



The NOAA FISHERIES NAVIGATOR

Watch Out for Munitions at Sea, and What to Do if You Find One!

Munitions are military weapons, ammunition, equipment and stores (reserves of nuclear, chemical, and conventional munitions). They may include mines, torpedoes, depth charges, artillery shells, bombs, and missiles. Underwater munitions may contain explosives or chemical agents. As most fishermen know, in the years following World War I and even more so after World War II, large quantities of captured, damaged, and obsolete munitions were disposed of in the sea.

The presence of forgotten munitions is a unique threat to commercial fishermen. During commercial marine operations, nets, bottom tending gear, and dredges may catch or dredge up munitions or unexploded ordinance from the ocean. Clearly, these munitions pose a danger to vessels and crews. It is important to be aware of them so that you can recognize a munition if you come across one, and know how to handle the situation

Threats and Hazards

Munitions present two main threats to commercial fishermen. First, many contain energetic material that

can self-detonate without warning. Second, some contain chemicals that can burn skin and nasal, throat and gastrointestinal tracts if inhaled.

All munitions, including those that have been lying dormant in sea or fresh water for many years, should be considered dangerous. In some cases, munitions that have been in water for a long period may actually have become more sensitive. Also, whether encountered at sea or on land, munitions might explode when moved, disturbed, or handled.

Detecting a Munition

Munitions submerged in sea water for any length of time may look new and be easy to identify, or they may be heavily rusted or encrusted with sea growth.

Vessel crews should be particularly alert for conditions or signs that could indicate the presence of chemical agents:

- Unusual odor from equipment or fish;
- A stinging sensation in the eyes;
- Burning or irritated skin;

- Presence of oily liquid; and
- Corroded containers or suspicious clay-like lumps.

Reporting a Munition

If you suspect that you have found unexploded ordinance, report it to the U.S. Coast Guard (Channel 16 – 156.800 MHz) as soon as possible by providing the following information:

- The vessel's position (use World Geodetic System 1984 [WGS-84] for reporting). If the exact position is unknown, give approximate coordinates, or a range and bearing from a charted feature.

- The activity (e.g., fishing, clamming, dredging) being conducted when the munition was encountered.

A general description of the munition's key features (i.e., size, shape, fins, markings) and overall condition, if observed or known.

- Any unusual odors.
- If the munition was returned to the water, provide:
- The position where it was returned to the water: the water depth, buoys or markings used, if any; and whether the location is near or within a charted disposal area;
- A description, if appropriate, of any entanglement (e.g., net, dredge);
- A description of surface or sub-surface structures within 1,000 yards.
- Never bring a munition into port. If a munition is found while in port, call 911.

What to do if munitions are recovered, but are not yet onboard:

Immediately stop all operations

- Do not bring the munition or gear containing it onboard, if possible
- Do not allow the munition to come or remain alongside the vessel where wave action could cause the munition to contact the hull
- If munition is caught in the gear, but has not been brought onboard, try to lower it safely back into the water, note the position and report it to the US Coast Guard

In:

- Shallow water (less than 130 feet), lower the munition to the bottom, buoy off the net or dredge recovery lines and remain in the area while awaiting assistance
- Deep water, stream the munition as far aft as possible, maintain steerageway, as necessary, and remain in the immediate area while awaiting assistance

What to do a munition is brought onboard:

- If gear with a suspected munition in it is brought over the deck, but it remains suspended and can be safely secured in place or nearby, immediately:
 - Secure the munition with guy lines to prevent movement, but do this as far away as possible from heat sources, vibrations and the crew;
 - Keep the crew upwind and as far away from the area as possible;
 - Minimize handling, and avoid disturbing (hitting, dropping or bending) any part of the munition;
 - Cover the munition with a tarp or wet cloth to reduce the potential for:
 - Deterioration of metal parts and release of its fill
- Explosives to dry out and become sensitive to shock
- Request assistance (Channel 16 – 156.800 MHz).

What to do if you think that a chemical munition or chemical agents are present:

Act immediately to protect the crew and vessel:

- Move all crew members upwind;
 - Steam into the wind to carry any contaminants away from the crew;
 - Close all doors and hatches;
 - Shut down all ventilation systems;
 - Flush the area thoroughly with water to wash the suspect chemical agent overboard;
 - Contact the U.S. Coast Guard for immediate assistance;
 - Do not steam into port, unless the U.S. Coast Guard advises you to do so.
 - If you suspect contamination by chemical agents:
 - Remove any contaminated or potentially contaminated clothing and place it in a plastic bag (double bag, if possible) and seal it or just throw the clothing overboard. Similar actions should be taken with contaminated or potentially contaminated tools;
 - Rinse the crew and the immediate area with large amounts of water. If possible, use warm soapy water;
 - Every effort should be made to prevent the potential spread of chemical contamination. Chemical agent-contaminated clothing and tools may expose other crew members to chemical agent and spread the contamination to other areas of the vessel. Crew members should not work in areas known or suspected to be contaminated by chemical agent. Vessels that may have come in contact with chemical agents should not bring their catch ashore until the State's department of environmental health has determined it is safe to do so.
- Should I bring the munition into port?
- No. Never bring a munition into port!**

The Importance of At-sea Monitors and Observers in the Northeast and Mid-Atlantic Region Commercial Fisheries

NOA's Northeast Fisheries Science Center's Fisheries Sampling Branch manages three programs in the Greater Atlantic Region:

The At-sea Monitoring Program, The Industry Funded Scallop Program, and The Northeast Fisheries Observer Program (NEFOP).

Our monitors and observers work on commercial fishing vessels in ports from Maine to North Carolina as a vital part of the fishery management process. They collect information during commercial fishing trips to inform the development of fisheries regulations.

There are similarities between the three types of monitoring programs. They record catch, gear and biological data and document sightings or interactions with protected species. There are also some differences unique to each type of monitoring program. At-sea monitors are deployed primarily on commercial groundfish vessels fishing with gillnet, bottom trawl and longline gear in the Northeast region. Industry funded scallop observers work on Atlantic sea scallop dredge and trawl vessels, and NEFOP observers are on commercial vessels fishing with gillnet, bottom trawl, midwater trawl, purse seine, clam dredge, lobster & fish

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How to Use Experimental Fishing Permits

Sometimes, fishermen want to develop and test new approaches to fishing that are restricted by existing regulations. NOAA Fisheries grants Experimental Fishing Permits, or EFPs. EFPs are temporary permits that allow fishermen to work outside of the existing regulatory system to explore ways to enhance our regional fisheries.

Each year, vessels may obtain an EFP to test alternative fishing strategies and gears that have the potential to influence how a fishery can operate. Some recent examples include:

Atlantic Trawler Fishing, Inc., was authorized to fish in Closed Areas I and II using an alternative square mesh codend to test whether they could harvest healthy Georges Bank haddock in these areas with minimal bycatch.

The Cape Cod Commercial Fishermen's Alliance was allowed to land incidentally caught barndoor skate, a prohibited species, to develop a premium barndoor skate market without undermining barndoor skate conservation goals.

The Massachusetts Division of Marine Fisheries (MADMF), working closely with whiting fishermen in the Gulf of Maine, was authorized to target whiting in Small Mesh Area 1 two weeks before the start of the season to inform potential changes to the whiting season in this area.

EFPs help fishermen and researchers explore ideas and develop more effective fishing practices. To enable oversight of the exempted fishing activity, and to help ensure data collected under the EFP can support



potential management changes in the future, EFPs include terms and conditions that need to be followed. For examples, fishing under EFPs often requires additional reporting and might include at-sea data collection requirements. NOAA Fisheries may be able to help support data collection, such as providing at-sea data collection technicians and help with data analysis.

To Apply for an EFP

EFP applications require information on the project goals, a list of the exemptions needed, and a description of how the work will be conducted. NOAA Fisheries staff can help refine ideas to improve the likelihood that an EFP application will be approved. Once complete, the Regional Administrator reviews each EFP request to make sure certain criteria are met. This process generally takes about 60 days after an



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application is submitted.

Questions to consider if you would like to develop an EFP application include:

What are the objectives of the project?

Does the scope of the research align with the research objectives?

Could the exemption increase the catch of overfished or depleted stocks, or have other negative impacts?

What information will be collected and will data analysis be needed?

When would the exempted fishing activity occur?

If you have questions or an idea for an EFP that you would like to discuss, contact Ryan Silva, Sustainable Fisheries Division, at ryan.silva@noaa.gov or call him at 978-281-9326. You may also contact Emily Keiley, Sustainable Fisheries Division, at emily.keiley@noaa.gov or 978-281-9116.

COOPERATIVE RESEARCH PROJECT UPDATES

Enhanced Biosampling Program Makes Good Use of Industry Samples

To improve federal stock assessments for some fish species, scientists at the Northeast Fisheries Science Center need to better understand their reproduction, including the size and age at which they mature and how many eggs they can produce. This requires sampling at specific stages before spawning, but these periods may not coincide with regular surveys.

Collaborative projects with the commercial fishing industry provide samples from more areas and seasons to help increase these data. Industry-based projects, including the Center's Study Fleet and Cooperative Gulf of Maine Longline Survey, have added more than 20,000 samples for reproductive studies.

These additional samples (part of the Enhanced Biosampling Program) have led to insights into yellowtail flounder reproduction, including annual variation, variation between stocks, and the effects of female condition. Sampling of winter flounder has shown low levels of skipped spawning, spatial variation in maturity, spawning seasonality, and reproductive potential. Through this work, Center scientists are examining the environmental and energetic drivers of reproduction in these and other commercially important fishes.

Center scientists are also evaluating herring samples for skipped spawning and the proportion of fish that spawn in the spring. Haddock in the Gulf of Maine and Georges Bank have fluctuated greatly in recruitment, so Center scientists are also examining haddock samples to better understand their reproductive dynamics. Recent efforts have also targeted sampling of data poor species such as cusk, which has limited life history information available in the western North Atlantic. Increased biological data obtained from commercial catches of these data poor species will help fill data gaps and improve information available to resource managers. For more information on the Enhanced Biosampling program, please contact Mark.Wuenschel@noaa.gov.

Low-Cost, Real-Time Oceanographic Data Transmission Systems in Development

For the past year and a half, the Northeast Fisheries Science Center's Oceanography and Cooperative Research Branches, partnering with fishermen, have been leveraging funds and opportunities to develop and test low-cost methods to transfer real-time oceanographic data from fishing

vessels. Two successful technology systems have been developed so far: the first combines modifications to GLOBSTAR transmitters (used previously on ocean drifters), recently-developed wireless temperature/depth recorders, and Windows software running on a laptop computer; the second, in final testing stages, involves a less expensive microcomputer, a new locally-developed temperature/depth recorder and an IRIDIUM satellite transmitter

As fishermen haul their gear with a wireless temperature sensor attached, the onboard computer system automatically sends the time, latitude and longitude, and average temperature and depth for the fishing effort to the satellite system. Within minutes, the data arrives at the lab in Woods Hole, which posts it on a website for the participating fishermen and collaborating scientists to view. This real-time transmission of oceanographic data can allow the data to be used by ocean researchers immediately, and allow for quick feedback to fishermen that they can use to fish more selectively and avoid unwanted bycatch.

We have collected and transmitted bottom temperature data from more than 1,750 hauls since the beginning of the project. Once fully developed, fishermen using these systems can report catch

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information and other data at a fraction of the cost of commercial ship-to-shore transmission. Additional sensors are being developed, including some that report directly to a smartphone instead of a shipboard computer. The systems are also being developed to deploy on unmanned sailboats, moored buoys, and drifters. Next steps also include investigating the possibility of extracting the temperature/depth feeds from existing net mensuration systems with temperature sensors, such as those made by NOTUS and Simrad. All of these advancements will enhance the data available to better understand ocean dynamics and drivers of fish distribution. For more information on this data telemetry work, please contact James.Manning@noaa.gov

Cooperative Witch Flounder Experiment Completed in Time for the 2016 Stock Assessment

A joint commercial fishing industry and Northeast Fisheries Science Center (NEFSC) team designed and completed an incredibly efficient August 2016 study onboard the F/V Karen Elizabeth. The study investigated the catchability of witch flounder in standard NEFSC bottom trawl survey gear. The experiment showed that the standard survey gear catches only approximately 29 percent of the witch flounder in its path. This value was then used to calculate a more accurate survey-based estimate of abundance across the entire stock area. Within weeks of the field

experiment, the data was analyzed and presented at the witch flounder benchmark assessment data meeting.

This analysis indicated that the field-based estimate of witch flounder abundance was about four times the estimate from the traditional stock assessment model. The result allowed the assessment working group to better understand the uncertainty in the output of the model. The causes of the difference between the field-based and model-based estimates are not yet fully understood, but the cooperative field experiment will help guide the continued management advice for this species. These types of targeted studies can help address important questions that can improve assessments for many important commercial species. For more information on this project, please contact David. Richardson@noaa.gov.



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Sea Scallop Research Set-Aside Awards Announced

NOAA Fisheries and the New England Fishery Management Council (NEFMC) are pleased to announce 17 projects that will be funded through the Atlantic Sea Scallop Research Set-Aside (RSA) Program. The Scallop RSA Program plays a vital part in supporting the region's most valuable commercial fishery.

"The Scallop Research Set-Aside Program continues to be integral to the successful management of this fishery," said New England Council Chairman Dr. John Quinn. "We genuinely appreciate everyone's long-standing engagement with this program. We have many industry members, managers, institutions, and researchers who help us set our research priorities, and this collaboration has fostered a constructive feedback loop between science and management."

The awards are expected to generate more than \$16 million; \$4 million to fund research and \$12 million to compensate industry partners that harvest set-aside quota. More than 30 researchers from 15 organizations will be conducting the projects.

Projects will address sea scallop research priorities established by the NEFMC. Among these are resource surveys to estimate scallop biomass, projects addressing bycatch reduction, and work to improve understanding of scallop biology and recruitment.

"The Research Set Aside program funds science projects that are directly applicable to the management of Atlantic sea scallop - a highly valuable resource," said Jon Hare, director of the Northeast Fisheries Science Center (NEFSC). "The selected projects complement research and monitoring that is ongoing at the NEFSC and this collaborative approach - enabled



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Looking for Gillnetters to Join Our Teams!

NOAA Fisheries is currently recruiting gillnetters to participate on the Harbor Porpoise and Atlantic Large Whale Take Reduction Teams, which aim to reduce marine mammal bycatch in commercial fishing gear.

Take Reduction Teams are comprised of federal, state, science, conservation, and fishing industry representatives. Team members meet once or twice a year, either in-person or by webinar. Travel for in-person meetings is reimbursed, including a daily per diem.

We need gillnet fishermen to participate to ensure that the team incorporates industry knowledge and concerns when discussing potential management actions that could impact the industry.

If you are interested in learning more about how to join a Take Reduction team, contact the Take Reduction Team Coordinator, Kate Swails at 978-282-8481 or kate.swails@noaa.gov.



New Jersey's Raritan River Restoration Gets Boost from Superfund Settlements

For struggling populations of migratory forage fish in the Raritan River, two recent legal settlements might be the answer. Can a legal settlement from a contaminated waste site benefit certain species of migratory forage fish? Along with pollution and large-scale commercial fishing, dams blocking access to habitat has played a major role in the depleted stocks of mid-Atlantic migratory forage fish.

Forage fish are called such because larger fish and marine mammals feed on them. Those referred to as "migratory" are spawning age adults that move from sea to freshwater rivers to deposit their eggs. The young then hatch and grow in the rivers until they can leave the river for life at sea. Rivers of the mid-Atlantic once flashed silver with American shad, blueback herring and alewife (the latter two referred to a "river-herring"). Some rivers still run silver, others do not. Native Americans and the European colonists relied on the spring run of these fish for food after long, hard winters.

The Raritan Basin

The Raritan and Millstone Rivers form the largest river system in New Jersey. Along with the Delaware, these rivers once supplied food measured in the millions of pounds. Few historic records for the Raritan exist. Today, only one commercial shad fishery remains open. Fishing for shad is greatest during spawning from late May into July, but mainly in a three-week period from



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late May to mid-late June. The river herring fishery has been closed to commercial and recreational fishing for several years. Shad that once filled the rivers now number in the few hundreds to a thousand.

Currently, the lower Raritan River contains contaminated sites, remnant dams, landfills, sanitary treatment facilities, which has led to these decimated migratory runs. The rural and suburban upper river supplies water for over 2 million people.

The Raritan Initiative

In October 2008, a coalition of potential partners convened to discuss the crisis facing migratory forage

species. The Raritan initiative suggested that sagging populations could be bolstered by removing old dams. The Delaware River, the only free running river on the East Coast, still supports wild populations. Despite its many dams, would it be possible to one day have a free-running Raritan? While unlikely, given a small number of dams still needed for water supply, the water was clean enough to support the fish due to decades of more thoughtful environmental practices. Ideas turned to action. NOAA Fisheries created an inventory of barriers and prioritized these for removal. A 2011 settlement reached between with the El Paso Corporation provided funding for removing three of the highest-priority dams. Partners in this effort included all three dam owners, one of which was built by James Buchanan Duke for whom Duke University was named.

Superfund Site Settlement

The next case that may help forage fish return to the Raritan River is the U.S. Environmental Protection Agency's clean-up of the American Cyanamid Superfund Site in Bridgewater NJ. The clean-up is nearing completion. Starting in the 1920s and continuing into the 1980s, the American Cyanamid Company, which was once one of the nation's top 100 manufacturing companies, released chemical waste directly into the Raritan River. Waste treatment began in 1940, which meant it was buried at the site or stored in unlined "impoundments," or reservoirs. That practice stopped in 1979, and dye manufacturing ended three years later. By 1985, direct discharge into the Raritan River ended and manufacturing ceased in 1999. Approximately 800,000 tons of chemical waste was buried at the site.

As part of the settlement, we worked with the other Natural Resource Trustees, U.S. FWS and NJDEP, to draft a restoration plan, which we released in November 2016. This followed the October 2016 U.S. Department of Justice's consent decree settlement.

Under the decree, Wyeth Holdings LLC was directed to remove the Weston Mill Dam on the Millstone River, and to design improved fish passage at the Island Farm Weir on the Raritan River. The consent decree was finalized in January 2017.

Looking Forward

In both natural resource damage cases, the resource agencies, the general public and others were asked to evaluate whether dam removal was an adequate compensation for devastating pollution and habitat destruction. Dam removal helps increase fish populations by making passage to historic spawning areas possible again. Raritan River field studies have already confirmed the presence of increased numbers of shad. Only long-term observation will tell if the effort is successful. In the meantime, dam removal improves water quality by allowing the stream to flow freely as it once did.

According to American Cyanamid case manager and NOAA Regional Resource Coordinator Reyhan Mehran, "The site's cleanup and compensatory projects will be important parts of the story of restoring the Raritan." This work should be completed by mid-2018.

For more information, contact Carl Alderson, NOAA Restoration Center, at 732-371-0848 or email Carl.Alderson@noaa.gov

Monitoring *Continued from page 1*

pot, and longline in both regions.

All types of observers collect information via interviews with the vessel's captain and crew, observations of fishing operations, photographing catch, and measurements of selected portions of the catch and fishing gear. Providing these details to our at-sea monitors and observers, along with allowing access to gather the information, is essential to a successful partnership between the Fisheries Sampling Branch and the commercial fishing community and to the success of the fishery management process.

Regulatory History of Observer Programs

At-sea monitoring requirements are detailed under Amendment 16 to the NE Multispecies Fishery Management Plan. They were first implemented on May 1st, 2010. This at-sea monitoring coverage is integral to stock-specific catch monitoring and ensures that annual catch limits are not exceeded. The catch composition information collected by At-sea Monitors is used to estimate total discards by sectors, gear type, and stock area.

The industry funded scallop observer program was re-activated in 2007. As specified by Amendment 13 to the Atlantic Sea Scallop Fishery Management Plan, industry funded scallop observers monitor sea scallop dredge and trawl gear catches aboard Limited Access and Limited Access General Category vessels. Data collected by industry funded scallop observers identify key characteristics of the commercial scallop fishery and inform stock assessments in the Greater Atlantic Region.

NEFOP observer coverage requirements were established under the Magnuson-Stevens Act and the

Standardized Bycatch Reporting Methodology (SBRM) Omnibus Amendment, the Marine Mammal Protection Act and the Endangered Species Act. Data collected by these observers identify key characteristics of commercial fisheries in our region. Catch data and biological information informs stock assessments. Additionally, protected species samples provide life history information and data for bycatch estimation. NEFOP observers have contributed to management of the Northeast and Mid-Atlantic fisheries, marine mammals, and endangered species, since the program's inception in 1989.

Role of the Fisheries Sampling Branch

Our job is to monitor and maintain communication with the at-sea monitors and observer service provider companies. We provide training and certification to the observers. We also perform data quality assessments, process pre-trip notifications and manage vessel selections in the at-sea monitoring Northeast groundfish fisheries and Northeast fisheries observer program notification fisheries.

Thank you!

The on-going cooperation between the Fisheries Sampling Branch, the commercial fishing community and our trained at-sea monitors and observers is extremely important to the development of effective fisheries regulations. We appreciate the assistance of the fishing industry in helping us achieve our goals.

For more information, contact Liz Chilton, Fisheries Sampling Branch, at 508-495-2307 or email her at Elizabeth.Chilton@noaa.gov.