

**Scientific Name:** *Pisidium henslowanum* Sheppard, 1825

**Common Name:** henslow('s) pea/pill clam, pisidiid clam

**Taxonomy:** Available through ITIS

**Identification:** Henslow's pea clam has a thin, triangle- to oval-shaped, relatively long bivalve shell with evenly spaced coarse striae. The beaks are located posterior to the centre and the joint at the dorsal margin is relatively pointed. The height to length ratio is 0.8–0.9. The 2<sup>nd</sup> cardinal tooth inside the shell is V-shaped and larger than the 4<sup>th</sup> cardinal, which begins above the 2<sup>nd</sup> cardinal and lies obliquely. The 3<sup>rd</sup> cardinal is relatively thick and located at the posterior margin. In live specimens, there is only an anal siphon (Herrington 1962; Mackie et al. 1980; Clarke 1981; Pennak 1989; Mackie 2000).

**Size:** *P. henslowanum* reaches 4–4.6 mm in length (Herrington 1962; Holopainen 1979; Clarke 1981; Mackie 2000).

**Native Range:** *P. henslowanum* is a Holarctic species found in Eurasia, in countries such as Iceland, Scandinavia, France, Germany, Belgium, the territory of the former USSR, and the United Kingdom (Clarke 1981; Mackie 2000).

**Nonindigenous Occurrences:** *P. henslowanum* probably first appeared in the Great Lakes basin sometime prior to 1916, maybe even as early as the 1890s. It has been recorded from the Lake Ontario, Lake Michigan, and Lake Erie watersheds (Heard 1961, 1962; Herrington 1962; Johnson and Matheson 1968; Wolfert and Hiltunen 1968; Mackie et al. 1980; Clarke 1981; Krieger 1984; Grigorovich et al. 2000, 2003; Mackie 2000; Ricciardi 2001).

**Means of Introduction:** *P. henslowanum* very likely arrived in ships to the Great Lakes basin. It was most likely delivered in solid ballast, which was in use at the turn of the century (Grigorovich et al. 2000, 2003).

**Status:** Established where recorded.

**Ecology:** In its native habitat *P. henslowanum* is most often found in rivers, canals, and streams of good water quality, while in North America it is mostly found in lakes and large rivers. Henslow's pea clam can occur down to 20 m depth although it is more limited by lack of oxygen with increasing depth. It is typically associated with silt, mud, and sand assemblages. Densities in Europe have reached 330–9000 clams per m<sup>2</sup> (Bishop and Hewitt 1976; Holopainen and Ranta 1977; Holopainen 1979; Mackie et al. 1980; Clarke 1981; Hinz et al. 1982; Holopainen and Jonasson 1983; Jonasson 1984; Krieger 1984; Smit et al. 1994, 1995; Steiner and Turner 1998).

Even though European authors typically indicate that *P. henslowanum* requires relatively hard, calcium rich water, it can survive in somewhat softer water in the

Connecticut River system. In this system the pH is 7.0–7.7 and the CaCO<sup>3</sup> concentration is 25–35 mg/l (Smith 1986).

*P. henslowanum* reproduces hermaphroditically and may self-fertilize. The number of embryos per gravid adult ranges from 1–40 and generally increases with parental size. Young are released depending on temperature and oxygen availability. *P. henslowanum* may produce one or two broods per year. The breeding season occurs in spring and summer. Young become mature at age 2 and the lifespan is thought to be 4–5 years (Holopainen 1979; Clarke 1981; Holopainen and Jonasson 1983; Holopainen and Hanski 1986; Smith 1986; Mackie 2000).

*P. henslowanum*, like many other pea clams, filters food from the water column directly above the substrate and from the sediments in which it lives, including bacteria, diatoms, detritus and other algae (Holopainen 1979; Mackie 2000).

### **Impact of Introduction**

**A) Realized:** Unknown.

**B) Potential:** Unknown.

**Remarks:** There has been some debate over whether or not *P. henslowanum* is native to North America. Those who believe it is a native species cite discoveries of occurrences in central and western Canada as well as shell deposits from 7000 years ago (Harris 1973), or mention that the population in the Holyoke Canals would have had difficulty spreading from the Great Lakes, considering that this canal system is not commercially navigable (Smith 1986). However, the general consensus amongst most authors is that *P. henslowanum* is an introduced species.

### **Voucher Specimens:**

### **References:**

Bishop, M. J. and S. J. Hewitt. 1976. Assemblages of *Pisidium spp.* (Bivalvia: Sphaeriidae) from localities in eastern England. *Freshwater Biology* 6(2):177-182.

Clarke, A. H. 1981. French translation by A. La Rocque. *Les Mollusques d'eau douce du Canada*. Musée national des sciences naturelles, Musées nationaux du Canada. 447 pp.

Grigorovich, I. A., A. V. Korniushev, and H. J. MacIsaac. 2000. Moitessier's pea clam *Pisidium moitessierianum* (Bivalvia, Sphaeriidae): a cryptogenic mollusk in the Great Lakes. *Hydrobiologia* 435:153-165.

Grigorovich, I. A., R. I. Colautti, E. L. Mills, K. Holeck, A. G. Ballert, and H. J. MacIsaac. 2003. Ballast-mediated animal introductions in the Laurentian Great Lakes: retrospective and prospective analysis. *Canadian Journal of Fisheries and Aquatic Sciences* 60:740-756.

- Harris, S. A. 1973. *Pisidium henslowanum* in western Canada. *Nautilus* 87(3):86-87.
- Heard, W. H. 1961. *Pisidium henslowanum* (Sheppard) in Lake Michigan. *Nautilus* 74(3):123.
- Heard, W. H. 1962. The Sphaeriidae (Mollusca: Pelecypoda) of the North American Great Lakes. *American Midland Naturalist* 67(1):194-198.
- Herrington, H. B. 1962. A revision of the Sphaeriidae of North America (Mollusca: Pelecypoda). Museum of Zoology, University of Michigan, Miscellaneous Publications 118. 74 pp 7 plates.
- Hinz, W., H. Daub, C. Marx, C. Tinz, and W. Wiersch. 1982. The mollusk fauna of the Issel system at the time of the 1976-77 expansion. *Decheniana. Bonn.* 134:176-177.
- Holopainen, I. J. 1979. Population dynamics and production of *Pisidium* species (Bivalvia, Sphaeriidae) in the oligotrophic and mesohumic Lake Pajarvi, southern Finland. *Archiv fuer Hydrobiologie Supplement* 54(4):466-508.
- Holopainen, I. J. and E. Ranta. 1977. Carbon dioxide output in the respiration of three *Pisidium* species (Bivalvia, Sphaeriidae). *Oecologia (Berlin)* 30:1-8.
- Holopainen, I. J. and I. Hanski. 1986. Life history variation in *Pisidium* (Bivalvia: Pisidiidae). *Holarctic Ecology* 9:85-98.
- Holopainen, I. J. and P. M. Jonasson. 1983. Long-term population dynamics and production of *Pisidium* (Bivalvia) in the profundal of Lake Esrom, Denmark. *Oikos* 41(1):99-117.
- Johnson, M. G. and D. H. Matheson. 1968. Macroinvertebrate communities of the sediments of Hamilton bay and adjacent Lake Ontario. *Limnology and Oceanography* 13(1):99-111.
- Jonasson, P. M. 1984. Oxygen demand and long term changes of profundal zoobenthos. *Proceedings of the Second International Symposium on Aquatic Oligochaete Biology, Hydrobiologia* 115:121-126.
- Krieger, K. A. 1984. Benthic macroinvertebrates as indicators of environmental degradation in the southern nearshore zone of the central basin of Lake Erie. *Journal of Great Lakes Research* 10(2):197-209.
- Mackie, G. L. 2000. Ballast water introductions of Mollusca. Pp. 219-254 in R. Claudi and J. H. Leach, eds. *Nonindigenous Freshwater Organisms: Vectors, Biology and Impacts*. CRC Press LLC, Boca Raton, Florida. 464 pp.

Mackie, G. L., D. S. White, and T. W. Zdeba. 1980. A guide to freshwater mollusks of the Laurentian Great Lakes with special emphasis on the genus *Pisidium*. Environmental Research Laboratory, Office of Research and Development, U. S. Environmental Protection Agency, Duluth, Minnesota 55804. 144 pp.

Pennak, R. 1989. Fresh-water Invertebrates of the Unites States, 3<sup>rd</sup> ed. Protozoa to Mollusca. John Wiley & Sons, Inc., New York, New York State. 628 pp.

Ricciardi, A. 2001. Facilitative interactions among aquatic invaders: is an “invasional meltdown” occurring in the Great Lakes? Canadian Journal of Fisheries and Aquatic Sciences 58:2513-2525.

Smit, H., H. C. Reinhold-Dudok Van Heel, and S. M. Wiersma. 1995. Sublittoral macrozoobenthic assemblages in the enclosed sediment-polluted Rhine-Meuse Delta; their relationship to environmental conditions. Netherlands Journal of Aquatic Ecology 29(1):31-47.

Smit, H., J. A. Van Der Velden, and A. Klinik. 1994. Macrozoobenthic assemblages in littoral sediments in the enclosed Rhine-Meuse Delta. Netherlands Journal of Aquatic Ecology 28(2):199-212.

Smith, D.G. 1986. *Pisidium henslowanum* in the Connecticut River, Massachusetts, USA (Bivalvia: Pisidiidae). Nautilus 100(4):124-126.

Steiner, P. and H. Turner. 1998. The Mollusca of Lake Greifensee: inventory and abundance of species in relation to site factors. Vierteljahrsschrift der Naturforschenden Gesellschaft in Zuerich 143(3):85-96.

Wolfert, D. R. and J. K. Hiltunen. 1968. Distribution and abundance of the Japanese snail, *Viviparus japonicus*, and associated macrobenthos in Sandusky Bay, Ohio. The Ohio Journal of Science 68(1):32-40.

**Other Resources:**

**Author:** Rebekah M. Kipp

**Revision Date:** Mar. 16, 2007

**Citation for this Information:** Rebekah M. Kipp. 2007. GLANSIS.

**Group:** Mollusks – Bivalves (mussels, clams, oysters)

**Lake(s):** Lake Ontario Drainage, Lake Erie Drainage, Lake Michigan Drainage

**Genus:** *Pisidium*

**Species:** *henslowanum*

**Common Name:** henslow('s) pea/pill clam, pisidiid clam

**Status:** Established

**Freshwater/Marine:** Freshwater

**Pathway:** Shipping

**Exotic/Transplant:** Exotic