

Helianthemum oelandicum
subsp. *levigatum* (M. Proctor) D.H.
Kent

Hoary Rock-rose

An endemic species only found on Cronkley Fell in North-west Yorkshire, *Helianthemum oelandicum* subsp. *levigatum* has small flowers with bright lemon-yellow petals that are usually swept downwards, and narrow leaves that are hairless on the upper surface and white-tomentose beneath. It is found on bare areas of sugar limestone and also within *Festuca ovina* and *Sesleria caerulea* turf, and occurs with other notable species such as *Gentiana verna* and *Kobresia simpliciuscula*. It is assessed as Vulnerable in Great Britain because of the restricted number of locations and fragility of habitat.



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IDENTIFICATION

Helianthemum oelandicum is a prostrate woody perennial with bright yellow flowers and opposite leaves that are glossy green above and whitish-tomentose below.

Subspecies *levigatum* is one of three subspecies that occurs in Britain and Ireland. It is told from subsp. *incanum* (England, Wales) and subsp. *piloselloides* (Ireland) by the glabrous upper leaf surfaces and fewer flowers (1-3) on each inflorescence branch (Stace 2010). Plants of subspecies *laevigatum* also have smaller, narrower leaves, a character maintained in cultivation, and presumably a modification caused by the harsh conditions experienced on Cronkley Fell (Proctor 1957).



Cronkley Fell, North-west Yorkshire, is home to the global population of *Helianthemum oelandicum* subsp. *levigatum*.
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SIMILAR SPECIES

H. oelandicum is told from *H. nummularium* by the absence of stipules, more strongly 'S' shaped styles and smaller flowers which are usually less than 15 mm in diameter. The petals of subsp. *levigatum* are also typically swept downwards (see photo above).

HABITATS

The world distribution of subsp. *levigatum* is restricted to three limestone outcrops on Cronkley Fell, where the plant is confined to bare expanses of eroded sugar limestone as well as more closed NVC CG9 *Sesleria albicans-Galium sternerii* and CG10 *Festuca ovina-Agrostis capillaris-Thymus praecox* grassland (Porter & Roberts 1999).

In 2013 it was recorded in 17 10 × 10 m grid cells in the most easterly enclosure ('*Helianthemum* knoll') where there were an average of 1.9 ± 0.6 plants m⁻². This suggested a total population of 300-1200 plants (using a bootstrap with a 95% confidence interval and assuming 25% of the area surveyed held suitable habitat).

BIOGEOGRAPHY

Helianthemum oelandicum subsp. *levigatum* is confined to between 525-540 m on Cronkley Fell, North-west Yorkshire where it was first recorded by E.S. Marshall on 2 July 1886. It was described as a separate subspecies in 1957 (Proctor 1957) and since then it has been recorded on four outcrops of sugar limestone within a single kilometre square.

Subsp. *incanum* occurs in north and south Wales and northwest England and subsp. *piloselloides* grows in Western Ireland (Stace 2010). In mainland Europe *H. oelandicum* is

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widespread, occurring from Iberia to the Caucasus, and from the Baltic (Öland) to North Africa. Several subspecies occur within this range.

ECOLOGY

Helianthemum oelandicum is a shrubby, mat-forming perennial, flowering from May to July. Plants flower freely and set abundant seed unless they are subjected to particularly heavy grazing.

There is no specialised means of dispersal but the seeds produce a mucilage when wet which may aid dispersal during wet weather. Seeds produced in one summer germinate gradually over a long period but the successful establishment of seedlings requires a period of damp weather long enough for young plants to develop a root system which can withstand drought (Griffiths & Proctor 1956).

H. oelandicum is visited by bees and is probably mainly pollinated by them, but it is not known whether this is true of subsp. *levigatum*. There appears to be no automatic selfing mechanism in *H. oelandicum*, possibly due to partial self-incompatibility (Griffiths & Proctor 1956).

THREATS

Helianthemum oelandicum subsp. *levigatum* is tolerant of moderate grazing because of its dwarf habitat, although heavy

grazing reduces seed-set in Teesdale (Griffiths & Proctor 1956). However, most plants occur within exclosures protected from grazing animals and this has resulted in a general improvement in flowering performance (Elkington 1981).

The sugar limestone on which *H. oelandicum* grows is a very fragile substrate, and excessive erosion due to a number of factors including rabbit burrowing, sheep grazing, wind and frost, continues to be a threat to extant populations. Botanists keen on seeing this British endemic are advised to attend organised group visits run by the local Botany Group and Natural England.

MANAGEMENT

All four outcrops where the species occurs have been fenced to exclude livestock and rabbits. However, following concerns about excessive growth of *Sesleria*, light grazing has been reintroduced to some of these areas, and results are being monitored.

REFERENCES

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AUTHOR VERSION

Kevin Walker. Version 4 December 2014.

SUGGESTED CITATION

Walker, K.J. 2014. *Helianthemum oelandicum* subspecies *levigatum* (M. Proctor) D.H. Kent. Hoary Rock-rose. Species Account. Botanical Society of Britain and Ireland.



Distribution of *Helianthemum oelandicum* subsp. *laevigatum* in Great Britain and Ireland.