Hypnea musciformis 简体中文 正體中文

System: Marine

Kingdom	Phylum	Class	Order	Family
Plantae	Rhodophycota	Rhodophyceae	Gigartinales	Hypneaceae

Common name hypnea (English)

Synonym
Fucus musciformis , Wulfen 1791
Sphaerococcus musciformis , (Wulfen) C. Agardh 1822
Hypnea rissoana , J. Agardh, nom. illeg. 1842
Sphaerococcus divaricatus , C. Agardh, nom. illeg. 1827

Similar species *Hypnea japonica*

Summary Hypnea musciformis (basionym Fucus musciformis) is classified as a red algae and is distributed throughout most of the world. It was recently introduced to Hawaii and has quickly become invasive and a nuisance.

view this species on IUCN Red List

Species Description
The University of Hawai'i (UNDATED) describes *H. musciformis* as, \"Clumps or masses of loosely intertwined, cylindrical branches, 10 - 20cm tall, 0.5 - 1.0cm diameter, that become progressively more slender towards tips. Firm, cartilaginous, highly branched. Branching is variable and irregular, often tendril-like and twisted around axes of other algae. The ends of many axes and branches are flattened with broad hooks. Holdfasts are small, inconspicuous, or lacking. Usually red, but can be yellowish brown in high light environments or nutrient poor waters. The authors state that *H. musciformis* can be easily distinguished from other native *Hypnea* spp. (In Hawai'i) by, \"The presence of flattened, broad hooks at the tips of the branches.\"
The University of Hawai'i (UNDATED) describes *H. musciformis* in more exact detail listing the following: \"Medulla appear parenchymatous around central axial cell; cortical filaments with few divisions on radii, outer layer pigmented. Tetrasporangia zonately divided, in raised nemathecia, usually on ultimate branches; spermatangia borne in chains in slightly swollen nemathecia at base of branchlets. Cystocarps conspicuous, rounded, without discharge pore.\" Smith *et al.* (2002) states that, \"*H. musciformis* has ''apical hooks'' at the tips of its branches that attach or anchor the alga onto other macroalgae and any other available substrate. When this species is ripped from the substrate, these hooks are likely to be left behind to re-grow.\"

Notes
H. musciformis, when abundant, usually co-occurs with *Ulva fasciata*, a known weedy species in a genus known to require high nutrient flux for growth (Larned 1998). Therefore, the mechanisms that influence bloom formation in this species may be related to land use activities and nutrient input (Smith *et al.* 2002).

Lifecycle Stages
\"The genus *Hypnea* has a *Polysiphonia* type life history with isomorphic, dioecious gametophytes and tetrasporophytes and a diploid carposporophyte developing on the female gametophyte" (Masuda *et al.*1997 in Reis & Yoneshigue-Valentin, 2000).

Uses
Melo *et al.* (1997) discovered, \"A protein fraction, rich in agglutinins, obtained from *H. musciformis* by precipitation with ammonium sulfate that showed antifungal activity against the fungi *Trichophyton rubrum* and *Colletotrichum lindemuthianum*, with total inhibition of spore germination at concentrations of 500, 1000 and 2000 mu-g/mL.\"
Russell and Balazs (1994) report that, \"In Hawai'i *H. musciformis* was originally planted on reefs in Kane'oheohe Bay, Oahu, in January 1974, but has since spread to many other locations on Oahu and to other Hawai'ian islands. *H. musciformis*, along with the previously introduced alien seaweed, *Acanthophora spicifera*, is now being prominently used as a food source by the green turtle (*Chelonia mydas*), an endangered species that frequents the Hawai'ian Islands.\"
Salimabi (1980) found that, \"Pharmacological studies on K-carrageenan extracted from *H. musciformis* have shown that it antagonizes histamine-induced spasm in guineapig ielum and possesses anti-inflammatory activity against rat hind paw oedema induced by commercial carrageenan\".
\"*H. musciformis* is an important carrageenan resource of Brazil used in the industry of phycocolloid gelling agent\" (Bravin and Yoneshigue-Valentin, 2002).

Habitat Description
SuriaLink (2003) reports that *H. musciformis*, \"Generally attaches subtidally to coral, stones or shells on sheltered tropical reef flats. It can also be cultivated on ropes suspended in the sea.\" The University of Hawai'i (UNDATED) states that, \"*H. musciformis* is often found as an epiphyte on reef algae such as *Sargassum echinocarpum*, *Sargassum polyphyllum*, and *Acanthophora spicifera*.\"

Reproduction
A study conducted by Reis and Yoneshigue-Valentin (2000) suggests that, \"In *H. musciformis*, asexual reproduction predominates over sexual reproduction. There are more vegetative than reproductive thalli under environmentally stressful conditions for growth.\" Smith *et al.* (2002) reports that, \"*H. musciformis* is able to propagate vegetatively in all size classes examined, with the greatest success observed in the smallest fragments. The tips of the branches of this species are inflated and have characteristic ''hooks.'' These hooks twine tightly around axes of other plants. Once the epiphytic biomass of *H. musciformis* reaches a certain size or weight, wave action or other physical disturbance may crop the majority of the hypnea off the host plant, leaving the ''hooks'' behind. Our fragmentation study showed that these hooks can increase in weight up to 200% in a week, thereby rapidly propagating this species. In addition to the hooks, drift biomass that is ripped up can also disperse to new locations.\"

General Impacts
The University of Hawai'i (UNDATED) states that, \"The success of *H. musciformis* in Hawai'i is likely due to a rapid growth rate, ability to epiphytize other algae and easy fragmentation. Drifting fragments reattach to other algae, especially *Sargassum*, which can become detached during storms and float long distances, carrying the epiphytic *H. musciformis* with it. Dispersal may well have been enhanced *via* inter-island travel with fouled boat hulls.\" The authors also report that, \"*H. musciformis* is often found in large, nearly unialgal mats, and during the winter can represent 2/3 of the biomass of drift algae on windward and leeward beaches on Maui. These mats are tossed ashore in windrows up to 1.5 feet and are considered an odiferous pest. In peak blooms, thousands of pounds wash up on Maui beaches.\"
Since its introduction, *H. musciformis* has become a staple food source for the green sea turtle (see *Chelonia mydas* in IUCN Red List of Threatened Species). This worries biologists because the nutritional value of *H. musciformis* has not been determined for green sea turtles. Only further research will determine if a diet of *H. musciformis* is detrimental to sea turtle populations (University of Hawai'I, UNDATED).

Management Info
The University of Hawai‘i was awarded a $60,000 grant from the Hawai‘i Coral Reef Initiative. The grant will be used to fund research being carried out to control five separate invasive species in Hawai‘i including *H. musciformis* (Leone, 2001).
In Brazil *H. musciformis* is harvested as a source of K-carrageenan. The scope of what researchers and scientists must overcome is partially revealed in Faccini and Berchez's (2000) research. The authors found that *H. musciformis* has a recovery rate of 87% each month after harvest. This allows a crop every 35 days. For control mechanisms to be devised, scientists must overcome this extremely rapid growth rate. The growth rates obtained from the authors study reveal nearly 15% growth per day and are supported by cultivation experiments developed in the same region. In fact *H. musciformis* recovery is also much faster than in other economically important seaweeds growing in the same area, such as *Pterocladiella capillacea*, that take nearly 6 months per crop harvest (Faccini and Berchez, 2000).

Principal source: *Hypnea musciformis* (University of Hawai‘i, UNDATED)

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

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ALIEN RANGE

[1] ANGOLA
[1] CAPE VERDE
[1] COTE D'IVOIRE
[1] GABON
[1] GHANA
[1] GUINEA-BISSAU
[1] LIBERIA
[1] MAURITANIA
[1] MOROCCO
[1] NIGERIA
[1] SAO TOME AND PRINCIPE
[1] SIERRA LEONE
[2] SPAIN
[1] TUNISIA
[20] UNITED STATES
[1] CAMEROON
[1] CONGO
[1] EGYPT
[1] GAMBIA
[1] GREECE
[2] ITALY
[1] MALTA
[1] MEDITERRANEAN & BLACK SEA
[1] NAMIBIA
[2] PORTUGAL
[1] SENEGAL
[1] SOUTH AFRICA
[1] TOGO
[1] TURKEY
[1] WESTERN SAHARA

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Hewitt, C.L, Campbell, M.L. and Gollasch, S. 2006. Alien Species in Aquaculture. Considerations for responsible use. IUCN, Gland, Switzerland and Cambridge, UK. viii + 32 pp.
Summary: This publication aims to first provide decision makers and managers with information on the existing international and regional regulations that address the use of alien species in aquaculture, either directly or indirectly; and three examples of national responses to this issue (New Zealand, Australia and Chile).
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General information

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Summary: AlgaeBase is a database of information on algae that includes terrestrial, marine and freshwater organisms.
AlgaeBase is available from: http://www.algaebase.org; *Hypnea musciformis* information is available from: http://www.algaebase.org/SpeciesDetail.lasso?species_id=349&-session=abv3:82D8C9F50c93138D10KiT39C8579 [Accessed 15 May 2005].
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Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
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