

Cladophora sericea

(Hudson) Kützing 1843

This fine, delicate green alga has overgrown and smothered coral and other algae during blooms on Maui.

Division Chlorophyta
 Class Chlorophyceae
 Order Cladophorales
 Family Cladophoraceae
 Genus *Cladophora*



PHOTO BY L. PRESKITT

IDENTIFYING FEATURES

DESCRIPTION

Plants bushy or spreading, not tufted. Filaments slightly to profusely branched; plants usually in soft to stiff clumps, often floating; The main axis branches dichotomously and has lateral branches that are shorter, narrower (20 - 40 μm diameter) and arranged alternately, opposite or on one side. Lateral branches near the tip often have shorter branches between longer branches. Attachment is by rhizoids from basal poles of mid to lower cells, or by cluster of basal rhizoids.

COLOR

Pale green to grass green.

HABITAT

Cladophora sericea occurs in small amounts with other algae or in abundant loose strands attached to coral, basalt substrate, and other hard surfaces on reef flats near low tide line to 2m deep.



PHOTO BY L. PRESKITT

STRUCTURAL

Main axes 50-70 μm diameter, cells 4-8x longer than wide containing reticulated chloroplasts.

DISTRIBUTION

HAWAI'I

Northwest Hawaiian Islands, O'ahu, Maui, Kaua'i, Lana'i, Moloka'i and Hawai'i Island.

WORLDWIDE

World-wide distribution: Australia, Atlantic Ocean, Mediterranean, Caribbean, Indian and Pacific Oceans.

MECHANISM OF INTRODUCTION

Indigenous to Hawai'i.

ECOLOGY/IMPACT

Cladophora sericea is a branching green filamentous alga found on most reefs in Hawai'i. This small green alga is usually a small part of the biomass of the diverse, highly competitive intertidal community. By virtue of its dense and self-shading form, the alga rarely experiences photoinhibition except in the branches on the very top of the tuft, and thus tends to attach to solid substrate areas that are quite exposed. In addition, the alga has demonstrated nitrate storage capabilities which increase its longevity in stressful conditions. All of the *Cladophora* species are opportunistic settlers that respond to environmental variation. Nutrient loading, water temperature fluctuations, and downwelling illumination all influence the growth rates and longevity of these alga. In areas of eutrophication, opportunistic species like *C. sericea* may play an important role in coral reef community shifts.

C. sericea has demonstrated invasive characteristics in Hawai'i. Approximately 10 years ago the alga became exceedingly abundant on leeward reefs in Maui and large blooms now occur seasonally. During the blooms, large masses of the alga drift in the water column, snagging on coral and rock outcroppings and smothering out the organisms beneath.

Cladophora species can be difficult to identify. The morphology can be altered significantly by environmental conditions, to the extent that in many cases even the cellular structure used to define the species can be variable among individuals of the same species. Therefore, the genus as a whole should be observed for invasive tendencies.

REFERENCES

Russell, D. J. and G. H. Balazs, 2000. Identification manual for dietary vegetation of the Hawaiian green turtle, *Chelonia mydas*. NOAA TM-NMFS-SWFSC-294. 49 pp.

WEB LINKS

Turtle Trax. <http://www.turtles.org/>

Virtual Herbarium. <http://www.botany.hawaii.edu/reefalgae/greenskey.htm>