

Harpoon weed, *Asparagopsis armata*



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Overview

Short description of *Asparagopsis armata*, Harpoon weed

The life cycle of harpoon weed has two morphologically different phases; the sexual (gametophyte) plant is rosy, yellowish pink or whitish pink, erect and spreading, with many feathery branches; up to 30 cm tall with some branches developing as conspicuous harpoon-like barbed structures up to 10 mm long. The asexual (tetrasporophyte) plant is rosy pink, filamentous, and forms fine woolly balls 10 - 20 mm in diameter.

Description of *Asparagopsis armata*, Harpoon weed status in GB

The barbed gametophyte stage of the harpoon weed is only common at south western locations, but the tetrasporophyte phase (known as *Falkenbergia*) has spread north to Shetland.

Habitat summary: *Asparagopsis armata*, Harpoon weed

The gametophyte occurs mainly in summer in shallow subtidal waters or in deep tidal pools on the lower shore, attached to various substrates – often to other algae by barbed branchlets. The *Falkenbergia* stage occurs all year round; it is epiphytic or sometimes free living, typically found subtidally and sometimes tangled up in other seaweeds.

Overview table

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|---------------------------|------------------------|
| Environment: | Marine |
| Species status: | Non-Native |
| Native range: | Australia, New Zealand |
| Functional type: | Algae (macroalgae) |
| Status in England: | Non-Native |
| Status in Scotland: | Non-Native |
| Status in Wales: | Non-Native |
| Location of first record: | Lundy |
| Date of first record: | 1949 |

Invasion history: *Asparagopsis armata*, Harpoon weed

Origin

Harpoon weed is endemic to the Southern Hemisphere and thought to originate from Australia and New Zealand.

First Record

The *Falkenbergia* stage was first recorded in GB in 1949 at Lundy in the Bristol Channel, following its discovery in Galway Bay, Ireland in 1939.

Pathway and Method

Harpoon weed most likely spread to GB from alien populations already established in Europe, by rafting and drifting on surface currents. It may have been introduced to mainland Europe, where it was first recorded in the Bay of Biscay, France, in 1925 with

oyster imports. Hull fouling has also been suggested as a possible vector.

Species Status

Harpoon weed has been introduced from its native range to Western Europe, the northern Mediterranean, North Africa, Japan and the west coast of North America during the twentieth century.

Ecology & Habitat: *Asparagopsis armata*, Harpoon weed

Dispersal Mechanisms

The gametophyte stage attaches itself by its hooks to other material including fragments of other seaweeds and is dispersed through drifting or rafting on surface currents. The *Falkenbergia* phase spreads easily as floating balls. The two stages are thought to be spreading independently by vegetative means (clonal reproduction).

Reproduction

Both stages reproduce vegetatively, *i.e.* they are able to reproduce by cloning, and the sexes are separate. The *Falkenbergia* stage produces haploid spores that develop into male or female free-living gametophytes. The large barbed growths of the plant are the sexual gametophytes. Fertilization occurs on the female reproductive structures, giving rise to a diploid zygote that develops into a multicellular structure called a carposporophyte (a pustule-like structure). The carposporophyte eventually produces and releases diploid carpospores that develop into tetrasporophytes (the *Falkenbergia* stage).

Known Predators/Herbivores

Harpoon weed is unpalatable to most herbivores due to chemical defences, but is known to be consumed by the sea hare *Aplysia parvula* and black-lip abalone *Haliotis rubra* in its native Australia.

Resistant Stages

None known.

Habitat Occupied in GB

The gametophyte occurs in shallow subtidal waters or deep pools on the lower shore, attached to a variety of substrates including rock, and sometimes attaches to other seaweeds by its barbed branchlets. The *Falkenbergia* stage is typically found subtidally; it is epiphytic or sometimes free-living. It is also known to grow in abundance amongst eelgrass beds, for example in the Scilly Isles.

Distribution: *Asparagopsis armata*, Harpoon weed

Native range from Australia and New Zealand. In GB the gametophyte occurs in the southwest of England, while the *Falkenbergia* stage occurs north to Shetland but is rare on the east coasts.

Impacts: *Asparagopsis armata*, Harpoon weed

Environmental Impact

Harpoon weed is reported to dominate algal assemblages in some locations; it forms bloom-like outbreaks and is known to cover 100% of the upper infralittoral (0 – 10 metres depth) during winter in the NW Mediterranean.

Health and Social Impact

Can cause a minor nuisance by sticking to the clothing of people swimming and snorkelling using its barbs.

Economic Impact

Economic losses to fisheries have been reported due to harpoon weed clogging up fishing nets when it occurs in bloom-like outbreaks. In Ireland, harpoon weed has recently been identified as a commercially important species for the production of cosmetics.

References & Links: *Asparagopsis armata*, Harpoon weed

Identification

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Oakes, M. (2003) *Asparagopsis armata*. Harpoon weed. Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]. Plymouth: Marine Biological Association of the United Kingdom. Available from: <http://www.marlin.ac.uk/speciesinformation.php?speciesID=2643>

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Management and impact

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