



Fish and Shellfish Program NEWSLETTER

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

Recent Advisory News



New PFAS Fish Consumption Advisories Issued for Castle Rock Lake and Lake Mohawksin

Elevated levels of PFAS found in several fish species

On October 11, 2022, the Wisconsin Department of Natural Resources (DNR) and the Department of Health Services (DHS) announced new consumption advisories for several fish species in Castle Rock Lake and Lake Mohawksin, both of which are segments of the Wisconsin River, following results of fish sampling.

Elevated levels of perfluorooctane sulfonate (PFOS), a type of per- and polyfluoroalkyl substance (PFAS), were detected in several fish species sampled from both Castle Rock Lake and Lake Mohawksin in March and April 2021, respectively. As a result, the DNR and DHS recommend the following consumption guidelines for anyone harvesting fish from those waterbodies:

CASTLE ROCK LAKE (Adams/Juneau Counties): Advisory is from the Petenwell Flowage Dam to the Castle Rock Lake Dam.

Species	Previous Advisory	New Advisory
Bluegill	General/Statewide*	1 meal/week
Yellow Perch	General/Statewide*	1 meal/week
Black Crappie	General/Statewide*	1 meal/week
Common Carp	1 meal/month (polychlorinated biphenyls)	1 meal/month (polychlorinated biphenyls) (No change)

*The general/statewide consumption advice for women <50 and children is 1 meal/week for panfish and 1 meal/month for all other species. For women >50 and men, the general/statewide consumption advice is 1 meal/week for all species except for panfish, which are unrestricted.

LAKE MOHAWKSIN (Lincoln County): Advisory begins at the Lake Alice Kings Dam, the Jersey City Flowage Dam and the confluence of the Little Somo River, and the Somo River. From those points, this advisory applies downstream to Pride Dam at the Tomahawk Mill.

Species	Previous Advisory	New Advisory
Bluegill	General/Statewide*	1 meal/week
Pumpkinseed	General/Statewide*	1 meal/month
Yellow Perch	General/Statewide*	1 meal/week
Black Crappie	General/Statewide*	1 meal/month
Rock Bass	General/Statewide*	1 meal/month

*The general/statewide consumption advice for women <50 and children is 1 meal/week for panfish and 1 meal/month for all other species. For women >50 and men, the general/statewide consumption advice is 1 meal/week for all species except for panfish, which are unrestricted.

PFAS are a group of human-made chemicals that have been used for decades in various products, such as non-stick cookware, fast food wrappers, stain-resistant sprays, and certain types of firefighting foams that have made their way into the environment.

Health risks may increase when fish with high levels of PFAS are consumed. These can include increased cholesterol levels, decreased immune response, and decreased fertility in women, among other health effects.

[More information is available on the DHS website.](#)

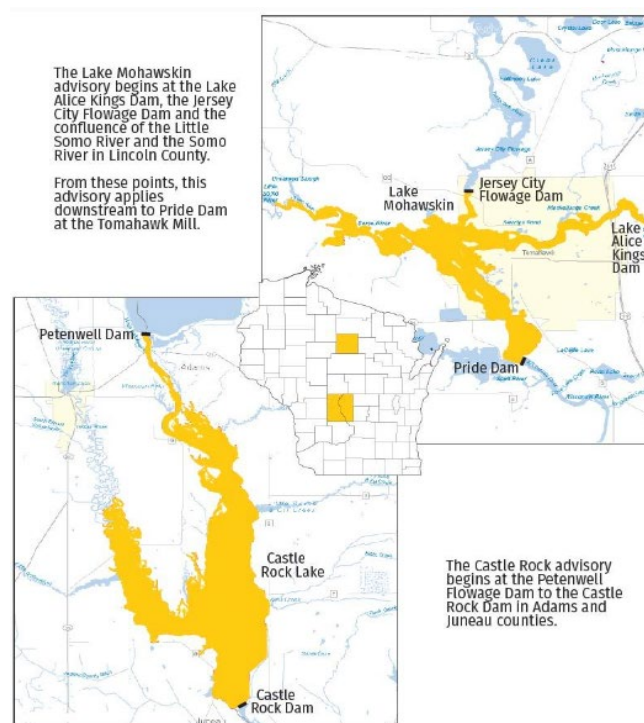
Following fish consumption advisories will help protect you from consuming excess PFOS, polychlorinated biphenyls (PCBs), and mercury.

There are consumption advisories already in place for various stretches of the Wisconsin River. A complete list of up-to-date consumption advisories can be found in the DNR's [Choose Wisely booklet](#).

Additional [fish consumption advice](#) and information on the [effects of PFAS](#) can be found on the DNR's website.

For more information, contact Sean Strom at Sean.Strom@Wisconsin.gov or DNR's press office at DNRPress@wisconsin.gov.

Source: <https://dnr.wisconsin.gov/newsroom/release/63526>



(Photo courtesy of Wisconsin Department of Natural Resources)

EPA News

EPA Begins Third Five-Year Review of Upper Hudson River PCBs Cleanup

On April 19, 2022, the United States Environmental Protection Agency (EPA) announced it initiated its third five-year review of the cleanup of the Hudson River PCBs Superfund site, which extends from Hudson Falls, New York, to the Battery in New York City. Dredging to remove PCBs from a 40-mile stretch of the upper Hudson River between Fort Edward and Troy, New York, was completed in 2015. The cleanup was conducted by General Electric (GE) Company under the oversight of and a legal agreement with EPA.



Dredging activities in the upper Hudson River, New York. (Photo courtesy of EPA Region 2)

The purpose of this five-year review, which is legally required under the Superfund law every five years after the start of on-site construction at a site, is to ensure that the cleanup is working as intended and protective of people's health and the environment.

"As we continue our work to monitor and assess the upper Hudson, move forward with the Hudson River floodplain investigation and evaluate how best to assess the lower Hudson, EPA is committed to continuing to fully engage our state and federal partners and the site's Community Advisory Group during the five-year review process," said EPA Regional Administrator, Lisa F. Garcia. "It has been EPA's long-standing experience on this iconic site that engagement from the public has strengthened our work and served well communities up and down the Hudson."

EPA will, in part, be evaluating new data collected since the second five-year review was conducted in 2017. As part of the upcoming five-year review, EPA will review the fish, water and sediment data collected between 2017 and 2021. This five-year review will be one of many future reviews and will not serve as the final assessment of the cleanup, rather, it will evaluate whether the stated goals of the cleanup are being met, or are expected to be met, based on the available data.

In the second five-year review report, issued in 2019, EPA deferred a determination about the protectiveness of the cleanup remedy in the Upper Hudson River until additional Hudson River fish tissue data could be gathered. As described in the second five-year review, it is anticipated that additional years of data may be needed to determine the rate of fish recovery with statistical confidence. Lowering PCB levels in fish tissue is the key objective of the cleanup remedy selected in 2002 by EPA.

The Operation, Maintenance, and Monitoring phase of the upper Hudson cleanup will continue. During this phase, there is ongoing monitoring to track the ongoing recovery of the river. EPA will also continue to conduct periodic five-year reviews.

The upcoming five-year review will also include a review of actions taken as a result of a 1984 cleanup plan for the areas of PCB-contaminated sediment upstream of the areas targeted for dredging. These areas, known as the remnant deposits, became exposed after the river water level dropped following removal of the Fort Edward Dam in 1973. These areas are now capped, maintained, and monitored.

EPA's other activities to address contamination in the Upper Hudson include an ongoing comprehensive floodplain investigation to evaluate and address PCB contamination that may be present in sediment carried onto low-lying shoreline areas in the Upper Hudson River. EPA also recently announced an agreement with GE to investigate contamination in the Lower Hudson River.

EPA expects to release the third five-year review report in spring 2023 and will make it available for public input. Prior to issuing the report, EPA also will present on the progress of the review to the site's Community Advisory Group (CAG). CAG meetings are open to the public and information about the meetings will be announced in advance. EPA anticipates the third five-year review report will be completed by summer 2023. The five-year review report will be available on [EPA's Hudson River webpage](#).

Between the 1940's and 1970's, GE discharged PCBs into the Hudson River from its two former capacitor manufacturing plants in Fort Edward and Hudson Falls, New York. In 2002, EPA issued a [Record of Decision](#) calling for the targeted environmental dredging of approximately 2.65 million cubic yards of PCB-contaminated sediment from a 40-mile stretch of the Upper Hudson River between Fort Edward and Troy, New York, followed by a period of monitored natural recovery predicted to extend more than five decades. The dredging and capping work in the Upper Hudson River was conducted between 2009 and 2015.

For more information about the Hudson River PCBs Superfund site, visit the [EPA Hudson River webpage](#).

For more information, contact Larisa Romanowski at romanowski.larisa@epa.gov.

Source: <https://www.epa.gov/newsreleases/epa-begins-third-five-year-review-upper-hudson-river-pcb-cleanup>

Other News

FDA and Federal Partners Launch Study on the Role of Seafood Consumption in Child Growth and Development

On October 11, 2022, the U.S. Food and Drug Administration (FDA) announced the launch of an independent study by the National Academies of Sciences, Engineering, and Medicine (NASEM) on the [Role of Seafood Consumption in Child Growth and Development](#). The FDA is partnering with the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Agriculture, and U.S. EPA on this study, which supports the goals of the FDA's [Closer to Zero Action Plan](#) for reducing the exposure of babies and young children to mercury, arsenic, lead, and cadmium from foods.

Seafood is part of a healthy eating pattern and provides key nutrients during pregnancy, breastfeeding, and/or early childhood to support a child's brain, spinal cord, and immune system development. At the same time, seafood is the primary dietary source of mercury, which is spread throughout the environment by both natural and human-made processes. Mercury can damage the nervous system, and babies and young children are more vulnerable to the harmful health effects of mercury. Seafood can also be a source of exposure for other naturally occurring and human-made contaminants. NASEM will convene a committee of experts to conduct systematic reviews of the scientific literature on seafood nutrition and toxicology; taken together, these data will inform the basis for evaluating how seafood consumption impacts child growth and development.

This study is designed to provide the most up-to-date understanding of the science of seafood consumption and child growth and development. Better understanding the science on mercury exposure from food is an important step in the cycle of continual improvement in the FDA's [Closer to Zero Action Plan](#). The study will also help inform whether updates are needed for the current [advice about eating fish](#) for children and those who might become or are pregnant or breastfeeding.

NASEM will publish the committee's report after the study is complete, in approximately 18 months. The FDA will use the report's findings, along with other data and information, to advance policies and programs that support healthy child growth and development.

During this time, the FDA will continue to provide information about how those who are or might become pregnant or caring for young children can choose seafood varieties consistent with limiting exposure to mercury. The FDA will use updated analytical methods to collect and analyze new data on the mercury content of seafood. The FDA also plans to conduct research with consumers to better understand how the agency can provide information that may help families consider how to make seafood part of a healthy diet.

Source: <https://www.fda.gov/food/cfsan-constituent-updates/fda-and-federal-partners-launch-study-role-seafood-consumption-child-growth-and-development>

Study funded by the U.S. National Science Foundation Reports 'Forever Chemicals' Destroyed by Simple Method

New process causes PFAS to degrade into benign end products

On September 12, 2022, the U.S. National Science Foundation (NSF) reported encouraging research findings on PFAS treatment. PFAS, manufactured chemicals commonly used since the 1940s in nonstick and waterproofing agents, are called "forever chemicals" for good reason. Bacteria can't eat them; fire can't incinerate them; and water can't dilute them. And, if these toxic chemicals are buried, they leach into surrounding soil, becoming a problem for generations.

Now, [Northwestern University](#) chemists have done the seemingly impossible. The research team developed a process that causes two major classes of PFAS compounds to fall apart — leaving behind only benign end products.

"PFAS has become a major societal problem," said Northwestern's William Dichtel, who led the study. "Even just a tiny amount of PFAS causes negative health effects, and it does not break down. We wanted to use chemistry to create a solution. It's exciting because of how simple that solution is."

The [NSF](#)-supported research was published in the journal [Science](#). The technique could be a way of disposing of these harmful chemicals, which are linked to negative effects in humans, livestock, and the environment. The substances have made their way into drinking water and into the blood of 97% of the U.S. population.

While studying PFAS compounds, Dichtel's team found a weakness in them. PFAS contains a long tail of unyielding carbon-fluorine bonds. But at one end of the molecule, there is a charged group that often contains oxygen atoms. Dichtel's team targeted this group by heating the PFAS in dimethyl sulfoxide — an unusual solvent for PFAS destruction — with sodium hydroxide, a common reagent.

"That triggered all these reactions and started spitting out fluorine atoms from the compounds to form fluoride, which is the safest form of fluorine," Dichtel said. "Although carbon-fluorine bonds are super-strong, the charged group is the Achilles' heel."

The new technique relies on a simple, inexpensive reagent, making the solution potentially more practical for widespread use.

Source: <https://beta.nsf.gov/news/forever-chemicals-destroyed-simple-method>

Recently Awarded Research

EPA Awards \$75,000 Environmental Justice Grant to Keweenaw Bay Indian Community to Assess Pollution

On April 19, 2022, EPA announced it awarded \$75,000 to the Keweenaw Bay Indian Community (KBIC) under the Environmental Justice Small Grants (EJSG) program. The funding will provide support to identify legacy and current environmental pollutants in the community, conduct an environmental risk assessment and develop materials to distribute project findings.

"EPA's Environmental Justice Small Grants program helps tribal nations to better understand possible health risks from environmental contamination," said EPA Regional Administrator Debra Shore. "This funding supports these communities in taking action to ensure that people are protected from environmental risks and potential health hazards."

"This EPA EJ [Environmental Justice] funding opportunity will assist KBIC with the completion of a health risk assessment focusing on environmental contaminants," said KBIC President Kim Klopstein. "This study will analyze the impacts of risk values set for the general population that are not reflective of our tribal lifeways and those members who rely on the environment to hunt, fish, and gather."

Environmental pollution that harms water quality can pose higher risks to tribal nations like the Keweenaw Bay Indian Community, who harvest significant amounts of native fish species to feed their families, as well as to use during ceremonies and other cultural practices. The area around the KBIC L'Anse reservation is subject to multiple stressors from current industrial facilities, such as a mixed-fuel power plant, and historical legacy pollutants. Legacy pollution from past copper mining operations have left contaminated byproducts that include heavy metals such as mercury, polycyclic aromatic hydrocarbons (PAHs), PCBs, phthalates, coal tars, nitrates, and ammonia compounds.

The EJSG project will help build capacity to understand these impacts and educate community members on possible exposures and risks from pollution. The information generated during the project could help develop future community guidelines, recommendations, research studies, and program planning.

The EJSG program provides funding directly to community-based organizations and tribes for projects that help residents of underserved communities understand and address local environmental and public health issues. The term “underserved community” refers to a community with environmental justice concerns or vulnerable populations, including people of color, low-income, rural, tribal, indigenous, and homeless populations. The long-term goals of the program are to support communities in their efforts to build overall capacity and create self-sustaining, community-based partnerships that will improve local environments in the future.

Find out more about the [EJSG program](#).

See a complete list of [EJSG program recipients](#).

Source: <https://www.epa.gov/newsreleases/epa-awards-75000-environmental-justice-grant-keweenaw-bay-indian-community-assess>

Tech and Tools

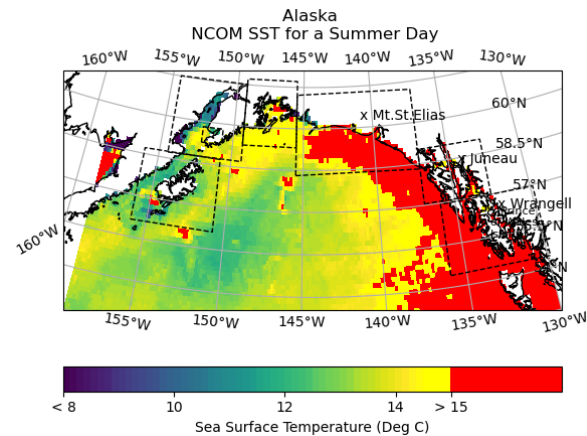
New Tools Predict Sea Surface Temperature to Inform Safe Harvest of Alaska Oysters

On August 2, 2022, the National Centers for Coastal Ocean Science (NCCOS) announced two new tools — now available to growers, farmers, and managers in Alaska's coastal waters — that will alert users when surface waters reach temperatures that favor *Vibrio* growth. The first tool uses satellite observations to determine the maximum sea surface temperature (SST) reached over the last week. The second tool predicts SST over the next four days.

Vibrio parahaemolyticus (*Vp*) are naturally occurring bacteria in coastal waters. Eating raw or undercooked seafood with high levels of *Vibrio* can cause infection. While these cases can be uncomfortable (e.g., upset stomach, gastroenteritis), they seldom cause serious illness. However, *Vibrio* infections and concerns surrounding them can have negative impacts on restaurants and the shellfish industry.

Temperature is a major driver of *Vp* growth. In general, once water temperatures exceed 59 degrees Fahrenheit, growth will occur, with faster replication at higher temperatures (Goertz et al. 2013). Because of the strong dependence on temperature for growth, SST is used in some cases to trigger harvest restrictions. The new [Alaska SST Tools](#) can help in planning safer harvest and cooling strategies by indicating when and where temperatures have already or are likely to exceed this threshold.

The [Alaska Max SST tool](#) shows the maximum SST over the last seven days derived from Visible Infrared Imaging Radiometer Suite (VIIRS) at a nadir resolution of about 750 meters (NOAA CoastWatch). The temperature scale is demarcated at the critical temperature of 59 degrees Fahrenheit with red or with the darkest shade in the color-blind scale option.



Alaska's sea surface temperature (SST) Navy Coastal Ocean Model (NCOM) for a summer day. (Photo courtesy of NCCOS)

The [Alaska Navy Coastal Ocean Model \(NCOM\) model tool](#) shows SST forecasts at a resolution of 3.6 kilometers or 1/30th of a degree. Forecast images are shown in a loop at an interval of every three hours over the next four days.

The tools were developed by the NCCOS Cooperative Oxford Lab in collaboration with the NCCOS Kasitsna Bay Lab, NOAA CoastWatch, and the [State of Alaska Division of Environmental Health- Food Safety and Sanitation](#). NCCOS produces several [Vibrio predictive models](#) that improve the safety of oysters by assisting coastal managers and shellfish growers in oyster harvest decision making nationwide.

[Sign up](#) to receive forecast updates and breaking news on *Vibrio*.

For more information, contact Robert Daniels at Robert.Daniels@noaa.gov, Ava Ellett at Ava.Ellett@noaa.gov, John Jacobs at John.Jacobs@noaa.gov, and Varis Ransi at Varis.Ransi@noaa.gov.

Source: <https://coastalscience.noaa.gov/news/new-tools-predict-sea-surface-temperature-to-inform-safe-harvest-of-alaska-oysters/>

Recent Publications

Journal Articles

The list below provides a selection of research articles.

- [Using Recreational Tournament Records to Construct a 53-year Time Series of the Florida Keys Recreational Bonefish Fishery](#)
Boucek, R.E., J.S. Rehage, N.A. Castillo, E. Dwoskin, S.M. Lombardo, R.O. Santos, C. Navarre, M.F. Larkin, and A.J. Adams. 2022. Using Recreational Tournament Records to Construct a 53-year Time Series of the Florida Keys Recreational Bonefish Fishery. *Environmental Biology of Fishes*.

- ▶ [Cascading Effects of Climate Change on Recreational Marine Flats Fishes and Fisheries](#)
Danylchuk, A.J., L.P. Griffin, R. Ahrens, M.S. Allen, R.E. Boucek, J.W. Brownscombe, G.A. Casselberry, S.C. Danylchuk, A. Filous, T.L. Goldberg, A.U. Perez, J.S. Rehage, R.O. Santos, J. Shenker, J.K. Wilson, A.J. Adams, and S.J. Cooke. 2022. Cascading Effects of Climate Change on Recreational Marine Flats Fishes and Fisheries. *Environmental Biology of Fishes*.
- ▶ [Biophysical Indicators and Indigenous and Local Knowledge Reveal Climatic and Ecological Shifts with Implications for Arctic Char Fisheries](#)
Falardeau, M., E.M. Bennett, B. Else, A. Fisk, C.J. Mundy, E.S. Choy, M.M.M. Ahmed, L.N. Harris, and J.-S. Moore. 2022. Biophysical Indicators and Indigenous and Local Knowledge Reveal Climatic and Ecological Shifts with Implications for Arctic Char Fisheries. *Global Environmental Change* 74:102469.
- ▶ [Introduction of Spatial Management in a Temperate Abalone \(genus *Haliotis*\) Fishery: What Can Be Learned From Spatial Variability in Catches?](#)
Ferguson, G.J., and S. Mayfield. 2022. Introduction of Spatial Management in a Temperate Abalone (Genus *Haliotis*) Fishery: What Can Be Learned from Spatial Variability in Catches? *Fisheries Management and Ecology*.
- ▶ [Engaging Formal and Informal Institutions for Stewardship of Rockfish Fisheries in the Gulf of Alaska](#)
Gordon, J.Y., A.H. Beaudreau, E.M. Saas, and C. Carothers. 2022. Engaging Formal and Informal Institutions for Stewardship of Rockfish Fisheries in the Gulf of Alaska. *Marine Policy* 143:105170.
- ▶ [In Vitro Glucuronidation of Caribbean Ciguatoxins in Fish: First Report of Conjugative Ciguatoxin Metabolites](#)
Gwinn, J.K., S. Uhlig, L. Ivanova, C.K. Fæste, F. Kryuchkov, and A. Robertson. 2021. In Vitro Glucuronidation of Caribbean Ciguatoxins in Fish: First Report of Conjugative Ciguatoxin Metabolites. *Chemical Research in Toxicology* 34(8):1910-1925.
- ▶ [How do Human Actions Affect Fisheries? Differences in Perceptions Between Fishers and Scientists in the Maine Lobster Fishery](#)
McClenachan, L., N.R. Record, and J. Waller. 2022. How Do Human Actions Affect Fisheries? Differences in Perceptions Between Fishers and Scientists in the Maine Lobster Fishery. *FACETS* 7:174-193.
- ▶ [Identifying Management Actions that Promote Sustainable Fisheries](#)
Melnichuk, M.C., H. Kurota, P.M. Mace, M. Pons, C. Minto, G.C. Osio, O.P. Jensen, C.L. de Moor, A.M. Parma, L. Richard Little, D. Hively, C.E. Ashbrook, N. Baker, R.O. Amoroso, T.A. Branch, C.M. Anderson, C.S. Szuwalski, J.K. Baum, T.R. McClanahan, Y. Ye, A. Ligas, J. Bensbai, G.G. Thompson, J. DeVore, A. Magnusson, B. Bogstad, E. Wort, J. Rice, and R. Hilborn. 2021. Identifying Management Actions that Promote Sustainable Fisheries. *Nature Sustainability* 4(5):440-449.
- ▶ [Indigenous Oyster Fisheries Persisted for Millennia and Should Inform Future Management](#)
Reeder-Myers, L., T.J. Braje, C.A. Hofman, E.A. Elliott Smith, C.J. Garland, M. Grone, C.S. Hadden, M. Hatch, T. Hunt, A. Kelley, M.J. LeFebvre, M. Lockman, I. McKechnie, I.J. McNiven, B. Newsom, T. Pluckhahn, G. Sanchez, M. Schwadron, K.Y. Smith, T. Smith, A. Spiess, G. Tayac, V.D. Thompson, T. Vollman, E.M. Weitzel, and T.C. Rick. 2022. Indigenous Oyster Fisheries Persisted for Millennia and Should Inform Future Management. *Nature Communications* 13(1):2383.
- ▶ [Rapid Recovery of Depleted Abalone in Isla Natividad, Baja California, Mexico](#)
Smith, A., J. Aguilar, C. Boch, G. Leo, A. Hernández-Velasco, S. Houck, R. Martinez, S. Monismith, J. Torre, C. Woodson, and F. Micheli. 2022. Rapid Recovery of Depleted Abalone in Isla Natividad, Baja California, Mexico. *Ecosphere* 13.
- ▶ [Restored Oyster Reefs Match Multiple Functions of Natural Reefs Within a Decade](#)
Smith, R.S., B. Lusk, and M.C.N. Castorani. 2022. Restored Oyster Reefs Match Multiple Functions of Natural Reefs Within a Decade. *Conservation Letters* 15.
- ▶ [Contaminant Concentrations and Risks Associated With the Pacific Oyster in the Highly Urbanized San Diego Bay](#)
Talley, T.S., C. Loflen, R. Gossett, D. Pedersen, N. Venuti, J. Nguyen, and R. Gersberg. 2022. Contaminant Concentrations and Risks Associated with the Pacific Oyster in the Highly Urbanized San Diego Bay. *Marine Pollution Bulletin* 174:113132.
- ▶ [The Vital Roles of Blue Foods in the Global Food System](#)
Tigchelaar, M., J. Leape, F. Micheli, E.H. Allison, X. Basurto, A. Bennett, S.R. Bush, L. Cao, W.W.L. Cheung, B. Crona, F. DeClerck, J. Fanzo, S. Gelcich, J.A. Gephart, C.D. Golden, B.S. Halpern, C.C. Hicks, M. Jonell, A. Kishore, J.Z. Koehn, D.C. Little, R.L. Naylor, M.J. Phillips, E.R. Selig, R.E. Short, U.R. Sumaila, S.H. Thilsted, M. Troell, and C.C.C. Wabnitz. 2022. The Vital Roles of Blue Foods in the Global Food System. *Global Food Security* 33:100637.

► [Ecotoxicology of Mercury in Burbot \(Lota lota\) from Interior Alaska and Insights Towards Human Health](#)

Walther, E.J., D.E. Arthur, A. Cyr, K.M. Fraley, T. Cabbage, E. Hinkle, J. McMahon, and P.A.H. Westley. 2022. Ecotoxicology of Mercury in Burbot (Lota lota) from Interior Alaska and Insights Towards Human Health. Chemosphere 298:134279.

Upcoming Meetings and Conferences

[2023 National Fish Forum](#)

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)

Virtual

[13th National Monitoring Conference](#)

April 24–28, 2023

Virginia Beach, VA

[115th Annual Meeting of the National Shellfisheries Association](#)

March 26–30, 2023

Baltimore, MD

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>.