

OCCASIONAL PAPERS OF THE MUSEUM OF  
ZOOLOGY

---

UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN

UNIVERSITY OF MICHIGAN PRESS

---

PLEUROCERIDAE OF THE ST. LAWRENCE  
RIVER BASIN

BY CALVIN GOODRICH

THIS paper is part of the preparatory work upon a molluscan check list which has been undertaken by the American Malacological Union. Other papers dealing with the family as it occurs in several sections of the North American continent will follow.

Pleuroceridae invaded or reinvaded the St. Lawrence basin as early as the period in which Lake Algonquin existed, and they were flourishing in the succeeding Lake Nipissing time. The invading host, as might be expected, was of a peculiarly adaptable character. This is demonstrated by the variety of habitats that have been occupied within the basin. These habitats range from brooks of slight current to rivers of heavy current, from sheltered bays of the Great Lakes to situations exposed to rough and persistent wave movement. The shells have been found in creeks that in seasons of drought acquire a relatively high temperature and also in rivers that in the course of a winter may freeze nearly to the bottom. A common habitat is among rapids of a stream which undergo the scouring process of flood and ice motion; at the same time shells of the same species may be occupying nearby spring discharges or trickles from canal banks. In short, the members of the family

that have been concerned in the invasion of the glaciated areas have been especially hardy representatives and may be held in the light of molluscan pioneers. They are reducible to one species of one genus and to two species and a subspecies of another genus. It is perhaps of significance that the one species and the single subspecies which have developed characters of outstanding distinctiveness are confined in both instances to parts of lakes.

#### PLEUROCERA

*Pleurocera acuta* Rafinesque, 1831. An elongate shell with loosely coiled spire, the carinae of which usually persist, though not always, to the ultimate whorl. The sculpture, if any, consists of spiral ridges and more or less pronounced folds upon the base. Diameter relative to altitude varies with habitat. For example, shells of the shallows of western Lake Erie, the type locality, are narrow whereas those that have obtained lodgment among rocks of the islands, which are subject to heavy wave action, are much broader. As in the case of *Goniobasis livescens*, the wide body whorl is correlated with a wide foot, and this in turn is correlated with position in exposed situations. *P. acuta* is closely related to *P. canaliculatum*. The two species (or forms) merge in at least three streams of the Ohio River basin. In tributaries of the Cumberland and Duck rivers of Tennessee are mollusks, clearly derived from heavier *Pleurocera* of the main streams, that are indistinguishable from *acuta*. The extreme variation is responsible for a number of specific names, few or none of which are warranted on biological grounds. The easternmost locality of *acuta* in the St. Lawrence drainage is a tributary of Lake Champlain in Vermont; the most northern known locality is Lake Superior, Bayfield, Bayfield County, Wisconsin (F. C. Baker).

#### Synonyms:

*Melania subularis* Lea, 1830  
*Melania alexandrensis* Lea, 1845  
*Melania haleiana* Lea, 1845  
*Melania tracta* Anthony, 1850  
*Melania neglecta* Anthony, 1854

*Melania intensa* Anthony, 1860  
*Melania livida* Reeve, 1860  
*Trypanostoma pallidum* Lea, 1862  
*Goniobasis lawrencei* Lea, 1869

Several of the lists of mollusca of the St. Lawrence system carry the name of *P. elevatum* (Say). The name is derived from revolving striae, a secondary character which in *acuta* is commonest among colonies of the larger streams and more or less rare in those of the Great Lakes. Say's specimens were taken in the Ohio River, which is occupied solely by a *Pleurocera* assignable to *canaliculatum* or its subspecies *undulatum*. Specimens having the measurements given by Say have been found as aberrants in *canaliculatum* lots.

#### GONIOBASIS

*Goniobasis livescens* (Menke), 1830. A mollusk of extreme variation; the spire ranges from long to short and is loosely to tightly coiled; whorls flattened to rounded; shell shape slender and elongate to ventricose. Occasionally sculptured with spiral lines. In parts of Lake Erie, as at Port Maitland, Ontario, and Locust Point, Ottawa County, Ohio, the carinae of the juvenile whorls are continued as keels on the mature whorls. A number of these keeled forms have been dredged in from ten to fifteen feet of water in Lake Erie in the vicinity of Put-in-Bay. Nearly all of the different forms of *livescens* are correlated with ecological conditions. The name appears to have been suggested from a color that dead shells of *Campeloma* and *Lymnaea*, as well as *Goniobasis*, acquire on beaches of the Great Lakes. In southern Michigan, head-stream colonies are usually of dark, sometimes black, appearance; downstream and lakes colonies, yellow or light brown. The majority of colonies of upper Michigan are of dark coloration, and this appears to be due to the "bog stain," which is a characteristic of most streams of that area. In the St. Lawrence basin, *livescens* occurs in streams and lakes from Lake Champlain to at least one tributary of Lake Superior in Michigan. It was an occupant of postglacial Lake Algonquin. Specimens of the species were taken from the gizzard of a white-winged scoter on Saginaw Bay of Lake Huron.

## Synonyms:

<i>Melania rufula</i> Haldeman, 1841	<i>Melania tecta</i> Anthony, 1854
<i>Melania niagarensis</i> Lea, 1841	<i>Melania cubicoides</i> Anthony, 1860
<i>Melania bizonalis</i> De Kay, 1843	<i>Melania osculata</i> Anthony, 1860
<i>Melania gemma</i> De Kay, 1843	<i>Goniobasis lithasoides</i> Lea, 1863
<i>Melania napella</i> Anthony, 1850	<i>Goniobasis milesii</i> Lea, 1863
<i>Melania cuspidata</i> Anthony, 1850	<i>Goniobasis translucens</i> Anthony,
<i>Melania inornata</i> Anthony, 1850	1865
<i>Melania elata</i> Anthony, 1850	<i>Goniobasis columbiensis</i> Whiteaves,
? <i>Melania varicosa</i> Haldeman, 1854	1905

*Goniobasis livescens gracilior* (Anthony), 1854. The body whorl of this subspecies is very much more rounded than it is in *livescens*, the base is somewhat flattened. All the specimens that have been seen are dark in color. Found in lakes of Summit and Stark counties, Ohio, but not everywhere there as a "pure" race.

## Synonym:

*Melania gracilis* Anthony, 1841

*Goniobasis haldemani* Tryon, 1865. A very slender mollusk the whorls of which increase slowly to the number of fifteen or sixteen. The diameter of the body whorl is seldom more than half that of an average specimen of *livescens*. Confined probably to Lake Erie, although reported to occur in Lake Champlain. The beaches are in places strewn with dead and decollated shells of *haldemani*, and the assumption has been that the species lives in deep water. No proof has been vouchsafed of this belief. The single living specimen that I have seen was taken by me in an inch or two of water in a sheltered marsh of Sandusky Bay, Ohio. It had the operculum of *livescens*. The name occurs in lists of mollusks from Pleistocene deposits of Niagara River. It is possible that these shells were simply examples of an attenuate form of *livescens* that is living at this time in Niagara River above the Falls.