


## Leathery sea squirt (*Styela clava*)



Left: Asian tunicate growing on the hull of a boat together with bluemussels and other fouling organisms.  
 Right: This specimen clearly shows the sturdy stalk which attaches the individual to the substrate.

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<b>Common name(s) in English</b>	Leathery sea squirt. Rough sea squirt. Asian tunicate. Club tunicate.
<b>... and in other languages</b>	Danish: Østasiatisk søpung. Dutch: Japanse zakpijp. French: Ascidié plissée. German: Ostasiatische Seeschiede. Falten Ascidié. Norwegian: Østasiatisk sekkedyr. Spanish: Ascidia plisada. Swedish: Ostasiatisk sjöpfung.
<b>Scientific name</b>	<i>Styela clava</i>
<b>Organism group</b>	Tunicates. Sea squirts (Ascidiacea).
<b>Size and appearance</b>	<i>Styela clava</i> usually grows to a length of 9–12 cm, but can in extreme cases reach 16 cm. It is club-shaped, has a long, sturdy “stalk” (absent in specimens smaller than 3 cm), and looks like a bag with a tough, leathery, wrinkled and bumpy (warted) surface. It can be brownish white, yellowish brown, yellowish grey or reddish brown. This is a solitary (non-colonial) sea squirt: each individual attaches itself to a substrate by its own stalk. Other sea squirts, algae and other encrusting organisms often grow on its rough surface. <i>S. clava</i> may live for a couple of years.
<b>May be confused with</b>	<i>Styela plicata</i> , another sea squirt from the western Pacific, introduced into the Mediterranean and parts of Europe. That species, however, has no stalk. (It should be noted that there are some 50 species of sea squirts in the waters around Sweden.)
<b>Geographical origin</b>	North-western Pacific, along the coasts of Japan, Korea, northern China and Siberia.
<b>First observed in Swedish waters</b>	Has not yet been observed in Swedish waters.
<b>Occurrence in Swedish seas and coastal areas</b>	Has not yet been observed in Swedish waters.
<b>Occurrence in other sea areas</b>	<i>Styela clava</i> was first observed in western Europe in 1953, off Plymouth in England. Since then it has spread to other parts of British waters, and in 1972 it was also found in Ireland, at Cork. By 1970 it had reached the French part of the English Channel, and in 1974 it was discovered off Den Helder in the Netherlands. Its spread in Dutch waters has been described as explosive. In the 1980s the species was found in Limfjorden in Denmark,

	<p>where it is now regarded as established. It also occurs in eastern Denmark, and on the North Sea coast of that country, for example at Esbjerg. In addition, <i>S. clava</i> has spread to North America (east and west coasts) and Australia. According to scientists, the species is in the process of spreading to sea areas worldwide.</p>
<b>Probable means of introduction</b>	<p><i>Styela clava</i> has probably spread round the world as a fouling organism on ships, and also attached to oysters. Its larvae survive for only a day, making it unlikely that the species is able to spread in that form.</p> <p>The fact that the first find of the species in western Europe was off Plymouth in 1953 has been linked to the return of British warships from the Korean War in 1951. It is speculated that <i>S. clava</i> may have spread to other areas, too, as a fouling organism on returning naval vessels. In Limfjorden in Denmark, this sea squirt was discovered on ropes and on oyster and mussel shells (at densities of up to 1,200 individuals per square metre). The species is believed to have been introduced to Danish waters on ships' hulls and/or on oysters imported for aquaculture.</p>
<b>Habitat(s) in which species occurs</b>	<p><i>Styela clava</i> lives in shallow, hard-bottom areas, at depths not exceeding 25 m. Sea squirts are generally sessile filter feeders, which spend their entire adult lives at the same site. The leathery sea squirt can tolerate wide fluctuations in both salinity and water temperature (2–23°C), but cannot cope with extreme cold. It can invade brackish and estuarine waters, but is unable to reproduce if the water temperature is below 15°C. Where conditions are favourable, however, it can reproduce virtually all year round. Growth can be very rapid, and the species can reach densities of 500–1,500 individuals per square metre. There are several reports of the astonishing speed at which it reproduces, once established in an area.</p>
<b>Ecological effects</b>	<p>When its population has become sufficiently large, the leathery sea squirt displaces native and cultured species, chiefly mussels and oysters, by competing with them for food (filter feeding) and space. An eloquent example of this is the way <i>Styela clava</i> can completely overgrow farmed common mussels (<i>Mytilus edulis</i>).</p>
<b>Other effects</b>	<p><i>S. clava</i> is a nuisance fouler of ships' hulls, and of shellfish farms, settling both on the shellfish themselves and on ropes and other aquaculture gear. The species also causes problems by fouling other structures in aquatic environments: it attaches itself to concrete and cement, wood, reefs, buoys and pontoons. The species can coexist with other fouling organisms, such as the introduced green alga <i>Codium fragile</i> spp. <i>tomentosoides</i>.</p>
<b>Additional information</b>	<p>In Korea, the species is an appreciated ingredient in dishes such as Mideodok-chim (steamed <i>Styela clava</i>).</p>
<p><i>FIND OUT MORE</i></p>	
<ul style="list-style-type: none"> <li>• Biopix: Østasiatisk søpung <a href="http://www.biopix.dk/Species.asp?Searchtext=Styela%20clava&amp;Category=LavereDyr">http://www.biopix.dk/Species.asp?Searchtext=Styela%20clava&amp;Category=LavereDyr</a></li> <li>• North European and Baltic Network on Invasive Alien Species: <i>Styela clava</i> <a href="http://www.nobanis.org/speciesInfo.asp?taxaID=682">http://www.nobanis.org/speciesInfo.asp?taxaID=682</a></li> <li>• Global Invasive Species Database: <i>Styela clava</i> <a href="http://www.issg.org/database/species/ecology.asp?si=951&amp;fr=1&amp;sts=">http://www.issg.org/database/species/ecology.asp?si=951&amp;fr=1&amp;sts=</a></li> <li>• Joint Nature Conservation Committee: <i>Styela clava</i> <a href="http://www.jncc.gov.uk/page-1722">http://www.jncc.gov.uk/page-1722</a></li> <li>• European Nature Information System Database (EUNIS): <i>Styela clava</i> <a href="http://eunis.eea.eu.int/species-factsheet.jsp?idSpecies=23929&amp;idSpeciesLink=23929">http://eunis.eea.eu.int/species-factsheet.jsp?idSpecies=23929&amp;idSpeciesLink=23929</a></li> <li>•  8,7 MB: Bundesanstalt für Gewässerkunde: Neozoa (Makrozoobenthos) an der deutschen Nordseeküste: Eine Übersicht <a href="http://www.stefannehring.de/downloads/083_Nehring+Leuchs-1999_BfG-Bericht-1200_neozoa-nordsee.pdf">http://www.stefannehring.de/downloads/083_Nehring+Leuchs-1999_BfG-Bericht-1200_neozoa-nordsee.pdf</a></li> </ul>	

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PHOTO CREDITS

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