Japweed *(Sargassum muticum)*


Left and middle: Fully grown specimen of japweed. Photo © Ignacio Bárbara, University of A Coruña, Spain. Right: Japweed in autumn/winter, with only the decimetre-long perennial shoots remaining, with their broad "leaves". Photo © Inger Wallentinus, Göteborg University.

Common name(s) in English	Japweed. (Japanese) wireweed. Strangle weed.
... and in other languages	Danish: Butblæret sargassotang. Dutch: Japans bessenwier. German: Japanischer Beerentang. Japanese: Tama-hahaki-moku. Norwegian: Japansk drivtang. Swedish: Sargassosnärja. Sargassosnärje. Japansk sargassotång.
Scientific name	*Sargassum muticum*
Organism group	Macroalgae. Brown algae (Phaeophyceae).
Size and appearance	*Sargassum muticum* varies to some extent in size and appearance, depending on the season and the environment in which it is growing. In summer, with their long annual "branches" (laterals), fully grown specimens of the alga on the west coast of Sweden can normally be up to 1.5–2 m in length, although 4 m long plants have also been found (this is one of the largest algae in Swedish seas – mermaid's tresses *(Chorda filum)* grows to roughly the same size). In Japanese waters, where the species originates, it grows to no more than 75–120 cm. In French waters, plants with a length of 6–7 m and even up to 12 m are found. In autumn and winter, only the decimetre-long perennial shoots remain, with their broad "leaves". The annual branches that develop from the basal stalk in spring produce numerous air bladders, 2–3 mm in diameter and borne on short stalks, and many small, oblong "leaves". During the summer, 1 cm long, cigar-shaped reproductive bodies form.
May be confused with	No native species of algae, but could be confused with other *Sargassum* species inhabiting more southerly waters.
Geographical origin	Japan.
First observed in Swedish waters	Drift specimens were first found off the west coast of Sweden in 1985.

	Attached plants were recorded in 1987 in the Koster area.
Occurrence in Swedish seas and coastal areas	The species is established in the Skagerrak and Kattegat, since attached specimens are to be found from Sweden's border with Norway to the central part of the Kattegat. Japweed has expanded very rapidly since the early 1990s. Drift specimens have been observed as far south as the Sound (Öresund), and in 2005 two attached plants were found just north of Helsingborg. In addition, the species has been recorded in the Belt Sea. It is unclear whether it could spread into the rest of the Baltic, as it is probably unable to reproduce there (see below concerning habitats).
Occurrence in other sea areas	*Sargassum muticum* is found in all the world's oceans except the Antarctic. In Europe it now occurs along the coasts of the north-eastern Atlantic, from Norway in the north, through Britain and Ireland, to Portugal in the south, and into the Mediterranean. In Nordic waters it was first discovered in 1984 in Denmark, in Limfjorden and on the west coast of Jutland. In 1992 the first attached plants were found on the Danish side of the Kattegat. On the south coast of Norway, drift specimens were observed in 1984 and attached plants in 1988. The species now occurs along the entire south coast of Norway, as far north as Sognefjord. It appeared in the north-eastern Pacific in the 1930s, and can now be found from Alaska in the north to Mexico in the south, but it has yet to be recorded along the east coast of America.
Probable means of introduction	The species found its way to Europe with live oysters *(Crassostrea gigas)* imported for aquaculture from the Pacific, and subsequently spread by natural means. The large plants can float away with the shells or small stones to which they are attached. Buoyed up by its air bladders, japweed can be carried long distances by currents. Since the species is self-fertile, a single plant is sufficient to establish new populations. Japweed was probably introduced to the west coast of North America, too, with imported oysters, attached to their shells as tiny young plants (germlings). This means of introduction is suspected partly because the alga's holdfast is not strong enough to keep it attached to a moving ship, for example, and partly because the first finds along the American coast were not made in port areas.
Habitat(s) in which species occurs	In Swedish seas this alga grows down to depths of 10 m. It develops best on sheltered, relatively shallow hard substrata or on hard materials on soft substrata. It is now also beginning to appear in belts of native wracks (*Fucus* spp.). Adult plants cope well with salinities down to about 20 psu, and can survive at much lower salinities. In experiments, however, it has not been possible to get the species to reproduce in water with a salinity of 15 psu or less. Growth is also poorer at lower salinities, although germlings can survive down to 5–6 psu. The species grows best in relatively warm water (up to around +25°C), but the perennial basal stalk can withstand temperatures below 0°C. Japweed does not thrive at sites where wave exposure is high, but does extremely well in waters with currents. On the west coast of Sweden it has gradually become increasingly common at open sites.
Ecological effects	The rapid expansion of japweed along the west coast of Sweden is one of the most striking changes to the algal belts of this area in modern times (apart from those caused by eutrophication).

	It is still partly unclear what happens in environments where this alga establishes itself, and whether it can outcompete, for example, native seaweeds or sea-grasses. With its ability to form tall, dense stands and reduce the amount of sunlight reaching the bottom, japweed could conceivably pose a threat to other species. Along the Atlantic coast of France, it has been found to outcompete tangle *(Laminaria digitata)* and eelgrass *(Zostera marina).* In English waters, in the Isles of Scilly, it grows in eelgrass beds. Dense stands of the species may increase sedimentation (accumulation of silt). One beneficial effect of japweed is that, in dense stands ("forests"), it can provide shelter for various animals, especially when plants of this species are the only large plants on certain sandy and other soft sediments, where they attach themselves to small stones and shells.
Other effects	Drifting japweed plants, often several metres long, foul fishing gear and propellers and clog water intakes. The species causes problems in aquaculture by growing on ropes, bags and cages, and in harbours by attaching itself to quays, buoys and pontoons.
Additional information	Japweed reproduces very efficiently, in that the fertilized eggs begin to develop on the parent plant, and a single plant can potentially give rise to many millions of new individuals. The species cannot grow from detached fragments, however. Its rapid growth in summer and the fact that the plants remain in place during the winter give this alga further advantages (space on rocks being a limiting factor). *Sargassum* species are to be found in seas worldwide, but the majority of them have never been in contact with the Sargasso Sea, from which the genus takes its name.

FIND OUT MORE

- 92 kB: Exotics across the ocean: *Sargassum muticum*
  http://www.aqualiens.tmbl.gu.se/Sargassum-muticum.pdf
- 515 kB: Correction: http://www.aqualiens.tmbl.gu.se/Sargassum_Correct_Addition.pdf
- 30 kB: Gollasch Consulting: Wallentinus: *Sargassum muticum*
  http://www.gollaschconsulting.de/download/Sargassum_p1.pdf
- AlgaeBase: *Sargassum muticum*
  http://www.algaebase.org/speciesdetail.lasso?species_id=90
- Baltic Sea Alien Species Database: *Sargassum muticum*
  http://www.ku.lt/nemo/directory_details.php?sp_name=Sargassum+muticum
- 3,4 MB: Nationaal Natuurhistorisch Museum: Non-indigenous marine and estuarine species in The Netherlands: *Sargassum muticum*
  http://www.marbee.fmns.rug.nl/pdf/marbee/2005-Wolf-ZoolMed.pdf
- Marine and estaurine macroinvertebrates, macroalgae and fish introduced to the Netherlands: *Sargassum muticum*
  http://home.hetnet.nl/~faassema/photos/Sargassummuticumweb.jpg
- Natuurlijk mooi: *Sargassum muticum*
  http://www.natuurlijkmooi.net/zeeland/wieren/sargassum_muticum.htm
- Irish Seaweed Center: Distribution of *Sargassum muticum* in Ireland
  http://www.irishseaweed.com/distribution_map_of_sargassum_mu.htm
- Marine Life Information Network for Britain & Ireland: *Sargassum muticum*
  http://www.marlin.ac.uk/species/Sargassummuticum.htm
- Joint Nature Conservation Committee: *Sargassum muticum*
  http://www.jncc.gov.uk/page-1677
- Global Invasive Species Database: *Sargassum muticum*
  http://www.issg.org/database/species/ecology.asp?si=727&fr=1&sts=sss

- European Nature Information System Database (EUNIS): *Sargassum muticum*
  http://eunis.eea.europa.eu/species-factsheet.jsp?idSpecies=65559&idSpeciesLink=65559
- Guide to the Exotic Species of San Francisco Bay: Japanese wireweed

http://www.exoticsguide.org/species_pages/s_muticum.html

- Monterey Bay Aquarium Research Institute: *Sargassum muticum*
  http://www.mbari.org/staff/conn/botany/browns/jacquie/default.htm

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http://www.algaebase.org/speciesdetail.lasso?species_id=90

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