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Additional records of phanerogams from the northern Marshall Islands

by

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The principal easily available lists of plants growing in the Marshall Islands north of Lat. 7°30' N. are in Taylor, Plants of Bikini, 1950, and Fosberg, Atoll Research Bulletin No. 39, 1955. In addition to these a list is provided in Fosberg, Military Geography of the Northern Marshalls, 1956, and there are scattered records throughout the literature of systematic botany, mostly based on the collections of Chamisso, made in 1817, and referred to as from "Radack". Most of these were probably collected on Odtia (the modern Wotje) and originally identified by Chamisso and Schlechtendal.

The botanical names were brought up to date in the 1955 list, but further research has resulted in a few more changes. Additional collecting, principally on a trip made under the auspices of the U.S. Naval Radiological Defense Laboratory in February, 1956, to Rongelap, Rongerik, Ailinginae, Utirik, Likiep, and Kwajalein atolls has yielded a considerable number of new distributional records from these atolls. These are here placed on record, along with certain corrections in the nomenclature used in the 1955 list and in Taylor's book. Following the practice adopted in the 1955 list only the name of the atoll and of the islet and collector's number are given, the numbers being in the author's consecutive series. The specimens have been or will be deposited in the U. S. National Herbarium, with duplicates, when available, in the B. P. Bishop Museum. Records are not cited from additional islets in atolls where the species concerned are already known. Brief generalized notes are added on occurrence and other matters of interest. Introduced species are indicated by an asterisk.

Polypodium scolopendria Burm. f.

Ailinginae Atoll: Sifo I., 36675
Very local in scrub forest.

*Cycas circinalis L.

Likiep Atoll: Likiep I., 36632.
Planted tree 5 m. tall, said to have been brought from Arno Atoll.

Pandanus tectorius Park.

Ailinginae Atoll: Sifo I., 36673. Rongerik Atoll: Eniwetak I.,
36705.
Rare in scrub and in Cordia forest.

*Chrysopogon aciculatus (Retz.) Trin.

Kwajalein Atoll: Kwajalein I., 39277.
Established in lawn at air terminal, somewhat protected and semi-shaded.

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*Cynodon dactylon (L.) Pers.

Likiep Atoll: Likiep I., 36726.
In lawn around church.

*Digitaria ciliaris (Retz.) Koel.

Kwajalein Atoll: Kwajalein I., 39499.
Occasional in waste ground near airstrip; probably a recent introduction.

*Digitaria insularis (L.) Henr.

Listed in 1955 as Tricachne insularis (L.) Nees, but referred to as Digitaria by Henrard in his monograph of Digitaria.

Digitaria pruriens var. microbachne (Presl) Fosb.

Ailinginae Atoll: Sifo I., 36688.
Found only in one small opening in the forest.
Listed in 1955 as Digitaria microbachne (Presl) Henr. but better regarded as a variety of the widespread D. pruriens.

*Eragrostis amabilis (L.) W. & A.

Rongerik Atoll: Eniwetak I., 36699.
Common in cleared strip.

Lepturus gasparricensis Fosb.

This was reported from Pokak Atoll in the 1955 list as Lepturus sp. It has the distinction of being one of the few species of vascular plants endemic to coral atolls, being known only from Pokak and Wake Atolls.

Lepturus repens (Forst. f.) R. Br.

Since the 1955 list a discussion of the Pacific forms of Lepturus has been published (Fosberg, Occ. Pap. Bishop Mus. 21: 285-294, 1955) and a number of varieties were recognized in Lepturus repens. In the northern Marshall Islands the following were found to occur, of which most of the specimens were cited in the 1955 list under L. repens:
Var. repens from Eniwetok Atoll, var. subulatus Fosb. from Eniwetok, Bikini, Utirik, Ujelang and Wotho atolls, var. septentrionalis Fosb. from Pokak, Bikar, Eniwetok, Bikini, Rongerik, Taka, Ailuk, Jemo, Likiep, Kwajalein, Lue, and Ujelang atolls, and var. occidentalis Fosb. from Eniwetok Atoll.

To these may be added the following new records: var. subulatus, Kwajalein Atoll, Kwajalein I., 36642, and var. septentrionalis, Ailinginae Atoll, Sifo I., 36673; Rongelap Atoll, Rongelap I., 36652, Eniaetok I., 36664, and Kabelle I., 36667.

*Paspalum fimbriatum HBK.

Kwajalein Atoll: Kwajalein I., 36644.
Established in waste ground near the airstrip, previously known in the Pacific from Hawaii and Guam.

*Paspalum setaceum Michx.

Kwajalein Atoll: Kwajalein I., 36641 (determined by Agnes Chase), 39488.

Well established in waste ground near the airstrip, not previously reported from the Pacific Islands, native of southeastern United States.

Thuarea involuta (Forst.) R. & S.

Ailinginae Atoll: Sifo I., 36696.

Forming ground cover in some areas in open forest.

*Cyperus polystachyos Rottb.

Kwajalein Atoll: Kwajalein I., 39490.

Local along airstrip.

*Cocos nucifera L.

Ailinginae Atoll: Sifo I., not collected. Rongerik Atoll:
Eniwetak I., not collected.

Several small groves on Sifo Islet in the interior.

*Rhoeo spathacea (Sw.) Stearn

Usually known as R. discolor (L'Her.) Hance and thus reported in 1955, but R. spathacea is an earlier name and the correct one for this widely planted tropical ornamental (see Stearn, *Baileya* 5: 195-198, 1957).

*Crinum asiaticum L.

Planted generally on Kwajalein Islet as an ornamental.

*Crinum bakeri Engl.

Utirik Atoll: Utirik I., 36713.

Planted along paths in village. This species has hitherto been known only from the original collection, made by Finsch on Mille Atoll, southern Marshalls in 1888. It was previously regarded as possibly based only on a badly prepared or abnormal specimen of C. asiaticum, in which the perianth tube is shorter than the lobes. However, the Utirik plants, seemingly perfectly normal, have this character, as well as crispate margined perianth segments.

*Crinum latifolium var. zeylanicum (L.) Hook. f. ex Trim.

Likiep Atoll: Likiep I., 36723.

Planted in gardens.

*Hippeastrum puniceum (Lam.) Urban

Likiep Atoll: Likiep I., 36727.

Planted in gardens.

Tacca leontopetaloides (L.) O. Ktze.

Ailinginae Atoll: Sifo I., 36692.

Common in forest and coconut groves.

*Casuarina equisetifolia L.

Likiep Atoll: Likiep I., 36630.

Tree 8 m. tall growing in garden on Likiep; planted also on Kwajalein and there apparently occasionally spontaneous from seeds of planted trees.

*Peperomia obtusifolia (L.) A. Dietr.

Likiep Atoll: Likiep I., 36724.

Growing in pot in shelter of buildings.

Peperomia ponapensis C. DC.

Recorded from Lae Atoll as Peperomia sp. in 1955, specimen since identified by T. G. Yuncker.

Fleurya ruderalis (Forst. f.) Gaud. ex Wedd.

Rongelap Atoll: Gegen I., 36737; Kabelle I. 36671; Ailinginae Atoll: Sifo I., 36691.

Locally common, especially on rocky ground, plants on Gegen in very poor condition.

*Artocarpus atilis (Park.) Fosb.

Rongelap Atoll: Rongelap I., planted in village, fruit preserved for analysis, but no herbarium specimen made.

*Artocarpus mariannensis Trec.

The following records, now referred to A. mariannensis were in 1955 reported as A. atilis: Utirik Atoll, 33691. Ujae Atoll, 34417. Lae Atoll, 34091. Ailuk Atoll, 33924, 33957. Likiep Atoll, 33840, 36633. In addition, a specimen from Eniwetok Atoll, St. John 23714 and one from Rongelap Atoll, Taylor 46-1399, both in the U.S. National Herbarium seen to belong to A. mariannensis. From Wotho Atoll, Fosberg 34233 and from Bikini Atoll, Taylor 46-1146 seem to be hybrids between A. atilis and this species.

Boerhavia tetrandra Forst. f.

Ailinginae Atoll: Sifo I., 36685.
Common on sand and cobble flats.

Boerhavia sp.

Rongelap Atoll: Kabelle I., 36670; Gegen I., 36728. Rongerik Atoll: Eniwetak I., 36700.

Common to dominant in ground cover in open and thin forest. This is a white-flowered form with leaves resembling those of B. mutabilis R. Br., and its exact status is uncertain as yet. It is also known from Wake and Johnston Islands. It would ordinarily be referred to B. diffusa L. and may be what Taylor (1951) has reported under that name from the Marshall Islands. It was mentioned in the 1955 list from Wake.

*Bougainvillea glabra Choisy

Utirik Atoll: Utirik I., 36716. Likiep Atoll: Likiep I., 36629, 36631.

Several color forms planted around houses but not growing especially well.

Pisonia grandis R. Br.

Ailinginae Atoll: Sifo I., 36680.

Codominant with Cordia in the forest, as in other dry atolls in the northern Marshalls and Wake Island.

Achyranthes canescens R. Br.

Rongelap Atoll: Gegen I., 36730.

Rare in thin Pisonia forest.

Portulaca lutea Sol.

Rongerik Atoll: Eniwetak I., seen by Evans, but not collected.
Ailinginae Atoll: Sifo I., 36676.
Occasional in sandy openings.

Portulaca samoensis v. Poelln.

Rongelap Atoll: Rongelap I., 36658.
Very local in sandy soil in grassy opening in coconut plantation.

Cassytha filiformis L.

Ailinginae Atoll: Sifo I., 36689.
Occasional, parasitic on Guettarda.

*Delonix regia (Bojer) Raf.

Likiep Atoll: Likiep I., 36638.
Old tree, planted in garden.

*Leucaena glauca (L.) Benth.

Likiep Atoll: Likiep I., 36636.
Planted in garden.

*Mimosa pudica L.

Kwajalein Atoll: Kwajalein I., 36640.
Very local on disturbed ground near air-strip; plants very chlorotic.

Soulamea amara L.

Rongerik Atoll: Eniwetak I., 36706.
Small colony in Pisonia forest; new northernmost record in Marshall Islands.

Suriana maritima L.

Ailinginae Atoll: Sifo I., 36690.
Common locally in scrub.

*Euphorbia cyathophora Murr.

The plants reported in the 1955 list as Euphorbia heterophylla L. have been redetermined by Dr. R. L. Dressler as E. cyathophora.

*Euphorbia glomerifera (Millsp.) Wheeler

Reported in 1955 list as Euphorbia hypericifolia L. but probably better referred to E. glomerifera.

Euphorbia hirta L.

Utirik Atoll: Utirik I., 36717.
Several plants seen near landing.

*Pedilanthus tithymaloides (L.) Poit.

The variegated form of this is planted around houses on Kwajalein Iset.

*Phyllanthus amarus Schum. & Thonn.

Eniwetok Atoll: Eniwetok I., St. John 23,706. (US)
Reported in 1955 list as Phyllanthus niruri L., but that species has been shown by Dr. G. L. Webster not to occur in the Pacific. The plants so referred from the Marshall Islands have been redetermined by Webster to be P. amarus.

Allophylus timorensis Bl.

Ailinginae Atoll: Sifo I., 36673.
Single clump in forest in center of islet.

Triumfetta procumbens Forst.

Ailinginae Atoll: Sifo I., 36682.
Common in open forest and openings.

Sida fallax Walp.

Rongerik Atoll: Eniwetak I., 36698.
Very local in scrub forest on back slope of lagoon beach ridge.

*Cucurbita maxima L.?

Rongelap Atoll: Rongelap I., 36655.
Persisting from cultivation around abandoned village.

Terminalia samoensis Rech.

Ailinginae Atoll: Sifo I., 36683.
Rare in scrub.

*Centella asiatica (L.) Urb.

Utirik Atoll: Utirik I., 36714.
Several patches seen in coconut plantation.

*Ipomoea triloba L.

Kwajalein Atoll: Kwajalein I., 39487.
Very local, one patch seen in waste ground near airstrip.

Ipomoea tuba (Schlecht.) G. Don

Ailinginae Atoll: Sifo I., 36693.
Common in openings.

Cordia subcordata Lam.

Ailinginae Atoll: Sifo I., 36695.
Co-dominant in forest with Pisonia grandis.

Tournefortia argentea L. f.

Ailinginae Atoll: Sifo I., 36679.
Very common tree in scrub forest. Reported in 1955 list as
Messerschmidia argentea, but should probably be replaced in Tournefortia.

Clerodendrum inerme (L.) Gaertn.

Ailinginae Atoll: Sifo I., 36697.
Common in small openings in forest.

*Vitex trifolia L.

Kwajalein Atoll: Kwajalein I., 36709.
Planted as an ornamental around buildings.

*Russelia equisetiformis Schlecht. & Cham.

Utirik Atoll: Utirik I., 36711.
Planted around an outbuilding.

*Pseuderanthemum carruthersii var. atropurpureum (Bull) Fosb.

Utirik Atoll: Utirik I., 36721.

Planted as an ornamental. A very common ornamental throughout the Marshalls, reported in the 1955 list as Pseuderanthemum atropurpureum. It should at most be regarded as a variety of P. carruthersii Seem., as the most obvious differences are in the color of leaves and flowers.

Guettarda speciosa L.

Ailinginae Atoll: Sifo I., 36681.

Common generally.

*Morinda citrifolia L.

Ailinginae Atoll: Sifo I., 36687.

Common around coconut groves, not seen elsewhere on islet.

Scaevola sericea Vahl

Ailinginae Atoll: Sifo I., 36677.

Dominant in scrub at top of beach and to some extent inland.

Recorded in 1955 list as Scaevola frutescens (Mill.) Krause, but that name is not correctly applied to the Pacific Island plant.

*Bidens pilosa var. radiata Sch.-Bip.

Kwajalein Atoll: Kwajalein I., 36639.

Abundant locally in waste places near airstrip, probably introduced from Guam, where it has appeared recently and spread with great rapidity.

Wedelia biflora (L.) DC.

Ailinginae Atoll: Sifo I., 36694.

Common in openings and edges of forest.

In addition to the foregoing, which are either indigenous to the Marshalls, naturalized, or growing under normal cultivation, a large number of cultivated species have been brought to Kwajalein and planted in pots in a nursery, and in a specially prepared well-protected garden. These establishments were well-cared for and most of the plants were flourishing in 1956. They had been fertilized with the blue-green alga, Nostoc, swept up from the water catchment, and, when they seemed to need it, very lightly with commercial fertilizer. Fresh vegetables of a number of sorts were being produced in the garden, a feat that has been accomplished elsewhere on coral atolls only with hydroponic techniques. In the previous year over a ton of Chinese cabbage had been produced, according to U.S. Navy Chief R.K.W. Lee, the man with a "green thumb" who was responsible for this enterprise. He had also started to plant out, in the shelter of the buildings and installations on the base a few of the ornamentals that seemed to be doing best under the nursery conditions. In 1958 the garden had been discontinued and the plants in the nursery, in the shelter of the old air terminal building, seemed to be largely caring for themselves. Most of them were still in fairly good condition and had made considerable growth. A list of the species observed, arranged alphabetically, is added here, as an indication of what species can be cultivated under atoll conditions if given protection and fertilization. Judging by the fact that Nostoc seemed to be

of value as a fertilizer, nitrogen deficiency may be one reason why some plants do not thrive on atolls. A number of other species were growing in the nursery, but were unfamiliar and not identifiable from the material seen. It is probable that a few of the species listed may eventually prove adapted to general cultivation in the Marshalls, but in all probability without special attention few of them will become established. It is reported that a selection of the nursery stock from Kwajalein has been taken to Eniwetok for planting there, but no information is yet available as to whether any of the plants have been successful.

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<i>Acalypha hispida</i>	<i>Clerodendrum inerme</i>
<i>Acalypha wilkesiana</i>	<i>Coccoloba uvifera</i>
<i>Aleurites moluccana</i>	<i>Cocos nucifera</i>
<i>Allamanda cathartica</i> var. <i>hendersonii</i>	<i>Codiaeum variegatum</i>
<i>Allium fistulosum</i>	<i>Coffea arabica</i>
<i>Alocasia macrorrhiza</i>	<i>Coleus scutellaria</i>
<i>Alpinia purpurata</i>	<i>Cordia sebastena</i>
<i>Ananas comosus</i>	<i>Cordyline australis</i>
<i>Angelonia angustifolia</i>	<i>Cordyline terminalis</i>
<i>Anthurium</i> sp.	<i>Cordyline</i> sp.
<i>Apium graveolens</i>	<i>Crinum asiaticum</i>
<i>Apium petroselinum</i>	<i>Cryptanthus zonatus</i>
<i>Araucaria excelsa</i>	<i>Cryptostegia grandiflora</i>
<i>Argyrea</i> sp.	<i>Cucumis melo</i> var.
<i>Artocarpus altilis</i>	<i>Cucumis sativus</i>
<i>Asparagus sprengeri</i>	<i>Cucurbita pepo</i>
<i>Asplenium nidus</i>	<i>Cucurbita</i> sp.
<i>Asystasia gangetica</i>	<i>Cymbidium</i> sp.
<i>Barleria cristata</i>	<i>Cycas circinalis</i>
<i>Barringtonia asiatica</i>	<i>Daucus carota</i>
<i>Bauhinia</i> sp.	<i>Delonix regia</i>
<i>Begonia</i> sp.	<i>Dieffenbachia</i> sp.
<i>Beloperone guttata</i>	<i>Duranta repens</i>
<i>Bougainvillea spectabilis</i>	<i>Epidendrum</i> sp.
<i>Brassia actinophylla</i>	<i>Epipremnum pinnatum</i>
<i>Brassica napus</i>	<i>Erythrina variegata</i> var. <i>orientalis</i>
<i>Brassica oleracea</i>	<i>Euphorbia cyathophora</i>
<i>Brassica pekinensis?</i>	<i>Euphorbia nereifolia</i>
<i>Breynia nivosa</i>	<i>Euphorbia pulcherrima</i>
<i>Caladium bicolor</i>	<i>Ficus rubiginosa</i>
<i>Calophyllum inophyllum</i>	<i>Ficus microphylla</i>
<i>Canna indica</i>	<i>Gardenia jasminoides</i>
<i>Capsicum annum</i>	<i>Gliricidia sepium</i>
<i>Carica papaya</i>	<i>Gomphrena globosa</i>
<i>Cassia alata</i>	<i>Guettarda speciosa</i>
<i>Casuarina equisetifolia</i>	<i>Hedychium coronarium</i>
<i>Catharanthus roseus</i>	<i>Hemigraphis</i> sp.
<i>Cerbera</i> sp.	<i>Hernandia sonora</i>
<i>Chrysolidicarpus lutescens</i>	<i>Hibiscus mutabilis</i>
<i>Cibotium</i> sp.	<i>Hibiscus rosa-sinensis</i>
<i>Citrullus vulgaris</i>	<i>Hibiscus schizopetalus</i>

Hibiscus tiliaceus
Hibiscus (ornamental hybrid)
Hymenocallis littoralis
Ipomoea batatas
Ixora casei
Jasminum pubescens
Kalanchoe pinnata
Lactuca sativa
Lagerstroemia indica
Macadamia ternifolia
Merremia tuberosa
Mirabilis jalapa
Morinda citrifolia
Murraya paniculata
Musa sapientum
Nephrolepis hirsutula
Nerium oleander
Nerium sp.
Ochrosia oppositifolia
Osteomeles anthyllidifolia
Pandanus tectorius
Passiflora edulis
Pedilanthus tithymaloides
Pemphis acidula
Pentas lanceolata
Persea americana
Petraea volubilis
Philodendrum oxycardium
Phoenix sp.
Phyllodendron sp.
Pilea microphylla
Pisonia grandis
Plumeria obtusa
Plumeria rubra
Podocarpus sp.
Polypodium scolopendria
Polyscias fruticosa
Polyscias guilfoylei
Polyscias scutellaria
Polyscias tricochleata
Polyscias sp.
Pritchardia sp.
Pseuderanthemum carruthersii var. atropurpureum
Pseuderanthemum carruthersii var. carruthersii
Pseuderanthemum carruthersii (var. with yellow veins)
Ptychosperma macarthuri
Raphanus sativus
Revenala madagascariensis
Rhapis flabelliformis
Rhoeo spathacea
Ruellia longifolia
Russelia equisetiformis
Sansevieria roxburghii
Scaevola sericea
Schinus terebinthifolius
Scindapsus aureus
Sesuvium portulacastrum
Solandra sp.
Solanum lycopersicum
Strelitzia reginae
Tabebuia pentaphylla
Tabernaemontana coronata
Theophrastia sp.
Thespesia populnea
Thevetia peruviana
Vanda "Miss Joachim"
Vitex trifolia
Zea mays
Zinnia elegans