# Appendix

**Fig. A**1**.** Stratigraphic columns of core sediments used in this study.

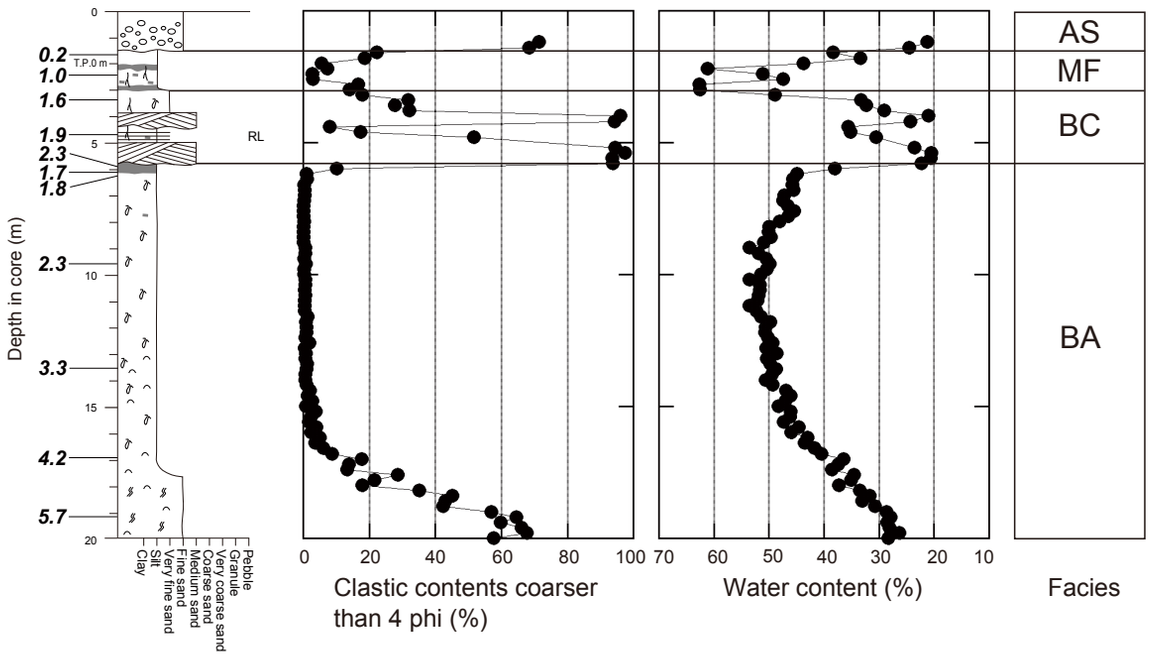
**Fig. A**2**.** Diatom assemblages. Relative abundances of marine–brackish–freshwater species (left) are expressed as percentages of the total number of frustules counted. Relative abundances of freshwater-species ecologies (right) are expressed as percentages of the total number of frustules counted in freshwater species. More than 100 frustules were counted from each sample. Black circles indicate that the counted frustules make up <1% of the total counted frustules.

**Fig. A**3**.** Photographs of plant macrofossils. (a) *Ruppia rostellata* fruit, (b) *Najas marina* seed, (c) *Potamogeton distinctus* fruit, (d) *Trapa* fruit (spine). Scale bar, 1 mm.

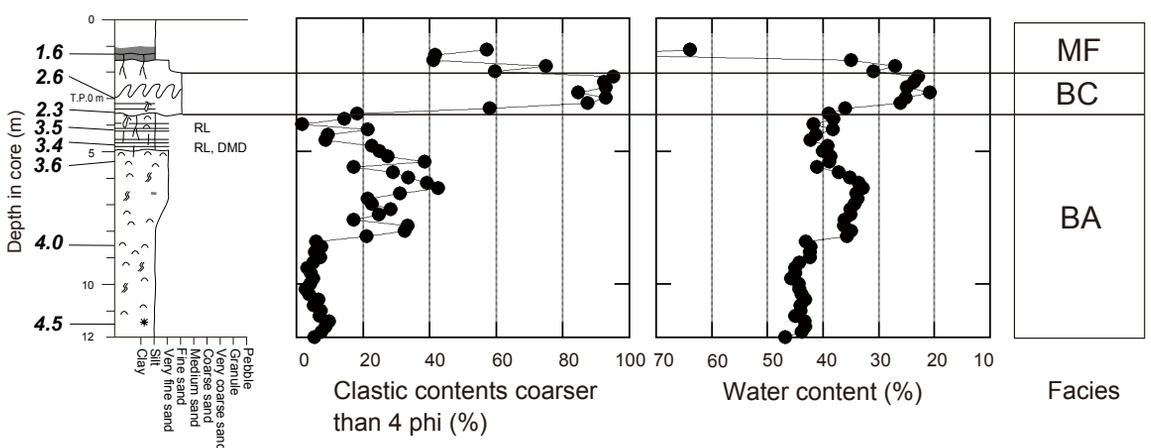
**Table A**1**.** Locations and penetration depths of sediment cores used in this study.

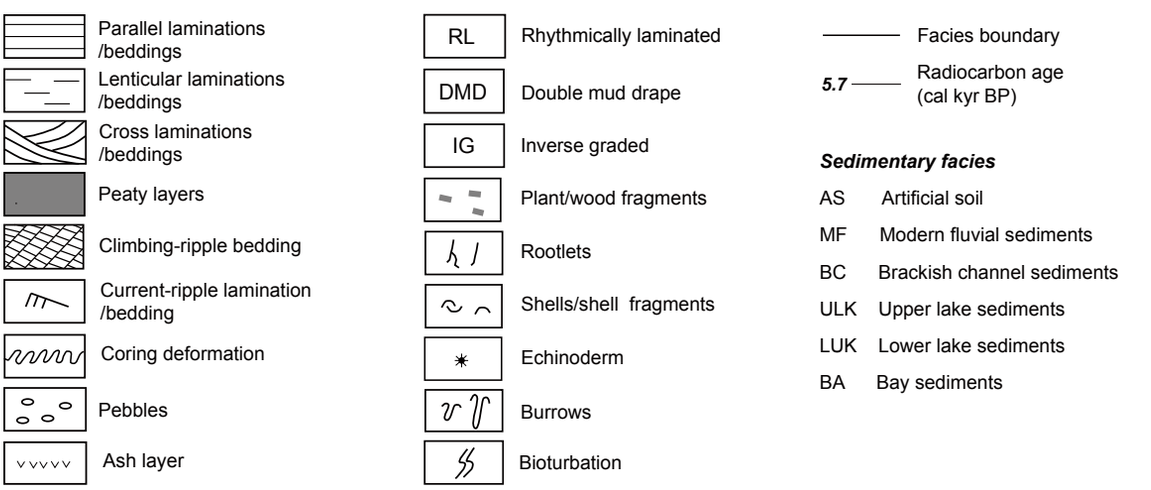
**Table A**2**.** Sea-level index points from Toyama Bay (Fujii,1992). Measured $^{14}C$ ages were converted into conventional $^{14}C$ ages using $\delta^{13}C$ values of –27.5‰ and 0‰ for plant and shell, respectively.

***GS-KWA-1***
***Elevation: T.P. +2.00 m***



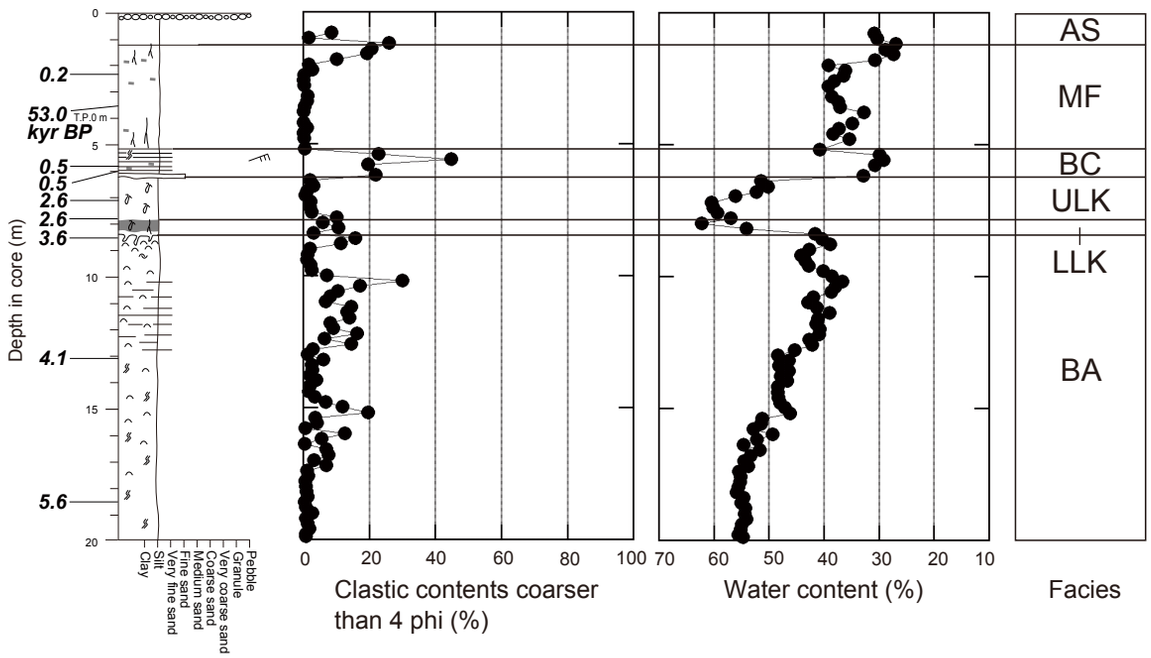

***GS-TNE-1***
***Elevation: T.P. +2.07 m***



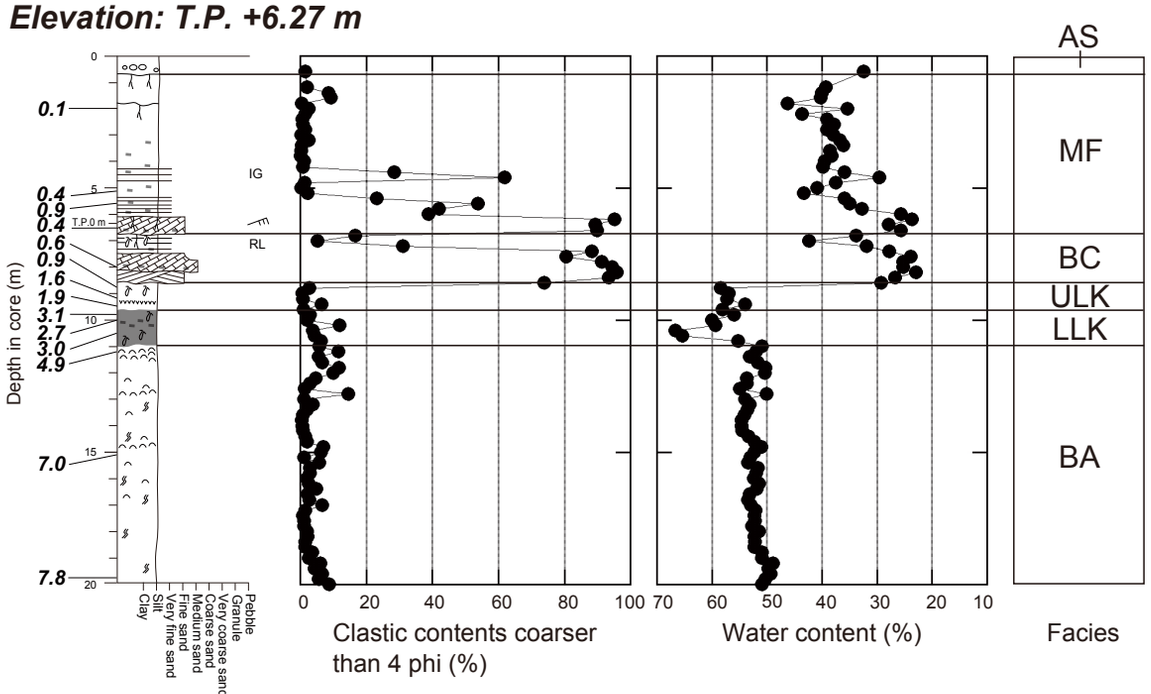




田辺ほか, Fig. A1-1

***GS-ABK-1***
***Elevation: T.P. +4.06 m***

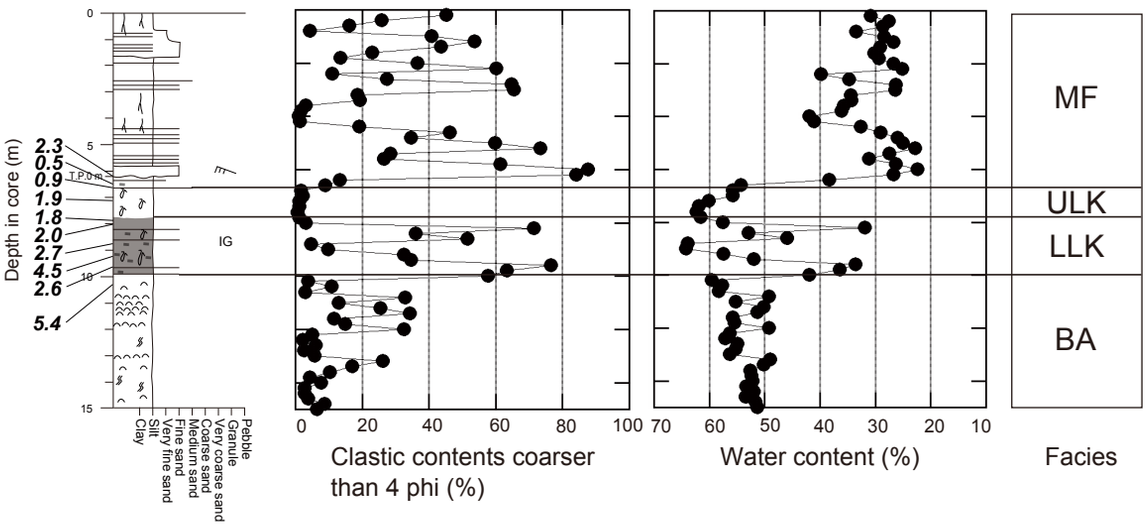



***GS-NDA-1***
***Elevation: T.P. +6.27 m***

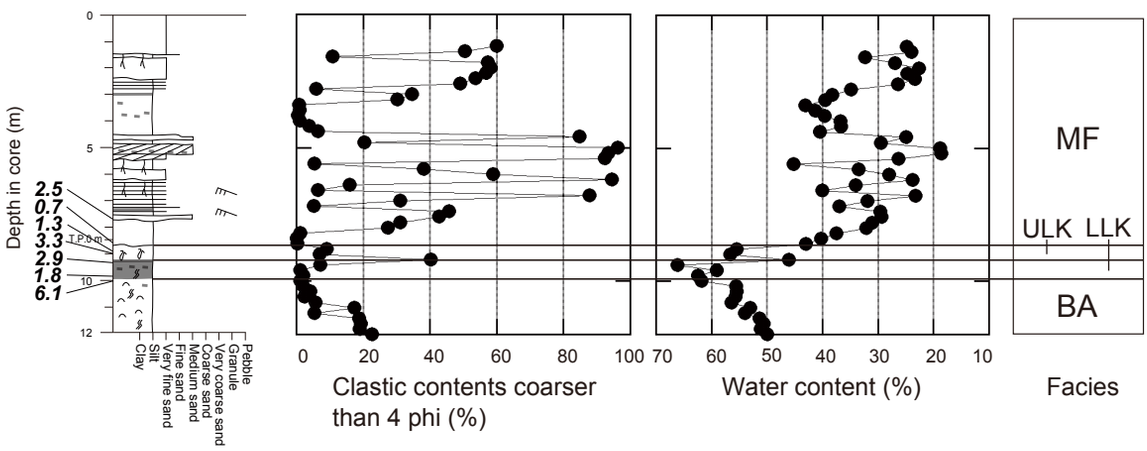



田辺ほか, Fig. A1-2

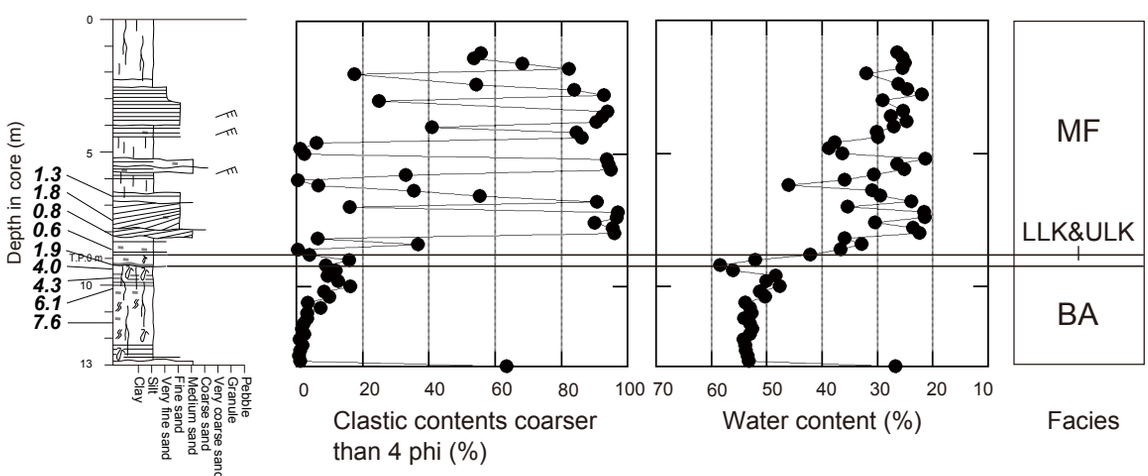
***GS-NDA-2***
***Elevation: T.P. +6.16 m***




***GS-NDA-3***
***Elevation: T.P. +8.47 m***



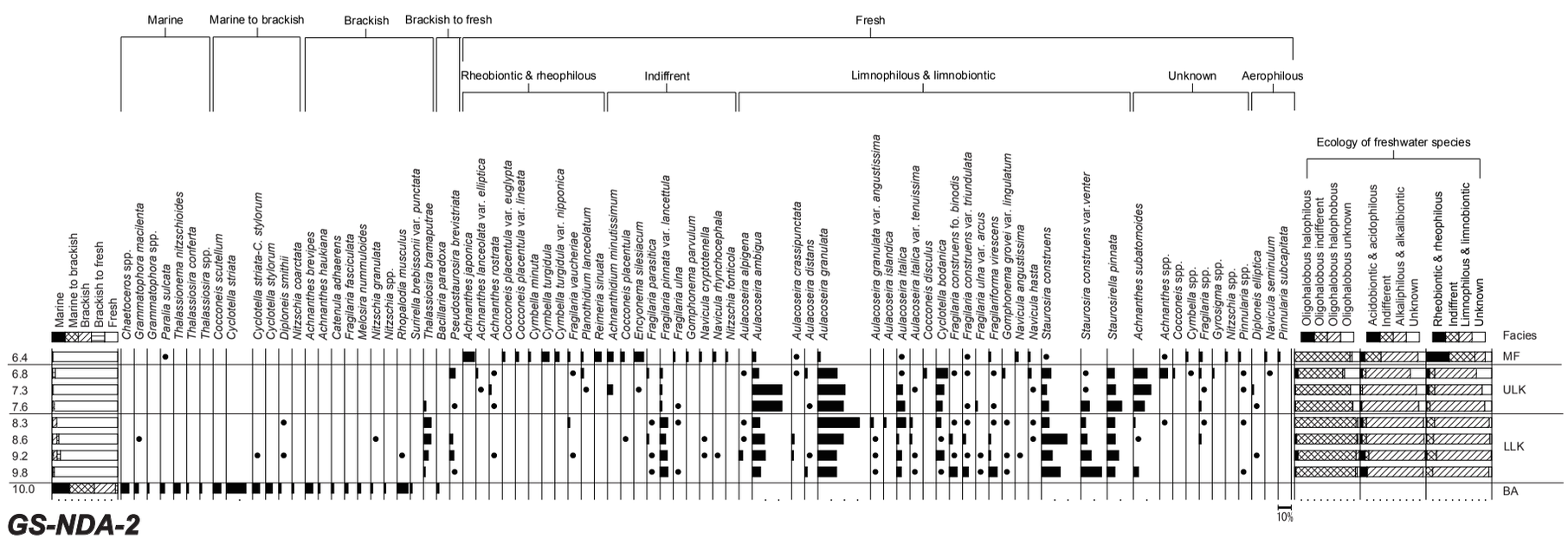

***GS-NDA-4***
***Elevation: T.P. +8.98 m***

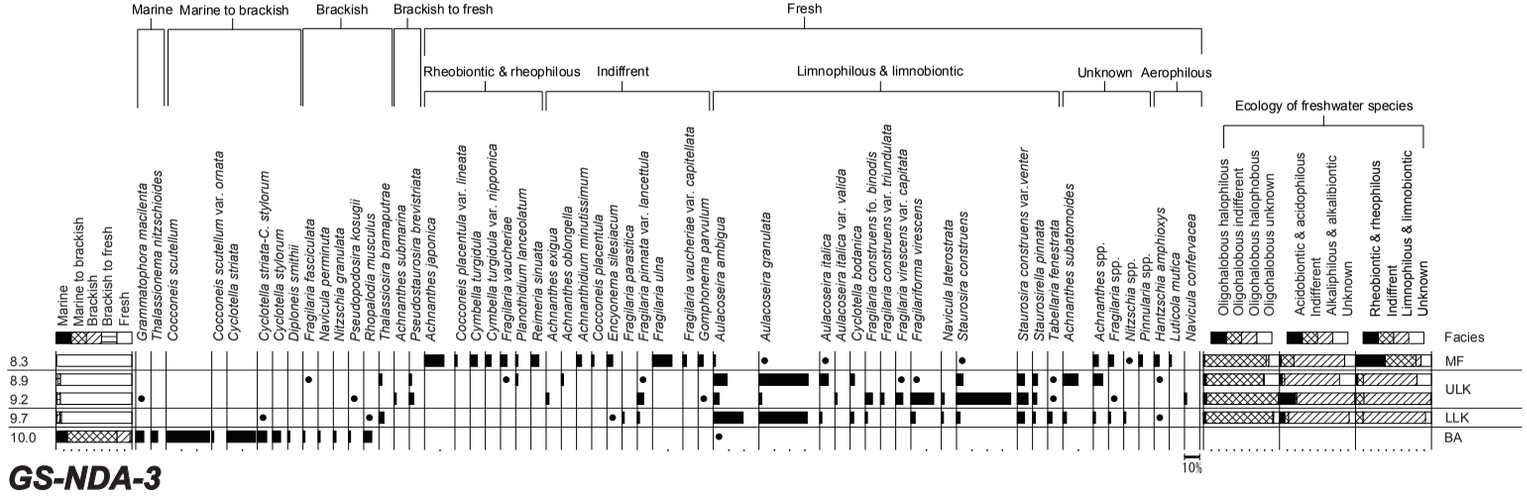



田辺ほか, Fig. A1-3

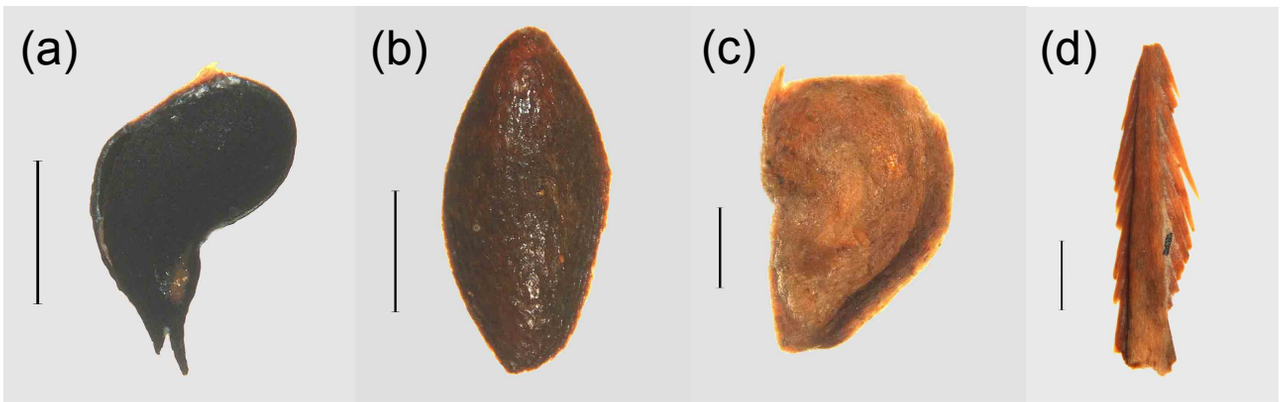
GS-ABK-1
GS-NDA-1
Facies
BC
ULK
LLK
BA
MF
Ecology of freshwater species
Oligohalobous halophilous
Oligohalobous indifferent
Oligohalobous halophobous
Oligohalobous unknown
Acidobiontic & acidophilous
Indifferent
Alkaliphilous & alkalibiontic
Unknown
Rheobiontic & rheophilous
Limnophilous & limnobiontic
Aerophilous
Marine
Marine to brackish
Brackish
Brackish to fresh
Fresh
Rheobiontic & rheophilous
Indiffrent
Limnophilous & limnobiontic
Unknown
Aerophilous
Brackish to fresh
Brackish
Marine to brackish
Marine
10%

田辺ほか, Fig. A2-1


Marine
Marine to brackish
Brackish
Brackish to fresh
Fresh
Rheobiontic & rheophilous
Indiffrent
Limnophilous & limnobiontic
Unknown
Aerophilous
Ecology of freshwater species
Facies
MF
ULK
LLK
BA
6.4
6.8
7.3
7.6
8.3
8.6
9.2
9.8
10.0
10%
GS-NDA-2


Marine
Marine to brackish
Brackish
Brackish to fresh
Fresh
Rheobiontic & rheophilous
Indiffrent
Limnophilous & limnobiontic
Unknown
Aerophilous
Ecology of freshwater species
Facies
MF
ULK
LLK
BA
8.3
8.9
9.2
9.7
10.0
10%
GS-NDA-3

田辺ほか, Fig. A2-2




田辺ほか, Fig. A3

| Core | Latitude (N) | Longitude (E) | Elevation (m T.P.) | Penetration depth (m) | Reference |
|---|---|---|---|---|---|
| GS-KWA-1 | 35°53′09.7″ | 140°16′38.9″ | +2.00 | 20.00 | Tanabe et al. (2015) |
| GS-TNE-1 | 35°51′39.6″ | 140°09′53.0″ | +2.07 | 12.00 | This study |
| GS-ABK-1 | 35°53′49.9″ | 140°01′52.3″ | +4.06 | 20.00 | Tanabe et al. (2015) |
| GS-NDA-1 | 35°57′37.2″ | 139°55′58.6″ | +6.27 | 20.00 | Tanabe et al. (2015) |
| GS-NDA-2 | 36°01′08.9″ | 139°51′18.5″ | +6.16 | 15.00 | This study |
| GS-NDA-3 | 36°04′37.3″ | 139°47′57.9″ | +8.47 | 12.00 | This study |
| GS-NDA-4 | 36°05′22.6″ | 139°47′40.9″ | +8.98 | 13.00 | This study |

| Elevation (m T.P.) | Material | Measured $^{14}$C age (BP) | Conventional $^{14}$C age (BP) | Calibrated $^{14}$C age (2σ range) (cal BP) | Median probability (cal BP) |
|---|---|---|---|---|---|
| -1.0 | Peat | 1400 ± 90 | 1360 ± 90 | 1420－1060 | 1280 |
| -1.5 | *Corbicula japonica* Prime | 1470 ± 35 | 1870 ± 35 | 1510－1330 | 1420 |
| -2.0 | Wood | 1950 ± 90 | 1910 ± 90 | 2060－1620 | 1850 |
| -2.0 | Wood | 1960 ± 70 | 1920 ± 70 | 2010－1700 | 1860 |
| -3.0 | Wood | 2730 ± 90 | 2690 ± 90 | 3040－2690 | 2820 |