

SHAPE EVOLUTION IN FISHES OF THE SUBFAMILY ICTIOBINAE

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Description:

Fishes of the subfamily Ictiobinae are large, bottom feeding fishes commonly referred to as buffalo fish and carp suckers. They are native to large rivers and lakes in eastern North America (inclusive of Mexico). Seven extant species are currently recognized in the two genera: *Carpiodes* and *Ictiobus*. However, most ichthyologists consider the group to be much more diverse, with each of the current species representing complexes of two to many species. The seven currently recognized ictiobine species are easily distinguished on the basis of shape characteristics such as proportions of the head and body, size and shape of the eye, length of the snout, position of the nostrils, size and height of the fins, and size and position of the mouth. Considerable shape variation also exists within species, and many ichthyologists consider this variation to be taxonomically informative.

In this project, students will use modern, computer-based methods of morphometrics (shape analysis) to quantify shape differences within current ictiobine species complexes and to interpret this information taxonomically. Data on overall shape and shape-change during growth will be gathered for different populations of select ictiobine species using an image-analysis system. Analysis of the images will reveal patterns of shape evolution and may confirm the existence of new species within the ranges of currently recognized ictiobine species. (For additional background on this project, please visit the web site: <http://www.museum.tulane.edu/ictiobin>).

Objectives:

- 1) During the 10-week period, participants will gain experience with:
- 2) Formulating and testing scientific hypotheses;
- 3) Modern methods of morphometrics and systematic ichthyology;
- 4) Computer analysis of data, scientific report writing and presentation of results.

Prerequisites:

Completion of sophomore year, GPA of 3.00 or higher, aptitude and motivation for advanced study in fish biology.