Foraminifera from Kuromatunai-mura, Suttu-gun, Hokkaidô

(Studies on the Fossil Foraminifera from the Neogene of Japan. Part 2.)

By

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The fossil foraminifera treated in this report was collected by Mr. W. Hashimoto last year from the shell-beds of the Setana Group of the two localities, Kaigarasawa and Nakanosawa, both in Kuromatunai-mura, Suttu-gun, in the southwestern part of Hokkaidô. The shell-beds exposed at the two places are usually regarded as belonging to the Nakanosawa beds, although the rock is rather sandy at Kaigarasawa and more muddy at Nakanosawa; they contain numerous remains of Foraminifera, Mollusca, Bryozoa Brachiopoda and Ostracoda. A list of the Foraminifera together with other fossils from the Setana Group was once given by Prof. T. Nagao and Mr. Y. Sasa of the Institute of Geology and Mineralogy, Hokkaidô Imperial University.\(^{(1)}\)

From the collection obtained by Mr. W. Hashimoto, the writer discriminated 102 species (and subspecies) of foraminifera from Kaigarasawa and Nakanosawa respectively; the total number of species (and subspecies) amounts to 103; 35 being common to the two localities. The following species of the Miliolidae, Nonionidae, Polymorphinidae and Rotaliidae are most abundant;

\[
\begin{align*}
\text{Quinqueloculina subaggulitina}, & \quad \text{Living representative unknown.} \\
\text{Quinqueloculina costata}, & \quad \text{Shallow seas of the Tropical Pacific Ocean and Southern Japan.}
\end{align*}
\]

Quinqueloculina curta, Japan, especially Mutu and Matusima Bays.  
Quinqueloculina yezoensis, Living representative unknown.  
Quinqueloculina vulgaris, About the Hawaiian Islands, Midway Island, Guam and shallow seas about Japan  
Triloculina suttuensis; Living representative unknown.  
Pseudopolytomophina ishikawaensis, Adjacent seas of Japan, especially Mutu and Matusima Bays.  
Elphidium crispum,  
Elphidium fabum, Mutu Bay.  
Elphidium macellum, Mutu Bay.  
Elphidium striato-punctatum, Coral reefs of Honolulu, Hawaiian Islands, Chatham Island and Laysan; Honkong Harbor; off Alaska, Bering Sea and Japan Sea.  
Eponides karasteni, Western Pacific, especially adjacent seas of Japan.  
Cancris auricula, About the Philippines and shallow seas about Japan.  
Cibicides lobatus, About the Hawaiian Islands, Guam, Japan and Bering Seas, generally common in shallow cooler water.

Common but less abundant species are:  
Quinqueloculina seminulum, Cosmopolitan.  
Spiroloculina canaliculata, Shallow seas about the Philippines, Hawaiian Islands, Bonin Islands and Japan.  
Triloculina circularis, Off Alaska, Japan, Guam and Hawaiian Islands.  
Guttulina australica, Italy (Rimini); Pacific, Australia (Watson’s Bay); Kobama, Japan; China Sea.  
Nonion boucanum, Adjacent seas of Japan, Guam, Hawaiian Islands.  
Pseudononion japonicum,(1) Northern Japan.  
Nonionella pulchella, Northern Japan.  
Elphidium advenum, Tropical Pacific Regions and Japan.  
Siphogenerina raphana, Adjacent seas of Japan.  
Discorbidiclybularis bradyi, Adjacent seas of Japan.  
Cibicides refulgens, Off Hawaiian Islands, Guam, Phillipine and Japan.  
Planulina wuellerstorfi, Western Pacific, especially Japan.

The bathymetric range of these species is by no means confined to the shallow seas, but their abundance in the Kuromatunai material seems to indicate its deposition in shallow water. This is also confirmed by the paucity of pelagic forms and Lagenids

(1) Asano, K. Pseudononion, A New Genus of Foraminifera found in Murak-oka-mura Kamakura-gōri, Kanagawa Pref. This Journal, Vol. 43, 1933, p. 347.
in the two localities.

Like the Molluscan fauna, the foraminifera fauna of the shell-beds bears a close affinity with the recent one of Mutu Bay,\(^{(1)}\) both having many species in common. Many species of the former are also very close to or identical with those of the Oil-field Pliocene of northern Japan; especially many of the same species of the two families Polymorphadinidae and Nonionidae are abundant in the Natukawa\(^{(2)}\) of Niigata and Akita prefectures, whereas *Cassidulina* and *Polystomellina* which are most abundant in the latter are very rare and lacking respectively in the present materials.

Numerous species of the present materials also occur in the Pliocene of Muraoka-mura, Kamakura-gōri, Kanagawa prefecture;\(^{(3)}\) but the characteristic species of the genera *Rotalia*, *Robulina*, *Lenticulina*, *Nodosaria*, *Uvigerina* and *Bolivina*, distinguishing the fauna of this locality, are either absent or at least uncommon in the Setana fauna.

Correlation by means of foraminifera is at present in need of further studies before conclusive remarks may be given, and the present article is intended to be merely a working basis for a more extensive study.

At this place I wish to express my sincere thanks to Prof. H. Yabe and Assist. Prof. S. Hanzawa under whose supervision the present work was carried out. Thanks are also due to Mr. W. Hashimoto for kindly submitting his material to my study.

**List of Foraminifera from Kaigarasawa and Nakanosawa, Kuromatunai-mura, Suttu-gun, Hokkaidō**

<table>
<thead>
<tr>
<th>Textulariidae: —</th>
<th>Kaigarasawa Nakanosawa</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Textularia agglutinans</em> d’ORBIGNY</td>
<td>Common</td>
</tr>
</tbody>
</table>


\(^{(3)}\) Asano, K. Foraminifera from Muraoka-mura, Kamakura-gōri, Kanagawa Prefecture (Studies on the Fossil Foraminifera from the Neogene of Japan), This Journal, vol. 43, 1936, p. 603.
Textularia candeiana d'Orbigny
Textularia conica (?)
Textularia cuneata HADA
Textularia gramen d'Orbigny
Textularia seminalata CUSHMAN
Textularia sp.

Verneuilinidae—
Gaudryina triangularia CUSHMAN
Gaudryina sp. 1.
Gaudryina sp. 2.

Miliolidae:—
Quinqueloculina boueana d'Orbigny
Quinqueloculina cf. contorta d'Orbigny
Quinqueloculina costata d'Orbigny
Quinqueloculina curta CUSHMAN
Quinqueloculina cf. gracilis d'Orbigny
Quinqueloculina huromatutuensis n. sp.
Quinqueloculina lamarchiana d'Orbigny
Quinqueloculina seminulum (LINNE)
Quinqueloculina subaggulinita n. sp.
Quinqueloculina vulgaris d'Orbigny
Quinqueloculina yezoensis n. sp.
Quinqueloculina sp.

Massilina secans (d'Orbigny.)
Spiroloculina antillarum d'Orbigny
Spiroloculina canaliculata d'Orbigny
Spiroloculina costata HADA
Spiroloculina depressa d'Orbigny
Spiroloculina gratooupi d'Orbigny
Hauerina fragilissima (Brady)
Triloculina circularis Bornemann
Triloculina circularis sublineata (Brady)
Triloculina suttuensis n. sp.
Triloculina oblonga d'Orbigny
Triloculina sp. (?)
Pyrgo bradyi (Schlumberger)
Pyrgo elongata (d'Orbigny)
Pyrgo yabei n. sp.

Ophthalimididae:—
Cornuspira involvens (Reuss)

Lagenidae:—
Robulus sp.
Nodosaria pyrula d'Orbigny
Lagenonodosaria scalaris (Batsch) "Twin"
Lageno-acuticosta REUSS
Lageno catenulata (Williamson)
Lageno gracilis Williamson

Few
Very Rare
Very Rare
Few
Few
Very Rare
Rare
Rare

Rare
Rare

Very Rare
Rare
Abundant
Very Rare
Abundant
Rare
Abundant
Rare
Common
Few
Abundant
Few
Abundant
Rare
Abundant
Rare
Very Rare
Very Rare
Rare
Rare
Few
Rare
Very Rare
Rare

Very Rare

NII-Electronic Library Service
<table>
<thead>
<tr>
<th>Foraminifera from Kuromatunai-mura, Suttu-gun, Hokkaido</th>
<th>619</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lagena gracilima Seguenza</strong></td>
<td>Very Rare</td>
</tr>
<tr>
<td><strong>Lagena laevis Montagu</strong></td>
<td>Rare</td>
</tr>
<tr>
<td><strong>Lagena orbignyana lacunata (Burrows &amp; Holland)</strong></td>
<td>Very Rare</td>
</tr>
<tr>
<td><strong>Lagena orbignyana Seguenza</strong></td>
<td>Very Rare</td>
</tr>
<tr>
<td><strong>Lagena semistriata Williamson</strong></td>
<td>Very Rare</td>
</tr>
<tr>
<td><strong>Lagena squamosa Montagu</strong></td>
<td>Rare</td>
</tr>
<tr>
<td><strong>Lagena striata d’Orbigny</strong></td>
<td>Very Rare</td>
</tr>
<tr>
<td><strong>Lagena striata stramosa Reuss</strong></td>
<td>Rare</td>
</tr>
<tr>
<td><strong>Lagena substriata Williamson</strong></td>
<td>Very Rare</td>
</tr>
<tr>
<td><strong>Lagena sulcata Walker &amp; Jacob</strong></td>
<td>Very Rare</td>
</tr>
</tbody>
</table>

**Polymorphinidae:**

| Guttulina austriae d’Orbigny                              | Common    |
| Guttulina irregularis (d’Orbigny)                        | Rare      |
| Guttulina kishinouyi Cushman & Ozawa                      | Rare      |
| Guttulina orientalis Cushman & Ozawa                      | Rare      |
| Guttulina pacifica (Cushman & Ozawa)                      | Rare      |
| Guttulina yabei Cushman & Ozawa                           | Rare      |
| Guttulina yamashakii Cushman & Ozawa                      | Very Rare |
| Pseudopolymorpha inamikawaensis Cushman & Ozawa           | Very Rare |
| Pseudopolymorpha sp. (Aff. P. ovalis)                     | Rare      |
| Signomorpha sawanensis (Cushman & Ozawa)                  | Rare      |
| Signomorpha trioculiras (Bagg)                            | Rare      |
| Polymorphinidae formae fistulosae                         | Common    |

**Nonionidae:**

| Nonion asterizans (Fichtel & Moll)                        | Very Rare |
| Nonion boueanaum (d’Orbigny)                             | Few       |
| Nonion cfr. grateloupi d’Orbigny                          | Rare      |
| Nonion orbiculare (Brady)                                 | Rare      |
| Nonion scaphum (Fichtel & Moll)                           | Rare      |
| Nonion stelligerum (d’Orbigny)                            | Very Rare |
| Pseudomonion japonicum Asano                              | Common    |
| Pseudomonion tredecum n. sp.                              | Rare      |
| Nonionella pulchella Hada                                  | Common    |
| Elphidium advenum (Cushman)                               | Common    |
| Elphidium crispum (Linne)                                 | Abundant  |
| Elphidium fabum (Fichtel & Moll)                           | Common    |
| Elphidium macellum (Fichtel & Moll)                       | Abundant  |
| Elphidium striato-punctatum (Fichtel & Moll)              | Abundant  |
| Elphidium sp.                                              | Few       |

**Buliminidae:**

<p>| Buliminella elegantissima (d’Orbigny)                     | Very Rare |
| Bulimina marginata d’Orbigny                              | Very Rare |
| Bolivina robusta Brady                                    | Very Rare |
| Bolivina punctata d’Orbigny                               | Very Rare |
| Bolivinella elegans Park “Twin”                            | Very Rare |
| Reussella spinulosa Reuss                                  | Rare      |</p>
<table>
<thead>
<tr>
<th>Genus</th>
<th>Frequency</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chrysalidinea dimorpha</strong></td>
<td>Rare</td>
<td>—</td>
</tr>
<tr>
<td><strong>Siphogenerina raphana</strong></td>
<td>Common</td>
<td>Few</td>
</tr>
<tr>
<td><strong>Siphogenerina raphana var.</strong></td>
<td>Rare</td>
<td>—</td>
</tr>
<tr>
<td>Rotaliidae:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Patellinella hanzawai</strong></td>
<td>Very Rare</td>
<td>Very Rare</td>
</tr>
<tr>
<td><strong>Discorbis globularis</strong></td>
<td>Common</td>
<td>Common</td>
</tr>
<tr>
<td><strong>Discorbis sp.</strong></td>
<td>Rare</td>
<td>—</td>
</tr>
<tr>
<td><strong>Eponides karsteni</strong></td>
<td>Abundant</td>
<td>Common</td>
</tr>
<tr>
<td><strong>Canceris auricula</strong></td>
<td>Common</td>
<td>Abundant</td>
</tr>
<tr>
<td><strong>Canceris cfr. convolutus</strong></td>
<td>Very Rare</td>
<td>—</td>
</tr>
<tr>
<td>Cassidulinidae:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cassidulina laevigata</strong></td>
<td>Very Rare</td>
<td>—</td>
</tr>
<tr>
<td><strong>Cassidulina subglobosa</strong></td>
<td>Very Rare</td>
<td>—</td>
</tr>
<tr>
<td>Globigerinidae:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Globigerina bulloides</strong></td>
<td>Common</td>
<td>Common</td>
</tr>
<tr>
<td><strong>Globigerina triloba</strong></td>
<td>Rare</td>
<td>—</td>
</tr>
<tr>
<td><strong>Orbulina universa</strong></td>
<td>Rare</td>
<td>Rare</td>
</tr>
<tr>
<td>Anomalinidae:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cibicides lobatus</strong></td>
<td>Abundant</td>
<td>Abundant</td>
</tr>
<tr>
<td><strong>Cibicides refugens</strong></td>
<td>Common</td>
<td>Abundant</td>
</tr>
<tr>
<td><strong>Cibicides sp.</strong></td>
<td>Rare</td>
<td>—</td>
</tr>
<tr>
<td><strong>Planulina wuellerstorfi</strong></td>
<td>Common</td>
<td>Rare</td>
</tr>
<tr>
<td>Total</td>
<td>102</td>
<td>42</td>
</tr>
</tbody>
</table>

**Description of New Species**

**Quinqueloculina subagglutinata** n. sp.

Pl. 32, Figs. 1 a-c.

Test 1.5 times as long as wide, 5 visible chambers in adult; wall rough, exteriorly composed of agglutinated sand grains; chambers somewhat angled, its sides flattened or slightly concave; neck indistinctly developed, aperture oval, with bifid tooth. Length rarely exceeding 1 mm.

Abundant in the materials studied; differs from Q. *agglutinata* Cushman in the angular chambers with rough exterior.

Holotype (Reg. No. 21370), and paratypes, all from Kaigarasawa, Kuromatunai-mura, Suttu-gun, Hokkaido.

**Quinqueloculina yezoensis** n. sp.

Pl. 32, Figs. 30 a-c.

Test somewhat longer than broad, periphery broadly rounded or somewhat angled; outer peripheral face of chamber with oblique costae, sides flattened or somewhat concave with fine striae; neck indistinctly developed, aperture oval, with simple tooth. Length about 1 mm.
Foraminifera from Kuromatunai-mura, Suttu-gun, Hokkaido

Rather frequent at Kaigarasawa; fairly variable in the ratio of length and width of test, being longer than the figured specimen. Distinguished from other striated forms by its characteristic oblique costae on the periphery and from the next form by the flattened or concave sides of chambers.

Holotype (Reg. No. 21371) and paratypes, all from Kaigarasawa, Kuromatunai-mura, Suttu-gun, Hokkaido.

*Quinqueloculina kuromatunaiensis* n. sp.

Pl. 32, Figs. 4 a-d.

Test quinquelocline, short and broad, periphery broadly rounded, not angled; chambers distinct, slightly contorted; wall costate, costae running obliquely, sides somewhat inflated, with fine striae; aperture slightly projecting, with a simple plate-like tooth. Length about 1.5mm.

Comparatively large; similar to the above-described one in the oblique striation on test, but differs from it in the broadly rounded periphery of chambers.

Holotype (Reg. No. 21372) and paratypes, all from Kaigarasawa, Kuromatunai-mura, Suttu-gun, Hokkaido.

*Triloculina suttuensis* n. sp.

Pl. 33, Figs. 2 a-c.

Test elongate, about 3 times as long as wide, with 3 visible chambers in adult, chambers sharply angled, triangular in end view; sides of last chamber nearly flattened, but those of preceding ones somewhat contorted and ridged; sutures distinct, depressed; wall smooth; aperture subtriangular, with tooth simple or narrow, bifid at tip. Length about 0.7mm.

Common in locality mentioned below; distinguished from *T. tricarinata* by much elongate test.

Holotype (Reg. No. 21373) from Kaigara-sawa, Kuromatunai-mura, Suttu-gun, Hokkaido.

*Pyrgo yabei* n. sp.

Pl. 33, Figs. 1a-b; 5 a-b.

Test elongate, tapering gradually toward apertural end, widest at near opposite end, biconvex in end view; periphery subacute, often sinuous; sutures distinct; wall smooth; aperture short and narrow, with a small flattened tooth with short lateral extensions at tip, only partially
filling aperture. Length about 0.4 mm.

Closely resembles *P. elongata* in outline of test, but differs in the acute periphery and sinuous suture-line which is concave toward the last chamber near the aperture and toward the preceding chamber at the opposite end.

Holotype (Reg. No. 21374) and paratypes, all from Kaigarasawa, Kuromatunai-mura, Suttu-gun, Hokkaido.

*Pseudonion tredecum* n. sp.

Pl. 33, Figs. 7 a-c.

Test depressed, bilaterally asymmetrical, ventral side completely involute, dorsal side somewhat evolute, periphery subacute, umbilicus of ventral side distinct, filled with granular shell-substance; chambers numerous, usually 13–14 in last formed coil in adult; sutures distinct, slightly depressed; wall smooth, finely perforate; aperture small, at base of last chamber. Length about 0.4, breadth 0.3, and thickness 0.1 mm.

Differs from *P. japonicum* (1) in the number of chambers and nearly circular test.

Holotype (Reg. No. 21375) from Kaigarasawa, Kuromatunai-mura, Suttu-gun, Hokkaido.

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(1) K. Asano, This Journal, Vol. 43, 1936, p. 347.