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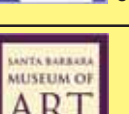
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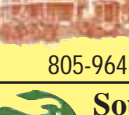
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805-964-3540; www.goletadepot.org

## Ecology of Local Lakes and Exploration of Wetlands

### Who Lives Where? Who Eats Whom?

#### Life Zones & Food Webs of Lakes

By Sally Isaacson, Santa Barbara Botanic Garden

Many different types of **living organisms** live in lakes and reservoirs. All of these are part of the complex **food web** of the **lake ecosystem**. Different types of organisms live in different habitats and regions within the lake. Some live close to shore, some live in mud on the lake bottom. Some live in deep water and others live in the upper layer of water where there is plenty of sunlight. Diatoms and green algae need light for photosynthesis and so they are most likely to be found in the upper, well-lit layers of the lake water. Lake water differs in temperature and oxygen content at different depths and at different times of year.

We can take samples of **phytoplankton** (tiny plant-like organisms such as diatoms and other algae) and **zooplankton** (animal plankton) by pulling a **plankton net** through the water behind our boat. An amazing variety of organisms can be seen when we examine our samples with a microscope.

Microscopic plankton organisms of all kinds are important food for the **consumers**, the animals that live in lakes. They are sieved from the water by filter feeders like clams, eaten by snails and insect larvae, and eaten by tiny invertebrates like *Daphnia*. At Lake Casitas, you can watch gulls flying up high in the air and dropping clams so that they break open, then the birds dive down and eat the soft meat from the shells. Insect larvae and aquatic snails are important food for fish, and fish in turn are eaten by many types of birds.

### My Experiences with the JASON Project

By Chad Makela, Jason Project Argonaut

My experiences all began years ago when I left my old school and began attending a small private school. With my new teacher, Barbara Miller, I was introduced to the wonderful world of the JASON Project at the Santa Barbara Maritime Museum. We annually attended this amazing program at the Santa Barbara Maritime Museum, watching the live videos, asking the Argonauts a variety of questions, and seeing all of the incredible exhibits.

As I grew older I was given the task of becoming a local Argonaut for the Channel Islands Expedition. This involved many marine experiments, with which we had to make explicit poster boards to be displayed at different events. Finally I had the opportunity to go to the Channel Islands to watch the Argos at work. I was so impressed, I set my next life goal as becoming a National Argonaut.

I waited for years until I was finally the appropriate age. The application was sent to me, and it was two-and-a-half inches thick! Though I knew what I had to do, I had set my goal, and I wasn't about to break it. With the help of my teacher Barbara, I worked on the application thoroughly. It took endurance, and the anticipation of being a National Argonaut, but I got it done.

I now look forward to the trip of my life, an expedition full of excitement, knowledge, and memories. This expedition to the Louisiana Wetlands is a once in a lifetime experience, and I am not just going to let it roll on by.

### A Mud-Pie Nest

By Linda Taylor, Cachuma Lake Nature Center

When you go to a lake or stream you probably go to great lengths to avoid walking in the mud. Cliff Swallows are very interesting birds of our area. They love mud! The male and female birds work together to build their nest by dipping their beaks into mud and daubing it on a cliff wall, the underside of a bridge, under the eaves of a building, in a culvert, or even on a dam! Bit by bit these birds make a gourd-shaped nest of mud balls. The nest may have a long entrance "hall" or a simple entry hole. Inside it is cozily lined with bits of grass and feathers.

Usually, Cliff Swallows build a city; many pairs nest together in a colony of a few birds or many thousands. These bird communities are similar to the cliff dwellings of America's Southwest. Wetlands are essential habitats for Cliff Swallows. Without mud nearby, they would not be able to build protective nests for their young.

Can you find a colony of Cliff Swallows near your home?

### "Fake" Lakes Make Fine Habitat

By Liz Mason, Santa Barbara County Parks Department

Cachuma Lake and Casitas Lake are drinking water **reservoirs**. They are not natural lakes. They were formed by dams built across rivers. But these "fake" lakes have ecosystems that provide different habitats for **living organisms**, just as natural lakes do. They have the same **food webs**.

As we build more communities for people, we have less natural habitat for wildlife. Casitas Lake and Cachuma Lake help make up for habitats that have been lost. These lakes have become very important habitats for **migratory birds**. Many species of birds spend winter months in California and other warmer parts of the United States.

Many birds use habitat near water, at the water's edge, or under the surface-it depends on what kind of bird it is, and what adaptations they have developed to use the habitat. Many birds can use more than one lake habitat.

#### Diving Birds

**Deep Diver:** The **Western Grebe** has lobed feet which enable it to swim as deep as 25 feet and to catch fish and other animals with its spear-like bill.



Roger Millikan



Larry Jon Friesen

**Shallow Diver:** The **Bufflehead** is a small diving duck. It uses webbed feet to dive in shallow water for aquatic insects and small fish.

**Surface Diver:** The **Osprey** is in the hawk family. It plunges into the water from high in the air and catches fish using strong talons. Prickly feet help hold the fish.



Roger Millikan

#### Surface-Feeding Birds

**White Pelicans** often fish in groups. They beat their wings on the surface to drive fish to shallower water. Then they scoop the fish up in their bills.



Sally Isaacson



Sally Isaacson

**Mallards** are dabbling ducks. They tip up their tails and use broad bills to reach food like roots or seeds of aquatic plants just under the water's surface.

#### Wading Birds

The **Great Blue Heron** wades with long legs in shallow water. It hunts fish, frogs, turtles, snakes, lizards, shrimp, and more.



Roger Millikan

#### Shoreline Birds

The **Killdeer** would make a great shortstop. It runs and stops suddenly, then dabs at the ground for insects in mud, on shore, or even in fields.



Roger Millikan

For information about educational programs or cruises for your family or class, call:

**Lake Casitas:** Santa Barbara Botanic Garden (805) 682-4726 ext. 654  
**Cachuma Lake:** Cachuma Lake County Park (805) 688-4515  
Cachuma Lake Nature Center (805) 693-0691

### Scrambled Birds, Instead of Eggs!

By Linda Taylor, Cachuma Lake Nature Center

All these birds or their nests can be found at Cachuma Lake Nature Center. They are usually found near water. Answers are below.

CLKBA DREWNCO THIGN EOHRN  
DAAANC OGOES  
IICCFAP NOLO  
IFLCF WWLLSOA  
LEKLIDER  
ENTREWS BEERG  
NAMACIER BROIN  
SWON ESOGO

BLEEHUFFA  
ECRINAAM TRITBEN

Answers: Black Crowned Night Heron,  
Bufflehead, Canada Goose, American Bittern,  
Pacific Loon, Cliff Swallow, Killdeer, West-  
ern Grebe, American Robin, Snow Goose.

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