

SPECIES INFORMATION SHEET

Lamprothamnium papulosum

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| English name: Foxtail stonewort | Scientific name: <i>Lamprothamnium papulosum</i> | |
| Taxonomical group: Class: Charophyceae Order: Charales Family: Characeae | Species authority: (Wallroth) J. Groves 1916 | |
| Subspecies, Variations, Synonyms: <i>Lamprothamnium hansenii</i> (C.Sonder) R. Corillion, 1957 | Generation length: 1 year | |
| Past and current threats (Habitats Directive article 17 codes): Eutrophication (H01.05), Construction (D03, J02.01.02, J02.12), Water traffic (G01.01.01), Tourism (G05) | Future threats (Habitats Directive article 17 codes): Eutrophication (H01.05), Construction (D03, J02.01.02, J02.12), Water traffic (G01.01.01), Tourism (G05), Other threat factors (marine aquaculture, F01), Climate change (M01, M02) | |
| IUCN Criteria: B2ab(ii,iii,iv,v) | HELCOM Red List Category: | EN Endangered |
| Global / European IUCN Red List Category NE / NE | Habitats Directive: – | |
| Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany 1 (Critically endangered), part of a §30 biotope (Federal Nature Conservation Act), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/– EN | | |

Distribution and status in the Baltic Sea region

Main distribution area of *Lamprothamnium papulosum* is the western Baltic Sea. Besides some historical records in Germany, it has never been found east of the Darss Sill. Outposts can be found in Norway, France, Italy, Spain, Ireland, and Great Britain.

All recent and former records of the species are restricted to Denmark, Germany and the west coast of Sweden. In Sweden, there are some rather recent records along the west coast but mostly the newest



Lamprothamnium papulosum.

Photo: Karin Fürhaupter, MariLim Aquatic Research GmbH.

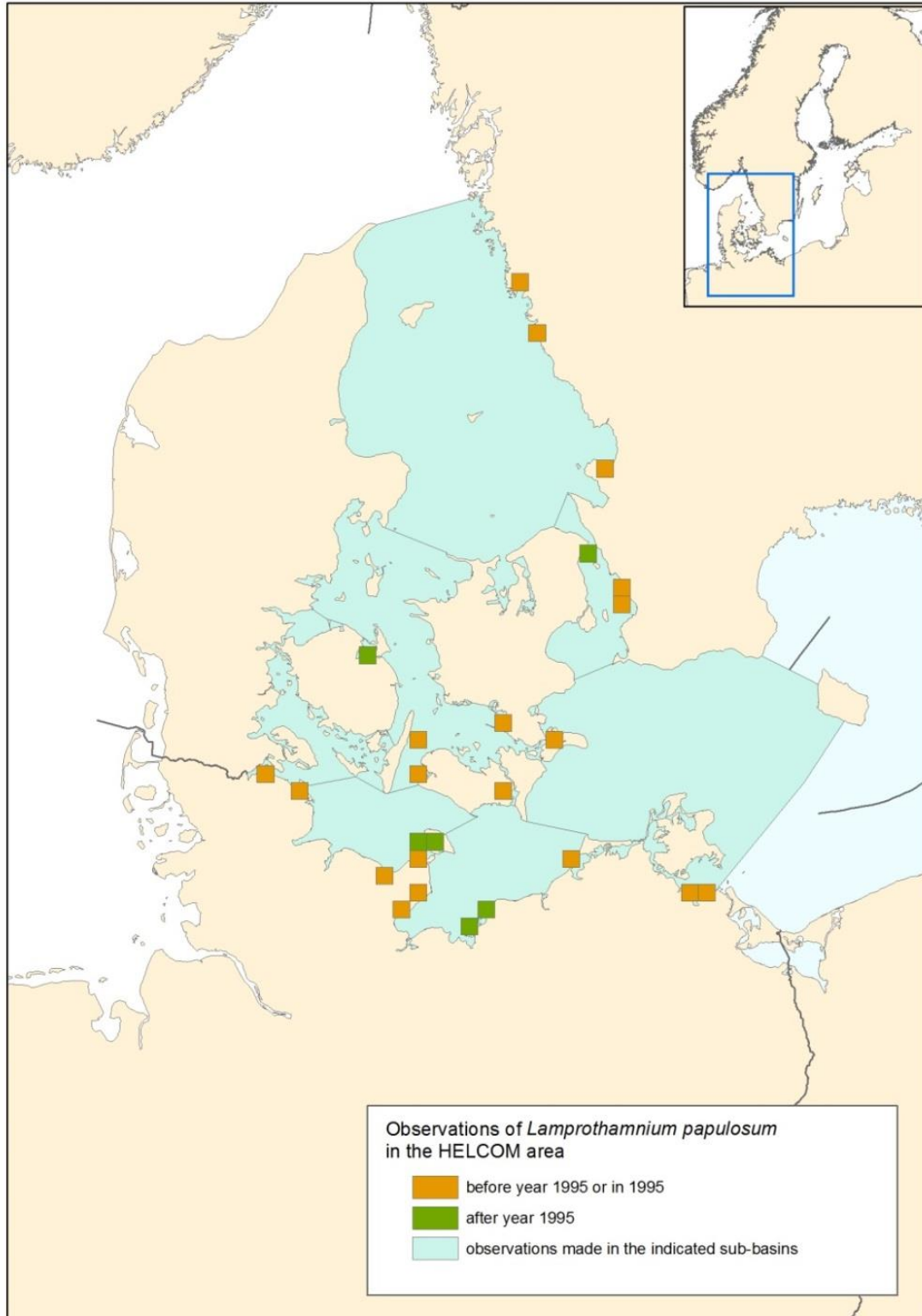
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records are from outside the HELCOM area. Historical records from 1860–1933 exist from five geographically separated locations (Skåne, Halland, Västergötland). Although the species has recently been searched for in several of its historical locations, it has not been found in the Swedish HELCOM area. In Denmark, there are a few records newer than 1995 (northern Sjælland, Fyn), but none from the last 10 year period. Six records exist for the time period of 1988–1991 from four geographically separated locations in bays and lagoons (around Lolland and southern Sjælland). No specific location information could be gathered about historical occurrences for Denmark, but the species was known to occur at 15 different locations historically. In Germany, 15 recent records (time period 2004–2011) exist from four geographically separated locations in bays and lagoons (Orther Bucht, Fastensee, Kirchsee, Salzhaff). Former records exist from eight different locations. Seven locations are known to have disappeared and two locations that may have been overlooked previously have been recently found. Bays, fjords and lagoons in Germany are regularly checked for the EU Water Framework Directive (WFD) monitoring, and it can be assumed that the currently known locations represent the true distribution range of this species in Germany. Outside the HELCOM area, the species is known to be rare in Ireland and Great Britain where it also appears to be declining.

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*Lamprothamnium papulosum***Distribution map**

The records of species compiled from the Danish national database for marine data (MADS), unpublished Danish data, the German database for macrophyte occurrences (MARIDATA), database of the Swedish Species Information Centre, Botanical Museum Lund (LD), and Uppsala Museum of Evolution Herbarium (UPS).



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Habitat and ecology

L. papulosum is a characteristic macrophyte in shallow, sheltered bays, fjords and coastal lagoons. It grows on sandy bottoms that can have a mixture of silt, gravel and/or pebbles but unlikely on pure silt or clay. In contrast to many other charophyte species, *L. papulosum* is a typical brackish water species with no records in freshwater environments. In Sweden it has been reported at a salinity range between 9.5 and 25 psu, in Denmark between 8 and 18 psu and in Germany between 10 and 18 psu for recent records (8 and 18 psu for historical records). The lower salinity boundary for distribution seems to be around 8–10 psu. It typically occurs in depth ranges between 0.5 and 2 m. All recent records in Germany are no deeper than 1 m. *L. papulosum* often grows together with other charophytes such as *Chara baltica* and *C. canescens* and higher plants like *Ruppia spp.*, *Zannichellia palustris* and *Zostera noltii* but seems to avoid densely vegetated areas. It never builds up dense populations. Usually it is found as single specimens, and it may easily be overlooked. The species is annual but overwinters with globular bulbils in the sediment.

Description of major threats

The observed declines are probably caused mainly by increased eutrophication. As *Lamprothamnium papulosum* prefers vegetation stands with low coverage, it is likely to be sensitive to the increasing amount of ephemeral algae due to eutrophication. Also coastal constructions and physical disturbance due to increased tourism has led to intensified degradation of shallow water habitats like coastal lagoons, bays and fjords. In the future climate change may alter the habitat conditions and also increasing aquaculture in bays may deteriorate the habitats.

Assessment justification

L. papulosum was included in the previous HELCOM list of threatened and/or declining species (HELCOM 2007). The geographic range of the species is considered restricted and continuingly declining, mainly due to eutrophication (Andersson et al. 2004; Swedish Species Information Centre 2010). All recent and former occurrences are restricted to the west coast of Sweden, Denmark and Germany. The extent of occurrences (EOO) is estimated < 15 000 km². The area of occupancy (AOO) is less than 500 km². All of the Danish records are older than 10 years and for Sweden exist no records newer than 1995. In Germany the species has recently been found at four locations but only with single specimens. The population is severely fragmented due to the occurrence in very few separated bays and lagoons without any connection to each other. The continuing decline of the population is assumed to concern at least AOO, the quality of the habitat, number of locations and number of mature individuals, but it may concern also EOO. The species meets the criteria for Endangered, B2ab(ii,iii,iv,v).

Recommendations for actions to conserve the species

Combatting local sources of nutrients (mainly agriculture) causing eutrophication. Conservation measures, such as restriction of coastal construction, dredging and beach tourism in shallow coastal lagoons, bays and fjords.

Common names

Denmark: rævehaletråd, Estonia: –, Finland: –, Germany: Fuchsschwanz-Armleuchteralge, Latvia: –, Lithuania: –, Poland: –, Russia: Лампротамниум пупырчатный, Sweden: axstråfse

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References

- Andersson, J., Garniel, A. & Nielsen, R. (2003). *Lamprothamnium papulosum*. In Schubert, H., Blindow, I. (eds.), Charophytes of the Baltic Sea, Koeltz Scientific, Koenigstein/Taunus. P. 156–162.
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- Krause-Jensen, D., University of Aarhus, Denmark (personal communication)
- MADS, The Danish national database for marine data. NERI: University of Aarhus; National Environmental Research Institute. Downloaded in August–September 2010.
- MARIDATA, the database of MariLim GmbH including all German literature references given in Nielsen (1995), Blümel et al. (2002), Schubert et al. (2003), Kiel herbarium references and all occurrences of the German HELCOM, BSPA and WFD monitoring.
- MarLIN, The Marine Life Information Network - information to support marine species and habitat conservation, sustainable management, protection and planning (www.marlin.ac.uk)
- Schmidt, D., van de Weyer, K., Krause, W., Kies, L., Garniel, A., Geissler, U., Gutowski, A., Samietz, R., Schütz, W., Vahle, H.-Ch., Vöge, M., Wolff, P. & Melzer, A. (1996). Rote Liste der Armleuchteralgen (Charophyceae) Deutschlands. In: Bundesamt für Naturschutz (Hrsg.): Rote Liste gefährdeter Pflanzen Deutschlands. Schriftenreihe für Vegetationskunde 28: 547–567, Bonn.