



Fish and Shellfish Program NEWSLETTER

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<https://www.epa.gov/fish-tech>

Recent Advisory News

Alabama Department of Public Health Issues 2022 Fish Consumption Advisories

On June 3, 2022, the Alabama Department of Public Health (ADPH) updated its fish consumption advisories based on data collected the preceding fall by the Alabama Department of Environmental Management (ADEM).

ADEM, the Tennessee Valley Authority, and the Alabama Department of Conservation and Natural Resources collected samples of specific fish species for analysis from various waterbodies throughout the state during the fall of 2021 (365 samples from 34 collection stations). ADPH assessed the analytical results to determine whether any of the tested contaminants in the fish may give rise to potential human health effects.

Fish consumption advisories are issued for specific waterbodies and specific species taken from those areas. In reservoirs, advisories apply to waters as far as a boat can be taken upstream in a tributary, that is, to full pool elevations.

Newly issued advisories will be represented as the safe number of meals of that species of fish that can be eaten in a given period of time, such as meals per week, meals per month or do not eat any. A meal portion consists of 6 ounces of cooked fish or 8 ounces of raw fish.

New and updated consumption advisories issued for the 34 bodies of water tested can be found on the ADPH website: alabamapublichealth.gov/tox/fish-advisories. Alabama’s updated advisories include advisories for mercury, perfluorooctane sulfonic acid (PFOS), and polychlorinated biphenyls (PCBs).

The advice contained in this release and complete listings of the posted fish consumption advisories are offered as guidance to individuals who wish to eat fish they catch from various waterbodies throughout the state. No regulations ban the consumption of any of the fish caught within the state, nor is there a risk of an acute toxic episode that could result from consuming any of the fish containing the contaminants for which the state has conducted analyses.

A fish consumption advisory can be issued for one or more specific species of fish within a waterbody, or an advisory can be extended to include all fish species within that waterbody. When excess levels of a contaminant are found in a specific species of fish, an advisory is issued for that specific species. For example, if an advisory had been issued for largemouth bass and not for channel catfish, it would be advised that individuals should not eat largemouth bass, but consumption of channel catfish is permissible without endangering health. When excess levels of a contaminant are found in multiple fish species sampled from a specific waterbody, a Do Not Eat Any advisory is issued. Consumption of any fish from a specific waterbody under a Do Not Eat Any advisory may place the consumer at risk for harm from the contaminant.

If a species is listed in the advisory, it is prudent to assume that similar species with similar feeding habits should be consumed with caution. For example, if black crappie is listed and white crappie is not, because they are in the same family, all crappie would fall under the listed advisory.

For more information, contact John Guarisco at John.Guarisco@adph.state.al.us.

Source: https://www.alabamapublichealth.gov/blog/2022/06/nr_03.html

EPA News

2023 National Fish Forum Registration is Live

The U.S. Environmental Protection Agency (EPA), Office of Water, will hold a virtual National Forum on Contaminants in Fish (Fish Forum) to bring together interested stakeholders to discuss the many issues related to human health and contaminants in fish. The free virtual conference will be held as follows:

- **Week 1:** February 28 and March 2, 2023 (12:00 - 5:30 PM Eastern Time)
- **Week 2:** March 7 and 9, 2023 (12:00 - 5:30 PM Eastern Time)

Some topics likely to be covered include:

- Latest science on specific contaminants in fish and their impacts on human health (e.g., per- and polyfluoroalkyl substances [PFAS], mercury, PCBs, and cyanotoxins)
- Emerging science in developing fish consumption advisories
- Risk communication and public engagement strategies for fish consumption advisories
- Issuing/rescinding fish consumption advisories
- Effectiveness of fish consumption advisories

- Environmental justice: Protection of high frequency fish consumers, such as subsistence fishers and fishers in underserved communities
- Community/participatory science: Roles and practices
- Sampling and analysis: Practices and methods

Register for the Fish Forum at: https://usepa.zoomgov.com/webinar/register/WN_h_jwofutQ1GjDim2P51Ubg.

If you plan to [submit an abstract](#) for consideration, please submit all materials for consideration by Wednesday, November 2, 2022. Your abstract should be no longer than 250 words.

For more information, visit <https://www.epa.gov/fish-tech/2023-national-fish-forum>.

EPA Announces \$79 Million Investment from President Biden's Bipartisan Infrastructure Law to Protect and Restore the Columbia River Basin

Up to \$6.9 million in Clean Water Act and Bipartisan Infrastructure Law funding will be awarded to reduce toxics in fish and water, address climate impacts in communities throughout the Basin

On August 10, 2022, at an event along the Columbia River in Portland, Oregon, U.S. EPA Administrator Michael S. Regan announced the \$79 million investment from President Biden's Bipartisan Infrastructure Law to protect and restore the Columbia River Basin. The announcement includes \$6.9 million in Bipartisan Infrastructure Law and Clean Water Act grants to be awarded this year for projects to reduce toxics in fish and water and address climate impacts in communities throughout the Columbia River Basin. Administrator Regan was joined by EPA Regional Administrator for the Pacific Northwest Casey Sixkiller, Senator Jeff Merkley, Senator Ron Wyden, and tribal, state, and local leaders for the announcement.

"The Columbia River Basin is a vital economic engine and an irreplaceable environmental asset, providing a broad range of benefits from agriculture to recreation to electricity, but toxic contaminants in the basin pose a serious risk," said EPA Administrator Michael S. Regan. "Through the investments from President Biden's Bipartisan Infrastructure Law, we will make unprecedented progress in our efforts to restore and protect these waters, clean up harmful pollution and deliver economic and environmental benefits to the communities supported by the basin."

The EPA Columbia River Basin Program received \$79 million from President Biden's [Bipartisan Infrastructure Law](#). This funding provides EPA the ability to grow the Columbia River Basin Restoration Program and significantly increase competitive grants throughout the Basin to reduce toxics. EPA will be awarding 12 grants using infrastructure law funds in 2022 totaling \$3.8 million. EPA plans to issue additional Requests for Applications in 2022-2023 using infrastructure law funds to increase toxics reduction through agricultural best practices, stormwater green infrastructure, pollution prevention, contaminated sites cleanup, and community education and engagement.

“Since time immemorial, communities throughout the Columbia River Basin have relied on the river for life and for the nutritional, economic, cultural, and spiritual gifts it provides,” said EPA Regional Administrator Casey Sixkiller. “Today we get to celebrate the vital work being done by our tribal, state, and local partners to preserve and protect this resource for future generations.”

“Water is the lifeblood of our state and our communities; from irrigation to recreation and tribal traditions,” said Senator Jeff Merkley (D-Oregon), who amended the Clean Water Act to create the Columbia River Basin Restoration Program. “We must do everything we can to keep our rivers and waterways clean and healthy. Funding from the Columbia River Restoration Program will reduce toxic contaminants in the Basin so folks can totally enjoy boating and fishing in Oregon waters. Thanks to the Bipartisan Infrastructure Law, we are providing \$79 million to fund grants for this long-term effort.”

“This is great news for the Columbia River Basin and all the Oregonians pulling together to protect this iconic waterway from toxics, so it continues to be a scenic treasure that creates joy and generates economic strength for generations to come,” said Senator Ron Wyden (D-Oregon). “These resources, from the Bipartisan Infrastructure Law, I was proud to support will help Oregon build a national model that employs best practices for agriculture, develops green infrastructure, promotes pollution prevention, and increases citizen education and involvement.”

EPA announced the following grants as examples of how this program is building community and tribal government capacity around the basin. This announcement includes seven initial grants totaling \$1.8 million focused on toxics reduction, community engagement, and pollution prevention projects occurring throughout the Basin. An additional 18 projects will be funded by later this fall.

- **Salmon-Safe Columbia Basin Pledge: Accelerating water quality protection in the Columbia Basin** (\$342,000 – funded by Bipartisan Infrastructure Law) Salmon-Safe will build on the successful rollout of Salmon-Safe initiatives in interior Columbia Basin tributaries that were implemented with the first phase of EPA funding. Salmon-Safe Columbia Basin Pledge will scale up activities in these tributaries, particularly in Idaho, while introducing a new Trout-Safe initiative across western Montana and the Wyoming portion of the Teton River Valley and upper Snake River. Salmon-Safe will roll out the Columbia Basin Pledge, engaging 250 farmers across multiple crop sectors and other large-scale land managers, in actions to protect downstream water quality. Earning Salmon-Safe certification will require that these mostly large-scale, diversified farms reduce or eliminate the use of pesticides that are harmful to fish and wildlife, and reduce runoff and wind erosion, while also improving soil health, riparian habitat, irrigation efficiency, and protecting wildlife habitat and enhancing native biodiversity. The project is a long-term strategy to reduce toxics and enhance climate resiliency in the watershed, while demonstrating market support to maintain viable farming operations.
- **Pesticide Behavior Change Project of Oregon & Southwest Washington** (\$347,412 – funded by Bipartisan Infrastructure Law) The City of Gresham, Oregon, will implement Phase II of the Pesticide Reduction Outreach (PRO) Campaign, previously funded by an EPA Columbia River Basin Restoration grant. This project will be managed by the City of Gresham, the Clean Rivers Coalition Steering Committee, and its partners. The PRO Campaign will focus on reducing human exposures and environmental releases

of residential and commercial pesticides. This project will launch pilot projects geared towards residential Do-It-Yourself lawn care audiences and small business Hispanic/Latino lawn care landscapers without pesticide licenses. The project help reduce pesticide use by teaching and engaging the key audiences about integrated pest management techniques and benefits.

- **Columbia River Pollution Education and Outreach Project** (\$125,452) Columbia Riverkeeper will help reduce toxic pollution in the Columbia Basin by conducting youth and community pollution education and outreach. The project will promote citizen engagement and knowledge about EPA’s priority toxics and pollution reduction programs through school, community, and online engagement and by educating and inspiring students and community members on sources of toxic pollution, reduction strategies, and actions to prevent pollution. This project builds on and expands Riverkeeper’s successful Columbia Gorge Pollution Prevention Outreach and Education Program funded by EPA in 2020 and 2021. Specifically, the project will provide high-quality, field and online-based toxic pollution education to 1,200 kindergartens through community college students from diverse communities in the Columbia River Gorge.
- **Reducing PFAS and Phthalates in Local Water Systems within the Columbia Basin** (\$118,044) Oregon Association of Clean Water Agencies (ACWA) will work to produce actionable information for ACWA and its member agencies to reduce and better assess sources of PFAS and phthalates in municipal wastewater and stormwater systems. The results of this effort will advance water quality improvement strategies for two priority chemical classes of emerging concern and will directly inform ACWA’s approaches for addressing other types of toxic pollutants through its prospective Toxics Reduction Strategy.
- **Engaging Communities to Monitor Mercury Risk in the Columbia River Basin** (\$349,919) Oregon State University (OSU) will work to implement a fine-scale, community-based mercury monitoring network in the Willamette River Valley to document trends in biotic mercury contamination at a fine scale across various environmental and demographic gradients, identifying pollution drivers, and informing safer fishing practices. Using established curricula, OSU will engage and educate community scientists to sample dragonfly larvae as mercury bioindicators (in a “biosentinel” network), connecting people to the freshwater systems on which they depend, and increasing public knowledge of mercury risks to ecosystem and human health.
- **Columbia Slope Water Quality Monitoring Phase 2** (\$246,860) and **Waste Incentive Network** (\$255,837) The City of Vancouver, Washington, will collect 18 months of water quality data at ten locations along the Columbia Slope to accurately establish current conditions, provide baseline data for future trend analysis, and determine the effectiveness of stormwater management practices. Water quality data will also be used to identify and prioritize outfall basins where future stormwater treatment retrofits would be effective in removing contaminants that are currently reaching the Columbia River. In a separate project, the city will work with its existing waste hauler, Clark County Public Works, and other private waste haulers, to improve dangerous waste disposal for business and multi-family residential waste through a project called the Waste Incentive Network. The city will reduce pollution and threats to human and aquatic health by encouraging proper waste disposal and raising awareness about the water pollution risks of improper waste disposal.

What they are saying

Kathleen George, Oregon Environmental Quality Commission Chair and Confederated Tribes of the Grand Ronde Tribal Council member said, “The need is huge. The time is now. Our fish and rivers can’t wait. We have built and fed our communities on the riches of our rivers. We have taken but very rarely do we give back. This investment of \$79 million will jump start the much-needed work of reducing toxic pollution that harms our waters and everyone who relies on them.”

“The Umatilla Tribes have worked for decades with our federal and state partners to protect our First Foods; the water, the fish, big game, the roots, and berries,” said Confederated Tribes of the Umatilla Indian Reservation Tribal Council Corrine Sams. “Pollution threatens those foods as well as each and every one of us. Together we can restore those foods and the environment on which they depend.”

“With support from EPA, Columbia Riverkeeper will help to reduce toxic pollution in the mid-Columbia,” said Columbia Riverkeeper Executive Director Lauren Goldberg. “We are excited to keep up the community-based momentum for a clean Columbia with high-quality online, field- and classroom-based pollution prevention education to community members and students from diverse communities in the Columbia River Gorge.”

“Salmon-Safe has partnered with environmentally innovative farmers in the mid-Columbia Basin for more than a decade to introduce market-based incentives for water quality protection and habitat restoration practices on agricultural lands,” said Salmon-Safe Executive Director Dan Kent. “With support from EPA Columbia River Basin Restoration Program, Salmon-Safe is scaling up our grower outreach, farm assessment, and market recognition efforts throughout the interior Columbia Basin, building new partnerships with place-based conservation organizations and tribal governments across the region, including upper Snake River tributaries. We look forward to building on this work with a new Columbia River Pledge to significantly expand the audience we activate in our water quality protection and salmon recovery efforts, including beginning to engage urban developers in cities like Spokane and Boise.”

“The City of Vancouver is excited to launch the Waste Incentive Network; we will use this program to reduce pollution and threats to human and aquatic health by promoting proper waste disposal,” said City of Vancouver Interim Surface Water Manager Kris Olinger. “Additional water quality monitoring along the Columbia Slope will help us identify and prioritize stormwater retrofit projects to remove contaminants from urban road runoff that discharges to the Columbia River.”

Background on the Columbia River Basin

The Columbia River Basin covers 260,000 square miles, 16 federally recognized tribes, across seven states including Oregon, Washington, Idaho, Montana, and Wyoming. The Basin provides benefits including commercial fisheries, agriculture, forestry, recreation, and electric power generation. Human activities have contributed toxic contaminants to the environment and throughout the basin, fish species have accumulated contaminant levels that are harmful to people and wildlife. Toxics in fish are a primary health concern for Columbia River Basin tribal people and other high fish consumers.

Congress amended the Clean Water Act in 2016 by adding Section 123, establishing a Columbia River Basin Restoration Program to develop a voluntary, competitive grant program for eligible entities to fund environmental protection and restoration programs throughout the basin. In 2020, EPA awarded \$2,053,903 in 14 grants throughout the basin to tribal and state governments, municipalities, NGOs, universities, and other entities. These grant projects are implementing and developing monitoring, promoting agricultural best practices, building green infrastructure, and increasing pollution prevention and public engagement and education.

The Columbia River Basin Restoration Program is focused on engaging tribal and underserved communities in efforts to identify and reduce threats to their environment and community health. EPA's commitment to reducing toxics in fish and water in the Columbia River Basin is key to EPA's ongoing trust responsibility to tribal governments. Toxics reduction will support climate resilience for the Columbia River Basin ecosystem by reducing aquatic ecosystem and human health stressors in an environment stressed by severe climatic events.

Learn more about the Columbia River Basin at <https://www.epa.gov/columbiariver>.

For more information, contact Suzanne Skadowski at skadowski.suzanne@epa.gov or (206)-553-2160.

Source: <https://www.epa.gov/newsreleases/epa-announces-79-million-investment-president-bidens-bipartisan-infrastructure-law-o>

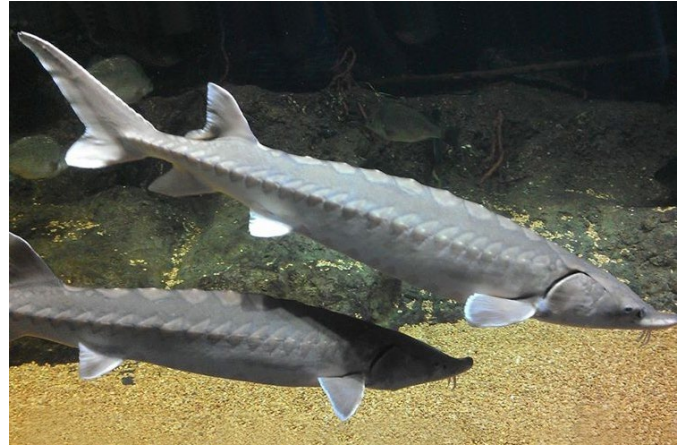
Other News

United States Geological Survey Study Suggests Atlantic Sturgeon Spawning Population Declined by More Than 99% in the Delaware River Since the Late 1800s

On July 25, 2022, United States Geological Survey (USGS) scientists reported that spawning habitat degradation, poor water quality, overharvesting and bycatch mortality – unintentional deaths caused by commercial fishing – have resulted in significant declines in Atlantic sturgeon populations. This ultimately resulted in a coastwide fishing ban in 1997 for the species and their listing under the Endangered Species Act of the United States in 2012. Known for their size, growing as long as 14 feet, Atlantic sturgeon are culturally important and were once sought after for their prized caviar, which is the primary reason they were overfished.

“The Delaware River population of Atlantic sturgeon has been the focus of several research efforts, and these new estimates of population size will provide important information resource managers can use to improve the conservation of this endangered fish,” said David Kazyak, an ecologist with the USGS Eastern Ecological Science Center and co-author of the study.

Atlantic sturgeon are a long-lived, migratory species that spend most of their lives in the ocean but spawn in freshwater rivers. Historical records show the species once spawned in at least 35 rivers in the United States and Canada, with the Delaware River thought to have supported the largest population of Atlantic sturgeon. Scientists now believe only 22 rivers still support naturally reproducing populations of the fish.



Atlantic sturgeon swimming. (Photo courtesy of NOAA Fisheries)

Estimating the population size of Atlantic sturgeon is challenging because adults are rare and travel across vast areas in the river and ocean making them difficult to capture. In the Delaware River, sturgeon occupy a shipping channel frequented by large cargo vessels, which makes most fish-sampling methods unsafe. Together, this has led to a lack of data needed to determine the number of adults that reproduce in this river.

To fill this data gap, researchers analyzed the deoxyribonucleic acid (DNA) of thousands of juvenile Atlantic sturgeon and built a genetic family tree to identify the total number of parents that reproduced each year. This method is ideal for Atlantic sturgeon, as capturing juveniles is often easier than capturing adults, providing a new opportunity to estimate spawning population size.

“This genetics method is relatively new, and this is the first time it has been used to study Atlantic sturgeon,” Kazyak said. “Similar genetics-based approaches have been used with other species of sturgeon, such as lake sturgeon in the Great Lakes, but we needed to ensure that it would work for Atlantic sturgeon.”

To determine whether their estimates of spawning population size were accurate, the researchers ran simulations to determine how data limitations could change the results of their analyses. Comparing the simulation results to their estimates of spawning population size in the Delaware River, the researchers concluded that the breeding population size was likely less than 250 adults, thus confirming their genetics-based estimates.

This research project meets the science needs of many cooperators, including the Atlantic States Marine Fisheries Commission (ASMFC). This compact of states from Maine to Florida is responsible for coordinating state and federal conservation and recovery efforts for Atlantic sturgeon.

“This project demonstrates the effective science support partnership benefits between USGS and ASMFC as directed under the Atlantic Coastal Fisheries Cooperative Management Act,” said Tom O’Connell, Director of the USGS Eastern Ecological Science Center. “Results from this project will have a direct benefit in informing conservation of Atlantic sturgeon by state and federal managers working together under the auspices of the commission.”

The study was done in collaboration with the State University of New York-Oswego, Delaware Division of Fish and Wildlife, Delaware State University, and Environmental Research and Consulting, and was published in Ecological Applications: <https://doi.org/10.1002/eap.2602>.

For more information, contact Jason Burton at jburton@usgs.gov.

Source: <https://www.usgs.gov/news/state-news-release/usgs-study-suggests-atlantic-sturgeon-spawning-population-declined-more-99>

Warming of the Oceans Due to Climate Change will Mean Fewer Productive Fish Species

Study Results Present a Mixed Picture of Ocean Health

On May 16, 2022, researchers reported warming of the oceans due to climate change will mean fewer productive fish species to catch in the future, according to a [new study](#). As temperatures warm, changing predator-prey interactions will prevent species from keeping up with conditions where they could thrive, the researchers found.

The United States ([U.S.](#)) [National Science Foundation \(NSF\)](#)-funded results, published in the journal *Proceedings of the Royal Society B*, present a mixed picture of ocean health. "The impact of a warming ocean on marine ecosystems will be complex and difficult to predict," said Mike Sieracki, a program director in NSF's Division of Ocean Sciences. "This study helps us know what to look for as the ocean changes so we can best manage our resources."

Not only will large species and commercially important fisheries shift out of their historical ranges as climate warms, but they will likely not be as abundant even in their new geographic ranges. A cod fisher in the Atlantic, for example, might still find fish 200 years from now, but in significantly fewer numbers.

"While the species we fish today will be there tomorrow, they will not be there in the same abundance," said study coauthor Malin Pinsky of [Rutgers University](#). "Overfishing becomes easier because the population growth rates are low. Warming coupled with food-web dynamics will be like putting marine biodiversity in a blender."

Previous studies of shifting habitat ranges focused on the direct impacts of climate change on individual species. While these "one-at-a-time" species projections offer insights into the composition of ocean communities in a warming world, they have largely failed to consider how food-web interactions will affect the pace of change, the researchers said.

The new study looked at trophic interactions – the process of one species being nourished at the expense of another – and other food-web dynamics to determine how climate change affects species' ranges.

Using sophisticated computer models, the researchers determined that predator-prey interactions are likely to cause many species, especially large predators, to shift their ranges more slowly than climate is changing.

"The model suggests that over the next 200 years of warming, species are going to continually reshuffle and be in the process of shifting their ranges," said lead author E.W. Tekwa at the University of British Columbia. "Even after 200 years, marine species will still be lagging behind temperature shifts. That's particularly true for those at the top of the food web."

For more information, contact info@nsf.gov.

Source: <https://beta.nsf.gov/news/warming-oceans-due-climate-change-will-mean-fewer-productive-fish-species>

Recently Awarded Research

More Than \$770,000 Awarded for Ruth Gates Coral Restoration Innovation Grants Projects

Projects will Develop Novel Coral Restoration and Intervention Methods to Restore Resilient Coral Ecosystems

On August 10, 2022, the National Oceanic and Atmospheric Administration (NOAA) awarded approximately \$771,000 in funding for 2022 to support efforts to restore resilient coral ecosystems. The funding is supporting four projects that will enhance coral resilience and improve the long-term success and efficiency of shallow-water coral reef restoration in a changing climate.

Globally, coral reefs are rapidly declining in health. While coral restoration efforts have been successful at a local level, we need to develop innovative interventions. They will improve the efficiency and long-term effectiveness of coral restoration activities in order to restore resilient, genetically diverse, and reproductively viable coral populations at a larger scale.

Projects will enhance research and development of interventions to improve coral resilience to environmental stressors. They will also support novel techniques to improve the efficiency and effectiveness of coral population enhancement.

NOAA awarded funding for one new project and three continuing, multi-year projects.

New Project

[Nova Southeastern University](#) will work with [Mote Marine Laboratory](#), [The Florida Aquarium](#), and the [University of North Carolina, Wilmington](#). They will determine the optimal light to maximize the survival and growth of young corals before, during, and immediately after the uptake of their algal endosymbionts. This will enable them to rapidly and effectively upscale production of genetically diverse corals for restoration. (\$356,210)



Scientists maintain corals growing in a coral reef nursery. The coral fragments will later be used to restore a degraded reef. (Photo courtesy of NOAA)

Continuing Projects

- The University of Hawai'i is addressing a knowledge gap by assessing how selectively bred corals can increase adaptation in natural reproduction by improving the temperature tolerance of future coral populations. (\$142,811)
- The Pennsylvania State University is analyzing four coral species in the U.S. Virgin Islands and Florida to understand genetic and molecular mechanisms related to thermal tolerance and resilience. (\$151,394)
- Johnston Applied Marine Science is testing a new settlement substrate for coral larvae in order to scale up coral restoration efforts through the outplanting of sexually derived juvenile corals and build capacity in the Commonwealth of the Northern Mariana Islands to implement coral sexual propagation. (\$120,907)

Ruth Gates Coral Restoration Innovation Grants

This competition is in direct response to the National Academies of Sciences, Engineering, and Medicine study on [Interventions to Increase the Resilience of Coral Reefs](#). The NOAA Coral Reef Conservation Program funds these innovation grants, which are a part of NOAA's effort to restore resilient coral ecosystems. [Learn more about the Ruth Gates Coral Restoration Innovation Grants](#).

For more information, contact Liz Fairey at liz.fairey@noaa.gov.

Source: <https://www.fisheries.noaa.gov/feature-story/more-770000-awarded-ruth-gates-coral-restoration-innovation-grants-projects>

Tech and Tools

Sharing the Tools of Sustainable Fishery Management

NOAA Fisheries supports Guam and American Samoa with the Tools Necessary to Develop Plans that Protect their Fishery Resources

They say it takes a village. But sometimes it takes a multi-agency, Pacific-wide collaboration.

With help from NOAA Fisheries, the U.S. Coral Reef Task Force, and local partners, the U.S. territories of Guam and American Samoa are on their way to developing their first sustainable coral reef fishery management plans. Once completed, these plans will chart a path forward to ensure the islands' marine resources are around for future generations to enjoy.

"The territories are taking a proactive approach in leading their efforts for sustainable coral reef fisheries management," said Fatima Sauafea-Le'au, American Samoa coral reef fisheries liaison with NOAA Fisheries' Pacific Islands Regional Office (PIRO).

Importantly, NOAA will have no ownership of the plans added Jonathan Brown, Guam coral reef fisheries liaison, NOAA Fisheries PIRO. "The resources that will be managed are within the local jurisdictions," he said. "We are just

in a support role, providing tools to help them develop the plans and helping them form partnerships with entities like The Nature Conservancy.”

One such tool is called [FishPath](#). FishPath provides a suite of potential management options for a species based on answers to a lengthy questionnaire about the fishery. It can be used in data-limited fisheries, like the coral reef fisheries in the Pacific Islands.

Brown and agency partners held a workshop for Guam’s management agencies in June 2022 to teach them how to use the tool to develop management options. These measures could then be incorporated into their sustainable fishery management plans.



Tanfaced parrotfish (*Chlorurus frontalis*) and whitespotted surgeonfish (*Acanthurus guttatus*) are common fish families in American Samoa coral reef ecosystems. (Photo courtesy of NOAA Fisheries)

American Samoa, with Sauafea-Le’au’s support, held its FishPath workshop in May 2022. It also conducted an analysis of appropriate management options that will help the territory achieve its management goals.

More workshops will be held in 2023, and the local resource management agencies will continue discussions to refine their management options. They’ll also work with community members whom the measures would affect.

“This initial workshop,” Brown said, “was just the first step of the process.”

Charting a Path

Guam’s fishery management representatives, including the Guam Department of Agriculture and Division of Aquatic & Wildlife Resources, attended the FishPath workshop. Other attendees included scientists with NOAA Pacific Islands Fisheries Science Center, the University of Guam, and the University of Hawai‘i. The American Samoa planning team is led by the Department of Marine and Wildlife Resources, the [Coral Reef Advisory Group](#), and the Pacific Islands Regional Office. The advisory group includes members such as the American Samoa Environmental Protection Agency, National Marine Sanctuary, and Community College.

Prior to the 5-day workshops, facilitated by The Nature Conservancy and NOAA Northwest Fisheries Science Center, attendees went through part of the [FishPath](#) tool on their own for the islands’ respective management plan priority coral reef fish species. During the workshop, they reviewed selected species questionnaires. The facilitators led discussions to formulate and understand management options and work through non-consensus answers.

“The real value of FishPath is not just coming up with options for management,” Brown said. “It’s a tool that really generates open discussion. It’s transparent and creates this level playing field of understanding.”

The tool provided a list of possible management options, graded on viability, which the facilitators helped whittle down to a smaller list. Some options were contentious for various reasons. For example, they didn’t help the fishery quickly enough, contained too many variables to understand their full effect, or were too costly.

In the end, the collaborators landed on two potential measures that would protect reproducing females and their egg-producing capacity. These include establishing size limits and reducing the number of adult fish that can be legally caught. These measures will ensure that the fishery has the reproduction and recruitment necessary to be sustainable.

The Path Forward

Given limitations on capacity, funds, and knowledge, taking a species-level approach to managing the fisheries doesn't seem viable, Brown explained. Instead, Guam and American Samoa will likely focus on so-called indicator species.

Fish species can be grouped in various ways, such as by family (groupers, snappers, etc.) or functionally (herbivores, carnivores, etc.). Within a given group, the health of certain species will often be defined by their life history and biology. By grouping species, managers can infer how the population of one species in a group is doing based on the indicator species. Managers can then use the indicator species to develop management measures for the group and monitor that species to assess the overall health of the group.

Guam's fishery managers will likely have another workshop focusing on indicator species. They'll then share their resulting management measures with the community, making sure the fishing community can contribute to the knowledge and help build the plan. Similarly, American Samoa will use the FishPath tool for its remaining pool of indicator species and take this collection of information into a second workshop to begin framing its plan, according to Sauafea-Le'au.

Fisheries management is an active and adaptive process. It requires close monitoring of the resource. American Samoa and Guam will have to develop assessment tools to monitor and evaluate the health of their managed species and effectiveness of their management plans.

Managing the fish is only half the story. Land-based activities, such as watershed runoff and coastal development, can harm fish populations by reducing the quantity or quality of their habitats, including coral reefs, seagrasses, and mangroves. After completing the fishery component of the management plan, the resource managers will move on to the non-fishery or habitat component.

"On small islands, we're so tied to the fish and our resources," Brown said. "We're doing this for our future generations."

More Information is Available at:

- [FishPath Tool](#)
- [Conserving Habitat in the Pacific Islands Region](#)

For more information, contact Pacific Islands Regional Office at piro.info@noaa.gov.

Source: <https://www.fisheries.noaa.gov/feature-story/sharing-tools-sustainable-fishery-management>

Recent Publications

Journal Articles

The list below provides a selection of research articles.

- ▶ [Investigating Fish Contamination Scenario and Community Willingness to Adopt Consumption Advice Proposing an Advisory Option](#)
Alam, L., Sumaila, U. R., Bari, M. A., Rusydy, I., Musthafa, M. S., & Mokhtar, M. 2022. Investigating fish contamination scenario and community willingness to adopt consumption advice proposing an advisory option. *Environmental Science and Pollution Research International* 29(16): 24167–24179.
- ▶ [Follicular Fluid and Blood Levels of Persistent Organic Pollutants and Reproductive Outcomes Among Women Undergoing Assisted Reproductive Technologies](#)
Björvang, R. D., Hallberg, I., Pikki, A., Berglund, L., Pedrelli, M., Kiviranta, H., Rantakokko, P., Ruokojärvi, P., Lindh, C. H., Olovsson, M., Persson, S., Holte, J., Sjunnesson, Y., & Damdimopoulou, P. 2022. Follicular fluid and blood levels of persistent organic pollutants and reproductive outcomes among women undergoing assisted reproductive technologies. *Environmental Research* 208: 112626.
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Upcoming Meetings and Conferences

11th U.S. Symposium on Harmful Algae

October 23-28, 2022

Albany, NY

Small Pelagic Fish: New Frontiers in Science and Sustainable Management

November 7-11, 2022

Lisbon, Portugal

115th Annual Meeting of the National Shellfisheries Association

March 26-30, 2023

Baltimore, MD

2023 National Fish Forum

February 28, March 2, March 7, and March 9, 2023

Virtual

Additional Information

This bimonthly newsletter highlights current information about fish and shellfish.

For more information about specific advisories within the state, territory, or tribe, contact the appropriate state agency listed on EPA's National Listing of Fish Advisories website at <https://fishadvisoryonline.epa.gov/Contacts.aspx>.

For more information about this newsletter, contact Sharon Frey (Frey.Sharon@epa.gov, 202-566-1480).

Additional information about advisories and fish and shellfish consumption can be found at <https://www.epa.gov/fish-tech>.