

Heterospathe elata, a New Record for the New Guinea Islands

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1. *Heterospathe elata* showing the coconut-like habit without a crownshaft. (Photo: Charlie D. Heatubun)



The horticulturally important palm *Heterospathe elata* Scheff. is recorded for New Guinea for the first time on the island of Gag, Indonesia.

The genus *Heterospathe* (Arecoideae: Areceae) comprises some 39 species of lowland and montane rainforest palms distributed from the Philippines and Micronesia through to eastern Indonesia, New Guinea, the Solomon Islands, Fiji and Vanuatu. During fieldwork by the first author for the Palms of New Guinea project (Baker 2002), three populations (fewer than 20 individuals) of a species of *Heterospathe* were found on the island of Gag, one of the Raja Ampat Islands.

Situated in the Indonesian province of West Papua, the Raja Ampat Archipelago is currently being considered by UNESCO for World Heritage Site listing. Gag is a small island (56 km²) approximately 150 km north-west of Sorong, the largest town on the Bird's Head Peninsula of mainland New Guinea. Sitting astride the world's largest seam of nickel, the amazing flora and fauna found on the island is under threat from large scale open-cast mining. A more detailed paper will discuss separately Gag Island's environment, including its plant communities and its palms in particular (Heatubun et al., in prep.), but in general, there are two main types of forest based on the underlying geology of the island, namely heath forest on ultramafic soils and rainforest on limestone-rich soils.

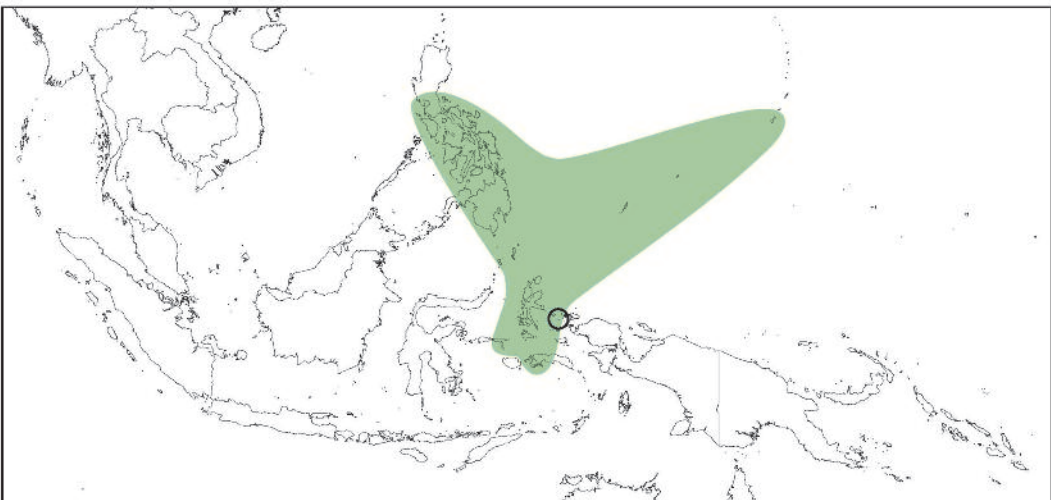
The *Heterospathe* found on Gag is very rare, occurring scattered throughout the limestone forest and rarely as one or two trees in open grassland near the airstrip and in an old abandoned garden close to a coconut plantation in the north of the island. The palm is solitary, with a slender stem to 10 m high, and has about 17 leaves forming a dense crown



2. The inflorescence of *Heterospathe elata*. (Photo: Charlie D. Heatubun)

that lacks a crownshaft (Fig 1). The leaves are approximately 350 cm long, including the petiole which is 75–100 cm long, with a conspicuously white powdery leaf sheath about 85 cm long. The inflorescence is approximately 150 cm long, emerging from among the leaves, and branching to three orders (Fig 2). The palm is known as *gul ways*

3. Map showing the distribution of *Heterospathe elata* with Gag Island marked with a circle.



in the local language (Gebe dialect), and sometimes local people use the stem for traditional house construction, such as flooring and poles or pillars. This is potentially a cause for conservation concern as so few individuals are known on the island.

Attempts were made to match the Gag specimens at Kew to an existing taxon, and to determine whether or not it may be new. Although the specimens did not match any of the taxa previously recorded in New Guinea, nor any of the descriptions in the literature, it soon became clear that that it was extremely similar to *Heterospathe elata* – a species not recorded previously from New Guinea or its adjacent islands. Most species in the genus *Heterospathe* are endemic to single islands/groups of islands, whereas *H. elata* is widely distributed, from the Philippines, to Maluku, the Caroline Islands (Palau) and the Marianas (Guam) (Fig 3). The species, the type of the genus *Heterospathe*, was first described by Scheffer in 1876 from material cultivated in Bogor Botanic garden originating from the island of Ambon, relatively close to New Guinea and to Gag Island (see map). *Heterospathe elata* is a canopy palm whereas most other species range from small to medium-sized understory to mid-story palms. Known as the Sagisi Palm, the species is a

popular and widely cultivated ornamental, which flourishes in full sun (Jones 1995). According to Fernando (1990), the species is nowhere abundant in the wild, although Moore and Fosberg (1956) reported that the species is considered to be a weed in Guam in several locations, even crowding out native species in ravines.

The Gag island palm displays an intriguing condition that has not been noted in *Heterospathe* before and is very unusual within tribe Areceae. Infructescences produce a mixture of single, bi-, and occasionally tri-lobed fruits, which contain one, two or three seeds correspondingly (Fig 4). From a total of three specimens from Gag Island, one specimen had 10.6% of its fruit with multiple lobes (26 out of 246 fruit), another 11.1% (43 out of 387), and the last specimen 5.3% (16 out of 302). On examining all fruit from all specimens of *H. elata* currently at Kew we found a single cultivated specimen at Kew, from “Lawn O” of Singapore Botanic Garden (*Nur s.n.*) collected in June 1929, and determined by Furtado, with a single bi-lobed fruit. We have no information as to where this specimen originally came from, but the fruit is still attached to a rachilla and indicates that this taxon has the capacity to produce such multi-lobed fruits.

4. The fruits of *Heterospathe elata* – showing development of bi-lobed fruit and the rusty brown indumentum on the rachilla. (Photo: Charlie D. Heatubun)



Two varieties of *H. elata* were described by Beccari, var. *guamensis* and var. *palauensis*. The former was considered to be a synonym of *H. elata* var. *elata* by Moore and Fosberg (1956) on the basis of there being little significant difference between the Guam material and material in cultivation, and their belief that the Guam material may have been introduced historically from the Philippines. Moore and Fosberg considered the fruit size and shape characters used by Beccari to distinguish var. *palauensis* to be "tenuous," but continued to recognize the variety on the basis of specimens bearing more slender rachillae and exhibiting "more strongly cross-rugulose pinnae," compared with var. *elata*. We suspect that these last distinguishing characters are probably also too tenuous, being variable across the many specimens of *H. elata* examined during this work. The curious fruit characters might suggest that the Gag form of *H. elata* merits taxonomic recognition. However, in view of the limited material available and the morphological variation observed across the species, this cannot be justified. Nevertheless, the discovery of this palm on Gag Island represents a significant addition to the New Guinea palm flora.

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