Freshwater sponges

Class Demospongiae

By Lori Micken

People who visit a lake, river, or stream usually pay attention only to the surface. They take pictures, enjoy the sounds and smells of the water, or go fishing. Too often they miss the intriguing world beneath the surface. Almost all life supported by lakes and rivers is underwater in a world most people never enter. And many of those plants and animals are too small to see with the naked eye.

One summer afternoon while cruising in my rowboat along the shallows of a mountain lake, I peered down into that underwater realm. In the flat, mud bottom I could see roots of pond lily and the carcasses of waterlogged trees. I reached into the clear water to break off a twig covered in a bright green substance that had projections resembling deer antlers in velvet. Rather than slimy, as I'd expected, its texture was rough. It was a freshwater sponge.

SPONGILLA LACUSTRIS FROM WIKIPEDIA

Identification

A sponge is the simplest form of animal life, an abstract skeleton made by and covered with cells. It is a commune constructed of interlacing filaments, a gorgeous filigree of colorless passages, pillars, and grottoes. Most sponges live in the ocean, but a few exist in freshwater.

Alga, a single-celled plant, is what makes the freshwater sponge green. Algae help provide oxygen and food for the sponge. In return, the sponge gives algae a place to live. Situations where two organisms benefit from their interaction are known as symbiotic relationships.

Distribution and size

Approximately 150 species of freshwater sponges are found throughout the United States, usually in clear, shallow waters of ponds, lakes, and slow-moving stream backwaters. Several sponge species exist in Montana, including *Spongilla lacustris* (shown above).

Most freshwaters sponges are a few inches long and form as encrustations on twigs or other hard surfaces.

Structure

For centuries, sponges were considered plants because of their primitive structure and lack of mobility. Their cell layers are not organized into tissues or organs. Various types of microscopic specialized cells—including sclerocytes, flagella, pinacocytes, and myocytes—work together to help the organism survive.

Spicules are the hard, needlelike structures that give sponges their shape. Spicules are composed of silica, a mineral composed of oxygen and silicon.

Ecological function

Sponges serve as food for other aquatic invertebrates, including caddis flies, mayflies, and midges. Because they do not tolerate pollution, their presence indicates clean water.

Reproduction

Sponges contain asexual reproductive cell groups called gemmules, which form when extreme cold, drought, or other conditions threaten a sponge's life. Gemmules resist drying, freezing, and oxygen depletion. Even if a sponge doesn't survive, its gemmules do. When conditions improve, they create another sponge. Another form of asexual reproduction occurs when a piece of sponge breaks off and regenerates into a new organism.

Sexual reproduction also takes place. An egg and sperm form a single cell that grows into a larva, which swims around and eventually attaches to a solid surface such as a twig and develops into an adult sponge.

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