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Reprinted from ANNUAL REPORTS FOR 1967 OF THE AMERICAN MALACOLOGICAL UNION
pp. 44–45

CHANGES AND REDUCTIONS IN OUR FRESHWATER MOLLUSCAN POPULATIONS

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(ABSTRACT)

The rapid growth of industry and population on our continent is producing great changes in our freshwater lakes and rivers. These changes began to unfold about two hundred years ago, beginning with the construction of our first canals, mill dams, and factories. A wide system of canals east of the Mississippi River linked some of the various river systems together. A number of our species of freshwater mollusks have thus moved from one river drainage to another.

The early pollution of the Merrimac and Blackstone rivers of New England eliminated two relatively rare mussels, *Lampsilis cariosa* and *Alasmidonta marginata varicosa*, each found there before this pollution occurred. Thus on one hand we find that the distribution of our molluscan population is being increased by man, while on the other hand it is being decidedly reduced. Let us further explore these two factors.

In general, the spread of freshwater mollusks into other drainages has included only a few common species which can adapt themselves to slowly moving water. Usually they do not seem to over-populate their new locations and therefore their introduction into foreign streams would appear unimportant. However, there are a few exceptions to this. In the United States the oriental clam *Corbicula manilensis* has been dispersed by other means, not altogether presently known, to an extensive area reaching from coast to coast. In many places this bivalve has become so prolific that it threatens to starve or crowd out mussels already living in that area.

Several other factors, however, are destroying our aquatic faunas. Most alarming among these is stream pollution. Pollution takes an immense toll among our mollusks. The June 1967 pollution of the Clinch River in Virginia by the Appalachian Power Company killed hundreds of thousands. Among the many mollusks and other plants and animals killed was the best remaining concentrated population of our AMU symbolic mollusk *Io fluvialis*. The Water Quality Act of 1965, enacted by the United States Congress, gave each state until June 30, 1967 time to adopt certain corrective actions, which if enforced, should eventually clear up the streams in the United States.

Secondly, the destruction of many species which inhabit swiftly running water, is caused by the construction of reservoirs. In this construction on our major river systems it appears that little thought and no constructive action have been shown to preserve natural sections of our rivers. The elimination of many rare species of mollusks which inhabit only the rapids and shoals of large streams has already occurred. Many freshwater mollusks require swift

running, clean water. In this group are such bivalve genera as *Dysnomia, Pegias, Alasmidonta,* certain *Elliptio, Pleurobema, Lampsilis* and others. The gastropod family Pleuroceridae is particularly indigenous in swift water. The various species of the genus *Apella* (= *Gyrotoma*) are entirely adapted only to swift water. Most of these species must now be considered extinct since nearly their entire range in the Coosa River of Alabama, to which they are endemic, has been inundated by reservoirs. *Io fluvialis* disappeared from the Tennessee River when the rapids which it inhabits were covered by TVA lakes. It is now found only in the Nolichucky, Clinch and Powell rivers.

Some reservoirs are now under construction for purely political reasons and are not needed. The present construction of the Tellico Dam near the mouth of the Little Tennessee River was resisted in vain by many individuals and organizations. This river has several large reservoirs on it at present with immense storage capacity. The twenty-five odd miles of swift water which remained above its mouth is considered a prime fishing area. Here are found several uncommon naiads and the rare pleurocerid *Eurycaelon anthonyi.* Construction of the dam will result in no long term economic benefit to the area.

Several species of rare mollusks, one of which is *Tulatoma magnifica,* the large viviparid gastropod with bands of prominent tubercules, were destroyed in the lower section of Choccolocco Creek in Taladega County, Alabama, when it was inundated by the impounding of Coosa River waters behind Logan Martin Dam. Some of these species do not live in Choccolocco Creek above the present reservoir. It appears possible that this creek could have been diverted at a point just above its mouth, to flow southward to enter the Coosa below the dam. A great stream which contained an extraordinary amount of endemic plant and animal life would have been preserved.

A third factor which is probably eliminating many mollusks from ponds and streams, is the practice of removing all fish from a body of water so as to eliminate all so-called trash fish. The waters are then restocked with game fish suitable to that area, but not always suitable naiad hosts.