National Park Service
Inventory and Monitoring Division

Ecological Monitoring Framework

The NPS Ecological Monitoring Framework is a systems-based, hierarchical organizational tool for promoting communication, collaboration, and coordination among parks, networks, programs, and agencies involved in ecological monitoring.

Vital signs selected by parks and networks for monitoring are assigned to the Level 3 category that most closely pertains to that vital sign. For example, the vital sign "Shoreline Change" is assigned to the Level 3 category of "Coastal/oceanographic features and processes" within the Level 2 category of Geomorphology and Level 1 category of "Geology and Soils."

Level 1 Category	Level 2 Category	Level 3 Category
Air and Climate	Air Quality	Air Contaminants
Air and Climate	Air Quality	Ozone
Air and Climate	Air Quality	Visibility and Particulate Matter
Air and Climate	Air Quality	Wet and Dry Deposition
Air and Climate	Weather and Climate	Weather and Climate
Biological Integrity	At-risk Biota	T&E Species and Communities
Biological Integrity	Focal Species or Communities	Amphibians and Reptiles
Biological Integrity	Focal Species or Communities	Birds
Biological Integrity	Focal Species or Communities	Cave Communities
Biological Integrity	Focal Species or Communities	Desert Communities
Biological Integrity	Focal Species or Communities	Estuarine Communities
Biological Integrity	Focal Species or Communities	Fishes
Biological Integrity	Focal Species or Communities	Forest/Woodland Communities
Biological Integrity	Focal Species or Communities	Freshwater Communities
Biological Integrity	Focal Species or Communities	Freshwater Invertebrates
Biological Integrity	Focal Species or Communities	Grassland/Herbaceous Communities
Biological Integrity	Focal Species or Communities	Intertidal Communities
Biological Integrity	Focal Species or Communities	Mammals
Biological Integrity	Focal Species or Communities	Marine Communities
Biological Integrity	Focal Species or Communities	Marine Invertebrates
Biological Integrity	Focal Species or Communities	Riparian Communities
Biological Integrity	Focal Species or Communities	Shrubland Communities
Biological Integrity	Focal Species or Communities	Sparsely Vegetated Communities
Biological Integrity	Focal Species or Communities	Terrestrial Complex
Biological Integrity	Focal Species or Communities	Terrestrial Invertebrates
Biological Integrity	Focal Species or Communities	Vegetation Complex
Biological Integrity	Focal Species or Communities	Wetland Communities

Level 1 Category	Level 2 Category	Level 3 Category
Biological Integrity	Infestations and Disease	Animal Diseases
Biological Integrity	Infestations and Disease	Insect Pests
Biological Integrity	Infestations and Disease	Plant Diseases
Biological Integrity	Invasive Species	Invasive/Exotic animals
Biological Integrity	Invasive Species	Invasive/Exotic plants
Geology and Soils	Geomorphology	Coastal/Oceanographic Features and Processes
Geology and Soils	Geomorphology	Glacial Features and Processes
Geology and Soils	Geomorphology	Hillslope Features and Processes
Geology and Soils	Geomorphology	Lake Features and Processes
Geology and Soils	Geomorphology	Marine Features and Processes
Geology and Soils	Geomorphology	Stream/River Channel Characteristics
Geology and Soils	Geomorphology	Windblown Features and Processes
Geology and Soils	Paleontology	Paleontology
Geology and Soils	Soil Quality	Soil Function and Dynamics
Geology and Soils	Subsurface Geologic Processes	Cave/Karst Features and Processes
Geology and Soils	Subsurface Geologic Processes	Geothermal Features and Processes
Geology and Soils	Subsurface Geologic Processes	Seismic Activity
Geology and Soils	Subsurface Geologic Processes	Volcanic Features and Processes
Human Use	Consumptive Use	Consumptive Use
Human Use	Cultural Landscapes	Cultural Landscapes
Human Use	Non-point Source Human Effects	Non-point Source Human Effects
Human Use	Point-Source Human Effects	Point-Source Human Effects
Human Use	Visitor and Recreation Use	Visitor Use
Landscapes	Energy Flow	Primary Production
Landscapes	Extreme Disturbance Events	Extreme Disturbance Events
Landscapes	Fire and Fuel Dynamics	Fire and Fuel Dynamics
Landscapes	Landscape Dynamics	Land Cover and Use
Landscapes	Nutrient Dynamics	Nutrient Dynamics
Landscapes	Soundscape	Soundscape
Landscapes	Viewscape	Viewscape/Dark Night Sky
Water	Hydrology	Groundwater Dynamics
Water	Hydrology	Marine Hydrology
Water	Hydrology	Surface Water Dynamics
Water	Water Quality	Aquatic Macroinvertebrates and Algae
Water	Water Quality	Microorganisms
Water	Water Quality	Nutrient Dynamics
Water	Water Quality	Toxics
Water	Water Quality	Water Chemistry