Data Article

Image dataset of common benthic foraminiferal taxa in the North Atlantic seafloor surface sediments (59.5°N transect) between the Labrador sea and Faeroe-Shetland sill

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ABSTRACT

The article presents a microphotograph dataset of 106 taxa of benthic foraminifera (BF) from surface sediments collected at 26 grab station during RV Akademik Ioffe 51st cruise (summer 2016). The selected stations are located along a 59.5°N transect in the North Atlantic. This is the key area of climate control, where the interaction of warm surface and cold deep water masses takes place, which affects the operation of the global oceanic thermohaline circulation. The analysis of the benthic foraminiferal assemblages allows us to describe the properties of bottom water mass, to draw conclusions about the environmental parameters at the bottom. This photo dataset will facilitate the identification of species of BF, and thus will accelerate the routine process of micropaleontological analysis and the subsequent reconstruction of environmental conditions.

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In this article, we present:

- map of the North Atlantic showing location of the research stations as well as warm surface currents and cold deep currents (Fig. 1);
- station list with geographic coordinates, sampling depth, and number of tests counted in the sample (Table 1);
- list of BF taxa (Table 2);
- microphotograph tables of benthic foraminifera for each station and taxonomic descriptions to them (phototables 1–26).

## 2. Experimental design, materials, and methods

For the for micropaleontological analysis, we used the surface sediments (0–2 cm) from 26 grab sampler (Van-Veen type) station, obtained during the 51st cruise of the RV Akademik Ioffe (AI) in the summer 2016 (Fig. 1, Table 1). Then, the samples were weighed, dried and washed with distilled water through a sieve with a mesh size of 63 μm. We used a sediment fraction of 63 μm to retain such small species as Epistominella exigua and Alabaminella weddellensis [1–4]. The identification of living foraminifera was not carried out. Further, the identification and counting was made at least 150 per one
Fig. 1. Map of the North Atlantic showing the location of stations. Red arrows denote warm surface currents, and blue arrows denote cold deep currents [10,11].

Table 1
Station list with geographic coordinates, water depths, and the number of foraminiferal specimens counted in the sample.

| Station No. | Depth (m) | Lat. (N) | Long. (W) | Total BF tests counted per 1 sample |
|-------------|-----------|----------|-----------|-----------------------------------|
| AI3646      | 3346      | 55.0021  | -43.7569  | 158                               |
| AI3639      | 3393      | 58.2180  | -54.1686  | 368                               |
| AI3635      | 3477      | 59.1116  | -50.5108  | 151                               |
| AI3629      | 2389      | 59.9664  | -47.0353  | 152                               |
| AI3613      | 328       | 59.8962  | -42.3150  | 399                               |
| AI3597      | 2399      | 59.5627  | -41.0077  | 184                               |
| AI3593      | 2922      | 59.5028  | -39.3311  | 193                               |
| AI3592      | 3156      | 59.4926  | -37.3242  | 208                               |
| AI3586      | 3064      | 59.5039  | -34.9820  | 159                               |
| AI3574      | 1531      | 59.5062  | -30.6606  | 221                               |
| AI3568      | 1694      | 59.5009  | -28.6663  | 199                               |
| AI3562      | 2237      | 59.4988  | -26.6601  | 185                               |
| AI3556      | 2512      | 59.4977  | -24.7053  | 157                               |
| AI3548      | 2740      | 59.4931  | -21.0865  | 203                               |
| AI3545      | 2825      | 59.4984  | -20.6946  | 160                               |
| AI3540      | 2182      | 59.5004  | -18.0003  | 224                               |
| AI3534      | 1519      | 59.5028  | -15.3330  | 294                               |
| AI3531      | 1291      | 59.5009  | -13.3339  | 168                               |
| AI3527      | 1611      | 59.4991  | -11.3338  | 209                               |
| AI3524      | 1468      | 59.4988  | -9.3336   | 237                               |
| AI3521      | 1051      | 59.5001  | -7.3344   | 323                               |
| AI3519      | 137       | 59.4996  | -6.0041   | 295                               |
| AI3516      | 158       | 59.5001  | -3.8321   | 422                               |
| AI3451      | 1150      | 61.0679  | -3.8666   | 186                               |
| AI3464      | 484       | 62.7388  | -8.4601   | 321                               |
| AI3485      | 567       | 64.0252  | -12.6182  | 204                               |
### Table 2

| Benthic foraminiferal genera and species |
|-----------------------------------------|
| *Adercotryma glomeratum* (Brady, 1878) |
| *Alabaminella weddellensis* (Earland, 1936) |
| *Amphicaryna scalaris* (Batsch, 1791) |
| *Astronion gallowayi* Loeblich & Tappan, 1953 = *Astronion hamadaense* Asano, 1950 |
| *Astronion stelligerum* (d’Orbigny, 1839) |
| *Bolivina earlandi* Parr, 1950 |
| *Bolivina pseudoplicata* Heron-Allen & Earland, 1930 |
| *Bolivina pygmaea* (Brady, 1881) |
| *Bolivina* sp. d’Orbigny, 1839 |
| *Brizalina subspinescens* (Cushman, 1922) |
| *Bulimina marginata* d’Orbigny, 1826 |
| *Bulimina mexicana* Cushman, 1922 = *Bulimina striata* d’Orbigny in Guérin-Ménéville, 1832 |
| *Carpenteria balaniformis* Gray, 1858 |
| *Cassidulina carinata* Silvestri, 1896 |
| *Cassidulina laevigata* d’Orbigny, 1826 |
| *Cassidulina reniforme* Nørvang, 1945 |
| *Cassidulina teretis* Tappan, 1951 |
| *Cassidulinae bradyi* (Norman, 1881) = *Evolvocassidulina bradyi* (Norman, 1881) |
| *Cibicides refulgens* Montfort, 1808 |
| *Cibicidoides bradyi* (Trauth, 1918) |
| *Cibicidoides lobatulus* (Walker & Jacob, 1798) |
| *Cibicidoides pachyderma* (Rzhakh, 1886) |
| *Cibicidoides pseudoungeriana* (Cushman, 1922) |
| *Cibicidoides* sp. Thalmann, 1939 |
| *Cibicidoides wuellerstorfi* (Schwager, 1866) |
| *Cribrostomoides subglobosus* (Cushman, 1910) |
| *Cyclammina pusilla* Brady, 1881 |
| *Cystammina pauciloculata* (Brady, 1879) |
| *Eggerella bradyi* (Cushman, 1911) |
| *Elphidium excavatum* subsp. clavatum Cushman, 1930 |
| *Elphidium incertum* (Williamson, 1858) = *Cribroelphidium incertum* Williamson, 1858 |
| *Elphidium* sp. Montfort, 1808 |
| *Elphidium subarcticum* Cushman, 1944 |
| *Epistominella exigua* (Brady, 1884) |
| *Fissurina lacunata* (Burrows & Holland, 1895) = *Seguenzaella lacunata* (Burrows & Holland, 1895) |
| *Fissurina* sp. Reuss, 1850 |
| *Fissurina squamososalata* (Brady, 1881) = *Vasicostella squamososalata* (Brady, 1881) |
| *Fissurina staphyllearia* Schwager, 1866 |
| *Fursenkoina complanata* (Egger, 1893) |
| *Fursenkoina fusiformis* (Williamson, 1858) = *Stainforthia fusiformis* (Williamson, 1858) |
| *Fursenkoina pauciloculata* (Brady, 1884) |
| *Gavelinopsis praegeri* (Heron-Allen & Earland, 1913) |
| *Globocassidulina subglobosa* (Brady, 1881) |
| *Gyroidina orbicularis* d’Orbigny in Parker, Jones & Brady, 1865 |
| *Gyroidina* sp. d’Orbigny, 1826 |
| *Hansenisca soldanii* (d’Orbigny, 1826) |
| *Hansenisca* sp. Loeblich & Tappan, 1987 |
| *Haynesina elegans* (d’Orbigny, 1826) |
| *Hyalinella balthica* (Schroeter in Gmelin, 1791) |
| *Ioanella tumidula* (Brady, 1884) |
| *Islandiella helenae* Feyling-Hanssen & Buzas, 1976 |
| *Karreriella bradyi* (Cushman, 1911) |
| *Karreriella conversa* (Grzybowski, 1901) |
| *Karreriella* sp. Finlay, 1940 |
| *Lagenammina difflugiformis* (Brady, 1879) |
| *Lagenosolenia incomposita* Patterson & Pettis, 1986 = *Fissurina incomposita* (Patterson & Pettis, 1986) |
| *Laticarinina pauperata* (Parker & Jones, 1865) |
| *Lenticulina gibba* (d’Orbigny, 1839) |
| *Melonis barleeanus* (Williamson, 1858) |
| *Melonis pampilioides* (Fichtel & Moll, 1798) |
sample for benthic tests [5] (Table 2). Species definition was based on publications of Jones [6], Feyling-Hanssen [7], Atlas of Benthic Foraminifera [8], Saidova [9]. Photos were made using a Nikon microscope SMZ25 equipped with a Nikon camera DS-Fi3 and NIS-Elements D software. Microphotograph tables were made in the computer program CorelDRAW12.

Table 2 (continued)  
Benthic foraminiferal genera and species

| Species                             | Year       |
|-------------------------------------|------------|
| Melonis sp. Montfort, 1808           |            |
| Miliolinella subrotunda (Montagu, 1803) |            |
| Nonionella auricula Heron-Allen & Earland, 1930 |            |
| Nonionella sp. Rhumbler, 1949       |            |
| Nonionella turgida (Williamson, 1858) = Nonionoides turgidus (Williamson, 1858) |            |
| Nonionoides grateoloupii (d’Orbigny, 1839) |            |
| Oolina acuticosta (Reuss, 1862) = Homalohedra acuticosta (Reuss, 1862) |            |
| Oolina sp. d’Orbigny, 1839          |            |
| Oolina squamosa (Montagu, 1803) = Favulina squamosa (Montagu, 1803) |            |
| Oridorsalis sp. Andersen, 1961       |            |
| Oridorsalis umbonatus (Reuss, 1851)  |            |
| Psammosphaera fusca Schulze, 1875    |            |
| Pullenia bulloides (d’Orbigny, 1846) |            |
| Pullenia quinqueloba (Reuss, 1851)   |            |
| Pullenia sp. Parker & Jones, 1862    |            |
| Pyrgo murrhina (Schwager, 1866)      |            |
| Pyrgo sp. Defrance, 1824             |            |
| Pyrulina sp. d’Orbigny, 1839        |            |
| Quinqueloculina arctica Cushman, 1933 |            |
| Quinqueloculina seminula (Linnaeus, 1758) |            |
| Quinqueloculina sp. d’Orbigny, 1826 |            |
| Recurvoidatus sp. Saidova, 1970      |            |
| Reophax bradyi Brønnimann & Whittaker, 1980 |            |
| Reophax dentaliniformis (Brady, 1881) = Nodulina dentaliniformis (Brady, 1881) |            |
| Reophax fusiformis (Williamson, 1858) |            |
| Robertinoides bradyi (Cushman & Parker, 1936) |            |
| Robertinoides sp. Hoglund, 1947      |            |
| Rosalina bradyi (Cushman, 1915)      |            |
| Rosalina sp. d’Orbigny, 1826        |            |
| Rosalina vilardeboana d’Orbigny, 1839 = Discorbis vilardeboanus (d’Orbigny, 1839) |            |
| Saccammina sphaectica Brady, 1871    |            |
| Sigmoilopsis schlumbergeri (Silvestri, 1904) |            |
| Spiroplectinella wrightii (Silvestri, 1903) |            |
| Textularia sp. Defrance, 1824        |            |
| Trifarina angulosa (Williamson, 1858) |            |
| Trifarina fluens (Todd in Cushman & McCulloch, 1948) |            |
| Trifarina sp. Cushman, 1923          |            |
| Triloculina elongata d’Orbigny in Fornasini, 1905 |            |
| Triloculina sp. d’Orbigny, 1826     |            |
| Triloculina triloba Loebling & Tappan, 1953 |            |
| Trochammina infrata (Montagu, 1808)   |            |
| Uvigerina aculeata d’Orbigny, 1846   |            |
| Uvigerina mediterranea Hofker, 1932  |            |
| Uvigerina peregrina Cushman, 1923    |            |
| Uvigerina sp. d’Orbigny, 1826       |            |
Phototable 1. Station 3646
1 Oridorsalis umbonatus, a spiral view, b umbilical view, c apertural view. 2 Epistominella exigua, a spiral view, b umbilical view. 3 Cibicidoides sp., a umbilical view, b spiral view. 4 C. wuellerstorfi, a umbilical view, b spiral view. 5 Pullenia quinqueloba, a side view, b apertural view. 6 P. bulloides, a side view, b apertural view. 7 Ionella tumidula, a spiral view, b umbilical view. 8 Fursenkoina complanata. 9 Eggerella bradyi, a apertural view, b lateral view. 10 Karrerulina conversa. 11 Cribrostomoides subglobosus. Scale 100 µm.
Phototable 2. Station 3639
1 Pullenia quinqueloba, a side view, b apertural view. 2 Melonis pompilioides, a side view, b apertural view. 3 Pullenia sp., a umbilical view, b apertural view. 4 Oridorsalis umbonatus, a spiral view, b lateral view, c apertural view. 5 Alabaminella weddellensis, a spiral view, b umbilical view. 6 Epistominella exigua, a spiral view, b umbilical view. 7 Cibicidoides pseudoangeriana, a umbilical view, b spiral view, c apertural view. 8 C. wuellerstorfi, a umbilical view, b spiral view. 9 Bolivina earlandi. 10 Uvigerina sp. 11 Cribrostomoides subglobosus, a lateral view, b apertural view. 12 ?. 13 ?. 14 Adercotryma glomeratum. 15 Psammosphaera fusca. 16 Karrerulina conversa. Scale 100 μm.
Phototable 3. Station 3635

1 Pullenia sp., a lateral view, b apertural view. 2 Melonis pompilioides, a side view, b apertural view. 3 Pullenia bulloides, a side view, b apertural view. 4 Alabaminella weddellensis, a spiral view, b umbilical view, c lateral view. 5 Epistominella exigua, a spiral view, b umbilical view. 6 Cibicidoides wuellerstorfi, a umbilical view, b spiral view. 7 Oridorsalis umbonatus, a spiral view, b umbilical view, c apertural view. 8 Hansenisca? sp., a spiral view, b umbilical view, c apertural view. 9, 10 Fursenkoina complanata, 9a apertural view, 9b lateral view, 10a lateral view, 10b apertural view. 11 Trochammina inflata, a spiral view, b umbilical view. 12 7. 13 Lagenammina diffugiformis. 14 Karrerulina conversa. Scale 100 μm.
Phototable 4. Station 3629

1 Gyroidina orbicularis, a spiral view, b umbilical view, c apertural view. 2 Hansenisca soldani, a spiral view, b umbilical view, c apertural view. 3 Oridorsal sp., a spiral view, b umbilical view. 4 Cibicoides wuellerstorfi, a umbilical view, b spiral view. 5 Elphidium incertum?. 6 Astrononion stelligerum, a side view, b apertural view. 7 Pullenia quinqueloba, a side view, b apertural view. 8 Cassidulina reniforme. 9 Globocassidulina subglobosa. 10 Cassidulina laevigata. 11 Alabaminella weddellensis, a spiral view, b umbilical view. 12 Trifarina angulosa. 13 Uvigerina aculeata. 14 ?. 15 ?. 16 Trochammina inflata. 17 ?. Scale 100 μm.
Phototable 5. Station 3613
1 Melonis barleeanus, a side view, b apertural view. 2 Pullenia bulloides. 3 Robertinoides bradyi. 4 Rosalina sp. cf. R. vilardeboana?, a umbilical view, b spiral view. 5 Alabaminella weddellensis, a spiral view, b umbilical view. 6 Astronion stelligerum, a, b side view. 7 Elphidium subarcticum. 8 Gavelinopsis praegeri, a spiral view, b umbilical view. 9 Cassidulina teretis, a apertural view, b lateral view. 10 C. reniforme. 11 Nonionella turgida, a lateral view, b apertural view. 12 Nonionella sp.? 13 Cibicidoides sp. cf. C. pseudoungeriana?, a umbilical view, b spiral view, c apertural view. 14 Cibicides refugens, a umbilical view, b spiral view, c apertural view. 15 Globo-cassidulina subglobosa. 16 Trifarina fluens, a, b lateral view. 17 T. angulosa, a, b lateral view. 18 Fissurina sp. 19 F. squamosoalata. 20 Oolina acuticosta. 21 Quinqueloculina seminula. Scale 100 μm.
Phototable 5. (continued).
Phototable 6. Station 3597

1 Melonis barleeanus, a side view, b apertural view. 2 Pullenia sp., a side view, b apertural view. 3 Epistominella exigua, a spiral view, b umbilical view. 4 Cassidulina teretis. 5 Clbicoides wuellerstorfi, a umbilical view, b spiral view, c apertural view. 6 C. wuellerstorfi, a umbilical view, b spiral view. 7 Hanseniska sp., a spiral view, b umbilical view. 8 Alabaminella weddellensis, a spiral view, b umbilical view. 9 Cassidulina reniforme. 10 Globacassidulina subglobosa. 11 Eggerella bradyi. 12 Bolivina pseudoplicata. 13, 14 Fissurina spp. 15 Lagena sp. 16 ?, a, b side view. 17 Trochammina inflata, a spiral view, b umbilical view. 18 Saccammina sphaerica. 19 Psammosphaera fusca. Scale 100 µm.
Photable 7. Station 3593
1 Oridorsalis umbonatus, a spiral view, b umbilical view, c apertural view. 2 Ioanella tumidula, a spiral view, b umbilical view. 3 Epistominella exigua, a spiral view, b umbilical view. 4 Alabaminella weddellensis, a spiral view, b umbilical view. 5 Melonis sp. juvenile form? like st.3592 (9). 6 Astronion stelligerum, a side view, b apertural view. 7 Pullenia quinqueloba, a side view, b apertural view. 8 Nonionella auricula, a lateral view, b apertural view. 9 Cassidulina laevigata, a apertural view, b lateral view. 10 Cibicoides wuellerstorfi, a umbilical view, b spiral view, c apertural view. 11 Trifarina angulosa. 12 Fursenkoina complanata. 13 F. fusiformis. 14 Fissurina sp. 15 Trochammina inflata. 16 Karrerulina sp. 17 Karrerulina conversa. Scale 100 μm.
Phototable 8. Station 3592

1. 
   - Hoeglundina elegans, a spiral view, b umbilical view, c lateral view.

2. Ioanella tumidula, a spiral view, b umbilical view, c lateral view.

3. Cibicidoides sp. a umbilical view, b spiral view, c apertural view.

4. C. wuellerstorfi, a umbilical view, b spiral view, c lateral view.

5. Epistominella exigua, a spiral view, b umbilical view, c lateral view.

6. Alabaminella weddellensis, a spiral view, b umbilical view, c lateral view.

7. Pullenia quinqueloba, a side view, b apertural view.

8. Nonionella auricula, a spiral view, b apertural view.

9. Melonis sp. juvenile form?, lake st. 3593 (5), a side view, b apertural view.

10. Oridorsalis umbonatus, a spiral view, b umbilical view, c lateral view.

11. Triloculina trihedra, a apertural view, b lateral view.

12. Fursenkoina complanata, a apertural view, b lateral view.

13. Pyrulina sp. Scale 100 μm.
Phototable 9. Station 3586

1 Globococcidulina subglobosa, a lateral view, b apertural view. 2, 3 Oridorsalis umbonatus, a spiral view, b umbilical view, c apertural view. 4 Melonis pompilioides, a side view, b apertural view. 5 M. barleeanus, a side view, b apertural view. 6 Hoeglundina elegans, a spiral view, b umbilical view. 7 Epistominella exigua, a spiral view, b umbilical view. 8 Cibicidoides wuellerstorfi, a umbilical view, b spiral view. 9 C. lobatulus, a umbilical view, b spiral view, c apertural view. 10 Fursenkoina complanata. 11 Fissurina incomposita. 12 Karreriella bradyi, a lateral view, b apertural view. 13 Sigmoilopsis sp. 14 ?. Scale 100 μm.
Phototable 10. Station 3574
1 Gavelinopsis praegeri. 2 Nonionella auricula, a spiral view, b umbilical view. 3 Cassidulinoides bradyi. 4 Robertinoidea bradyi. 5 Globocassidulina subglobosa. 6 Cassidulina reniforme. 7 C. teretis, a apertural view, b lateral view. 8 C. teretis, a, b lateral view. 9, 10 Gyroidina orbicularis, a spiral view, b umbilical view, c apertural view. 11 Pullenia quinqueloba, a side view, b apertural view. 12 Astronomion gallowayi. 13 Cibicidoides lobatulus, a umbilical view, b spiral view, c apertural view. 14 C. pachyderma, a umbilical view, b spiral view, c apertural view. 15 C. wuellerstorfi, a umbilical view, b spiral view. 16 Trifarina angulosa. 17 Bulimina mexicana. 18 Triloculina sp. 19 Quinqueloculina sp., a lateral view, b apertural view. 20, 21 Fissurina spp. 22 F. lacunata. 23 Carpenteria balaniformis, a, b side view, c lateral view. 24 Eggerella bradyi, a apertural view, b lateral view. 25 Textularia sp. 26 Karrieriella bradyi, a apertural view, b lateral view. 27 Sigmoilopsis schlumbergeri. Scale 100 μm.
Phototable 10. (continued).
Phototable 11. Station 3568

1 *Gyroidina orbicularis*, a spiral view, b umbilical view, c lateral view. 2 *Gavelinopsis praegeri*, a spiral view, b umbilical view. 3 *Cassidulina teretis*, a lateral view, b apertural view. 4 *Alabaminella weddellensis*, a spiral view, b umbilical view, c lateral view. 5 ? a, umbilical, b spiral view, c apertural view. 6 *Lenticulina gibba*. 7 *Triloculina trihedra*, a, b lateral view. 8 *Pyrgo murrhina*, a, b lateral view. 9 *Bulimina mexicana*, a, b lateral view. 10 *Trifarina angulosa*, a, b side view. 11 *Trifarina*? sp., a, b side view. 12 *Sigmoilopsis schlumbergeri*. Scale 100 μm.

![Phototable 11. Station 3568](image-url)
Phototable 12. Station 3562
1 Gyroidina orbicularis, a spiral view, b umbilical view, c apertural view. 2 Epistominella exigua, a spiral view, b umbilical view. 3 Alabaminella weddellensis, a spiral view, b umbilical view. 4 Hoeglundina elegans. 5 Cassidulina teretis, a apertural view, b lateral view. 6, 7 Cibicidoides wuellerstorfi, a umbilical view, b spiral view, c apertural view. 8 Pullenia bulloides, a side view, b apertural view. 9 Melonis pompilioides, a side view, b apertural view. 10 Fissurina sp. 11 Pyrgo sp. 12 Pyrgo murrhina. 13 Recurvoidatus? sp., a umbilical view, b apertural view. 14 Cystammina pauciloculata. Scale 100 μm.
Phototable 13. Station 3556

1. ? like 3548 (4), a spiral view, b umbilical view, c apertural view.
2. Alabaminella weddellensis, a spiral view, b umbilical view.
3. Epistominella exigua, a spiral view, b umbilical view.
4. Nonionoides grateloupii, a spiral view, b umbilical view, c apertural view.
5. Nonionella auricula, a umbilical view, b apertural view.
6. Pullenia sp., a lateral view, b apertural view.
7. Trifarina angulosa, a, b lateral view.
8. Fursenkoina complanata, a apertural view, b lateral view.
9. Lagena sp.
10. Triloculina trihedra, a, b lateral view, c apertural view.
11. Cystammina pauciloculata.
12. Lagenammina diffugiiformis. Scale 100 μm.
Phototable 14. Station 3548

1 Cibicidoides bradyi, a umbilical view, b spiral view, c apertural view.
2 Alabaminella weddellensis, a spiral view, b umbilical view.
3 Epistominella exigua, a spiral view, b umbilical view.
4 ? like 3556 (1), a umbilical view, b spiral view, c apertural view.
5 Melonis sp. cf. M. barleeanus, a side view, b apertural view.
6 Pullenia sp., a side view, b apertural view.
7 P. bulloides, a side view, b apertural view.
8 P. bulloides, a side view, b apertural view.
9 Fursenkoina complanata.
10 Fissurina staphyllearia.
11 Lagenammina diffugiformis.
12 Reophax fusiformis?. Scale 100 μm.
Phototable 15. Station 3545

1 Laticarinina pauperata. 2 Pullenia sp., a lateral view, b apertural view. 3 Melonis pompilioides, a side view, b apertural view. 4 Pullenia bulloides, a side, b apertural view. 5 Hansenisca soldanii, a spiral view, b umbilical view, c apertural view. 6 Cibicidoides wuellerstorfi, a umbilical view, b spiral view, c apertural view. 7 Epistominella exigua, a spiral view, b umbilical view. 8 Lagena sp. 9 Fissurina sp. 10 Fursenkoina complanata. 11 Trifarina angulosa; 12 Triloculina elongata 13 Quinquelocula sp. cf. Q. arctica, a lateral view, b apertural view. 14 Cystammina pauciloculata. 15 Sigmoilopsis schlumbergeri. 16 Reophax dentaliformis?. 17 Psammosphaera fusca. 18 Lagenammina difflugiformis. Scale 100 μm.
Phototable 16. Station 3540
1 Oridorsalis umbonatus, a spiral view, b umbilical view, c apertural view. 2 Epistominella exigua, a spiral view, b umbilical view. 3 Alabaminella weddellensis, a spiral view, b umbilical view. 4 Cassidulina reniforme, a apertural view, b lateral view. 5 Cassidulina laevigata. 6 Cibicidoides sp. cf. C. pachyderma?, a umbilical view, b spiral view. 7 C. lobatulus, a umbilical view, b spiral view. 8 Gavelinopsis praegeri, a spiral view, b umbilical view. 9 Melonis barleeanus, a side view, b apertural view. 10 Melonis pumilioides, a side view, b apertural view. 11, 12 Pullenia bulloides, a side view, b apertural view. 13 Nonionella sp. cf. Nonionella turgida, a lateral view, b apertural view. 14 Nonionella auricula. 15 Pyrgo sp. 16, 17 Triloculina trihedra, a, b lateral view. 18 Brizalina subspinescens. 19 Bolivina earlandi. 20 Bulimina mexicana. 21, 22 Trifarina angulosa. Scale 100 μm.
Phototable 16. (continued).
Phototable 17. Station 3534
1 Globacassidulina subglobosa, a, lateral view, b apertural view. 2 Gyroidina orbicularis, a spiral view, b umbilical view, c apertural view. 3 Oridorsalis umbonatus?, a spiral view, b umbilical view, c apertural view. 4 Gavelinopsis praegeri, a spiral view, b umbilical view. 5 Alabaminella weddellensis, a spiral view, b umbilical view. 6 Epistominella exigua, a spiral view, b umbilical view. 7 Nonionella auricula. 8 Cibicidoides lobatulus?, a umbilical view, b spiral view. 9, 10 Cassidulina laevigata. 11 C. teretis. 12, 13, 14, 15 Trifarina angulosa. 16 Bolivina earlandi. Scale 100 μm.
Phototable 18. Station 3531

1 Hansenia soldanii, a spiral view, b umbilical view, c apertural view. 2 Cibicidoides bradyi, a umbilical view, b spiral view, c apertural view. 3 Cassidulina laevigata, a apertural view, b lateral view. 4 C. teretis. 5 Globocassidulina subglobosa, a, b apertural view. 6 Gavelinopsis praegeri, a spiral view, b umbilical view, c lateral view. 7 Pullenia bulloides, a side view, b apertural view. 8 Elphidium excavatum, a, b side view. 9 Oolina squamosa. 10, 11 Fissurina spp., a side view, b apertural view. 12 Brizalina subspinescens. 13, 14 Trifarina angulosa. 15 Uvigerina peregrina. 16 Sigmoilopsis schlumbergeri. 17 Trochammina inflata. Scale 100 μm.
Phototable 19. Station 3527

1 Cibicidoides sp. cf. C. lobatulus, a umbilical view, b spiral view, c apertural view. 2 C. lobatulus, a umbilical view, b spiral view, c apertural view. 3 C. wuellerstorfi, a umbilical view, b spiral view. 4 C. brodyi, a umbilical view, b spiral view, c apertural view. 5 Melonis sp. 6 Melonis barleeanus, a side view, b apertural view. 7 Pullenia bulloides, a side view, b apertural view. 8 Cassidulina reniforme, a apertural view, b lateral view. 9 C. teretis, a lateral view, b apertural view. 10 Globocontractula subglobosa. 11 Elphidium excavatum, a lateral view, b apertural view. 12 Gyroidina orbicularis, a spiral view, b umbilical view, c apertural view. 13 Alabaminella weddellensis, a spiral view, b umbilical view. 14 Fissurina squamosola. 15 Bolivina earlandii. 16 Bulimina mexicana. 17 Trifarina angulosa. 18 T. fluens. 19 Uvigerina sp. 20 Uvigerina sp. cf. U. mediterranea. 21 Cyclammina passila, a lateral view, b apertural view. 22 Saccammina sphaerica. 23 Lagenammina diffugiformis. 24 ? 25 Sigmoidopsis schlumbergeri. Scale 100 μm.
Phototable 19. (continued).
Phototable 20. Station 3524
1 Cibicidoides sp. juvenile form for C. lobatulus?, a umbilical view, b spiral view, c apertural view. 2 Cibicides rufulgens, a umbilical view, b spiral view, c apertural view. 3 Cibicidoides sp., a umbilical view, b spiral view. 4 Cibicidoides sp., a umbilical view, b spiral view. 5 ?, a lateral view, b apertural view. 6 Elphidium excavatum, a umbilical view, b spiral view. 7 Nonionella auricula, a lateral view, b apertural view. 8 Cassidulina teretis, a apertural view, b lateral view. 9 C. reniforme. 10 Epistominella exigua, a spiral view, b umbilical view. 11 Alabaminella weddellensis, a spiral view, b umbilical view. 12 Gavelinopsis praegeri, a spiral view, b umbilical view. 13 Oridoralis sp. cf. O. umbonatus, a spiral view, b umbilical view, c apertural view. 14 Fissurina staphyllearia. 15 Fissurina sp. 16 Bulimina mexicana. 17, 18 Fursenkoina fusiformis. 19 F. pausiloculata. 20 Fursenkoina sp. cf. F. complanata. 21 Brizalina subspinescens. 22 Bolivina sp. 23, 24, 25 Trifarina angulosa. 26 Uvegerina peregrina. 27 Bolivina pseudoplacata. 28 Sigmolopsis schlumbergeri. 29 Reophax bradyi. 30 Psammosphaera fusca. Scale 100 μm.
St. Al 3524 (continued)

Phototable 20. (continued).
Phototable 21. Station 3521
1 Gyroidina orbicularis, a spiral view, b umbilical view, c apertural view. 2 Cibicidoides bradyi, a umbilical view, b spiral view, c apertural view. 3 Gavelinopsis praegeri, a spiral view, b umbilical view. 4 Cassidulina laevigata, a apertural view, b lateral view. 5 C. laevigata. 6 C. reniforme, a apertural view, b lateral view. 7 C. laevigata, a apertural view, b lateral view. 8 Elphidium subarccicum. 9 E. excavatum?, a side view, b apertural view. 10 Melonis? sp. 11 Epistominella exigua, a spiral view, b umbilical view. 12 Alabaminella weddellensis, a spiral view, b umbilical view. 13 Nonionella auricula. 14 N. turgida, a lateral view, b apertural view. 15 Nonionella sp., a spiral view, b umbilical view. 16 N. auricula, a lateral view, b apertural view. 17 Globocassidulina subglobosa. 18 Robertinoidea sp., a apertural view, b lateral view. 19 Pyrgo murrhina. 20 Triloculina elongata. 21 Bolivina earlandi. 22 Bolivina sp. 23 Bolivina sp. 24 Bolivina sp. 25 Brizalina subspinescens. 26 Bolivina pygmae. 27 Fursenkoina complanata. 28 F. fusiformis. 29 Oolina squamosa 30 Spirophulina tenuiseptata. 31 Trifarina angulosa. 32 Uvigerina peregrina. 33 Uvigerina sp. 34 Cribrastrothelius subglobosus, a side view, b apertural view. 35 ?, a side view, d apertural view. 36 Eggerella bradyi. 37 Sigmoilopsis schlumbergeri. 38 Psammosphaera fusca. 39 Lagenammina diffugiformis. Scale 100 μm.
Phototable 21. (continued).
Phototable 22. Station 3519

1 Rosalina vilardeboana, a spiral view, b umbilical view. 2 Cassidulina laevigata, a lateral view, b apertural view. 3 Islandiella helenae. 4 Cassidulina teretis. 5 C. reniforme. 6, 7 Globocassidulina subglobosa. 8 Rosalina bradyi, a spiral view, b umbilical view. 9 Cibicidoides sp. cf. C. pseudoungeriana, a umbilical view, b spiral view, c apertural view. 10 Cibicides refulgens, a umbilical view, b spiral view, c apertural view. 11 Cibicidoides pachyderma, a umbilical view, b spiral view. 12 Pyrgo sp. 13 7. 14 Bulimina marginata. 15 Trifarina angulosa. 16 T. fluens. 17 Oolina sp. 18 O. squamosa. 19 Spiroplectinella wrightii. Scale 100 μm.
Phototable 23. Station 3516

1. Nonionella auricula, a umbilical view, b spiral view.
2. N. turgida, a lateral view, b umbilical view.
3. Cassidulina carinata, a laterale view, b apertural view.
4. C. laevigata, a lateral view, b apertural view.
5. C. reniforme, a apertural view, b lateral view.
6. Hyalinea balthica.
7. 7, 8, 9. Rosalina vilardeboana, a spiral view, b umbilical view.
10. Pyrgo sp.
11. Quinqueloculina seminula, a lateral view, b apertural view.
12. Miliolinella subrotunda, a lateral view, b apertural view.
13. Bulimina marginata.
14. Trifarina angulosa.
15. Fursenkoina fusiformis.
16. Amphicoryna scalaris, a lateral view, b apertural view.
17. Bolivina sp. Scale 100 μm.
Phototable 24. Station 3451

1 Cassidulina laevigata, a apertural view, b,c lateral view.
2 C. laevigata. 3 C. teretis. 4 Cassidulina sp., a apertural view, b lateral view.
5, 6 C. reniforme, a apertural view, b lateral view. 7 Elphidium sp. cf. E. excavatum, a lateral view, b apertural view. 8 E. excavatum. 9 Melonis barleeanus, a side view, b apertural view. 10 Pullenia bulloides, a side view, b apertural view. 11 Pyrgo sp. 12 Triloculina tricarinata, a lateral view, b apertural view. 13 Trifarina angulosa. 14 Lagenammina diffugiformis. 15 ?. 16 Psammosphaera fusca. Scale 100 µm.
| Phototable 25. Station 3464 |
|-----------------------------|
| 1 Elphidium excavatum, a lateral view, b apertural view. 2 Pullenia bulloides, a side view, b apertural view. 3 Melonis barleeanus, a side view, b apertural view. 4 Cibicoides sp., a spiral view, b umbilical view. 5 Cibicoides sp., a spiral view, b umbilical view. 6 C. lobatulus, a umbilical view, b spiral view. 7 Cibicides refugens, a umbilical view, b spiral view, c apertural view. 8 C. Muellerstorfi, a umbilical view, b spiral view, c apertural view. 9 Cassidulina laevigata, a apertural view, b lateral view. 10 C. teretis, a apertural view, b lateral view. 11 Globocassidulina subglobosa. 12 Rosalina sp., a spiral view, b umbilical view. 13 Fissurina sp. 14 Trifarina angulosa. 15 Bolivina earlandi. Scale 100 μm. |
Phototable 26. Station 3485

1 Pullenia bulloides, a side view, b apertural view.
2 ? a lateral view, b apertural view.
3 Cassidulina teretis, a apertural view, b lateral view.
4 C. laevigata, a, b lateral view.
5 Globocassidulina subglobosa, a apertural view, b lateral view.
6 G. subglobosa, a lateral view, b apertural view.
7 Gyroidina orbicularis, a spiral view, b umbilical view, c apertural view.
8 Cibicoides sp., a umbilical view, b spiral view, c apertural view.
9, 10 Cibicides refulgens, a umbilical view, b spiral view, c apertural view.
11 Cibicoides lobatulus, a umbilical view, b spiral view, c apertural view.
12 Bolivina earlandi.
13, 14 Trifarina angulosa.
15 Eggerella bradyi. Scale 100 μm.
Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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