NATURAL DIET OF *OXYLOMA RETUSA* (PULMONATA: SUCCINEIDAE)

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Abstract: The land snail *Oxyloma retusa* living on the shore of a lake in Maryland, U.S.A., eats mostly dead plants in the spring, both dead and green plants in the summer.
Keywords: Mollusca, gastropoda, Succineidae, Oxyloma, food, fecal analysis.

Oxyloma retusa (Lea 1834), a land snail endemic to North America, lives on the mud and on cattails and other plants on the shores of ponds, lakes, marshes and on the banks of creeks (Hubricht, 1985; Lannoo & Bovbjerg, 1985). I am presenting data on the diet of *O. retusa* collected from the shores of a small lake in Maryland, U.S.A.

Materials and methods

Live *O. retusa* were collected at 2 stations ~560 m apart on the shores of Lake Churchill in Germantown, Montgomery County, Maryland, U.S.A. The snails were taken from cattails (*Typha* sp.) and various herbaceous plants or directly from the mud at the shore. Three sets of collections were made on 14 April 2002, 15 June 2002 and 20 August 2004. On each occasion, at least 33 snails were placed in clean plastic containers and brought to the laboratory. No food was given to the snails for several hours, but they were sprayed with water to prevent them from drying. During this period, feces that were deposited on the container walls were removed and combined in small drops of glycerol in petri dishes and stored in a desiccator over anhydrous calcium sulfate (Drierite) at room temperature. Feces stored under these conditions for up to 3.5 years retained their original colors, except those that contained carrot remains, which faded. Each sample may have contained feces from multiple snails. To determine their contents, the feces were broken apart with a fine needle and examined under a microscope at up to 400x. Control snails were fed dead cattail leaves, carrot and zucchini skins and toilet paper. Their feces were collected and treated the same way.

Results and discussion

There were two types of fecal matter: (1) strings consisting mostly of recognizable remains of what was eaten by the snails; (2) amorphous dark brown masses that contained no recognizable remains. The latter is probably what is referred to as the liver string (Chatfield, 1976).

A group of 29 *O. retusa* starved for 7 hours did not eat partially rotten spinach leaves and crawled away from them. About 2 hours later, the same snails readily ate fresh carrot and zucchini skins. The fecal strings of *O. retusa* that had been fed carrot, zucchini and toilet paper were orange, green and white, respectively. This indicated that the color of a snail's feces was a reliable indicator of the type of food it had consumed.

On 14 April 2002, 33 snails were taken from rotting leaves on the ground and from dead cattails. Twenty-nine samples of feces were obtained from these snails. The fecal strings consisted almost entirely of brown plant matter and some fungus hyphae and were similar in composition to the contents of the feces of snails that had been fed dead cattail leaves in the laboratory. A small amount of green plant matter was present in only 1 sample.

On 15 June 2002, 66 snails were taken mostly from dead cattails; only a few were found on green leaves. Thirty samples of feces were obtained. Their contents were primarily brown plant matter, pollen grains of possibly cattails and fungus hyphae. There was no green plant matter.

On 20 August 2004, 33 snails were taken from the mud and from small herbaceous plants; no snails were seen on cattails. Twenty samples of feces were obtained. Green plant matter was present in all samples; it consisted mostly of clumps of what appeared to be chloroplasts. Similar green clumps were also present in the feces obtained from snails that had been fed zucchini skins. All samples also contained brown plant remnants. There were also a few filaments of green algae.
I did not recognize remains of arthropods or other animals in any of the samples.

All herbaceous plants and the aboveground parts of cattails growing at the collection sites die in the fall. New plants start to grow towards the end of March and by June the sites become very densely covered with green plants. Despite the availability of green plants starting early in the spring, however, the data show that from April through June, *O. retusa* feeds almost exclusively on dead plants, including dead cattails. In the summer, the snails also feed on green plants. *Oxyloma retusa* is dormant between late fall and mid-March, and therefore, does not feed.

Shrader (1972) analyzed feces and gut contents of *O. retusa* collected in June in southern Michigan and noted that the snails had eaten both living and dead plants, fungi, pollen, algae and diatoms. My results generally agree with those of Shrader, although the contributions of algae and diatoms to the diet of my snails were negligible.

References

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