

# Further Additions to the Flora of Guam, III

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Since the last report in this series (*Micronesica* 2(1): 47-50, 1966) a few further records of plants of interest have accrued, which are here set out with the appropriate collection data. I have in several cases to thank various specialists for their assistance in the determination of specimens; they are mentioned under the appropriate heading.

## ALGAE

The College of Guam has been fortunate in being able to turn to Prof. William Randolph Taylor of the University of Michigan Herbarium for the determination of numerous marine algae. However, a final report on these is not yet available for publication. In the meantime, two collections can be cited from amongst the collections of fresh-water and marine algae.

## MYXOPHYCEAE

*Spirulina subsalsa* Oersted ex Gomont.

GUAM: Piti; Hoover Beach; in about 9 ft. of water, 4 March 1964, *Virginia M. Cone* (GUAM).

This identification was kindly provided by Dr. Gregorio Velasquez, of the Department of Botany, University of the Philippines.

## CHARACEAE

*Chara fibrosa* Ag.

GUAM: Almagosa River near Almagosa Springs, in pools and eddies, with *Ceratopteris* and *Phormidium* sp., 25 July 1962, *Stone 4321*; and at Chepek Springs, 21 November 1963, *Stone 4904* (GUAM).

Our identification was willingly provided by Dr. R. D. Wood of the University of Rhode Island.

## PTERIDOPHYTA

### Thelypteridaceae

In "Pteridophytes of Guam" by W. H. Wagner and D. F. Grether (Bishop Mus. Occas. Pap. 19(2): 25-99. 1948) seven species of *Cyclosorus* Link were reported, and one species of *Lastrea* Bory. Another species of *Lastrea* (*L. gretheri*) was described by Wagner from specimens collected on Rota Is. by Grether. The distinction between the genera *Cyclosorus* and *Lastrea* (veins anastomosing versus veins

free) has been considered insufficient by various authors, of whom the most recent is probably K. Iwatsuki, whose several recent papers on this group of ferns have appeared in *Acta Phytotaxonomica et Geobotanica*, published at the University of Kyoto. He considers *Cyclosorus* as a subgenus of *Thelypteris* Schmidel, a name considered to be invalid by Copeland (in "Genera Filicum") but in use by various authors. Alston has taken up the name in his work with African ferns, and Iwatsuki for Asiatic ferns. Holttum too, in his "Ferns of Malaya" (1954) uses the name *Thelypteris*, although he upholds the genus *Cyclosorus* as well. Thus, despite Copeland's opinions of 1947, the name *Thelypteris* for the ferns called *Lastrea* by Copeland, and according to Alston and Iwatsuki, among others, including *Cyclosorus*, seems to be resurrected and in general use. The nomenclatural problems involving the usability of the name *Thelypteris* may not be solved to everyone's agreement, but there does seem to exist a present consensus among many students of ferns. In addition, the reasons for maintaining *Cyclosorus* as a distinct genus appear to have been rejected by recent work, such as that of Iwatsuki on venation. In the light of these conclusions then, the names for several of the ferns in Guam must be altered.

*Thelypteris* Schmidel

(Including *Lastrea* Bory and *Cyclosorus* Link).

**Key to species known in Guam (Based on Wagner & Grether)**

1. Veins entirely free ..... *T. torresiana*
1. Veins anastomosing at least at the sinuses of lobes of pinnae,
  2. Pinnae not lobed, ..... *T. warburgii*
  2. Pinnae lobed,
    3. Basal 2-18 pairs of pinnae abortive or reduced to auricles,
      4. Two or more pairs of veins united; fronds coriaceous, .....  
..... *T. unita*
      4. One pair of veins united, or a third (unpaired) vein also confluent  
..... *T. maemonensis*
    3. Basal pinnae not reduced to auricles, though sometimes slightly smaller than upper pinnae,
      5. Sori restricted to the lobes, hence a sterile strip present on each side of the costa,
        6. Fronds coriaceous; marsh plants; dorsal side of costa scaly  
..... *T. goggiloda*
        6. Fronds chartaceous; plants of dryer habitats; costa not scaly dorsally ..... *T. interrupta*
      5. Sori present both on the lobes and below the angle of the sinus, hence no sterile strip present,
        7. Fronds sparsely hairy, the indusium with very short hairs; segments close to the rachis usually not enlarged  
..... *T. dentata*
        7. Fronds hairy; indusium with many long hairs; segments of basal pinnae closest to the rachis often enlarged ..... *T. parasitica*

## Enumeration

1. *Thelypteris torresiana* (Gaud.) Alston, Lilloa 30: 111. 1960.  
Polystichum torresianum Gaudichaud, Freyc. Voy. Bot. 33. 1827. *Lastrea torresiana* (Gaud.) Moore, Ind. Fil. 106. 1858; Wagner & Grether, Bish. Mus. Occ. Pap. 19(2): 58. 1948.
2. *Thelypteris warburgii* (Kuhn & Christ) B. C. Stone, comb. nov.  
Aspidium warburgii Kuhn & Christ, ex Warbug, Monsunia 1: 81. 1900.  
Cyclosorus warburgii (Kuhn & Christ) Wagner & Grether, op. cit. 48.
3. *Thelypteris unita* (L.) C. V. Morton, Amer. Fern Journ. 49: 113. 1959.  
Cyclosorus unitus (L.) Ching, Fan Inst. Biol. Bot. Bull. 8: 4, 192, 1938; Wagner & Grether, op. cit. 52.  
For a much fuller synonymy, see Wagner & Grether, l.c.
4. *Thelypteris maemonensis* (Wagner & Grether) B. C. Stone, comb. nov.  
Cyclosorus maemonensis Wagner & Grether, Bish. Mus. Occ. Pap. 19(2): 54. f. 5. 1948.
5. *Thelypteris goggiloda* (Schkuhr) Small, Ferns S.E.U.S. 248. tab. 475. 1938.  
Cyclosorus goggilodus (Schkuhr) Link, Hort. Berol. 2: 128. 1833. (as *C. gongyloides*). Wagner & Grether, op. cit. 50.
6. *Thelypteris interrupta* (Willdenow) B. C. Stone, comb. nov.  
Pteris interrupta Willd., Phytographia 13, t. 10, f. 1. 1794. Cyclosorus interruptus (Willd.) H. Ito, Bot. Mag. Tokyo 51: 714. 1937; same comb. made superfluously by Ching, Fan Inst. Biol. Bot. Bull. 8: 4, 184, 1938; Wagner & Grether op. cit. 50.
7. *Thelypteris dentata* (Forsk.) E. St. John, Amer. Fern Journ. 26: 44. 1936.  
Cyclosorus dentatus (Forsk.) Ching, Fan Inst. Biol. Bot. Bull. 8: 206. 1938; Wagner & Grether, op. cit. 56.
8. *Thelypteris parasitica* (L.) Fosberg, Bish. Mus. Occ. Pap. 23(2): 30. 1962.  
Cyclosorus parasiticus (L.) Farwell, Amer. Midl. Nat. 12: 259. 1931; Wagner & Grether, op. cit. 57.  
*Dryopteris parasitica* (L.) O. Kuntze, in Safford, Contrib. U.S. Natl. Herb. 9: 273. 1905.

Besides the above species, all known from Guam, the following species from Rota may now be called:

*Thelypteris gretheri* (Wagner) B. C. Stone, comb. nov.

*Lastrea gretheri* Wagner, Pac. Sci. 2(3): 214. f. 1. 1948.

The holotype collection is: ROTA: North slope of plateau, 800 ft. alt., on bare coral-limestone rocks in crevices, roadside banks, 28 July 1946, *Grether 4468* (UC).

## ANGIOSPERMAE

## Monocotyledoneae

## ZANNICHELLIACEAE

*Halodule uninervis* (Forsk.) Ascherson, in Boissier, Fl. Orient. 5: 24. 1882.

This plant has commonly been called *Diplanthera uninervis*, but the generic name *Diplanthera* is preempted by a genus of Bignoniaceae; hence the name *Halo-*

*dule*, for this common marine 'eel-grass,' must come into use. The plant has long been known from Guam (and elsewhere in Micronesia). The following recent collections may be reported.

GUAM: Agfayan Bay, in shallow warm lagoon waters, 21 May 1962, *Stone 4162* (GUAM). Pago Bay, in shallow lagoon, alternating with stands of the much larger *Enhalus acoroides*, but much less common, 7 October 1964, *Stone 5148* (GUAM). The Chamorro name is "chaguan-tasi."

#### GRAMINEAE

*Schizachyrium obliquiberbe* (Hack.) Camus. (Subfam. Panicoideae, Tribe Andropogoneae).

GUAM: Manengon savanna, laterite soils, low grass along track, 26 Sept. 1963, *Stone 4839* (GUAM, LEIDEN). New to the flora of Micronesia.

This is a rather inconspicuous grass, but it is not uncommon in dry lateritic savanna areas. Whether it is native or has been introduced cannot be told. The determination was kindly given by the Flora Malesiana Foundation, Leiden Netherlands.

#### COMMELINACEAE

*Rhoeo spathacea* (Sw.) Stearn. [Earlier but incorrectly known as *Rhoeo discolor* (L'Heritier) Hance.].

Although previously reported from Guam, it is of interest to record the fact that while in most localities it is clearly restricted to cultivated areas and near villages or house-sites, this easily recognized rosette-forming plant with its prominent purple leaf-undersurfaces has become thoroughly naturalized and common on the small limestone islet, Alupat Island, in Agana Bay.

#### Dicotyledoneae

#### PIPERACEAE

Three species of *Peperomia* have previously been reported from Guam (Yuncker, Occas. Pap. Bishop Mus. 14(2): 7-25. 1938; *ibid.* 22(8): 83-108. 1959). One of these, *P. pellucida* H.B.K., is a widespread American weed. The other two, *P. mariannensis* C.D.C. and *P. guamana* C. DC., are both supposedly endemic in the Marianas Islands. Both have been recorded from Guam. However, Yuncker (l.c. 1959, p. 100) indicates that he is doubtful of the specific distinctness of *P. guamana* (the later name, published in 1914), but because of the fragmentary nature of the Gaudichaud type specimen of *P. mariannensis*, he did not make one a synonym of the other. After a study of many living specimens in Guam and Saipan, I can find no distinction to maintain these two species. The alleged difference (the leaf base in *P. mariannensis* is said to be more obtuse, as is the apex) does not hold up after numerous comparisons. Independently, Dr. F. R. Fosberg has reached the same conclusion and has presented a longer discussion in *Phytologia*, quite recently. The synonymy is as follows:

*Peperomia mariannensis* C. DC. in *Dc. Prod.* 16(1): 442. 1869.

*Peperomia guamana* C. DC., Philipp. J. Sci. 9: 72: 1914. Syn. nov.

Further to the collections cited by Yuncker (l.c.) the following may be recorded:

GUAM: Mangilao; dissected limestone cliffs adjacent to College campus, herbs on coral boulders in shade of *Guamia-Bleekeria-Cordia-Cycas* forest, 3 May 1962, *Stone 4136* (GUAM). Same location, 19 October 1962, *Stone 4406* (GUAM). Ritidian Point, base of cliffs in crevices of limestone cliff-face, in shade, 27 February 1963, *Stone 4713* (GUAM).

## URTICACEAE

*Dendrocnide latifolia* (Gaud.) Chew, Gard. Bull. Singapore 21: 203. 1965.

This name reflects a new classification of certain genera of Urticaceae proposed recently by Dr. Wee-Lek Chew, and may now be used for the Guam (and Marianas Is.) plant previously called *Laportea latifolia* Gaud. A number of collections, all from limestone areas, are represented in the College of Guam Herbarium. Unlike some other species in the genus, the irritating siliceous hairs are very few and appear to be restricted to inflorescences; handling the leaves causes no discomfort.

*Laportea interrupta* (L.) Chew, l.c.

Formerly known as *Fleurya interrupta* L. The small herbs of this and the following species are both natives of Guam and are restricted to limestone.

*Laportea ruderalis* (Forst. f.) Chew, l.c.

Formerly known as *Fleurya ruderalis* Forst. f.

## LEGUMINOSAE

*Crotalaria retusa* L.

Barrigada, 12 March 1962, *Stone 3977* (GUAM, US). Asanite Bay, 29 November 1963, *Stone 4922* (GUAM). Nimitz Hill, *Fosberg 39243* (BISH, US).

These specimens were kindly identified by F. R. Fosberg.

*Acacia confusa* Merr.

Though extremely common in Saipan and Tinian, this plant, with its very characteristic small sickle-shaped phyllodia and small yellow globose heads of flowers, is not yet naturalized on Guam. However, one or two trees are in cultivation (including the College of Guam campus).

*Derris elliptica* (Roxb.) Benth.

Specimens presumably of this species, conforming well in the characters of the vegetative parts, but not flowering, were collected in several villages in southernmost Guam by members of the Guam Department of Agriculture. The plants were cultivated (according to residents) for use as "insecticides." This property of insecticidal action is known to be characteristic of *Derris elliptica*. It is also a fish narcotic, and source of rotenone. Consequently, it is illegal (in Guam) to cultivate this plant. The local native species (*D. trifoliata* Loureiro) has similar narcotic properties but in very much weaker concentration. *Derris elliptica* was quite possibly introduced from Palau or elsewhere in Micronesia, where it is common.

*Mucuna platyphylla* A. Gray.

The specimen previously reported (*Micronesica* 1: 134. 1964) under the heading *Mucuna* sp. aff. *urens* (from Northwest Field, *Stone 5004*) has been determined by courtesy of the Arnold Arboretum as *M. platyphylla*. Additional collections were made in Saipan:

SAIPAN: Mt. Tagpochao, alt. 1500 ft., edge of *Guamia* forest, limestone, vine with pale green fls., 28 December 1964, *Stone 5165* (GUAM).

An additional specimen (sterile) probably belongs here also:

GUAM: Almogosa, near Chepek Springs, climbing on trees, 25 July 1962, *Stone 4326* (GUAM).

## RUTACEAE

*Citrus macroptera* Montr.

This appears to be the correct name for Safford's subsp. *saponacea* (*Citrus aurantium* subsp. *saponacea* Saff., Useful Plants of Guam (Contrib. U.S. Natl. Herb. vol. 9): 226. 1905) according to Swingle (*Citrus Industry* 1: 437. 1943). See the note in *Micronesica* 1: 125. 1964.

*Murraya paniculata* (L.) Jack.

This rather well-known cultivated shrub, earlier known as *Murraya exotica* and as *Chalcas paniculata*, is common in cultivation in many gardens in Guam.

GUAM: Agana, cultivated near Trust Territory H.Q. area, 6 April 1964, *Stone 5091* (GUAM).

## EUPHORBIACEAE

*Acalypha hispida* Burm. f.

A common cultivated shrub with long, bright red flowering tassels. It is badly attacked in Guam by mealybugs.

GUAM: Barrigada village, in cultivation, shrubby, 7 July 1962, *Stone 4269* (GUAM).

*Pedilanthus tithymaloides* (L.) Poit.

Another commonly cultivated shrub; easily distinguished by its zig-zag fleshy stems and often whitish leaves, and its red shoe-shaped inflorescences. Originally introduced from the West Indies; perhaps brought to Guam from cultivation in Hawaii.

GUAM: Agana, in gardens, old Trust Territory H.Q., 6 April 1964, *Stone 5090* (GUAM).

## MALVACEAE

*Malvaviscus arboreus* Cav. var. *penduliflorus* (DC.) Schery.

A cultivated shrub much like the red-flowered *Hibiscus*, but with rolled flowers that do not open widely.

GUAM: College campus, Mangilao, 22 May 1964, *Stone 5120* (GUAM).

## STERCULIACEAE

*Dombeya wallichii* (Lindl.) Benth. & Hook. f.

An uncommon cultivated tree.

GUAM. Agana Post-Office, 28 March 1964, *Stone 5080* (GUAM).

## ELAEAGNACEAE

*Elaeagnus* sp.

GUAM: Yona, F. D. Leon Guerrero farm, small shrubby tree, leaves with silvery stellate scales on lower surfaces, petals absent, stamens 4, ovary inferior; one individual seen, 23 March 1964, *Stone, Long & Fletcher 5060* (GUAM). Evidently very rare in cultivation, but attractive and deserving a wider use.

## MYRTACEAE

*Eugenia cumini* (L.) Druce.

Cultivated on the hillside around the Governor's House.

GUAM: Agana Heights, near Governor's House, 12 July 1962, *Stone 4281* (GUAM).

## ONAGRACEAE

*Ludwigia hyssopifolia* (G. Don) A. W. Exell.

Formerly called *Jussiaea liniifolia* Vahl. Naturalized in Guam.

*Ludwigia octovalvis* (Jacquin) Raven.

Formerly called *Jussiaea suffruticosa* L. Naturalized in Guam.

## ARALIACEAE

*Brassaia actinophylla* Endlicher.

Rare in cultivation, and not seen flowering.

GUAM: Guam Public Library, Agana, 6 March 1963, *Stone 4730* (GUAM).

## SAPOTACEAE

*Manilkara achras* (Miller) Fosberg, *Taxon* 13(7): 255. 1964.

This is the correct name for the chico or chicle tree, in cultivation sparsely on Guam. This corrects the name as given in *Micronesica* 1: 127. 1964 (printed before Fosberg's paper appeared).

GUAM: Yona, F. D. Leon Guerrero farm, 23 March 1964, *Stone, Long, & Fletcher 5058* (GUAM).

## CONVOLVULACEAE

*Ipomoea indica* (Burm. f.) Merr. forma *albiflora* forma nova.

Flores albi. (Figure 1).

Identical with the common blue-flowered form (in which the corollas fade



Fig. 1



pink) but with clear white flowers. Since there is doubt as to the application of the correct specific epithet, though no question as to the distinctness of the above newly described form, it must also be pointed out that this could be called: *Ipomoea* R. Br. forma *albiflora* f. nov. (flores albi).

Holotype: GUAM: Harmon Village, exit road to main road, white-flowered vine on grassy banks, 6 March 1963, *Stone 4729* (GUAM). Duplicates at L, US, BISH.

### SCROPHULARIACEAE

*Bacopa procumbens* (Mill.) Greenman.

GUAM: Near mouth of Lasaguas River, Apra Harbor; prostrate herb with yellow flowers, 4 February 1963, *Stone 4674* (GUAM). The determination was kindly made by the Flora Malesiana Foundation.

### COMPOSITAE

*Eupatorium odoratum* L.

A common weed on Saipan, but scarce in Guam.

GUAM: Loc. unknown (Harmon?), *Adele Wade* s.n., 1963 (GUAM).

*Lactuca* sp. ?

GUAM: Mangilao, 21 March 1963, *Stone 4733* (GUAM).

*Youngia japonica* (L.) DC.

GUAM: Harmon Village, around houses, 16 April 1962, *Stone 4070* (GUAM).

Weedy, especially in shady lawns.

### Explanation of Figure

Fig. 1. *Ipomoea indica* f. *albiflora*. The holotype plant in its natural habitat.