Pakiri Beach to Mangawhai spit	1939-2007	AK 234104, AK 37463, AK 287405, AK 298682, AK 299779
Takatu Point (Tawharanui Peninsula)	1975	AK 135991
Tamaki sandspit [Tahuna-Torea]	Kirk herbarium n.d.	AK 11684
Kaitoke Beach & Oruawharo Bay, Great Barrier Island	1938-1990	AK 22200, AK 271544 [both Kaitoke Bch], CHR 466149

B. Literature records of *Coprosma acerosa* in Auckland

Author	**Location**
Hutton & Kirk 1868	Arid Island [Rakitu]
Kirk 1868	Great Barrier (noted as abundant)
Kirk 1870	Auckland Isthmus and Takapuna District
Buchanan 1875	Kawau Island
Esler 1975	Piha
Cranwell 1981	West Coast

Botanical collecting in the central Pacific Ocean region

Rhys Gardner

This article summarizes plant-collecting activities in the central Pacific Ocean region (hereafter, central Oceania) up to the year 1800. Another, on the following 75 years, is intended. Originally part of a review of the region's grasses (Gardner 2007), this material grew too long to be placed there.

"Central Oceania" comprises the islands and island-groups of Rotuma, Wallis & Futuna, Fiji, Tonga, Samoa, Niue, and the Cook Islands. With the exception of the (plant-less) Minerva Reef of Tonga, they are all located entirely within the tropics, between 9 deg. South and the Tropic of Capricorn. The distance spanned, from Rotuma in the west to Penrhyn in the east, is c. 2700 km.

Information has mostly been gleaned from secondary sources: van Steenis-Kruseman (1950); Buck (1953); Beaglehole (1955-67); Sharp (1960); Dunmore (1965-69); Smith (1979); Spate (1988); Dunmore (1992); Badger (1996). The compilation of Brigham (1900) is very useful where older names of islands are concerned, and Robson (2000) is an invaluable atlas and itinerary for Cook's First, Second and Third Voyages. Where particular plant collections are likely to be found today can generally be determined from the Index Herbariorum Part II (Collectors) series, e.g. Vegter (1976), and from notes in the taxonomic bibliographies "TL 1" and "TL 2" (Stafleu 1967; Stafleu & Cowan, 1976-88).

The earliest voyages of discovery into central and eastern Oceania, in the 17th and 18th centuries, went in search of wealth and geographic knowledge, and made no systematic collections. The last of them can be mentioned here, since it marks the transition to what has been called "The Golden Age of Scientific Exploration". This was the voyage of Captain Samuel Wallis in H.M.S. *Dolphin* along with two other vessels. His orders were to search for land in the southern Pacific Ocean, notably the 'Southern Continent' that had been predicted by theoretical geographers. After sailing west through the Tuamotu Islands Wallis reached the easternmost island in the Society Islands group, Meheitia, which he named 'Osnaburgh Island'. 0n 18 June 1767 Tahiti was discovered.

Wallis named Tahiti 'George III Island' and stayed there somewhat more than a month. He gave names to Moorea ('Duke of York's Island') and three other of the leeward islands in this group. Leaving this archipelago, the *Dolphin* sailed westwards to pass Niuatoputapu and Tafahi in mid-August and, a few days later, Uvea, or 'Wallis Island', as Wallis's men would have it. From Uvea the *Dolphin* continued westwards to Batavia, to regain England on May 20 1768.

The first important scientific expedition into the eastern Pacific was made by the French, under Louis-Antoine de Bougainville, whose ships *Boudeuse* and *Etoile* set sail from Nantes in France on 15 November 1766. Philibert Commerson was the expedition's Royal Botanist and Naturalist. They entered the Pacific through the Straits of Magellan, sailed past the Tuamotus, and on 2 April 1768 reached Meheitia in the

Society Islands. On 6 April 1768 they anchored at Hitiaa Lagoon on the east coast of Tahiti. Bougainville named the island group the 'Bourbon Archipelago' and Tahiti itself, because of its charming and hospitable inhabitants, he called 'La nouvelle Cythère'.

They departed from Tahiti later that month. In early May the expedition passed through the islands of Samoa, sighting Ta'u, Olosega and Ofu, then Tutuila and Upolu. Although seas were too rough for the Frenchmen to attempt a landing, the people came out in their canoes and the two groups traded; in admiration, Bougainville named these islands 'Iles des Navigateurs'. The expedition then sailed westward to Batavia, rounded the Cape of Good Hope, and returned to France in March 1769.

Commerson, however, left the expedition in Mauritius, to die there in 1773. Some but not all of his material did reach France — in particular, collections from Port Praslin (New Ireland) exist at P (Muséum National d'Histoire Naturelle, Paris), but none from Tahiti have survived (Drake del Castillo 1893: xiii; note Stafleu's (1971: 227) assumption to the contrary).

The next voyage, that of Lieutenant James Cook in the *Endeavour* (" Cook's First Voyage"), did not pass through central Oceania, but, as noted by Smith (1979), has to be discussed in an article such as this because of the fundamental nature of its scientific discoveries.

The expedition sailed from Plymouth on 25 August 1768. On board were the botanists Joseph (later Sir Joseph) Banks and Daniel Carl Solander (later to be awarded an Honorary Doctorate from the University of Oxford), and botanical draughtsman Sydney Parkinson (who was to die on the homeward part of the journey). Ostensibly, the purpose of the voyage was a purely scientific one, an observation of the transit of Venus (the path of the planet's shadow across the sun's face), which would provide an estimate of the size of solar system. Cook also had secret instructions, to search for the 'Southern Continent', an obsession of certain theoretical geographers. In third place was the natural history work, which got approval from the Admiralty only because of persistent politicking by Banks and the Royal Society. A wealthy young landowner, Banks was able to finance himself and Solander and their seven assistants, and had already demonstrated "the right stuff" both botanically-speaking and with respect to maritime hardships, during a voyage to Labrador with the Royal Navy two years earlier.

The *Endeavour* anchored at Matavai Bay on the northern coast of Tahiti on 13 April 1769. The ship remained in this island-group for three months, and Banks and Solander made a large number of collections, from Tahiti ('Otaheite'), Moorea ('Eimeo' or 'York Island'), Huahine ('Huaheine'), Raiatea ('Ulietea') and Tahaa ('Otaha') — see Beaglehole (1955), Grove (1963) and Robson (2000) for a detailed chronology. Both Banks and Solander proved capable linguists (Tingbrand 1984; Carter 1988; Rensch 2003), and collected vernacular names and other local information for their plants. Some of this was soon published, in the journal of Sydney Parkinson (1773), as notes on "plants for use as food, medicine etc. in Otaheite".

On 3 June 1769, a day of cloudless sky, the transit of Venus was observed. The *Endeavour* sailed northwards from Tahiti on 13 July, Cook having found a native named Tupaia (sometimes spelt 'Tupia') who was willing to guide the ship to his home island of Raiatea. Landings were made on Huahine, Raiatea and Tahaa (but not Borabora). In deference to Wallis's having already named Tahiti 'King George III Island', Cook named these leeward islands (Huahine, Raiatea, Otaha, Borabora, Motu-iti and Maupiti) the 'Society Islands', not, as is sometimes supposed, after the Royal Society, but "as they lay contiguous to one a nother". In time, this name came to include Tahiti and the windward isles as well.

Leaving the Societies, Cook turned south from Raiatea, to sight and circumnavigate Rurutu ('Hitiroa') on 13 August, where trading was done without any landing being made. The expedition then headed south to New Zealand and Australia, to return home on July 13 1771 via Batavia and the Cape of Good Hope.

The Banks and Solander collections were consulted by Banks's many botanical visitors and after his death were taken care of by his librarian Robert Brown, who arranged in 1827 for them to become a part of the British Museum herbarium (now BM, Natural History Museum, London). Sets of duplicates were distributed by BM to Kew, Paris and to several other herbaria. A lesser number of specimens had already been gifted by Banks to eminent botanists such as L'Héritier and Gaertner (Edwards 1978).

Because of a number of circumstances, in particular the early death of Solander (in 1782), and also Banks's increasing responsibilities and financial stresses (Edwards 1978; Carter 1988), the botanical results were not published. However, the collections, and Solander's manuscript flora *Primitiae Florae Insularum Oceani Pacifici*, with its detailed descriptions, vernacular names and localities provide crucial data for reasoning about the nativity of many of the weedy or widespread Pacific Islands plants (Merrill 1954).

The next expedition of relevance was also directed by James Cook. Appointed as Commander of the two ships *Resolution* and *Adventure*, he was ordered to make another search for the Southern Continent, this time in all parts of the southern oceans. Banks had decided not to go again because he judged the ships' fittings inadequate for scientific work, and the German naturalist-scholar Johann Reinhold Forster along with

his talented and artistic seventeen year-old son George went in his stead. Until recently, the dispersed nature of the Forster collections and writings has often hampered conclusions being drawn about provenance, type material etc. But with the recent publication of the studies of Nicolson & Fosberg (2004), our understanding of Forsterian botany has been very much advanced.

Cook's Second Voyage departed from Plymouth on 13 July 1772 and reached Cape Town at the end of October. Here an additional botanist was recruited, Anders Sparrman, like Solander a Swede and former pupil of Linnaeus. Exploration was carried out towards Antarctica, then northeast to New Zealand, and then north to reach the Societies on 15 August 1773. Two weeks were spent on Tahiti; Huahine was visited, then Raiatea and Otaha. (Sparrman mistakenly says in his journal (1953: 83) that the latter island had never been botanized). Course was then set for Tonga. On 23 September 1773 the atoll Manuae in the southern Cook Islands was discovered, which Cook was eventually to name Hervey's Island, a name which in the plural came for some time to mean the Cook Islands at large. No landing was made on Manuae. The expedition went on to reach Tonga at the beginning of October, where a brief landing was made on Eua ('Eoowe'), and then several days were spent on Tongatapu. Tonga was departed on 8 Oct 1773, the ship being laden with coconuts, bananas, yams, live pigs and fowls. Describing the people of these islands as living in amity with one another and "more desirous to give than receive", Cook named this group the 'Friendly Islands'.

New Zealand was attained again in early November. Then, after a long westward haul as far as Easter Island and the Marquesas (where they landed and spent several days on Tahu Ata), Cook and the *Resolution* arrived back at Tahiti on 22 April 1774. After short stays on Huahine and Raiatea, they left the Societies and sailed through the Cook Islands, discovering (but not landing on) Palmerston atoll on 16 June. They went on to discover Niue on 20 June 1774 but had to retreat in face of a hostile reception — the botanists got only a handful of cliff plants, and Cook named it 'Savage Island'. They then passed through the northern group of the Tongan Islands, to land on Nomuka ('Annamooka'), where they stayed during 25-29 June. Then, on 2 July, the small island of Vatoa ('Turtle Island') in the southern part of the Fijian archipelago was passed by.

The expedition then left the central Pacific region, to go on to Vanuatu, where a brief landing was made on Malekula, and a longer one on Tanna. The New Caledonian mainland was then discovered and was botanized on, as was the the islet of Améré ('Botany Island') near the Isle of Pines (this also a Cook name). Norfolk Island was discovered on 10 October. England was regained via Cape Horn on 30 July 1775. After this journey of slightly more than three years, covering 60 000 to 70 000 miles, only four men had been lost by accident or disease, and none had died from scurvy.

In the words of Buck (1953), Cook's Second Voyage exploded the theory of the 'Southern Continent', discovered new islands, and produced a vast amount of information concerning Polynesian peoples. Unfortunately, the botanical information gathered was comparatively slight. When back in London, the Forsters encountered various difficulties, mainly of their own making, and although three works containing information on the Pacific flora were published (Forster and Forster 1775; Forster 1786a; Forster 1786b) they are very incomplete.

The Forster collections soon became widely dispersed, a matter for concern made worse by their being poorly labelled and not clearly associated with the published descriptions. Apparently the most complete sets of specimens are in BM and perhaps K, but at least twenty or so other European herbaria also have material (Fosberg 1993; Hansen & Wagner 1998; Nicolson & Fosberg 2004). Two manuscript lists in BM are of special interest to those wanting to know likely localities of plants seen on the Second Voyage. One is the catalogue made by Banks of the Forster specimens [236 species] that he saw in January 1778; the other is an undated list, in the elder Forster's hand, entitled *Catalogue of a collection of plants presented to Joseph Banks by J. R. & G. Forster* — it contains 255 species. According to Edwards (1982: 28) these lists relate to separate collections.

Smith (1979) has suggested that some material in BM labelled only "Capt. Cook" may have been collected by anonymous crew members "on any of the three voyages". This seems unlikely for the First Voyage, but on the Second Voyage surgeon's mate William Anderson was developing his interest in natural history and had begun to collect shells and plants, e.g. Seemann (1865: 323) cites a collection of the grass *Thuarea involuta* made by Anderson on Tanna. Very relevant too is a paragraph in George Forster's published account of the voyage (Forster 1777, vol. 2: 419-20), revealing some pique at Anderson's abilities as demonstrated in New Caledonia: "One of the surgeon's mates, who went on this excursion, collected a prodigious variety of new and curious shells upon the island of Ballabeea [Balabio] and likewise met with many new species of plants, of which we did not see a single specimen in the districts we had visited; but the meanest and most unreasonable envy taught him to conceal these discoveries from us, though he was utterly incapable of making use of them for the benefit of sciences."

Beaglehole's comment (1961: xlvi) is unimprovable: "This monster of envy and ignorance could only have been William Anderson, whose version we should like to have."

Anderson, a consumptive, died in 1778 off the Alaskan coast during the latter part of Cook's Third Voyage, and it would seem that some of his specimens (perhaps those made on both voyages) were not immediately incorporated into BM (Britten 1916: 350). Possibly, then, some of the "Capt Cook" material might belong to him.

Also in BM is a two-volume set of George Forster's drawings and watercolours. Copper plates were engraved for many of these (Edwards 1982); one set of pulls from these plates is at BM and one is at LE (V.L. Komarov Botanical Institute, Leningrad). Among the drawings are the grasses *Ischaemum murinum*, *Lepturus repens* and *Thuarea involuta*. In Edwards's list of these pulls (1982: 776), those of *Lepturus repens* and two other seashore plants, *Heliotropium anomalum* and *Pemphis acidula*, are catalogued under "Cook Islands". Since the expedition did not land on Manuae or Palmerston this must be erroneous — these widespread plants could well have been taken on Niue.

Cook's Third Voyage, which was to be his last, was made primarily as an exploration of the northern Pacific and Arctic waters. The ships *Resolution* and *Discovery* sailed from Plymouth in July and August 1776. William Anderson, now surgeon on the *Resolution*, appears to have collected few plants on this trip, but he kept a journal valuable for its linguistic and ethnographical observations. David Nelson, a young gardener collecting for Kew on Banks's instruction, shipped on *Discovery* , and was to make a plant collection of some moderate size.

After reaching New Zealand in February 1777 the expedition proceeded to the Cook Islands, where at the end of May Mangaia and then Atiu were touched on, but little or no collecting was done on these islands. On 4 April a landing was made on Takutea atoll, where fodder was collected; Manuae was then touched on, and then on 15 April a landing was made on Palmerston atoll, where the almost grass-less state of the island was bemoaned, there being only a small quantity of a "Creeping Grass" (probably *Lepturus repens* or *Thuarea involuta*). A stay was made there for several days, when an abundance of coconuts, fish and seabirds at least was gathered.

Cook then proceeded to the Tongan Islands, where a long stay was made (28 April to 17 July 1777) on Nomuka and Lifuka in the Haʻapai Group, Tongatapu, and Eua. Anderson's focus would seem to have been on ethnography, and Hemsley (1894) cites Tongan collections only of Nelson. The rest of Cook's Third Voyage was made in waters outside our region of interest. Cook was killed on the shore of Hawaii in 1779. After some more exploration in that island-group and in the Arctic (looking for a "North-West Passage") his two ships returned to London in 4 Oct 1780. The collections of Anderson and Nelson are at BM.

The second of the French voyages of discovery (following that of Bougainville) into the central Pacific was commanded by Jean-Francois de Galaup, Compte de la Pérouse (usually referred to as La Pérouse). This ill-fated expedition sailed from Brest in August 1785, and comprised the ships *Boussole* and *Astrolabe*; it carried a naturalist, botanist, natural historian, botanical draughtsman, and a gardener. In December 1787 they passed through Samoan waters, where a disastrous attempt to land on Tutuila for watering was made — the party was attacked, and twelve men were killed. The island of Savaiʻi was sighted on 17 December, a new discovery. They then entered Tongan waters, traded offshore with the people of Tongatapu without attempting to land there, and went on to reach Sydney on 26 January 1788.

From Sydney, La Pérouse dispatched back to France the journals and charts which formed the basis of the later-published account of this part of the voyage. The collections, however, remained on board. The expedition was never heard from again, and it was not until 1827 before its fate became known — shipwreck on Vanikoro in the Santa Cruz Islands, with loss of both vessels, all collections, and all personnel.

The next great French expedition was under the command of Antoine-Raymond-Joseph de Bruni d'Entrecasteaux, with ships *Recherche* and *Esperance*. The principal naturalist was Jacques-Julien Houttou de la Billardière (referred to here as Labillardière), accompanied by Louis Auguste Deschamps. This expedition set sail from Brest in Sept 1791, its major object being to find out the fate of La Pérouse. The voyage took in Australia and surrounding islands, then sailed via northern most New Zealand and the Kermadec Islands (a discovery of theirs) to Tongatapu, where a stay was made in 25 March-10 April 1793.

D'Entrecasteaux then visited Tanna, New Caledonia and the Santa Cruz Islands. Navigational difficulties, near-shipwreck and sickness almost finished off this expedition as it struggled in September and October to reach Surabaya in eastern Java. By this time the French Revolutionary Wars had broken out, and Holland had been annexed by Republican France. Royalist officers in the expedition took charge, and the pro-Revolutionary Labillardière and others were made prisoner and subsequently taken to Mauritius. The Royalist party with the plant collections and other scientific valuables attempted to return home in a Dutch ship but were captured by the British.

Labillardière's specimens were then the object of various manoeverings in London. At one stage Banks was commanded by Queen Charlotte to inspect them and advise her, which he did, saying that he would "undertake to select for her Majesty a complete collection of one good specimen of each species ... the individual specimens from whence they are to be

taken cannot consist of less than 10,000 ... " (Carter, 1988: 410). However, more generous sentiments prevailed, and thanks to Banks's "disinterested liberality" the whole collection was returned to Labillardière in late 1797.

Labillardière published on Tasmanian and New Caledonian plants, but these works included no information on the Tongan flora, and one has to suspect that any such collections were lost. His account of New Caledonian plants (Labillardière 1824-5) contains fine illustrations of the grasses *Miscanthus floridulus* and *Sporobolus virginicus*.

There are collections of Labillardière from the D'Entrecasteux Expedition in the Florence University herbarium (FI) and also in P and BM. Deschamps had been allowed by the Dutch to stay behind in Java and he collected there for another five years; all his specimens, however, were subsequently lost.

There had been a number of minor Spanish voyages between 1770 and 1781, such as that by Francisco Antonio Mourelle, who in February 1781 discovered the Tongan island of Fonualei, and then Late and Vava'u, which he called the 'Mayorga Archipelago'. Much more important, though was the Malaspina Expedition of 1789-1794 (van Steenis-Kruseman 1950; Langdon 1977; Spate 1988; David et al. 2004; Rigby et al. 2005). This was primarily a voyage of scientific discovery, though with additional instructions to assess various political and military situations, including Russian activities along the Northwest Pacific Coast of America. It was commanded by Alejandro Malaspina (Fig. 1), who was born in 1754 in the Italian city of Parma, then a Spanish territory. He was an experienced and valiant naval officer with a good appreciation of science and had already made one world circumnavigation (Sáiz et al. 1994).

Malaspina's expedition comprised the twin, purpose-built 360-ton corvettes *Descubierta* and *Atrevida*. The botanists on board were Luis Née and Antonio Pineda; later, at Valparaíso, the Bohemian botanist Tadeo Haenke, a "collecting phenomenon", was to join them (Presl 1825). Malaspina sailed from Cadiz in September 1789, and initially explored and charted the length of the Pacific Coast of America. Then, he sailed west from Acapulco along the Manila Galleon track, to reach Guam on February 1792, and in late March, Cavite on the Philippine island of Luzon.

After exploring for a number of months in the region of the Philippines (where Pineda died), Malaspina headed eastwards. Erromango was sighted in February 1793; on 21 February they were off Dusky Sound in New Zealand. However strong northeasterlies forced them to turn west again, and they headed for Sydney, where they anchored on 11 March 1793. After a short stay there, the expedition went to Vava'u, where three weeks (19 May - 11 June) were spent in making astronomical, linguistic, botanical and ethnographical studies. Some days were then spent around the adjacent islands of Late, Kao, and Tofua, and Tongatapu was sighted; the expedition then sailed away for Callao, and rounded the Horn to regain Cadiz on 21 September 1794.

On his return Malaspina became involved in court intrigues, apparently attempting to replace in Queen María Luisa's affections the powerful chief minister of that time, Manuel de Godoy (Rogers 1995). The latter prevailed, and, slightly more than a year after his return, Malaspina was arrested. Imprisoned for seven years and then banished, he was to die an obscure death in Italy in 1810. Godoy was able to suppress publication of the expedition's journals and other works, and until relatively recently these and the drawings and scientific treasures have remained more or less unknown.

Fig. 1. Malospina on the shores of Vava'u. The burrs being combed from his hair could be those of *Cenchrus caliculatus*.

The botanical collections from the Malaspina Expedition, as well as much other material, went to the Royal Botanical Garden of Madrid (MA), where botanist Antonio Cavanilles published two new species from Née's Vava'u specimens: *Cenchrus caliculatus* and *Guioa lentiscifolia*. Haenke was present on the first part of the homeward voyage but disembarked at Callao. He settled in Bolivia, to die there in 1816. The only Pacific Ocean material known to be collected by him appears to be from the Philippines and Guam (Presl 1825; Miller 1970) — material from Australia or Vava'u, if any existed, has been lost.

References

Badger, G. M. 1996: The explorers of the Pacific. 2nd ed. Kangaroo Press, New South Wales.

Beaglehole, J. C. (ed). 1955: The journals of Captain James Cook on his voyages of discovery. I: The voyage of the *Endeavour* 1768-1771. C. U. P. for Hakluyt Society, Cambridge.
Beaglehole, J. C. (ed). 1961: The journals of Captain James Cook on his voyages of discovery. II: The voyage of the *Resolution* and *Adventure* 1772-1775. C. U. P. for Hakluyt Society, Cambridge.
Beaglehole, J. C. (ed). 1967: The journals of Captain James Cook on his voyages of discovery. III: The voyage of the *Resolution* and *Discovery* 1776-1780. C. U. P. for Hakluyt Society, Cambridge.
Brigham, W. T. 1900: An index to the islands of the Pacific Ocean. Bishop Museum Press, Honolulu.
Britten, J. 1916: William Anderson and the plants of Cook's third voyage. *J. Bot. 54*: 346-52.
Buck, P. H. 1953: Explorers of the Pacific. *Bish. Mus. Spec. Pub. 43*. Bishop Museum, Honolulu.
Carter, H. B. 1988: Sir Joseph Banks. British Museum (Natural History), London.
David, A. et al. (eds.) 2004: The Malaspina Expedition 1789-1794. Hakluyt Society and Museo Naval Madrid, London.
Drake de Castillo, E. 1893: Flore de la Polynésie française. G. Masson, Paris.
Dunmore, J. 1965-9: French explorers in the Pacific. 2 vols. Oxford University Press, London.
Dunmore, J. 1992: Who's who in Pacific navigation. Melbourne University Press, Carlton.
Edwards, P. 1982: George Forster's plant drawings from Cook's second voyage in the Department of Botany, British Museum (Natural History), London. Pp. 770-7790 in M. E. Hoare (ed.): The *Resolution* Journal of Johann Reinhold Forster. Vol. IV. Hakluyt Society, London.
Forster, G. 1777: A voyage round the world. 2 vols. White, Robson, Elmsley and Robinson, London.
Forster, G. 1786: Florulae Insularum Australianum Prodromus. Göttingen.
Forster, J. G. A. 1786: De plantis esculentis insularum oceani australis commentatio botanica. Berlin. 80 pp.
Forster, J. G. A.; Forster, G. 1775(1776): Characteres Generum Plantarum. London. White, Cadell and Elmsly.
Fosberg, F. R. 1993: The Forster Pacific Islands collections from Captain Cook's *Resolution* voyage. *Allertonia 7*: 41-86.
Gardner, R. O. 2007: Grasses (Gramineae) of the Central Pacific Ocean Region. *Rec. Auckland Mus. 44*: 43-83.
Groves, E. W. 1962: Notes on the botanical specimens collected by Banks and Solander on Cook's First Voyage, together with an itinerary of landing localities. *J. Soc. Bibliogr. Nat. Hist. 4*: 57-62.
Hansen, B.; Wagner, P. 1998: A catalogue of the herbarium specimens from Captain Cook's first and second expeditions housed in the Copenhagen Museum (C). *Allertonia 7*: 307-361.
Hemsley, W. B. 1894: The flora of the Tonga or Friendly Islands. *J. Linn. Soc. Lond., Bot. 30*: 158-217.
Langdon, R. 1977: The maritime explorers. Pp. 40-62 in Rutherford, N. (ed): Friendly Islands: a history of Tonga. O.U.P., Melbourne.
Merrill, E. D. 1954. The botany of Cook's voyages. Chronica Botanica Co, Waltham.
Miller, H. S. 1970: The herbarium of Aylmer Bourke Lambert. *Taxon 19*: 489-553.
Nicolson, D. H.; Fosberg, F. R. 2004: The Forsters and the Botany of the Second Cook Expedition (1772-1775). Regnum Vegetabile 139. Gantner, Ruggell.
Parkinson, S. 1773: A journal of a voyage to the South Seas, in His Majesty's ship, the Endeavour. Printed for Stansfield Parkinson, London.
Presl, K. B. 1825-36: Reliquiae Haenkeanae. [Facsimile edn, with a foreword by W. T. Stearn. A. Asher & Co., Amsterdam 1973].
Rensch, K. H. 2003: Early Tahitian. Archipelago Press, Canberra.
Rigby, N., van der Merwe, P., Williams, G. 2005: Pioneers of the Pacific. University of Western Australia Press.
Robson, J. 2000: Captain Cook's World. Random House, Auckland.
Rogers, R. F. 1995: Destiny's landfall. University of Hawai'i Press, Honolulu.
Sáiz, B., Manfredi, D.; de la Sota, J. 1994: Alexandro Malaspina, La América Imposible. Compañía Literaria, Madrid.
Seemann, B. 1865-1873: Flora Vitiensis. L. Reeve & Co., London.
Smith, A. C. 1979: Introduction. Pp. 1-88 in Flora Vitiensis Nova. Vol. 1. Pacific Tropical Botanical Garden, Hawaii.
Sparrman, A. 1953: A voyage around the world ... . Transl. H. Beamish & A. Mackenzie. Robert Hale, London.
Spate, O. H. K. 1988: The Pacific since Magellan. Vol. 3 Paradise Lost and Found. Pergamon Press, Sydney.
Stafleu, F. A. 1967: Taxonomic Literature. Regnum Vegetabile 52. I. B. P. T., Zug. ["TL 1"].
Stafleu, F. A. 1971: Linnaeus and the Linnaeans. 1971. IAPT,. Utrecht.
Stafleu, F. A. & Cowan, R. C. 1976-1988: Taxonomic Literature. 2nd edn. Vols 1-7. Bohn, Scheltema & Holkema, Utrecht. ["TL 2"].
Steenis-Kruseman, M. J. van. 1950: Malaysian plant collectors and collections. Flora Malesiana, Series 1, Vol.1. [With introductory chapters by C. G. G. J. van Steenis]. Noordhoff-Kolff, Jakarta.
Tingbrand, P. 1984: Daniel Solander, Pitea's around-the-world pioneer. *Arch. Nat. Hist. 11*: 489-498.
Vegter, I. H. 1976: Index Herbariorum. Part II Collectors (4) M. Regnum Vegetabile 93. Bohn, Scheltema & Holkema, Utrecht.

Hydatella inconspicua in Northland lakes

Maureen Young

The aquatic *Hydatella inconspicua* (Fig. 1) is known in New Zealand from seven western dune lakes in Northland, and some western Southland and Fiordland lakes. It has disappeared from two Northland lakes because of infestations of exotic weeds and fish. It is a tiny tussock-like plant with filiform leaves c. 2 cm long, green-brown at the top third and white below, and while it is usually submerged, it can be exposed when water levels fall in summer.

During the ABS Easter camp of 2007, Kevin Matthews from Awanui took us to Lake Ngatu, and showed us a population at the southern end of the lake. The plants are monoecious, and one plant showed the minute red, globular fruit held between chalice-shaped bracts. This is the type locality for the plant. It was first collected there in 1906 for Cheeseman by Kevin's great-great uncle, R.H. Matthews and his friend, H. Carse. Ten days after the ABS camp I was at Lake Ngatu again, this time with a team of NIWA aquatic ecologists and Lisa Forester from the Northland Regional Council. Kevin joined us for the visit, and this time he found another good patch at the north eastern side of the lake. By this time I was beginning to understand that the plant is usually completely obscured by a coating of blue-green algae, making it difficult to locate.