Lepidium banksii

COMMON NAME
coastal peppercress

SYNONYMS
Lepidium banksii var ovatum Kirk

FAMILY
Brassicaceae

AUTHORITY
Lepidium banksii Kirk

FLORA CATEGORY
Vascular – Native

ENDEMIC TAXON
Yes

ENDEMIC GENUS
No

ENDEMIC FAMILY
No

STRUCTURAL CLASS
Herbs - Dicotyledons other than Composites

CURRENT CONSERVATION STATUS
2017 | Threatened – Nationally Critical | Qualifiers: CD, EF, RR

PREVIOUS CONSERVATION STATUSES
2012 | Threatened – Nationally Critical | Qualifiers: CD, EF, EW, RR
2009 | Threatened – Nationally Critical | Qualifiers: CD, EF
2004 | Threatened – Nationally Critical

BRIEF DESCRIPTION
Perennial herb arising from stout tap-root. Plants with numerous spreading leafy branches. Leaves dark green, often coarsely serrated, smelling of cress when crushed. Inflorescences at branch tips, Flowers stems finely hairy. Flowers white with four stamens, Petals very narrow and short. Fruits circular, apices very deeply notched, splitting cleanly into two valves, seeds brown or orange-brown.

DISTRIBUTION
Endemic. South Island, formerly known from the Marlborough Sounds west to Tasman and Golden Bays and from the Karamea coastline. All recent records come from small shell banks in the Waimea Estuary near Nelson and the from the rocky coastline north of Totaranui, Abel Tasman National Park. The species has been introduced to several locations near Moutere and on rocky islands off the Abel Tasman coastline.

In cult. ex Totaranui. Photographer: Gillian M. Crowcroft, Licence: All rights reserved.

In cult. ex Totaranui. Photographer: Gillian M. Crowcroft, Licence: All rights reserved.

HABITAT
Strictly coastal, where it has been found growing amongst boulders near penguin colonies and within estuaries on low-lying shell banks.

DETAILED DESCRIPTION

Tap-rooted, strongly pungent smelling, perennial herb. Growth habit dense, stems closely placed, 20–50 cm tall. Stems upright to spreading, stout, barely flexuous; mature stems woody, 100–500 × 3–8 mm, often devoid of foliage on middle and lower parts of stems. Leaves glabrous, coriaceous, green, planar, rosette and stem leaves usually withering, variable in size and shape. Leaves of young and vigorous plants and stems: lamina 20–40 × 6–15 mm, oblanceolate-spathulate, obovate; apex obtuse, often with up to 3 or 4 teeth; margin coarsely serrate, with 15–21 pairs of teeth; teeth up to 2.0 mm deep, irregular in size, protruding beyond leaf outline; base attenuate to cuneate, petiole distinct; petiole up to 35.0 × 1.3–2.8 mm, channelled. Leaves of mature plants and cauline stems: lamina 8–25 × 3–6 mm, linear oblanceolate, obovate; apex obtuse to truncate, often with up to 3 or 4 teeth; margin serrate in upper half, up to 7 pairs of teeth; not overlapping, up to 1.5 mm deep, often protruding beyond leaf outline; base attenuate to cuneate, usually tapering to ± distinct petiole, sometimes appearing sessile; petiole up to 8.0 × 1.0–1.8 mm, channelled. Inflorescences terminal and lateral, racemose, 20–80 mm long, rachis 0.6–1.4 mm diameter, glabrous or sometimes with pale clavate hairs; pedicels 5–8 mm long, erecto patent, with pale clavate hairs on adaxial surface, hairs 0.1–0.15 mm long. Flowers 4.0–4.5 mm diameter. Sepals 4, saccate, overlapping at base, green, apex obtuse, margin white, shape and size dimorphic; lateral sepals 1.6–2.1 × 1.1–1.5 mm, orbicular, glabrous; median sepals 1.5–1.9 × 0.9–1.1 mm, broadly elliptic, abaxial surface glabrous or sparsely hairy, hairs 0.2–0.4 mm long. Petals white, 1.8–2.0 × 0.1–0.9 mm, erect, claw indistinct; limb narrowly obovate, elliptic or filiform, often irregular in shape, apex obtuse to subacute. Stamens 4, ± equal lengths, 1.2–1.7 mm long, base 0.6–0.9 mm wide; anthers 0.4–0.7 mm long, yellow or sometimes violet. Ovary 1.4–1.6 × 1.0–1.6 mm, broadly ovate, green, apex round or sometimes weakly shouldered; style 0.2–0.3 mm long, cylindrical below, spreading at apex; stigma 0.45–0.5 mm diameter. Nectaries 4, 0.2–0.4 × c. 0.1 mm, oblong, green. Silicles cartilaginous when fresh, coriaceous when dry, 4.5–5.5 × 4.0–5.0 mm, broadly ovate, apex notched, base cordate, valves green maturing yellow-green, glabrous, slightly winged; style 0.2–0.3 mm long, exserted. Seeds 1.8–2.3 × 1.0–1.2 mm, obovate or obovate-elliptic, brown to orange-brown, not winged.

SIMILAR TAXA

Lepidium banksii is recognised by the clavate hairs on the pedicels, mostly filiform petals, styles that spread at the apex into a broad plate, and silicles that have a prominent apical notch (de Lange et al. 2013). In comparison, the styles of the other Lepidium species except for L. seditiosum, are cylindrical for their whole length. Lepidium seditiosum differs from L. banksii by its circumferentially hairy inflorescences, erect growth habit, and much larger, more deeply cut leaves. Lepidium seditiosum is endemic to the Bounty Islands. DNA sequence data (nrDNA ITS, ETS, cpDNA trnL) places L. banksii with L. oleraceum while L. seditiosum is allied to L. aegrum, L. crassum and L. juvencum (see de Lange et al. 2013)

FLOWERING

November - January

FLOWER COLOURS

White

FRUITING

November - January

LIFE CYCLE

Mucilaginous seeds are dispersed by attachment and possibly wind and water (Thorsen et al., 2009).

PROPAGATION TECHNIQUE

Easily grown from fresh seed. Seed has short-term viability. Plants can be grown from sem-hardwood cuttings. Although easily grown this species is short-lived (often lasting for only a few months) and so is best treated as an annual. It is very prone to insect damage, especially from cabbage white butterfly caterpillars, diamond backed moths, cabbage aphids, slugs and snails. Powdery mildew, fusarium and verticillium wilt are also problems, and plants are almost always infected with white rust (Albugo candida), which produces yellow streaks on young foliage, and numerous white pustules on the leaves when in its reproductive phase. Because of these problems, the species is rarely cultivated.

THREATS

At serious risk of extinction. Disease and browsing animals (insect and mammal), coupled with seasonal droughts, and human interference are constant threats to the species in the wild. In fact despite intensive management, which includes frequent translocations and population enhancement, hand weeding, fertiliser applications, disease control by spraying, enclosures to prevent browse and trampling, this species is at the very brink of extinction. Indeed there may not even be any natural occurring plants left. This is very worrying as the species has proved very hard to maintain in cultivation. As of 2004, there are now 188 adult plants in the wild, 12 of which result from natural recruitment, the rest from human plantings.

ETYMOLOGY

lepidium: Scale-shaped (pods)
banksii: Named after Sir Joseph Banks, 1st Baronet, GCB, PRS (24 February 1743 - 19 June 1820) was an English naturalist, botanist and patron of the natural sciences.

WHERE TO BUY

A few plants are held by specialist growers, botanic gardens and universities. The Auckland Regional Botanic Gardens maintains a seed bank for this species. The Nelson/Marlborough Conservancy of the Department of Conservation also holds plants as part of its long-term management of the species.

TAXANOMIC NOTES

Nuclear and chloroplast DNA sequences do not recognise L. banksii as distinct from L. oleraceum. They show this species is not closely related to L. obtusatum.
Extra information
Story from Trilepidea Issue 32 (July 2006) about the unsung heroes who helped to save this species from extinction,

ATTRIBUTION

P.J. de Lange (21 August 2013). Description from de Lange et al. (2013) - see references for free download link for that paper.

REFERENCES AND FURTHER READING

de Lange, P.J.; Heenan, P.B.; Houliston, G.; Rolfe, J.R.; Mitchell, A.D. 2013: New *Lepidium* (Brassicaceae) from New Zealand. *Phytokeys 24*:1-147pp. , doi: 10.3897/phytokeys.24.4375.
David A. Norten and Peter J. de Lange. 1999. Coastal cress (Nau) recovery plan. Threatened Species Recovery Plan 26. Department of Conservation
Thorsen, M. J.; Dickinson, K. J. M.; Seddon, P. J. 2009. Seed dispersal systems in the New Zealand flora. Perspectives in Plant Ecology, Evolution and Systematics 11: 285-309

NZPCN FACT SHEET CITATION

Please cite as: de Lange, P.J. (Year at time of access): Lepidium banksii Fact Sheet (content continuously updated). New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/flora/species/lepidium-banksii/ (Date website was queried)

MORE INFORMATION

https://www.nzpcn.org.nz/flora/species/lepidium-banksii/