



Earth Gauge

A National Environmental Education Foundation Program

National Parks & Wildlife

Water resources on our public lands provide space for recreation, enjoyment of nature and vital habitat for many wildlife species. On **September 26, 2009**, volunteers at **National Public Lands Day (NPLD)** events throughout the country will work to improve water quality on public lands by planting native vegetation to reduce polluting runoff, testing for water quality and cleaning up rivers, lakes and wetlands. Find an NPLD project in your community by visiting **www.publiclandsday.org** and read on to learn about the wildlife that depend on water resources in National Parks and Lakeshores throughout the country.

Southeast: Biscayne and Dry Tortugas National Parks

The third largest coral reef in the world and the only living tropical reef in the U.S. runs from Biscayne Bay to Dry Tortugas National Park off the coast of Florida. Coral reefs are home to diverse sea life, including manatees, sharks and thousands of fish species. These fragile ecosystems are sensitive to changes in the environment such as reduced water quality and changes in water temperature. Warmer waters and other stressors can cause "coral bleaching" episodes, where corals expel the algae that live on them, exposing their white skeletons. Bleaching makes corals more susceptible to disease and competing species, and less able to reproduce or build their skeletons; prolonged bleaching episodes can result in the deaths of entire coral colonies.



What can you do?

Protecting water quality around coral reefs helps these ecosystems stay healthy and better withstand other stressors, such as changes in water temperature. In many cities, water in the storm system travels directly to local streams, rivers and the ocean untreated, where it can impact water quality and wildlife. Before applying fertilizers or pesticides in your yard, check the local forecast. Wait for dry weather to make sure lawn care products are not washed away with rain water.

Great Lakes: Pictured Rocks, Apostle Islands and Sleeping Bear Dunes National Lakeshores



The Great Lakes Region is warmer than it was 50 years ago and trends in earlier snowmelt and lower water levels have been observed. Lake Superior has warmed by 2.5 degrees Fahrenheit since 1980 and cold water trout species have declined in Pictured Rocks and Apostle Islands National Lakeshores along the Lake. In 2006, thousands of birds were killed at Sleeping Bear Dunes National Lakeshore on Lake Michigan when botulism made its way up the food chain through invasive species; Zebra and Quagga mussels fed on algae containing the botulism toxin and were eaten by invasive fish called Round Gobies, which were in-turn eaten by Great Lakes waterfowl, including loons and cormorants. Scientists believe that warmer waters, lower lake levels and increased seasonal influxes of nutrients make it easier for botulism to survive.



What can you do?

Avoid spreading invasive species to new waters. If you own a boat, thoroughly clean it before putting it into the water and before transporting it to another body of water. Remove any visible mud, plants and animals, and drain any water left in the boat before you move it.

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Knowledge to live by

Mid-Atlantic: Chesapeake Bay Gateways Network

Diseases, water pollution and overharvesting have all contributed to the decline of the Chesapeake Bay oyster population to less than one percent of its population in the 1800's. A marine parasite (*Perkinsus marinus*) which can cause massive die-offs of the Eastern Oyster (*Crassostrea virginica*) used to rarely be spotted north of the Chesapeake Bay. Since 1992, outbreaks have been occurring as far as 310 miles north of the Bay. The winter water temperature off of the East Coast is an important predictor of the parasite's success – since the 1960's, increasing water temperatures have helped the parasite expand its range to the north.



What can you do?

Protecting water quality helps oysters stay healthy and better withstand other stressors, such as parasites. Failing septic tanks contribute to poor water quality – when sewage leaks into the ground, it contaminates groundwater and the Bay. If you have a septic system, prevent water pollution by diverting rain water runoff from downspouts away from your septic drainfield to avoid transporting pollutants into groundwater supplies.

West: Yosemite and Sequoia National Parks

Scientists believe that Yellow-legged frogs now inhabit less than 10 percent of their original range in the Sierra Nevada Mountains, partially due to trout stocking in mountain lakes. Trout eat frogs and their young, but removal of trout from some lakes in Yosemite and Sequoia National Parks has helped frog populations recover. Unfortunately, other impacts on frog populations, such as degraded water quality, are still a problem. Because frogs have permeable skin, pollutants like pesticides can easily pass into their systems, making them sick.



What can you do?

Rain washes pesticides away from yards into our streams and lakes, where they can kill amphibians and fish. If you are thinking of applying pesticides in your yard, remember this: Most bugs are good bugs! Less than 15 percent of the bugs in your yard are pests. If you must use a pesticide, make sure you identify the pest and the proper treatment. Check the local forecast for dry weather and follow application instructions carefully.

Pacific Northwest: Olympic and Mount Rainier National Parks

Olympic and Mount Rainier National Parks are home to the headwaters of several streams used by salmon. Over the last half of the 20th century, November-to-March temperatures in the Pacific Northwest rose by about 4.5 degrees Fahrenheit. This corresponded to less snowpack, earlier melting of snowpack and more late winter and early spring precipitation falling as rain instead of snow. The point in the year when river levels peak now arrives an average of nine days earlier than it did in the 1950's. Earlier peak flow means average autumn stream levels are lower than they were 50 years ago and water is warmer. Salmon are cold water species and cannot tolerate significant rises in temperature; low stream levels also impede salmon's ability to navigate the waters.



What can you do?

Give salmon a hand by helping to restore streams and rivers. Volunteer to work on river and stream restoration projects with NPLD or organizations like Trout Unlimited (www.tu.org). At home, plant native shrubs and trees on stream banks to provide stability during heavy rains and increased shade during hot weather, creating a more stable environment for salmon and trout.

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