Rare and Unusual Plants North of the Kauri Line

J. L. Bartlett, Auckland

In a recent paper in the *N.Z. Journal of Botany** Dr D. R. Given lists 314 plants considered to be rare and/or endangered. About 90 of these lie above a line joining Kawhia in the west, to Tauranga in the east, the so-called kauri line. This represents about 30% of the 314 plants in an area of 54900 km^2, being 20% of the total area of N.Z. Below I hope to outline the distribution of these plants and some others growing in association with the rarer plants.

Probably the most interesting pteridophyte in the far north and certainly the rarest is *Christella dentata*. This fern was recorded in two places in Mangonui County where it is still intact. One of these locations is on farmland in an ancient scrap of kahikatea forest, and because of its unpalatability to cattle it is prevented from being an exotic tit-bit for the voracious ungulates. It differs from the Rotorua populations in having smaller, more membranous fronds of a lighter green and a creeping rhizome.

Not far from this location is the original site of *Pittosporum obcordatum* var. *kaitaiaensis* and *Lycopodium serpentinum*. A few very interesting orchids were found here also, near a great swampy area called Lake Tongonge, long since drained. Some of the orchids are *Chiloglottis formicifera, Corybas aconitiflorus, C. unguiculatus, Calochilus campestris* and *Thelymitra matthewsii*. From the huge quantity of herbarium material collected by Matthews, it is not surprising these orchids are nearly extinct.

The two hygrophilous ferns *Thelypteris confluens* and *Cyclosorus interruptus* also have a very tenuous hold in the far north. *T. confluens* is known from six locations extending from Kerikeri to the Karikari Peninsula, then to Tauroa with one location near Cape Reinga.

Many different types of habitat are represented in this relatively small area; among others are cliff communities, scrub on plateau-like formations of ironstone and serpentine; in the very far north hinterland scrub with either *Hakea* or *Leptospermum* as the dominant species, coastal forest remnants, gumland scrub, gumland bog and swamp; fresh-water swamp, estuarine swamp, damp sand-dunes and compacted sandstone areas, exposed pipe-clay ridges and rocky outcrops of conglomerate. There are only two high points near 1000′ and considerable areas of frequently burnt-over scrub. Considering, for example, the cliff community at North Cape, this shows a gradual transition from prostrate bushy shrubs to some coastal forest associations in more shaded parts of the cliff to the more typical marine plants near the base. Here can be found a collection of plants,

N.Z. J1Bot. 14(2): 135-150, June 1976

some unique to the area: *Pittosporum michiei, P. pimeleoides, Cyathodes parviflora, Geniostoma ligustrifolium* var. *crassum, Parsonsia* sp., *Cassinia amoena, Coprosma* × *kirkii, Coprosma* × *neglecta, Hebe ligustrifolia, H. brevifolia, Pseudopanax* sp., *Phyllocladus* sp., *Haloragis erecta* ssp. *cartilaginea.*

On a plateau of serpentine at approx. 600′ can be found *Haloragis erecta* ssp. *cartilaginea, Botrychium australe, Phylloglossum drummondii, Pomaderris prunifolia* var. *edgerleyi, P. oraria* var. *novae-zelandiae* and the two pittosporums and the two hebes mentioned above. It is quite extraordinary that no more than 50 yds from the serpentine area there is a quarry! When I visited the area with Mr R. H. Michie in December 1976 he noticed considerable changes that had been caused by fire within the past 10 years.

These interesting plants can be split up into at least three groups —

a) The **endemic** plants: the *Pittosporum, Hebe brevifolia* and the *Cassinia.*

b) The **serpentinicolous** races: the *Geniostoma, Phyllocladus,* dwarf *Knightia excelsa* (when grown in non-serpentine soil these plants regain their usual dimensions)

c) The **plants of uncertain taxonomic position:** the *Parsonsia, Pseudopanax,* and some odd forms of *Leptospermum* and the *"Coprosma neglecta".* These when grown in normal garden soil do not change their dimensions and/or prostrate habits. The *Cyathodes* is a disjunct species, being found on the Chathams and in Australia.

Another area of bush containing a quite different association extends from the western end of Spirits Bay to the Unuwhao Trig. Here can be found *Olearia albida* var. *angulata, Dracophyllum viride, Pratia physaloides, Weinmannia silvicola* var. *betulina* and a *Weinmannia* sp. having very small adult leaves and much longer racemes than *W. silvicola* var. *betulina.* Rather surprisingly, in this bush can be found many species of the large foliose lichens of the genera *Sticta* and *Pseudocyphellaria.* Hepatics of the genera *Plagiochila, Schistochila, Frullania, Radula* and *Fossombronia* are reasonably common in the damper areas. Some species may have their northernmost distribution in this area.

7,000 acres of pines are being planted, and this unique piece of bush between the Spirits Bay Road and the Mokaikai Block is threatened with commercial exploitation. One population of *Pomaderris phylicifolia* var. *polifolia* has been destroyed and only one or two small areas of this very rare plant are left.

The distribution of the two genera of land snails *Paryphanta* and *Placostylus* has been affected by burning and clearing of the bush. Sixteen subspecies including six subfossil remains have been located in this area. *Placostylus ambagiosus* ssp. *michiei* and *P. ambagiosus* ssp. *paraspiritus* are now relegated to an area of no more than 80 × 50

yards and are near extinction, as is *Paryphanta busbyi* ssp. *wattii* near Cape Maria Van Diemen.

Also, as the fresh-water swamps are drained, various genera such as *Utricularia, Drosera, Lepidosperma, Myriophyllum, Chara* and many others will disappear.

Other plants of interest in this far northern area are *Pisonia brunoniana, Planchonella novo-zelandica, Hebe diosmifolia* and rather surprisingly *Alseuosmia quercifolia, Libocedrus plumosa, Senecio kirkii* var. *angustior, Coprosma parviflora, Pseudopanax anomalus, Litsea calicaris,* and the ferns *Selenodesmium elongatum* and *Leptopteris hymenophylloides*. One extraordinary piece of bush contains no less than *10* gymnosperms including the rare *Dacrydium kirkii* and the much rarer *D. colensoi*. In all there are over 210 species of dicots and monocots in an area of half a square mile. Many rare bryophytes are present also, e.g. *Dawsonia superba, Homalia auriculata, Campylopus bicolor* and *Dicranoloma fasciatum*. The *Homalia* is very rare, having been recorded only from four locations in N.Z. Some very surprising finds were *Ascarina lucida, Pseudowintera axillaris, Pittosporum cornifolium, Pratia physaloides, Corokia buddleoides, Metrosideros* sp. with leaves like *M. fulgens* but the plant forming a large tree, like *M. robusta* (which is also present), *Mida salicifolia, Hedycarya arborea* and *Laurelia novae-zelandiae*. The ferns *Blechnum discolor, B. filiforme, B. fraseri, Rumohra adiantiformis* and seven species of filmy ferns are also there. On the pipe clay on the borders of this kauri remnant can be found the very interesting monocots *Lepidosperma laterale* and *L. filiforme,* and also a number of species of *Schoenus* and *Baumea*.

The Tauroa Peninsula and Herekino Gorge area 80 miles south on the west coast have small areas of *Leptospermum* scrub containing the very rare *Pseudopanax ferox*. Other plants are *Hibiscus diversifolius, Adiantum formosum* (first seen in 1932 and not located since) *Rubus squarrosus, Peperomia tetraphylla, Dicksonia lanata, Schizaea dichotoma, Dracophyllum viride, D. matthewsii* and some rather extraordinary examples of *Alseuosmia,* one plant having deeply bullate leaves circular in outline, 6 cm in diameter!

On the western side of the Herekino Gorge can be found *Pittosporum virgatum,* a plant now known only from six or so locations in the North Auckland and Coromandel districts.

One most unusual area of the far north is the Karikari Peninsula which is a veritable botanical cornucopia, e.g. *Lycopodium serpentinum, Thelypteris confluens, Cyclosorus interruptus, Dracophyllum adamsii, Pimelea arenaria, Hebe diosmifolia, H. bollonsii* and the rare bryophytes *Campylopus bicolor, Fossombronia perpusilla, Goebelobryum unguiculatum, Dendroceros giganteus* and *Aneura orbiculata,* all in abundance.

The largest recorded plants of *Asplenium obtusatum* var. *northlandicum* occur in this area, with some fronds up to 70 cm.

Many rare species of *Carex, Juncus, Baumea* and grasses exist here also. The area is the "happy hunting ground" of Mr G. B.

Rawlings who has made many important discoveries in the far north — truly a botanist *primus inter pares*.

On the southern side of Doubtless Bay two very interesting areas of bush occur, one at Mangonui and one further south near the Whangaroa Harbour.

One plant of importance at Mangonui is *Pittosporum pimeleoides*, where forms ranging from the so-called *"reflexum"* to the very small-leaved plants looking like young tea-tree can be found. The whole area has been ear-marked for pine plantation.

The Whangaroa Bush has some rather more outstanding plants. Among these are *Pseudopanax gilliesii* and *Alseuosmia ligustrifolia*, renamed recently as *A. banksii* ssp. *banksii* in an excellent revision of the genus by Dr R. Gardner of Auckland University. The many forms of the larger-and smaller-leaved types are going to be given general collective titles indicating their hybrid origin. *Pittosporum virgatum* can be found here also. A little south of Whangaroa is an area of bush containing the northernmost plants of *Asplenium colensoi, Blechnum vulcanicum* and *Pseudopanax discolor*. Near Kaikohe can be found *Baumea complanata*, a very rare plant that may soon disappear with development of the area.

The Kerikeri area has one or two interesting collections of plants including *Hebe acutiflora, Dracophyllum matthewsii, Todea barbara, Thelypteris confluens* and *Asplenium bulbiferum* ssp. *gracillimum*, a new subspecies recently described by Dr P. Brownsey in his masterly revision of the genus. Some of the coastal areas near Russell contain *Hebe bollonsii* and *H. parviflora* var. *arborea*, and near Kawakawa, in *Leptospermum* scrub, can be found *Doodia aspera*, recently rediscovered in N.Z. having being recorded only from the North Cape area about 50 years ago. This is by far the rarest fern in N.Z.

It is possible that the Kawakawa area may contain the most southern plants of the true *Coprosma parviflora*. Other coprosmas in these bits of tea-tree bush are *C. rigida, C. crassifolia, C. arborea, C. spathulata* and *C. tenuicaulis*.

Some parts of the bush are made up of large limestone blocks and the rare liverwort *Plagiochasma hodgsoniae* grows there, a thalloid hepatic with curious stalked carpocephalae that may contain four or five large cellular regions of spores.

The coastal forest remnants extending from Russell to the Whangarei Heads have a few localities near the sea containing *Fuchsia procumbens* and at the Heads two conspicuous high points, Mt Manaia and Bream Head, form spectacular sentinels overlooking the entrance to the harbour. Here can be found *Celmisia adamsii* var. *rugosula* , a small colony greatly reduced by goats whether four or two-legged, the latter being far more destructive. These magnificent daisies have been ripped out and transported to backyard gardens to form an incongruous and ecologically impossible association with other vandalized rarities. Some arbitrary collectors are under the illusion that by gathering large quantities of rare plants they may

"save" the flora single-handed, and obviously do not understand the importance of a plant's ecological associations.

Other plants of unusual distribution are *Pomaderris oraria* var. *novae-zelandiae, Nestegis apetala, Hebe* sp. unnamed and *Hebe parviflora* var. *arborea*. Near the sea coast can be found *Asplenium obtusatum* var. *northlandicum* and *Asplenium flaccidum* var. *haurakiense*.

Moving back to the west coast north of the Hokianga Harbour, a rather magnificent area of kauri forest can be found, although much depleted by logging. An area of about half that of Waipoua still exists. Many very large trees tower over the secondary association of *Beilschmiedia taraire, B. tawa, Podocarpus totara, P. ferrugineus, P. spicatus, Dacrydium cupressinum* and hardwood trees.

The rare dacrydiums *D. kirkii* and *D. colensoi* can also be found there. Other species with a northern distribution are *Phyllocladus glaucus, Ackama rosaefolia, Litsea calicaris* and *Libocedrus plumosa*. The liane *Metrosideros albiflora* is abundant, as are the two pittosporums *P. kirkii* and *P. cornifolium*. The ferns *Blechnum fraseri* and *Dicksonia lanata* add contrast to the mammoth size of the kauri trees.

The following table compares the usual kauri associations of four kauri forests with additional plants peculiar to one specific area.

Waipoua	Whangaroa	Gt. Barrier	Kauaeranga (Thames)
Thismia rodwayi	Pseudopanax gilliesii	Olearia allomii	Olearia townsonii
Carmichaelia silvatica	Alseuosmia ligustrifolia	Metrosideros parkinsonii	Gaultheria paniculata
Yoania australis	Pittosporum pimeleoides	Leptospermum sinclairii	Pittosporum huttonianum
		Hebe latisepala	Brachyglottis myrianthos
		Celmisia major var. major (near the coast)	Celmisia adamsii
			Blechnum vulcanicum

The kauri seems to form many different associations, or rather there are many different associations with kauri common to them and not necessarily being the dominant species.

On the western coast two localities are noteworthy, one at Mangonui Bluff where *Hebe speciosa* and *Cotula rotundata* have a slim hold on their environment, and the rugged coastal area north of the Manukau Harbour where a few fascinating plants can be found.

Blechnum banksii is known only at one locality north of the Manukau Heads and grows with *Asplenium terrestre* var. *marinum*, a disjunct species depredated by fern collectors.

On the rocky cliffs *Myosotis petiolata* var. *pansa*, *Hebe obtusata*, *Celmisia major* var. *major*, *Pteris comans* and *P. saxatilis* grow. The only other rare plants on the west occur to the south at Raglan, where the nearly extinct ngaio *Myoporum debile* has an exceedingly tenuous hold, having been recently burnt over. Whether it will survive time can only tell. Very few cuttings have been taken and their distribution has been complicated by the introduction by collectors of *M. debile* from Australia. It is quite ironic to think that here is a case of over-protection that has not been able to ensure a plant's survival.

The islands of the northern eastern coast seem to be better known than the mainland and have been botanically "done to death". The Three Kings have by far the rarest collection of plants, thirteen endemics in all. *Davallia tasmanii*, *Carex elingamita*, *Hebe insularis*, *Alectryon grandis*, *Myrsine oliveri*, *Cordyline kaspar*, *Elingamita johnsonii*, *Pittosporum fairchildii*, *Pennantia endlicheri*, *Tecomanthe speciosa*, *Paratrophis smithii*, *Brachyglottis arborescens*, the true *Coprosma macrocarpa* and possibly an undescribed ngaio. *Xeronoma callistemon* is well known and is from the Poor Knights Islands. *Myrsine divaricata*. *Carmichaelia williamsii*, and *Todea barbara* are also recorded from there.

Myoporum laetum var. *decumbens* is also reported from there, but has been since found on a number of islands off the east coast of the Coromandel Peninsula.

The final and perhaps greatest botanical area north of the kauri line is the Coromandel-Kaimai Range and environs; the so-called Thames Botanical District (starting at Te Moehau 2900′ and stopping at Te Weraiti 2500′ for the purposes of this article).

Little need be said about Te Moehau as it has been well documented over the last 100 years, with a species list prepared by A. E. Esler recently. The rest of the ranges are very poorly known. Even Te Aroha is little documented. One factor militating against further exploration is the exceedingly rugged terrain and the lack of tracks. Only very recently have new tracks been put in and these are only for goat-culling use, and some have become overgrown already. Anyone who has not attempted to reach a high point in the range will not have the slightest idea of what a combination of *giant Gahnia*, *Freycinetia*, *Ripogonum* and *Astelia* can have on progress up to the floristic parnassus awaiting them. Those that have done so have been amply rewarded!

I will just list some of the more interesting Te Moehau plants. These include *Celmisia incana*, *Orebolus pectinatus*, *Ourisia colensoi*, *Pentachondra pumila*, *Cyathodes empetrifolia*, *Libocedrus bidwillii*, *Phyllocladus alpinus*, *Dracophyllum traversii*, *Carpha alpina*, *Nothodanthonia setifolia*, *Dacrydium biforme*, *Gleichenia alpina* and *Podocarpus nivalis*.

On Maumaupaki 450 miles to the south can be found *Celmisia adamsii* var. *adamisii, Ourisia colensoi, Archeria racemosa, Gaultheria paniculata* and *Dacrydium intermedium*. On the ridge connecting Papakai with Maumaupaki occurs *Libocedrus bidwillii*, and in the very wet area of the Papakai Plateau *Dacrydium bidwillii*.

In the Kauaeranga Valley exists the *sanctus sanctorum* of the botanical pantheon of the Coromandel Range: *Parahebe catarractae, Brachyglottis myrianthos, Lindsaea viridis, Celmisia adamsii* var. *adamsii, Loxoma cunninghamii, Olearia townsonii, Pittosporum huttonianum, Pimelea buxifolia, P. gnidia, Blechnum vulcanicum, Dracophyllum patens, D. traversii, D. matthewsii, Coprosma dodonaeifolia, C. banksii, C. foetidissima, Archeria racemosa, Pseudopanax discolor, P. simplex* var. *sinclairii, P. laetus, Nothofagus menziesii* (Adams: recorded from Puru) *N. truncata, Trilepidea adamsii* (Kirk: recorded from Hape Stream not seen recently) and *Phymatodes novae-zelandiae* and many others, approximately 550 species in total.

Adams in his list mentions *Dracophyllum strictum* but confused this with the juvenile form of *D. patens* which was described 30 years after Adams' time. Other odd records are *Coprosma linariifolia* for the very narrow-leaved form of *C. robusta* × *propinqua*, small plants that soon lose their narrow leaves and take up the foliage of the usual hybrid plants; *Dacrydium laxifolium* for juvenile *D. intermedium; Gaultheria rupestris* for *G. paniculata; Dracophyllum urvilleanum* for *D. lessonianum*. He may have also confused *D. bidwillii with D. biforme* on Te Moehau.

The range south of Te Aroha contains many surprises. One area contains *Nothofagus truncata, N. fusca, N. menziesii* and *Agathis australis*, and another area contains *Libocedrus bidwillii, Dacrydium intermedium, D. colensoi* and *D. biforme* as well as the three beeches mentioned above. The very rare *Dracophyllum adamsii* grows with *Quintinia serrata, Ixerba brexioides* and *Phyllocladus alpinus* on the highest ridges, with an abundance of large liverworts and mosses. Most species of the moss genus *Dicranoloma* can be found including the very large-leafed *D. cylindropyxis* and *D. fasciatum* with its setae enveloped by large perichaetial bracts. Filmy ferns too are very luxuriant on the fourth highest peak in the whole range,'Ngatamahinuera'. About 12 miles from Te Aroha for example can be found two very rare ferns, *Apteropteris malingii* and *Mecodium rufescens*. Other ferns there are *Blechnum procerum, Hymenophyllum peltatum, Mecodium pulcherrimum, Meringium bivalve* and *Macroglena stricta*. There is no *Leptopteris superba* which is rather surprising considering the very damp nature of the mountain top, but probably too much light comes through the stunted silver beech for its liking. *Libocedrus bidwillii* and *Coprosma dodonaeifolia* are present, also *Elaeocarpus hookerianus, Dacrydium biforme, D. colensoi, D. intermedium, Phyllocladus alpinus, Nothofagus fusca, N. menziesii, N. truncata* and on a few of the lower slopes, *Agathis australis*.

Some of the streams near the foothills of the Kaimai range are also very interesting, containing a great wealth of bryophytes. One stream in particular has a marvellous collection of thalloid liverworts, the genera *Targionia, Marchantia, Reboulia* and *Asterella* being represented, in some places two or more species being present. On the damp rocky ledges of the same stream *Pimelea longifolia* can be found.

One last very neglected set of areas are the various swamps of the Waikato Basin. These extend from Maramarua in the East to Lake Waikare in the West and then south to Te Awamutu. They are being drained and plants such as *Myriophyllum robustum, Sporodanthus traversii* and *Lycopodium serpentinum* may soon be lost. In fact *M. robustum* has only been rediscovered in the last few months and occupies a very small area of no more than 600 square feet. Interesting mosses include the rare *Sphagnum subsecundum,* with deep concave leaves terminated by five small denticles.

This then concludes the "Cook's Tour" of the Auckland district. It can be hoped that by careful preservation of the areas mentioned the rare plants may grow undisturbed for posterity in their myriad ecological associations.

TREES, SHRUBS, AND LIANES OF NEW ZEALAND

I have compiled a check-list of the indigenous trees, shrubs, and lianes of the New Zealand Botanical Region. The list includes unnamed plants as well as named ones; also all recorded wild hybrids. Anyone requiring a copy is invited to write to Botany Division Substation, Soil Bureau, D.S.I.R., Private Bag, Lower Hutt. Comment on the list, in the form of suggested additions or deletions of species, varieties, or hybrids, is also invited.

A. P. DRUCE