

The Mural Flora of Auckland

M. D. Wilcox and D. B. Rogan

Rock walls made from loose scoria boulders, cemented basalt blocks, or bricks, are very common in Auckland, particularly in the older "volcanic" suburbs such as Mt. Eden, Epsom, Balmoral, Mt. Albert, One Tree Hill, and Mangere Bridge. One of the most impressive stone walls in Auckland is the original Albert Barracks wall, dating from 1846, still intact in the inner quadrangle of the University.

A characteristic flora develops on these walls, dominated by grey foliose lichens of the family Parmeliaceae on the rock surfaces; by cushion mosses (Bryaceae, Pottiaceae) on the tops of walls and in cracks; by a liverwort (*Frullania solanderiana*) forming felted mats on damp shaded walls; and by a group of vascular plants, dominated by leather-leaf fern (*Pyrrosia eleagnifolia*), Kenilworth ivy (*Cymbalaria muralis*), Mexican daisy (*Erigeron karvinskianus*), scrambling fumitory (*Fumaria muralis*), small herb Robert (*Geranium purpureum*), and lilac oxalis (*Oxalis incarnata*). A large, typical wall to see these plants is the one on the corner of Balmoral and Mt. Eden Roads. Stone walls in Greenlane Road, bordering Cornwall Park, have the most diverse and luxuriant mural flora in the city, including thriving colonies of the native orchid *Earina mucronata*. Other old walls with interesting plants are those in the Symonds Street Cemetery, which support spectacular colonies of throatwort (*Trachelium caeruleum*), and old walls adjoining the remnant Mt.

Eden lava forest in Gilgit Road.

The extensive scoria walls of Otuataua Stonefields at Ihumatao, Mangere are covered with lichens, particularly *Rimelia*, *Xanthoparmelia*, and *Xanthoria* species.

Three common creeping plants naturalised on Auckland walls are creeping fig (*Ficus pumila*), pink-headed knotweed (*Polygonum capitatum*), and ivy (*Hedera helix*).

The calcareous mortar on brick walls provides a lime-rich substrate which can harbour an introduced maidenhair fern, *Adiantum capillis-veneris*, and calcicolous mosses such as *Gymnostomum calcareum*, *Tortula muralis*, *Trichostomiopsis australasiae*, and *Zygodon menziesii*.

There has not previously been a comprehensive report of the plants found on Auckland's walls, though some discussion of the subject has been given by Bishop (1992), Brockie (1997), and Esler (1988). Several of the commoner lichens are mentioned by Hayward & Hayward (1983).

The records listed are largely based on field observations, many of which are supported by voucher specimens (e.g AK 240016). Some records are based only on old herbarium specimens. Strictly cultivated garden plants have not been included.

Lichens

(Family names follow Galloway 1985 and Malcolm & Galloway 1997)

Canoparmelia cineracens (Lyngé) Elix & Hale

Previously *Pseudoparmelia cineracens* (Lyngé) Hale. Common on rocks near the sea and on scoria around Auckland. Lecanorales: Parmeliaceae.

Cladonia confusa (R. Sant.) Nyl.

Found on rock walls in Cornwall Park and Ihumatao. AK 240016 Lecanorales: Cladoniaceae

Cladonia ramulosa (With.) J.R.Laundon

(Syn. *Cladonia anomaea* (Ach.) Ahti & P. James)

Rock walls, Cornwall Park and Ihumatao. AK 240018. Lecanorales: Cladoniaceae

Cladonia squamosa Hoffm.

Rock walls, Greenlane Road. AK 236198. Lecanorales: Cladoniaceae.

Dirinaria picta (Sw.) Clem & Shear

Common in Auckland, whitish-grey patches on brick walls, bark, fences, tile roofs. Lower surface black. Foliose (Hayward & Hayward 1983) Lecanorales: Physciaceae.

Flavoparmelia soledians (Nyl.) Hale

Formerly *Pseudoparmelia soledians* (Nyl.) Hale. Abundant on wood and coastal rocks. Yellowish or greenish-grey upper surface (Hayward & Hayward 1983). Lecanorales: Parmeliaceae.

Heterodermia speciosa (Wulfen) Trevis.

Common in Auckland, whitish-green on rocks and wood. Lecanorales: Physciaceae.

Lecanora ?campestris (Schaerer) Hue

Crustose lichen found on rock around Auckland. AK 239517. Lecanorales: Lecanoraceae.

Lepraria incana (L.) Ach.

Granular, whitish lichen common on rocks and wood at Greenlane. Lichenes Imperfecti.

Neofuscelia ?loxodella (Essl.) Essl.

Isidiate, dark olive-brown lichen occasional on rocks at Ihumatao. AK 240017. Lecanorales: Parmeliaceae.

Neofuscelia verucella (Essl.) Essl.

Known as "brown parmelia". Olive-brown or blackish-brown upper surface. Often on stone walls (Hayward & Hayward 1983). Lecanorales: Parmeliaceae.

Parmotrema chinense (Osbeck) Hale & Ahti

Also known as *P. perlatum* (Eschw.) M. Choisy

Foliose. Common on bark and rocks. An early and common coloniser of sawn wood, fence posts, and telegraph poles (with *Ramalina* and *Usnea*). Probably adventive in New Zealand. Upper surface pale greenish-grey or bluish grey. Black below, with conspicuous dark brown naked zone. Common on basalt rock wall, Mangere Bridge. Lecanorales: Parmeliaceae.

Parmotrema cristiferum (Taylor) Hale

Rock walls, Cornwall Park. AK 241961. Lecanorales : Parmeliaceae.

Placopsis perrugosa (Nyl.) Nyl.

Cream coloured crustose lichen found on rocks around Auckland. Lecanorales: Trapeliaceae.

Placopsis sp.

Orange coloured crustose lichen found on rocks at Ihumatao. AK 240019. Lecanorales: Trapeliaceae.

Pseudocyphellaria neglecta (Müll. Arg.) H.Magn.

Large foliose lichen found in large patches on rocks at Ihumatao. AK 240014. Peltigerales: Lobariaceae.

Ramalina celastri (Spreng.) Krog & Swinscow

Strap-like lichen commonly found on rocks and branches. Coastal forms can be very thick and coriaceous. AK 240015. Lecanorales: Ramalinaceae.

Rimelia cetrata (Ach.) Hale & A. Fletcher

Broad-lobed, greenish-grey to whitish grey, black lower surface. Lacks soredia and isidia. Rock walls, Cornwall Park. AK 241962. Lecanorales : Parmeliaceae.

Rimelia reticulata (Taylor) Hale & A.Fletcher

Previously known as *Parmotrema reticulatum* (Taylor) M. Choisy. Foliose. On bark and rocks. Also on fence posts, fruit trees, and park trees. Upper surface blue-grey. Maculate at lobes, reticulate cracked. Lower surface black, with shining, naked marginal zone. Lecanorales: Parmeliaceae.

Stereocaulon corticatulum Nyl.

Cornwall Park. On stone walls. AK 239516. Lecanorales: Stereocaulonaceae.

Stereocaulon ramulosum (Sw.) Räscher

Found on top of walls in Cornwall Park, adjoining Greenlane Road. Gilgit Street, Mt. Eden. AK 241970. Common early coloniser of bare roadside banks forming large greyish patches. Lecanorales: Stereocaulonaceae.

Xanthoparmelia australasica D. Galloway

Foliose. Smooth, yellowish-green above, black below. Coastal rocks Scoria walls, Cornwall Park. AK 190848. Lecanorales: Parmeliaceae.

Xanthoparmelia scabrosa (Taylor) Hale

Foliose. Upper surface yellowish-green, lower surface pale tan. On rock, rock walls, soil, wood, glass, tar-seal roads, concrete. AK 164149. The most abundant lichen in Auckland. Very common in Australia. Lecanorales: Parmeliaceae.

Xanthoria ligulata (Körber) P. James

Foliose. Deep yellow to orange, or orange-red colour. On coastal rocks. Abundant on the basalt scoria rocks fringing the shore along Kiwi Esplanade, Mangere Bridge, and at Ambury Park. Teloschistales: Teloschistaceae.

Liverworts

(names follow Glenny 1998)

Chiloscyphus (Lophocolea) semiteres (Lehm.) Mitt.

Grows on damp shaded parts of scoria rock walls, Mangere Bridge. AK 239423. Jungermanniales: Lophocoleaceae.

Chiloscyphus (Lophocolea) subporosa Mitt.

Grows on smooth rocks in shade, including scoria walls. Jungermanniales: Lophocoleaceae.

Frullania solanderiana Col.

A common Auckland liverwort. It forms a green felt over damp or shaded scoria rock walls at Mangere Bridge, Cornwall Park, Ellerslie AK 241969, and Epsom AK 239894. Jungermanniales: Frullaniaceae.

Lunularia cruciata (L.) Dum.

Greenhouses, potted nursery stock, nurseries. Shaded parts of gardens. Gemmae cups lunate. Stone walls at Cornwall Park. AK 236203. Marchantiales: Lunulariaceae.

Hornworts

(name follows Glenny 1998)

Phaeoceros carolinianus (Michx.) Prosk.

Common hornwort. World-wide. New Zealand. Usually on the sides of ditches or on wet banks. Dark green, irregular rosettes. Recorded from rock wall, Auckland Society of Model Engineers model railway, Panmure Baisin. October 1999. Yellow spores. AK 241958. Anthocerotales: Athocerotaceae.

Mosses

(names follow Beever, Allison & Child 1992)

Bryum argenteum Hedw.

Common moss in cracks in footpaths, and on concrete walls. Silvery-green. Cosmopolitan. Greenish silver shoots, packed together in a dense low turf. AK 49959, AK 58693. Bryaceae.

Bryum billardierei Schwagr.

Leaves are arranged in a swollen terminal head, packed together to form mats. Occurs on rock walls, Cornwall Park (Greenlane Road). AK 241960. Bryaceae.

Bryum capillare Hedw.

On rock walls near the sea, Mangere Bridge. AK 241967. Bryaceae.

Bryum radiculosum Brid.

Occurs on the mortar in brick walls. AK 117100. Bryaceae.

Campylopus clavatus (R.Br.) Wils.

Common on banks and open areas. Star-shaped brood bodies. Rock walls, Manukau City centre. AK 241964. Dicranaceae.

Ceratodon purpureus (Hedw.) Brid.

Open, dry sites. Ditrichaceae.

Grimmia pulvinata (Hedw.) Sm. ex Sm. & Sowerby

Forms cushions on walls and rocks. AK 52356. Grimmiaceae.

Gymnostomum calcareum Nees & Hornsch

Rock wall, Ellerslie Racecourse. AK 241968. Pottiaceae.

Hedwigia ciliata (Hedw.) Ehrh. ex P.Beauv.

Recorded from a rock wall in Titirangi Road. AK 102131. Hedwigiaceae.

Hypnum cupressiforme Hedw. var. *cupressiforme*

Very common in open grassland and roadside banks. On damp walls, Mt. Eden. Hypnaceae.

Hypopterygium rotulatum (Hedw.) Brid.

A small umbrella moss. Rock wall, St Barnabas Church, Mt. Eden Road. AK 241966. Hypopterygiaceae.

Philonotis tenuis (Tayl.) Reichdt.
Rock wall, Manukau City centre. AK 241963. Bartramiaceae.

Rhyncostegium tenuifolium (Hedw.) Reichdt.
Forms glossy yellowish-green mats. Rock wall, Greenlane Road, adjacent to Cornwall Park. AK 241959. Stone wall, French Bay. AK 164365. Brachytheciaceae.

Tortula muralis Hedw.
Very common on old brick walls, in cities. Rock wall, Scott Avenue. Rock wall, Manukau City centre. Ambury Park. Cathedral, Parnell. AK 52312, AK 173306. Pottiaceae.

Tortula princeps De Not.
A common cushion moss. It occurs on Mangere Mt, and in Ambury park, forming cushions on the top of basalt scoria rocks. On rocks. Also on rock walls. A small, tufted, green moss. AK 52313. Pottiaceae.

Trichostomiopsis australasiae Card.
On brick and concrete walls. AK 52382. Pottiaceae.

Weissia controversa Hedw.
On soil in open sites. Rock wall, Mt. Eden Road, Auckland. AK 241965. Rock wall, Epsom. AK 18343. Pottiaceae.

Zygodon menziesii (Schwaegr.) Arnott
Recorded from a damp scoria wall, Auckland City. AK 182824. Orthotrichaceae.

Ferns and fern allies

Adiantum capillus-veneris L.
Maidenhair fern. Subtropics and tropics. Naturalised in New Zealand. Walls and banks, Auckland. It grows on the calcareous mortar of brick walls at the femery, Auckland Domain. Thriving colony on a brick wall, Manukau Road (near junction with Greenlane Road). Old gasworks near Victoria Park. AK 151932. Adiantaceae.

Asplenium flabellifolium Cav.
Necklace fern. New Zealand, Australia. Grows amongst scoria. Rangitoto, Mangere Mountain. Recorded from a scoria wall in Symonds Street, Auckland (Jones 1983, 1996). Aspleniaceae.

Asplenium flaccidum Forst.f.
Hanging spleenwort. New Zealand, Australia. Common epiphyte in forest and on rocks. AK 241977. Aspleniaceae.

Cyrtomium falcatum (L.f.) C.Presl
Holly fern. Asia. Japan. Naturalised in New Zealand, in Auckland. Toothed pinnae. Grown at the Auckland Botanic Gardens. Occurs on the walls of Mt. Eden prison. AK 170733. Rock wall, Langton's Restaurant, Mt. Eden. Aspleniaceae.

Hypolepis lactea Brownsey & Chinnock
New Zealand. Auckland. Retaining wall, campus marae, Auckland University. AKU 21345A. Dennstaedtiaceae.

Microsorium pustulatum (G.Forst.) Copel. subsp. *pustulatum*
Hound's tongue fern (previously known as *Phymatosorus pustulatus* (Forst.f.) Pichi-Serm., *Phymatosorus diversifolius* (Willd.) Pichi-Serm. and *Microsorium diversifolium* (Willd.) Copel.). New Zealand, Australia. Common. Forms carpets on the ground in forest, and climbs up tree trunks. Rock walls at the cemetery, Symonds Street. Bricks on Cathedral, Parnell. AK 168716. Polypodiaceae.

Nephrolepis cordifolia (L.) C.Presl
Tuber sword fern, fishbone fern. Throughout the tropics. Commonly cultivated. Has fleshy tubers. Readily colonises rock walls. AK 238768. Davalliaceae.

Pellaea rotundifolia (Forst.f.) Hook.
Button fern, tarawera. New Zealand. Recorded from a stone wall, Balmoral. AK 236204. Adiantaceae.

Psilotum nudum (L.) P.Beauv.
Hawaii, New Zealand, Australia, Japan, Kermadec Islands, tropics. Rangitoto Island. Terrestrial. Plant recorded from a rock wall, Manukau City centre. Psilotaceae.

Pteridium esculentum (Forst.f.) Cockayne
Bracken fern. Stunted plants have been observed on exterior walls of Mt. Eden prison (A. E. Esler, pers. comm.).

Pteris cretica L.

Tropics. Commonly grown as a pot plant. Naturalised in New Zealand. AK 206840. Brick walls, Auckland Domain. Adiantaceae.

Pteris tremula R.Br.

Shaking brake, turawera. New Zealand, Australia. Common in drier forests. Auckland, Coastal forests, gardens. Frequent in scoria walls. Adiantaceae.

Pteris vittata L.

Chinese brake, rusty brake, *paku uban bukit* (Malay). Australia, Asia, Africa. Cultivated in New Zealand. Now naturalised on a brick wall in Manukau Road, Epsom (Cameron 1999, AK 237258, AK 223419-21), growing from the calcareous mortar. Adiantaceae.

Pyrrhosia eleagnifolia (Bory) Hovenkamp

Leather-leaf fern. New Zealand. Endemic. Common epiphyte on tree trunks and rocks, including stone walls in Auckland. A very drought-resistant fern. Dominant on the old walls in Greenlane Road. Polypodiaceae.

Monocots

Agapanthus praecox Willd.

Agapanthus (syn. *Agapanthus orientalis*). South Africa. Very common ornamental in New Zealand. Common in Auckland on rock faces, embankments, and walls. Amaryllidaceae.

Briza maxima L.

Quaking grass. Mediterranean region. On rock walls, Newmarket railway station. Poaceae.

Bromus diandrus Roth

Great brome. Recorded from the base of a rock wall. AKU 14617. Poaceae.

Cynodon dactylon (L.) Pers.

Couch grass, Bermuda grass. Common lawn grass. Originated in India, now pan-tropical. Common in Auckland, as a weed of driveways, in lawns, near the sea. Colonises the top of sea walls, Kiwi Esplanade, Mangere Bridge. Poaceae.

Dactylis glomerata L.

Cocksfoot. Sometimes found growing on old rock walls. Poaceae.

Digitaria sanguinalis (L.) Scop.

Summer grass, crab grass, hairy finger grass. Annual. Widespread temperate weed. Abundant in Auckland. Often tinged purple. Leaves pubescent. Commonly grows at the junction of rock walls and footpaths. Mt. Eden. AKU 23560. Poaceae.

Earina mucronata Lindl.

New Zealand. Epiphytic. Spring-flowering. It has colonised the top of stone walls, Greenlane Road and Gilgit Street, Auckland. Orchidaceae.

Ehrharta erecta Lam.

Panic veld grass. South Africa. An aggressive weed in New Zealand, Australia. Has become an abundant weed on wasteland in Auckland, including cracks in pavements and crevices in walls. Poaceae.

Hordeum murinum subsp. *leporinum* (Link) Arcang.

Barley grass (syn. *Critesion murinum* (L.) A. Löve subsp. *leporinum* (Link) A. Löve). Recorded from a sea wall at Mairangi Bay. Poaceae.

Myrsiphyllum asparagoides (L.) Willd.

Florist's smilax (syn. *Asparagus asparagoides* L.). South Africa. Well naturalised in northern New Zealand. Asparagaceae.

Myrsiphyllum scandens Thunb. (Oberm.)

Climbing asparagus (syn. *Asparagus scandens* Thunb.). South Africa. Naturalised in bush in northern New Zealand. One of the worst forest and shrubland weeds in northern New Zealand. Often smothering old scoria walls, Mangere. Asparagaceae.

Pennisetum clandestinum Hochst. ex Chiov.

Kikuyu grass. Native of East African highlands. Commonly spreads over and through rock walls. Poaceae.

Poa annua L.

Annual poa. Europe, Turkey. Cosmopolitan. Abundant weed. Common in Auckland. There are some perennial forms. Commonly colonises cracks in stone walls. Poaceae.

Poa pratensis L.

Meadow grass. Recorded from a dry rock wall, Mt. Albert. AK 218005. Poaceae.

Polypogon viridis (Gouan) Breist.

Water bent (syn. *Agrostis semiverticillata* (Forssk.) C. Chr. or *Agrostis viridis* Gouan). Mediterranean region. Stoloniferous perennial. In Auckland, on roadsides and damp places and banks. On walls at Albert Park and Auckland Hospital. Poaceae.

Rytidosperma racemosum (R.Br.) Connor & Edgar

Danthonia, wallaby grass (syn. *Notodanthonia racemosa* (R. Br.) Zotov, *Danthonia racemosa* R. Br., *Austrodanthonia racemosa* (R. Br.) Linder) Australia. Naturalised in New Zealand in lowland grassland. Very common in Auckland, usually on the drier, poorer sites. Common on walls, Symonds Street Cemetery. Poaceae.

Tradescantia fluminensis Vell. Conc.

Wandering Jew. Brazil. Very common in disturbed native bush in New Zealand. Also occurs on stone walls. Commelinaceae.

Dicots

Abutilon pictum (Gillies ex Hook. & Arn.) Walp

Cultivated only. Possibly of S. American origin. Auckland University grounds, on a wall. Malvaceae.

Alternanthera sessilis (L.) R.Br.

Sessile alternanthera. Young tops are edible. Known as *nahui* in New Zealand. Thought to be a Polynesian introduction. Recorded from the base of a scoria wall 438 Beach Road, Mairangi Bay. AKU 12597. Amaranthaceae.

Amaranthus deflexus L.

Prostrate amaranth. Tropical America. Weed in New Zealand. Rock walls, Manukau City centre. Amaranthaceae.

Anagallis arvensis L. var. *arvensis*

Scarlet pimpernel. Europe. Common weed in New Zealand. Often on walls. Campanulaceae.

Anredera cordifolia (Ten.) Steenis

Madeira vine or mignonette vine (syn. *Boussingaultia baselloides*). Tropical South America. Has aerial stem tubers. Smothering habit over rock walls, particularly in Mangere and Mt. Eden. Basellaceae.

Aphanes inexpectata Lippert

Parsley piet. Europe. Commonly naturalised throughout New Zealand. Opportunist on rock walls. Rosaceae.

Atriplex prostrata DC.

Orache. Eurasia, N. Africa. Prostrate weed. Common in New Zealand near the coast on shingle banks, fringing mud flats. (includes *Atriplex novae-zelandiae* Aellen). Occurs around the Manukau Harbour, sometimes on sea walls. Rock sea wall, Hobson Bay. AKU 4588. Chenopodiaceae.

Buddleja davidii Franch.

Buddleia. China. Serious weed in New Zealand, particular in Central North Island pine plantations, and the Urewera National Park. Colonies on stone walls near Newmarket railway station, and Symonds Street Cemetery. Loganiaceae.

Calystegia silvatica (Kit.) Griseb.

Great bindweed. Common in New Zealand. White flower. From Europe. Onehunga. Scrambling over low rock walls in Symonds Street Cemetery. AK 241973. Convolvulaceae.

Cardamine hirsuta L.

Bitter cress. Europe. Common on rock walls. Brassicaceae.

Centranthus ruber (L.) DC.

Spur valerian, red valerian, soldier's pride. Europe. Perennial. Bluish-green, smooth leaves. Abundant wildflower in Waikumete Cemetery, Auckland, and also on walls and embankments (e.g, Gillies Avenue, Newmarket). Flowers pink to magenta in colour. Flowering in late October. Single-seeded fruit is parachute dispersed. Valerianaceae.

Cerastium glomeratum Thuill.

Annual mouse-ear chickweed. Europe. Common in New Zealand. Caryophyllaceae.

Ciclospermum leptophyllum (Pers.) Sprague

Slender celery. America. Naturalised in New Zealand. A small, feathery annual. Waitakere Ranges. Rock walls, parking area, Manukau City centre. Apiaceae.

Clytostoma callistegioides (Cham.) Bureau & K.Schum.

Argentine trumpet vine, love-charm. Ornamental climber. Argentina, Brazil, Paraguay. Auckland University. Cultivated on a wall. AKU 16951. Bignoniaceae.

Conyza albida Sprengel

Broad-leaved fleabane. Subtropical South America. Erect herb to 2.5 m. Weed of disturbed sites. Abundant on roadsides and waste areas, Manukau City. Sometimes on rock walls. Asteraceae.

Conyza bonariensis (L.) Cronq.

Wavy-leaved fleabane. South America. Common on gravelly roadsides, waste places. Often seen on rock walls. Asteraceae.

Coronopus didymus (L.) Smith

Twin cress. Europe. Common garden weed. Brassicaceae.

Cotula australis (Sprengel) Hook.f.

Soldier's button. Native in New Zealand and Australia. Common in Auckland in waste places, including stone walls. Asteraceae.

Cotula coronopifolia L.

Bachelor's button. Common near the coast, especially near salt marshes. New Zealand. Cosmopolitan. Common in Auckland, around the Manukau Harbour. Colonises the top of sea walls, Kiwi Esplanade. Asteraceae.

Crassula multicava Lemaire

Fairy crassula. South Africa. Succulent. Pink flowers. Leaves are dotted with hydathodes. Common garden plant in New Zealand. Often grows over scoria walls. Crassulaceae.

Cymbalaria muralis Gaertner f.

Kenilworth ivy, ivy-leaved toadflax, mother-of-thousands, pennywort, roving Jenny. Mediterranean. Widely naturalised. Very common in Auckland, on scoria walls. Flower stalks bend towards the light, but when fruit is ripe, bend away from the light, allowing seeds to be shed on the wall. AK 218524. Scrophulariaceae.

Delairea odorata Lem.

Cape ivy (syn. *Senecio mikanioides* Otto ex Walp.). South Africa. Twining perennial. Fleshy leaves. Common in New Zealand. On rock walls, Kiwi Esplanade, Mangere Bridge. Asteraceae.

Distictis buccinatoria (DC.) A.H.Gentry

Cherere, Mexican blood flower, red bignonia, blood-trumpet. From Mexico, West Indies. A liane. Flowers reddish orange. Cultivated in New Zealand. Also has been known as *Bignonia buccinatoria* Mairet ex DC. and *Phaedranthus lindleyanus* Miers. Climbing on walls at Ellerslie Racecourse. AKU 22020. Bignoniaceae.

Dittrichia graveolens (L.) Greuter

Camphor inula, stinkweed (Australia). Africa, Asia, E. Europe. Recorded from the base of a wall in Browns Bay. AKU 20118. Asteraceae.

Duchesnea indica (Andrews) Focke

Indian strawberry. Commonly naturalised in New Zealand. Rock wall, Symonds Street Cemetery. AK 241975. Rosaceae.

Duranta erecta L.

Golden dewdrop, pigeonberry. Subtropical America – Mexico, Caribbean, to South America. Garden ornamental. Often spiny. Flowers violet. Fruit yellow-orange. In Auckland (Western Springs, Unitec). Rock wall at the marae, Auckland University. (syn. *Duranta repens* L., *Duranta plumieri* Jacq.). Verbenaceae.

Echeveria secunda W.B. Booth

Hen and chickens echeveria. Mexico. Common pot plant, and also grown on rock walls and embankments, and as edging. Wild on rock wall, Gilgit Street, Mt. Eden. Crassulaceae.

Epilobium billardieranum ssp. *cinereum* (A. Rich.) Raven & Engelhorn

Willow-herb. New Zealand, Australia. Dry banks. Prostrate plant with toothed leaves common on rock walls, Manukau City centre. AK 181039. Rooting at nodes. Onagraceae.

Erigeron karvinskianus DC.

Mexican daisy. Mexico. Wild in New Zealand, and also cultivated. Common in Auckland on banks and walls. Asteraceae.

Euphorbia helioscopia L.

Sun spurge. Europe, Asia. Finely serrate leaves. Usually has a yellowish appearance. Sea walls at Mangere Bridge. Euphorbiaceae.

Euphorbia peplus L.

Milkweed. Europe. Present in almost every garden in New Zealand. Common on walls. Euphorbiaceae.

Euryops abrotanifolius (L.) DC.

Paris daisy. South Africa. Common garden plant. Recorded from Lynmall, New Lynn, on a brick wall. AK 214518. Asteraceae.

Fatsia japonica (Thunb.) Decne. & Planchon

Fatsia. From Japan and Korea. Very commonly cultivated. Recorded from a rock wall, Sheraton Hotel carpark Building, Liverpool Street. AK 232908. Araliaceae.

Ficus pumila Thunb.

Creeping fig. Native of south China/SE Asia. On stone walls in Auckland, for example, St Cuthberts School, and properties in Gillies Avenue, Gilgit Street, and Almorah Road. Moraceae.

Ficus rubiginosa Desf. ex Vent.

Rusty fig, Port Jackson fig. Australia. Wild in Auckland, and Kawau Island. Seedlings commonly colonise rock walls in Cornwall Park and Symonds Street Cemetery. Moraceae.

Fumaria capreolata L.

Rampant fumitory. Recorded on base of rock wall, One Tree Hill. AK 182198. Fumariaceae.

Fumaria muralis Koch

Scrambling fumitory. Europe. Scrambling, climbing herb. Annual. Often occurs on scoria walls. Fumariaceae.

Galium divaricatum Lam.

Slender bedstraw. Europe. In New Zealand in poor stony pastures. Common in rock walls, Manukau City centre. Rubiaceae.

Geranium purpureum Villars

Small herb Robert. Mediterranean. Common in the Auckland area on rock walls and scoria banks. Strong smelling. Geraniaceae.

Geranium salanderi Carolin

Recorded from rock wall, Mt. Albert. ("coarse hairs"). AK 182188. Geraniaceae.

Gnaphalium coarctatum Willd.

Purple cudweed. South America. Plentiful weed of waste places in Auckland, including rock walls. Asteraceae.

Gnaphalium sphaericum Willd.

Japanese cudweed. Japan, Australia, New Zealand. Opportunist on rock walls. Asteraceae.

Hedera canariensis Willd.

Canary ivy (syn. *Hedera helix* subsp. *canariensis* (Willd.) Cout.). Canary Islands. The cultivar 'Variegata' is commonly used in Auckland for groundcover. There is a vigorous colony on a rock wall in the Symonds Street Cemetery, with both green and variegated leaves. Araliaceae.

Hedera helix L.

Ivy. Europe. Common in New Zealand. Often colonises rock walls in Auckland. This woody climber has adhesive roots. Araliaceae.

Hydrocotyle moschata Forst.f.

New Zealand. Often in lawns. In Auckland, sometimes on stone walls. Apiaceae.

Ipomoea indica (Burman) Merr.

Blue morning glory. Tropics. A common weed in New Zealand. Deeply 3-lobed leaves, large deep-blue flowers. Sometimes found sprawling over rock walls. AK 101463. Convolvulaceae.

Lamium purpureum L.

Red dead nettle. Eurasia. Very common weed in New Zealand. Rock walls, Manukau City centre. Lamiaceae.

Lapsana communis L.

Nipplewort. A common garden weed in New Zealand. A nuisance in summer. Rock walls, Mt. Eden. Asteraceae.

Lavandula dentata L.

Toothed lavender. Mediterranean. N. Africa, Spain. Pinnate or toothed leaves. Bushy aromatic shrub. Commonly cultivated in New Zealand. Growing wild on a crib wall, Mt. Albert. AKU 18479. Lamiaceae.

Lavatera arborea L.

Tree mallow. Europe, North Africa. Up to 3 m high. Semi-woody. Well established on the Mangere Bridge foreshore, on the site of the old house (now a picnic area) in Kiwi Esplanade. Common along the Onehunga coastal walkway. Sometimes on coastal rock walls. Flowering in October. Malvaceae.

Legousia speculum-veneris (L.) Chaix

Large Venus's looking glass. N. Africa, E. Asia, Europe. Violet flowers. Recorded from rock wall in Auckland city. AKU 21847. Campanulaceae.

Leucanthemum vulgare L.

Oxeye daisy. Eurasia, Abundant in New Zealand on roadsides and in waste places. Occurs on old walls in the Symonds Street Cemetery, Auckland. Asteraceae.

Ligustrum lucidum Aiton f.

Tree privet, Chinese wax tree, *nuzin*. China, Korea, Japan. Thrives in cities, and is seemingly resistant to air pollution. Seedlings sometimes germinate on scoria walls. Oleaceae.

Ligustrum sinense Lour.

Chinese privet. Common shrub weed in Auckland. Seedlings sometimes appear on rock walls. Oleaceae.

Linaria maroccana Hook.f.

Recorded from crevices in a rock wall above the Newmarket railway yards. AK 225250. Scrophulariaceae.

Linaria purpurea (L.) Miller

Purple linaria. Italy. Common in Auckland on waste ground and rock walls. Scrophulariaceae.

Lonicera japonica Thunb.

Japanese honeysuckle. Very common climbing weed in New Zealand. Occurs on rock walls, St Martins Lane, Symonds Street Cemetery. Caprifoliaceae.

Macfadyena unguis-cati (L.) A.Gentry

Cats claw creeper. (syn. *Doxantha unguis-cati* (L.) Rehd.). Liane. Ornamental. Yellow flowers. Mexico to Argentina. Cultivated vine, over pergola, Wintergarden at Auckland Domain. Ellerslie Racecourse. Bignoniaceae.

Macropiper excelsum (Forst.f.) Miq. subsp. *excelsum*

Kawakawa. Very common shrub in lowland forest. Seedlings are not uncommon on old rock walls, Symonds Street Cemetery. Piperaceae.

Mandevilla laxa (Ruiz & Pav.) Woodson

Chilean-jasmine. Argentina, Peru, Bolivia. Cultivated on a wall, Old Govt. House, Auckland University. AKU 18482. Apocynaceae.

Medicago arabica (L.) Hudson

Spotted bur medick. Europe, Asia. Abundant weed in Auckland, commonly on footpaths. Fabaceae: Faboideae.

Medicago nigra (L.) Krockner

Bur medick. Procumbent. Common weed in Auckland. On top of rock sea walls, Kiwi Esplanade, Mangere Bridge. Fabaceae: Faboideae.

Melilotus indicus (L.) All.

King Island melilot. Common on the approaches to the old Mangere Bridge, and on top of sea walls, Auckland. Fabaceae: Faboideae.

Metrosideros excelsa Sol. ex Gaertner

Pohutukawa. Seedlings often appear on rock walls. Myrtaceae.

Myosotis arvensis (L.) Hill

Field forget-me-not. Europe. Common weed in New Zealand. Rock walls, Manukau City centre. Boraginaceae.

Osteospermum fruticosum (L.) Norlindh

(*O. ecklonis* (DC.) Norlindh)

Dimorphotheca, sailor-boy daisy. South Africa. Naturalised on Rangitoto Island. Naturalised on rock wall, Almorah Road, Mt. Eden. AK 241972. Asteraceae.

Oxalis exilis Cunn.

Creeping oxalis. New Zealand, Australia. Very common in a wide range of habitats — rocky slopes, rock crevices, turf, scrub, pasture, river beds, beaches, waste places, lawns, Manukau City centre. AK 219491. Oxalidaceae.

Oxalis incarnata L.

Lilac oxalis. South Africa. Common weed in New Zealand. Waste places and gardens. Beneath hedges, rock walls. One of the characteristic weeds of Auckland's walls and garden hedges. Oxalidaceae.

Oxalis pes-caprae L.

Bermuda buttercup. South Africa. A common weed. Frequent in gardens and rock walls in Auckland. Oxalidaceae.

Papaver dubium L.

Long-headed poppy. Europe, Asia. Naturalised in New Zealand. Occurs on wall at Ellerslie Racecourse. AK 183976. Papaveraceae.

Parthenocissus tricuspidata (Sieb. & Zucc.) Planch.

Boston ivy. Japan. China. Cultivated in New Zealand. Leaves turn red in autumn. Abundant on rock wall, Symonds Street Cemetery. Vitaceae.

Parietaria judaica L.

Pellitory-of-the-wall (syn. *Parietaria diffusa* Mert. & Koch). Europe, N. Africa, Asia. Naturalised in New Zealand cities in foot paths and walls. Recorded from Birkenhead (CHR). Stone walls in Auckland (no records at Museum). Urticaceae.

Peperomia urvilleana A.Rich.

Native pepper. On lava rocks and also on shaded, artificial basalt rock walls, Withiel Thomas Reserve and Almorah Drive, Mt. Eden, Auckland. AK 242044. Piperaceae.

Pericallis x hybrida R.Nordenstam

Cineraria. Abundant in gardens, coming away in the late autumn and winter, and bursting into flower from late August. September is the flowering peak. Naturalised on coastal cliffs at Hillsborough. Grows on scoria walls, Mangere Bridge. Asteraceae.

Picris echioides L.

Oxtongue (syn. *Helminotheca echioides*). A weed of gardens and waste places. Commonly gets a foothold in cracks at the base of walls. Asteraceae.

Plantago coronopus L.

Buck's horn plantain. Europe. Abundant in salt marshes in New Zealand. Common at Mangere Bridge, Onehunga, and Ambury Park, Manukau Harbour, Auckland. Often colonises the top of sea walls, Kiwi Esplanade. Plantaginaceae.

Plantago lanceolata L.

Ribwort, narrow-leaved plantain. Eurasia. One of the commonest plants in New Zealand. Rock walls, Symonds Street Cemetery. Plantaginaceae.

Polycarpon tetraphyllum (L.) L.

Allseed. Europe. Common weed in New Zealand. On gravel roadways. Rock walls, Manukau City centre. Caryophyllaceae.

Polygonum capitatum D.Don

Pink-head knotweed. Himalayas. Garden plant in New Zealand. Often grows on rock walls. Common in Cornwall Park on brick walls. AK 240871. Polygonaceae.

Pseudognaphalium luteoalbum (L.) Hilliard & B.L.Burtt

New Zealand. Native cudweed. Jersey cudweed. Abundant woolly weed of forest nurseries and pine cutovers. Colonises rock walls in Auckland. AK 221128. Rock walls, Manukau City centre. Asteraceae.

Rumex sagittatus Thunb.

Climbing dock. South Africa. Climber or scrambler. Common on rock walls in Auckland. AK 145353, AK 116060. Polygonaceae.

Sagina apetala Ard.

Pearlwort. Annual. Eurasia. Common in New Zealand. Recorded from rock wall, Judges Bay. AK 207053. Caryophyllaceae.

Sagina procumbens L.

Procumbent pearlwort. Europe. Perennial. A common weed of paving. Thrives between the cobblestones in driveways. Auckland. Caryophyllaceae.

Sarcocornia quinqueflora (Ung.-Stemb.) A.J.Scott

New Zealand glasswort. (syn. *Salicornia australis* Sol. ex Benth.). New Zealand, New Caledonia, Australia. Abundant in salt marshes. Edible. Can grow on coastal walls, as at Hobson Bay and Mangere Bridge. Chenopodiaceae.

Sedum acre L.

Stonecrop. Europe, Asia. Commonly naturalised in New Zealand. Walls at Cornwall Park and Mt. Albert. AK 220951. Crassulaceae.

Sedum album L.

White stonecrop. Europe, Asia. Cultivated in NZ gardens, becoming a nuisance. Grows on top of stone walls, Cornwall Park (Greenlane Road), Government House (Mountain Road). AK 220950. Crassulaceae.

Sedum praealtum A.DC.

Shrubbery stonecrop. Mexico. A subshrub. Recorded from a basalt wall, Mt. Eden Road. AKU 18945. Crassulaceae.

Senecio skirrhodon DC.

Gravel groundsel. South Africa, Madagascar. A common weed in Auckland. Seems to flower at any time of the year. Considered to be poisonous. Colonises rock walls at Manukau City centre. Asteraceae.

Senecio vulgaris L.

Groundsel. Europe. Common weed in New Zealand, in gardens and forest nurseries. Colonises rock walls in Auckland. AK 240875. Asteraceae.

Silene gallica L.

Catchfly. Europe. Very common weed in New Zealand. Rock walls, Manukau City centre. Caryophyllaceae.

Silene vulgaris (Moench) Garcke

Bladder campion. Europe, Asia. Abundant weed in New Zealand. Recorded from a rock wall, Mt. Eden. AK 217713. Caryophyllaceae.

Solanum nigrum L.

Black nightshade. Eurasia. Abundant in New Zealand. Garden weed. Rock walls, Manukau City centre. Solanaceae.

Sonchus asper (L.) Hill

Prickly sow thistle. A common weed of waste places and coastal sites. Sea walls at Mangere Bridge. Asteraceae.

Sonchus oleraceus L.

Sow thistle, milk thistle, puha. Frequent on stone walls. Asteraceae.

Stachys arvensis (L.) L.

Stagger weed, field woundwort. Europe. A weed in New Zealand. Recorded from a sea wall at Mangere Bridge. Lamiaceae.

Stellaria media (L.) Cirillo

Common stitchwort or chickweed. Europe. Found everywhere. Rock walls. Caryophyllaceae.

Tecomaria capensis (Thunb.) Spach

Cape honeysuckle. South Africa. Abundant hedge plant in Auckland. Around Mangere, it is often associated with old rock walls. Bignoniaceae.

Tithonia rotundifolia (Mill.) Blake

Mexican torch flower. Attractive to monarch butterflies. Garden plant. Recorded naturalised in Auckland on an old stone wall, Mt. Albert. AK 231883. Asteraceae.

Trachelium caeruleum L.

Throatwort. Mediterranean. Naturalised in Auckland. Abundant on the cemetery wall, Symonds Street, and rocks in Government Gardens (Bangerter 1980). AK 241976. Wall outside Auckland Hospital, Park Road. AK 241974. Flowering in January. Often on stone walls. Campanulaceae.

Trachelospermum jasminoides (Lindl.) Lem.

Luo shi. China. White perfumed flowers. Grown in dense beds at Auckland Botanic Gardens. Growing on wall, old Government House, Auckland. AKU 17796. Apocynaceae.

Trifolium dubium Sibth.

Suckling clover. Europe, Caucasus. Abundant in New Zealand. Crib walls, Auckland University. Fabaceae: Fabioideae.

Tropaeolum majus L.

Garden nasturtium, Indian cress. Peru, northern Andes. Abundant garden weed in New Zealand. Moist, shady places. Often scrambling over scoria walls. Tropaeolaceae.

Valerianella carinata Lois.

Com salad. Europe. Annual herb. Rock wall, Wynyard Street. AK 9603. Valerianaceae.

Veronica arvensis L.

Field speedwell, wall speedwell. Europe. Abundant annual weed in New Zealand. Cultivated ground, banks, walls. Scrophulariaceae.

Veronica persica Poir.

Scrambling speedwell. Europe, W. Asia. Very common weed of cultivated ground. Rock walls, Manukau City centre. AK 240876. Scrophulariaceae.

Viola odorata L.

Violet. Europe, Turkey. Naturalised in Auckland. Rock walls, Allendale Road, Mt. Albert. Violaceae.

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Mt Eden Rock Forests, Auckland City

Dedicated to the memory of James (Jim) Gouldstone*

E. K. Cameron

Introduction

In the 19th century, rock forest on basaltic lava (c. 19,000 years old) on the north-eastern slopes of Mt Eden (Maungawhau) was estimated to cover less than 50 ha (Smale and Gardner 1999) (see Fig. 1). Only three small areas of Mt Eden rock forest remain, all within 0.5 km of each other. Urbanisation, roading and quarrying have eradicated most of the rest, but individual trees and small groups of trees can still be seen on other private land in the adjacent area. The best known and the only one freely accessible to the public, is the Withiel Thomas Reserve, on the north side of

Withiel Drive (see Cameron et al. 1997: 205). The other two areas are close by: Government House grounds on the western side of Mountain Road, and the former Goodfellow property, to the north, off Almorah Road (see Fig. 1). On a rather wet 17 July 1999 Auckland Bot. Soc. visited all three sites. We started with 38 people at Government House and ended with 22 at the Goodfellow property.

Kirk (1870) appears to be one of the first to document the vegetation on the Auckland scoria cones. In his general account of the Auckland isthmus flora he mentioned that there are

* Jim Gouldstone (14 Jun. 1932 - 4 Oct. 1999) was a recent but keen Bot. Soc. member who had a passion for and an expert knowledge of small native land snails.