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NOTES ON THE DISTRIBUTION OF ENDEMIC PLANTS

A. Moscal

(Continued - the first part of this article appeared in The Tasmanian Naturalist No. 48, February 1977)

MURCHISON RIVER

Lomatia tinctoria, Lomatia polymorpha, Epacris mucronulata, Cenarrhenes nitida, Anopterus glandulosus, Anodopetalum biglandulosum, Eucryphia lucida, Phyllocladus asplenifolius.

THE GOOSENECK, MT. MURCHISON, MT. READ, MT. HAMILTON

Phyllocladus asplenifolius: South of Lake Johnston.
Microcachrys tetragona, Diselma archeri: South-east ridges of Mt. Murchison.
Athrotaxis selaginoides: Mt. Read, Mt. Murchison at Lake Sandra, Lake Gaye.
Anemone crassifolia: Throughout
Aristotelia peduncularis: In forest West of the Gooseneck (Berry - White variant only.)
Rubus gunnianus: Mt. Murchison, abundance of fruit set only within disturbed soil, in mining and erosion areas, the same observation applies also to observations in the Loddon Range.
Anodopetalum biglandulosum: Intermixed with *Nothofagus gunnii,* South of Lake Johnston at 840 m level.
Anopterus glandulosus, Eucryphia lucida: Rain-forest West of the Gooseneck.
Callistemon viridiflorus: Mt. Murchison South.
Diplaspis cordifolia, Dichosciadum ranunculaceum var, tasmanicum, Eucalyptus vernicosa, Pernettya lanceolata, Gautheria hispida, Monotoca empetrifolia, Epacris mucronulata, Ourisia integrifolia, Euphrasia striata, Euphrasia hookeri, Plantago gunnii, Agastachys odorata, Orites milliganii, Pimelea milliganii, Exocarpos humifusus, Leptomeria glomerata, Poa gunnii, Campinema lineare: Mt. Murchison.
Persoonia gunnii: Red blossoms, probably diseased, Lake Sandra.
Euphrasia diemenica, Euphrasia diemenica collina variant: The Gooseneck and Noran Saddle.
Richea milliganii: Most predominant shrub and main stronghold of this plant localized on an area of 500 x 200 m at 960 m level West of Lake Sandra.
Richea angustifolia: Mt. Murchison confined only to exposed ridges.
Lomatia polymorpha: Rain-forest West of Mt. Murchison.

Pimelea lindleyana: Rain-forest throughout the range.
Richea curtisae: Ring River unburned area on plateau between Mt. Read and Mt. Hamilton.
Actinotus moorei, Cyathodes petiolaris, Trochocarpa cunninghamii, Leucopogon milliganii, Archeria serpillifolia, Richea scoparia, Richea pandanifolia, Prionotes cerinthoides, Mitrasacme archeri, Cenarrhenes nitida, Milliganía densiflora, Blandfordia punicea: Throughout the Range from Mt. Hamilton to Mt. Murchison.

ARTHUR PLAINS

Dacrydium franklinii: Junction Creek.
Lomatia polymorpha, Monotoca scoparia var, submutica: Junction Creek and Wullyawa Creek.
Pterostylis vereenae: Not endemic, Wullyawa Creek abundant.
Thelymitra truncata: Not endemic, Dorado Ridge at 360m level.
Haemodorum distichophyllum: Crossing River - Spring River Divide.

CROSSING RIVER GORGES

Dracophyllum milliganii, Dacrydium franklinii, Lomatia polymorpha, Isophysis tasmanica, Blandfordia punicea, Monotoca scorparia var. *Leptospermum glaucescens:* On islands North of Davey S.L. Unburned sanctuaries, trees up to 15m high.

GREYSTONE BLUFF

Geum talbotianum: 20 Plants only, confined in a single cleft West side of the main Bluff rock base at 960m level.
Diselma archeri, Microcachrys tetragona, Athrotaxis selaginoides Anemone Crassifolia, Anodopetalum biglandulosum, Anopterus glandulosus, Tetracarpaea tasmanica, Eucryphia milliganii, Baeckea leptocaulis, Leptospermum rupestre, Milliganía stylosa, Diplaspis cordifolia, Ewartia meridithea, Senecio pectinatus var. *ochroleuca, Forstera bellidifolia, Cyathodes parvifolia, Monotoca glauca, Epacris corymbiflora, Dichosciadium ranunculaceum* var. *tasmanicum, Olearia persoonioides, Olearia ledifolia Ewartia meridithae, Archeria hirtella, Archeria eriocarpa, Archeria serpyllifolia, Prionotes cerinthoides, Sprengelia distichophylla, Richea milliganii, Richea curtisae, Richea scoparia, Richea pandanifolia, Dracophyllum milliganii, Dracophyllum minimum, Euphrasia diemenica, Euphrasia kingii, Euphrasia hookeri, Agastachys odorata, Cenarrhenes nitida, Persoonia gunnii, Orites milliganii, Pimelea lindleyana, Pimelea milliganii, Helichrysum pumilum, Isophysis tasmanica, Blandfordia punicea, Xyris operulata, Eucalyptus vernicosa.*

DAVEY RIVER PLAINS

Milliganía johnstonii: Two localities South of Badger Creek, at between 40 and 80m elevation.
Location I in wet heath 25 x 100m
Location II in wet heath and quarzite sand deposit of overflowing perennial creek, 100 x 250m.
Old River Sheet 8111/199263 and 199275.
If the H.E.C. Davey River impoundment is implemented, this area will be within the flood plain. The University of Tasmania is in possession of live plants which I sent out.

BADGER CREEK WATERSHED DEPRESSION
Old River Sheet 8111/212728-222728

Dacrydium franklinii: Approximately 600 to 800 mature trees of 20m in height and 4.50m in circumference, another 400 trees of less than 1.60m circumference, abundance of saplings and seedlings on moss covered ground. This area has not experienced any fire for at least 2,500 years, except on the perimetre and a wedge burn of about 500m by 200m intruding into the rainforest from a small southern buttongrass plain, now revegetating with *Eucalyptus* and *Leptospermum scoparium.* Badger Creek drains this subterranean depression through fissures under the western ridge composed of Conglomerate and at some stage caved in or collapsed at a rate of about 30m. On the western side the creek emerges into a Canyon of some 800m length and 150m at its widest, 35m in depth, narrowing into a gorge before reaching the Davey River Plains at an 80m elevation. The canyon has experienced previous spot fires and except for juvenile *D. franklinii* no other botanical notes were taken there.

Continuing notes as above within the depression:
Pseudopanax gunnii of three different leaf variants, *Archeria hirtella, Anodopetalum biglandulosum, Anopterus glandulosus, Eucryphia lucida, Olearia persoonoides, Trochocarpa gunnii, Phylocladus aspleniifolius, Aristotelia peduncularis. Epacris corymbiflora* on the buttongrass plain.

Juvenile *D. frankinii* were also found at Pine Creek under Cinder Hill and at Crossing River 2023-2123.

MT. RALLINGA (MELALEUCA RANGE)

Persoonia: Prostrate plant 15 cm across, leaves linear-spathulate, 7 mm long, 3 mm wide, 1 mm thick. Flowers in leaf-axils only, the same including the fruit as in *Persoonia gunnii.*
Approximately some 300 plants on the plateau in quarzite gravel, growing alongside with normal *Persoonia gunnii* bushes.
One plant, forwarded to *Dr. W. M. Curtis* and *Mr. D. I. Morris*, is growing successfully in a garden at Fern Tree for further study. The opinion of *Dr. Curtis* and *Mr. Morris* is that it is a new endemic variant for Tasmania.

MT. BROCK

Senecio primulifolius: Southern rock spur at 600m under stunted *Nothofagus cunninghamii, Richea scoparia* variant 4m high, leaves imbricate, soft, curly, linear-lanceolate, pointed end but not pungent, 3cm long, base broad and sheathing, margins only minutely scaberulous, further study of this variant is necessary, plants of the same description have been observed at Lake Dobson and near Waldheim.

Baechea leptocaulis: 3.20m high, trunk 35cm circumference, trees of this size common in saddle between Mt. Brock and the main ridge of Melaleuca Range at 500m level in semi sheltered position, *Dracophyllum milliganii,* 5m high, inflorescence 1.20m long, 60cm across, within watershed of Alexander Creek, Mt. Brock South.

RAY RANGE

Acradenia frankliniae: Ray River, 1.5km upstream from Moulters Inlet.

Dracophyllum milliganii: Common in wet gullies on the eastern side of Ray Range up to 720 m level.

Pseudopanax gunnii, Pimelea lindleyana, Townsonia viridis.

Dacrydium franklinii: At Old River and Bathurst Creek. The Ray Range suffered extensive damage in the 1934 fire, former alpine forests of *Nothofagus cunninghamii* now almost impenetrable, regrowth of *Leptospermum, Melaleuca,*

Banksia, cutting-grass, button-grass and *Bauera rubioides,* individual *N. Cunninghamii* now up to 1.50 m and rare in distribution, the same applies to *Atherosperma moschatum* standing at 2m, no regrowth of *Eucryphia lucida* or *milliganii* was observed.

NOROLD RANGE

Leucopogon milliganii rare, *Epacris corymbiflora, Archeria hirtela, Richea milliganii, Richea curtisiae* common and abundant in exposed situations in quarzite gravel, plants of 6 m high with normal size inflorescence of 10 cm.

In cases where main trunk of wind prostrated plants has been severed through hail and gravel action (trunk being knife shaped towards prevailing weather side, the same is the case with *Baekea leptocaulis* on Mt. Brock), terminal crowns on branchelets are rooting within the gravel and bearing inflorenscences.

Richea angustifolia, Richea pandanifolia, Richea scoparia, Dracophyllum milliganii and *Dracophyllum minimum* rare, *Milligania densiflora, Ewartia meridithae* rare, *Campynema lineare, Gleichenia abscida* within the gorge of eastern set of three un-named waterfalls, *Euphrasia kingii, Euphrasia gibbsiae* abundant not endemic, *Tetracarpaea tasmanica, Athrotaxis selaginoides* one single tree north of main peak at 800 m level.

Eucryphia lucida and *Eucryphia milliganii* growing side by side on rocky foreshore of unmapped Lake at 840 m level North-west of main peak.

ROWITTA PLAINS

Prasophyllum buftonianum: (Prasophyllum buftonianum also occurs at Gates Bluff on Freycinet Peninsula where blossoming time is usually end of March-begin - ning of April) while at Rowitta Plains blossoming time is only for a short period beginning of February.

Campynema lineare, Haemodorum distichophyllum: through observations over the years in the West-Southwest, I regard the Rowitta Plains and the Melaleuca area as the main stronghold of this plant.

Pterostylis parviflora var. *aphylla* consistently blossoming here in middle of January.

The Rowitta Plains, Mt. Rugby, the western and southern slopes of Mt. Wilson, Norold Range, Old River and part of Harrys Bluff where burned out at Christmas 1972: The endemic flora seems to survive and grow very slowly; *Baeckea leptocaulis* blossoming in the second year, *Agastachys odorata* in the fourth year, for the first time. *Lomatia polymorpha, Cenarrhenes nitida, Anopterus glandulosus* no blossoms as yet in summer 1976.

Lomatia tasmanica: South Bathurst Range at approximately 200m level within rainforest, trees of 5m high not uncommon, mainly along old water race and in small clearings. Main propagation seems to be from suckers along the root system; observations in 1976 showed that all ovaries were shrivelled up, therefore no pollination had taken place. Plants as indicated by Mr. D. King to be of a complete pubescent appearance and soft feathery leaves at lower elevations, I was not able to find.

Through mining activity up to 1935 the area has been consistently burned from sea level up to about 80 m elevation and there are no *Lomatia* plants left in this zone.

Although the tin deposits are of alluvial form originating from the Granite Moinse Ridge, the location of *Lomatia tasmanica* is on metamorphosed schist and quarzite, above the general 20 m elevation, East of Point Eric.

In my quest to expand the distribution knowledge of *Lomatia tasmanica* I chose, in 1975 and 1976, habitats similar to the South Bathurst Range as follows:

Louisa Bay, Anchorage Cove, Red Point Hills, Black Cliff Hills, Cox Bluff, Abeana Head to Smoke Signal Hill, New Harbour, Hidden Bay, Kitchem Bay and Amy Harbour, Window Pane Creek to Window Pane Bay, New Falls Creek area were visited in 1972 and again in 1976. No recordings were made. Therefore the only known location and stronghold of *Lomatia tasmanica* is the area within the South Bathurst Range at 200m elevation mentioned above.

INSECT PREDATION IN THE BRUSHTAIL POSSUM

Peter Murray (Tasmanian Museum)

Some insects and other small invertebrates are incorporated in the diet of the brushtail possum quite by accident. The proportion of arthropod remains in the stomachs of possums that can be attributed to purposeful insect predation is unknown. Possums rarely seem to be attracted to insects and frequently, when presented with a moth or fly, fail to even notice it.

Yet on one occasion I was able to witness an example of spontaneous insect predation by *Trichosurus*. The action was a fast, smoothly coordinated hand-mouth capture performed on a blowfly that had landed on a wall within reach of the possum. The room was well illuminated, a condition that might impair the possum's vision, which is better suited for nocturnal or crepuscular activity.

The possum began to act the instant the fly landed. There was no sign that the fly was noticed before it came to rest. The possum assumed a bipedal stance, hind limbs in full extension; the head aiming towards the fly but well short of it. The forelimbs closed around the insect from both sides, scooping it downwards to the mouth. The possum dropped to a sitting position and consumed its prey (Figure 1.).

This incident appeared stereotyped. There was no period of evaluation or hesitation of any sort. Perhaps the closeness of the newly alighted insect to the possum triggered the action.

The example suggests that brushtail possums have maintained adequate visual acuity, spatial perception and hand-mouth coordination for predation even though they are primarily herbivorous feeders.

Several sources, including Collins (1973) state that in addition to insects, possums probably also eat small birds. There is no direct evidence that *Trichosurus* actively pursues and captures birds. Possums are fond of meat when they are presented with it but it is likely that the prevailing idea that they capture birds stems from an observation by Waterhouse in 1846 of a captive brushtail devouring a dead bird that was thrown to it. However, it is probable that possums stalk and capture insects. The kind of movements shown by the above example suggests a patterned action response. As many phalangeroids are insectivorous, the presence of this characteristic in *Trichosurus* is not surprising.

Subsequent experimentation with captive possums yielded mixed results. The experimental subjects made few attempts to capture insects presented to them. However, those few responses obtained indicated that my original observation was not of an entirely unique event. It also demonstrated that the use of the hands in insect predation by brushtail possums is typical.

Possums that were attracted to insects (injured moths) presented to them on a horizontal surface, employed a paired forelimb pounce in order to catch them. The prey was held under one or both paws until the snout could be inserted under the palms, through a "cage" of claws. Insects frequently escaped at this stage of predation.

REFERENCES CITED

Collins, L.R.
1973 Monotremes and Marsupials: A Reference for Zoological Institutions. Smithsonian Institution Press, Washington D.C.

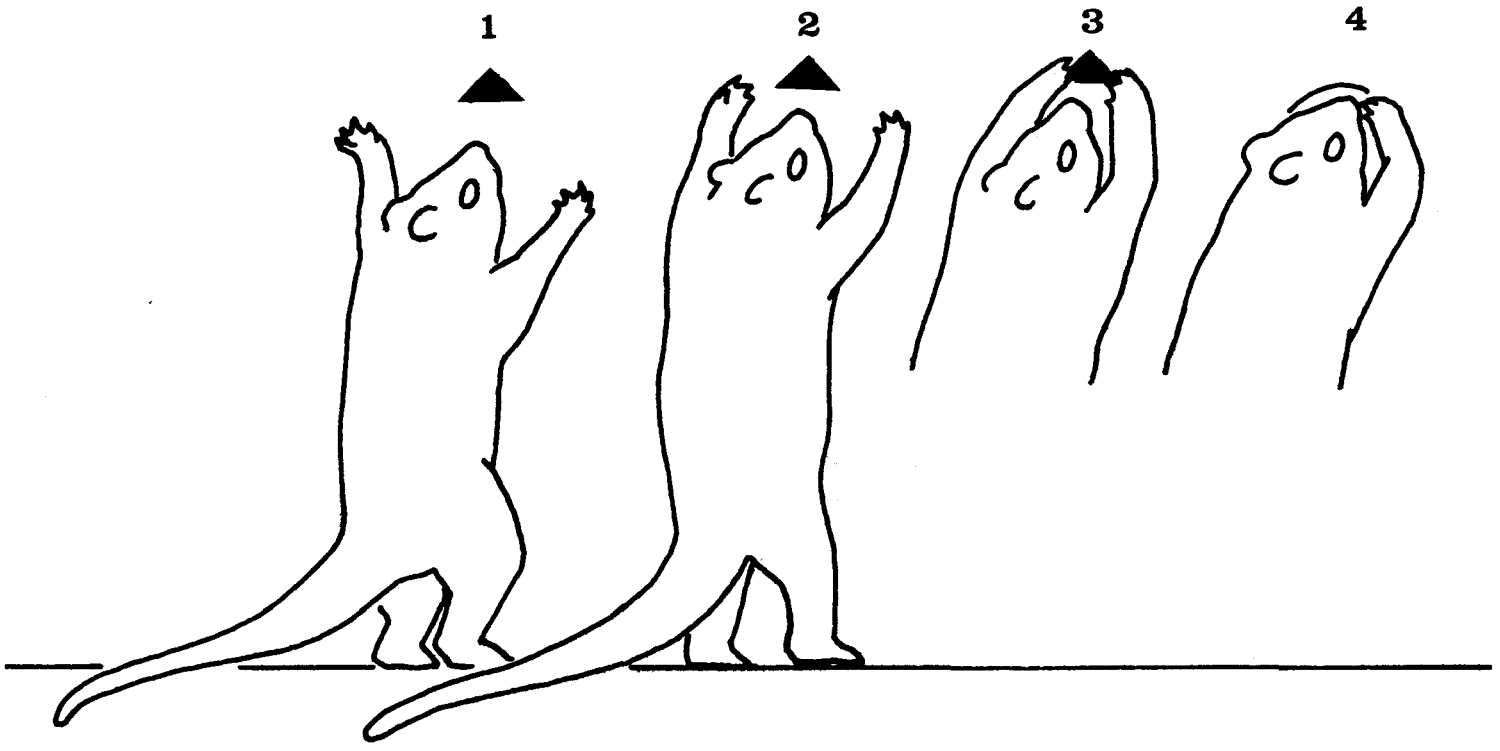


Figure 1. Sequential drawing of six month old T. vulpecula capturing a fly landed on a vertical surface (wall); 1, assumption of bipedal stance; 2, full extension of hind limbs; 3, full extension of forelimbs; 4, drawing insect towards the mouth and beginning to drop to sitting posture.

A KING CRICKET IN TASMANIA

(Orthoptera : Stenopelmatidae)

Alison Green (Tasmanian Museum)

An insect now in the Tasmanian Museum's collection represents a new record for Tasmania. It is a male King Cricket, a fearsome-looking specimen with a body length (head included) of 75 mm. It is brown in colour and wingless, with a massive head and antennae longer than the body. The large jaws, each 15mm long, could deliver a painful bite; however, there is no venom associated with these.

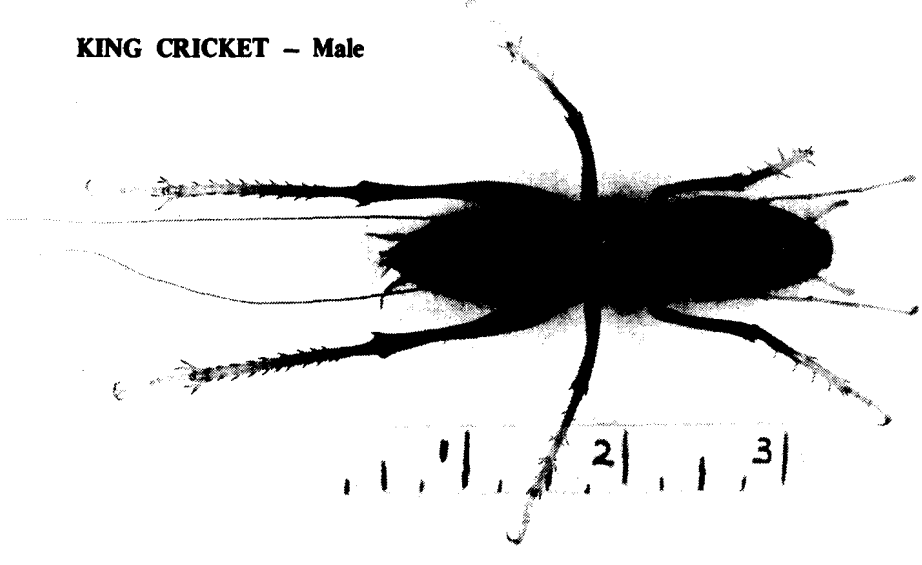
The king cricket was collected on the 6th February, 1977, by Carl Cazaly and his father, Mr. R.L. Cazaly, in bushland near their home in Brushy Creek Road, Lenah Valley (a suburb of Hobart). It was found about three feet underground, among loose, shaly rock, near eucalypt trees. The insect was still very lively when it was given to the museum next day by Carl and his brother, Zane.

King crickets belong to the same family (Stenopelmatidae) as the wetas of New Zealand. Their nearest relatives in Tasmania are the cave crickets and "tree crickets", which are placed in different families, while the long-horned grasshoppers and the true crickets, in different superfamilies, are one step further away.

King crickets occur near the eastern coast of mainland Australia where they live in rotting logs and other such hiding places. A drawing of a male of *Australostoma opacum* (Brunner), fig. 21. 3A in "Insects of Australia" (Melbourne University Press: 1970), shows the general appearance of these insects.

The Tasmanian specimen belongs to the same genus, *Australostoma*, as the mainland king crickets but the species which it represents has not yet been determined. The most likely possibility is *Australostoma australasiae* (Gray); however, a comparison with named examples is needed to confirm this guess. No previous record of a king cricket in Tasmania has been traced. It is surprising that such a spectacular insect had escaped notice until now.

KING CRICKET – Male



THE TASMANIAN MUTTON-BIRD

Irynej Skira

The Tasmanian mutton-bird or short-tailed shearwater, *Puffinus tenuinostris* forms the basis of one of Tasmania's oldest industries. This birding industry is still carried on commercially in the Hunter Islands off the North West Coast and in the Furneaux group. In the south of the State the mutton-bird rookeries are open only to non-commercial operators.

An estimate of the "catch" each season gives an idea of how large these mutton-bird rookeries are. No figures exist for the southern rookeries but few of them would have more than 20,000 chicks. In Northern Tasmania in 1976 over 160,000 birds were taken off Trefoil Island and over 110,000 each off Big Dog Island and Babel Island. Mt. Chappell Island once one of the largest commercial rookeries has been closed for some years, not only on account of its being a State Reserve but probably also because of its snakes. Even as late as 1959 an expedition raised by the local Flinders Island policeman killed 200 snakes in a day.

The number of chicks taken each year, is unrelated to the number that eventually fly away, but it is thought that about 60% of those birds that could have flown off are taken.

What research is being done on mutton birds? In 1947 research was initiated by the former Tasmanian Fauna Board and CSIRO Wildlife Division and the task given to Dr. Dominic Serventy. A base was set up on Fisher Island, just off Lady Barron on Flinders Island and basic biological studies were carried out on Fisher Island,Cat Island and other islands in Franklin Sound. Most of the work was carried out in the 1950's but today birds and their progeny are still banded on Fisher Island.

Dr. Serventy found that the birds return in late September, clean out their old burrow and lay one egg in late November, the peak of egg-laying being confined within three days. Birds do not breed until 5 or 6 years old but live to a ripe age, one bird on Fisher Island now being at least 34 years old and chicks banded on Fisher Island in 1949 and 1950 are still returning today!

Research by the National Parks and Wildlife Service is not biology orientated but management orientated. Its purpose is to know how many birds can be taken without upsetting the viability of a rookery. Formerly, up to 1000 chicks were banded on Big Dog and Little Green Islands in the Furneaux group and 400 at Cape Queen Elizabeth, on Bruny Island. From the number of bands returned an idea was obtained of how many birds 'escaped.' This method depended on the goodwill of all sorts of birders and many bands were either overlooked or not returned.

A more efficient technique was therefore needed. A comparison is now made of the number of chicks present before and after the season. Allowing for some deaths and early departures a much more accurate estimate of the "catch" can be obtained. However more data is required before preliminary findings can be reported.

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