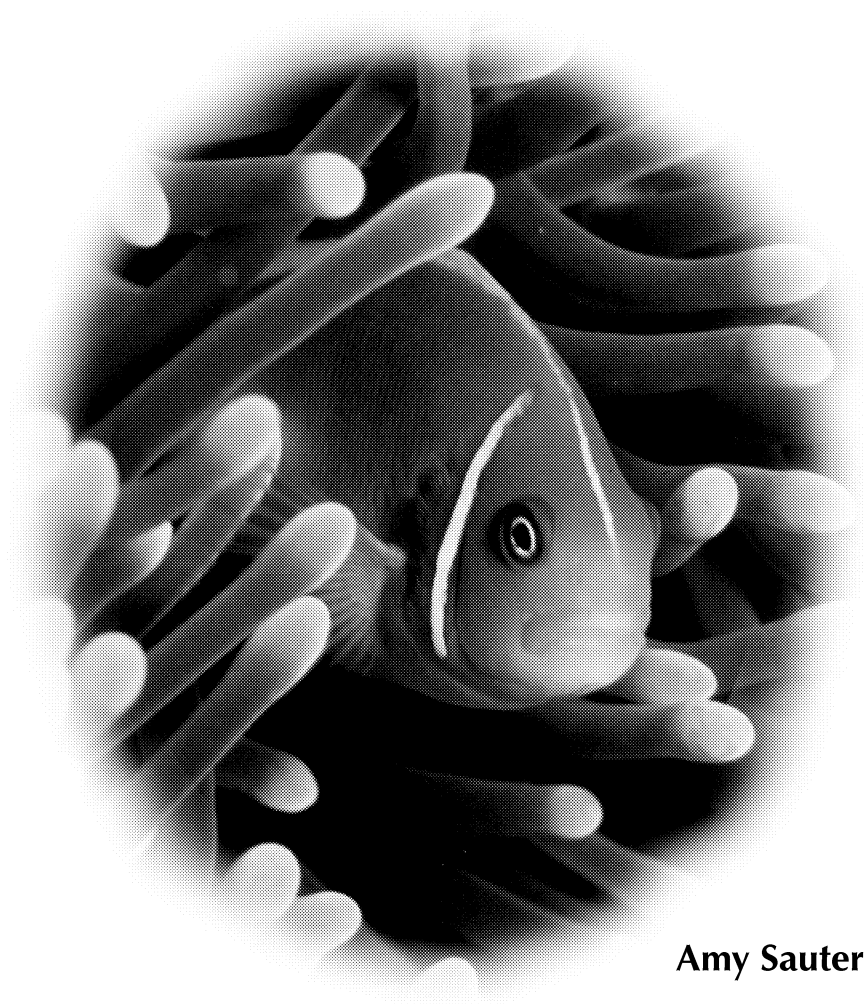


Lab Manual

# Marine Biology

An Introduction to Ocean Ecosystems



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## A WETLAND STUDY

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### *Purpose*

To collect and analyze data from a local wetland.

### *Materials*

- water-quality test kit to measure dissolved oxygen
- pH test paper or pH meter to measure pH (hydrogen ion concentration)
- Secchi disk to measure turbidity (water clarity)
- hydrometer to measure salinity (salt content of water)
- thermometer
- nets, small containers, buckets, hand lenses for the temporary capture, holding, and observing of plants and animals found
- hula hoop or quadrat (square frame), one per group
- identification books, to name species in the study area
- up to six ropes of equal length, up to 10 meters, optional, to sample along a transect
- camera
- microscope

### *Procedure*

In a group or pairs, proceed to the wetland site with equipment for sampling and recording. If a **transect** is used, lay down the **ropes** approximately 3 meters apart and mark along the ropes every 2 to 3 meters to designate sampling sites. Lay the **hula hoops** along these sampling sites and observe and describe the life bounded by the hoops. If no transect is used, choose a sampling site within the defined study area. Use an **identification book** to label photographs you take of invertebrates and

plants. Remember to quickly release your specimens after you photograph them. Geology of the study site must be noted, including description of soil, rocks, and topography. You should take water samples and measure dissolved oxygen, salinity, pH, temperature, and turbidity. Water samples can be taken and returned to the laboratory for analysis of microbial life. Evidence of the presence of birds and mammals (tracks, bones, scat, feathers, etc.) should be noted. Data from the individual sampling sites should be organized and compared with those of other groups.

Every wetland is a wild space that should be treated with respect. Good science is low impact, and the study site should be left pristine.

### *Questions*

1. Why might certain sampling sites exhibit more biodiversity (variety of living things) than others?
2. Study the data from the water-quality tests (dissolved oxygen, pH, salinity, temperature, and turbidity) and the counts and identification of living things. Do you see a connection among any of these data?
3. Were any interesting questions raised in the study regarding interdependence of species? For example, was a particular invertebrate found only in sampling sites with a particular species of plant?

### *Starting Points for Student Research on Estuaries*

Continue the work accomplished in the wetland study. Visit the same study site during another season and compare with the class data. Exchange this data with other students in your area or online. Draw comparisons between your study site and another wetland.

Study the Chesapeake Bay, the largest estuary in the United States, with the help of Chesapeake Bay Observing System ([www.cbos.org](http://www.cbos.org)). The site uses real-time data from the bay. Or try the Chesapeake Bay page on the web site of the Maryland Department of Natural Resources ([www.dnr.state.md.us/bay](http://www.dnr.state.md.us/bay)).

Using data from your own observations or shared data from a nature center, aquarium, or other on-line source, conduct a study of the birds that can be found in the estuaries or wetlands in your area or elsewhere.

Visit the National Estuarine Research Reserve System web site ([www.ocrm.nos.noaa.gov/nerr/](http://www.ocrm.nos.noaa.gov/nerr/)) for information on estuaries.

Visit the Monterey Bay National Marine Sanctuary web site for ideas ([bonita.mbnms.nos.noaa.gov/sitechar/river.html](http://bonita.mbnms.nos.noaa.gov/sitechar/river.html)).