

Short Note



A new planktonic foraminifera species (*Igorina isabellae* n. sp.) from the late Paleocene of the Pacific Ocean

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In their recent taxonomic revision of Paleocene-Eocene planktonic foraminifera species of the genus *Igorina*, Soldan et al. (2011) illustrated and described numerous morphotypes of uncertain taxonomic identification at species and genus level. Results from the phylogenetic analyses revealed that the genus *Igorina* is a polyphyletic group with the Eocene forms having evolved from a different ancestor than that of the Paleocene forms. Some of the Paleocene morphotypes were described as new species (*I. paraspirealis* Soldan et al., 2011 and *I. praecarinata* Soldan et al., 2011), whereas the Eocene igorinids were proved to possess a different wall texture and, thus, accommodated in the new genus *Pearsonites* (Soldan et al., in press). In addition, Soldan et al. (2011) identified in the Paleocene assemblages of the Pacific Ocean (Ocean Drilling Program Leg 198 Shatsky Rise, Bralower et al., 2002; and Leg 143 Allison Guyot, Sager et al., 1993), a group of keeled specimens (*Igorina* morphotype D) characterised by a large number of chambers in the last whorl. Based on the results of parsimony analyses and in agreement with the morphological observations, *Igorina* morphotype D was regarded falling within the morphologic variability of *I. laevigata* (Bolli, 1957).

Further biostratigraphic analyses of closely spaced samples from ODP Leg 198 and Leg 143 have revealed that *Igorina* morphotype D commonly occurs in the late Paleocene planktonic foraminiferal assemblages from Subzones P4a to the base of P4c (Berggren & Pearson, 2005). Moreover, it shows very distinctive morphological features and a stratigraphically continuous record that support its reliability and validity at species level. For this reason the new species *Igorina isabellae* is herein formally described to accommodate the keeled Paleocene igorinids with seven to ten chambers in the last whorl.

SYSTEMATIC PALAEOLOGY

Order FORAMINIFERIDA Eichwald, 1830

Superfamily GLOBIGERINACEAE Carpenter, Parker
& Jones, 1862

Family TRUNCOROTALOIDIDAE Loeblich & Tappan, 1961

Genus *Igorina* Davidzon, 1976

Type species - *Acarinina tadjikistanensis* Bykova, 1953

Igorina isabellae n. sp.
(Pl. 1)

1979 *Globorotalia (Globorotalia) albeari* Cushman & Bermúdez - BLOW, pp. 883-885, Pl. 92, fig. 4, figs 8-9; Pl. 93, figs 1-4 (Leg 6, Site 47, Shatsky Rise, Northwest Pacific Ocean).

2005 *Igorina albeari* (Cushman & Bermúdez) - PETRIZZO, Pl. 4, fig. 3a-c (Leg 198, Hole 1209A, Shatsky Rise, Northwest Pacific Ocean).

2011 *Igorina* morphotype D - SOLDAN, PETRIZZO, PREMOLI SILVA & CAU, fig. 6/5-6 (Leg 198, Hole 1209B, Shatsky Rise, Northwest Pacific Ocean).

Etymology - Named in honor of Professor Isabella Premoli Silva for her outstanding contributions to the study of planktonic foraminifera.

Type locality - Shatsky Rise, Northwest Pacific Ocean.

Type material - Holotype (Pl. 1, 1a-c; Micro-Unimi no. 1985), paratype 1 (Pl. 1, 2a-c; Micro-Unimi no. 1986) and paratype 2 (Pl. 1, 3a-c; Micro-Unimi no. 1987); deposited in the Micropalaeontological Collection, Università degli Studi di Milano, Dipartimento di Scienze della Terra "A. Desio", Italy.

Material - 65 specimens.

Dimensions of holotype - Diameter = 0.39 mm, thickness = 0.20 mm.

Occurrence - Zones P4a-P4c (basal part), late Paleocene.

Geographic distribution - This taxon has been recorded at low and mid latitudes and it commonly occurs in the (sub)tropical planktonic foraminiferal assemblages from the Pacific Ocean (DSDP Leg 6, ODP Leg 143 and ODP Leg 198).

Wall texture - Praemuricate, nonspinose.

Diagnosis - *Igorina isabellae* n. sp. is characterised by small to medium sized test with a well developed muricocarina and a large number of chambers (seven-nine, rarely ten) in the last whorl.

Description - Test almost equally biconvex; equatorial periphery almost circular to subcircular, very slightly lobate; test surface with pustules, the wall of the inner chambers on the spiral side is clearly covered by a crust; in edge view the peripheral margin is subacute to acute with a distinct keel; umbilical side with seven to ten equidimensional and subtriangular chambers, sutures straight and radial, umbilicus small, narrow and deep; spiral side with 2½ whorls; whorls tightly coiled with seven-nine (rarely ten) crescentic/petaloid chambers in the final whorl, increasing very slowly in size as added, sutures strongly recurved and weakly incised; aperture an interiomarginal, umbilical-extraumbilical, moderately high arch extending nearly to the periphery.

Discussion - *Igorina isabellae* n. sp. is an important component of the (sub)tropical assemblages of the northwestern and central Pacific Ocean. This keeled taxon is usually very distinctive in the assemblage assigned to Subzones P4a-P4b. Specimens similar to *Igorina isabellae* n. sp. and characterised by an imperforate carina along the peripheral margin were described by Blow (1979) from the Pacific Ocean as *Globorotalia* (*Globorotalia*) *albeari* Cushman & Bermúdez, 1949. These specimens are here included in the variability of *Igorina isabellae* n. sp. Typical forms of *Igorina isabellae* n. sp. have been previously illustrated by Petrizzo (2005) and Soldan et al. (2011) from Shatsky Rise sites.

Cladistic analyses performed on Paleocene specimens (Soldan et al., 2011) suggest that *Igorina isabellae* n. sp. is closely related to *I. laevigata* from which it evolved by increasing the number of chambers in the last whorl at the base of Subzone P4a. To date, its highest occurrence has been recorded in the lower part of Subzone P4c.

Igorina isabellae n. sp. is distinguished from *I. laevigata* in having a more circular equatorial periphery and for its larger number of chambers in the last whorl. It differs from *I. albeari* in possessing a distinct and well-developed keel around the peripheral margin.

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EXPLANATION OF PLATE 1

Igorina isabellae n. sp.

Figs 1-3 - Primary types

- 1 - Holotype (Micro-Unimi no. 1985), sample 198-1209B-23H-7, 11-12 cm.
- 2 - Paratype 1 (Micro-Unimi no. 1986), sample 198-1209B-23H-7, 11-12 cm.
- 3 - Paratype 2 (Micro-Unimi no. 1987), sample 198-1209B-23H-7, 11-12 cm.

Figs 4-7 - Secondary types

- 4 - Sample 198-1209B-23H-7, 11-12 cm.
- 5 - Sample 198-1209B-23H-CC, 8-9 cm.
- 6 - Sample 143-865B-14H-4, 47-49 cm.
- 7 - Sample 143-865B-14H-4, 47-49 cm.

a = umbilical view; b = edge view; c = spiral view. Scale bar = 100 µm.

