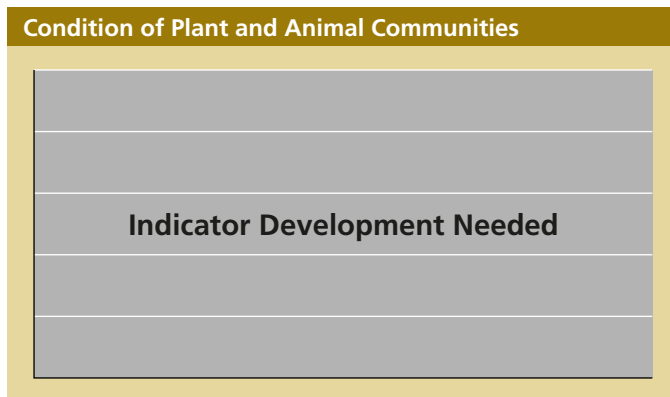




SYSTEM DIMENSIONS	CHEMICAL AND PHYSICAL	BIOLOGICAL COMPONENTS	HUMAN USES
Extent Pattern	Nutrients, Carbon, Oxygen Contaminants Physical	Plants and Animals <b>Communities</b> Ecological Productivity	Food, Fiber, and Water Recreation and Other Services

## ② Condition of Plant and Animal Communities



**What Is This Indicator, and Why Is It Important?** This indicator would report on the percentage of land area and stream and coastline length according to the level of disturbance, management, or physical alteration. Different levels of ecosystem alteration correspond to changes in both the type and number of species of plants and animals found in an area. Plants and animals in areas with high levels of alteration will be very different from those in similar areas that are relatively undisturbed.

The types of plants and animals found in areas that are highly managed or altered have in large part been determined by human activity. These areas are relatively easy to define, and more data about them are available:

- **Physically altered:** Areas in which a high percentage (for example, 30% or more) of the land surface is covered by asphalt, concrete, or buildings, is quarried or strip-mined, or, in the case of stream banks or shorelines, is “armored” with riprap or other materials.
- **Highly managed:** Areas in which human activity has directly and significantly altered the species, especially plants, found there; farms, plantation forests, golf courses, and intensively grazed grasslands and shrublands fall into this category.

In areas that are less substantially modified, the mix of plants and animals is less directly determined by people and more affected by ecological conditions. There are, however, no generally accepted methods for distinguishing between levels of alteration in these natural or semi-natural lands. This indicator presumes that such methods will be developed and that it will be possible to classify these areas into three broad categories:

- **Undisturbed:** Areas of relatively undisturbed biological communities where the types of plants and animals found are similar to what they would be without human influences. Examples might include wilderness areas and much of interior Alaska.
- **Disturbed:** Areas with a modified mix of plant and animal species. Examples might include areas with a high proportion of non-native species, or a different mix of native species as a result of the long-term exclusion of fire.
- **Less disturbed:** Areas with communities with changes intermediate between “disturbed” and “undisturbed.”

The species that occur in a place strongly affect the goods and services an ecosystem provides. Areas that are highly managed or physically altered provide important and socially desired goods and services as a result of this management or alteration, but that set of goods and services is quite different from those provided by more natural communities.

**Why Can't This Indicator Be Reported at This Time?** Although there are data on the status of plants and animals across large regions of the country (see the At-Risk Native Species indicator, p. 52), there are few data on the mix of species found within smaller areas or stretches of stream and coastline. The best data are for land intensively used by people—highly managed and physically altered lands are distinct enough to be identified from satellite measurements.



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

## ② Condition of Plant and Animal Communities *(continued)*

For semi-natural and natural areas, however, there are two problems. First, species composition is monitored for some systems (e.g., percent cover of non-native plants in forested areas), but not for all systems or for all types of species alterations. Just as important, ecologists have not agreed on how to classify a particular natural or semi-natural area as disturbed, less disturbed, or undisturbed. Again, measures exist for some ecosystem types (for example, see Status of Freshwater Animal Communities, pp. 147 and 193) but not for most.

**Discussion** The biological communities found on and in much of the nation's lands and waters today are very different from those of presettlement times. Much of this change is the result of deliberate human intervention: forests have been cleared for farms, streams dammed to form lakes or to generate power, and land covered with housing and roads. Clearly, the goods and services derived from these altered lands and waters differ considerably from those derived from wilderness areas and other lands in a natural or semi-natural condition.

Until better means are developed to determine what conditions exist on the two-thirds of U.S. lands that are natural to semi-natural, both reporting on and interpreting this indicator will remain difficult.

The technical note for this indicator is on page 215.