

Data Repository Item 2003140

DIATOM ANALYSES FOR SEVENMILE CREEK CORE I AND FERRY CREEK
CORES H AND SSevenmile Creek Core I

(Diatoms listed in parentheses are rare)

Sample: SM 97 I - 40-40.5 cm

Description: weathered cream-colored organic mud

Pertinent diatom species: *Cosmioneis pusilla*, *Pinnularia lagerstedtii*, *Luticola mutica*, *Pinnularia viridis*, *Paralia sulcata*, *Rhopalodia acuminata*

Environment: brackish high marsh or low-to-high marsh transition

Special notes: diatom assemblage very similar to 50-50.5 cm. Dominantly high marsh species with occurrences of lower-intertidal species.

Sample: SM 97 I - 48-48.5 cm

Description: oxidized mud

Pertinent diatom species: *Paralia sulcata*, *Campylodiscis echineis*, *Dimeregramma minor*, *Fallacia cryptolyra*, *Opephora minor* (*Luticola mutica*, *Luticola muticoides*, *Pinnularia lagerstedtii*, *Fallacia pygmaea*, *Cosmioneis pusilla*)

Environment: probably tidal flat

Special notes: marsh species present, but rare and not well-preserved (allochthonous).

Sample: SM 97 I - 50-50.5 cm

Description: peat

Pertinent diatom species: *Cosmioneis pusilla*, *Pinnularia lagerstedtii*, *Paralia sulcata*, *Fragilaria* spp.; *Nitzschia commutata*

Environment: brackish high marsh

Special notes:

Sample: SM 97 I - 60-60.5 cm

Description: mud or sandy mud

Pertinent diatom species: *Opephora minor*, *Achnanthes delicatula*; *Paralia sulcata* in chains; *Fallacia cryptolyra*, (*Caloneis westii*, *Nitzschia acuminata*)

Environment: tidal flat

Special notes: well-preserved sandy tidal-flat species; *Paralia sulcata* in chains

Sample: SM 97 I - 70-70.1 cm

Description: oxidized mud

Pertinent diatom species: *Opephora minor*, *Fallacia cryptolyra*, *Paralia sulcata*, *Lyrella lyra*, *Catenula adhaerens*

Environment: tidal flat

Special notes: consistent with assemblages from sandy tidal flats

Sample: SM 97 I - 75-75.5 cm

Description: sandy organic mud

Pertinent diatom species: *Achnanthes delicatula*, *Opephora minor*, *Actinoptychus senarius*, *Paralia sulcata*, *Dimeregramma minor*; *Cocconeis scutellum*, *Synedra fasciculata*, *Fallacia cryptolyra*

Environment: probably tidal flat

Special notes: diatoms not abundant, mostly sandy tidal flat species, and most fractured. Rare freshwater species also present (allochthonous).

Sample: SM 97 I - 79-79.5 cm

Description: dark brown organic mud; soil 3 (1700 yr BP)

Pertinent diatom species: *eunotia* spp, *Cosmioneis pusilla*, *Pinnularia lagerstedtii*, *cycmen*; *Pinnularia viridis*, *Navicula elegans*

Environment: freshwater to slightly brackish marsh

Special notes: diverse oligohalobous (indifferent) assemblage.

Sample: SM 97 I - 90-90.5 cm

Description: mud

Pertinent diatom species: *Caloneis westii*, *Nitzschia* spp., *Navicula* spp., *Achnanthes brevipes*, *Diploneis interrupta*, *Nitzschia* cf. *commutata*, *Navicula digitoradiata*

Environment: low marsh or tidal flat adjacent to a marsh

Special notes: mix of species typically found in estuarine low marshes

Sample: SM 97 I - 110-110.5 cm

Description: muddy soil; oxidized silty clay loam

Pertinent diatom species: *Paralia sulcata*, (*Tryblionella granulata*, *Caloneis westii*; *Coscinodiscus marginatus*, sponge spicules)

Environment: indeterminate

Special notes: preservation very poor. *Paralia sulcata* common, but no other diatoms in significant numbers. Could be residual upland deposit, or poorly preserved intertidal deposit.

Sample: SM 97 I 116.5-117 cm

Description: weakly developed soil

Pertinent diatom species: *Pinnularia lagerstedtii*, *Paralia sulcata*, *Cosmioneis pusilla*, *navlan*, *Tryblionella debilis*, *Nitzschia commutata*

Environment: probably brackish high marsh.

Special notes: poor preservation; diatoms appear leached.

Sample: SM 97 I - 122-122.5 cm

Description: mud/soil transition

Pertinent diatom species: *Diploneis interrupta* dominant; *Nitzschia sigma*, *Caloneis westii*, *Rhopalodia acuminata*; *Scoliopleura tumida*, *Luticola mutica*, *Nitzschia commutata*, *Nitzschia sigma*;

Environment: brackish low marsh

Special notes: *Diploneis interrupta* dominant

Sample: SM 97 I - 140-140.5 cm

Description: mud overlying sand

Pertinent diatom species: *Trachyneis aspera*, *Scoliopleura tumida*, *Paralia sulcata*, *Delphineis karstenii*

Environment: tidal flat

Special notes: diatoms very rare, unusually well preserved. Large *Scoliopleura*, *Trachyneis*, *Paralia*, *Delphineis*. Transport unlikely because large, delicate species are intact.

Sample: SM 97 I 153-153.5 cm

Description: sandy mud

Pertinent diatom species: *Paralia sulcata*, *Tryblionella granulata*

Environment: indeterminate (possibly brackish tidal flat)

Special notes: diatoms very rare; sample possibly winnowed or initially a low-productivity environment.

Sample: SM 97 I - 155-155.7 cm

Description: fine sand

Pertinent diatom species: fragments only

Environment: indeterminate

Special notes: very rare diatom fragments; transported material?

Sample: SM 97 I - 157-157.5 cm

Description: peaty mud

Pertinent diatom species: (*delphinei karstenii* , *Paralia sulcata*, *caloneis molaris*, *Pinnularia lagerstedtii*, *Thalassionema nitzschioides*)

Environment: indeterminate (subaerial soil?)

Special notes: diatoms are very rare and mostly dissolved.

Sample: SM 97 I - 210-210.5 cm

Description: mud

Pertinent diatom species: *Achnanthes delicatula*, *Tryblionella granulata*, *Cocconeis peltoides*, *Paralia sulcata*, *Gyrosigma balticum*, *Delphineis karstenii*

Environment: tidal flat

Special notes: diatom assemblage consistent with sandy tidal-flat environment

Sample: SM 97 I - 215-215.5 cm

Description: mud

Pertinent diatom species: (*Paralia sulcata*, *Tryblionella constricta*, *Odontella aurita*, *Caloneis westii*, but also single specimens of *Cosmioneis pusilla*, *Luticola mutica*, *Caloneis bacillum*)

Environment: Indeterminate (tidal flat?)

Special notes: diatoms rare. Possibly rapidly deposited sediment; no coherent assemblage.

Sample: SM 97 I - 216.5-217 cm

Description: peat

Pertinent diatom species: *Navicula cincta*, *Cosmioneis pusilla*, *Pinnularia lagerstedtii*, *Diploneis pseudovalis*, *Navicula peregrina*, *Caloneis bacillum*, *Nitzschia dissipata*, *Navicula phyllepta*, *Nitzschia commutata*

Environment: brackish high marsh

Special notes: probably low-gradient high marsh near or slightly above MHHW

Sample: SM 97 I - 290-290.5 cm

Description: dark olive gray mud

Pertinent diatom species: *Paralia sulcata*, *Gyrosigma balticum*, *Thalassiosira pacifica*, *Thalassiosira eccentrica*, *Delphineis karstenii*, *Thalassionema nitzschioides*, *Scoliopleura tumida*, *Endictya hendeyi*

Environment: tidal flat

Special notes: diverse assemblage

Sample: SM 97 I - 299.5-300 cm

Description: sandy mud

Pertinent diatom species: (*Paralia sulcata*, *Tryblionella litoralis*, *Catenula adhaerens*; *Fallacia pygmaea*)

Environment: Indeterminate

Special notes: diatoms very rare, most diatoms fragmented; may indicate transport.

Sample: SM 97 I - 301-302 cm

Description: peat

Pertinent diatom species: *Cosmioneis pusilla*, *Nitzschia dissipata*, *Nitzschia commutata*, *Navicula lanceolata*, *Diploneis pseudovalis*, *Pinnularia lagerstedtii*

Environment: high marsh or low-to-high marsh transition

Special notes: dominated by high-marsh species, but with common occurrences of species from lower in the intertidal zone. Possibly a high or transitional marsh with fairly regular tidal inundation.

Sample: SM 97 I - 320.5-321 cm

Description: small sand layer in mud

Pertinent diatom species:

Environment: indeterminate (brackish)

Special notes: basically devoid of diatoms; only rare specimens and fragments

Sample: SM 97 I - 340-340.5 cm

Description: light gray mud

Pertinent diatom species: *Tryblionella* spp., *Caloneis bacillum*, *Gyrosigma eximium*, *Achnanthes brevipes*, *Gyrosigma acuminata*; *Delphineis karstenii*; *Scoliopleura tumida*; *Gyrosigma balticum*, *Nitzschia sigma*; *Gyrosigma eximium*, *Actinoptychus senarius*

Environment: tidal flat

Special notes: in contrast to the dark gray mud at 360 cm, this deposit has a diverse diatom assemblage. Higher productivity? Better preservation? Finer grainsize? Higher elevation, i.e., Closer to marsh and above channel currents?

Sample: SM 97 I -- 360-360.5 cm

Description: dark gray mud in bioturbated zone

Pertinent diatom species: *Paralia sulcata*

Environment: indeterminate (possibly sandy tidal flat)

Special notes: diatoms rare overall, with a few sand flat species. Sample indicative of overall low productivity, or post-deposition winnowing.

Sample: SM 97 I -- 390-390.5 cm

Description: dark gray mud

Pertinent diatom species: *Paralia sulcata* (*Nitzschia sigma*; *Opephora minor*, *Tryblionella granulata*, *Endictya hendeyi*, *Thalassionema nitzschioides*)

Environment: tidal flat or subtidal channel

Special notes: diatoms very rare overall; sandflat species very rare, much less frequent than 360 cm

Sample: SM 97 I - 400-400.4 cm

Description: mud; abundant woody debris and shells

Pertinent diatom species: *Paralia sulcata*, (*Achnanthes delicatula*, *Cocconeis diminuta*, *Dimeregramma minor*, *Catenula adhaerens*, *Opephora minor*)

Environment: sandy tidal flat or shallow subtidal channel

Special notes: diatoms rare overall. Possibly low-productivity sand flat deposit.

Sample: SM 97 I - 410-410.5 cm

Description: fine-to-very-fine sandy loam

Pertinent diatom species: *Paralia sulcata* (*Dimeregramma marina*, *Tryblionella granulata*, *Trachyneis aspera*, *Thalassionema nitzschioides*)

Environment: probably tidal flat

Special notes: diatoms sparse except for *Paralia*. Possibly an environment more coarse-grained than is most conducive to high diatom productivity.

Sample: SM 97 I - 417-417.5 cm

Description: sand

Pertinent diatom species: *Paralia sulcata*

Environment: indeterminate (estuarine)

Special notes: diatoms very rare; possible winnowing.

Sample: SM 97 I - 418.5-419 cm

Description: peat

Pertinent diatom species: *Pinnularia lagerstedtii*, *Cosmioneis pusilla*, *Diploneis psuedovalis* (*Delphineis karstenii*, *Frustulia vulgaris*, *Caloneis bacillum*, *Navicula* spp., *Paralia sulcata*)

Environment: brackish high marsh

Special notes: mostly high marsh species, but lower intertidal species also present in small numbers. Probably high marsh close to MHHW with regular tidal inundation.

Sample: SM 97 I - 460-460.5 cm

Description: light gray mud overlying dark gray mud

Pertinent diatom species: *Nitzschia sigma*, *Achnanthes delicatula*, *Cocconeis diminuta*, *Tryblionella* spp., common planktonic diatoms

Environment: tidal flat

Special notes: diverse diatom assemblage; planktonic diatoms common.

Sample: SM 97 I - 500-500.5 cm

Description: mud

Pertinent diatom species: *Gyrosigma balticum*, *Mastogloia eximium*, *Tryblionella granulata*, *Caloneis westii*, *Achnanthes delicatula*, *Cocconeis diminuta*, *Lyrella lyra*

Environment: tidal flat

Special notes: mix of sand flat and mud flat assemblages.

Sample: SM 97 I - 520-520.5 cm

Description: sandy loam

Pertinent diatom species: *Paralia sulcata* (*Tryblionella granulata*)

Environment: indeterminate

Special notes: *Paralia sulcata* common and *Tryblionella granulata* rare, other diatoms absent. Remnant assemblage, possibly reworked or winnowed.

Sample: SM 97 I - 527-528 cm

Description: pulsed sand

Pertinent diatom species: *Paralia sulcata*, (*Achnanthes delicatula*, *Cocconeis diminuta*, *Dimeregramma minor*, *Catenula adhaerens*, *Opephora minor*)

Environment: tidal flat

Special notes: diatoms very rare, mainly *Paralia sulcata*, but other sand flat species also present. Consistent with interpretation as either as sandy tidal flat or tsunami deposit.

Sample: SM 97 I - 531-531.5 cm

Description: peat

Pertinent diatom species: *Cosmioneis pusilla*, *Nitzschia commutata*, *Pinnularia lagerstedtii*, (*Diploneis psuedovalis*, *Navicula* spp., *Thalassionema nitzschioides*)

Environment: brackish high marsh

Special notes:

Sample: SM 97 I - 673-673.5 cm

Description: mud containing clam shells

Pertinent diatom species: *Synedra fasciculata*, *Delphineis karstenii*, *Odontella obnuta*, *Thalassionema nitzschioides*, *Gyrosigma balticum*, *Actinoptychus senarius*

Environment: tidal flat or shallow subtidal channel

Special notes: diatoms rare overall; rare planktonic species in addition to tidal flat species.

Sample: SM 97 I - 674-675.5 cm

Description: peat

Pertinent diatom species: *Caloneis westii*, *Caloneis bacillum*, *Diploneis smithii* var. *rhombica*, *Diploneis interrupta*, *Rhopalodia musculus*, *Melosira nummuloides*, *Gyrosigma eximium*, (*Cosmioneis pusilla*)

Environment: brackish low marsh

Special notes:

Sample: SM 97 I - 774-774.5 cm

Description: mud

Pertinent diatom species: (*Delphineis karstenii*, *Paralia sulcata*, *Tryblionella granulata*, *Tryblionella apiculata*, *Thalassiosira* spp., *Odontella aurita*; *Actinoptychus senarius*)

Environment: probably tidal flat

Special notes: diatoms rare, possibly because of sandy tidal flat environment not conducive to high diatom productivity.

Sample: SM 97 I - 775.5-776 cm

Description: peaty mud

Pertinent diatom species: *Caloneis westii*, *Rhopalodia musculus*, *Nitzschia sigma*, *Delphineis karstenii*, *Melosira nummuloides*, *Navicula digitoradiata*, *Trachyneis aspera*

Environment: brackish low marsh

Special notes: mix of low marsh species and species found in nearshore tidal flats.

Ferry Creek Core S

Sample: BA97-S:85-85.5 cm

Description: brown mud

Pertinent diatom species: *Gomphonema parvulum*, *Fragilaria* sp., *Cocconeis placentula*, *Achnanthes lanceolata*

Environment: Freshwater wetland, possibly shallow pond or river bank

Special notes: Freshwater deposit, diatoms present but rare, fragments common; shallow pond/ river

Sample: BA97S: 128-128.5 cm

Description: Sandy mud

Pertinent diatom species: *Eunotia pectinalis*, *E. monodon*, *Aulacoseira granulata*

Environment: Freshwater

Special notes: Freshwater deposit. Possibly ephemeral pond?

Sample: BA97S: 130-130.5 cm

Description: brown muddy soil

Pertinent diatom species: *Eunotia pectinalis*

Environment: Indeterminate (possibly freshwater)

Special notes: Poor preservation. Diatoms basically absent; diatom fragments very rare.

Sample: BA97S: 175-175.5 cm

Description: mud

Pertinent diatom species: *Pinnularia* spp.

Environment: Freshwater

Special notes: Diatoms very rare

Sample: BA97S: 187-187.5 cm

Description: Mud mixed with forest litter, above event horizon

Pertinent diatom species:

Environment: Indeterminate (possibly upland)

Special notes: Diatoms basically absent with exception of *P. cf. viridis*.

Sample: BA97S: 210.5-211.5 cm

Description: sand with forest litter

Pertinent diatom species:

Environment: Indeterminate (possibly upland)

Special notes: Barren

Ferry Creek Core H

Sample: BA98H: 150-151 cm

Description: loamy sand

Pertinent diatom species: *Eunotia* spp., *Pinnularia* spp.

Environment: Probably freshwater wetland

Special notes: Very rare fragments of freshwater diatoms

Sample: BA98H: 178-179 cm

Description: coarse sand and pebbles

Pertinent diatom species:

Environment: Indeterminate

Special notes: Barren

Sample: BA97H : 420-421 cm

Description: Sand at peat/sand couplet

Pertinent diatom species:

Environment: Indeterminate

Special notes: Barren

Sample: BA97H: 430-430.5 cm

Description: dark brown muddy soil

Pertinent diatom species: *Eunotia minor*, *Diploneis smithii*, *Gophonema* sp.,

Environment: Freshwater wetland

Special notes:

Sample: BA97H: 490-490.5 cm

Description: mud

Pertinent diatom species: *Eunotia minor*, *Eunotia* spp., *Epithemia* sp.

Environment: Freshwater wetland

Special notes: Freshwater diatoms only; very rare, mostly broken

Sample: BA97H: 560-560.5

Description: mud

Pertinent diatom species:

Environment: Indeterminate

Special notes: Barren

Sample: BA97H: 590-590.5 cm

Description: mud

Pertinent diatom species:

Environment: Indeterminate

Special notes: Barren

Sample: BA97H: 619-619.5 cm

Description: mud

Pertinent diatom species:

Environment: Indeterminate

Special notes: Fragments of possible freshwater species

Sample: BA97H: 640-640.5 cm

Description: mud

Pertinent diatom species:

Environment: Indeterminate

Special notes: Barren