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The Pitcairn Islands: biogeography, ecology and prehistory
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The flora of the Pitcairn Islands: a review

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The vascular plant flora of the Pitcairn Islands, south-central Pacific Ocean, is described based on extensive new collections made in 1991 and previously published records. Two vascular plants occur on Ducie Atoll; one (*Pemphis acidula*) is a new record. Sixty-three native vascular plants occur on Henderson, of which nine are endemic; *Canavalia rosea*, *Operculina turpethum*, *Psilotum nudum* and *Solanum americanum* are new records for the island. Oeno Atoll has 16 native vascular plants; the single endemic (*Bidens hendersonensis* var. *oenoensis*) was not found in 1991 despite careful searches. *Triumfetta procumbens* was new for Oeno. Sixty-six native vascular plants have now been recorded from Pitcairn Island, there are two endemic ferns and seven endemic angiosperms in this number. A number of non-native taxa were new to Pitcairn. Some of the previously described taxa could not be found on Pitcairn, probably because they are very rare and only a small amount of time was spent collecting on Pitcairn. Many of the Pitcairn taxa are threatened by the spread of introduced species, especially *Syzygium jambos*.

ADDITIONAL KEY WORDS:—Pitcairn – Henderson – Oeno – Ducie – flora – island biogeography – South Pacific – South East Polynesia

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INTRODUCTION

Lying at the south eastern part of Polynesia, the Pitcairn Islands are remote from the nearest archipelagos of French Polynesia: the Austral, Gambier and Tuamotu groups. The Pitcairn Group is itself very diffuse; Ducie Atoll is further from Pitcairn (*c.* 600 km) than Oeno Atoll is from the Gambier, the nearest archipelago, *c.* 450 km distant. Remoteness, both within the group and between the group and other archipelagos, is therefore a major factor in determining the floristic spectrum and phytogeography.

Before describing the floristic findings of the expedition, some general comments on the endemic and indigenous flora of the vascular plants are given. The present flora is then described in relation to the expedition findings, and to previous collections.

GENERAL CHARACTERISTICS OF THE FLORA

The Pitcairn Islands, together with the islands of French Polynesia and the Cook Islands, belong to the phytogeographical area defined as the sub-province of east Polynesia in the Malesian region by van Balgooy (1971). Tables 1–3 summarizes the presently known information about the indigenous and endemic flora of the Pitcairn Group, together with that of the Gambier, Austral and Tuamotu archipelagos. All data are extracted from 'Nadeaud', a database held at ORSTOM-Tahiti.

The most striking feature is the poor flora of Ducie Atoll. This can be partly explained by extreme remoteness, Ducie is effectively the eastern-most island of the Indo-Pacific biogeographic province. The flora of Easter Island further to the east is essentially non-Polynesian, with a predominance of American and Subantarctic elements, in addition to widespread Indo-Pacific

TABLE 1. Floristic diversity of the Pitcairn Group in comparison with the Austral, Gambier and Tuamotu archipelagos. Indigenous implies native to more than one island/archipelago, endemic implies native to a single island/archipelago. The number of uncertain taxa are given in parentheses

Island/ archipelago	Area (km^2)	Indigenous ferns	Indigenous angiosperms	Indigenous vascular plants	Endemic ferns	Endemic angiosperms	Endemic vascular plants	Total
Ducie	0.74	0	2	2	0	0	0	2
Henderson	37.2	9	45 (3)	54 (3)	0	9	9	63
Oeno	0.62	2	13	15	0	1	1	16
Pitcairn	6.6	21 (1)	36 (3)	57 (1)	2	7	9	66
Pitcairn group	45.2	23 (1)	63 (4)	86	2	17	19	105
Australs	148	81	121	202	15	72	87	289
Gambiers	46	19	53	72	9	8	8	80
Tuamotus	726	19	76	89	0	4	4	95

TABLE 2. Kriber similarity index (above diagonal) and number of common species (below diagonal) for the Pitcairn Group, and the Austral, Gambier and Tuamotu archipelagos

	Henderson	Oeno	Pitcairn	Australs	Gambiers	Tuamotus	Total species
Henderson	*	56	48	53	53	50	54
Oeno	13	*	26	54	52	59	15
Pitcairn	24	6	*	52	54	35	57
Australs	44	15	40	*	60	49	202
Gambiers	32	13	31	64	*	54	72
Tuamotus	34	15	22	61	43	*	89

TABLE 3. Dispersal mechanisms for native non-endemic taxa of the Pitcairn Group (percentages of total flora in parentheses)

Dispersal mechanism	Ducie	Henderson	Oeno	Pitcairn
Anemochory	0	11 (21)	2 (13)	21 (43)
Hydrochory	2 (100)	16 (31)	5 (33)	11 (23)
Active zoochory	0	14 (27)	1 (7)	10 (21)
Passive zoochory	0	11 (21)	7 (47)	6 (12)

or pantropic strand species (Zizka, 1991). Ducie, in common with most atolls, might be expected to have a poor flora because of the limited number of ecological niches available, and because it is exposed to marine overwashing during storms (Fosberg, 1991; Waldren, Florence & Chepstow-Lusty, 1995). These factors will limit the range of species which can successfully establish and compete with existing vegetation. The flora of Ducie was previously reported by Rehder & Randall (1975), who recorded two widespread strand species only.

Oeno Atoll also has a small native flora, but it is considerably more diverse than that of Ducie. This might be explained by its proximity to other islands which can act as a source of propagules. The flora of Oeno has been previously described by St John & Philipson (1960). Like Ducie, the flora consists mainly of common strand species, but it has one endemic taxon, *Bidens hendersonensis* var. *oenoensis* Sherff, a relative of the typical variety from Henderson. Despite a careful search, we failed to locate this taxon. The Tuamotu archipelago, consisting entirely of atolls, is floristically richer than Oeno.

Henderson and Pitcairn both have a far greater number of native species than the two atolls, and both islands contain a similar number of endemic species (Table 1). Henderson Island, a raised atoll, has a total of 63 native taxa, of which nine are endemic; the flora has been previously reported by St John & Philipson (1962) and Fosberg *et al.* (1989). At approximately 30 m above sea level, the raised plateau is not overwashed by sea water, and vegetation development is far more complete and the flora more diverse than on the atolls. This in turn has led to enhanced soil development (S. Walden & L. Scally, unpublished data), and hence a much wider range of

habitat types than low atolls subject to periodic marine inundation. The following nine taxa are endemic to Henderson:

Alyxia sp.
Bidens hendersonensis var. *hendersonensis*
Xylosma suaveolens ssp. *haroldii*
Geniostoma hendersonensis
Myrsine hosakae
Peperomia hendersonensis
Ixora fragrans
Santalum insulare var. *hendersonense*
Nesoluma st-johnianum.

Although the number of endemic taxa appears low for this part of Polynesia (Florence, 1987), some of them are important from a biogeographical point of view, with related taxa having a narrow or disjunct distribution in the area. For example, *Nesoluma* is a Pacific genus with a disjunct distribution: Hawaii, Mangaia in the southern Cook Islands, the Austral and Society groups, and Henderson. Henderson is also the extreme eastern limit for *Alyxia* and *Santalum* is known further east only in Juan Fernandez. The other genera are more widespread in the Indo-Pacific or even further afield, but all have their most eastern limit on Henderson. Because of this, Henderson is of great biogeographic interest, and may provide valuable insights into the chorology and the mechanisms of dispersal of many taxa in the Pacific.

Pitcairn Island is a small volcanic island of relatively low elevation (to about 330 m) but with a greater variety of habitats than a low coral island (Florence, 1987; Waldren, Florence & Chepstow-Lusty, 1995), with 66 native taxa; the flora was previously reported by St John (1987) with some notes in Fosberg *et al.* (1989). The following 9 taxa are endemic to Pitcairn:

Bidens mathewsii
Glochidion sp.
Homalium taypau
Abutilon pitcairnense
Myrsine sp. aff. *niauensis*
Peperomia pitcarinensis
Coprosma rapensis var. *benefica*
Ctenitis cumingii
Angiopteris chauliodonta.

Despite the slightly lower percentage of endemics than Henderson, Pitcairn shows a number of interesting features: *Bidens mathewsii* is a relative of *B. hendersonensis*, and *Abutilon* has relatives in the Gambier Islands and the Marquesas. *Coprosma* is a Malesian-Pacific genus with the eastern limit at Pitcairn, the typical variety is from Rapa. *Glochidion* has numerous related species in the islands of eastern Polynesia (J. Florence, unpublished data). *Myrsine* is a genus with many endemic species throughout the south Pacific, but the Pitcairn species is insufficiently known; the same is true of *Peperomia pitcairnensis*. However, the most interesting feature of Pitcairn is that two endemic ferns occur on such a small island; both *Ctenitis* and *Angiopteris* have relatives in French Polynesia.

FLORISTIC LIST OF VASCULAR PLANTS

The following lists of taxa are arranged alphabetically in the major taxonomic groups: Dicotyledons, Monocotyledons, Gymnosperms and Pteridophytes. Synonymy is given only for names different from previous papers on the flora of the region, citations are given for synonyms in order to facilitate comparison between all previous floristic accounts of the Pitcairn Group. Short botanical descriptions are only given at the first occurrence of the species. Voucher specimens are located at PAP, with duplicates at BISH, BM, BRIT, CHR, DAV, E, K, L, MO, P, PTBG, STR, TCD, US, WELT, WELTU.

The following abbreviations give the phytogeographical status:

End: Endemic, here referring to the individual islands in the Pitcairn Group,
Ind: Indigenous, a taxon that is considered native but not endemic,
Pol: Early Polynesian introduction, introduced prior to European contact,
Nat: Naturalised, a taxon deliberately introduced by man and now established in a natural state,
Adv: Adventive, established taxa that were not deliberately introduced, includes all weeds,
Cul: Cultivated, not naturalised.

DUCIE ISLAND

Boraginaceae

Argusia argentea (L. f.) H. Heine
— *Tournefortia argentea* L. f, Rehder & Randall (1975: 18).
(Ind)
A compact tree, leaves greyish green, mainly at the end of branches, fragrant small white flowers. Forms a monospecific forest (Waldren *et al.*, 1995). *Brooke in Florence 11050.*

Lythraceae

Pemphis acidula J. R. & G. Forster
(Ind)
A small tree with hard red wood, small leaves and small white flowers. Very rare. A new record and only the second woody species recorded from the island. This species was not noted during the 1987 visit of Smithsonian Expedition despite 'careful searches' (Fosberg *et al.*, 1989: 18), and may be a recent colonist. *Brooke in Florence 11051.*

Rehder & Randall (1975) and Fosberg *et al.* (1989) reported earlier sitings of a grass, probably *Lepturus repens* (G. Forster) R. Brown, and a vine, possibly *Nesogenes euphrasioides* A. Gray or *Triumfetta procumbens* G. Forster, but neither has been seen on the atoll since the Whitney Expedition in 1922.

HENDERSON ISLAND

Dicotyledonae

Aizoaceae

Sesuvium portulacastrum (L.) L.
(Ind.)

A succulent herb with pink flowers. Common along the southern cliffs, rare on the North Beach cliffs. *Florence, Chepstow-Lusty & Waldren 10923, 10988.*

Amaranthaceae

Achyranthes aspera var. *pubescens* (Moquin) C. Townsend
(Ind or Pol)
— *Achyranthes aspera sensu* St John & Philipson (1962: 180).

A slender and more or less scandent suffrutescent herb. Differs from the typical *A. aspera* by the presence of a very sparse pubescence on leaves and details of the staminodial corona. Only one station on the plateau, probably the same location as Tait 66, cf. St John & Philipson (1962: 180). The status of this taxon is uncertain; however, its presence in the plateau forest and absence from the vicinity of Polynesian habitation sites suggests that it may be native. In the absence of a recent overview of the polymorphic *A. aspera* in the Pacific, we follow Fosberg *et al.* (1989) in using this varietal name. *Brooke in Florence 11053; Florence, Chepstow-Lusty & Waldren 10928.*

Apocynaceae

Alyxia sp.
(End)
— *Alyxia stellata sensu* St John & Philipson (1962: 192)

Clearly a new species, as indicated by Fosberg *et al.* (1989: 9); this will be described in a separate publication. A relative of *A. stellata* from the South Pacific, which has many forms on islands from the Society Islands to New Caledonia; the Henderson species differs by its consistently 4–5-merous verticillate leaves, more elongate cymes, larger flowers with glabrous calyx lobes, and seeds with a more-deeply rugose coat. Found on the plateau in the *Pisonia* forest, generally in sunny places, in tree-gaps or edges of former trails. Locally frequent in *Ixora* thickets. *Florence 10848, 10959; Florence, Chepstow-Lusty & Waldren 10887, 10895, 10918, 10927.*

Araliaceae

Meryta brachypoda Harms
(Ind)

Simple or few-branched, crushed leaves lightly fragrant. Only one sterile, small population seen in *Pisonia* forest near the massively dissected limestone inland from the North West Beach; fits the vegetative description of *M. brachypoda.* Previously collected only by Tait in 1912. An interesting disjunct distribution; found also in the Austral Islands. *Florence, Chepstow-Lusty & Waldren 11004.*

Asteraceae

Bidens hendersonensis var. *hendersonensis* Sherff
(End)
— *Bidens hendersonensis* var. *subspathulata* Sherff; St John & Philipson (1962: 194) *syn. nov.* Type: St John & Fosberg 15173 BISH
With more specimens to hand and close observations of this species in the field, it appears that the minor variations in shape and size of leaves and details in achenes named at varietal rank by Sherff are not dependable characters, and no others have been discerned to separate his two varieties. A shrub or small tree, the crushed leaves lightly fragrant; capitula yellow, slightly foetid, with 3–5 ligules. Common on the plateau in open or part-shaded places. *Florence 10817, 10958, 10980, 10997; Florence, Chepstow-Lusty & Waldren 10824, 10871, 10998.*

Senecio stokesii F. Brown
(Ind)
A very variable herb, simple or many-branched, the leaves varying greatly according to the habitat; this variation apparently not under genetic control (J. Macklin & S. Waldren, unpublished data). Capitula yellow to yellow-orange, foetid. Common in many places in the plateau forests, generally in gaps or colonizing old trails. Also in dwarf coastal scrub communities, and the scrub inland from the East Beach. Found also in the Austral Islands. *Florence 10957, 10965, 10977, 10995; Florence, Chepstow-Lusty & Waldren 10883, 10884, 10906, 10984.*

Boraginaceae

Argusia argentea (L. f.) H. Heine
(Ind)
— *Tournefortia argentea* L. f. Fosberg *et al.* (1989: 10)
— *Messerschmidia argentea* (L. f.) I. Johnston. St John & Philipson (1962: 193).
One of the commonest trees on the North and East Beaches, on coral gravel or sand. *Florence, Chepstow-Lusty & Waldren 10924.*

Cordia subcordata Lamarck
(Pol)
A small tree with orange flowers. Probably a Polynesian introduction, used as carving wood by Pitcairn islanders. Established in beach forest communities on the North and East beaches, often with *Thespesia populnea. Florence 10821.*

Heliotropium anomalum var. *argenteum* A. Gray
(Ind)
— *Heliotropium anomalum* var. *candidum* St John. St John & Philipson (1962: 192)
In beach-front communities, but also on coastal cliff tops. A repent prostrate perennial herb, with small white fragrant flowers. The same variety occurs in the Hawaiian Islands. *Florence 10857, 10964; Florence & Waldren 10854; Florence, Chepstow-Lusty & Waldren 10987.*

Brassicaceae

Lepidium bidentatum Montin
(Ind)

An erect suffruticose herb, leaves are peppery to taste, flowers white. In coastal rock crevices, ledges, and open stations on the plateau; locally common. *Florence 10968; Florence & Waldren 10877; Florence, Chepstow-Lusty & Waldren 10905, 10920, 11006.*

Capparaceae

Capparis cordifolia Lamarck
(Ind)
— *Capparis sandwichiana* DC., Fosberg, Sachet & Stoddart (1983: 31)

An epilithic scandent shrub, night-flowering, the white flowers fading to pink by the following afternoon. Local, on coastal dissected limestone, promontories and on the top of the southern cliffs. *Florence & Waldren 10851; Florence, Chepstow-Lusty & Waldren 10912.*

Convolvulaceae

Ipomoea macrantha J. Roemer & J. A. Schultes
(Ind)
— *Ipomoea glaberrima* Bojer. St John & Philipson (1962: 192)

A trailing and climbing vine, white flowers open late evening, fading by mid-morning. Moderately common in coastal *Argusia* scrub. *Florence 10876; Florence, Chepstow-Lusty & Waldren 10873.*

Operculina turpethum (L.) S. Manso
(Ind)

A trailing vine, old stems narrowly alate, young twigs and leaves densely pubescent, flowers white. Very local at the southern end, with *Capparis* and *Cassytha* in open dissected limestones. First record of this species, known from the old World tropics and Pacific Islands. *Florence, Chepstow-Lusty & Waldren 10909, 10989.*

Euphorbiaceae

Chamaesyce sparrmannii (Boissier) Hurusawa
(Ind)
— *Euphorbia sparrmannii* Boissier, Fosberg *et al.* (1989: 6).
— *Euphorbia ramosissima* Hooker & Arnott *non* Loiseleur. St John & Philipson (1962: 186).

A prostrate herb with milky juice, trailing branches and white involucral glands. A relative of the shrubby *C. atoto* from other parts of the Pacific. Common on coastal cliff tops, and in the dwarf shrub communities at the southern end. *Florence 10860; Florence & Waldren 10853, 10879, 11012.*

Glochidion pitcairnense (F. Brown) H. St John
(Ind)

A tree, on Henderson with drooping twigs, slightly bullate leaves, very small yellowish green flowers, and green capsules with vermilion seeds that are

eaten by birds. The species is also found on Pitcairn and in the Gambier Islands. *Florence 10818; Florence, Chepstow-Lusty & Waldren 10825, 10900.*

Flacourtiaceae

Xylosma suaveolens subsp. *haroldii* Sleumer
(End)

A dioecious small to large tree with hard, reddish wood. Male flowers slightly fragrant, female green, fruit black at maturity. Common in *Pisonia* forest on the plateau, and locally abundant on poorer soils (S. Waldren & L. Scally, unpublished data). *Florence 10868; Florence, Chepstow-Lusty & Waldren 10827, 10869, 10870.*

Goodeniaceae

Scaevola sericea Vahl
(Ind)
— *Scaevola taccada* var. *tuamotuensis* St John. St John & Philipson (1962: 194)
— *Scaevola sericea* var. *tuamotuensis* (St John) Fosberg. Fosberg *et al.* (1989: 11)

A spreading shrub, flowers white to cream, fruits white. Common in sandy coastal communities, and on cliff slopes. On the plateau, found in *Timonius* scrub towards the centre of the island. *Florence 10864, 10867; Florence, Chepstow-Lusty & Waldren 10882, 10911.*

Hernandiaceae

Hernandia stokesii (F. Brown) Kubitzki
(Ind)
— *Hernandia sonora sensu* St John. St John & Philipson (1962: 181)

A small tree known only from the western pinnacled limestone, about 1 km south-east of the North West Beach. Leaves not distinctly peltate in mature trees, fruits purple-red at maturity. Has an interesting disjunction because it is otherwise known only from Rapa, *c.* 1600 km to the west. *Florence, Chepstow-Lusty & Waldren 11005, 11008.*

Lauraceae

Cassytha filiformis L.
(Ind)

A parasitic vine climbing over shrubs or sprawling in open places. Very common in shrubby vegetation, and locally abundant on cliff slopes. *Florence 10837.*

Leguminosae

Caesalpinia bonduc (L.) Roxburgh
(Ind)
— *Caesalpinia major sensu* Fosberg *et al.* (1989: 6), non (Medikus) Dandy & Exell

A coarse prickly liana, distinct from *C. major* by persistent, conspicuous,

compound stipules, and pods with two greyish seeds. Local in the north part, mainly restricted to plateau forest close to the north beach; rare inland from East Beach. *Florence, Chepstow-Lusty & Waldren 10835.*

Canavalia rosea (Swartz) A.P. DC.
(Ind)
A trailing vine with pink flowers. Widespread on the seacoasts of the Tropics, but this is the first record for Henderson. Only one location at the southern end, near to the cliff edge in a dwarf scrub community, with *Capparis, Guettarda* and *Cassytha. Brooke in Florence 11052; Florence, Chepstow-Lusty & Waldren 10914, 10986.*

Senna glanduligera (St John) A. C. Smith
(Ind)
— *Cassia glanduligera* St John. St John & Philipson (1962: 181, fig. 8); Fosberg *et al.* (1989: 6).
A small tree, simple or few-branched near the apex, flowers yellow; the indehiscent legumes are brown to blackish. Restricted to the plateau forest in the northern half, generally gregarious in small gaps and along old trails. Large numbers of seedlings were often found under the shade of other trees, it is possible that these may remain in a juvenile state for some time until a gap opens in the canopy. *Florence, Chepstow-Lusty & Waldren 10833.*

Loganiaceae

Geniostoma hendersonense H. St John
(End)
A shrub from the understorey of the *Pisonia* forest on the plateau. One of the commoner endemic species. Flowers white, with an odour of urine; black fruits, with orange-pink seeds. *Florence 10836, 10838, 10996; Florence, Chepstow-Lusty & Waldren 10828, 11002.*

Lythraceae

Pemphis acidula J. R. & G. Forster
(Ind)
Occurs on beachrock and low coastal limestone outcrops only; absent from sandy areas. *Florence 10973; Florence & Waldren 10856.*

Malvaceae

Thespesia populnea (L.) Solander ex Correa
(Ind, Pol?)
A tree probably introduced by Polynesians as elsewhere in Eastern Polynesia (see Zizka, 1991), but fossil fruits have been found in pre-cultural deposits on Henderson (M. Weisler, personal communication). Used for carving by Pitcairn Islanders, and regularly harvested from the North and North West Beaches. In beach forest communities and other coastal forests behind the North and North West Beaches; absent from similar habitat at the East Beach. *Florence, Chepstow-Lusty & Waldren 10889.*

Myrsinaceae

Myrsine hosakae H. St John

(End)

A small functionally dioecious tree, with ramiflorous flowers, fruits eaten by birds. Apparently uncommon, in closed *Pisonia* forest only on the plateau. *Florence 10840, 10978, 10979; Florence, Chepstow-Lusty & Waldren 10993.*

Myrtaceae

Eugenia reinwardtiana (Blume) A.P. DC.

(Ind)

— *Eugenia rariflora* Bentham. St John & Philipson (1962: 187); Fosberg *et al.* (1989: 7).

A shrublet in the understorey of the plateau, also in open communities at the edges of the plateau. Widespread throughout the island, but never really abundant; commonest in the *Timonius* scrub in the centre of the island. Obvious by its large, showy, red uniseeded fruits which are eaten by birds. *Florence 10819; Florence & Waldren 10850.*

Nyctaginaceae

Boerhavia tetrandra G. Forster

(Ind)

— *Boerhavia diffusa* var. *tetrandra* (G. Forster) Heimerl. St John & Philipson (1962: 181).

A trailing vine or herb with pink flowers, common in the herbaceous state on coral sand, and cliff slopes. *Florence 10859, 10966; Florence & Waldren 10852.*

Pisonia grandis R. Brown

(Ind)

A soft-wooded medium to large tree, with brittle twigs. Flowering trees not seen during our stay. The commonest tree on Henderson, forming dense stands on the plateau (vegetative propagation very frequent). Varies greatly in stature, from large (to 15 m) trees small bushy plants (to 1 m) in exposed cliff top communities. No seedlings seen of this species. *Brooke in Florence 11054; Florence & Waldren 11010.*

Piperaceae

Peperomia hendersonensis Yuncker

(End)

A succulent herb, stems erect with swollen nodes, dark green shiny leaves with nerves impressed above. A relative of the complex centred on *P. rhomboidea* W. J. Hooker & Arnott from French Polynesia and the Cook Islands. A common endemic herb in rock fissures and on the forest floor. *Florence 10841; Florence & Waldren 11011; Florence, Chepstow-Lusty & Waldren 10890.*

Pittosporaceae

Pittosporum aff. *arborescens* W. Rich ex A. Gray
(Ind)

A prostrate sterile shrub, leaves a little carnose. Only one station found at south end of the island, slightly north east of the South Point. The plant could not be found in previous stations in the plateau forests, and at the plateau margin near the North Beach. Identified as *P. arborescens* by St John & Philipson (1962: 181); in the absence of fertile specimens, we regard this determination as provisional. *Florence, Chepstow-Lusty & Waldren 10991.*

Portulacaceae

Portulaca lutea Solander ex Seemann
(Ind)

A succulent perennial herb with a thick, fleshy stem-base; bright yellow fragile flowers, leaves varying greatly in size depending on whether growing in sheltered or salt-exposed locations. Common on the exposed plateau margins with *Sesuvium*; occasional on the East Beach strandline. *Florence 10862, 10967; Florence & Waldren 10878; Florence, Chepstow-Lusty & Waldren 10913.*

Rubiaceae

Cyclophyllum barbatum (G. Forster) N. Halle & Florence
(Ind)
— *Canthium barbatum* var. *christianii*, forma *calcicola* Fosberg. St John & Philipson (1962: 193); Fosberg *et al.* (1989: 10).

In the absence of a revision of the Pacific-widespread *Cyclophyllum barbatum*, we agree with Smith (1988) and retain only the specific rank. A fairly common shrub from the understorey of the plateau forest. White fragrant flowers fading to creamy; berries pink. *Florence 10865; Florence, Chepstow-Lusty & Waldren 10829, 10881.*

Guettarda speciosa L.
(Ind)

A widespread species in the Tropics; varies from tree to dwarf subshrub, with white highly fragrant flowers opening in the early morning. Occurs over most of the island and in several communities, but usually as isolated individuals. *Florence, Chepstow-Lusty & Waldren 10823, 10910.*

Ixora fragrans (Hooker & Arnott) A. Gray
(End)

A small shrub from the understorey of the *Pisonia* forest on the plateau. White fragrant flowers, red berries. In absence of a revision of this difficult genus, we follow Fosberg *et al.* (1989) and retain this species as distinct from relatives in French Polynesia. Endemic to Henderson. *Florence, Chepstow-Lusty & Waldren 10826, 10830, 10891, 11001.*

Morinda myrtifolia A. Gray
(Ind)
— *Morinda umbellata* var. *forsteri* (Seemann) Fosberg. St John & Philipson (1962: 193); Fosberg *et al.* (1989: 10).
A woody climber with small white fragrant flowers, the fruiting syncarps blackish, eaten by birds. Forms dense tangles in the *Pisonia* forest on the plateau. *Florence & Waldren 10930; Florence, Chepstow-Lusty & Waldren 10903.*

Psydrax odorata (G. Forster) A. C. Smith & S. Darwin
(Ind)
— *Canthium odoratum* (G. Forster) Seemann. St John & Philipson (1962: 193); Fosberg *et al.* (1989: 10).
A small shrub, with white fragrant flowers and black fruits. Fairly common on the plateau in open communities or in the understorey of *Pisonia* forest. *Florence 10956, 10976; Florence & Waldren 10855; Florence, Chepstow-Lusty & Waldren 10990.*

Timonius polygamus (G. Forster) C. B. Robinson
(Ind)
A dioecious scandent to prostrate shrub with hard wood, white evening or night scented flowers and black fruits. Female plants have cymes reduced to a single flower, males with 3–14 flowers per cyme. In dense stands on limestone in the centre of the plateau, and on cliff slopes. *Florence 10861, 10863; Florence, Chepstow-Lusty & Waldren 10831, 10985.*

Santalaceae

Santalum insulare var. *hendersonense* (Skottsberg) Fosberg & Sachet
(End)
— *Santalum hendersonense* Skottsberg. St John & Philipson (1962: 180).
A tree or shrub. Variable in the position of the inflorescence, which is mostly terminal in the plateau forest but axillary in dwarf cliff-top scrub; however, intermediates occur. Local in the plateau *Pisonia* and *Xylosma* forests, also found along the cliffs of North and East Beaches, and at the southern end where, in the severely salt-sprayed dwarf shrub communities, the plant is a procumbent shrub with small glaucous leaves. *Florence 10822, 10839, 10970, 10894, 10908, 10921, 10922, 10981, 10999.*

Sapindaceae

Allophylus rhomboidalis (Nadeaud) Radlkofer
(Ind)
— *Allophylus* sp. Fosberg *et al.* (1989: 7)
We retain here the name in use for East Polynesia, but a thorough study of the *A. cobbe* (L.) Blume complex is needed. A small tree, occasional in the *Pisonia* forest on the plateau. Rarely seen fertile. *Brooke in Florence 11079; Florence, Chepstow-Lusty & Waldren 11000.*

Sapotaceae

Nesoluma st-johnianum Lam & B. Meeuse
(End)
A small tree with hard red wood, ramiflorous with yellow-cream flowers,

ripe fruits black. Endemic to Henderson, very common in the plateau forest. *Florence 10963; Florence, Chepstow-Lusty & Waldren 10896, 10898, 10926, 10983.*

Solanaceae

Lycium sandwicense A. Gray
(Ind)
A small prostrate subshrub, with small cylindrical succulent leaves, pink flowers and bright red fruits. Occurs at the southern end close to the cliff edge, in the salt-spray zone. One sight record by M. Brooke from the North East Point. *Florence, Chepstow-Lusty & Waldren 10916.*

Solanum americanum P. Miller
(Adv)
A white flowered herb. New record for the island, possible a recent introduction by birds as there is only one location known near the South West Point. Common on Pitcairn Island, but the islanders could not have introduced the species to the southern end of Henderson. *Brooke in Florence 11109.*

Surianaceae

Suriana maritima L.
(Ind)
A shrub or small tree. Purplish-black bark, pubescent twigs and yellow flowers are good characters to separate it from *Pemphis acidula*, which it superficially resembles. Only in coastal communities on coral sands (cf. *Pemphis*, above). *Florence 10975; Florence, Chepstow-Lusty & Waldren 10880.*

Tiliaceae

Triumfetta procumbens G. Forster
(Ind)
A perennial prostrate herb; flowers yellow ageing to orange, with burr-like fruits. Local on the North Beach in sandy coastal vegetation. *Florence 10866.*

Ulmaceae

Celtis pacifica Planchon
(Ind)
— *Celtis paniculata* var. *viridis* F. Brown (1935: 32, fig. 3g); St John & Philipson (1962: 180) *syn. nov.* type: Quayle & Curtis 387 (BISH)
— *Celtis* sp. Fosberg *et al.* (1989: 4).
One of the largest trees in the plateau forest, along with *Pisonia* and *Guettarda*. Monoecious, with black fruits eaten by birds. As part of a revision of Ulmaceae for the *Flore de Polynesie Française* we have studied all material of this area, and have found no reasons to consider that Henderson Island plants are distinct from those of the islands in French Polynesia. Size and shape of leaves, and the pubescence of inflorescence are not reliable, while the obscure characters of the colour of the young branches and wood

anatomy are of little value. *Florence 10820; Florence, Chepstow-Lusty & Waldren 10832, 10892.*

Urticaceae

Procris pedunculata (G. Forster) Wedd. var. *pedunculata*
(Ind)
A succulent herb with bright red fruits. Common in shady stations and rock crevices on the plateau. *Florence, Chepstow-Lusty & Waldren 10834.*

Verbenaceae

Premna serratifolia L.
(Ind)
— *Premna integrifolia* L. St John & Philipson (1962: 193).
A scandent shrub with a hard wood, green fragrant flowers and black fruits. On the plateau, locally abundant in shady or open places, forming dense thickets. *Florence 10847; Florence, Chepstow-Lusty & Waldren 10982.*

Viscaceae

Korthalsella platycaula (Tieghem) Engler
(Ind)
— *Korthalsella vitiensis* (Tieghem) Engler. St John & Philipson (1962: 180).
— *Korthalsella platycaula* var. *vitiensis* (Tieghem) Danser. Fosberg *et al.* (1989: 4).
A parasite, characterized by the flattened stem with broad articulations, minute yellow-olive flowers and fruits. Rare, mainly on *Pisonia* in the plateau forest. *Florence 10849; Florence, Chepstow-Lusty & Waldren 10872, 10888, 10994.*

Korthalsella rubescens (Tieghem) Lecomte
(Ind)
A parasite; differs from the preceding by stems with small narrow sub-terete articulations, more or less rounded at the base of plant. Occurs on many hosts, especially *Glochidion, Cyclophyllum, Ixora*; rare on *Pisonia.* More common than *K. platycaula. Florence 10843; Florence, Chepstow-Lusty & Waldren 10897, 10901, 10992, 11009.*

Monocotyledonae

Agavaceae

Cordyline fruticosa (L.) A. Chevalier
(Pol)
— *Cordyline terminalis* (L.) Kunth. St John & Philipson (1962: 179).
A simple, occasionally branched treelet with verrucose bark. The form introduced by the Polynesians has green foliage and is apparently sterile. Rare on ridge of the plateau, possibly a marker of safe paths on the cliff margin, as in other Polynesian islands. *Florence, Chepstow-Lusty & Waldren 10929.*

Cyperaceae

Fimbristylis cymosa subsp. *umbellato-capitata* (Hillebrand) T. Koyama
(Ind)
— *Fimbristylis* sp. St John & Philipson (1962: 179).
A tufted perennial sedge. Locally common at South West End close to the cliff, forming a closed sward. Also found at the North East Point, in a similar habitat. *Brooke in Florence 11003; Florence, Chepstow-Lusty & Waldren 10915.*

Liliaceae

Dianella intermedia Endlicher
(Ind)
— *Dianella intermedia* var. *gambierensis*, F. Brown. St John &, Philipson (1962: 179).
A perennial stoloniferous herb, the leaves finely serrate, flowers bluish-white and fruits metallic blue. Rare in the herb layer of the *Pisonia* forest, and in open *Timonius* scrub. *Florence, Chepstow-Lusty & Waldren 10902.*

Pandanaceae

Pandanus tectorius S. Parkinson ex Z
(Ind, Pol?)
— *Pandanus* sp. St John & Philipson (1962: 179).
Two forms (possibly involving Polynesian cultivars) occur on the island: the first with few massive ramifications, bark light yellow to brown reddish, the second is much more branched with thinner branches, bark light yellowish brown. Common on North Beach, more or less invading the coconut plantations and areas of cut *Thespesia.* As with other taxa known to be used by Polynesians, it is not clear whether *Pandanus* is indigenous, introduced or (perhaps most likely) both. Naturally dispersed by flotation. Very common throughout the island, often forming small groves. Seems to flower synchronously over much of the island. *Florence 10874, 10875, 10960, 10961.*

Poaceae

Lepturus repens (G. Forster) R. Brown
(Ind)
A usually stoloniferous grass, common in sandy coastal communities. A dwarf tufted form *c.* 10 cm high is found on the cliff at the East Beach and on the top of the cliff at the South West Point, in salt-sprayed areas. *Florence 10858, 10969; Florence, Chepstow-Lusty & Waldren 10907.*

Thuarea involuta (G. Forster) R. Brown ex J. Roemer & J. A. Schultes
(Ind or Pol)
A stoloniferous grass, with many long creeping shoots, spathe-like inflorescence. Possibly a Polynesian introduction, locally abundant on the North Beach and in the understorey of the central *Xylosma* forest. The status is uncertain; in the Tuamotu Islands it is a common weed of Polynesian coconut plantations, but its occurrence in *Xylosma* forest suggests it may be native on Henderson. *Florence 10974; Florence, Chepstow-Lusty & Waldren 10886.*

Pteridophyta

Aspleniaceae

Asplenium nidus L.
(Ind)
A tufted epiphytic or epilithic fern. On limestone outcrops and crevices in *Pisonia* forest on the plateau, occasional at the base of the cliff in mixed communities. *Florence 10842, 10971.*

Asplenium obtusatum G. Forster
(Ind)
A tufted epilithic fern. Local in limestone crevices close to the cliff margin at the southern end. *Florence, Chepstow-Lusty & Waldren 10917.*

Asplenium polyodon G. Forster
(Ind)
— *Asplenium lobulatum sensu* St John, St John & Philipson (1962: 178), non Mettenius
An epilithic tufted fern. One station on limestone in the south-west 1–2 km from the coast, rare; the second in the western pinnacles about 1 km south-east of the North West Beach, where the plant is common in the small cavities of the dissected limestone. We regard *A. polyodon* in a wide sense; the Henderson plant is very similar to the plant of Tikehau, in the Tuamotus. In the Society Islands, the stipe and rachis are generally more scaly. *Florence, Chepstow-Lusty & Waldren 10904, 11007.*

Davalliaceae

Davallia solida (G. Forster) Swartz
(Ind)
An epiphytic or terrestrial scandent fern, fronds slightly dimorphic. Fairly common in the north-central *Pisonia* forests. *Florence 10845.*

Nephrolepis biserrata (Swartz) H. Schott
(Ind)
— *Nephrolepis hirsutula sensu* Fosberg *et al.* (1989: 2) non (G. Forster) K. Presl
A tufted epilithic fern, scales on stipe and rachis very sparse or absent, pinnae entire and wide spaced, with sori in sub-marginal position. Apparently rarer than *N. hirsutula*; at the base of cliff at East and North Beaches. *Brooke in Florence 11081, Florence 10962.*

Nephrolepis hirsutula (G. Forster) K. Presl
(Ind)
— *N. exaltata sensu* St John, St John & Philipson (1962: 179), non (L.) Schott?
Same habit as *N. biserrata* from which it differs by the scaly stipe, rachis and pinnae; these with woolly scales, margin entire to slightly crenulate, more closely spaced, with an acroscopic basal lobe more or less developed. Common in the north west area in open scrub with *Timonius* and *Scaevola*, and on cliff slopes. As we have not seen the material cited by St John, the

synonymy is tentative. *Brooke in Florence 11080, Florence, Chepstow-Lusty & Waldren 10885, 10925.*

Polypodiaceae

Phymatosorus scolopendria (N. Burman) Pichi Sermolli
(Ind)
— *Phymatodes scolopendria* (Burman) Ching. St John & Philipson (1962: 179).
— *Polypodium scolopendria* Burman. Fosberg *et al.* (1989: 2).
Terrestrial and epiphytic fern with large fronds reaching 1–2 m, sori slightly immersed in the frond. Very variable in size, depending on exposure. Regarded by some authors as being *Phymatosorus grossus*, but in the absence of a detailed study of type and other material, we retain the specific epithet used previously for the Henderson material (Fosberg *et al.*, 1989; St John & Philipson, 1962). *Florence 10844, 10972.*

Pyrrosia serpens (G. Forster) Ching
(Ind)
— *Cyclophorus blepharolepis sensu* St John. St John & Philipson (1962: 179) non Christensen.
An epiphytic fern with long, intertwined rhizomes and small erect fronds, grey beneath. Locally common in the *Pisonia* forest, rare in the *Xylosma* forest, and not found close to the plateau margin. *Florence 10846.*

Psilotaceae

Psilotum nudum (L.) Beauv.
(Ind)
A terrestrial erect fern with shortly creeping rhizome and pseudo-dichotomous naked fronds. First record of this widespread species, probably overlooked. Of erratic distribution in the open *Pisonia/Xylosma* forest of the plateau. *Florence, Chepstow-Lusty & Waldren 10899, 10919.*

Previously recorded but not founded during this survey are the following: *Sesbania coccinea* subsp. *atollensis* (St John) Sachet, the subspecies is endemic to East Polynesia, possibly extinct on Henderson; *Jasminum didymum* G. Forster, an obscure record by Cuming; *Fitchia nutans* Hook. f. is definitely an endemic of Tahiti, and the material of Cuming is mislabelled from Henderson, like many specimens from this time; *Microsorum vitiense* (Baker) Copeland is a synonym of *Phymatosorus commutatus* (Blume) Pichi Sermolli, which we consider to have originated from Pitcairn and not Henderson (see Waldren *et al.*, 1955). Bernardi (1964) records Cuming specimens of *Weinmannia rapensis* F. Brown from both Henderson and Pitcairn. These have been overlooked in previous reports, but in view of the doubt surrounding some of the Cuming specimens (see Fosberg *et al.*, 1983:33), we regard these records as uncertain.

Two other species were seen but not collected: *Cocos nucifera* L. and *Passiflora maliformis* L., the latter in one spot at the east part of North Beach, is a recent introduction by Pitcairners. The adventive *Setaria verticillata* (L.) Beauv. was found at the North Beach near the landing as previously reported

by Fosberg *et al.* (1989); all plants noted during the expedition were destroyed. In addition, Merelda Warren of Pitcairn Island reported an epiphytic orchid from above the Two Tier Cave, North Beach, but searches of the site failed to confirm this.

OENO ISLAND

Dicotyledonae

Amaranthaceae

Achyranthes aspera var. *velutina* (Hooker & Arnott) C. Townsend
(Ind)
— *Archyranthes velutina* forma *rosea* Suessenguth. St John & Philipson (1960: 402); Fosberg *et al.* (1989: 16).
A small subshrub, with a grey-green velutinous pubescence covering the whole plant; the erect inflorescence is tinged with red, flowers pink. Local in areas of shrubby *Argusia*, and in the *Pisonia/Argusia* forest. *Florence, Chepstow-Lusty & Waldren 10932.*

Boraginaceae

Argusia argentea (L. f.) H. Heine
(Ind)
— *Tournefortia argentea* L. f. Fosberg *et al.* (1989: 17).
— *Messerschmidia argentea* (L. f.) I. Johnston. St John & Philipson (1960: 403).
Common throughout, and very variable in stature (see Waldren *et al.*, 1995). *Florence, Chepstow-Lusty & Waldren 10942.*

Brassicaceae

Lepidium bidentatum Montin
(Ind)
Common amongst open, bushy *Argusia. Florence, Chepstow-Lusty & Waldren 10931, 10949.*

Clusiaceae

Calophyllum inophyllum L.
(Cul)
A small tree, light yellow sap, coriaceous leaves, flowers white. Introduced, one tree planted near the Pitcairners' camp. *Florence 10953.*

Goodeniaceae

Scaevola sericea Vahl
(Ind)
— *Scaevola sericea* var. *tuamotuensis* (St John) Fosberg. Fosberg *et al.* (1989: 17).
Local in shrubby *Argusia* and *Suriana* communities. *Florence, Chepstow-Lusty & Waldren 10940.*

Lauraceae

Cassytha filiformis L.
(Ind)
Common in open *Argusia* areas. *Florence, Chepstow-Lusty & Waldren 10933.*

Moraceae

Ficus elastica Roxburgh ex Hornemann
(Cul)
A small tree with many aerial roots, abundant milky sap, and large leathery leaves; stipules red. Introduced, one tree planted near the Pitcairners' camp. *Florence 10952.*

Nyctaginaceae

Boerhavia tetrandra G. Forster
(Ind)
— *Boerhavia diffusa* var. *tetrandra* (G. Forster) Heimerl. St John & Philipson (1960: 402).
Common in *Argusia* scrub. *Florence, Chepstow-Lusty & Waldren 10946.*

Pisonia grandis R. Brown
(Ind)
Local, forming a forest with tall *Argusia* at the southern end, in phosphorus-enriched soil (S. Waldren & L. Scally, unpublished data). *Florence 10955, Florence, Chepstow-Lusty & Waldren 10938.*

Rubiaceae

Hedyotis romanzoffiensis (Chamisso & Schlechtendal) Fosberg
(Ind)
A subshrub, flowers green, fruits white but tinged with violet at maturity. Locally common in fairly bare sandy areas near the shore, less common on coral rubble. Occurs from Eastern Polynesian to Kiribati, the Phoenix and Line Islands. *Florence, Chepstow-Lusty & Waldren 10935, 10941, 10951.*

Solanaceae

Solanum viride G. Forster ex K. P. Sprengel non R. Brown
(Nat)
— *Solanum tuamotuense* St John. St John & Philipson (1960: 403).
A perennial herb, more or less branched. One station at south east end, at edge of *Pisonia/Argusia* forest. Possibly indigenous, but more probably a Polynesian introduction. R. E. Symon (personal communication) has indicated this previously unpublished synonymy to us. *Florence, Chepstow-Lusty & Waldren 10937.*

Surianaceae

Suriana maritima L.
(Ind)
Common on sandy beach fronts, and scattered about the sand spit. *Florence, Chepstow-Lusty & Waldren 10943.*

Tiliaceae

Triumfetta procumbens G. Forster
(Ind)
Very rare, a few individuals on the sand spit. First record for Oeno; possibly a recent colonist, despite its abundance on Pacific atolls and on Henderson (Waldren *et al.*, in press). *Florence, Chepstow-Lusty & Waldren 10944.*

Monocotyledonae

Pandanaceae

Pandanus tectorius S. Parkinson ex Z
(Ind)
— *Pandanus feruliferus* St John. St John & Philipson (1960: 402).
Common on gravel and sand. This form is close to that of the slender-branched Henderson form. *Florence, Chepstow-Lusty & Waldren 10934, 10948.*

Poaceae

Lepturus repens (G. Forster) R. Brown
(Ind)
Common in open areas amongst *Argusia. Florence, Chepstow-Lusty & Waldren 10936.*

Setaria verticillata (L.) Beauv.
(Adv)
A new record, probably introduced from Pitcairn (where it is common) by the islanders who visit Oeno for holidays. *Florence, Chepstow-Lusty & Waldren 10950.*

Gymnospermae

Araucariaceae

Araucaria heterophylla (R. Salisbury) Franco
(Cul)
The Norfolk Island pine, planted near the Pitcairners' camp. Two trees seen. *Florence 10954.*

Pteridophyta

Aspleniaceae

Asplenium nidus L.
(Ind)
Restricted to the *Pisonia/Argusia* forest, but common there. *Florence, Chepstow-Lusty & Waldren 10939.*

Polypodiaceae

Phymatosorus scolopendria (Burman) Pichi Sermoli
(Ind)
— *Phymatodes scolopendria* (Burman) Ching. St John & Philipson (1960: 402).
— *Polypodium scolopendria* Burman. Fosberg *et al.* (1989: 16).
As on Henderson, highly variable in size and lobation, varying from almost simple fronds in exposed coastal habitat to large fronds over 2 m long on richer soils in the *Pisonia/Argusia* forest. *Florence, Chepstow-Lusty & Waldren 10945, 10947.*

The following previously recorded species were not found during the present survey: *Brassica juncea* (L.) Cosson & Czernaev, a fugacious weed collected once by Williams in 1956; *Crinum* aff. *asiaticum*, an ornamental no longer present; and the endemic *Bidens hendersonensis* var. *oenoensis* Sherff, which was not found despite a careful search.

PITCAIRN ISLAND

Dicotyledonae

Aizoaceae

Sesuvium portulacastrum (L.) L.
(Ind)
Rare on basalt coastal cliffs at Bounty Bay. *Florence 10772.*

Amaranthaceae

Achyranthes aspera L. var. *aspera*
(Pol)
An introduced Polynesian weed. Leaves grazed by goats. One station seen at Down Rope. *Florence 11020.*

Alternanthera brasiliana (L.) Kuntze
(Nat)
Introduced ornamental, a reddish-purple plant with white capitula. Naturalized on roadsides. *Florence & Waldren 11034.*

Amaranthus viridis L.
(Adv)
A coarse herb, utricule indehiscent, 3 tepals. A common weed in gardens and along roadside. *Florence 10750, 10810.*

Apiaceae

Apium leptophyllum (Persoon) F. H. Mueller ex Bentham
(Adv)
A rare weed, leaves dissected with filiform divisions, fruit circular. *Florence 11023.*

Apium prostratum Labillardiere
(Ind)
— *Apium australe* Thouars. St John (1978: 45).
A biennial herb, leaves with large divisions, corky circular fruits. Probably indigenous on sea cliffs of the east and south coast; rare. *Florence 10777, 11017.*

Apocynaceae

Cerbera manghas L.
(Ind)
A small tree with abundant milky sap, fallen corolla was white. A tentative determination, in the absence of mature flowers. Rare at Tedside, on a slope in *Homalium* forest. *Florence 11028.*

Araliaceae

(Cul)
An undetermined small treelet, naturalised along roadside. Said to be introduced from Panama. *Florence & Waldren 11037.*

Asteraceae

Bidens mathewsii Sherff
(End)
An endemic subshrub less than 1 m high, with small yellow capitula. Very rare at the Rope, in disturbed *Dicranopteris* community. *Brooke in Florence 11110; Florence 11015.*

Bidens pilosa L.
(Adv)
A pantropical weed, capitula generally without white ligulate flowers. Common in gardens, fields and roadsides. *Florence 10746; Florence & Waldren 11041.*

Conyza bonariensis (L.) Cronquist
(Adv)
A suffruticose herb, capitula creamy white. Introduced and widespread in various disturbed communities. *Florence 10761.*

Sigesbeckia orientalis L.
(Adv)
A suffruticose herb, capitula glandulous, yellow. Rare on the disturbed summital crest. *Florence & Waldren 11042.*

Sonchus oleraceus L.
(Adv)
A lactiferous herb, capitula lemon-yellow. A common weed in gardens and along roadsides. *Florence 10765.*

Synedrella nodiflora (L.) J. Gaertner
(Adv)
An introduced herb, capitula with lemon-yellow ligules. Found on a sunny roadside. *Florence 10747.*

Taraxacum officinale G. Weber
(Adv)
A tuberized herb, capitula bright yellow. In the lawn around the Radio Station. *Florence 11024.*

Vernonia cinerea var. *parviflora* (Reinwardt ex Blume) A.P. DC.
(Adv)
A small herb with violet capitula. Found in weedy and coastal habitats. *Florence 10794.*

Begoniaceae

Begonia sp.
(Cul)
A cultivated hybrid, caulescent, with pink flowers. Ornamental in the village, sub-spontaneous. *Florence 10814.*

Boraginaceae

Argusia argentea (L. f.) H. Heine
(Ind)
On basaltic coast. One tree at Bounty Bay, apparently rare. *Florence 10799.*

Brassicaceae

Coronopus didymus (L.) Smith
(Adv)
A small prostrate herb with white flowers, silicules circular. Introduced, new record for the island; one station on bare basaltic coastal rock north of Bounty Bay. *Florence 10798.*

Caprifoliaceae

Lonicera japonica Thunberg
(Cul)
An ornamental liana, fragrant creamy flowers. Cultivated, tending to escape but not fully naturalized. *Florence 10760.*

Convolvulaceae

Ipomoea indica (L.) Merrill
(Nat)
A climbing vine, milky juice rare, large showy blue flowers, throat purplish. An introduced ornamental, naturalized around Adamstown, and becoming a troublesome weed. *Florence 10784.*

Ipomoea macrantha J. Roemer & J. A. Schultes
(Ind)
Rare, one coastal station at Bounty Bay. *Florence 10785.*

Cucuribtaceae

Cucumis sativus L.
(Nat)
A climbing vine, fruit shorter and larger than the cultivated plant. Naturalized on a coastal cliff beneath the village rubbish dump area. *Florence 10796.*

Euphorbiaceae

Chamaesyce hirta (L.) Millspaugh
(Adv)
A weed, leaves with a reddish central spot above. Common along roadsides and in gardens. *Florence 10812.*

Chamaesyce sparrmannii (Boissier) Hurusawa
(Ind)
— *Euphorbia pitcairnensis* F. Brown (1935: 134, Fig 21d).
— *Euphorbia ramosissima* Hooker & Arnott. St John (1987: 39).
Apparently very rare, one plant at Bounty Bay, in sheltered crevices of basaltic coastal rocks. Has the same prostrate habit as the plants have on Henderson in exposed coastal habitats. *Florence 10797.*

Euphorbia peplus L.
(Adv)
A weed, inflorescences with cornute yellowish glands. Rare on roadsides. *Florence & Waldren 11048.*

Euphorbia pulcherrima Willdenow ex Klotzsch
(Cul)
A shrub with abundant milky sap and showy red bracts, involucral glands yellow. Common ornamental plant. *Florence 10809.*

Glochidion pitcairnense (F. Brown) St John
(Ind)
A small tree, glabrous in all parts, leaves slightly bullate, fruits more deeply lobed than the following species. Rare in open fern community. *Florence 10736, Florence & Waldren 11047.*

Glochidion sp.
(End)
A striking new species, belonging to the group of East Polynesian species characterized by a pubescent ovary with 4–5 locules, which is centred around *G. taitensis* Baillon ex J. Mueller. The Pitcairn plant differs by its more massive ovary and shorter stylar column. The taxon will be described in a separate paper. Endemic to Pitcairn Island, at edge of disturbed forest or in open mixed grass-fern community, apparently not common. *Florence 10728, 10754; Florence & Chepstow-Lusty 10730.*

Flacourtiaceae

Homalium taypau St John
(End)
A medium low-branched tree, flowers purple. An endemic species, related

to *H. acuminatum* of Rarotonga. Common in the forested valleys, but these are being invaded by *Syzygium jambos* (see Waldren *et al.*, in press). *Florence & Waldren 11043.*

Xylosma suaveolens (J. R. & G. Forster) G. Forster
(Ind)
— *Xylosma suaveolens* subsp. *haroldii* Sleumer. St John (1987: 42).
A small depressed shrub, young green fruits. One specimen seen on the summital crest. Apparently different from the plant on Henderson, but more material is needed for a precise determination. *Florence & Waldren 11040.*

Goodeniaceae

Scaevola sericea Vahl
(Ind)
— *Scaevola taccada* var. *tuamotuensis* St John. St John (1987: 53).
One plant seen on basaltic soil from the beach of Bounty Bay. *Florence 10791.*

Hernandiaceae

Hernandia sonora L.
(Ind)
— *Hernandia nymphaeifolia* (Presl.) Kubitzki, St John (1987: 34).
A medium-sized tree, peltate leaves, immature fruits translucent yellow turning to red. Apparently rare in disturbed valley forests. *Florence & Chepstow-Lusty 10729.*

Lamiaceae

Ballota nigra L.
(Adv)
A lightly aromatic herbaceous weed, flowers with a 10-nerved calyx, corolla 2-lipped, pink, four stamens. A rare weed along a roadside. New record for Pitcairn. *Florence 11022.*

Lauraceae

Persea americana P. Miller
(Nat)
Avocado is locally naturalized in secondary forests. *Florence 11014.*

Leguminosae

Abrus precatorius L. subsp. *precatorius*
(Nat)
A woody climber, seeds black with a vermilion aril. Roadside scrub. *Florence & Waldren 11038.*

Albizia saman (N. Jacquin) F. H. Mueller
(Cul)

A large ornamental tree, flowers with showy white and pink stamens. Planted in a garden. *Florence 10801.*

Bauhinia monandra Kurz
(Nat)
A tree, large pink flowers, one fertile stamen. Cultivated for handcrafts, and more or less naturalized around the village. *Florence 10804.*

Centrosema pubescens Bentham
(Adv)
An introduced scrambling vine with large pink flowers. A new record, seen in one spot at Adamstown. *Florence 10803.*

Desmodium tortuosum (Swartz) A.P. DC
(Adv)
A suffruticose herb, small mauve flowers, legumes deeply incised on both sides. A new record, along the roadside at Adamstown. *Florence 10783.*

Erythrina variegata L.
(Pol)
— *Erythrina variegata* var. *orientalis* (L.) Merrill. St John (1987: 36); Fosberg *et al.* (1989: 13).
A tree, almost leafless at flowering, inflorescences with orange-red flowers. Introduced by Polynesians; rare, in a ravine of McCoy's Valley. *Florence 11021.*

Lablab purpureus (L.) Sweet
— *Dolichos lablab* L. Fosberg *et al.* (1989: 13).
(Nat)
A low scrambling vine, white flowers fading to cream. Escaped from cultivation, common. *Florence 11032.*

Malvaceae

Hibiscus tiliaceus L.
(Ind)
A small tree with more or less arching branches, flowers yellow with purple petal bases. Common in all forested valleys on steep slopes, rarer in coastal habitats. *Florence 10787.*

Malvastrum coromandelianum (L.) Garcke
(Adv)
A weedy herb, more or less prostrate, with pale yellow flowers. Common on roadsides. *Florence 10744.*

Sida rhombifolia L. subsp. *rhombifolia*
(Adv)
A weedy herb, flowers light yellow. Common in old fields and along roadsides. *Florence 10745.*

Thespesia populnea (L.) Solander ex Correa
(Pol?)
A small tree, yellow flowers with red-purple petal bases. Occurs on the crest

above the Radio Station, and around Adamstown; probably a Polynesian introduction. *Florence 10737.*

Myrtaceae

Eugenia reinwardtiana (Blume) A.P. DC.
(Ind)
Rare on coastal cliffs at Bounty Bay. *Florence 10780, 10790.*

Eugenia uniflora L.
(Nat)
An introduced shrub, white flowers. Used as a hedge in gardens, becoming naturalized. *Florence & Waldren 11049.*

Metrosideros collina (J. R. & G. Forster) A. Gray s.l.
(Ind)
A small tree or shrub, vermilion flowers. Occasional on dry crests and slopes in open communities. We retain only the specific rank here; a full revision of this species is needed. *Florence 10768; Florence & Waldren 11045.*

Psidium cattleianum Sabine
(Nat)
A shrub widely naturalized on the island. *Florence 10751.*

Syzygium jambos (L.) Alston
(Nat)
— *yzygium jambos err. typ.* Fosberg *et al.* (1989: 14).
A small tree with pale yellow flowers. The major conservation problem of Pitcairn, invading a variety of communities in various ecological situations and threatening the survival of many native plants (Waldren *et al.*, in press). *Florence 11033.*

Nyctaginaceae

Mirabilis jalapa L.
(Nat)
An ornamental herb, flowers white or yellow. In gardens, but more or less naturalized. *Florence 10800.*

Oleaceae

Jasminum grandiflorum L.
(Cul)
An ornamental liana, white flowers strongly fragrant. Cultivated in gardens. *Florence 10807.*

Oxalidaceae

Oxalis corniculata L.
(Adv)
A prostrate herb, yellow flowers. Common on roadsides. *Florence 10811.*

Passifloraceae

Passiflora laurifolia L.
(Nat)
A climbing vine, bracts free. In cultivation, but more or less naturalized. *Florence & Waldren 11035.*

Passiflora maliformis L.
(Nat)
A vigorous vine, bracts united at the base. More common and aggressive than the previous, local in dense tangles at edge of the forest. *Florence 10748.*

Piperaceae

Peperomia blanda var. *floribunda* (Miquel) H. Huber
(Ind)
— *Peperomia leptostachya* var. *macrophylla* (Setchell) Yuncker. St John (1987: 29).
A small succulent herb, twigs and leaves pubescent. On coastal cliffs or shaded rocks in *Homalium* forests. *Florence 11025; Waldren in Florence 10816.*

Peperomia rapensis F. Brown
(Ind)
A small prostrate *Peperomia* characterized by opposite to sub-opposite leaves and stems with stiff hairs less than 0.2 mm long. Very rare on coastal cliffs at Down Rope. Distribution highly disjunct: also found 1500 km to the west, in the Austral Islands. *Florence 11016.*

Plantaginaceae

Plantago major L.
(Adv)
An introduced weed, found mainly in coastal communities. *Florence 10788.*

Rosaceae

Fragaria × *ananassa* Duchesne
(Nat)
A strawberry, no mature fruits seen. Remnant of cultivation and more or less naturalized on roadsides. *Florence 10734.*

Rubiaceae

Guettarda speciosa L.
(Ind)
A rare tree from basaltic coast at Bounty Bay. *Florence 10767.*

Rutaceae

Citrus medica L.
(Cul)
A small tree slightly spiny, petiole wingless, lamina not articulate on petiole. A tentative determination in the absence of mature fruit. Said to be introduced

from New Zealand (R. Warren, personal communication). *Florence & Waldren 11036.*

Solanaceae

Lycium sandwicense A. Gray
(Ind)
Coastal cliffs at Bounty Bay, rare. *Florence 10778, 10795.*

Lycopersicon esculentum P. Miller
(Nat)
Glandular climbing herb, yellow flowers. Naturalized in an old garden. *Florence 10808.*

Nicotiana tabacum L.
(Nat)
A tall glandular herb, pink flowers. Introduced, naturalized sparsely on roadsides. *Florence 11013.*

Solanum americanum P. Miller
(Adv)
A prostrate herb, flowers white, black fruits. A weed, found also in coastal vegetation. *Florence 10774.*

Verbenaceae

Lantana camara L.
(Nat)
A climbing shrub, less prickly than in French Polynesia, flowers orange to red. Mainly in old plantations and disturbed areas, and in some places a threat to native vegetation. *Florence 10749.*

Verbena litoralis Kunth
(Adv)
A small much-branched herb, pink flowers. Rare in an open rocky station at Tedside. *Florence 11031.*

Monocotyledonae

Agavaceae

Cordyline fruticosa (L.) A. Chevalier
(Pol)
Occasionally flowering (cf. Henderson, above). Locally common in fern and grass communities, and roadsides. *Florence & Waldren 11039.*

Cannaceae

Canna indica L.
(Nat)
A rhizomatous herb, red flowers. Introduced, largely naturalized on roadsides and in secondary forest. *Florence 10815.*

Commelinaceae

Commelina diffusa Burman
(Adv)
A creeping perennial, blue ephemeral flowers. Roadside at Adamstown. *Florence 10802.*

Cyperaceae

Kyllinga brevifolia Rottboell
(Adv)
— *Cyperus brevifolius* (Rottb.) Hassk. St John (1987: 24).
A stoloniferous sedge, heads green. Occasional in grassy communities. *Florence 10769.*

Kyllinga nemoralis (J. R. & G. Forster) Dandy ex Hutchinson & Dalziel
(Adv)
Like the previous, but heads white. Common at Adamstown, in weedy places. *Florence 10806.*

Mariscus javanicus (Houttuyn) Merrill & Metcalfe
(Adv)
Cyperus javanicus Houttuyn. St John (1987: 25).
A tufted perennial sedge, with sharp glaucous leaves. Local in coastal vegetation, scattered on the summital crest. *Florence 10793.*

Orchidaceae

Taeniophyllum fasciola (G. Forster) H. G. Reichenbach
(Ind)
— *Taeniophyllum* sp. St John (1987: 29).
A leafless epiphyte, narrow photosynthetic roots, erect capsules. Rare in *Homalium* forest. *Florence 11027.*

Poaceae

Cynodon dactylon (L.) Persoon
(Adv)
A stoloniferous grass. Common in lawns and on roadsides. *Florence 10762.*

Digitaria setigera Roth ex J. Roemer & J. A. Schultes
(Adv)
A grass with white hairs on the culms, panicles with 6–10 spikes, which remain bunched. Common in coastal communities, along roadsides and fields. *Florence 10763, 10789, 10813.*

Eleusine indica (L.) J. Gaertner
(Adv)
A perennial tufted grass. Weedy open places along roads. *Florence 10786.*

Lepturus repens (G. Forster) R. Brown
(Ind)
Rare in coastal vegetation at Bounty Bay. *Florence 10779.*

Oplismenus hirtellus (L.) Palisot
(Adv)
A stoloniferous prostrate grass. Rare in shady understorey of secondary *Homalium* forest. *Florence & Chepstow-Lusty 10731.*

Paspalum conjugatum B. Bergius
(Adv)
Stoloniferous grass, panicle of two digitate spikes forming a T-shape. Common in open secondary scrub. *Florence 10782.*

Paspalum orbiculare G. Forster
(Adv)
Tufted tall grass, panicle of 3–7 alternate spikes. Rare in open secondary communities. *Florence 10771.*

Setaria verticillata (L.) Beauv.
(Adv)
— *Setaria pumila* (Poir.) Roemer & Schultes. St John (1987: 24).
On roadsides, common. *Florence 10764.*

Sorghum sudanense (Piper) Stapf
(Adv)
— *Sorghum halepense sensu* Fosberg *et al.* non (L.) Persoon, Fosberg *et al.* (1989: 12)
A tall grass. Roadsides, disturbed areas, very aggressive and invading the *Dicranopteris* community at moderate altitude. *Florence 10781.*

Sporobolus indicus (L.) R. Brown
(Adv)
A tufted grass, panicles green tinged with violet. In grass communities at low altitude. *Florence 10770.*

Gymnospermae

Pinaceae

Pinus caribaea var. *hondurensis* Barett & Golfari
(Cul)
A young tree planted on the roadside in the hills above Adamstown. Introduced from the Gambier Islands. *Florence 10759.*

Pteridophyta

Aspleniaceae

Arachniodes aristata (G. Forster) Tindale
(Ind)
— *Rumohra aristata* (G. Forster) Ching. St John (1987: 19).
Terrestrial, with a creeping rhizome, shiny dark green frond, aristate pinnules. Rare in the *Homalium* forest at high altitude. *Florence 10739.*

Asplenium obtusatum G. Forster
(Ind)
Locally common on coastal cliffs. *Florence 10775, 11019.*

Asplenium shuttleworthianum Kunze
(Ind)
— *Loxoscaphe gibberosum* T. Moore. St John (1987: 20).
Terrestrial or epilithic, rhizome short creeping, black palea, dark green frond. Anomalous distribution: New Zealand, Fiji and Pitcairn. Locally common on coastal cliffs, rarer in the understorey of *Homalium* forest. We have previously discussed the taxonomic problems in *Loxoscaphe* and *A. shuttleworthianum*, our collections agree with the description of *A. shuttleworthianum*. Future collectors should pay detailed attention to these taxa. *Florence 10741, 10756, 10776, 11018.*

Aspidiaceae

Ctenitis cumingii Holttum
(End)
Terrestrial, rhizome short creeping. This endemic differs from *C. sciaphila* of French Polynesia by the lack of rufous palea on the stipes. Very rare, seen in one place with *Angiopteris*. Not mentioned by St John (1987). *Florence 10758.*

Blechnaceae

Doodia media R. Brown s.l.
(Ind)
A tufted erect fern; frond dark, brittle. Rare in shady humid places in the *Homalium* forests. *Florence 10738.*

Cyatheaceae

Cyathea medullaris (G. Forster) Swartz
(Ind)
— *Cyathea cumingii* Baker. St John (1987: 17).
The only tree-fern, with stems up to 7 m high and 15 cm diameter. Rare below the summital crest in a disturbed *Metrosideros/Homalium* forest, very rare elsewhere. *Florence & Waldren 11044.*

Davalliaceae

Davallia solida (G. Forster) Swartz
(Ind)
Rare in the *Dicranopteris* community. *Florence 10735.*

Nephrolepis cordifolia (L.) K. Presl
(Ind or Adv?)
An erect stoloniferous fern, scales obscure on the stipe and rachis, pinnae distinctly crenate, indusium reniform. Rare in mixed grass-fern community at Tedside. New for the island, status obscure. *Florence 11030.*

Nephrolepis hirsutula (G. Forster) K. Presl
(Ind)
A larger and more common fern than *N. cordifolia*, in mixed grass-fern communities. *Florence 10733, 10753, 11029.*

Gleicheniaceae

Dicranopteris linearis (Burman) Underwood
(Ind)
Terrestrial in dense tangled growths. Common above 30 m elevation in open areas. *Florence 10752.*

Hymenophyllaceae

Trichomanes endlicherianum K. Presl
(Ind)
The only filmy fern of Pitcairn. In a humid valley on shaded basaltic rock. Same station as *Angiopteris* and *Ctenitis* in *Homalium-Syzygium* forest. *Florence 10755.*

Marattiaceae

Angiopteris chauliodonta E. B. Copeland
(End)
A large erect fern, with a globular rhizome up to 30 cm; the stipe naked and glaucous, with the frond reaching 3 m. In the absence of a recent revision of the genus we retain Copeland's name for the Pitcairn plant. A very rare endemic, threatened by *Syzygium* invading the native forests (Waldren *et al.*, in press). *Florence 10757.*

Polypodiaceae

Phymatosorus commutatus (Blume) Pichi Sermolli
(Ind)
— *Phymatodes sylvaticum* (Brack.) Copeland. St John (1987: 21).
A creeping fern, frond with very small or punctiform sori, slightly pustulate, not fragrant like the ornamental form. Very rare by a shady stream bank. *Florence 10743.*

Phymatosorus powellii (J. G. Baker) Pichi Sermolli
(Ind)
— *Microsorium pitcairnense* E. Copeland (1938: 74)
— *Polypodium pitcairnense* (Copeland) Brownlie, St John (1987: 21).
— '*Microsorium*' type: Pitcairn: Fosberg & Clark 11311 (BISH) syn. nov.
Superficially similar to *P. scolopendria*, differing by the more narrow pinnae, undulate margins and sori forming pustules on the upper surface of the pinnae. Very similar to the material of the Society and Cook Islands. Rare at high altitude in *Homalium* forest. *Florence & Waldren 11046.*

Phymatosorus scolopendria (Burman) Pichi Sermolli
(Ind)
Phymatodes scolopendria (Burman) Ching. St John (1987: 21).
Common in a variety of habitats, varying in dissection and size of the lamina. See comments for Henderson Island. *Florence 10792.*

Pyrrosia serpens (G. Forster) Ching
(Ind)
— *Pyrrosia angustata sensu* St John (1987).
Epiphytic and epilithic, in sunny places. Rare at Tedside. *Florence 11026.*

Psilotaceae

Psilotum nudum (L.) Beauv.
(Ind)
Psilotum nudun (L.) P. Beauv. *err. typ.* St John (1987: 16).
Terrestrial. One station seen, on a shady stream bank. *Florence 10742.*

Thelypteridaceae

Christella parasitica (L.) Lêveillé
(Ind)
— *Cyclosorus parasiticus* (L.) Farw. St John (1987: 19).
— *Thelypteris* cf. *parasitica* (L.) Tard. Fosberg *et al.* (1989: 12).
A terrestrial creeping fern, frond with lowest pinnae deflexed, with the acroscopic basal lobes well developed; sori black. Rare in the understorey of forests or shady roadsides, sometimes grown in the gardens. *Florence 10805.*

Pneumatopteris costata var. *hispida* Holttum
(Ind)
Rhizome erect, costa and rachis pubescent beneath, indusia distinct. Rare in shady roadsides and low-altitude forest. Found also on Rarotonga and Easter Island. *Florence 10732.*

Sight records of uncollected plants: *Aleurites moluccana* (L.) Willd.; *Araucaria heterophylla* (R. Salisbury) Franco; *Catharanthus roseus* (L.) G. Don; *Citrullus lanatus* (Thunb.) Matsum & Nakai; *Coix lacryma-jobi* L. (fruits only collected); *Ficus prolixa* G. Forster; *Leucaena leucocephala* (Lam.) De Wit; *Melia azaderach* L.; *Morinda citrifolia* L.; *Morinda myrtifolia* A. Gray (=*Morinda forsteri* Seem. St John, 1987: 52), the only indigenous species in this group; *Ocimum basilicum* L.; *Polyscias guilfoylei* (Bull) L. H. Bailey; *Psidium guajava* L.; *Tagetes patula* L.; *Terminalia catappa* L.; *Zingiber zerumbet* (L.) Roscoe.

Garden sight records not previously recorded: *Acalypha wilkesiana* Muell. Arg.; *Arbutus unedo* L.; *Codiaeum variegatum* (L.) Bl.; *Cucurbita* cf. *maxima* Duchesne *ex* Lam.; *Gerbera jamesonii* Bol. *ex* Adlam.; *Hydrangea macrophylla* (Thunb.) Ser.; *Leucanthemum vulgare* Lam.; *Rhododendron* cf. *indicum* (L.) Sweet.

The following have previously been recorded as native from Pitcairn but were not found on this survey: *Abutilon pitcairnense* Fosberg, an endemic of Pitcairn with only three collections known; *Alyxia scandens* Roem. & Schultes, one collection by Miss R. A. Young; *Capparis cordifolia* Lam., Whitney Expedition of 1922; *Celtis pacifica* G. Planch.; *Cocculus ferrandianus* Gaud.; *Coprosma rapensis* F. Brown var *benefica* (Oliver) Fosberg, endemic; *Cyclophyllum barbatum* (G. Forster) N. Halle & Florence; *Dianella intermedia* Endlicher; *Diplazium harpeodes* T. Moore; *Jasminum didymum* G. Forster; *Lepidium bidentatum* Montin; *Myrsine* sp. aff. *niauensis*, apparently endemic; *Osteomeles anthyllidifolia* (Sm.) Lindl.; *Sapindus saponaria* L.; *Vittaria elongata* Sw., said by

St John (1987) to be rare in 1934 and *Weinmannia rapensis* F. Brown, a Cuming record of uncertain status.

St John (1987) also lists *Barringtonia asiatica* (L.) Kurz and *Calophyllum inophyllum* L as native, we consider them to Polynesian introductions.

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APPENDIX 1: TAXONOMIC POLLEN NOTES OF SOME OF THE ENDEMIC SPECIES AND VARIETIES OF HENDERSON ISLAND

Prepared by A. J. Chepstow-Lusty

Pollen was collected from the reproductive structures of living specimens in the field and preserved in 90% ethanol, 5% acetic acid and 5% formaldehyde. In the laboratory, the material underwent acetolysis,

before being mounted in silicone oil for examination under light microscopy. Prepared slides were studied with a calibrated Leitz microscope and photographs were taken on a Nikon labophot with a Nikon FX-35A camera attachment. All exposures were at a magnification of 40×, except for *Peperomia hendersonensis* (oil immersion at 100×). Reference slides are located at Department of Plant Sciences, Cambridge University, UK and Geography Department, Massey University, New Zealand.

Descriptions

All the species described produce pollen singly as a monad. Descriptions were firstly concerned with basic criteria such as symmetry, either bilateral or radiosymmetric. Radiosymmetric grains were further classified as isopolar or heterpolar or, if lacking in polarity, as apolar. Pollen grains were then classified using the morphological type nomenclature of Faegri & Iversen (1964), in conjunction with details of apertures.

Shape is another primary criterion. All the grain types that are radiosymmetric were described according to Erdtman (1943) depending on the ratios of their polar and equatorial axes (P:E ratios): perprolate >2, prolate 2–1.33, subprolate 1.33–1.14, prolate spheroidal 1.14–1.00, oblate spheroidal 1.00–0.88, suboblate 0.88–0.75, oblate 0.75–0.50, and peroblate <0.50. Exine structure and sculpture were penultimately dealt with based on the usage of Faegri & Iversen (1964), followed by the range of the lengths of the polar and equatorial axes.

Alyxia sp. – asymmetrically barrel shaped, heteropolar, one side straight, the other side more convex; diporate, giant pores about 30 μm across, surrounded by slight thickenings 3 μm wide; exine c. 1.5 μm thick, with minute reticulation or slightly irregular pitting; 47–50 × 56–60 μm. Very few grains from specimens collected, Figure 1.

Bidens hendersonensis var. *hendersonensis* Sherff – radiosymmetric, isopolar; tricolporate, colpi long, pores small, not well defined; spheroidal, amb circular; exine tectate, echinate, echini long, conical with curved pointed tips, c. 6 μm in height and 4 μm across the base, in a meridonal arrangement, c. 9 μm distant from each other; 32–33 × 29–33 μm. Figure 2, polar view.

Glochidion pitcairnense (F. Brown) H. St John – radiosymmetric, isopolar; tetracolporate, frequently pentacolporate, colpae thin and long reaching to the proximity of the poles, pores circular but often indistinct c. 1.5 μm in diameter; oblate spheroidal; amb circular; exine c. 1.5 μm thick, perreticulate, homobrochate, brochi c. 1 μm in diameter; 21–22 × 21–23 μm. Figure 3. A, polar and B, equatorial views.

Xylosma suaveolens subsp. *haroldii* Sleumer – radiosymmetric, isopolar; tricolporate, colpae long and not reaching the poles; usually subprolate, but occasionally prolate spheroidal; amb trilobate; exine c. 2 μm thick, with minutely reticulate texture (oil immersion); 17–20 × 13–18 μm. Figure 4. A, polar; B & C, equatorial views.

Senna glanduligera (H. St John) A. C. Smith – radiosymmetric, isopolar; tricolporate, poles rounded almost reached by the colpae, the borders of each colpa distinctively constricted in polar view and bulging when seen in equatorial view, pores very narrow; subprolate; amb trilobate; distinct opaque body present on all grains examined, which is resistant to acetolysis; exine c. 2 μm thick, apparently double, with a granular texture; 27–29 × 22–25 μm. Figure 5. A, polar and B, equatorial views.

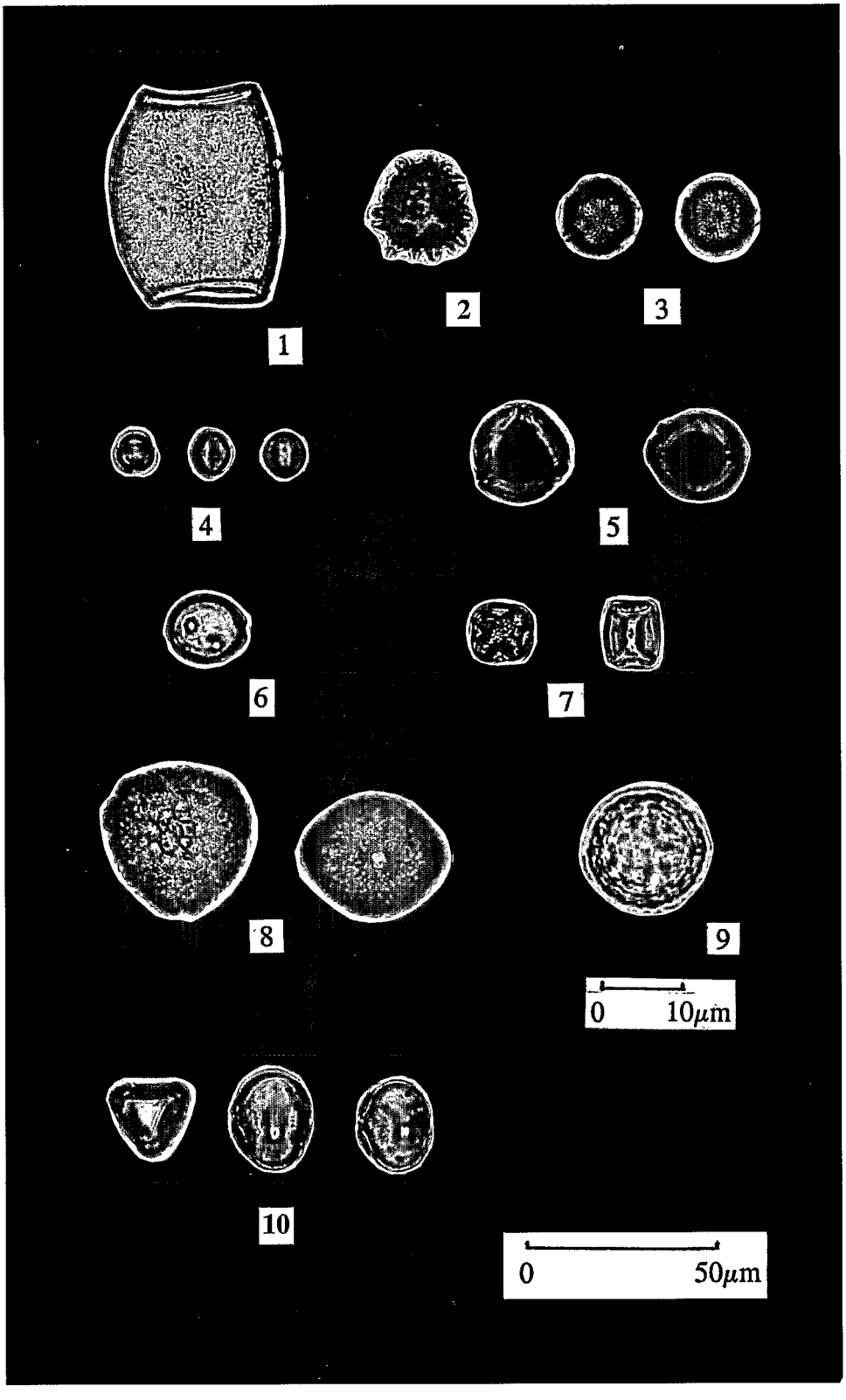
Geniostoma hendersonense H. St John – Heteropolar, mostly tri- or tetrapolar; pores only rarely in an equatorial plane; pores c. 3 μm in diameter, very prominent owing to the occurrence of heavy exinous thickenings round each (about 4 μm high), which in cross-section are shield-like; oblate or sub-oblate; exine c. 1.5 μm thick, with minutely reticulate texture just visible; 13–20 × 18–23 μm. Figure 6, equatorial view.

Myrsine hosakae H. St John – radiosymmetric, isopolar; tetracolp(or)ate, colpae straight, c. 11 μm long, occasionally somewhat indistinct; cross-wise arrangement of colpae in polar view very distinctive, pores only rarely distinct; mostly prolate spheroidal, poles markedly flattened; amb quadrangular in outline; exine c. 1 μm thick; 19–23 × 15–22 μm. Figure 7. A, polar and B, equatorial views.

Peperomia hendersonensis Yuncker – inaperturate, apolar; spheroidal; exine c. 1 μm thick, intectate, verrucate (verrucae up to 1 μm in diameter); 11–15 μm in diameter. Figure 9.

Cyclophyllum barbatum (J. G. Forster) Halle & Florence – radiosymmetric, isopolar; tricolporate, colpi short, broad and shallow, producing distinct notches in polar view; pores distinct, rounded, c. 6 μm in diameter, each surrounded by a distinct thickening 3 μm thick in surface view; oblate, often sub-oblate; amb rounded to subtriangular; exine c. 2.5–3 μm thick; perreticulate; heterobrochate, brochi generally 3–4 μm long, some up to 6 μm in length, tending to get smaller towards pores; 30–40 × 40–46 μm. Figure 8. A, polar and B, equatorial views.

Santalum insulare var. *hendersonense* (Skottsberg) Fosberg & Sachet – radiosymmetric, isopolar; triporate, pores large, conspicuous, c. 4 μm in diameter, tending to elongate meridionally, bordered by meridional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costae which arch into the intercolpia; subprolate, polar area domed, amb subtriangular; exine c. 1 μm thick, reticulate in an equatorial band, becoming perforate and ultimately psilate in the polar areas of the hemispheres, reticulation heterobrochate, brochi <1 μm across, 25–30 × 21–23 μm. Figure 10. A, polar; B & C, equatorial views.

Nesoluma st.-johnianum Lam. & Meeuse – material obtained was sterile.

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APPENDIX 2: THE LICHENS OF HENDERSON ISLAND AND OENO ATOLL, A PRELIMINARY SURVEY

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A collection of 78 numbers from Henderson Island and 27 numbers from Oeno Island was made by the senior author in 1991 and forms the basis of the annotated list which is presented below. The collection is still not completely identified and the resulting list is therefore incomplete. We list the identifications made to date below, with notes on their hosts and distribution where available. Vouchers are located at BM with duplicates at TCD.

Henderson Island

Buellia glaucotheca (Fée) Malme
Known from the West Indies and South America. A single record from the plateau forest along the Pinnacle trail, on *Pisonia grandis*: SW91-28 (part)

Caloplaca cf *granulosa* (Müll. Arg.) Jatta
Known from the British Isles, south and central Europe, North America and North Africa (Purvis *et al.*, 1992). On coastal *Argusia*, SW91-134

Chrysothrix candelaris (L.) Laundon
Cosmopolitan. Occasional on *Pandanus*, North Beach forests; not seen elsewhere. SW91-51

Coccocarpia palmicola (Sprengel) L. Arvidss & D. J. Galloway
Only seen in the plateau forests. A common pantropical species, widely distributed in the Pacific (Arvidsson, 1982). SW91-115, SW91-120

Collema kauaiense H. Magn.
Common on coastal *Argusia*, fairly common in plateau forests. SW91-124, SW91-128a (part), SW91-146, SW91-158 (part)

Collema japonicum (Müll. Arg.) Hue
Plateau forest, in heavy shade. SW91-111

Dirinaria applanata (Fée) Awasthi
Widespread epiphyte, generally in lightly shaded conditions. SW91-42, SW91-141 (part)

Dirinaria confluens (Fr.) Awasthi
In beach and plateau forests, often on *Cordia* and *Pisonia*. SW91-55, SW91-119, SW91-128, SW91-136

Dirinaria picta (Sw.) Clements & Shear
In similar locations to *D. applanata*, but commoner. SW91-27, SW91-39, SW91-117, SW91-141 (part)

Figures 1–10. Photomicrographs of pollen from endemic Henderson Island taxa. Fig. 1, *Alyxia* sp.; Fig. 2, *Bidens hendersonensis* var. *hendersonensis* (polar); Fig. 3, *Glochidion pitcairnense* (left: polar; right: equatorial); Fig. 4, *Xylosma suaveolens* subsp. *haroldii* (left: polar; right: equatorial); Fig. 5, *Senna glanduligera* (left: polar; right: equatorial); Fig. 6, *Geniostoma hendersonense* (equatorial); Fig. 7, *Myrsine hosakae* (left: polar; right: equatorial); Fig. 8, *Cyclophyllum barbatum* (left: polar; right: equatorial); Fig. 9, *Peperomia hendersonensis*; Fig. 10, *Santalum insulare* var. *hendersonense* (left: polar; centre & right: equatorial).

Hypotrachyna minarum (Vainio) Krog & Swinsow
Widespread in temperate and tropical lowlands. Noted from beach and plateau forest, often on *Pandanus*. SW91-54, SW91-112, SW91-155 (part)

Hypotrachyna cf. *rachista* (Hale) Hale
On coastal *Pandanus*. Known from southern N. America, Central and South America (Hale, 1975). SW91-155

Parmeliella mariana (Fr.) Jørg. & Gall.
Common and locally abundant in plateau forests, especially on *Xylosma*, but also common on *Pisonia* and *Glochidion*; occasional in embayment forest. A common tropical species, widely distributed in the Pacific region (Jørgensen & Galloway, 1992). SW91-113, SW91-125, SW91-132, SW91-139, SW91-157

Parmotrema saccatilobum (Taylor) Hale
Type collection of this species is 'Pitcairn's Island, Beechey' [FH-Taylor, lectotype]. Known only from the Pitcairn group, Fiji and the Marshall Islands (Hale, 1965). On *Pisonia*, only in the plateau forest. SW91-31, SW91-126

Parmotrema tinctorum (Nyl.) Hale
A common epiphyte throughout plateau and beach forests; not recorded from the southern half of the island. A common, pantropical weedy species (Hale, 1965; Swinscow & Krog, 1988). SW91-31, SW91-49, SW91-109

Pertusaria leioplacella Nyl.
Spores 8 per ascus, ovoid, wall 5–7 μm thick, 85–100 × 31–34 μm. Agrees well with Archer & Elix's (1992) description, but spores larger. Only seen in the plateau forests, especially on *Pisonia grandis* and *Xylosma suaveolens*. Known elsewhere only from New Caledonia and Queensland, Australia. SW91-28 (part)

Physcia tribacia (Ach.) Nyl.
In beach forest on *Cordia*. A widespread temperate species (Swinscow & Krog, 1988). SW91-55, SW91-110, SW91-119, SW91-128a

Physma byrsaeum (Ach.) Tuck.
Local in the plateau and beach forests. A widespread tropical species (Galloway, 1985; Swinscow & Krog, 1988). SW91-55, SW91-110, SW91-144

Pyxine cocoes (Sw.) Nyl.
On coastal *Pandanus* and *Argusia*. A widespread pantropical species (Awasthi, 1982; Rogers, 1986; Swinscow & Krog, 1988). SW91-154, SW91-172

Pyxine consocians Vainio
A single record from *Pisonia grandis* on the N-S trail. A pantropical species known from East Africa (Swinscow & Krog, 1988); India (Awasthi, 1982) and Australia (Rogers, 1986). SW91-137

Ramalina celastri (Sprengel) Krog & Swinscow
Common in rather exposed locations; found occasionally in the plateau forests, more common in beach forest at the North Beach. A widespread, pantropical species (Stevens, 1987; Swinscow & Krog, 1988). SW91-38

Thelotrema lacteum Krempelh.
Spores brown, 7–9 septate, 28–38 × 11–14 μm; agrees well with Hale's (1981) description. A widely distributed pantropical species (Hale, 1981). Only noted in plateau forest; usually on *Pandanus* or *Pisonia*, but also seen on *Xylosma suaveolens*. SW91-28 (part), SW91-30 (part), SW91-(part) SW91-135

Oeno

Dirinaria applanata (Fée) Awasthi
Common. SW91-174, SW91-182, SW91-194, SW91-200

Dirinaria picta (Sw.) Clements & Shear
SW91-200a, SW91-201

Pyxine cocoes (Sw.) Nyl.
SW91-172 (part), SW91-185

Pyxine consocians Vainio
Probably common, seen in *Pisonia/Argusia* forest and in open areas of shrubby *Argusia*. SW91-182 (part)

Ramalina nervulsosa var. *luciae* (Molho *et al.*) Stevens

Uncommon, mostly on *Pandanus*. Known from Sri Lanka, Indonesia, Kenya, Australia, New Hebrides, Fiji, Cook Islands and Tahiti. SW91-187

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