

SYSTEM DIMENSIONS	CHEMICAL AND PHYSICAL	BIOLOGICAL COMPONENTS	HUMAN USES
Extent Pattern	Nutrients, Carbon, Oxygen Contaminants Physical	Plants and Animals <b>Communities</b> Ecological Productivity	Food, Fiber, and Water Recreation and Other Services

## ⊖ Status of Freshwater Animal Communities: Fish and Bottom-Dwelling Animals

### What Is This Indicator, and Why Is It Important?

This indicator reports on “biological integrity”—the degree to which the suite of fish and bottom-dwelling animals in a lake or stream resembles what one might find in a relatively undisturbed lake or stream in the same region. Tests assess the number of different species, the number and condition of individuals, and food chain interactions for fish and bottom-dwelling (or benthic) animals, which include insects, worms, mollusks, and crustaceans. High scores indicate close resemblance to “natural” conditions, and low scores indicate significant deviation from them.

Undisturbed lakes and streams in a particular region have a relatively predictable set of fish and bottom-dwelling animals, which occur in predictable proportions.

Alterations to the stream or lake can change the composition and condition of these biological communities from this undisturbed or “reference” condition. Alterations that affect biological integrity include decreased water quality, introduction of non-native species, changes in the amount or timing of water flows, and modification of the lake or stream bed or shoreline. Some lakes and streams are so modified that, for example, both the number of species and the number of individuals are very low when compared with undisturbed areas, and many of those that remain are diseased or otherwise damaged. Ecosystems that are “healthy,” or show high integrity, are more likely to withstand natural and man-made stresses.

**Why Can’t This Indicator Be Reported at This Time?** The tests of biological integrity now in use have been developed primarily for streams and wadeable rivers; methods for lakes and larger rivers are not as well developed. In addition, these tests must be tailored to each region of the country to ensure that each stream or lake is compared with an appropriate reference. Only a handful of states regularly conduct quantitative tests of the condition of fish or bottom-dwelling animal communities. Thirty states are developing such tests, and five states already use such tests in regulating water quality.

The technical note for this indicator is on page 253.

