

Scientific Name: *Gillia altilis* Lea, 1841

Common Name: buffalo pebblesnail

Taxonomy: Available through ITIS

Identification: The shell of this species is inflated but still conical, and usually yellow to green, with 2–4 whorls when eroded and ~4.5 when intact. Each whorl is distinctly shouldered. The umbilicus is either not apparent or very small. The columella is not thickened and the shell can be thin or thick. The shell aperture is oval to ear-shaped. When viewed laterally, the outer lip of the shell bends forward. The chitinous, oval, yellow to green operculum shows paucispiral markings and has a subcentral nucleus. The mantle is black or shows dark pigmentation, which is also seen in the nape, the anterior part of the snout, the top of the tentacles, and along the edge of the peristome. The radula of *G. altilis* looks like a single serrated blade with 51–55 tooth rows. The egg capsules are ~1.25 mm in diameter (Thompson 1984; Pennak 1989; Jokinen 1992).

Size: In New York State, *G. altilis* grows 6–8 mm high (Jokinen 1992).

Native Range: *Gillia altilis* is native to the Atlantic coastal drainage of North America (Mills et al. 1993). It occurs from New York State and Vermont down to South Carolina (Jokinen 1992).

Nonindigenous Occurrences: The first record of *G. altilis* in the Great Lakes drainage was from Oneida Lake, New York State, around 1915–1918 (Mills et al. 1993). However, in subsequent years it was likely extirpated from this water body. The snail was later recorded from Niagara-on-the-Lake, Lake Ontario, in 1936, and in the Erie Canal at various times before 1940 (Mills et al. 1993). The New York State Department of Environmental Conservation (2005) also reports records from Lake Erie, but gives no references and declares that the current status of this population is unknown.

Means of Introduction: *G. altilis* was able to colonize the Lake Ontario drainage basin by means of the Erie Canal system in New York State, which connects this part of the Great Lakes with the Hudson River (Mills et al. 1993).

Status: *G. altilis* is considered established in the Lake Ontario drainage (Jokinen 1992; Mills et al. 1993)

Ecology: *G. altilis* is usually found in freshwater stream environments. Its globose shell is adapted for inhabiting high-velocity lotic environments, because it allows for a large, muscular foot that can suction to rocks. However, it should be noted that relatives of this species, with the same globose shell and large foot, are well adapted to living on silty substrates because the large foot prevents the snail from sinking. In fact, it is not uncommon for *G. altilis* to inhabit both stagnant waters in lakes and streams and rapidly moving waters (Thompson 1984). In Vermont, it is found in the Hudson River in shoals where there is macrophyte cover and mud substrate (Kart et al. 2005). In New York State,

it also commonly inhabits warmwater, shallow lacustrine habitats with mud substrate (New York State Department of Conservation 2005).

G. altilis exhibits separate sexes and sperm is transmitted to the female through a penis that extends from the nape of the male. This species lays its eggs in hemisphere-shaped capsules, singly or in clumps up to six at a time on leaves and stems of macrophytes. It has a radula that is specialized, exhibiting overall larger but fewer cones and cusps on the various teeth, which are adapted for grazing on coarser food particles than those of other related snails in the subfamily Lithoglyphinae (Thomson 1984).

Impact of Introduction

A) Realised: At this time, there are no recorded impacts in the Great Lakes system.

B) Potential: There are no known impacts in other water bodies at present.

Remarks: In some regions where *G. altilis* is native, populations are declining or not very abundant. For example, in Vermont, this species is considered to be an invertebrate species in “greatest conservation need” (Kart et al. 2005). In New York State, this species is ranked as S1 (very vulnerable due to low abundance of species and/or required habitat), protected U SC (unprotected at present but of special concern due to increasing evidence of vulnerability) and globally as G5 (rare but not vulnerable) (New York State Department of Environmental Conservation 2005). Loss of habitat due to anthropogenic modifications, pesticides and competition with introduced species are considered the major threats to declining or vulnerable gastropod populations in New York State (New York State Department of Environmental Conservation 2005).

Voucher Specimens:

References:

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Thompson, F. G. 1984. North American freshwater snail genera of the hydrobiid subfamily Lithoglyphinae. *Malacologia* 25(1):109-141.

Other Resources:

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Group: Mollusks – Gastropods (Snails)

Lake(s): Lake Ontario Drainage, Lake Erie

Genus: *Gillia*

Species: *atilis*

Common Name: buffalo pebblesnail

Status: Established in Lake Ontario Drainage, Reported from Lake Erie

Freshwater/Marine: Freshwater

Pathway: Canals

Exotic/Transplant: Native Transplant