

Text-only File
Checking in on the Health of America's Rivers and Streams Storymap
U.S. Environmental Protection Agency

1. Why are rivers and streams important?

Americans rely on rivers and streams for sources of drinking water and for swimming, fishing, and boating. Rivers and streams are also home to fish and provide food and water for wildlife. Because rivers and streams are important, it is crucial to know how they are doing.

2. What did the survey find?

1. Nutrient pollution is widespread and worsening.
 - 58% of our river and stream miles have nutrient pollution. This is an increase of 10% compared to the previous survey.
 - Nutrient pollution can lead to algal blooms, some of which can be harmful. Microcystin, an algal toxin, was found in 37% of river and stream miles but rarely at levels of concern.
2. Nearly half of river and stream miles have unhealthy biological communities.
 - 44% of our river and stream miles have unhealthy biological communities. Insects, crayfish, and worms are used as indicators because they can be sensitive to changes in their environment.
 - Rivers and streams with nutrient pollution are more likely have unhealthy biological communities compared to those without nutrient pollution.
3. Half of river and stream miles have healthy riverside vegetation.
 - 58% of river and stream miles have good riverside vegetation. This is an increase of 5% compared to the previous survey.
 - Shoreline vegetation can help reduce nutrient and sediment runoff, prevent erosion and provide shade to reduce water temperature.
4. One-third of river and stream miles are potentially unsafe for recreation.
 - Enterococci, bacteria that indicate fecal contamination and the presence of disease-causing organisms, were above the human health threshold in 30% of river and stream miles.
 - To ensure water is safe for swimming and recreation, consult local water quality advisories.
5. Contaminants in fish tissue were common in large rivers, with human health concerns varying by contaminant.
 - Mercury concentrations were high in 24% of the sampled population of rivers. PCB concentrations were high in 49% of the sampled population of rivers. PFOS concentrations were high in 8% of the sampled population of rivers.
 - Eating fish has many health benefits, but to ensure healthy choices consult local fish consumption advisories before consuming fish caught recreationally.

3. How did EPA, States, and Tribes conduct this study?

- **What sites were sampled?**
EPA selected river and stream sites across the US using a randomized approach. Probabilistic surveys are often used in natural and social science fields and in health studies to assess populations by surveying a representative sample. This approach generates unbiased population estimates within a defined margin of error. 1,853 sites were sampled in 2013-14 that together represent the target population of 750,000 miles of flowing rivers & streams across the country. EPA is 95% confident that conditions are within a +/- 3% margin of error of the national percentages reported here. Results are compared to the first rivers and streams survey that was conducted in 2008-09.
- **What field collection methods were used?**
Crews used [standardized field methods](#) to collect comparable data from across the country. Samples and measurements were taken to assess the physical, chemical and biological integrity of rivers and streams and to assess recreational concerns to humans. Click below to learn more! (coming soon). (Links will open in a new tab).
- **How is good vs. poor condition determined?**
The highest quality biological, chemical, and physical habitat condition varies naturally across the country. Therefore, data are assessed in a geographical context that considers what conditions are expected. Click below to learn more! (coming soon). Other indicators that do not vary naturally across the country (human health concerns, acidification, & riparian disturbance) use nationally consistent thresholds. (Links will open in a new tab).

4. What is the condition of rivers and streams in my part of the country?

In addition to identifying broad-scale national issues, the survey assesses conditions for [different parts of the country](#). This helps to target efforts that address relevant issues at the regional level. Click on the regions to view the extent of poor condition and the top stressors in your part of the country. To view more results for each of the regions, visit the [interactive data dashboard](#). (Links will open in a new tab).

- **Coastal Plains:** In the Coastal Plains (CPL), 64% of river and stream miles are in poor biological condition, faring worse than the national average. The top stressors in the CPL are nutrients (total nitrogen and phosphorus) and riparian vegetation cover.
- **Northern Appalachians:** In the Northern Appalachians (NAP), 37% of river and stream miles are in poor biological condition, similar to the national average. The top stressors in the NAP are nutrients (total nitrogen and phosphorus) and riparian vegetation cover.
- **Northern Plains:** In the Northern Plains (NPL), 38% of river and stream miles are in poor biological condition, similar to the national average. However, this region saw improvements, the percent of miles in good condition increased by 14 percentage points from 2008-09. The top stressors in the NPL are nutrients, salinity, and riparian disturbance.
- **Southern Appalachians:** In the Southern Appalachians (SAP), 47% of river and stream miles are in poor biological condition, similar to the national average. The top stressors in the SAP are nutrients (total nitrogen and phosphorus), riparian disturbance, riparian vegetation cover, and excess sediment.

- **Southern Plains:** In the Southern Plains (SPL), 26% of river and stream miles are in poor biological condition, faring better than the national average. The percent of miles in good condition decreased by 14 percentage points from 2008-09, indicating condition may be worsening. The top stressors in the SPL are nutrients (total nitrogen and phosphorus) and riparian disturbance.
- **Temperate Plains:** In the Temperate Plains (TPL), 46% of river and stream miles are in poor biological condition, similar to the national average. The top stressors in the TPL are nutrients (total nitrogen and phosphorus), excess sediment, riparian disturbance, and riparian vegetation cover.
- **Upper Midwest:** In the Upper Midwest (UMW), 30% of river and stream miles are in poor biological condition, faring better than the national average. The top stressors in the UMW are nutrients (total nitrogen and phosphorus) and riparian vegetation cover.
- **Western Mountains:** In the Western Mountains (WMT), 30% of river and stream miles are in poor biological condition, faring better than the national average. The top stressor in the WMT is total phosphorus.
- **Xeric:** In the Xeric (XER) desert southwest, 44% of river and stream miles are in poor biological condition, similar to the national average. Further, the percent of miles in good condition decreased by 11 percentage points from 2008-09, indicating condition may be worsening. The top stressors in the XER are total phosphorus and riparian disturbance.

5. What can be done to protect our rivers and streams?

Rivers and streams are vital to our country's history, culture, and economy. Here are a few examples of what you can do to help:

- Pick up pet waste
- Choose phosphate-free detergents, soaps, and household cleaners
- Apply fertilizers sparingly and responsibly on your lawn or garden
- Participate in tree planting and stream restoration groups
- Practice green landscaping, such as rain barrels and rain gardens, to help capture stormwater

Management actions by state and local governments in partnership with the public, nonprofits, and businesses can help protect our rivers and streams by:

- Adopting numeric nutrient water quality criteria
- Improving nutrient removal in wastewater treatment
- Expanding shoreline buffers by planting native vegetation
- Protecting & restoring wetlands
- Supporting farmers' efforts to manage nutrients and runoff
- Creating market incentives for nutrient management and stream protection

[Learn about more actions you can take to protect rivers and streams.](#) Link will open in a new tab

6. Explore all the data and results

Download the [Report](#), [Technical Report](#), and [Factsheet](#). Use the [data dashboard](#) to explore additional results:

- Condition results for each indicator
- Different subpopulations like ecoregions, river basins and EPA regions
- Relationships between chemical and physical habitat stressors and benthic macroinvertebrate and fish communities
- Results for streams only and change in condition from the Wadeable Streams Assessment in 2004

Download all of the 2013-2014 data by filtering the table by Survey: <https://www.epa.gov/national-aquatic-resource-surveys/data-national-aquatic-resource-surveys>

Links will open in a new tab

7. Acknowledgments

The National Rivers and Streams Assessment is part of the [National Aquatic Resource Surveys](#), a series of probabilistic assessments conducted through an EPA, state, and tribal partnership. EPA thanks the state, tribal, and many other partners who contributed to this effort including scientists, field and lab staff, and analysts. Link will open in a new tab.