NOBANIS - Marine invasive species in Nordic waters - Fact Sheet

Styela clava

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Species description

Species name
Styela clava (Herdman, 1881)

Synonyms
Styela mammiculata Carlisle, 1954; *Bostryorchis clava* Redikorzev, 1916; *Styela barnharti* Ritter & Forsyth, 1917.

Common names
Clubbed tunicate, Leathery sea squirt, Asian tunicate, Rough sea squirt (USA, CAN, UK); Østasiatisk søpung (DK); Østasiatisk sekkedyr (NO); Östasiatisk sjöpung (SE); Ostasiatische Seeschiede, Falten Ascidie (GE); Japanse zakpijp (NL); Ascidie plissée (FR); Ascidia plisada (SP).

Taxonomic problem
The authority is sometimes gives as Herdman, 1882, sometimes as Herdman, 1881 or (Herdman, 1881). The WoRMS database (http://www.marinespecies.org/) gives (Herdman, 1881) as the correct authority and Fleming, 1822 as the author for the genus *Styela*. However, all three versions are still used in the scientific literature.

Identification

This is a relatively large (often >10 cm long), stalked, solitary sea aquirt, which is often found associated with man-made structures, seaweeds or shellfish. It has a warty exterior and a long stalk. There are several native species of *Styela*, none of which have the long stalk, e.g. *S. rustica* (Linnaeus, 1767), *S. coriacea* (Alder & Hancock, 1848), *S. gelatinosa* (Traustedt, 1886), and *S. atlantica* (Van Name, 1912).

Picture of *Styela clava*

For further information see:
http://www.frammandearter.se/0/2english/pdf/Styela_clava.pdf
http://www.exoticsguide.org/species_pages/s_clava.html
http://www.marlin.ac.uk/speciesinformation.php?speciesID=4398
http://www.marlin.ac.uk/marine_aliens/species.asp?SpID=17
http://www.jncc.gov.uk/page-1722
http://www.europe-aliens.org/pdf/Styela_clava.pdf
http://species-identification.org/species.php?species_group=tunicata&id=42
http://www.issg.org/database/species/ecology.asp?si=951&fr=1&sts
http://www.mass.gov/czm/invasives/docs/invaders/s_clava.pdf
http://www.niwa.co.nz/our-science/aquatic-biodiversity-and-biosecurity/tools/sea_squirt
http://www.biosecurity.govt.nz/files/pests/seasquirt/sea-squirt-factsheet.pdf
http://www.bcsga.ca/research-development/invasive-tunicates-monitoring-project/identifying-tunicates/clubbed-tunicate-styela-clava

For *Styela coriacea* see: http://species-identification.org/species.php?species_group=tunicata&id=43

For *Styela gelatinosa* see: http://www.marlin.ac.uk/speciesfullreview.php?speciesID=4399
http://www.habitas.org.uk/marinelife/species.asp?item=ZD1735

Vector
It has been proposed that *S. clava* was introduced to Europe as fouling on warships returning from the Korea war in 1953. It was probably introduced to the Danish Limfjord with oyster spat, and ballast water has been suggested as the vector in Canada.

Distribution

Native distribution
NW-Pacific, including Japan, northern China, Korea and Siberia.

Introduced distribution
The invasion in Europe has been summarized by Davis & Davis (2007) and by Davis et al. (2007). It was first found in 1953 near Plymouth, U.K.

Recently *Styela clava* was found in the Mediterranean (Davis & Davis, 2008).

Styela clava has also been introduced to both sides of the American continent (Lambert & Lambert, 1998; Locke et al., 2007).

Styela clava also has been introduced to Australia, where it was first recorded in 1976 (Holmes, 1976) and New Zealand (Biosecurity New Zealand – see URL above).

Impacts

This is a fouling species, and because it is very big it also serves as a substrate for other fouling organisms, mostly other species of tunicates. It is a great nuisance to mussel farms because it attaches in dense clumps to equipment, including hanging ropes. Densities of 1000 individuals per m^2 have been recorded (Minchin & Duggan, 1988). Management in New Zealand focuses on preventing further spread and they have published an assessment report (available at http://www.biosecurity.govt.nz/files/pests/salt-freshwater/styela-clava-population-management.pdf). The state of Washington has an active management program and has published several reports that are available on their web-site (see: http://wdfw.wa.gov/fish/ans/tunicates_bienniumreport2007-09.pdf and http://wdfw.wa.gov/fish/ans/tunicates_wastate_report2007.pdf)

It has been attempted to market it as a seafood specialty (Karney & Rhee, 2009).

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