

Diatom zones (NPD)

B
TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpellia biradiata
Azpellia komurae
Azpellia nodulifera
Azpellia oligocenica
Azpellia praeonodulifera
Azpellia salisburyana
Azpellia tabularis
Azpellia vetustissima
Azpellia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Coccneis scutellum
Coccneis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 *B* 20A - 32-cc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolobus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecum decoratum
Goniothecum rogersii
Goniothecum spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikeda tenuis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Lizitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearboei
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ *17*

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vls/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roccella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praesoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schradeni
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira maryjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. *nodus*
Actinocyclus Ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bidentata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Caviflora exigua
Caviflora jouseanaus
Caviflora lanceolatus
Caviflora linearis
Caviflora miocenicus
Caviflora rectus
Caviflora spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccocolea californica
Coccocolea costata
Coccocolea scutellum
Coccocolea spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinea angustata
Delphinea ischaboensis
Delphinea kippae
Delphinea sachalinensis
Delphinea simonsenii
Delphinea surirella
Delphinea spp.

Core, section, interval (cm)

U14-20A - SR-C

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombyx
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminaea
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratulum radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/ 19

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praesoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjanica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeabyssi
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

B

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 9R - CC

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biderata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilatus exiguis
Cavilatus jouseanus
Cavilatus lanceolatus
Cavilatus linearis
Cavilatus miocenicus
Cavilatus rectus
Cavilatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iris
Coscinodiscus radius
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidienticula ikebei
Crucidienticula kanayae
Crucidienticula nicobarica
Crucidienticula paranicobarica
Crucidienticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplolepis bombus
Diplolepis puelha
Diplolepis smithii
Diplolepis suborbicularis
Diplolepis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunota pectinalis var. *minor*
Eunota praerupta var. *praerupta*
Eunota spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Listiinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rotundil
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/14

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>60%), C (20-60%), D (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norvegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamicana
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeylebeli
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugarvensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisiatus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguus
Cavatulus jouseaeus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidiscita ikebei
Crucidiscita kanayaee
Crucidiscita nicobarica
Crucidiscita paranicobarica
Crucidiscita sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surrella
Delphineis spp.

Core, section, interval (cm)

U14 Z0, A. 14R CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tannimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia peclinaria var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis plocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kozlumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschikatia
Neodenticula kolzumii
Neodenticula seminas
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinboldii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia serata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/

15

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vls/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus cestrupi
Shionodiscus praecestrupi
Shionodiscus trifultus
Stephanopxis dimorpha
Stephanopxis horridus
Stephanopxis turris
Stephanopxis spp.
Surrella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lucsa
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeylebeli
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperat
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge +

Diatom zones (NPD)

Vindet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia paenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguis
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symblophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayaae
Crucidenticula nicobarica
Crucidenticula paranicobaraica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A 16R CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis laeta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis prashyalina
Denticulopsis praskatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupula var. *praerupula*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolilosis
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kozumiella tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kozumi
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 15

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (<3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norvegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Roella gelida
Roella praenitida
Roella semigelida
Roella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifolius F
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp. F
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infundibulum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamica
Thalassiosira medaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaloensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp. T
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiella divergens
Yoshidaiella spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

SPONGE ET

FORAM T

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

*Achnanthes groenlandica**Achnanthes inflata**Achnanthes lanceolata**Achnanthes lineariformis**Achnanthes* spp.*Actinocyclus curvatus**Actinocyclus ellipticus**Actinocyclus ingens**Actinocyclus ingens* f. *nodus**Actinocyclus ingens* f. *planus**Actinocyclus oculatus**Actinocyclus ochotensis**Actinocyclus octonarius**Actinocyclus robustus**Actinocyclus tsugaruensis**Actinocyclus* spp.*Actinopychus senarius**Actinopychus vulgaris**Actinopychus* spp.*Araniscus lewisianus**Araniscus* spp.*Asteromphalus darwinii**Asteromphalus oligocenicus**Asteromphalus parvulus**Asteromphalus robustus**Asteromphalus* spp.*Azpeitia biradiata**Azpeitia komarae**Azpeitia nodulifera**Azpeitia oligocenica**Azpeitia praenodulifera**Azpeitia salisburyana**Azpeitia tabularis**Azpeitia velutissima**Azpeitia* spp.*Bacterosira bathyomphala**Bacterosira fragilis**Bacterosira* spp.*Cavatibus exiguus**Cavatibus jouseanus**Cavatibus lanceolatus**Cavatibus linearis**Cavatibus miocenicus**Cavatibus rectus**Cavatibus* spp.*Cestodiscus kugleri**Cestodiscus trochus**Cestodiscus* spp.*Coccoineis californica**Coccoineis costata**Coccoineis scutellum**Coccoineis* spp.*Coscinodiscus asteromphalus**Coscinodiscus marginatus**Coscinodiscus oculus-iridis**Coscinodiscus radius**Coscinodiscus rhombicus**Coscinodiscus symbolophorus**Cosmoldiscus insignis**Crucidenticula ikebei**Crucidenticula kanayae**Crucidenticula nicobarica**Crucidenticula paranicobarica**Crucidenticula sawamurae**Cyclotella striata**Cyclotella meneghiniana**Cyclotella* spp.*Cymbella cistula**Cymbella minuta**Cymbella subaequalis**Cymbella* spp.*Delphinella angustata**Delphinella ischaboenensis**Delphinella kippae**Delphinella sachalinensis**Delphinella simonsoni**Delphinella surrella**Delphinella* spp.

Core, section, interval (cm)

U14 ZG. A. 18Rcc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)*Denticulopsis crassa**Denticulopsis dimorpha* var. *dimorpha**Denticulopsis dimorpha* var. *areolata**Denticulopsis hastedii**Denticulopsis hyalina**Denticulopsis katayamiae**Denticulopsis lauta**Denticulopsis praedimorpha* var. *minor**Denticulopsis praedimorpha* var. *praedimorpha**Denticulopsis praehyalina**Denticulopsis praekatayamiae**Denticulopsis praelata**Denticulopsis simonsenii**Denticulopsis tanimurae**Denticulopsis vulgaris**Denticulopsis* spp.*Diploneis bombus**Diploneis puelia**Diploneis smithii**Diploneis suborbicularis**Diploneis* spp.*Distephanosira architecturalis**Distephanosira* spp.*Ellerbeckia sol**Ellerbeckia* spp.*Eunotia pectinalis* var. *minor**Eunotia praeerupta* var. *praeerupta**Eunotia* spp.*Fragilaria construens**Fragilaria* spp.*Fragilariopsis cylindrus**Fragilariopsis doliolus**Fragilariopsis fossilia**Fragilariopsis oceanica**Fragilariopsis pilicena**Fragilariopsis* spp.*Goniothecium decoratum**Goniothecium rogersii**Goniothecium* spp.*Grammatophora* spp.*Halimphora costata**Hyalodiscus obsoletus**Hyalodiscus* spp.*Ikebaea tenuis**Kisseleviella carina**Kisseleviella ezoensis**Kozlumia tatsunokuchiensis**Kozloviella minor**Liszitnia ornata**Medilaria magna**Medilaria splendida**Melosira albicans**Navicula elginensis**Navicula lyraeoides**Navicula menisculus**Navicula salinarum**Neodenticula kamtschatka**Neodenticula kolzumii**Neodenticula seminae**Nitzschia challengerii**Nitzschia joussea**Nitzschia palea**Nitzschia reinholdii**Nitzschia rolandii**Odontella aurita**Odontella* spp.*Paralia sulcata**Paralia* spp.*Podosira stelligera**Porosira glaciata**Proboscia barbol**Proboscia curvirostris**Proboscia interposta**Proboscia praearborai**Pseudodimmerogramma elegans**Pseudonitzschia seriata**Pseudopyxis americana**Pseudotriceratum radiosoreticulatum**Pyxidicula zabelinae*

DATE: 2013/July/15

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)

F (>1 vlv/10FOVs & <1 vlv/10FOVs)

R (>3 vlv/traverse & <1 vlv/10FOVs)

X (present), B (barren)

*Raphoneis amphiceros**Raphoneis* spp.*Rhizosolenia hebetata* f. *hiemalis**Rhizosolenia hebetata* f. *semispina**Rhizosolenia norwegica**Rhizosolenia praebergoni**Rhizosolenia setigera**Rhizosolenia* spp.*Rocella tesselata**Rocella gelida**Rocella praenitida**Rocella semigelida**Rocella vigilans**Rouxia californica**Rouxia granda**Rouxia isoploidea**Rouxia obesa**Shionodiscus oestrupii**Shionodiscus praeoestrupii**Shionodiscus trifolius**Stephanopyxis dimorpha**Stephanopyxis horridus**Stephanopyxis turris**Stephanopyxis* spp.*Surirella* spp.*Thalassionema bacillaris**Thalassionema nitzschiooides**Thalassionema nitzschiooides* var. *incurvatum**Thalassionema nitzschiooides* var. *inflatum**Thalassionema nitzschiooides* var. *parvum**Thalassionema pseudonitzschiooides**Thalassionema schraderi**Thalassionema* spp.*Thalassiosira antiqua**Thalassiosira bioculata**Thalassiosira castanea**Thalassiosira convexa**Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica**Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida**Thalassiosira grunowii**Thalassiosira hyalina**Thalassiosira irregularis**Thalassiosira jacksonii**Thalassiosira jouseae**Thalassiosira leptopus**Thalassiosira lineata**Thalassiosira lusca**Thalassiosira manifesta**Thalassiosira marjamicola**Thalassiosira mediaconvexa**Thalassiosira minutissima**Thalassiosira miconenica**Thalassiosira nordenstkioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenidulus**Thalassiosira praeybæli**Thalassiosira robusta**Thalassiosira sanctaeiae**Thalassiosira singularis**Thalassiosira temperet**Thalassiosira umaoiensis**Thalassiosira undulosa**Thalassiotrichia yabei**Thalassiotrichia* spp.*Trachyneis aspera**Trachyneis* spp.*Yoshidaia divergens**Yoshidaia* spp.*Chaetoceros Resting Spores*

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Bawen

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bidentata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinea angustata
Delphinea ischaboensis
Delphinea kippae
Delphinea sachalinensis
Delphinea simonsenii
Delphinea surirella
Delphinea spp.

Core, section, interval (cm)

U14 20A, 19Rcc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastatilis
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis laeta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplothele bombus
Diplothele puelia
Diplothele smithii
Diplothele suborbicularis
Diplothele spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariaopsis cylindrus
Fragilariaopsis dolios
Fragilariaopsis fossilis
Fragilariaopsis oceanica
Fragilariaopsis pilocema
Fragilariaopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabeliae

DATE: 2013/July/

15

OBSERVER'S NAME AF (SK) IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetula f. *hiemalis*
Rhizosolenia hebetula f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidius
Thalassiosira praeysabeli
Thalassiosira robusta
Thalassiosira sanctetteae
Thalassiosira singularis
Thalassiosira tempesi
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopeltus senarius
Actinopeltus vulgaris
Actinopeltus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bidriata
Azpeitia komarae
Azpeitia nodulifera
Azpeitia oligoconica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia fabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Caviflora exigua
Caviflora jouseanaus
Caviflora lanceolatus
Caviflora linearis
Caviflora miocenica
Caviflora rectus
Caviflora spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinis angustata
Delphinis ischaboensis
Delphinis kippae
Delphinis sachalinensis
Delphinis simonensis
Delphinis surrella
Delphinis spp.

Core, section, interval (cm)

U14 20A, 20RCC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastatilis
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilicena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kozlumia tatsunokuchiensis
Kozloviella minor
Liszitinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyrae
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kozlumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodinheimerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 15

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (<3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praesoestrupili
Shionodiscus trifolius
Stephanopxis dimorpha
Stephanopys horridus
Stephanopxis turris
Stephanopxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamicola
Thalassiosira medaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioeldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenitidus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperet
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrichix longissima
Thalassiotrichix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

*B*TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 26 A-25R-1, bottom

DATE: 2013/July/15

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens 1. nodus
Actinocyclus Ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseae
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus mioceneus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asterophorus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmofelidus insignis
Crucidenticula kebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamureae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis sunirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis kaiyamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praeyalina
Denticulopsis praekaiyamae
Denticulopsis praelauta
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossils
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medaria megna
Medaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia senata
Pseudoxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata 1. *hiemalis*
Rhizosolenia hebetata 1. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia setigera
Roparia tesselata
Roccella gelida
Roccella praenitida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvatum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira biocellata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

B

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, Interval (cm)

U14 020 A-20 R-1, bottom

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgans
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenidulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseae
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconeis californica
Coccoconeis costata
Coccoconeis scutellum
Coccoconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symblophorus
Cosmoldiscus insignis
Crucidentula ikebei
Crucidentula kanayae
Crucidentula nicobarica
Crucidentula paranicobarica
Crucidentula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surirella
Delphinella spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonensei
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariosis cylindrus
Fragilaropsis dolilus
Fragilaropsis fossils
Fragilaropsis oceanica
Fragilaropsis plicena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisselevilla carina
Kisselevilla ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Mediaria magna
Mediaria splendida
Melosira albicans
Navicula elginensis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
Neodenticula karstschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriala
Pseudopixilla americana
Pseudofricerium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/15

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 valves/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia setigera
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamicia
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

B

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14

20A-~~20B-1.6cm~~

29

29

DATE: 2013/July/15

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/travers & <1 vlv/10FOVs)
 X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseae
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidiscita ikebei
Crucidiscita kanayae
Crucidiscita nicobarica
Crucidiscita paranicobarica
Crucidiscita sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. dimorpha
Denticulopsis dimorpha var. areolata
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis fausta
Denticulopsis praedimorpha var. minor
Denticulopsis praedimorpha var. praedimorpha
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonsonii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. minor
Eunotia praerupta var. praerupta
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolloides
Fragilaropsis tabularis
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenulis
Kisselevilla carina
Kisselevilla ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitina ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimorpha elegans
Pseudonitzschia senilis
Pseudoxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. hiemalis
Rhizosolenia hebetata f. semispina
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Ropera tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus praeoestrupil
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. incurvatum
Thalassionema nitzschiooides var. inflatum
Thalassionema nitzschiooides var. parvum
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjimica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

*B*TOTAL PRESERVATION
G (good), M (moderate), P (poor)Core, section, interval (cm)
U14 20 A-35R-1,TOTAL ABUNDANCE:
M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatula exigua
Cavatula jouseana
Cavatula lanceolatus
Cavatula linearis
Cavatula miocenicus
Cavatula rectus
Cavatula spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asterophorus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidiscita ikebei
Crucidiscita kanayae
Crucidiscita nicobarica
Crucidiscita paranicobarica
Crucidiscita sawamurae
Cyclorella striata
Cyclorella meneghiniana
Cyclorella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanoisira architecturalis
Distephanoisira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eurotia pectinalis var. *minor*
Eurotia praerupta var. *praerupta*
Eurotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolloides
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilicena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kozumiella tatsunokuchiensis
Kozumiella minor
Listizina ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatcica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia roelandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porsira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/ 16
OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 valves/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/1raverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia seligera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praesoestrupili
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillans
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvatum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schaderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira maryjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira preyabei
Thalassiosira robusta
Thalassiosira sanctaeae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, Interval (cm)

U14 20A - 38R-1

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)

F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinptychus senarius
Actinptychus vulgaris
Actinptychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpellia komurae
Azpellia nodulifera
Azpellia oligocenica
Azpellia praenodulifera
Azpellia salisburyana
Azpellia tabularis
Azpellia vetustissima
Azpellia spp.
Bacteriosira bathyomphala
Bacteriosira fragilis
Bacteriosira spp.
Cavitatus exiguis
Cavitatus jouseanus
Cavitatus lanceolatus
Cavitatus linearis
Cavitatus miocenicus
Cavitatus rectus
Cavitatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconeis californica
Coccoconeis costata
Coccoconeis scutellum
Coccoconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayaee
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamureae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praeyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dololus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilicena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmericratera elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 16

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 valves/FOV)

F (>1 vlv/10FOVs & <1 vlv/10FOVs)

R (>3 vlv/traverse & <1 vlv/10FOVs)

X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Ropertia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus paoeoestrupil
Shionodiscus trifultus
Stephanopxis dimorpha
Stephanopxis horridus
Stephanopxis turris
Stephanopxis spp.
Surrella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvatum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeli
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidiala divergens
Yoshidiala spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20 A, 42 R cc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens 1. nodus
Actinocyclus Ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopysthus senarius
Actinopysthus vulgans
Actinopysthus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligoconica
Azpeitia praeonulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatula exigua
Cavatula lousseanus
Cavatula lanceolatus
Cavatula linearis
Cavatula mioceneus
Cavatula rectus
Cavatula spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidiscula ikebei
Crucidiscula kanayae
Crucidiscula nicobarica
Crucidiscula paranicobarica
Crucidiscula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minutula
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonserii
Delphineis sunrella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis prehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonserii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolloides
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilicena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Listizina ornata
Medaria magna
Medaria splendida
Melosira albicans
Navicula elginensis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbolii
Pseudodimerogetra elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/ 16

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praeoestrupili
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira maryjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenea
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctaeae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Cheirotoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge -

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, Interval (cm)

U1420, A, 44R cc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/

16

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 valves/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

<i>Achnanthes groenlandica</i>	<i>Denticulopsis crassa</i>
<i>Achnanthes inflata</i>	<i>Denticulopsis dimorpha</i> var. <i>dimorpha</i>
<i>Achnanthes lanceolata</i>	<i>Denticulopsis dimorpha</i> var. <i>areolata</i>
<i>Achnanthes lineariformis</i>	<i>Denticulopsis hustedtii</i>
<i>Achnanthes</i> spp.	<i>Denticulopsis hyalina</i>
<i>Actinocyclus curvatus</i>	<i>Denticulopsis katayamiae</i>
<i>Actinocyclus ellipticus</i>	<i>Denticulopsis lauta</i>
<i>Actinocyclus ingens</i>	<i>Denticulopsis praedimorpha</i> var. <i>minor</i>
<i>Actinocyclus ingens</i> f. <i>nodus</i>	<i>Denticulopsis praedimorpha</i> var. <i>praedimorpha</i>
<i>Actinocyclus ingens</i> f. <i>planus</i>	<i>Denticulopsis praehyalina</i>
<i>Actinocyclus oculatus</i>	<i>Denticulopsis praekatayamiae</i>
<i>Actinocyclus ochotensis</i>	<i>Denticulopsis praelauta</i>
<i>Actinocyclus octonarius</i>	<i>Denticulopsis simonsenii</i>
<i>Actinocyclus robustus</i>	<i>Denticulopsis tanimurae</i>
<i>Actinocyclus tsugaruensis</i>	<i>Denticulopsis vulgaris</i>
<i>Actinocyclus</i> spp.	<i>Denticulopsis</i> spp.
<i>Actinopytchus senarius</i>	<i>Diploneis bombus</i>
<i>Actinopytchus vulgaris</i>	<i>Diploneis puella</i>
<i>Actinopytchus</i> spp.	<i>Diploneis smithii</i>
<i>Araniscus lewisianus</i>	<i>Diploneis suborbicularis</i>
<i>Araniscus</i> spp.	<i>Diploneis</i> spp.
<i>Asteromphalus darwinii</i>	<i>Distephanosira architecturalis</i>
<i>Asteromphalus oligocenicus</i>	<i>Distephanosira</i> spp.
<i>Asteromphalus parvulus</i>	<i>Ellerbeckia sol</i>
<i>Asteromphalus robustus</i>	<i>Ellerbeckia</i> spp.
<i>Asteromphalus</i> spp.	<i>Eunoia pectinalis</i> var. <i>minor</i>
<i>Azpeitia biradiata</i>	<i>Eunoia praerupta</i> var. <i>praerupta</i>
<i>Azpeitia komurae</i>	<i>Eunoia</i> spp.
<i>Azpeitia nodulifera</i>	<i>Fragilaria construens</i>
<i>Azpeitia oligocenica</i>	<i>Fragilaria</i> spp.
<i>Azpeitia praenodulifera</i>	<i>Fragilariaopsis cylindrus</i>
<i>Azpeitia salisburyana</i>	<i>Fragilariopsis dololus</i>
<i>Azpeitia tabularis</i>	<i>Fragilariopsis fossilis</i>
<i>Azpeitia vetustissima</i>	<i>Fragilariopsis oceanica</i>
<i>Azpeitia</i> spp.	<i>Fragilariopsis pilocena</i>
<i>Bacteriosira bathyomphala</i>	<i>Fragilariopsis</i> spp.
<i>Bacteriosira fragilis</i>	<i>Goniothecium decoratum</i>
<i>Bacteriosira</i> spp.	<i>Goniothecium rogersii</i>
<i>Cavitalus exiguis</i>	<i>Goniothecium</i> spp.
<i>Cavitalus jouseaeus</i>	<i>Grammatophora</i> spp.
<i>Cavitalus lanceolatus</i>	<i>Halambphora costata</i>
<i>Cavitalus linearis</i>	<i>Hyalodiscus obsoletus</i>
<i>Cavitalus miocenicus</i>	<i>Hyalodiscus</i> spp.
<i>Cavitalus rectus</i>	<i>Ikebea tenuis</i>
<i>Cavitalus</i> spp.	<i>Kisseleviella carina</i>
<i>Cestodiscus kugleri</i>	<i>Kisseleviella ezoensis</i>
<i>Cestodiscus trochus</i>	<i>Kolzumia tatsunokuchensis</i>
<i>Cestodiscus</i> spp.	<i>Kozloviella minor</i>
<i>Coccoconeis californica</i>	<i>Lisitzinia ornata</i>
<i>Coccoconeis costata</i>	<i>Mediaria magna</i>
<i>Coccoconeis scutellum</i>	<i>Mediaria splendida</i>
<i>Coccoconeis</i> spp.	<i>Melosira albicans</i>
<i>Coscinodiscus asteromphalus</i>	<i>Navicula elginensis</i>
<i>Coscinodiscus marginatus</i>	<i>Navicula lyroides</i>
<i>Coscinodiscus oculus-iridis</i>	<i>Navicula menisculus</i>
<i>Coscinodiscus radiatus</i>	<i>Navicula salinarum</i>
<i>Coscinodiscus rhombicus</i>	<i>Neodenticula kamtschatka</i>
<i>Coscinodiscus symbolophorus</i>	<i>Neodenticula kolzumii</i>
<i>Cosmiodiscus insignis</i>	<i>Neodenticula seminae</i>
<i>Crucidiscula ikebei</i>	<i>Nitzschia challengeri</i>
<i>Crucidiscula kanayaee</i>	<i>Nitzschia jouseae</i>
<i>Crucidiscula nicobarica</i>	<i>Nitzschia palea</i>
<i>Crucidiscula paranicobarica</i>	<i>Nitzschia reinholdii</i>
<i>Crucidiscula sawamurae</i>	<i>Nitzschia rolandii</i>
<i>Cyclotella striata</i>	<i>Odontella aurita</i>
<i>Cyclotella meneghiniana</i>	<i>Odontella</i> spp.
<i>Cyclotella</i> spp.	<i>Paralia sulcata</i>
<i>Cymbella cistula</i>	<i>Paralia</i> spp.
<i>Cymbella minuta</i>	<i>Podosira stelligera</i>
<i>Cymbella subaequalis</i>	<i>Porosira glacialis</i>
<i>Cymbella</i> spp.	<i>Proboscia barbol</i>
<i>Delphineis angustata</i>	<i>Proboscia curvirostris</i>
<i>Delphineis ischaboensis</i>	<i>Proboscia interposita</i>
<i>Delphineis kippae</i>	<i>Proboscia praebarbol</i>
<i>Delphineis sachalinensis</i>	<i>Pseudodimerogetrum elegans</i>
<i>Delphineis simonsenii</i>	<i>Pseudonitzschia seriata</i>
<i>Delphineis surirella</i>	<i>Pseudopyxilla americana</i>
<i>Delphineis</i> spp.	<i>Pseudoriceratium radiosoreticulatum</i>
	<i>Pyxidicula zabelinae</i>

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

under.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

almost broken

Core, section, interval (cm)

U14 20A-48R-CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%) R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. *nodus*
Actinocyclus ingens 1. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitatus exiguis
Cavitatus jouseae
Cavitatus lanceolatus
Cavitatus linearis
Cavitatus miocenicus
Cavitatus rectus
Cavitatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symblophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinis angustata
Delphinis ischaboensis
Delphinis kippae
Delphinis sachalinensis
Delphinis simonsenii
Delphinis surirella
Delphinis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis fauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonsenii
Denticulopsis tianmurensis
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolloides
Fragilaropsis fossils
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyaldodiscus obsoletus
Hyaldodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisztszina ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia setigera
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/16

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 valves/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/travers & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus paoeostrupil
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira biocellata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida T 2
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai a divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

0

2

sponge 7

fragments

Diatom zones (NPD)

*B*TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 49R - 1.6 cm

TOTAL ABUNDANCE:
M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%) (B = no diatoms)

DATE: 2013/July/ 16

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 v/lvs/FOV)
 F (>1 v/lv/10FOVs & <1 v/lv/10FOVs)
 R (>3 v/lv/traverse & <1 v/lv/10FOVs)
 X (present), B (baren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. *nodus*
Actinocyclus Ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinophy whole senarius
Actinophy whole vulgaris
Actinophy whole spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus jouseaeus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccneis californica
Coccneis costata
Coccneis scutellum
Coccneis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula kebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis kafayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis prelaufa
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunoia pectinalis var. *minor*
Eunoia praerupta var. *praerupta*
Eunoia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolilus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis plicona
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikeba tenuis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamschatkica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia roelandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbolii
Pseudodimeroograma elegans
Pseudonitzschia seriata
Pseudotrixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sporogen
fragments

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Fragment

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinophytus senarius
Actinophytus vulgaris
Actinophytus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligogenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligonatica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitatus exiguis
Cavitatus jouseanus
Cavitatus lanceolatus
Cavitatus linearis
Cavitatus miocenicus
Cavitatus rectus
Cavitatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscindiscus asteromphalus
Coscindiscus marginatus
Coscindiscus oculus-iridis
Coscindiscus radiatus
Coscindiscus rhombicus
Coscindiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayaee
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamureae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surirella
Delphinella spp.

Core, section, interval (cm)

U14 20A - 51R - 1W. 20 mm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 valves/FOV)
 F (>1 viv/10FOVs & <1 viv/10FOVs)
 R (>3 viv/traverse & <1 viv/10FOVs)
 X (present), B (barren)

*Denticulopsis crassa**Denticulopsis dimorpha* var. *dimorpha**Denticulopsis dimorpha* var. *areolata**Denticulopsis hustedtii**Denticulopsis hyalina**Denticulopsis katayamae**Denticulopsis lauta**Denticulopsis praedimorpha* var. *minor**Denticulopsis praedimorpha* var. *praedimorpha**Denticulopsis praehyalina**Denticulopsis praekatayamae**Denticulopsis praelauta**Denticulopsis simonensis**Denticulopsis tanimurae**Denticulopsis vulgaris**Denticulopsis* spp.*Diploneis bombus**Diploneis puella**Diploneis smithii**Diploneis suborbicularis**Diploneis* spp.*Distephanosira architecturalis**Distephanosira* spp.*Ellerbeckia sol**Ellerbeckia* spp.*Eunota pectinalis* var. *minor**Eunota praerupta* var. *praerupta**Eunota* spp.*Fragilaria construens**Fragilaria* spp.*Fragilariopsis cylindrus**Fragilariopsis dollos**Fragilariopsis fossilis**Fragilariopsis oceanica**Fragilariopsis pilicena**Fragilariopsis* spp.*Goniothecium decoratum**Goniothecium rogersii**Goniothecium* spp.*Grammatophora* spp.*Halimphora costata**Hyalodiscus obsoletus**Hyalodiscus* spp.*Ikebaea tenuis**Kisseleviella carina**Kisseleviella ezoensis**Kolzumia tatsuokuchiensis**Kozloviella minor**Lisitzinia ornata**Mediaria magna**Mediaria splendida**Melosira albicans**Navicula elginensis**Navicula lyroides**Navicula menisculus**Navicula salinarum**Neodenticula kamtschatka**Neodenticula kolzumii**Neodenticula seminae**Nitzschia challengerii**Nitzschia jouseae**Nitzschia palea**Nitzschia reinholdii**Nitzschia rolandii**Odontella aurita**Odontella* spp.*Paralia sulcata**Paralia* spp.*Podosira stelligera**Porosira glacialis**Proboscia barbol**Proboscia curvirostris**Proboscia interposita**Proboscia praearbaroi**Pseudodimerogetron elegans**Pseudonitzschia senilata**Pseudoxiphidium radiosoreticulatum**Pyxidicula zabeliae**Rhaphoneis amphiceros**Rhaphoneis* spp.*Rhizosolenia hebetata* f. *hiemalis**Rhizosolenia hebetata* f. *semispina**Rhizosolenia norwegica**Rhizosolenia praebergonii**Rhizosolenia* spp.*Roperia tesselata**Rocella gelida**Rocella praenitida**Rocella semigelida**Rocella vigilans**Rouxia californica**Rouxia granda**Rouxia isopola**Rouxia naviculoides**Rouxia obesa**Shionodiscus oestrupil**Shionodiscus paoeostrupil**Shionodiscus trifultus**Stephanopyxis dimorpha**Stephanopyxis horridus**Stephanopyxis turris**Stephanopyxis* spp.*Suriella* spp.*Thalassionema bacillaris**Thalassionema nitzschioidea**Thalassionema nitzschioidea* var. *incurvatum**Thalassionema nitzschioidea* var. *inflatum**Thalassionema nitzschioidea* var. *parvum**Thalassionema pseudonitzschioidea**Thalassionema schraderi**Thalassionema* spp.*Thalassiosira antiqua**Thalassiosira bioculata**Thalassiosira castanea**Thalassiosira convexa**Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica**Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida**Thalassiosira grunowii**Thalassiosira hyalina**Thalassiosira irregularis**Thalassiosira jacksonii**Thalassiosira jouseae**Thalassiosira leptopus**Thalassiosira lineata**Thalassiosira lusca**Thalassiosira manifesta**Thalassiosira manjamica**Thalassiosira mediaconvexa**Thalassiosira minutissima**Thalassiosira miocenica**Thalassiosira nordenstkoeldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenidulus**Thalassiosira praeyabeli**Thalassiosira robusta**Thalassiosira sanctae**Thalassiosira singularis**Thalassiosira temper**Thalassiosira umaiensis**Thalassiosira undulosa**Thalassiosira yabeli**Thalassiosira* spp.*Thalassiothrix longissima**Trachyneis* spp.*Trachyneis* spp.*Yoshidiala divergens**Yoshidiala* spp.*Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS***Sponge**

Diatom zones (NPD)
BARREN

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Core, section, interval (cm)
U14 20 A - 5 (R-1W) 60 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vls/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. *nodus*
Actinocyclus Ingens f. *planus*
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenidulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus lineans
Cavilitus mioceneus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconeis californica
Coccoconeis costata
Coccoconeis scutellum
Coccoconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symblophorus
Cosmiodiscus insignis
Crucidicula ikebei
Crucidicula kanayaee
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinia angustata
Delphinia ischaboensis
Delphinia kippae
Delphinia sachalinensis
Delphinia simonsenii
Delphinia surirella
Delphinia spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonensei
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariosis cylindrus
Fragilaropsis dololus
Fragilaropsis fossils
Fragilariosis oceanica
Fragilaropsis pilocena
Fragilariosis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisselevilla carina
Kisselevilla ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Mediaria magna
Mediaria splendida
Melosira albicans
Navicula elginensis
Navicula lyrides
Navicula menisculus
Navicula salinarum
Neodenticula karstschatica
Neodenticula kolzumii
Neodenticula seminæ
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarboi
Pseudodinmmerogramma elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudoriceratium radiosoreticulatum
Pyxidicula zabeliae

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvatum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenea
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

undet.

TOTAL PRESERVATION

(G (good), M (moderate), P (poor))

G alveolar Baren

Core, section, interval (cm)

U14 20 A - 5712-CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July 16

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 v/lvs/FOV)
 F (>1 v/lv/10FOVs & <1 v/lv/10FOVs)
 R (>3 v/lv/traverse & <1 v/lv/10FOVs)
 X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens 1. nodus
Actinocyclus Ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus foveanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidiscula ikebei
Crucidiscula kanayaee
Crucidiscula nicobarica
Crucidiscula paranicobarica
Crucidiscula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis sunirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis kiryamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis prehyalina
Denticulopsis praekiryamae
Denticulopsis praelauta
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunoia pectinalis var. *minor*
Eunoia praerupta var. *praerupta*
Eunoia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolilus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilicena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitina ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
Neodenitula kamtschatka
Neodenitula kolzumii
Neodenitula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearboi
Pseudodimerogetron elegans
Pseudonitzschia seriata
Pseudoxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengzonii
Rhizosolenia setigera
Ropera tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxla californica
Rouxia granda
Rouxia isopollica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praesoestrupili
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillans
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamicola
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira preyabeii
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaciensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge —

Diatom zones (NPD)

Vndet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, Interval (cm)

U14 20 A. 5281W/177

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 valves/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacteriosira bathyomphala
Bacteriosira fragilis
Bacteriosira spp.
Cavitalus exiguis
Cavitalus jouseae
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayaee
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamureae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surirella
Delphinella spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolloides
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis plicena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kotzumia tatsunokuchiensis
Kozloviella minor
Lisitzinica ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmericraterium elegans
Pseudonitzschia senata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia setigera
Ropera tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvatum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira biocellata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordensoeldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidala divergens
Yoshidala spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

foram T

* -

Sponge F

Diatom zones (NPD)

under

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

olmose bottom

Core, section, Interval (cm)

U14 20A - 52R-1, bottom

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/16

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

<i>Achnanthes groenlandica</i>	<i>Denticulopsis crassa</i>
<i>Achnanthes inflata</i>	<i>Denticulopsis dimorpha</i> var. <i>dimorpha</i>
<i>Achnanthes lanceolata</i>	<i>Denticulopsis dimorpha</i> var. <i>areolata</i>
<i>Achnanthes lineariformis</i>	<i>Denticulopsis hustedtii</i>
<i>Achnanthes</i> spp.	<i>Denticulopsis hyalina</i>
<i>Actinocyclus curvatus</i>	<i>Denticulopsis katayamae</i>
<i>Actinocyclus ellipticus</i>	<i>Denticulopsis lauta</i>
<i>Actinocyclus Ingens</i>	<i>Denticulopsis praedimorpha</i> var. <i>minor</i>
<i>Actinocyclus Ingens</i> f. <i>nodus</i>	<i>Denticulopsis praedimorpha</i> var. <i>praedimorpha</i>
<i>Actinocyclus Ingens</i> f. <i>planus</i>	<i>Denticulopsis praehyalina</i>
<i>Actinocyclus oculatus</i>	<i>Denticulopsis praekatayamae</i>
<i>Actinocyclus ochotensis</i>	<i>Denticulopsis praelauta</i>
<i>Actinocyclus octonarius</i>	<i>Denticulopsis simonense</i>
<i>Actinocyclus robustus</i>	<i>Denticulopsis tanimurae</i>
<i>Actinocyclus tsugaruensis</i>	<i>Denticulopsis vulgaris</i>
<i>Actinocyclus</i> spp.	<i>Denticulopsis</i> spp.
<i>Actinoptychus senarius</i>	<i>Diploneis bombus</i>
<i>Actinoptychus vulgaris</i>	<i>Diploneis puebla</i>
<i>Actinoptychus</i> spp.	<i>Diploneis smithii</i>
<i>Araniscus lewisianus</i>	<i>Diploneis suborbicularis</i>
<i>Araniscus</i> spp.	<i>Diploneis</i> spp.
<i>Asteromphalus darwinii</i>	<i>Distephanosira architecturalis</i>
<i>Asteromphalus oligocenicus</i>	<i>Distephanosira</i> spp.
<i>Asteromphalus parvulus</i>	<i>Ellerbeckia sol</i>
<i>Asteromphalus robustus</i>	<i>Ellerbeckia</i> spp.
<i>Asteromphalus</i> spp.	<i>Eunotia pectinalis</i> var. <i>minor</i>
<i>Azpeitia biradiata</i>	<i>Eunotia praerupta</i> var. <i>praerupta</i>
<i>Azpeitia komurae</i>	<i>Eunotia</i> spp.
<i>Azpeitia nodulifera</i>	<i>Fragilaria construens</i>
<i>Azpeitia oligocenica</i>	<i>Fragilaria</i> spp.
<i>Azpeitia praenodulifera</i>	<i>Fragilariopsis cylindrus</i>
<i>Azpeitia salisburyana</i>	<i>Fragilariopsis dolloides</i>
<i>Azpeitia tabularis</i>	<i>Fragilariopsis fossils</i>
<i>Azpeitia velutissima</i>	<i>Fragilariopsis oceanica</i>
<i>Azpeitia</i> spp.	<i>Fragilariopsis pilocena</i>
<i>Bacterosira bathyomphala</i>	<i>Fragilariopsis</i> spp.
<i>Bacterosira fragilis</i>	<i>Goniothecium decoratum</i>
<i>Bacterosira</i> spp.	<i>Goniothecium rogersii</i>
<i>Cavatulus exiguis</i>	<i>Goniothecium</i> spp.
<i>Cavatulus jouseae</i>	<i>Grammatophora</i> spp.
<i>Cavatulus lanceolatus</i>	<i>Halamphora costata</i>
<i>Cavatulus linearis</i>	<i>Hyalodiscus obsoletus</i>
<i>Cavatulus miocenicus</i>	<i>Hyalodiscus</i> spp.
<i>Cavatulus rectus</i>	<i>Ikebea tenuis</i>
<i>Cavatulus</i> spp.	<i>Kisseleviella carina</i>
<i>Cestodiscus kugleri</i>	<i>Kisseleviella ezoensis</i>
<i>Cestodiscus trochus</i>	<i>Kolzumia tatsunokuchiensis</i>
<i>Cestodiscus</i> spp.	<i>Kozloviella minor</i>
<i>Cocconeis californica</i>	<i>Lisitzinia ornata</i>
<i>Cocconeis costata</i>	<i>Medilaria magna</i>
<i>Cocconeis scutellum</i>	<i>Medilaria splendida</i>
<i>Cocconeis</i> spp.	<i>Melosira albicans</i>
<i>Coscindidiscus asteromphalus</i>	<i>Navicula elginensis</i>
<i>Coscindidiscus marginatus</i>	<i>Navicula lyraoides</i>
<i>Coscindidiscus oculus-iridis</i>	<i>Navicula menisculus</i>
<i>Coscindidiscus radiatus</i>	<i>Navicula salinarum</i>
<i>Coscindidiscus rhombicus</i>	<i>Neodenticula karstschatica</i>
<i>Coscindidiscus symbolophorus</i>	<i>Neodenticula kolzumii</i>
<i>Cosmoldiscus insignis</i>	<i>Neodenticula seminae</i>
<i>Crucidenticula ikebei</i>	<i>Nitzschia challengeri</i>
<i>Crucidenticula kanayae</i>	<i>Nitzschia jouseae</i>
<i>Crucidenticula nicobarica</i>	<i>Nitzschia palea</i>
<i>Crucidenticula paranicobarica</i>	<i>Nitzschia reinholdii</i>
<i>Crucidenticula sawamuriae</i>	<i>Nitzschia rolandii</i>
<i>Cyclotella striata</i>	<i>Odontella aurita</i>
<i>Cyclotella meneghiniana</i>	<i>Odontella</i> spp.
<i>Cyclotella</i> spp.	<i>Paralia sulcata</i>
<i>Cymbella cistula</i>	<i>Paralia</i> spp.
<i>Cymbella minuta</i>	<i>Podosira stelligera</i>
<i>Cymbella subaequalis</i>	<i>Porosira glaciata</i>
<i>Cymbella</i> spp.	<i>Proboscia barbol</i>
<i>Delphineis angustata</i>	<i>Proboscia curvirostris</i>
<i>Delphineis ischaboensis</i>	<i>Proboscia interposta</i>
<i>Delphineis kippae</i>	<i>Proboscia praebarboi</i>
<i>Delphineis sachalinensis</i>	<i>Pseudodimmericramma elegans</i>
<i>Delphineis simonsenii</i>	<i>Pseudonitzschia seriata</i>
<i>Delphineis surirella</i>	<i>Pseudopyxis americana</i>
<i>Delphineis</i> spp.	<i>Pseudoriceratium radiosoreticulatum</i>

*Pyxidicula zabelinae*fragment*Chaetoceros Resting Spores*

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

B

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, Interval (cm)

U1416A - 53R-1, 60cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 16

OBSERVER's NAME (AF) SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vials/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

<i>Achnanthes groenlandica</i>	<i>Denticulopsis crassa</i>
<i>Achnanthes inflata</i>	<i>Denticulopsis dimorpha</i> var. <i>dimorpha</i>
<i>Achnanthes lanceolata</i>	<i>Denticulopsis dimorpha</i> var. <i>areolata</i>
<i>Achnanthes lineariformis</i>	<i>Denticulopsis hustedii</i>
<i>Achnanthes</i> spp.	<i>Denticulopsis hyalina</i>
<i>Actinocyclus curvatus</i>	<i>Denticulopsis katayamae</i>
<i>Actinocyclus ellipticus</i>	<i>Denticulopsis fauta</i>
<i>Actinocyclus ingens</i>	<i>Denticulopsis praedimorpha</i> var. <i>minor</i>
<i>Actinocyclus ingens</i> f. <i>nodus</i>	<i>Denticulopsis praedimorpha</i> var. <i>praedimorpha</i>
<i>Actinocyclus ingens</i> f. <i>planus</i>	<i>Denticulopsis praehyalina</i>
<i>Actinocyclus oculatus</i>	<i>Denticulopsis praekatayamae</i>
<i>Actinocyclus ochotensis</i>	<i>Denticulopsis praelauta</i>
<i>Actinocyclus octonarius</i>	<i>Denticulopsis simonisenii</i>
<i>Actinocyclus robustus</i>	<i>Denticulopsis tanimurae</i>
<i>Actinocyclus tsugaruensis</i>	<i>Denticulopsis vulgaris</i>
<i>Actinocyclus</i> spp.	<i>Denticulopsis</i> spp.
<i>Actinophytes senarius</i>	<i>Diploneis bombus</i>
<i>Actinophytes vulgaris</i>	<i>Diploneis puella</i>
<i>Actinophytes</i> spp.	<i>Diploneis smithii</i>
<i>Araniscus lewisiensis</i>	<i>Diploneis suborbicularis</i>
<i>Araniscus</i> spp.	<i>Diploneis</i> spp.
<i>Asteromphalus darwinii</i>	<i>Distephanosira architecturalis</i>
<i>Asteromphalus oligocenicus</i>	<i>Distephanosira</i> spp.
<i>Asteromphalus parvulus</i>	<i>Ellerbeckia sol</i>
<i>Asteromphalus robustus</i>	<i>Ellerbeckia</i> spp.
<i>Asteromphalus</i> spp.	<i>Eunotia pectinalis</i> var. <i>minor</i>
<i>Azpeitia biradiata</i>	<i>Eunotia praeerupta</i> var. <i>praeerupta</i>
<i>Azpeitia komurae</i>	<i>Eunotia</i> spp.
<i>Azpeitia nodulifera</i>	<i>Fragilaria construens</i>
<i>Azpeitia oligocenica</i>	<i>Fragilaria</i> spp.
<i>Azpeitia praenodulifera</i>	<i>Fragilariopsis cylindrus</i>
<i>Azpeitia salisburyana</i>	<i>Fragilariopsis dololus</i>
<i>Azpeitia tabularis</i>	<i>Fragilariopsis fossils</i>
<i>Azpeitia velutissima</i>	<i>Fragilariopsis oceanica</i>
<i>Azpeitia</i> spp.	<i>Fragilariopsis plicoena</i>
<i>Bacterosira bathyomphala</i>	<i>Fragilariopsis</i> spp.
<i>Bacterosira fragilis</i>	<i>Goniothecium decoratum</i>
<i>Bacterosira</i> spp.	<i>Goniothecium rogersii</i>
<i>Cavitalus exiguis</i>	<i>Goniothecium</i> spp.
<i>Cavitalus fouseanus</i>	<i>Grammatophora</i> spp.
<i>Cavitalus lanceolatus</i>	<i>Halambphora costata</i>
<i>Cavitalus linearis</i>	<i>Hyalodiscus obsoletus</i>
<i>Cavitalus miocenicus</i>	<i>Hyalodiscus</i> spp.
<i>Cavitalus rectus</i>	<i>Ikebaea tenuis</i>
<i>Cavitalus</i> spp.	<i>Kisseleviella carina</i>
<i>Cestodiscus kugleri</i>	<i>Kisseleviella ezoensis</i>
<i>Cestodiscus trochus</i>	<i>Kolzumia tatsunokuchiensis</i>
<i>Cestodiscus</i> spp.	<i>Kozloviella minor</i>
<i>Coccoconeis californica</i>	<i>Liszitina ornata</i>
<i>Coccoconeis costata</i>	<i>Medilaria magna</i>
<i>Coccoconeis scutellum</i>	<i>Medilaria splendida</i>
<i>Coccoconeis</i> spp.	<i>Melosira albicans</i>
<i>Coscinodiscus asteromphalus</i>	<i>Navicula elginensis</i>
<i>Coscinodiscus marginatus</i>	<i>Navicula lyraoides</i>
<i>Coscinodiscus oculus-iridis</i>	<i>Navicula menisculus</i>
<i>Coscinodiscus radiatus</i>	<i>Navicula salinarum</i>
<i>Coscinodiscus rhombicus</i>	<i>Neodenitula kamtschatica</i>
<i>Coscinodiscus symbolorhaphus</i>	<i>Neodenitula kolzumii</i>
<i>Cosmoldiscus insignis</i>	<i>Neodenitula seminae</i>
<i>Crucideticula ikebei</i>	<i>Nitzschia challengeri</i>
<i>Crucideticula kanayaee</i>	<i>Nitzschia fouseae</i>
<i>Crucideticula nicobarica</i>	<i>Nitzschia palea</i>
<i>Crucideticula paranicobarica</i>	<i>Nitzschia reinholdii</i>
<i>Crucideticula sawamurae</i>	<i>Nitzschia rolandii</i>
<i>Cyclotella striata</i>	<i>Odontella aurita</i>
<i>Cyclotella meneghiniana</i>	<i>Odontella</i> spp.
<i>Cyclotella</i> spp.	<i>Paralia sulcata</i>
<i>Cymbella cistula</i>	<i>Paralia</i> spp.
<i>Cymbella minuta</i>	<i>Podosira stelligera</i>
<i>Cymbella subaequalis</i>	<i>Porosira glacialis</i>
<i>Cymbella</i> spp.	<i>Proboscia barbol</i>
<i>Delphineis angustata</i>	<i>Proboscia curvirostris</i>
<i>Delphineis ischaboeensis</i>	<i>Proboscia interposta</i>
<i>Delphineis kippae</i>	<i>Proboscia praebarboi</i>
<i>Delphineis sachalinensis</i>	<i>Pseudodimerogetrum elegans</i>
<i>Delphineis simonisenii</i>	<i>Pseudonitzschia seriata</i>
<i>Delphineis surirella</i>	<i>Pseudopyxilla americana</i>
<i>Delphineis</i> spp.	<i>Pseudotriceratium radiosoreticulatum</i>
	<i>Pyxidicula zabeliae</i>

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Burken

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 zo A. 57RCC

DATE: 2013/July/ 17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 valves/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinoecyclus curvatus
Actinoecyclus ellipticus
Actinoecyclus ingens
Actinoecyclus ingens f. nodus
Actinoecyclus ingens f. planus
Actinoecyclus oculatus
Actinoecyclus ochotensis
Actinoecyclus octonarius
Actinoecyclus robustus
Actinoecyclus tsugaruensis
Actinoecyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenidulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathymopha
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus mioceneus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symblophorus
Cosmiodiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surirella
Delphinella spp.

Denticulopsis crassa
Denticulopsis dimorpha var. dimorpha
Denticulopsis dimorpha var. areolata
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. minor
Denticulopsis praedimorpha var. praedimorpha
Denticulopsis praehyalina
Denticulopsis praekatajamae
Denticulopsis praetexta
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. minor
Eunotia praerupta var. praerupta
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolilus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisselevilla carina
Kisselevilla ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraea
Navicula menisculus
Navicula salinarum
Neodenticula karstschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbolii
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. hiemalis
Rhizosolenia hebetata f. semispina
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Roperia tesselata
Roella gelida
Roella praenitida
Roella semigelida
Roella vigilans
Rouxia californica
Rouxia granda
Rouxia ispolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. incurvatum
Thalassionema nitzschioidea var. inflatum
Thalassionema nitzschioidea var. parvum
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamicola
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenea
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaloensis
Thalassiosira undulosa
Thalassiosira yabelii
Thalassiosira spp.
Thalassiotrix longissima
Thalassiotrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge -

Diatom zones (NPD)**Barren****TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

fragments

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. plenus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus ussuricus
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpelita bradiata
Azpelita komurae
Azpelita nodulifera
Azpelita oligocenica
Azpelita praenodulifera
Azpelita salisburyana
Azpelita tabularis
Azpelita velutissima
Azpelita spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguus
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, Interval (cm)

U14 20A .58R2W100

TOTAL ABUNDANCE:M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheia bombus
Diplotheia puella
Diplotheia smithii
Diplotheia suborbicularis
Diplotheia spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dololus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilcorna
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikedaea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixille americana
Pseudofratercula radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia preebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopoca
Rouxia naviculoides
Rouxia obesa
Shalonodiscus oestrupii
Shlonodiscus paoeostrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis lurris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schradieri
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manfesta
Thalassiosira marjamica
Thalassiosira mediocconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperoi
Thalassiosira umiacensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrich longissima
Thalassiotrich spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores**TOTAL OF VEGETATIVE CELLS**

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

fragment

Core, section, interval (cm)

U14 20A.58R3W34

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpelia bivalvata
Azpelia komurae
Azpelia nodulifera
Azpelia oligocenica
Azpelia praenodulifera
Azpelia salisburyana
Azpelia tabularis
Azpelia vetustissima
Azpelia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseae
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iris
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmidiscus insignis
Crucidicula kebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypalma
Denticulopsis praetypalmae
Denticulopsis praefluita
Denticulopsis simonsonii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolofolius
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lizitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabeliae

DATE: 2013/July/

17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praeintida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus paeoestrupil
Shionodiscus trifulus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaria
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamicia
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidala divergens
Yoshidala spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge T

Diatom zones (NPD)

Bayren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, Interval (cm)

U14 20A 58R CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathymopha
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseae
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccneis californica
Coccneis costata
Coccneis scutellum
Coccneis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. dimorpha
Denticulopsis dimorpha var. areolata
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. minor
Denticulopsis praedimorpha var. praedimorpha
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. minor
Eunotia praeupta var. praeupta
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolloides
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halampheira costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszkinia ornata
Mediaria magna
Mediaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimerogetron elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. hiemalis
Rhizosolenia hebetata f. semispina
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia setigera
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. incurvatum
Thalassionema nitzschioidea var. inflatum
Thalassionema nitzschioidea var. parvum
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira biocellata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamicola
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeli
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

mudflat

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A 59R-1W. 25 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliosus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilcorna
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikobea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challenger
Nitzschia jouseana
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetron elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia lesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopatica
Rouxia naviculoides
Rouxia obesa
Shionodiscus cestrupil
Shionodiscus paeoestrupil
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriellia spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseana
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyleabii
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrix longissima
Thalassiotrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge

Diatom zones (NPD)

Undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 59R-2W 10cm

DATE: 2013/July/ 17

OBSERVER's NAME AF SK IS

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%) B (no diatoms)

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Ananiscus lewisianus
Ananiscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurasae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamureae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tamurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolliola
Fragilariopsis fossalis
Fragilariopsis oceanica
Fragilariopsis plocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Mediaea magna
Mediaea splendida
Melosira albicans
Navicula elginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumi
Neodenticula seminas
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roccella gelida
Roccella praenitida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus praeoestrupil
Shionodiscus trifullus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temporis
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge

Diatom zones (NPD)
BARREN

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Core, section, interval (cm)
U14 20A - 59R-3, 85 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biredata
Azpeitia komurei
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguus
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconis californica
Coccoconis costata
Coccoconis scutellum
Coccoconis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidienticula ikabei
Crucidienticula kanayae
Crucidienticula nicobarica
Crucidienticula paranicobarica
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis laeta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praetextata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lizitzinia ornata
Medularia magna
Medularia splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtshatica
Neodenticula kolzumii
Neodenticula seminaea
Nitzschia challengerii
Nitzschia jouseana
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vflvs/FOV)
F (>1 vflv/10FOVs & <1 vflv/10FOVs)
R (>3 vflv/traverse & <1 vflv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata 1. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roella gelida
Roella praenitida
Roella semigelida
Roella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shlonodiscus ostrupili
Shlonodiscus praesostrupili
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira biculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenitulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrichia longissima
Thalassiotrichia spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Baren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

fragments

Core, section, Interval (cm)

U14 20A, 59Rcc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vials/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (baren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseae
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccneis californica
Coccneis costata
Coccneis scutellum
Coccneis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symblophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinia angustata
Delphinia ischaboensis
Delphinia kippae
Delphinia sachalinensis
Delphinia simonsenii
Delphinia surirella
Delphinia spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dolloides
Fragilaropsis fissilis
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kotzumia tatsunokuchiensis
Kozloviella minor
Lisztnica ornata
Mediaria magna
Mediaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmericromera elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia seligera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus paoeostrupil
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvatum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira fusca
Thalassiosira manifesta
Thalassiosira marjamicia
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

undet.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 60R - CC

Achnanthes groenlandica
 Achnanthes inflata
 Achnanthes lanceolata
 Achnanthes lineariformis
 Achnanthes spp.
 Actinocyclus curvatus (94.8, 7.6)
 Actinocyclus ellipticus
 Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
 Actinocyclus oculatus
 Actinocyclus ochotensis
 Actinocyclus octonarius
 Actinocyclus robustus
 Actinocyclus tsugaruensis
 Actinocyclus spp.
 Actinopychus senarius
 Actinopychus vulgaris
 Actinopychus spp.
 Araniscus lewisiensis
 Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpelia bifradiata
Azpelia komurae
Azpelia nodulifera
Azpelia oligocenica
Azpelia praeonodulifera
Azpelia salisburyana
Azpelia tabularis
Azpelia vetustissima
Azpelia spp.
Bacterosira balthyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguus
Cavilitus jouseae
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp. (90.0, 14.9)
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccineis californica
Coccineis costata
Coccineis scutellum
Coccineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawanureae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), P (<2%), B (no diatoms)

DATE: 2013/July/ 17

OBSERVER's NAME AF SK (IS)

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praeyalina
Denticulopsis preekatayamae
Denticulopsis prelautea
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunota pectinalis var. *minor*
Eunota praerupta var. *praerupta*
Eunota spp.
Fragilaria construens
Fragilaria spp.
Fragilariosis cylindrus
Fragilariosis dololus
Fragilariosis fossils
Fragilariosis plicena
Fragilariosis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hydrodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Lisitzinia ornata
Mediaria magna
Mediaria splendida
Melosira albicans
Navicula alginensis
Navicula lyraides
Navicula menisculus
Navicula salinarum
Neodenticula karstschatica
Neodenticula kolzumii
Neodenticula seminae R Nod. 58? — (84.5, 14.9)
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

R Chaetoceros Resting Spores
 TOTAL of VEGETATIVE CELLS 2

Sponge

Diatom zones (NPD)
BARREN

TOTAL PRESERVATION
 G (good), M (moderate), P (poor)

Core, section, interval (cm)
 U14 20A - 61R-1

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus oculatus
Actinocyclus ochoensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinophy whole senarius
Actinophy whole vulgaris
Actinophy whole spp.
Araniscus lewisi
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathymopha
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus louseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus mioceneus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iris
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidiscita ikebei
Crucidiscita kanayaiae
Crucidiscita nicobarica
Crucidiscita paranicobarica
Crucidiscita sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonserii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. dimorpha
Denticulopsis dimorpha var. areolata
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. minor
Denticulopsis praedimorpha var. praedimorpha
Denticulopsis praeyalina
Denticulopsis praekatayamae
Denticulopsis praelauta
Denticulopsis simonserii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. minor
Eunotia praerupta var. praerupta
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis dololus
Fragilaropsis fossils
Fragilaropsis oceanica
Fragilaropsis pliocena
Fragilaropsis spp.
Goniothecum decoratum
Goniothecum rogersii
Goniothecum spp.
Grammatophora spp.
Halampheira costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatcica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia louseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 17
 OBSERVER's NAME AF SK (IS)

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. hiemalis
Rhizosolenia hebetata f. semispina
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praeoestrupili
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. incurvatum
Thalassionema nitzschioidea var. inflatum
Thalassionema nitzschioidea var. parvum
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularata
Thalassiosira jacksonii
Thalassiosira louseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira maryjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenea
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umiacensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaea divergens
Yoshidaea spp.

Chaetoceros Resting Spores
 TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)*Bare***TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinophytus senarius
Actinophytus vulgaris
Actinophytus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurei
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitatus exiguis
Cavitatus jouseanus
Cavitatus lanceolatus
Cavitatus linearis
Cavitatus miocenicus
Cavitatus rectus
Cavitatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidienticula ikebei
Crucidienticula kanayae
Crucidienticula nicobarica
Crucidienticula paranicobarica
Crucidienticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A. 62R - 1

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha* var. *dimorpha
Denticulopsis dimorpha* var. *areolata
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dololius
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halanphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lizitzinia ornata
Medularia magna
Medularia splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminæ
Nitzschia challenger
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopediastrum americana
Pseudotriceratium radiosoreliculum
Pyxidicula zabeliae

DATE: 2013/July/**17**

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopelta
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus paeoestrupili
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctissima
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrichum longissimum
Trachyneis spp.
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chonetes Resting Spores**TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)
BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A-63R-CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeltia bivalvis
Azpeltia komurae
Azpeltia nodulifera
Azpeltia oligocenica
Azpeltia praenodulifera
Azpeltia salisburyana
Azpeltia tabularis
Azpeltia vetustissima
Azpeltia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis kayaiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanikurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliosus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilicena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikoea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia lesselata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifulus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marumamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrix longissima
Thalassiotrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens 1. nodus
Actinocyclus Ingens 1. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopeltus senarius
Actinopeltus vulgaris
Actinopeltus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bibradialis
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia fabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguis
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmidiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonisenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 6xR - cc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis laeta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolichus
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Podosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearboi
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudocyprilla americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabelinae

DATE: 2013/July/ 17

OBSERVER's NAME

AF

SK

IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hemiclavis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Roella gelida
Roella praenitida
Roella semigelida
Roella vigilans
Rouxia californica
Rouxia granda
Rouxia isopatica
Rouxia naviculoides
Rouxia obesa
Shlonodiscus ostrupili
Shlonodiscus praecostripli
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira tempesi
Thalassiosira umaciensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

B

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 65R-CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeltia bivalvis
Azpeltia komurae
Azpeltia nodulifera
Azpeltia oligocenica
Azpeltia praenidulifera
Azpeltia salisburyana
Azpeltia tabularis
Azpeltia vetustissima
Azpeltia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguus
Cavitalus jouseae
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoineis californica
Coccoineis costata
Coccoineis scutellum
Coccoineis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmidiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastatilis
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolilosis
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilicorna
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikobea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lizitzinia ornata
Medularia magna
Medularia splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschikacea
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Parosira glaciales
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbolii
Pseudodimeroigrana elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelnae

DATE: 2013/July/ 12

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessilata
Rocella gelida
Rocella praeinitia
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwini
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitatus exiguis
Cavitatus jouseanus
Cavitatus lanceolatus
Cavitatus linearis
Cavitatus miocenicus
Cavitatus rectus
Cavitatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 60R - 2, bottom

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypalma
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dollius
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis plicacea
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikoea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkica
Neodenticula kolzumii
Neodenticula seminiae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciatis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimmericraterogramma elegans
Pseudonitzschia seriata
Pseudoxiphidium americanum
Pseudofriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiermalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia oboea
Shaloniscus cestrupil
Shlonodiscus praeostrupil
Shionodiscus trifulus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manujamica
Thalassiosira mediocconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Core, section, interval (cm)
U14 20A - 69R - CC

TOTAL ABUNDANCE:
M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopeltus senarius
Actinopeltus vulgaris
Actinopeltus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvis
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocerica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidienticula ikabei
Crucidienticula kanayae
Crucidienticula nicobarica
Crucidienticula paranicobarica
Crucidienticula sawamuriae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha* var. *dimorpha
Denticulopsis dimorpha* var. *areolata
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha* var. *minor
Denticulopsis praedimorpha* var. *praedimorpha
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliosus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halanaphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenulis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lizitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciata
Proboscia barbolii
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbolii
Pseudodimerogetron elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreliculum
Pyxidicula zabelinae

DATE: 2013/July/17

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiermalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrix longissima
Thalassiotrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

B

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Core, section, interval (cm)
U14 20A - DIR - C bottom

TOTAL ABUNDANCE:
M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisiatus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilatus exiguis
Cavilatus jouseanus
Cavilatus lanceolatus
Cavilatus linearis
Cavilatus miocenicus
Cavilatus rectus
Cavilatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmidiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolilolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis plocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchensis
Kozloviella minor
Lisitzinia omata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkica
Neodenticula kolzumii
Neodenticula seminiae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barboli
Proboscia curvirostris
Proboscia interposta
Proboscia praebarboi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudofratercula radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/12

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessilata
Roccella gelida
Roccella praenitida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus paeoestrupil
Shionodiscus trifillus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaria
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvulum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjorae
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)*Bathren***TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 Z 0 A. 73 Rcc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Aransicus lewisianus
Aransicus spp.
Asteromphalus darwini
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bidriata
Azpeitia komuras
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis plocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkica
Neodenticula kolzumi
Neodenticula seminiae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopityilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/

18

OBSERVER's NAME AF SK IS**RELATIVE ABUNDANCE OF EACH TAXON**

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifillus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvulum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manujamica
Thalassiosira mediocconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporei
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 74R - 1

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurasae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus thomasicus
Coscinodiscus symbolophorus
Cosmidiscus insignis
Crucidenticula ikebeli
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamuriae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedi
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaricopsis cylindrus
Fragilaricopsis doliolus
Fragilaricopsis fossalis
Fragilaricopsis oceanica
Fragilaricopsis plicena
Fragilaricopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula menisculus
Navicula sinularum
Neodenticula kamtschatkica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudodixyella americana
Pseudofratercula radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 18

OBSERVER's NAME

AF SK

IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiermalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Roccella gelida
Roccella praenitida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus cestrupilis
Shionodiscus paeoestrupilis
Shionodiscus trifulus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporei
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)**BARREN****TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

Core, section, interval (cm)U14 20A - 75R - 1**TOTAL ABUNDANCE:**

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwini
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biraedata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crudicentula ikebei
Crudicentula kanayae
Crudicentula nicobarica
Crudicentula paranicobarica
Crudicentula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsonii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis plocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumi
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbolii
Pseudodinmerogramma elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/ 18

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roccella gelida
Roccella praeintida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praesoestrupii
Shionodiscus trifillus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvulum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umapiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Trachyneis spp.
Trachyneis aspera
Yoshidaea divergens
Yoshidaea spp.

Chaetoceros Resting Spores**TOTAL OF VEGETATIVE CELLS**

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U1420 A - 76R-1

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopeltichus senarius
Actinopeltichus vulgaris
Actinopeltichus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburiana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathymophala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseae
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolorophorus
Cosmoldiscus insignis
Crucidinicula ikebei
Crucidinicula kanayae
Crucidinicula nicobarica
Crucidinicula paranicobarica
Crucidinicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonisenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimerophora*
Denticulopsis dimorpha var. *seolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praekautta
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Disstephanosira architecturalis
Disstephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaropsis cylindrus
Fragilaropsis doliolus
Fragilaropsis fossils
Fragilaropsis oceanica
Fragilaropsis pilocena
Fragilaropsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikeda tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kozloviella tatsunokuchensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/18

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RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
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 R (>3 vlv/traverse & <1 vlv/10FOVs)
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Raphoneis spp.
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Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessulata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjoramica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporel
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

Vhdet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A, 80R 1A 80

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvulus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseae
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconeis californica
Coccoconeis costata
Coccoconeis scutellum
Coccoconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kobzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarboi
Pseudodimeroigrane elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabeliae

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vials/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessilata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shiondiscus oestrupil
Shiondiscus paeoestrupil
Shiondiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schradieri
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira maryjematica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sancteae
Thalassiosira singularis
Thalassiosira temperoi
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chiloglena Resting Spores

TOTAL OF VEGETATIVE CELLS

Sponge T

Diatom zones (NPD)

NPDI

TOTAL PRESERVATION

G (good), M (moderate), R (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurensis
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseae
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-indis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A 20R 1AD

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *seolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminaea
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia serata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 19

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shlonodiscus oestrupii
Shlonodiscus praeoestrupii
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillariae
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lucas
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeabyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperiei
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrich longissima
Thalassiotrich spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

SPONGE T

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

*Achnanthes groenlandica**Achnanthes inflata**Achnanthes lanceolata**Achnanthes lineariformis**Achnanthes spp.**Actinocyclus curvatus**Actinocyclus ellipticus**Actinocyclus Ingens**Actinocyclus Ingens f. nodus**Actinocyclus Ingens f. planus**Actinocyclus ocellatus**Actinocyclus ochotensis**Actinocyclus octonarius**Actinocyclus robustus**Actinocyclus tsugaruensis**Actinocyclus spp.**Actinopychus senarius**Actinopychus vulgaris**Actinopychus spp.**Araniscus lewisiensis**Araniscus spp.**Asteromphalus darwini**Asteromphalus oligogenicus**Asteromphalus parvulus**Asteromphalus robustus**Asteromphalus spp.**Azpeitia biradiata**Azpeitia komurae**Azpeitia nodulifera**Azpeitia oligocerica**Azpeitia praenodulifera**Azpeitia salisburyana**Azpeitia tabularis**Azpeitia velutissima**Azpeitia spp.**Bacterosira bathyomphala**Bacterosira fragilis**Bacterosira spp.**Cavatitus exiguus**Cavatitus jouseanus**Cavatitus lanceolatus**Cavatitus linearis**Cavatitus miocenicus**Cavatitus rectus**Cavatitus spp.**Cestodiscus kugleri**Cestodiscus trochus**Cestodiscus spp.**Cocconeis californica**Cocconeis costata**Cocconeis scutellum**Cocconeis spp.**Coscindodiscus asteromphalus**Coscindodiscus marginatus**Coscindodiscus oculus-iridis**Coscindodiscus radiatus**Coscindodiscus rhombicus**Coscindodiscus symbolophorus**Cosmoldiscus Insights**Crucidenticula ikebei**Crucidenticula kanayae**Crucidenticula nicobarica**Crucidenticula paranicobarica**Crucidenticula sawamurae**Cyclotella striata**Cyclotella meneghiniana**Cyclotella spp.**Cymbella cistula**Cymbella minuta**Cymbella subaequalis**Cymbella spp.**Delphinella angustata**Delphinella ischabooensis**Delphinella kippae**Delphinella sachalinensis**Delphinella simonsoni**Delphinella surrella**Delphinella spp.*

S P N J C F

Core, section, interval (cm)

U14 20A 80R2A81

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)*Denticulopsis crassa**Denticulopsis dimorpha* var. *dimorpha**Denticulopsis dimorpha* var. *areolata**Denticulopsis hastedii**Denticulopsis hyalina**Denticulopsis katayamae**Denticulopsis lauta**Denticulopsis praedimorpha* var. *minor**Denticulopsis praedimorpha* var. *praedimorpha**Denticulopsis praehyalina**Denticulopsis praekatayamae**Denticulopsis praesoluta**Denticulopsis simonsenii**Denticulopsis tanimurae**Denticulopsis vulgaris**Denticulopsis spp.**Diploneis bombus**Diploneis puelia**Diploneis smithii**Diploneis suborbicularis**Diploneis spp.**Distephanosira architecturalis**Distephanosira spp.**Ellerbeckia sol**Ellerbeckia spp.**Eunotia pectinalis* var. *minor**Eunotia praerupta* var. *praerupta**Eunotia spp.**Fragilaria construens**Fragilaria spp.**Fragilariopsis cylindrus**Fragilariopsis dolikos**Fragilariopsis fossilia**Fragilariopsis oceanica**Fragilariopsis pilocena**Fragilariopsis spp.**Goniothecium decoratum**Goniothecium rogersii**Goniothecium spp.**Grammatophora spp.**Halimphora costata**Hyalodiscus obsoletus**Hyalodiscus spp.**Ikebaea tenuis**Kisseleviella carina**Kisseleviella ezoensis**Kozlumia tatsunokuchiensis**Kozloviella minor**Liszitinia ornata**Medilaria magna**Medilaria splendida**Melosira albicans**Navicula elginensis**Navicula lyraeides**Navicula menisculus**Navicula salinarum**Neodenticula kamtschatkae**Neodenticula kotzumii**Neodenticula seminae**Nitzschia challengerii**Nitzschia jouseana**Nitzschia palea**Nitzschia reinholdii**Nitzschia rolandii**Odontella aurita**Odontella spp.**Paralia sulcata**Paralia spp.**Podosira stelligera**Porosira glaciata**Proboscia barbol**Proboscia curvirostris**Proboscia interposta**Proboscia praearbaroi**Pseudodimmerogramma elegans**Pseudonitzschia seriata**Pseudopixylla americana**Pseudotriceratium radiosoreticulatum**Pyxidicula zabelinae*

19

DATE: 2013/July/

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)

F (>1 vlv/10FOVs & <1 vlv/10FOVs)

R (>3 vlv/traverse & <1 vlv/10FOVs)

X (present), B (barren)

*Rhaphoneis amphiceros**Rhaphoneis spp.**Rhizosolenia hebetata* f. *hiemalis**Rhizosolenia hebetata* f. *semispina**Rhizosolenia norwegica**Rhizosolenia praebengonii**Rhizosolenia setigera**Rhizosolenia spp.**Roperia tesselata**Rocella gelida**Rocella praenitida**Rocella semigelida**Rocella vigilans**Rouxia californica**Rouxia granda**Rouxia isopolica**Rouxia naviculoides**Rouxia obesa**Shalonodiscus oestrupli**Shalonodiscus praeoestrupli**Shionodiscus trifolius**Stephanopyxis dimorpha**Stephanopyxis horridus**Stephanopyxis turris**Stephanopyxis spp.**Suriella spp.**Thalassionema bacillaris**Thalassionema nitzschioides**Thalassionema nitzschioides* var. *incurvatum**Thalassionema nitzschioides* var. *infatum**Thalassionema nitzschioides* var. *parvum**Thalassionema pseudonitzschioidea**Thalassionema schraderi**Thalassionema spp.**Thalassiosira antiqua**Thalassiosira bioculata**Thalassiosira castanea**Thalassiosira convexa**Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica**Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida**Thalassiosira grunowii**Thalassiosira hyalina**Thalassiosira irregularis**Thalassiosira jacksonii**Thalassiosira jouseae**Thalassiosira leptopus**Thalassiosira lineata**Thalassiosira lucia**Thalassiosira manifesta**Thalassiosira marujamica**Thalassiosira mediaconvexa**Thalassiosira minutissima**Thalassiosira miocenica**Thalassiosira nordenstkioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenidulus**Thalassiosira praeybabei**Thalassiosira robusta**Thalassiosira sanctaeiae**Thalassiosira singularis**Thalassiosira temperet**Thalassiosira umaoiensis**Thalassiosira undulosa**Thalassiosira yabei**Thalassiothrix longissima**Thalassiothrix spp.**Trachyneis aspera**Trachyneis spp.**Yoshidaia divergens**Yoshidaia spp.**Cheatoceros Resting Spores*

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

undet.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

C

Core, section, interval (cm)

U14 20A 80R2A98

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugariensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadifata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguus
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconeis californica
Coccoconeis costata
Coccoconeis scutellum
Coccoconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radialius
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamiae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheleis bombus
Diplotheleis puelia
Diplotheleis smithii
Diplotheleis suborbicularis
Diplotheleis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossalis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopediastrum americana
Pseudotreticatum radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 1

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vials/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessilata
Roccella gelida
Roccella praeinitida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shiondiscus oestrupii
Shiondiscus praeoestrupii
Shiondiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetteae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Sponge ET

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoptychus senarius
Actinoptychus vulgaris
Actinoptychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwini
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpellia bivalvata
Azpellia komurae
Azpellia nodulifera
Azpellia oligocenica
Azpellia praeonulifera
Azpellia salisburyana
Azpellia tabularis
Azpellia velutissima
Azpellia spp.
Bacterosira bathymphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguus
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minutula
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A-80R-2A, 100m

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/18 - 19

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praeraupta var. *praeraupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis plicena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenula
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkica
Neodenticula kolzumii
Neodenticula seminase
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol ? + ① 7338
Proboscia curvirostris (42.0, 78.0)
Proboscia interposta
Proboscia praebarbol
Pseudodimmericraterogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudofratercula radiosoresciculatum
Pyxidicula zabelinae

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Sponge

b foram

Pest spore

Rhizoflagellate -

Diatom zones (NPD)

undet.

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 ZA A. SOR 2A116

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvulus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus isugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguis
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeinis californica
Coccoeinis costata
Coccoeinis scutellum
Coccoeinis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinis angustata
Delphinis ischaboensis
Delphinis kippae
Delphinis sachalinensis
Delphinis simonsenii
Delphinis surirella
Delphinis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *aerolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanikumurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dololius
Fragilariopsis fossile
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminaea
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata **E1**
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbolii
Pseudodimerogetron elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratum radiosoreticulatum
Pyxidicula zabelinae

f 10Sponge **E7**

* -

placed copia T

DATE: 2013/July/ **19**

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessulata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira micrenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabil
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp. **T** ---
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

*Achnanthes groenlandica**Achnanthes inflata**Achnanthes lanceolata**Achnanthes lineariformis**Achnanthes spp.**Actinocyclus curvatus**Actinocyclus ellipticus**Actinocyclus ingens**Actinocyclus ingens f. nodus**Actinocyclus ingens f. planus**Actinocyclus oculatus**Actinocyclus ochotensis**Actinocyclus octonarius**Actinocyclus robustus**Actinocyclus tsugaruensis**Actinocyclus spp.**Actinopychus senarius**Actinopychus vulgaris**Actinopychus spp.**Araniscus lewisiensis**Araniscus spp.**Asteromphalus darwinii**Asteromphalus oligocenicus**Asteromphalus parvulus**Asteromphalus robustus**Asteromphalus spp.**Azpeitia briadiata***Azpeitia komurensis***Azpeitia nodulifera**Azpeitia oligocenica**Azpeitia praenodulifera**Azpeitia salisburyana**Azpeitia tabularis**Azpeitia velutissima**Azpeitia spp.**Bacterosira bathyomphala**Bacterosira fragilis**Bacterosira spp.**Cavatitus exiguis***Cavatitus jouseanus***Cavatitus lanceolatus**Cavatitus linearis**Cavatitus miocenicus**Cavatitus rectus**Cavatitus spp.**Cestodiscus kugleri**Cestodiscus trochus**Cestodiscus spp.**Coccoeis californica**Coccoeis costata**Coccoeis scutellum**Coccoeis spp.**Coscinodiscus asteromphalus**Coscinodiscus marginatus**Coscinodiscus oculus-iridis**Coscinodiscus radialis**Coscinodiscus rhombicus**Coscinodiscus symbolophorus***Cosmoldiscus insignis***Crucidenticula ikebei**Crucidenticula kanayae**Crucidenticula nicobarica**Crucidenticula paranicobarica**Crucidenticula sawamurae**Cyclotella striata**Cyclotella meneghiniana**Cyclotella spp.**Cymbella cistula**Cymbella minuta**Cymbella subaequalis**Cymbella spp.**Delphineis angustata**Delphineis ischaboensis**Delphineis kippae**Delphineis sachalinensis***Delphineis simonsenii***Delphineis surirella**Delphineis spp.**Spongite T*

Core, section, interval (cm)

U14 20A 2013

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praekauttae
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaria cylindrus
Fragilariopsis doliolus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyrodes
Navicula merulinus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseana
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimerogetron elegans
Pseudonitzschia serata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopatica
Rouxia naviculoides
Rouxia obesa
Shlondiscus oestrupii
Shlondiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseana
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lucas
Thalassiosira manifesta
Thalassiosira marjoramica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeabyssi
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrichia longissima
Thalassiotrichia spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A 80R3A55

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpelia bivalvis
Azpelia komurae
Azpelia nodulifera
Azpelia oligocenica
Azpelia praenodulifera
Azpelia salisburyana
Azpelia tabularis
Azpelia vetustissima
Azpelia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguus
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coconeis californica
Coconeis costata
Coconeis scutellum
Coconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikabei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastifilis
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenula
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porsaria glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shiondiscus oestrupil
Shiondiscus paeoestrupil
Shiondiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis lurnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schradieri
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeli
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

sporangia

全面

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 80R-4A, 62 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%) B (no diatoms)

Achnanthes groenlandica

Achnanthes inflata

Achnanthes lanceolata

Achnanthes lineariformis

Achnanthes spp.

Actinocyclus curvatus

Actinocyclus ellipticus

Actinocyclus ingens

Actinocyclus ingens f. nodus

Actinocyclus ingens f. planus

Actinocyclus oculatus

Actinocyclus ochotensis

Actinocyclus octonarius

Actinocyclus robustus

Actinocyclus tsugarvensis

Actinocyclus spp.

Actinopychus senarius

Actinopychus vulgaris

Actinopychus spp.

Araniscus lewisianus

Araniscus spp.

Asteromphalus darwinii

Asteromphalus oligocenicus

Asteromphalus parvulus

Asteromphalus robustus

Asteromphalus spp.

Azpellia bireadiata

Azpellia komuras

Azpellia nodulifera

Azpellia oligocenica

Azpellia praeonodulifera

Azpellia salisburyana

Azpellia tabularis

Azpellia velutissima

Azpellia spp.

Bacterosira bathyomphala

Bacterosira fragilis

Bacterosira spp.

Cavatulus exiguis

Cavatulus jouseanus

Cavatulus lanceolatus

Cavatulus linearis

Cavatulus miocenicus

Cavatulus rectus

Cavatulus spp.

Cestodiscus kugleri

Cestodiscus trochus

Cestodiscus spp.

Cocconeis californica

Cocconeis costata

Cocconeis scutellum

Cocconeis spp.

Coscinodiscus asteromphalus

Coscinodiscus marginatus

Coscinodiscus oculus-iridis

Coscinodiscus radiatus

Coscinodiscus rhombicus

Coscinodiscus symbolophorus

Cosmoldiscus insignis

Crudicentula ikebei

Crudicentula kanayae

Crudicentula nicobarica

Crudicentula paranobarcia

Crudicentula sawamurae

Cyclotella striata

Cyclotella meneghiniana

Cyclotella spp.

Cymbella cistula

Cymbella minuta

Cymbella subaequalis

Cymbella spp.

Delphineis angustata

Delphineis ischaboensis

Delphineis kippae

Delphineis sachalinensis

Delphineis simonsenii

Delphineis surirella

Delphineis spp.

Denticulopsis crassa

Denticulopsis dimorpha var. dimorpha

Denticulopsis dimorpha var. areolata

Denticulopsis hastedtii

Denticulopsis hyalina

Denticulopsis katayamae

Denticulopsis lauta

Denticulopsis praedimorpha var. minor

Denticulopsis praedimorpha var. praedimorpha

Denticulopsis praehyalina

Denticulopsis praekatayamae

Denticulopsis praefluita

Denticulopsis simonsenii

Denticulopsis tanimurae

Denticulopsis vulgaris

Denticulopsis spp.

Diploneis bombus

Diploneis puella

Diploneis smithii

Diploneis suborbicularis

Diploneis spp.

Distephanosira architecturalis

Distephanosira spp.

Ellerbeckia sol

Ellerbeckia spp.

Eunotia pectinalis var. minor

Eunotia praerupta var. praerupta

Eunotia spp.

Fragilaria construens

Fragilaria spp.

Fragilaria cylindrus

Fragilaria doliolus

Fragilaria fossils

Fragilaria oceanica

Fragilaria plicena

Fragilaria spp.

Goniothecium decoratum

Goniothecium rogersii

Goniothecium spp.

Grammatophora spp.

Halamphora costata

Hyalodiscus obsoletus

Hyalodiscus spp.

Ikebea tenuis

Kisseleviella carina

Kisseleviella ezoensis

Kolzumia tatsunokuchiensis

Kozloviella minor

Lisitzinia ornata

Medilaria magna

Medilaria splendida

Melosira albicans

Navicula elginensis

Navicula lyraeoides

Navicula menisculus

Navicula salinarum

Neodenticula kamtschatka

Neodenticula kolzumii

Neodenticula seminae

Nitzschia challenger

Nitzschia jouseana

Nitzschia palea

Nitzschia reinholdii

Nitzschia rolandii

Odontella aurita

Odontella spp.

Paralia sulcata

Paralia spp.

Podosira stelligera

Porosira glacialis

Proboscia barbol

Proboscia curvirostris

Proboscia interposta

Proboscia praebarbol

Pseudodimerogetrum elegans

Pseudonitzschia seriata

Pseudoxilla americana

Pseudotriceratium radiosoreticulatum

Pyxidicula zabeliae

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)

F (>1 vlv/10FOVs & <1 vlv/10FOVs)

R (>3 vlv/traverse & <1 vlv/10FOVs)

X (present), B (barren)

Rhaphoneis amphiceros

Rhaphoneis spp.

Rhizosolenia hebetata f. hiemalis

Rhizosolenia hebetata f. semispina

Rhizosolenia norwegica

Rhizosolenia praebergonii

Rhizosolenia setigera

Roparia tessellata

Rocella gelida

Rocella praenitida

Rocella semigelida

Rocella vigilans

Rouxia californica

Rouxia granda

Rouxia isopatica

Rouxia naviculoides

Rouxia obesa

Shionodiscus oestrupii

Shionodiscus preeoestrupii

Stephanopyxis dimorpha

Stephanopyxis horridus

Stephanopyxis turris

Stephanopyxis spp.

Suriella spp.

Thalassionema bacillaris

Thalassionema nitzschiooides

Thalassionema nitzschiooides var. incurvatum

Thalassionema nitzschiooides var. inflatum

Thalassionema nitzschiooides var. parvum

Thalassionema pseudonitzschiooides

Thalassionema schraderi

Thalassionema spp.

Thalassiosira antiqua

Thalassiosira bioculata

Thalassiosira castanea

Thalassiosira convexa

Thalassiosira decipiens

Thalassiosira dubiosa

Thalassiosira eccentrica

Thalassiosira fasciculata

Thalassiosira fraga

Thalassiosira gravida

Thalassiosira grunowii

Thalassiosira hyalina

Thalassiosira irregulata

Thalassiosira jacksonii

Thalassiosira jouseae

Thalassiosira leptopus

Thalassiosira lineata

Thalassiosira lusca

Thalassiosira manifesta

Thalassiosira marujamica

Thalassiosira mediaconvexa

Thalassiosira minutissima

Thalassiosira miocenica

Thalassiosira nordenskioldii

Thalassiosira orientalis

Thalassiosira praefraga

Thalassiosira praenidulus

Thalassiosira praeyabei

Thalassiosira robusta

Thalassiosira sanctae

Thalassiosira singularis

Thalassiosira temporis

Thalassiosira umaoiensis

Thalassiosira undulosa

Thalassiosira yabei

Thalassiosira spp.

Trachyneis spp.

Yoshidaia spp.

Yoshidaia divergens

Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

sponge

全面

Diatom zones (NPD)

undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugariensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvis
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitatus exiguis
Cavitatus jousseanus
Cavitatus lanceolatus
Cavitatus linearis
Cavitatus miocenicus
Cavitatus rectus
Cavitatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmidiscus insignis
Crucidenticula ikebei
Crucidenticula karayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 80R-5A, 44 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vials/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praetypalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplothele bombus
Diplothele puelia
Diplothele smithii
Diplothele suborbicularis
Diplothele spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dololus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilcorna
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisselevilla carina
Kisselevilla ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula eligensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkica
Neodenticula kolzumii
Neodenticula seminosa
Nitzschia challenger
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbarol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotricherulum radiosoreticulatum
Pyxidicula zabeliae

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge

0
3

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bidriata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocentra
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoenes californica
Coccoenes costata
Coccoenes scutellum
Coccoenes spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

closed

Dino

Sponge

Core, section, interval (cm)

U14 20A 80R-6A 35cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%) B (no diatoms)

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. hiemalis
Rhizosolenia hebetata f. semispina
Rhizosolenia norwegica
Rhizosolenia praebarginii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolidea
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praecostupli
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp. *IE* *T*
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. incurvatum
Thalassionema nitzschiooides var. inflatum
Thalassionema nitzschiooides var. parvum
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseana
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjoramica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sancteiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp. *T*
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores *IE* *S*

TOTAL of VEGETATIVE CELLS

金西

Diatom zones (NPD)

NPD 12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 80R - 6A 65 cm

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeltia bifadiata
Azpeltia komurae
Azpeltia nodulifera
Azpeltia oligocenica
Azpeltia praenodulifera
Azpeltia salisburyana
Azpeltia tabularis
Azpeltia vetustissima
Azpeltia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minutula
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. hiemalis
Rhizosolenia hebetata f. semispina
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praesostrupii
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis lurris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. incurvatum
Thalassionema nitzschiooides var. inflatum
Thalassionema nitzschiooides var. parvum
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediocconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporis
Thalassiosira umaiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Q 2

*Shionodiscus oestrupii**Shionodiscus praesostrupii**Shionodiscus trifolius**Stephanopyxis dimorpha***Stephanopyxis horridus***Stephanopyxis lurris**Stephanopyxis spp.**Suriella spp.**Thalassionema bacillaris**Thalassionema nitzschiooides**Thalassionema nitzschiooides var. incurvatum**Thalassionema nitzschiooides var. inflatum**Thalassionema nitzschiooides var. parvum**Thalassionema pseudonitzschiooides**Thalassionema schraderi**Thalassionema spp.***Thalassiosira antiqua***Thalassiosira bioculata***Thalassiosira castanea****Thalassiosira convexa***Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica**Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida***Thalassiosira grunowii***Thalassiosira hyalina**Thalassiosira irregulata***Thalassiosira jacksonii****Thalassiosira jouseae***Thalassiosira leptopus**Thalassiosira lineata**Thalassiosira lusca**Thalassiosira manifesta***Thalassiosira marujamica***Thalassiosira mediocconvexa***Thalassiosira minutissima***Thalassiosira miocenica**Thalassiosira nordenskioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenudulus**Thalassiosira praeyabei**Thalassiosira robusta**Thalassiosira sanctae***Thalassiosira singularis****Thalassiosira temporis***Thalassiosira umaiensis**Thalassiosira undulosa***Thalassiosira yabei***Thalassiosira spp.**Thalassiothrix longissima**Thalassiothrix spp.**Trachyneis aspera**Trachyneis spp.**Yoshidaia divergens**Yoshidaia spp.*

R 24

II II II II

Q 3

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge

全面

Diatom zones (NPD)

NPDT2

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 80R - 6A 80 cm

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvulus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpelita bivalvata
Azpelita komurae
Azpelita nodulifera
Azpelita oligocenica
Azpelita praenodulifera
Azpelita salisburyana
Azpelita tabularis
Azpelita velutissima
Bacterosira balthyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguis
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula semina —
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata EEEEEE
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

44

19

Diatom zones (NPD)*un det***TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

R 2

- Achnanthes groenlandica*
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus T
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugariensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biraedita
Azpeitia komurea
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus mioceneus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum *
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radialis
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A 80R-6A 106um

TOTAL ABUNDANCE:M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 19

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXONA (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

- Achnanthes groenlandica*
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus T
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugariensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biraedita
Azpeitia komurea
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus mioceneus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum *
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radialis
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Q Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

23

Diatom zones (NPD)

B
TOTAL PRESERVATION
G (good), M (moderate), P (poor)

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwini
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurasae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguus
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus reclus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iris
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebeli
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 81F - CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)



Denticulopsis crassa
Denticulopsis dimorpha var. dimorpha
Denticulopsis dimorpha var. areolata
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamiae
Denticulopsis lauta
Denticulopsis praedimorpha var. minor
Denticulopsis praedimorpha var. praedimorpha
Denticulopsis praetayloriae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Euotia pectinalis var. minor
Euotia praerupta var. praerupta
Euotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dololus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis plocana
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozlovella minor
Liszinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbarol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/18

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. hiemalis
Rhizosolenia hebetata f. semispina
Rhizosolenia norwegica
Rhizosolenia praebicornii
Rhizosolenia seligera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praeantida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia grandida
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifillus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. incurvatum
Thalassionema nitzschiooides var. inflatum
Thalassionema nitzschiooides var. parvum
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporis
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

全圖

Diatom zones (NPD)undet**TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

FRAGMENT

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

sporangia

Core, section, interval (cm)

U14 20A-83R-1W 23 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaria cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenula
Kisseleviella carina
Kisseleviella ezoensis
Kozumiella tatsunokuchiensis
Kozumiella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetra elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabeliae

Cheatoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

0
2

19

Diatom zones (NPD)

undet
TOTAL PRESERVATION
 G (good), M (moderate), P (poor)
Fragment

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvulus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvis
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguus
Cavatulus jouseaeus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A 83R-1W 49 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%) B (no diatoms)

DATE: 2013/July/

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliosus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilicorna
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tanaka
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamschatcica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbolii
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

sponge closed cap

Diatom zones (NPD)

BAREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Fragment

Core, section, interval (cm)

U14 20A 83R-1W, 64 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus isaguruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biadriata
Azpeitia komurea
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus mioceneus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenula
Kisseleviella carina
Kisseleviella ezoensis
Kozumiella tatsunokuchiensis
Kozumiella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabeliae

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwini
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurasae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus jousseae
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iris
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboenensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 83R - CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Q

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Disstephanosira architecturalis
Disstephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis plocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikobea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumi
Neodenticula seminæ
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudodixyella americana
Pseudoriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/18

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus praeoestrupil
Shionodiscus trifullus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvulum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira joussea
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temporis
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)**BARBEN****TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

Core, section, interval (cm)U1420A - 86R - C**TOTAL ABUNDANCE:**

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguus
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus micocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconis californica
Coccoconis costata
Coccoconis scutellum
Coccoconis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonisenii
Denticulopsis tanikurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunoia pectinalis var. *minor*
Eunoia praerupta var. *praerupta*
Eunoia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratulum radiosoreticulatum
Pyxidicula zabeliae

DATE: 2013/July/ 19**OBSERVER's NAME AF SK IS****RELATIVE ABUNDANCE of EACH TAXON**

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Roparia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shlonodiscus oestrupii
Shlonodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infundibulum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schradeni
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeabyssi
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporei
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bideridata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Caviflatus exiguis
Caviflatus jouseae
Caviflatus lanceolatus
Caviflatus linearis
Caviflatus miocenicus
Caviflatus rectus
Caviflatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconeis californica
Coccoconeis costata
Coccoconeis scutellum
Coccoconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crudicentula ikebei
Crudicentula kanayae
Crudicentula nicobarica
Crudicentula paranicobarica
Crudicentula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 87R 2 100 cm

DATE: 2013/July/ 19

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploaneis bombus
Diploaneis puelia
Diploaneis smithii
Diploaneis suborbicularis
Diploaneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolulus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabeliae

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tugariensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bidriata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguis
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeinis californica
Coccoeinis costata
Coccoeinis scutellum
Coccoeinis spp.
Coscindodiscus asteromphalus
Coscindodiscus marginatus
Coscindodiscus oculus-iris
Coscindodiscus radiatus
Coscindodiscus rhombicus
Coscindodiscus symbolophorus
Cosmodiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 87R-2W, 134cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)*Denticulopsis crassa*

Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*

Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris

Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis

Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia *peclinaria* var. *minor*

Eunotia *praerupta* var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus

Fragilariopsis doliolus
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus

Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis

Kolzumia tatsunokuchiensis
Kozloviella minor
Lisztnia ornata
Medilaria magna

Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum

Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis

Proboscia barbol
Proboscia curvirostris

Proboscia interposita
Proboscia *praebarboi*

Pseudodimerogetron elegans

Pseudonitzschia senata

Pseudopyxis americana

Pseudotriceratium radiosoreticulatum

Pyxidicula zabeliae

DATE: 2013/July/

19

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia seligera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopatica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lucas
Thalassiosira manifesta
Thalassiosira manujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyleabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Sponge

ting forrm

Diatom zones (NPD)**BARREN****TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biredata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidiscita ikebei
Crucidiscita kanayae
Crucidiscita nicobarica
Crucidiscita paranicobarica
Crucidiscita sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 87R-3W 33 cm

TOTAL ABUNDANCE:M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastatilis
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis laeta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonisenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplothele bombus
Diplothele puelia
Diplothele smithii
Diplothele suborbicularis
Diplothele spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisztnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia roelandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 19

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXONA (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis tauris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lucas
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira mihiutlensis
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyleabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)

NP D-12

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

R X

R I

F 32

F 19

R 3

A 5

X

L 1.0 → 8.0

→ 2.0 ← 9.0

← 3.0 → 10.0

H 1.0 ← 11.0

L 1.0 → 12.0

E 1.0 ← 13.0

→ 6.0 → 14.0

E 1.0 ← 15.0

Core, section, interval (cm)

U14 20A - 872 - 2m 10/cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)*Achnanthes groenlandica**Achnanthes inflata**Achnanthes lanceolata**Achnanthes lineariformis**Achnanthes spp.**Actinocyclus curvatus**Actinocyclus ellipticus**Actinocyclus Ingens**Actinocyclus Ingens 1. nodus**Actinocyclus Ingens 1. planus**Actinocyclus oculatus**Actinocyclus ochotensis**Actinocyclus octonarius**Actinocyclus robustus**Actinocyclus tsugaruensis**Actinocyclus spp.**Actinopcythus senarius**Actinopcythus vulgaris**Actinopcythus spp.**Araniscus lewisianus**Araniscus spp.**Asteromphalus darwinii**Asteromphalus oligocenicus**Asteromphalus parvulus**Asteromphalus robustus**Asteromphalus spp.**Azpeitia bireadata**Azpeitia komurae**Azpeitia nodulifera**Azpeitia oligoconica**Azpeitia praenodulifera**Azpeitia salisburyana**Azpeitia tabularis**Azpeitia vetustissima**Azpeitia spp.**Bacterosira bathymphala**Bacterosira fragilis**Bacterosira spp.**Cavifatus exiguis**Cavifatus jouseanus**Cavifatus lanceolatus**Cavifatus linearis**Cavifatus miocenicus**Cavifatus rectus**Cavifatus spp.**Cestodiscus kugleri**Cestodiscus trochus**Cestodiscus spp.**Coccoineis californica**Coccoineis costata**Coccoineis scutellum**Coccoineis spp.**Coscinodiscus asteromphalus**Coscinodiscus marginatus**Coscinodiscus oculus-iridis**Coscinodiscus radiatus**Coscinodiscus rhombicus**Coscinodiscus symbolophorus**Cosmolodiscus insignis**Crucidenticula ikebei**Crucidenticula kanayae**Crucidenticula nicobarica**Crucidenticula paranicobarica**Crucidenticula sawamurae**Cyclotella striata**Cyclotella meneghiniana**Cyclotella spp.**Cymbella cistula**Cymbella minuta**Cymbella subaequalis**Cymbella spp.**Delphinella angustata**Delphinella kippae**Delphinella sachalinensis**Delphinella simonsonii**Delphinella surirella**Delphinella spp.**Denticulopsis crassa**Denticulopsis dimorpha var. dimorpha**Denticulopsis dimorpha var. areolata**Denticulopsis hastedii**Denticulopsis hyalina**Denticulopsis katayamae**Denticulopsis leuta**Denticulopsis praedimorpha var. minor**Denticulopsis praedimorpha var. praedimorpha**Denticulopsis prashyalina**Denticulopsis praekatayamae**Denticulopsis praelata**Denticulopsis simonsenii**Denticulopsis tanimurae**Denticulopsis vulgaris**Denticulopsis spp.**Diploneis bombus**Diploneis puella**Diploneis smithii**Diploneis suborbicularis**Diploneis spp.**Distephanosira architecturalis**Distephanosira spp.**Ellerbeckia sol**Ellerbeckia spp.**Eunotia pectinalis var. minor**Eunotia praerupta var. praerupta**Eunotia spp.**Fragilaria construens**Fragilaria spp.**Fragilariopsis cylindrus**Fragilariopsis dolicis**Fragilariopsis fossilia**Fragilariopsis oceanica**Fragilariopsis pilocoma**Fragilariopsis spp.**Goniothecium decoratum**Goniothecium rogersii**Goniothecium spp.**Grammatophora spp.**Halamphora costata**Hyalodiscus obsoletus**Hyalodiscus spp.**Ikebea tenuis**Kisseleviella carina**Kisseleviella ezoensis**Kolzumia tatsunokuchiensis**Kozloviella minor**Lisitzinia ornata**Medilaria magna**Medilaria splendida**Melosira albicans**Navicula elginiensis**Navicula lyraeoides**Navicula menisculus**Navicula salinarum**Neodenticula kamtschatka**Neodenticula kolzumii**Neodenticula semina**Nitzschia challengerii**Nitzschia joussea**Nitzschia palea**Nitzschia reinholdii**Nitzschia rolandii**Odontella aurita**Odontella spp.**Paralia sulcata**Paralia spp.**Podostira stelligera**Porusa glacialis**Proboscia barbol**Proboscia curvirostris**Proboscia interposta**Proboscia praetarboi**Pseudodimmerogramma elegans**Pseudonitzschia seriata**Pseudoxiphidium americanum**Pseudotriceratium radiosoreticulatum**Pyxidicula zabelinae**Spong**Pear sp. *+***Silic*

DATE: 2013/July/ 19

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)

F (>1 vlv/10FOVs & <1 vlv/10FOVs)

R (>3 vlv/traverse & <1 vlv/10FOVs)

X (present), B (barren)

*Rhaphoneis amphiceros**Rhaphoneis spp.**Rhizosolenia hebetata f. hemispha**Rhizosolenia hebetata f. semispina**Rhizosolenia norwegica**Rhizosolenia praesbergoni**Rhizosolenia setigera**Rhizosolenia spp.**Roperia tessellata**Rocella gelida**Rocella praenitida**Rocella semigelida**Rocella vigilans**Rouxia californica**Rouxia granda**Rouxia isopolica**Rouxia naviculoides**Rouxia obesa**Rhonodiscus oestrupli**Rhonodiscus praecoestrupli**Shionodiscus trifolius**Stephanopyxis dimorpha**Stephanopyxis horridus**Stephanopyxis turnis**Stephanopyxis spp.**Surirella spp.**Thalassionema bacillaris**Thalassionema nitzschioides *+***Thalassionema nitzschioides var. incurvatum**Thalassionema nitzschioides var. inflatum *F***Thalassionema nitzschioides var. parvum**Thalassionema pseudonitzschioidea**Thalassionema schraderi**Thalassionema spp.**Thalassiosira antiqua**Thalassiosira bioculata**Thalassiosira castanea**Thalassiosira convexa**Thalassiosira decipiens**Thalassiosira dubiosa**Thalassiosira eccentrica *+***Thalassiosira fasciculata**Thalassiosira fraga**Thalassiosira gravida *F***Thalassiosira grunowii**Thalassiosira hyalina**Thalassiosira irregularis**Thalassiosira jacksonii**Thalassiosira jouseae**Thalassiosira leptopus**Thalassiosira lineata**Thalassiosira lusca**Thalassiosira manifesta**Thalassiosira marumjica**Thalassiosira mediaconvexa**Thalassiosira minutissima**Thalassiosira miocenica**Thalassiosira nordenstkioldii**Thalassiosira orientalis**Thalassiosira praefraga**Thalassiosira praenidulus**Thalassiosira praeyabei**Thalassiosira robusta**Thalassiosira sanctetae**Thalassiosira singularis**Thalassiosira temperata**Thalassiosira umaciensis**Thalassiosira undulosa**Thalassiosira yabei**Thalassiothrix longissima**Trachyneis aspera**Trachyneis spp.**Yoshidaia divergens**Yoshidaia spp.**Chaetoceros Resting Spores**TOTAL OF VEGETATIVE CELLS*

100

11-25

Diatom zones (NPD)

undet

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

fragments

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoptychus senarius
Actinoptychus vulgaris
Actinoptychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenidulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathymopha
Bacterosira fragilis
Bacterosira spp.
Cavilatus exiguis
Cavilatus jouseaeus
Cavilatus lanceolatus
Cavilatus linearis
Cavilatus miocenicus
Cavilatus rectus
Cavilatus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula kebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20 A. 87/R4W51

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastatilis
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis laeta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossalis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebaea tenius
Kisseleviella carina
Kisseleviella ezoensis
Kozloviella tatsuokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula meridulus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challenger
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosorecicum
Pyxidicula zabelinae

20

DATE: 2013/July/

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vials/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus paeoestrupil
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaria
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjoramica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioeldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeylebeli
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Sponges FT-

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A - 87R - 4W 100 cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biredata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Caviflora exigua
Caviflora jouseana
Caviflora lanceolata
Caviflora linearis
Caviflora miocenica
Caviflora rectus
Caviflora spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surrella
Delphinella spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praesoluta
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puebla
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilocana
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odonella aurita
Odonella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarboi
Pseudodinmerogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 19

OBSERVER'S NAME AF SK (IS)

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norvegica
Rhizosolenia praebergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isoplica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

*Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS*

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus isugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bidentata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Caviflora exigua
Caviflora jouseanaus
Caviflora lanceolatus
Caviflora linearis
Caviflora miocenicus
Caviflora rectus
Caviflora spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidienticula ikebei
Crucidienticula kanayaee
Crucidienticula nicobarica
Crucidienticula paranicobarica
Crucidienticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A 87R-CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunota pectinalis var. *minor*
Eunota praerupta var. *praerupta*
Eunota spp.
Fragilaria construens
Fragilaria spp.
Fragilariaopsis cylindrus
Fragilariaopsis doliolus
Fragilariaopsis fossilis
Fragilariaopsis oceanica
Fragilariaopsis pilocena
Fragilariaopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Lizitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciales
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabeliae

DATE: 2013/July/ 19

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessula
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolidea
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marulamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeli
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporei
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chrysoceras Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugariensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathymophala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguus
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscindiscus asteromphalus
Coscindiscus marginatus
Coscindiscus oculus-iridis
Coscindiscus radiatus
Coscindiscus rhombicus
Coscindiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A 88R1W73

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praesialis
Denticulopsis prasakatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolikos
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyrodes
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratium radiosoreticulatum
Pyrdicula zabelinae

DATE: 2013/July/

20

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia habelata f. *hiemalis*
Rhizosolenia habelata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lucas
Thalassiosira manifesta
Thalassiosira manujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira milcenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeysabel
Thalassiosira robusta
Thalassiosira sanctella
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Sponge -

Diatom zones (NPD)**BARREN****TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

Core, section, interval (cm)U14 20A - 8.8R - 2W, 100 cm**TOTAL ABUNDANCE:**

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 20**OBSERVER's NAME AF SK IS****RELATIVE ABUNDANCE of EACH TAXON**

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens 1. nodus
Actinocyclus ingens 1. plenus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopytchus senarius
Actinopytchus vulgaris
Actinopytchus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biraedita
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabulans
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsoni
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dololius
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocana
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisztinyia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kantschatica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella australis
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Parosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearboei
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosericulatum
Pyxidicula zabeliae

Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopycnus senarius
Actinopycnus vulgaris
Actinopycnus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia konruae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crudicentula ikebei
Crudicentula kanayaae
Crudicentula nicobarica
Crudicentula paranicobrica
Crudicentula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsoni
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 88R-cc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis laute
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praeshyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolikos
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyrae
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotretularium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norvegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Roella gelida
Roella praenitida
Roella semigelida
Roella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis lurris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvatum*
Thalassionema nitzschioidea var. *infatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Caviflora exigua
Caviflora jouseanaus
Caviflora lanceolatus
Caviflora linearis
Caviflora miocenicus
Caviflora rectus
Caviflora spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscindodiscus asteromphalus
Coscindodiscus marginatus
Coscindodiscus oculus-iridis
Coscindodiscus radiatus
Coscindodiscus rhombicus
Coscindodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinea angustata
Delphinea ischaboensis
Delphinea kippae
Delphinea sachalinensis
Delphinea simonsenii
Delphinea surirella
Delphinea spp.

Core, section, interval (cm)

U14 20A - 89R-1

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katalymae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatsuyamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halimphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkica
Neodenticula kolzumii
Neodenticula seminaea
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratum radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Roccella gelida
Roccella praenitida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopoloides
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miconenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabeli
Thalassiosira robusta
Thalassiosira sanctella
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)**BARREN****TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpellia bidentata
Azpellia komurae
Azpellia nodulifera
Azpellia oligocenica
Azpellia praenodulifera
Azpellia salisburyana
Azpellia tabularis
Azpellia velutissima
Azpellia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguus
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmidiscus insignis
Crucidienticula ikebei
Crucidienticula kanayaee
Crucidienticula nicobarica
Crucidienticula paranicobarica
Crucidienticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U1420A - 90F - CC

TOTAL ABUNDANCE:M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonensis
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuonokuchiensis
Kozloviella minor
Listiznia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminas
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciales
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimeroigrane elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratium radioscreticulatum
Pyxidicula zabelinae

DATE: 2013/July/19**OBSERVER'S NAME****AF****SK****IS****RELATIVE ABUNDANCE of EACH TAXON**

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopatica
Rouxia naviculoides
Rouxia obesa
Shalonodiscus oestrupli
Shalonodiscus paoeoestrupli
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infundibulum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira maryjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabeli
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporei
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A.91/RCC

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bibracta
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseae
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iris
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Coscinodiscus insignis
Crucidicula ikebei
Crucidicula kanayae
Crucidicula nicobarica
Crucidicula paranicobarica
Crucidicula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphinella angustata
Delphinella ischaboensis
Delphinella kippae
Delphinella sachalinensis
Delphinella simonsenii
Delphinella surirella
Delphinella spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praelata
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dololus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisztnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus paoeostrupil
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctetteae
Thalassiosira singularis
Thalassiosira temporei
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

*Chaetoceras Resting Spores**TOTAL of VEGETATIVE CELLS*

Diatom zones (NPD)

B
TOTAL PRESERVATION
G (good), M (moderate), P (poor)

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvulus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccocoleis californica
Coccocoleis costata
Coccocoleis scutellum
Coccocoleis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Coscinodiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamuriae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A-92R-CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

O

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dolios
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisztnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopediastrum americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roccella gelida
Roccella praenilida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shiondiscus oestrupii
Shiondiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis liris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schradieri
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetiae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

B
TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinophytus senarius
Actinophytus vulgaris
Actinophytus spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvis
Azpeitia komurensis
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus jouseanus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Coscinodiscus insignis
Crucidiscula ikebei
Crucidiscula kanayae
Crucidiscula nicobarica
Crucidiscula paranicobarica
Crucidiscula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 6A - 73R - *lakemore*

- 1

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

DATE: 2013/July/ 19

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebengonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessula
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupili
Shionodiscus praeoestrupili
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manumica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeysabeli
Thalassiosira robusta
Thalassiosira sanctetteae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Ananis lewisiatus
Ananis spp.
Asteromphalus darwini
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komuras
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenidulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguus
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iris
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 95F - CC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Disstephanosira architecturalis
Disstephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaricopsis cylindrus
Fragilaricopsis doliolus
Fragilaricopsis fossils
Fragilaricopsis oceanica
Fragilaricopsis plicena
Fragilaricopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hydrodiscus obsoletus
Hydrodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminiae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciata
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopixylla americana
Pseudofraterulatum radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 20

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praegeronii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roccella gelida
Roccella praeinitida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus praeoestrupil
Shionodiscus trifillus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjericana
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporei
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidai divergens
Yoshidai spp.

Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

*Achnanthes groenlandica**Achnanthes inflata**Achnanthes lanceolata**Achnanthes lineariformis**Achnanthes spp.**Actinocyclus curvatus**Actinocyclus ellipticus**Actinocyclus ingens**Actinocyclus ingens f. nodus**Actinocyclus ingens f. planus**Actinocyclus oculatus**Actinocyclus ochotensis**Actinocyclus octonarius**Actinocyclus robustus**Actinocyclus tsugaruensis**Actinocyclus spp.**Actinopychus senarius**Actinopychus vulgaris**Actinopychus spp.**Araniscus lewisiensis**Araniscus spp.**Asteromphalus darwinii**Asteromphalus oligocenicus**Asteromphalus parvulus**Asteromphalus robustus**Asteromphalus spp.**Azpeitia briadeta***Azpeitia komurae***Azpeitia nodulifera**Azpeitia oligocenica**Azpeitia praenodulifera**Azpeitia salisburyana**Azpeitia tabularis**Azpeitia velutissima**Azpeitia spp.**Bacterosira bathyomphala**Bacterosira fragilis**Bacterosira spp.**Cavatitus exiguus***Cavatitus jouseanus***Cavatitus lanceolatus**Cavatitus linearis**Cavatitus miocenicus**Cavatitus rectus**Cavatitus spp.**Cestodiscus kugleri**Cestodiscus trochus**Cestodiscus spp.**Coccoconeis californica**Coccoconeis costata**Coccoconeis scutellum**Coccoconeis spp.**Coscinodiscus asteromphalus**Coscinodiscus marginatus**Coscinodiscus oculus-iridis**Coscinodiscus radiatus**Coscinodiscus rhombicus**Coscinodiscus symbolophorus***Cosmoldiscus insignis***Crucidenticula ikebei**Crucidenticula kanayae**Crucidenticula nicobarica**Crucidenticula paranicobarica**Crucidenticula sawamurae**Cyclotella striata**Cyclotella meneghiniana**Cyclotella spp.**Cymbella cistula**Cymbella minuta**Cymbella subaequalis**Cymbella spp.**Delphineis angustata**Delphineis ischaboensis**Delphineis kippae**Delphineis sachalinensis***Delphineis simonsenii***Delphineis surirella**Delphineis spp.*

Core, section, interval (cm)

U14 20. A. 97 RCC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula merulinus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praearbaroi
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratulum radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 20

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (> 10 valves/FOV), C (1-10 vlv/FOV)
F (> 1 vlv/10FOVs & < 1 vlv/10FOVs)
R (> 3 vlv/traverse & < 1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopatica
Rouxia naviculoides
Rouxia obesa
Shlonodiscus oestrupii
Shlonodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lucas
Thalassiosira manifesta
Thalassiosira marjoramica
Thalassiosira mediaconvexa
Thalassiosira minitissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeabyssi
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporei
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiotrichia longissima
Thalassiotrichia spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Reeting Spores
TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Baren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U14 20A 98R3W100

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biradiata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia fabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguis
Cavatulus jouseae
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoineis californica
Coccoineis costata
Coccoineis scutellum
Coccoineis spp.
Coscindodiscus asteromphalus
Coscindodiscus marginatus
Coscindodiscus oculus-iridis
Coscindodiscus radiatus
Coscindodiscus rhombicus
Coscindodiscus symbolophorus
Cosmodiscus insignis
Crucidentula ikebei
Crucidentula kanayae
Crucidentula nicobarica
Crucidentula paranicobarica
Crucidentula sawamurai
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedti
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis preakatayamae
Denticulopsis praesoluta
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puebla
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossile
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszmania ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia joussea
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimmerogramma elegans
Pseudonitzschia seriata
Pseudopyxilla americana
Pseudotriceratulum radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 20

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roella gelida
Roella praenitida
Roella semigelida
Roella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupli
Shionodiscus praeoestrupli
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suirella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetteae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaciensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

Barten

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus olctorius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia briadata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatulus exiguus
Cavatulus jouseaeus
Cavatulus lanceolatus
Cavatulus linearis
Cavatulus miocenicus
Cavatulus rectus
Cavatulus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconis californica
Coccoconis costata
Coccoconis scutellum
Coccoconis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidienticula ikebei
Crucidienticula kanayae
Crucidienticula nicobarica
Crucidienticula paranicobarica
Crucidienticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20.A.98R2W1¹⁰

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplolepis bombus
Diplolepis puelha
Diplolepis smithii
Diplolepis suborbicularis
Diplolepis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariaopsis cylindrus
Fragilariaopsis doliolus
Fragilariaopsis fossils
Fragilariaopsis oceanica
Fragilariaopsis pilocena
Fragilariaopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tanaka
Kisseleviella carina
Kisseleviella ezoensis
Kozumiella tatsunokuchiensis
Kozumiella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginiensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatca
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Parosira glaciales
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabeliae

DATE: 2013/July/20

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupi
Shionodiscus paeoestrupi
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schradieri
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularata
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjamicia
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporal
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

BARREN

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoconeis californica
Coccoconeis costata
Coccoconeis scutellum
Coccoconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidienticula kebei
Crucidienticula kanayae
Crucidienticula nicobarica
Crucidienticula paranicobarica
Crucidienticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsonii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A - 98R - VW 10cm

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplothele bombus
Diplothele puebla
Diplothele smithii
Diplothele suborbicularis
Diplothele spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikeba tanakai
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciales
Proboscia berbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarboi
Pseudodimeroigraneum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabeliae

DATE: 2013/July/ 20

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargoni
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessella
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopofica
Rouxia naviculoides
Rouxia obesa
Shiondiscus oestrupii
Shiondiscus praeoestrupii
Shiondiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schradieri
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira manjimica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudius
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabeli
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)**BARREN****TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopeltis senarius
Actinopeltis vulgaris
Actinopeltis spp.
Araniscus lewisanus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvis
Azpeitia komurei
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguis
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Core, section, Interval (cm)U14 20A - 98R - C C**TOTAL ABUNDANCE:**M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilaria cylindrus
Fragilaria dolios
Fragilaria fossilis
Fragilaria oceanica
Fragilaria pilocoma
Fragilariaopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikobea tenuis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lizitzinia ornata
Medularia magna
Medularia splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Parosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreliculatum
Pyxidicula zabeliae

DATE: 2013/July/ 20**OBSERVER'S NAME AF SK (S)****RELATIVE ABUNDANCE OF EACH TAXON**

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hemicapsa*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praesbergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tessellata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turnis
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvatum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiotrix longissima
Thalassiotrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chrysococcus Resting Spores**TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Core, section, interval (cm)

U1420A .99R cc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvulus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bidriata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguis
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonensis
Delphineis surirella
Delphineis spp.

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliotus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikobea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetron elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/ 20

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Rhaphoneis amphiceros
Rhaphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roccella gelida
Roccella praeintida
Roccella semigelida
Roccella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus paeoestrupil
Shionodiscus trifilatus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjoramica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeyleabii
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)*Barely***TOTAL PRESERVATION**

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus Ingens
Actinocyclus Ingens f. nodus
Actinocyclus Ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Ananiscus lewisianus
Ananiscus spp.
Asteromphalus darwini
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biraidea
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavitalus exiguus
Cavitalus jouseanus
Cavitalus lanceolatus
Cavitalus linearis
Cavitalus miocenicus
Cavitalus rectus
Cavitalus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonisenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)*U14 20A. 101RC***TOTAL ABUNDANCE:**

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedtii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praetorta
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis plicena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenulis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchensis
Kozloviella minor
Lisitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminiae
Nitzschia challengerii
Nitzschia jouseana
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praearbaroi
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreticulatum
Pyxidicula zabelinae

DATE: 2013/July/*20*
OBSERVER's NAME AF SK IS**RELATIVE ABUNDANCE of EACH TAXON**

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praeinlida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupil
Shionodiscus paoeostrupil
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *inflatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregulata
Thalassiosira jacksonii
Thalassiosira jouseana
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marujamica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenudulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctaeiae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umaiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiotrichix longissima
Thalassiotrichix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Resting Spores**TOTAL of VEGETATIVE CELLS**

Diatom zones (NPD)

Barren

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. plenus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugariensis
Actinocyclus spp.
Actinoplychus senarius
Actinoplychus vulgaris
Actinoplychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseanus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iris
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20A. 102 Rcc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
 F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diplotheia bombus
Diplotheia puelia
Diplotheia smithii
Diplotheia suborbicularis
Diplotheia spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossili
Fragilariopsis oceanica
Fragilariopsis pilocema
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Liszitnia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatkae
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengeri
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimmerogramma elegans
Pseudonitzschia senata
Pseudopyxis americana
Pseudotriceratium radiosoreculturatum
Pyxidicula zabelinae

DATE: 2013/July/ 20

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlvls/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetula f. *hiemalis*
Rhizosolenia hebetula f. *semispina*
Rhizosolenia norwegica
Rhizosolenia praebargentilis
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessella
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopoloides
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus praeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *infatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lucsa
Thalassiosira manifesta
Thalassiosira marjorana
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctetteae
Thalassiosira singularis
Thalassiosira temporei
Thalassiosira umaloensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chaetoceros Resting Spores

TOTAL OF VEGETATIVE CELLS

Diatom zones (NPD)

Barkham

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. nodus
Actinocyclus ingens f. planus
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisiensis
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia bivalvata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia velutissima
Azpeitia spp.
Bacterosira bathymphala
Bacterosira fragilis
Bacterosira spp.
Cavilitus exiguis
Cavilitus jouseaeus
Cavilitus lanceolatus
Cavilitus linearis
Cavilitus miocenicus
Cavilitus rectus
Cavilitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccoeis californica
Coccoeis costata
Coccoeis scutellum
Coccoeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus Insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonisenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20. A. 103RCC

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *arcuata*
Denticulopsis hastifilis
Denticulopsis hyalina
Denticulopsis katalayamas
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossils
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebea tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsuokuchensis
Kozloviella minor
Lizitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula meridulus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminiae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glaciales
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarbol
Pseudodimerogetron elegans
Pseudonitzschia seriata
Pseudopyxis americana
Pseudotriceratium radiosoreliculum
Pyxidicula zabelinae

DATE: 2013/July/ 20

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
 F (>1 vlv/10FOVs & <1 vlv/10FOVs)
 R (>3 vlv/traverse & <1 vlv/10FOVs)
 X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia fessulata
Rocella gelida
Rocella praeinitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaria
Thalassionema nitzschioidea
Thalassionema nitzschioidea var. *incurvatum*
Thalassionema nitzschioidea var. *inflatum*
Thalassionema nitzschioidea var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjoramica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenskioeldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeybabei
Thalassiosira robusta
Thalassiosira sanctella
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaia divergens
Yoshidaia spp.

Chrysoceros Resting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)

~~BARREN~~

TOTAL PRESERVATION

G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus ocellatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugarvensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeitia biredata
Azpeitia komurae
Azpeitia nodulifera
Azpeitia oligocenica
Azpeitia praenodulifera
Azpeitia salisburyana
Azpeitia tabularis
Azpeitia vetustissima
Azpeitia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Cavatitus exiguus
Cavatitus jouseanus
Cavatitus lanceolatus
Cavatitus linearis
Cavatitus miocenicus
Cavatitus rectus
Cavatitus spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Coccocolea californica
Coccocolea costata
Coccocolea scutellum
Coccocolea spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iris
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidenticula ikebei
Crucidenticula kanayae
Crucidenticula nicobarica
Crucidenticula paranicobarica
Crucidenticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischaboensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)

U14 20 A - 104A-1.

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hastedii
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puella
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia peclinaria var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis doliolus
Fragilariopsis fossilia
Fragilariopsis oceanica
Fragilariopsis pilocena
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikeba tenuis
Kisseleviella carina
Kisseleviella ezoensis
Kolzumia tatsunokuchiensis
Kozloviella minor
Listiznia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyraeoides
Navicula menisculus
Navicula salinarum
Neodenticula kamtschatka
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposita
Proboscia praebarboi
Pseudodimmerogramma elegans
Pseudonitzschia senata
Pseudopyxilla americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabelinae

DATE: 2013/July/ 20

OBSERVER'S NAME AF SK IS

RELATIVE ABUNDANCE of EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norvegica
Rhizosolenia praebargentii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Roella gelida
Roella praenitida
Roella semigelida
Roella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shilonodiscus oestrupli
Shilonodiscus praesoestrupli
Shionodiscus trifultus
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Surirella spp.
Thalassionema bacillaris
Thalassionema nitzschiooides
Thalassionema nitzschiooides var. *incurvatum*
Thalassionema nitzschiooides var. *infatum*
Thalassionema nitzschiooides var. *parvum*
Thalassionema pseudonitzschiooides
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lucas
Thalassiosira manifesta
Thalassiosira manjamicana
Thalassiosira mediaconvexa
Thalassiosira miltutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeabyssi
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temperata
Thalassiosira umaoiensis
Thalassiosira undulosa
Thalassiosira yabei
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Chaetoceros Reeting Spores

TOTAL of VEGETATIVE CELLS

Diatom zones (NPD)
BARREN

TOTAL PRESERVATION
G (good), M (moderate), P (poor)

Achnanthes groenlandica
Achnanthes inflata
Achnanthes lanceolata
Achnanthes lineariformis
Achnanthes spp.
Actinocyclus curvatus
Actinocyclus ellipticus
Actinocyclus ingens
Actinocyclus ingens f. *nodus*
Actinocyclus ingens f. *planus*
Actinocyclus oculatus
Actinocyclus ochotensis
Actinocyclus octonarius
Actinocyclus robustus
Actinocyclus tsugaruensis
Actinocyclus spp.
Actinopychus senarius
Actinopychus vulgaris
Actinopychus spp.
Araniscus lewisianus
Araniscus spp.
Asteromphalus darwinii
Asteromphalus oligocenicus
Asteromphalus parvulus
Asteromphalus robustus
Asteromphalus spp.
Azpeltia bivalvis
Azpeltia komurasae
Azpeltia nodulifera
Azpeltia oligocenica
Azpeltia praenidulifera
Azpeltia salisburyana
Azpeltia tabularis
Azpeltia vetustissima
Azpeltia spp.
Bacterosira bathyomphala
Bacterosira fragilis
Bacterosira spp.
Caviflora exigua
Caviflora jouseae
Caviflora lanceolatus
Caviflora linearis
Caviflora miocenica
Caviflora rectus
Caviflora spp.
Cestodiscus kugleri
Cestodiscus trochus
Cestodiscus spp.
Cocconeis californica
Cocconeis costata
Cocconeis scutellum
Cocconeis spp.
Coscinodiscus asteromphalus
Coscinodiscus marginatus
Coscinodiscus oculus-iridis
Coscinodiscus radiatus
Coscinodiscus rhombicus
Coscinodiscus symbolophorus
Cosmoldiscus insignis
Crucidienticula kebei
Crucidienticula kanayae
Crucidienticula nicobarica
Crucidienticula paranicobarica
Crucidienticula sawamurae
Cyclotella striata
Cyclotella meneghiniana
Cyclotella spp.
Cymbella cistula
Cymbella minuta
Cymbella subaequalis
Cymbella spp.
Delphineis angustata
Delphineis ischabeensis
Delphineis kippae
Delphineis sachalinensis
Delphineis simonsenii
Delphineis surirella
Delphineis spp.

Core, section, interval (cm)
U14 20A-105R-cc

TOTAL ABUNDANCE:

M (>60%), A (20-60%), C (5-20%)
F (2-5%), R (<2%), B (no diatoms)

Denticulopsis crassa
Denticulopsis dimorpha var. *dimorpha*
Denticulopsis dimorpha var. *areolata*
Denticulopsis hustedi
Denticulopsis hyalina
Denticulopsis katayamae
Denticulopsis lauta
Denticulopsis praedimorpha var. *minor*
Denticulopsis praedimorpha var. *praedimorpha*
Denticulopsis praehyalina
Denticulopsis praekatayamae
Denticulopsis praefluita
Denticulopsis simonsenii
Denticulopsis tanimurae
Denticulopsis vulgaris
Denticulopsis spp.
Diploneis bombus
Diploneis puelia
Diploneis smithii
Diploneis suborbicularis
Diploneis spp.
Distephanosira architecturalis
Distephanosira spp.
Ellerbeckia sol
Ellerbeckia spp.
Eunotia pectinalis var. *minor*
Eunotia praerupta var. *praerupta*
Eunotia spp.
Fragilaria construens
Fragilaria spp.
Fragilariopsis cylindrus
Fragilariopsis dololius
Fragilariopsis fossilis
Fragilariopsis oceanica
Fragilariopsis pilcorna
Fragilariopsis spp.
Goniothecium decoratum
Goniothecium rogersii
Goniothecium spp.
Grammatophora spp.
Halamphora costata
Hyalodiscus obsoletus
Hyalodiscus spp.
Ikebaea tenulis
Kisseleviella carina
Kisseleviella exzoensis
Kolzumia tatsunokuchensis
Kozloviella minor
Lizitzinia ornata
Medilaria magna
Medilaria splendida
Melosira albicans
Navicula elginensis
Navicula lyroides
Navicula menisculus
Navicula salinarum
Neodenticula kamtchatkica
Neodenticula kolzumii
Neodenticula seminae
Nitzschia challengerii
Nitzschia jouseae
Nitzschia palea
Nitzschia reinholdii
Nitzschia rolandii
Odontella aurita
Odontella spp.
Paralia sulcata
Paralia spp.
Podosira stelligera
Porosira glacialis
Proboscia barbol
Proboscia curvirostris
Proboscia interposta
Proboscia praebarbol
Pseudodimerogetrum elegans
Pseudonitzschia seriata
Pseudopixilla americana
Pseudotriceratium radiosoreculatum
Pyxidicula zabelnae

DATE: 2013/July/ 21

OBSERVER's NAME AF SK IS

RELATIVE ABUNDANCE OF EACH TAXON

A (>10 valves/FOV), C (1-10 vlv/FOV)
F (>1 vlv/10FOVs & <1 vlv/10FOVs)
R (>3 vlv/traverse & <1 vlv/10FOVs)
X (present), B (barren)

Raphoneis amphiceros
Raphoneis spp.
Rhizosolenia hebetata f. *hiemalis*
Rhizosolenia hebetata f. *semispina*
Rhizosolenia norwegica
Rhizosolenia paebergonii
Rhizosolenia setigera
Rhizosolenia spp.
Roperia tesselata
Rocella gelida
Rocella praenitida
Rocella semigelida
Rocella vigilans
Rouxia californica
Rouxia granda
Rouxia isopolica
Rouxia naviculoides
Rouxia obesa
Shionodiscus oestrupii
Shionodiscus paeoestrupii
Shionodiscus trifolius
Stephanopyxis dimorpha
Stephanopyxis horridus
Stephanopyxis turris
Stephanopyxis spp.
Suriella spp.
Thalassionema bacillaris
Thalassionema nitzschioides
Thalassionema nitzschioides var. *incurvatum*
Thalassionema nitzschioides var. *inflatum*
Thalassionema nitzschioides var. *parvum*
Thalassionema pseudonitzschioidea
Thalassionema schraderi
Thalassionema spp.
Thalassiosira antiqua
Thalassiosira bioculata
Thalassiosira castanea
Thalassiosira convexa
Thalassiosira decipiens
Thalassiosira dubiosa
Thalassiosira eccentrica
Thalassiosira fasciculata
Thalassiosira fraga
Thalassiosira gravida
Thalassiosira grunowii
Thalassiosira hyalina
Thalassiosira irregularis
Thalassiosira jacksonii
Thalassiosira jouseae
Thalassiosira leptopus
Thalassiosira lineata
Thalassiosira lusca
Thalassiosira manifesta
Thalassiosira marjameica
Thalassiosira mediaconvexa
Thalassiosira minutissima
Thalassiosira miocenica
Thalassiosira nordenstkioldii
Thalassiosira orientalis
Thalassiosira praefraga
Thalassiosira praenidulus
Thalassiosira praeyabei
Thalassiosira robusta
Thalassiosira sanctae
Thalassiosira singularis
Thalassiosira temporalis
Thalassiosira umoiensis
Thalassiosira undulosa
Thalassiosira yabel
Thalassiosira spp.
Thalassiothrix longissima
Thalassiothrix spp.
Trachyneis aspera
Trachyneis spp.
Yoshidaiia divergens
Yoshidaiia spp.

Cheilococcus Resting Spores

TOTAL OF VEGETATIVE CELLS