**Heterosiphonia japonica**

**Common name(s) in English** –

**... and in other languages**

**Scientific name**
- *Heterosiphonia japonica*. When the species was first observed in Europe, however, it was known as *Dasysiphonia* sp.

**Organism group**
- Macroalgae. Red algae (Rhodophyta).

**Size and appearance**
*Heterosiphonia japonica* is bushy in appearance and can grow to a height of around 30 cm. The plants are quite dark red in colour, and collapse when removed from the water. They have one or more main axes, branching in multiple planes. The main axes and branches are polysiphonous in structure (consisting of several rows of cells), with four periaxial cells (giving the alga a segmented appearance), and with rhizoidal cortication in their lower portions. Attached to the main branches are monosiphonous (one cell-row wide) branchlets (pseudolaterals), the tips of which are dichotomously branched.

**May be confused with**
*Heterosiphonia japonica* may be confused with *Heterosiphonia plumosa*. That species, however, has 9–12 periaxial cells and is coarser and more flattened in appearance.

*H. japonica* may also, on superficial inspection, resemble *Brogniartella byssoides*, a species with 5–7 periaxial cells and densely covered with red, monosiphonous, dichotomously branched pseudolaterals – but lacking cortication. In addition, *H. japonica* may possibly be confused with *Bonnemaisonia asparagoides*, but that species is not polysiphonous in structure.

**Geographical origin**
- Japan and Korea.

**First observed in Swedish waters**
- 2002

**Occurrence in Swedish seas and coastal areas**
- Skagerrak. Was first discovered in Kosterfjorden.

**Occurrence in other sea areas**
- The first recorded find of *Heterosiphonia japonica* in Europe was made in 1994 in an empty oyster pond in the Netherlands. The alga subsequently spread rapidly in Dutch waters. The same year it was discovered on the coast of northern Spain (Galicia), chiefly in areas with oyster farms. In 1996 finds of the species were recorded in

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Photos: Left © M. D. Guiry, Algaebase. Right © Jan Karlsson, Tjärnö Marine Biological Laboratory
Oyster-farming areas on the west coast of France, and in 1998 along France’s Mediterranean coast. In Norway *H. japonica* was discovered in the sea south of Bergen in 1996, and the species has since become widespread. It has rapidly become one of the commonest macroalgal species on the west coast of Norway. In Denmark the alga was discovered at several sites in 2005, including Limfjorden. *H. japonica* has also been reported from North America (observations in Alaska and California), and from Russia and China.

<table>
<thead>
<tr>
<th>Probable means of introduction</th>
<th>Shipping (ballast water) and aquaculture (with oysters imported for cultivation).</th>
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<tr>
<td>Habitat(s) in which species occurs</td>
<td><em>Heterosiphonia japonica</em> has a preference for rocks and other hard surfaces, but also spreads in areas with other benthic substrata. It thrives in areas that are relatively well sheltered from waves. The species also attaches to other algae and to animals. It can grow down to depths of just over 40 m, but is usually found in waters 6–22 m deep. It can cope with everything from temperatures around freezing to tropical conditions (30°C), and requires relatively high salinity. Optimum conditions for growth are a water temperature of 19–25°C and a salinity of 30 psu. The species' development is appreciably inhibited if the water has a salinity of less than 20 psu, and at salinities below 10 psu it is unable to survive. Given its capacity for rapid growth at such widely varying temperatures and salinities, and its effective propagation by means of fragmentation (see below under &quot;Additional information&quot;), there is reason to assume that <em>H. japonica</em> could continue its expansion into the Kattegat, and possibly into the southern Baltic.</td>
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<td>Ecological effects</td>
<td><em>Heterosiphonia japonica</em> grows rapidly and spreads over large areas, and may therefore displace other algal species in particular locations. It also attaches to other algae and to benthic animals.</td>
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<td>Additional information</td>
<td>According to research in Norway on <em>H. japonica</em> and its rapid spread in Norwegian waters, there is much to suggest that this species rarely reproduces sexually in these areas. It probably spreads by shedding its small, monosiphonous pseudolaterals. These fragments then give rise to new plants. To date, only tetrasporophytes of <em>H. japonica</em> have been found in European waters. Loose fragments of the species are very robust. Fragments stored for 40 days in the dark and at different temperatures, including as low as 15°C (corresponding to conditions in a ballast tank), have survived and, under normal growth conditions, been able to regenerate.</td>
</tr>
</tbody>
</table>

FIND OUT MORE

- 936 kB: Institute of Marine Research, Norway: Den eksotiske rødalgen *Heterosiphonia japonica* på norskekysten
  [http://www.imr.no/__data/page/4637/7.6_Tema_Den_eksotiske_rodalgen_Heterosiphonia_japonica_pa_Norskekysten.pdf](http://www.imr.no/__data/page/4637/7.6_Tema_Den_eksotiske_rodalgen_Heterosiphonia_japonica_pa_Norskekysten.pdf)
- North European and Baltic Network on Invasive Alien Species: *Heterosiphonia japonica*
- Oslo University, Department of Biology: Effects of temperature and salinity on growth, reproduction and survival in the introduced red alga *Heterosiphonia japonica*
- ETI BioInformatics: SoortenBank.nl: *Heterosiphonia japonica*
- AlgaeBase: *Heterosiphonia japonica*
  [http://www.algaebase.org/SpeciesDetail.lasso?species_id=4722](http://www.algaebase.org/SpeciesDetail.lasso?species_id=4722)
- Mie University. Lab. Phycology: *Heterosiphonia japonica*
  [http://sourui2.bio.mie-u.ac.jp/sourui_photo/rhodo/isohagi.html](http://sourui2.bio.mie-u.ac.jp/sourui_photo/rhodo/isohagi.html)
- Seaweeds of Hokkaido: *Heterosiphonia japonica*
  [http://www.ne.jp/asahi/marine/algae/Hjaponica.html](http://www.ne.jp/asahi/marine/algae/Hjaponica.html)
PHOTO CREDITS

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