

GUIDE TO MARINE INVADERS IN THE GULF OF MAINE

Undaria pinnatifida undaria kelp, wakame seaweed

Potential
Invader



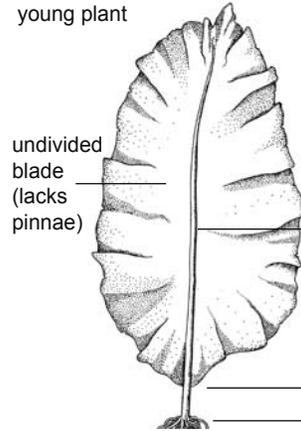
Photos: Steve Lonhart /Monterey Bay NMS



PHYSICAL DESCRIPTION

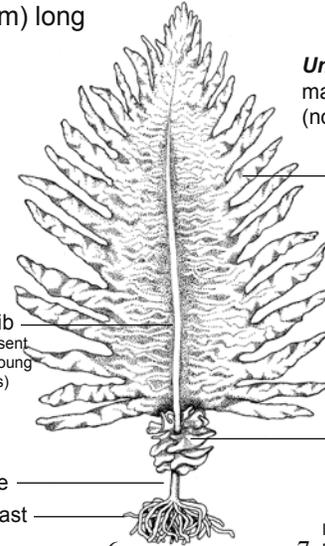
- Brown kelp with wide, brown to yellow-tan blades
- Mature plants have a divided blade (with pinnae) with conspicuous midrib, holdfast, stipe (stem), and spiral, folded sporophyll
- Young plants have holdfast, stipe, undivided blade, and initially no midrib
- Grows rapidly to 3-9 ft (1-3 m) long

Undaria pinnatifida
young plant



undivided
blade
(lacks
pinnae)

Undaria pinnatifida
mature plant
(not to scale)



pinnae
(‘wings’/‘fingers’)

midrib
(not present
in very young
plants)

stipe
holdfast



sporophyll

Illustration: © Rob Gough
Photo: Steve Lonhart /MBNMS

HABITAT PREFERENCE

- Found from low intertidal to subtidal depths of approx. 15 ft (5 m)
- Grows on hard surfaces including rocks, ropes, docks, pilings, moorings, and other structures
- Can form dense ‘kelp forests’ in sheltered waters

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INVASION STATUS & ECOLOGICAL CONCERNS

Undaria pinnatifida is an invasive kelp native to Japan. Commonly known as 'wakame', an ingredient in miso soup, this alga is commercially grown throughout Asia for human consumption. It has invaded many of the world's oceans, from European waters, to waters off New Zealand. In 2001, *U. pinnatifida* was discovered on North American shores in Monterey Bay, CA, where efforts to manually remove it continue today.

This alga is a very prolific and hardy species, with a growth rate measured at 1-2 cm per day, and a max. length of 9 ft (3 m). It can establish itself on a wide variety of surfaces. As a result of its amazing growth rate and wide blades, this seaweed quickly starves the natural understory algae of light. As these algae die, fish and invertebrates must move elsewhere to find food, thus creating extra feeding pressure on adjacent areas. *U. pinnatifida* has drastically affected the ecosystem of many waters that it has invaded. In addition to such ecological damages, it is a fouling species on ship hulls, nets, fishing gear, moorings, ropes, and other structures, and as such, increases labor and maintenance costs.

SIMILAR SPECIES

Photos (left to right):

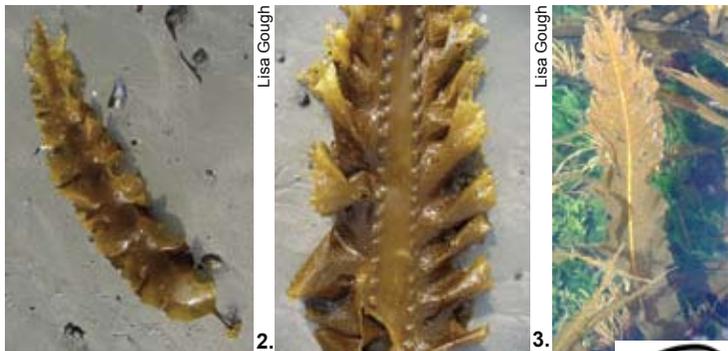
1. *S. latissima* blade, stipe and holdfast
2. *S. latissima* blade showing absence of midrib
3. *Alaria* sp. showing midrib

Saccharina latissima (sugar kelp)

Undaria pinnatifida may be mistaken for our region's native brown kelps, particularly *Saccharina latissima*. However, *S. latissima* has ruffled edges along undivided blades with no midrib, vs. divided blades and conspicuous midrib of *U. pinnatifida*.

Other local kelps

While several of the Gulf of Maine's native kelp species possess some of the features of *U. pinnatifida* (i.e. midrib in *Alaria* sp., divided blades of *Laminaria digitata*), none possess the folded, spiral sporophyll.



This identification card is one of a series produced by Salem Sound Coastwatch (www.salemsound.org) highlighting introduced species that pose a threat to the marine environments of Massachusetts and the Gulf of Maine. The original development of these cards was funded by the MA EOEPA Office of Coastal Zone Management with funding from the U.S. Fish and Wildlife Service. For additional species information or to report sightings, please visit www.mass.gov/czm/invasives/monitor/reporting.htm.

