American jack knife clam *(Ensis directus)*

Photo © Malene Thyssen, Wikipedia.

Common name(s) in English	American jack knife clam. American razor clam. Razorfish.
… and in other languages	Danish: Amerikansk knivmusling. Dutch: Amerikaanse zwaardschede. German: Amerikanische Schwertmuschel. Norwegian: Amerikansk knivskjell. Swedish: Amerikansk knivmussla.
Scientific name	*Ensis directus*. See also *Ensis americanus.*
Organism group	Molluscs. Bivalves.
Size and appearance	The shell is long and narrow, somewhat curved, and greenish yellow to brown on the outside. The outer surfaces of shells washed ashore are often abraded and therefore a whiter colour. The hinge is located at the anterior (front) end of the shell. Almost the whole of the long shell thus corresponds to what in more normally built bivalves forms the posterior (hind) part of the shell. *(Source: Aquascope.)* • After its first winter, the jack knife clam reaches a length of about 6 cm, and at most an adult can grow to 16–17 cm. Longevity can be up to five years, but normally the species lives for just over three.
May be confused with	Apart from the American jack knife clam, four other razor shell species belonging to the genus *Ensis* are found in the seas around Sweden: *Ensis arcuatus*, *Ensis ensis* (common razor shell), *Ensis minor* and *Ensis siliqua* (pod razor shell). The various species can be difficult to distinguish – it is necessary to examine the inside of the shell and study the anterior and posterior adductor muscle scars, the hinge and the pallial sinus.
Geographical origin	East coast of North America. The American jack knife clam used to be restricted to the east coast of Canada and the United States, from Labrador to Florida.
First observed in Swedish waters	1982
Occurrence in Swedish seas and coastal areas	West coast as far south as Laholmsbukten.
Occurrence in other sea areas	The American jack knife clam is already very common along North Sea coasts, in Belgium, the Netherlands, Germany (first discovered in 1979 off the Elbe estuary), Britain and Denmark. From Belgium (first recorded in 1987), for example, it is reported that "the shells of this species are washed onto our beaches in their millions", and from Denmark (first discovered in 1981), that "the species is now

	enormously widespread, especially on the west coast, but also in Limfjorden and the Kattegat". On shallow (3–18 m deep), sandy bottoms in German waters, jack knife clams are reported to be found at densities of 400–1,500 per square metre. Other reports indicate that almost 2,000 individuals per square metre are found on fine sands, and just under 5,500 per square metre on silty sands. The species is also reported from southern Norway (first recorded in 1989) and northern France (since 1991).
Probable means of introduction	Ballast water. It is assumed that free-swimming larvae of the species were released with ballast water off the Elbe estuary (where the jack knife clam was first found in Europe). Its subsequent spread along the coasts is probably a result of larvae drifting with currents.
Habitat(s) in which species occurs	This bivalve species lives at water depths of 1–20 m, buried in sandy substrata. It thrives in soft, silty sands in inter- and subtidal areas and estuaries. An individual that feels threatened can very quickly bury itself in the sand; there are reports of jack knife clams that have dug down and disappeared in just 15 seconds. The species digs with its foot, which protrudes from the front end of the shell. The foot is compressed and extended, enabling it to force its way down through the sand like a wedge. When the animal has dug down some way, it relaxes its adductor muscle. The valves of the shell are pushed apart, compacting the sand to make it hard. The foot is then filled with blood, enlarging it to form a kind of anchor. When the clam subsequently contracts the longitudinal muscles of its foot, the rest of its body is pulled downwards. To return to the surface, the animal uses its foot to push the shell upwards. *(Source: Aquascope.)*  Photo © Lars-Ove Loo, Department of Marine Ecology, Gothenburg University
Ecological effects	This species competes with other sand-living bivalves (filter feeders). If its population in an area becomes very large, it can affect the overall structure of the benthic community. The fact that these clams dig burrows for themselves can, in areas with dense populations, influence the character of the sediments and hence the habitats of other species. On the Dutch coast, the American jack knife clam has become one of the dominant species.
Other effects	The species can damage trawls and other fishing nets on the seabed, causing economic losses to fisheries. • The sharp shells of jack knife clams can cause deep cuts if stepped on. Such injuries can also be sustained with native species, but *Ensis directus* lives at much shallower depths than they do. Apart from the actual cut, the wound can become infected with bacteria.

FIND OUT MORE

- North European and Baltic Network on Invasive Alien Species: *Ensis americanus* http://www.nobanis.org/NationalInfo.asp?countryID=DK&taxaID=249
- North European and Baltic Network on Invasive Alien Species: *Ensis directus* http://www.nobanis.org/speciesInfo.asp?taxaID=8363
- 8,7 MB: Bundesanstalt für Gewässerkunde: Neozoa (Makrozoobenthos) an der

deutschen Nordseeküste: Eine Übersicht.
http://www.stefannehring.de/downloads/083_Nehring+Leuchs-1999_BfG-Bericht-1200_neozoa-nordsee.pdf

- 320 kB: Gollasch Consulting: Voigt: *Ensis directus.*
  http://www.gollaschconsulting.de/download/Ensis_p1.pdf
- Skov- og Naturstyrelsen: Amerikansk knivmusling
  http://www.skovognatur.dk/Emne/Naturbeskyttelse/invasivearter/Dyrearter/AmerikanskKnivmusling.htm
- Nationalpark Wattenmeer: Schwertmuschel
  http://www.wattenmeer-nationalpark.de/leben/tiere/muscheln/schwertm.htm
- Alfred Wegener Institute: American razor clams
  http://www.awi-bremerhaven.de/Benthic/CoastalEco/population_ecology/PE_diversity3.html
- Schutzstation Wattenmeer: Die Schwertmuschel
  http://www.schutzstation-wattenmeer.de/wissen/schwertmuschel.html
- 3,4 MB: Nationaal Natuurhistorisch Museum: Non-indigenous marine and estuarine species in The Netherlands: *Ensis directus*
  http://www.marbee.fmns.rug.nl/pdf/marbee/2005-Wolf-ZoolMed.pdf
- Marine and estaurine macroinvertebrates, macroalgae and fish introduced to the Netherlands: *Ensis americanus*
  http://home.hetnet.nl/~faassema/photos/Ensisamericanusweb.jpg
- Natuurlijk mooi: *Ensis americanus*
  http://www.natuurlijkmooi.net/zeeland/tweekleppigen/ensis_americanus.htm
- De Onderwaterwereld: Amerikaanse zwaardschede
  http://www.onderwaterwereld.net/oww_ml/php/data.php?TLC=NL&SOC=TWKLP&SSC=Ensis%20americanus
- De Vogeldagboeken van Adri de Groot: Amerikaanse zwaardschede
  http://www.vogeldagboek.nl/Vogeldagboek/2006/Jan06_17.html
- Management Unit of the North Sea Mathematical Models (MUMM): Exotic species
  http://www.mumm.ac.be/EN/Management/Nature/ExoticSpecies/index.php
- Joint Nature Conservation Committee: *Ensis americanus* (synonym: *Ensis directus)*
  http://www.jncc.gov.uk/page-1716
- Baltic Sea Alien Species Database: *Ensis americanus*
  http://www.ku.lt/nemo/directory_details.php?sp_name=Ensis+americanus

PHOTO CREDITS

See also photos of other *Ensis species* (including those found in Swedish waters) on the Spanish web site Malakos: Un lugar para los amantes de los Moluscos y coleccionistas de conchas.
http://www.eumed.net/malakos/guia/biv_c.html

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