

Scientific Name: *Pisidium amnicum* Müller, 1774

Common Name: greater European pea/pill clam, pisidiid clam

Taxonomy: Available through ITIS

Identification: This small bivalve has a height to length ratio of 0.74–0.81 and is relatively long, oval shaped, and heavily striated with a shiny yellow or brown epidermis. The beaks are located towards the posterior by about 2/3 of the total shell length. Inside the shell, the cardinal teeth are closer to the anterior lateral teeth than to the posterior lateral teeth, the 2nd cardinal tooth is a thick peg covered by the thinner 4th cardinal, and the 3rd cardinal curves around the 2nd cardinal. In live specimens there is only an anal siphon (Herrington 1962; Mackie et al. 1980; Clarke 1981; Pennak 1989).

Size: *P. amnicum* varies from 8.8–11.9 mm in length (Herrington 1962; Holopainen 1979; Vincent et al. 1981; Holopainen et al. 1997).

Native Range: *P. amnicum* is widely distributed in Eurasia and North Africa between Naples, Siberia, and Algiers (Vincent et al. 1981; Por et al. 1986; Mackie 2000).

Nonindigenous Occurrences: *P. amnicum* was first recorded in the Great Lakes drainage in 1897 near the mouth of the Genesee River at Lake Ontario. It has also been recorded from other areas in Lake Ontario, Lake Huron, Lake Erie, Lake Michigan, and Lake Superior (Heard 1962; Mackie et al. 1980; Clarke 1981; Mills et al. 1993; Mackie 2000; Grigorovich et al. 2003).

Means of Introduction: *P. amnicum* was very likely introduced in solid ballast, which was used in the early 1900s in ships entering the Great Lakes (Mills et al. 1993; Grigorovich et al. 2003).

Status: Established where recorded, but at low densities in some regions. *P. amnicum* could also occur in other inland waters within the Great Lakes basin (Mackie et al. 1980; Clarke 1981; Mills et al. 1993; Grigorovich et al. 2003).

Ecology: *P. amnicum* is typically a rheophilic species in its native range but can also occur in lakes. It prefers sand but has also been recorded on mud and gravel. It can survive anoxic conditions under ice cover but may be limited in some upper river reaches where temperatures do not exceed 15–17°C in July. *P. amnicum* is capable of closing its shell to induce anoxia, metabolic quiescence, and anaerobiosis, and can survive for 200 days at 0°C. It occurs down to 30 m in Europe but only down to 10 m in the Great Lakes. Densities in Europe have reached around 1000–3300 clams per m². In the St. Lawrence River, Canada, where it has been introduced, it is often found living in littoral zones in association with the introduced snail *Bithynia tentaculata* and the oligochaete *Sparganophilus tamesis* (Bishop and Hewitt 1976; Holopainen 1979, 1987; Mackie et al. 1980; Vincent et al. 1981; Dyduch-Falniowska 1982; Piechocki and Luczak 1989;

Holopainen and Penttinen 1993; Grabow 1994; Zettler 1996, 1998; Holopainen et al. 1997; Mackie 2000).

P. amnicum is hermaphroditic, ovoviviparous, and can undergo cross-fertilization. In Europe it is often semelparous, reproducing once in a lifetime. In the St. Lawrence River it is iteroparous, reproducing twice, once at age 2 and once at age 3. Recruitment takes place when water temperatures reach 15–20°C. Maturation of individuals and egg-laying occur between July and October, and eggs are brooded for around 9–10 months. The number of embryos per adult varies from 5–29. Lifespan is typically 1–3 years (Holopainen 1979; Vincent et al. 1981; Holopainen et al. 1997; Araujo and Ramos 1999; Araujo et al. 1999).

P. amnicum larvae may be distributed by ruminants via excrement. Adult clams in particular can be hosts to digenean parasites in Eurasia, such as: *Bunodera lucipercae*, *Palacerochis crassus*, *Phyllodistomum elongatum*, and *Crepidostomum* sp. Parasites may castrate their hosts. Semelparity could be a result of castration (Zhokov 1990; Holopainen et al. 1997; Rantanen et al. 1998; Sturm 2000).

Pill clams are filter feeders, living in the sediments and obtaining nutrition from the substrate and the water column. This species especially favors diatoms (Holopainen 1979; Mackie 2000).

Impact of Introduction

A) Realized: Unknown.

B) Potential: Unknown.

Remarks: In some parts of its native range *P. amnicum* is considered endangered (Beran 1998; Sturm 2000).

Voucher Specimens:

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Other Resources:

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

Lake(s): Lake Ontario Drainage, Lake Superior, Lake Huron, Lake Erie, Lake Michigan

Genus: *Pisidium*

Species: *amnicum*

Common Name: greater European pea/pill clam, pisidiid clam

Status: Established

Freshwater/Marine: Freshwater

Pathway: Shipping

Exotic/Transplant: Exotic