

A NEW SPECIES OF *DEPARIA* FROM NEW GUINEA

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ABSTRACT

WARDANI, W., JAENUDIN, APANDI, I., KUSUMAWATY, A. & SANTOSO, W. 2021. A new species of *Deparia* from New Guinea. *Reinwardtia* 20(2): 57–61. — *Deparia stellata* is a new species of highland in Eastern New Guinea, described from a specimen found among unidentified piles of New Guinean Expedition in 1975. Its distinctive stellate-hairs on all axis and occasionally on rachis-scale margin are the main character that differentiate the species to other *Deparia*.

Key words: *Deparia*, highland, New Guinea, stellate-hairs.

ABSTRAK

WARDANI, W., JAENUDIN, APANDI, I., KUSUMAWATY, A. & SANTOSO, W. 2021. Jenis baru *Deparia* dari Papua Nugini. *Reinwardtia* 20(2): 57–61. — *Deparia stellata* adalah jenis baru dari dataran tinggi Papua Nugini bagian timur, dideskripsikan dari satu spesimen yang tidak teridentifikasi dalam tumpukan hasil ekspedisi di Papua Nugini pada tahun 1975. Karakter utama yang membedakannya dari jenis lain pada marga *Deparia* adalah tutupan rambut-rambut bintang di semua sumbu (rakis, kosta kostul dan vena) dan terkadang pada tepian sisik di bagian rakis.

Kata kunci: Dataran tinggi, *Deparia*, Papua Nugini, rambut bintang.

INTRODUCTION

Among specimens of Athyriaceae from New Guinea stored in BM, we found an interesting specimen that could not be convincingly identified. The pinnate oblong-lanceolate leaf with pinnae deeply incised, gradually reduced to pinnae with serrated margin toward apex, groovy and hairy-look axis, and linear indusium that mostly not reaching margin are some of the main features of a common species, *Deparia petersenii*, that immediately observed in our specimen. It was collected on the Star Mountains Expedition in 1975, a collaborative trip between Papua New Guinea National Herbarium (LAE) and Rijksherbarium Leiden (L).

After a closer examination, we found the lamina axes of this specimen are densely covered with distinctive indumentum of darkly-pigmented stellate hairs, rather than multicellular septate hairs as commonly found in other *Deparia* species. Moreover, their scales are different from some hairs on margin that are not present in most of *Deparia*. This character is unusual for the genus and suggest that this specimen represented an undescribed species.

Deparia is a wide spread genus in the family Athyriaceae, distributed in tropical Africa, Madagascar, Reunion, South India, Ceylon, Himalayas, East and South East Asia, Oceania, East Australia and East North America (Kato, 1984). This terres-

trial fern includes several other previously recognized genera *i.e.* *Dryoathyrium* Ching, *Lunathyrium* Koidz., *Parathyrium* Holttum, *Athyriopsis* Ching (Kato, 1984; Sano *et al.*, 2000; Wang *et al.*, 2013), *Triblemma* (J.Sm.) Ching and *Dictyodrama* Ching (Sano *et al.*, 2000; Wang *et al.*, 2003). *Deparia* differs from other genera in the Athyriaceae in its discontinued groove at the junction of costae and rachis (Kato, 1984) combined with the presence of multicellular (septate) hairs (Sundue & Rothfels, 2014; Rothfels *et al.*, 2012).

MATERIALS AND METHODS

Herbarium specimen of *Deparia* stored in BO and a loan from BM were gathered for observation and sorted based on morphology. Detail examina-

tion were carried using Olympus stereo microscope SZ61 equipped with long arm, calibrated eyepiece and camera (Fig. 1).

RESULTS AND DISCUSSION

Kuo *et al.* (2018) recognized five sections with three subsections in its infrageneric classification, *i.e.* *Dryoathyrium*, *Lunathyrium*, *Erectus*, *Dictyodrama*, *Deparia* with sub sections *Deparia*, *Caespites* and *Athyriopsis*. This classification is in line with grouping presented in Kato (1984) for Pacific species. Following the key to section provided in Kato (1984) this presented new species is in between the Sect. *Deparia* and Sect. *Athyriopsis* since it has entire indusia but slender rhizome.

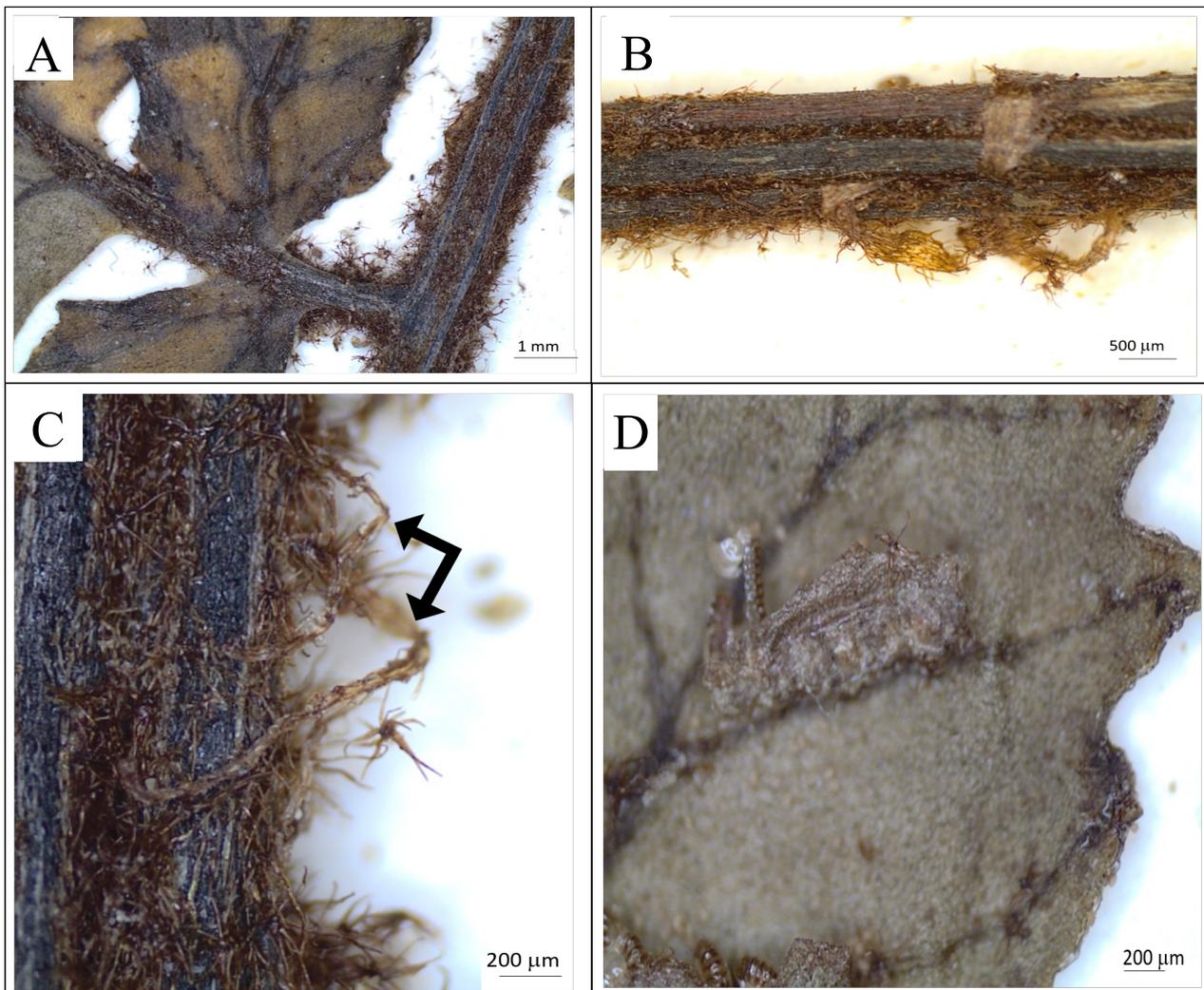


Fig. 1. A. Rachis densely covered with dark-stellate hair. Also showing the discontinued groove at the junction of costae and rachis. B. Stipe scale with irregular stiff hair on its margin. C. Two pieces of septate hair on rachis, appear among stellate hair. D. Indusium with stiff hairs radiate from one point on the margin. From *W. R. Barker 67491*. Photos by W. Wardani.

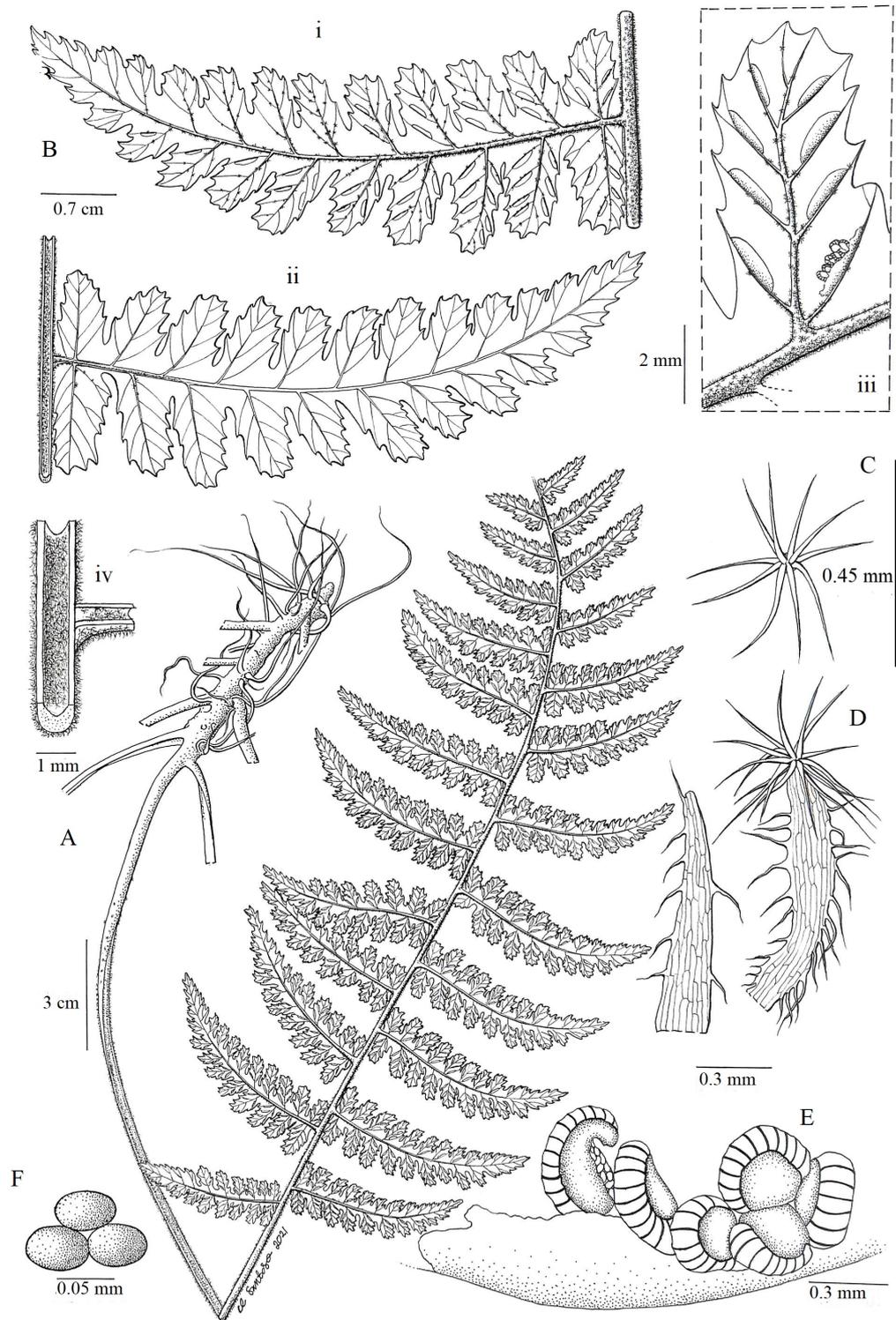


Fig. 2. *Deparia stellata* Wardani *spec. nov.* A. Habit. B. Portion of pinnae of abaxial (i) and adaxial (ii) side, detail of indusium underneath (iii) and groove at the junction of rachis and costae (iv). C. Stellate hair. D. Scale with stiff hairs on margin and stellate hair at apex. E. Detail of sporangium below indusium. F. Bilateral spore. From *W. R. Barker 67491*. Drawn by *W. Santoso*.



Fig. 3. Scanned holotype specimen of *Deparia stellata* Wardani spec. nov. From W. R. Barker 67491. Scanned by Jaenudin.

Deparia stellata Wardani *spec. nov.* Figs. 1–3. — TYPE: PAPUA NEW GUINEA. District West Sepik, Subdist. Telefomin, 5°00'S 141°05'E, 2,100 m asl near the border with Indonesia, 21 April 1975, *W. R. Barker 67491* (Holotype BM! Isotype L).

Pinnate-pinnatifid leaf, groovy axis, discontinue at the junctions. Rachis, costae and costules covered with darkly-pigmented stellate hair, while the multicellular septate hair as commonly occur in *Deparia* is sparsely present. Scale margin ornamented with hairs.

Rhizome creeping, slightly ascending, 4.6 mm thick. Stipe blackish, 18.5 cm long, scales caducous, brown, about 0.3 mm wide and 2 mm long, irregularly with stiff hairs on margin, unlike the entire margin in most of *Deparia* species. *Lamina* lanceolate, gradually acuminate, slightly reduced downward, herbaceous, 23–33.5 cm long, 11 cm wide, pinnate-pinnatifid, one or two basal pinnae pairs with separated acroscopic basal segment. Pinnae 1.7–2.4 cm apart, deeply pinnatifid and serrated lobes, up to 6 cm long and 1.62 cm wide with 1.45 mm stalks, acuminate, acroscopic basal segment 8 mm long and 4.3 mm wide, 3 mm apart. All axes of both sides bearing dark stellate hairs 0.45–0.9 mm in diameter, especially dense on the rachis and pinnae stalks, replace the septate hairs that commonly occur in other *Deparia* species. The long septate hairs only sparsely present on rachis. Smaller scales as on stipe also present on rachis, with hairs on margin. *Sori* linear on veins, indusia thin, 1.85–3 mm long, entire, sometimes ornamented with few ±0.12 mm long stiff hair on margin, radiating from a point impressing an abraded stellate hair.

Distribution. Known only from the type location.

Habitat. In a pristine forest at high altitude of New Guinea, 2,100 m asl.

Etymology. The epithet refers to the distinctive stellate hair covering rachis and basal pinnae-stalk, and also alludes to the type locality, the Star Mountains.

Note. The duplicate specimen in L were stored under *Diplazium stellatopilosum* (Brause) Holttum

(L.3525651) which is a very different species that has similar unusual hair covering (Holttum & Roy, 1965).

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REFERENCES

- HOLTTUM, R. E. & ROY, S. K. 1965. Cytological observation on ferns from New Guinea with description of new species. *Blumea* 13: 129–139.
- KATO, M. 1984. A taxonomic study of the Athyroid fern genus *Deparia* with main reference to the Pacific species. *Journal Faculty of Science University of Tokyo* Section III 13: 371–430.
- KUO, L. Y., EBIHARA, A., HSU, T. C., ROUHAN, G., HUANG, Y. M., WANG, C. N., CHIOU, W. L. & KATO, M. 2018. Infrageneric revision of the fern genus *Deparia* (Athyriaceae, Aspleniineae, Polypodiales). *Systematic Botany* 43(3): 645–655.
- ROTHFELS, C. J., SUNDUE, M. A., KUO, L. Y., LARSSON, A., KATO, M., SCHUETTPELZ, E. & PRYER, K. M. 2012. A revised family level classification for eupolypod II ferns (Polypodiidae: Polypodiales). *Taxon* 61(3): 515–533.
- SANO, R., TAKAMIYA, M., KURITA, S., ITO, M. & HASEBE, M. 2000. *Diplazium subsinuatum* and *D. tomitaroanum* should be moved to *Deparia* according to molecular, morphological and cytological characters. *Journal of Plant Research* 113(2): 157–163.
- SUNDUE, M. A. & ROTHFELS, C. J. 2014. Stasis and convergence characterize morphological evolution in eupolypod II ferns. *Annals of Botany* 113(1): 35–54.
- WANG, M. L., CHEN, Z. D., ZHANG, X. C., LU, S. G. & ZHAO, G. F. 2003. Phylogeny of Athyriaceae: evidence from chloroplast *trnL-F* region sequences. *Acta Phytotaxonomica Sinica* 41: 416–426.

