

Gracilaria parvispora

Abbott 1985

Gracilaria parvispora, or *ogo*, is one of the most popular edible seaweeds in Hawai'i. This red alga has become quite rare, and reproductive plants are protected by state law.

Division Rhodophyta
 Class Rhodophyceae
 Order Gracilariales
 Family Gracilariaceae
 Genus *Gracilaria*



IDENTIFYING FEATURES

DESCRIPTION

Gracilaria parvispora has solid, commonly compressed branches, 1 - 4 mm in diameter, with long narrow, pointed tips. The plant grows tall, to 30 cm or more, with a single dominant axis, 0.8 - 3.5 mm diameter, usually with 3 orders of branching or, if more, the last order is short, slender and spine-like.

Gracilaria spp. are extremely variable in Hawaiian waters. Habitats with lower water motion and salinity produce bushier, darker plants with a more dense branching pattern.

COLOR

The plant is often red, but can become light brown, light green, or almost white in areas of bright sunlight. Can become very dark brown to almost black in habitats of low water motion or in mariculture.

HABITAT

Gracilaria parvispora is found on reef flats and areas of sand overlying rocky substrate with moderate water motion.

STRUCTURAL

Medullary cells thick-walled, cell sizes grading abruptly to mostly 1-layered cortex; subcortex of 1-2 irregularly arranged layers of cells, the immediately adjacent medullary cells, large, 90-150 μm diam., before becoming even larger toward center. Tetrasporangia scattered, 16 x 26 μm , commonly pear-shaped. Spermatangia form inconspicuous saucerlike superficial depressions, frequently confluent, surrounding cells modified. Cystocarps 2-3 mm diam., internal spore mass relatively small, not filling cavity; gonimoblast tissue thin-walled; tubular nutritive cells conspicuous; pericarp with conspicuous lateral and vertical pit connections, contents appearing star shaped.

Gracilaria parvispora morphological variation



DISTRIBUTION

HAWAI'I

Localized distribution. Moloka'i, O'ahu: found Hau'ula, Coconut Island, Kane'ohe Bay, Oceanic Institute, Ke'ehi Lagoon, One'ula Beach, and 'Ewa.

WORLDWIDE

Hawaiian endemic.

ECOLOGY/IMPACT

Gracilaria parvispora is one of the larger native red algae in Hawai'i, reaching lengths up to 60 cm. It prefers nutrient rich water with low wind and water motion. This red alga was fairly common until overharvested; the invasive *G. salicornia* is now dominant in *G. parvispora*'s typical natural habitats on O'ahu.

G. parvispora is endemic to Hawai'i and is one of the three most sought after seaweeds for food in the Hawaiian Islands (*G. coronopifolia* or *limu manueaua* and *Asparagopsis taxiformis* or *limu kohu* the other two). Over harvesting for consumption accounts for serious shortages in the natural population. Until the 1970's, this popular alga was the most common limu found in Honolulu fish markets. The shortage of *G. coronopifolia* and *G. parvispora* led to the introduction of *G. tikvahiae* from Florida in the mid 1970's for mariculture as a possible produce replacement for the now rare native species. A law passed in 1988 prohibits the collection of plants with "dark bumps" or cystocarps, denoting a fertile, reproductive plant.

Extensive research has been done on the feasibility of mariculture of this popular edible seaweed. Tank cultures have not been successful, but recent studies have shown successful mariculture of *G. parvispora* in floating baskets has high yields in the protected environment of traditional Hawaiian fishponds.

REFERENCES

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- Abbott, I.A., 1999. Marine Red Algae of the Hawaiian Islands. Bishop Museum Press, Honolulu, Hawai'i.
- Doty, M.S. 1986. Experiments with *Gracilaria* in Hawai'i, 1983-1985. Hawai'i Botanical Science Paper, no. 46, University of Hawai'i (publisher), Honolulu, Hawai'i.
- Magruder, W.H., and J.W. Hunt, 1979. Seaweeds of Hawai'i. Oriental Publ. Co., Honolulu, Hawai'i.
- Glenn, E.P. and K. Fitzsimmons. Productivity of Long Ogo (*Gracilaria parvispora*) in Floating Cages. Environmental Research Laboratory, University of Arizona, Tucson, Arizona.

WEB LINK

University of Arizona Fishpond Project. <http://ag.arizona.edu/azaqua/ogopaper.txt>



Food for sale at Haili's Market, Honolulu, Hawai'i.

