
Transfer of *Navicula elegantoides* Hustedt to the genus *Pinnunavis* (Naviculaceae, Bacillariophyta)

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The genus *Pinnunavis* Okuno was described in 1975 (Okuno 1975: 109) with *Pinnunavis elegans* (W.Smith) Okuno as generitype (John 1988: 417, pl. 1, figs 1-8 LM, pl. 2: figs 9-14 SEM). Okuno (1975) considered the genus *Pinnunavis* to be intermediate between *Navicula* Bory (1822: 128) and *Pinnularia* Ehrenberg (1843: 45) (see Moe & Silva 2001: 319 regarding the orthography). Its generic distinctness from *Pinnularia* was comprehensively reviewed by Edgar *et al.* (2015). Of the 9 species and one infraspecific taxon up to now reported within this genus (Guiry & Guiry 2018), two species were described from Africa: *Pinnunavis edkuensis* Saleh & R.K.Edgar (Edgar *et al.* 2015: 16) and *P. zalatii* Saleh & R.K.Edgar (Edgar *et al.* 2015: 16) both from the brackish water of Lake Edku in Egypt. All other eight *Pinnunavis* names were transferred from the genus *Navicula*. From tropical Africa, only *Pinnunavis elegans* was reported from Sierra Leone (as *Navicula elegans* var. *smithii* Cleve-Euler 1955: 3, fig. 973a) by Woodhead & Tweed (1960: 132).

Although *Pinnunavis* is not recognised taxonomically by some authors (e.g., Krammer & Lange-Bertalot 1986: 236), we are convinced that a *Navicula* taxon, observed by us in African material, can best be transferred to *Pinnunavis* given the unique combination of valve outlines, as in *Navicula*, and of alveoloid striae, as in *Pinnularia*.

Navicula elegantoides Hustedt (1942: length about 80-130 µm, width 33-39 µm, 5 striae in 10 µm) was described from the Buhi River in Luzon, the largest island of the Philippines. Light microscopic images of the lectotype (163/36a. Luzon, Buhi-Fluß. 210), designated by Simonsen (1987: 277-278), are given in Simonsen (1987: pl. 411: figs 1-4; pl. 412: figs 1-4; length about 74-105 µm, width 24-33 µm, 5-6 (7) striae in 10 µm), who stated that it is smaller than Hustedt's illustration. Light (Figs 1-2) and scanning electron microscope (Figs 3-9) investigation of material ST8-2LA/E collected in Lake Ahémé, Benin (length about 66-75 µm, width 21-28 µm, 6-7 striae in 10 µm), on 22 June 2016 showed that the striae, radiate near the centre of the valve and divergent near the poles, are composed of 3-4 (most 4) rows of areolae (Figs 5-9). The central raphe endings appearing round in light microscopy, however, are straight and surrounded by a groove in the silica-wall as observed in SEM (Fig. 5). Externally, the distal raphe fissures are straight and continuing on the valve mantle (Figs 6-7); internally ending in a distinct helictoglossa (Fig. 8). Besides the several records from Luzon Island (Benguet, Banaue (ponds); Rizal, Manila (Lyon ponds, Ponds in Bureau of Science grounds); Laguna, Los Baños, Laguna de Bay; Buhi Lake) in the Philippines (Woltereck 1941: 52; Hustedt 1942: 76-77, fig. 142; Martinez-Goss 2001: 8; Ohtsuka *et al.* 2009: 143, fig. 95: *Pinnunavis*(?) sp.), this taxon has also been reported as a marine and estuarine species from Malacca River, Malaysia (Prowse 1962: 42, pl. 8: fig. d); canal at the temple, Hikkaduwa, Sri Lanka (Foged 1976: 33, pl. 12: figs 8-9); Swan River and Canning River, Australia (John 1983: 89, pl. 43: figs 11-12; John 2012: p. 132, figs 102 K-L; McCarthy 2013); Andaman and Nicobar Islands, India (Prasad & Srivastava 1992: 208, 222); Lake Shinja, Tomoga Island, Wakayama

Prefecture, Japan (Nakai 1995: 75, fig. 1); Osaka Bay, Wakayama Prefecture, Japan (Suematsu 1995: 105); mangroves, Yunxiao County, Fujian Province, China (Chen *et al.* 2006: 96, fig. 2); Fujian (China), Australia, Sri Lanka, fresh water, brackish water, and mangrove (Liu 2008: 77); streams in Wido Island, Buan County (North Jeolla Province) and in Wosando in Boryeong (South Chungcheong Province), South Korea (Joh 2017: 243, pl. 2: fig. 16), and now from Lake Ahémé in Benin, West Africa, indicating a Palaeotropical and Australian distribution of *Navicula elegantoides*.

***Pinnunavis elegantoides* (Hustedt) Cocquyt & Olodo, comb. nov. (Figs 1-9)**

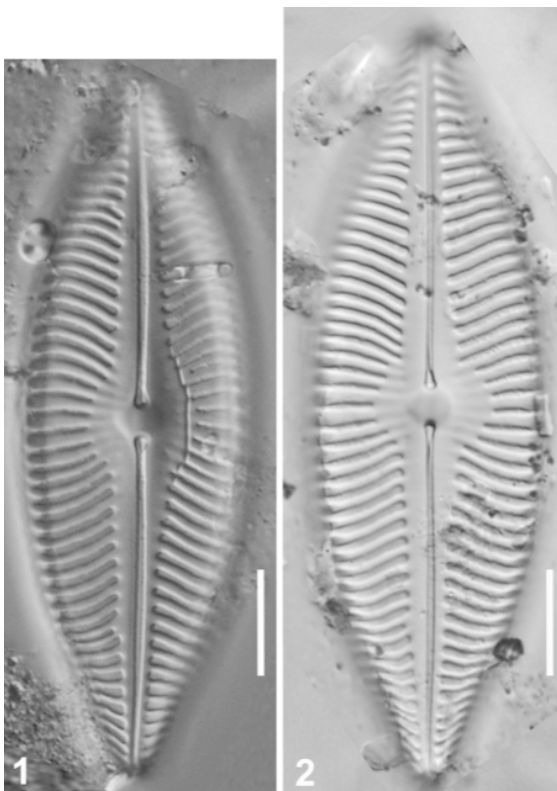
Basionym: *Navicula elegantoides* Hustedt *Internationale Revue der gesamten Hydrobiologie und Hydrographie* 42(1/3): 76, fig. 142, 1942.

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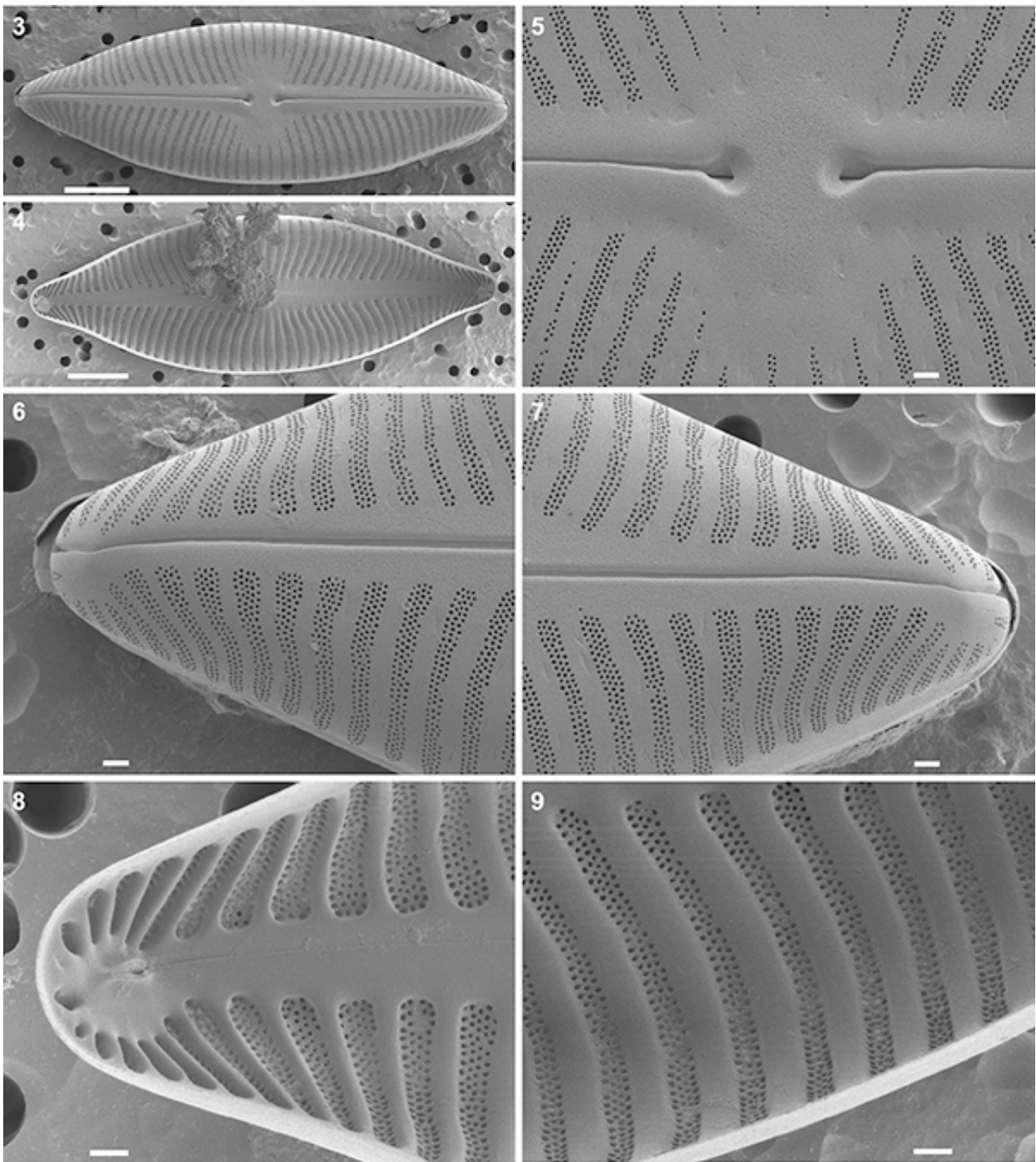
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Figs 1-2. LM images of *Pinnunavis elegantoides* (Hustedt) Cocquyt & Olodo, *comb. nov.* from material ST8-2LA/E of Lake Ahémé, Benin. Scale bars = 10 μ m.



Figs 3-9. SEM images of *Pinnunavis elegantoides* (Hustedt) Cocquyt & Olodo, *comb. nov.* from material ST8-2LA/E of Lake Ahémé, Benin. Fig. 3. External view of entire valve. Fig. 4. Internal view of entire valve. Fig. 5. Detail of the external proximal raphe endings. Figs 6, 7. Detail of the external view of the multiserial striae near the poles. Fig. 8. Detail of an internal distal raphe ending with distinct helictoglossa. Fig. 9. Detail of the internal view of the alveoloid multiserial striae. Scale bars Figs 3-4 = 10 μ m, Figs 5-9 = 1 μ m.