Managing Derelict Fishing Gear in Massachusetts

An issue brief from the Massachusetts Derelict Fishing Gear Task Force

Town of Rockport municipal officials use heavy equipment to remove large "gear ball" of lobster trap, gillnet, and rope fragments off the shoreline.

Derelict lobster trap filled with fish (Tautog) in Cape Cod Bay.

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Executive Summary

“Derelict” fishing gear, or "ghost gear", is defined as abandoned, lost, or otherwise discarded fishing gear (ALDFG), and, as its name implies, refers to fishing gear that has been abandoned, lost, or discarded at sea and is no longer in the control of a fisher. ALDFG, which is made up of nets, traps, ropes, and buoys, can cause dangerous conditions in the water and on land. This gear can continue to “fish” after it is lost or abandoned leading to waste of marine resources. It can cause entanglements of large whales and sea turtles. When washed up on land this gear results in a mess of tangled rope and wire mesh fragments that not only create a visual nuisance but can pose a danger to unsuspecting beachgoers.

Most of this gear comes from the state’s fixed gear fisheries, which principally includes commercial and recreational trap fisheries for lobsters and commercial trap fisheries for whelk and certain finfish species, as well as a small-scale commercial gillnet fishery. These commercial trap fisheries represent a large portion of the Commonwealth’s fishing industry and have substantially grown and advanced over the past 50 years. Collectively these trap fisheries in Massachusetts are valued at over $75 million dollars and support over 700 small owner-operator commercial fishing businesses and multiple shoreside fishing and vessel support businesses, include a substantial recreational fishing footprint, and provide fresh locally caught seafood to citizens of the region and beyond. Additionally, the state authorizes a recreational lobster fishery whereby each permit holder may fish up to 10 traps. While decreasing in scale over the past decade, this recreational trap fisher is still responsible for a sizeable quantity of trap gear set in Massachusetts waters. In 2022, DMF permitted 4,572 recreational lobster fishers, and when applying recent effort and gear loss trends, DMF estimates recreational fishers deployed approximately 18,500 traps and lost approximately 4,500 traps.

The scale of the ALDFG problem has increased over time as more traps have been deployed in these fisheries and as materials used to construct fishing gear have evolved. When the lobster industry began in the 1860s, the fishery was small in scale (25,000 traps) and the fishing gear was constructed entirely of biodegradable materials (wooden traps, jute rope, wooden buoys). During the 1970’s and 1980’s, advancements in plastics and copolymers lead to their widescale use in the construction of fishing gear. Wooden lobster traps were replaced with polyvinyl coated steel mesh traps and jute rope was replaced with nylon, polypropylene and polyethylene rope. These new materials are stronger, more durable, and persist in the environment for an indefinite period. By the 1990’s over 95% of traps and rope used in fixed gear fisheries were constructed entirely of synthetic materials. In 2021, more than 250,000 traps were set in Massachusetts state waters. The Massachusetts Division of Marine Fisheries (DMF) estimates that as much as 9% of this gear is lost or abandoned annually.

ALDFG presents a serious challenge to commercial fishers, waterfront property owners, municipalities, the Massachusetts Environmental Police (MEP), and DMF. Efforts to clean up ALDFG from the shorelines and coastal waters of the Commonwealth are greatly hampered by state law [M.G.L. c. 130, §§ 31 and 32), which protects all fishing gear as private property. It does not differentiate between intact fishing gear and fishing gear debris. Additionally, the current law restricts what can be done with ALDFG, even limiting the removal of this gear from public and private lands. When the legislature enacted these laws in 1941, they were understandably trying to protect the property rights of fishers, who sometimes lose their fishing gear through natural events. However, the legislature could not have envisioned the very large increase in the scale of trap fisheries in Massachusetts, the amount of gear that is now discarded, lost, or abandoned, nor the changes in materials used to make fishing gear that now allow fishing gear to persist in the environment indefinitely. Accordingly, the Massachusetts Derelict Fishing Gear Task Force recommends that the Massachusetts legislature consider amending M.G.L. c. 130, §§31 and 32 to

allow for efficient and timely removal of ALDFG from our shorelines and waters and to give DMF the statutory authority to regulate the identification, removal, and disposal of ALDFG.

Commercial fishers work with CCS staff to grapple and remove ALDFG off Cape Cod

Massachusetts Derelict Fishing Gear Task Force

In July of 2022, DMF Director Daniel McKiernan created the Massachusetts Derelict Fishing Gear Task Force (Task Force), whose purpose is to study the issue of abandoned, lost, or otherwise discarded fishing gear (ALDFG) in Massachusetts waters and to develop solutions for the removal of such gear. The Task Force is comprised of members from a broad cross section of stakeholders with experience in commercial fishing, fisheries policy and management, law enforcement, conservation, and derelict fishing gear research and retrieval. The members and their affiliations are as follows:

- *Bob Glenn (Chair), Deputy Director, Massachusetts Division of Marine Fisheries*
- *Jared Silva, Senior Policy Analyst, Massachusetts Division of Marine Fisheries*
- *David Chosid, Marine Fisheries Biologist, Massachusetts Division of Marine Fisheries*
- *Julia Kaplan, Environmental Analyst, Massachusetts Division of Marine Fisheries*
- *Tori LaBate, Assistant General Counsel, Massachusetts Department of Fish and Game*
- *Chris Baker, Major, Massachusetts Environmental Police*
- *Laura Ludwig, Manager of Marine Debris and Plastics Program, Provincetown Center for Coastal Studies*
- *Beth Casoni, Executive Director, Massachusetts Lobstermen's Association*
- *Raymond Kane, Outreach Coordinator for the Cape Cod Commercial Fishermen's Alliance and Chairman of the Massachusetts Marine Fisheries Advisory Commission.*
- *Arthur Sawyer, Commercial Fisherman/President, Massachusetts Lobstermen's Association and member of the Massachusetts Marine Fisheries Advisory Commission*

This whitepaper is the first deliverable of the Task Force. Its goal is to give legislators, stakeholders, and the general public an overview of the problem of ALDFG in Massachusetts waters and the laws that preclude DMF and others from cleaning it up, and to inform discussions about potential solutions. The Task Force views statutory changes as the first step in creating an effective derelict gear cleanup program and provides recommendations for statutory changes that allow DMF to regulate ALDFG removal and disposal activities. In addition, the Task Force will develop draft regulations that clearly distinguish between fishing gear and fishing gear debris, and will describe the marine fishing gear debris removal efforts which DMF seeks to authorize and implement.

Background

Commercial trap[1] fishing for lobsters began in Massachusetts in the 1860's, when fishermen used rowing dories to deploy wooden traps in coastal waters. These traps were attached to ropes with wooden buoys and were hauled by hand. Historically this fishery was small in scale. In 1888 there were fewer than 25,000 traps fishing in Massachusetts waters (Figure 1). This fishery grew substantially with the advent of combustion powered vessels. By the 1940's, fishers were deploying more than 100,000 traps and landing in excess of 3,000,000 pounds of lobsters. After 1970, the number of traps used in the lobster fishery rose dramatically reaching a high of 425,000 traps in 1990. Since the high in the 1990s, effort in the fishery has gradually declined. In 2021, 633 Massachusetts lobster fishers used 258,626 traps to land a total of 9,573,878 pounds of lobsters from state waters. The 2021 landings had an ex-vessel value[2] of $70,489,275. Today this iconic and legacy fishery is the most valuable fishery prosecuted within Massachusetts state waters.

Massachusetts state waters also host two other important trap fisheries: the trap fishery channeled whelk fishery ("conch pot") and the fish trap fishery for scup and black sea bass ("fish pot"). In 2019, whelk pot fishers landed 993,128 pounds of channeled whelk using 11,894 pots with an ex-vessel value of $3,697,699. In that same year, fish pot fishers landed 279,990 pounds of scup and 176,350 pounds of black sea bass using 4,577 traps with a combined ex-vessel value of $785,530. While much smaller in scale, these fisheries are an important source of income for many commercial fishers in the Commonwealth.

Collectively, these trap fisheries support over 700 small owner-operated[3] fishing businesses along with multiple shoreside fishing and vessel support businesses and provide fresh local caught seafood. However, despite all the positive benefits of these fisheries, gear loss and ALDFG remain as extremely challenging fishery management and enforcement issues. ALDFG may remain at sea, or in many cases, wash up on the coastline, and in both instances, create problems that need to be addressed.

Massachusetts also permits and regulates a recreational lobster fishery that allows the use of trap gear to take lobsters and certain edible crab species incidentally caught. Under state law, recreational lobster trap fishers may fish up to 10-traps at any one time[4]. However, not all recreational lobster fishers use traps, as hand harvest by diving is a common technique, and not all recreational fishers deploy their full 10-trap limit. In 2019, as part of its Technical Report Series, DMF published "Technical Report 69: A Characterization of Fishing Activity and Trap Loss in the Massachusetts Recreational American Lobster

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[1] DMF regulations define traps as to mean, "any lobster trap, modified lobster trap, fish pot, conch pot, or any other contrivance, other than nets, that is placed on the ocean bottom and designed to catch finfish, whelks, lobsters, or crabs.

[2] Ex-vessel value refers to the dollar amount received by fishers at the point of primary sale to a seafood dealer authorized as a primary buyer. This value does not represent the total value of the harvested seafood to the seafood industry. The 2019 "Fisheries Economics of the United States" report produced by NOAA Fisheries calculates nationwide landings revenues for 2019 to be $5,598,014 while the total sales (without imports) of the seafood industry to be $54,884,906.
< https://media.fisheries.noaa.gov/2022-07/FEUS-2019-final-v3_0.pdf >

[3] Owner-operator means a commercial fishing business whereby the individual named on the commercial fishing permit is required to be onboard the vessel when commercial fishing is occurring. This prevents the corporate fishing fleet model and results in the fishery being comprised of small independent businesses.

[4] G.L. c. 130, § 37. "A noncommercial lobster and crab permit shall authorize the holder and members of the holder's immediate family residing in the same residence as the holder to fish for, take or land by use of pots only lobsters and edible crabs for consumption, and not for sale, by himself and the members of his immediate family residing in the same residence as the holder; provided, however, that the holder and such other persons shall not use more than ten traps for such fishing at any one time…"

Fishery"[5]. This report investigated recreational trap fishing effort and characterized gear loss in this fishery using data compiled from 2000-2015 recreational lobster fishery permitting and annual catch report data and a 2015 recreational lobster permit holder survey.

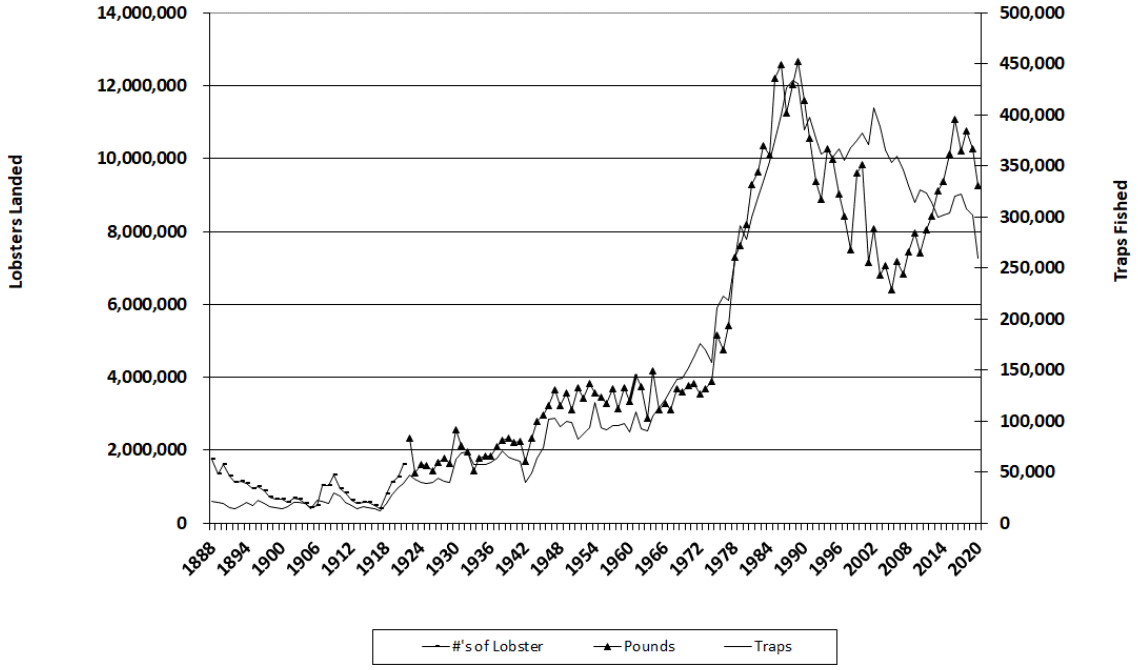

Figure 1. Lobster landings and effort in Massachusetts territorial waters, 1888 – 2020. Data source: 1888 to 1963 Annual Report of the Massachusetts Commissioners of Fish and Game. 1964 to 2020 - Massachusetts monthly harvester reports and federal VTRs with data as of September 2021.

Relevant here are the Technical Report's findings regarding number of permit holders fishing traps, number of traps fished, and number of traps lost per year. For 2015, permitting and annual catch report data indicate 58% of permits issued were active. DMF also electronically surveyed all 2015 permit holders who had an e-mail on file (n=4,327). The survey response rate was 33% (n=1,429). Of the respondents 68% reported using traps, with 56% reporting fishing exclusively with traps and 12% using some combination of both traps and diving. Of the respondents fishing traps, 66% reported fishing fewer than 10 traps with seven traps being the mean. Lastly, 74% of respondents reported losing at least one trap per year, and it was calculated that each respondent lost on average 1.7 traps per year. In 2015, there were 3,991 active permits issued. Extrapolating from the above survey data, we can estimate that in 2015 Massachusetts had 2,714 recreational lobster trap fishers fishing approximately 19,000 traps and losing about 4,600 traps.

While the scale of the recreational lobster trap fishery has been declining since 2000, ALDFG from this sector remains an issue. In 2022, DMF issued 4,572 recreational lobster permits authorizing the use of traps. While we do not have current effort and gear loss data for 2022, we can extrapolate using the

[5] DMF Technical Report #69. 2019. Characterization of Fishing Activity and Trap Loss in the Massachusetts Recreational American Lobster Fishery. < https://www.mass.gov/doc/dmf-technical-report-69-2015-recreational-lobster-survey/download >

2015 survey information on traps fished and traps lost per recreational fisher. Using this information, we roughly estimate that 2,652 recreational lobster fishers set approximately 18,500 traps and lost about 4,500 traps. This represents a sizeable amount of annual gear loss particularly given its cumulative impacts.

The issues caused by ALDFG are directly linked to the ultimate fate of the gear and how long it persists in the environment after it is abandoned, lost, or discarded. Whether ALDFG remains in the ocean or washes up on shore from wave action during storms, it may remain intact (capable of functioning as intended) and is still of value to the owner. However, more frequently this gear is damaged or destroyed so that it is no longer intact and could be accurately classified as marine debris or trash.
Historically, traps were made of wood, and the line used to haul traps were made of jute or other natural materials (Figure 2). While this gear would have been equally subject to loss and abandonment, it was made entirely of bio-degradable, non-synthetic materials. During the 1970's and 1980's, advancements in plastics and co-polymers lead to their widescale use in the construction of fishing gear. Wooden traps were replaced with polyvinyl coated steel mesh traps (Figure 3) and jute rope was replaced with polypropylene and polyethylene rope. These new synthetic materials are stronger, more durable, and persist in the environment for an indefinite period. By the 1990's, over 95% of traps and rope used in Massachusetts trap fisheries were constructed entirely of synthetic materials.

While we do not have any hard estimates of how long these materials persist or how long fishing gear constructed from these materials can remain intact in the marine environment, we do have some data that provide us with insight on the rough scale of their longevity. Through authority provided by DMF, the Provincetown Center for Coastal Studies (CCS) has conducted multiple derelict fishing gear retrieval projects over the last decade where grappling hooks are towed in specific areas along the sea floor of Cape Cod Bay to snag and retrieve derelict fishing gear. Through these efforts CCS have retrieved hundreds of derelict traps and just as many traps in good condition. Trap fishers are required to annually affix trap ID tags for the current fishing year, and each recovered trap is examined for the most recent trap tag. For traps with tags intact, the year in which the trap was lost can be inferred with high confidence. From this work we know that roughly 50% of lobster traps recovered remain intact and usable, and that these PVC-coated steel mesh ALDFG traps can persist for over two decades in the marine environment.

Figure 2. Example of a wooden lathe lobster trap commonly used in the Massachusetts lobster fishery in the 1970's and 1980's.

Figure 3. A modern derelict lobster trap on the sea floor off the coast of Plymouth, Massachusetts, constructed of polyvinyl coated steel mesh.

Categorizing ALDFG

ALDFG trap gear falls into two categories, buoyed and unbuoyed. Buoyed ALDFG refers to fishing gear in which the surface buoy and buoy line remain intact and are usually visible from the surface of the water. Unbuoyed ALDFG refers to fishing gear in which the buoy and buoy line are not intact and not detectable from the surface. While these two categories of ALDFG share many of the same environmental and handling issues, they also each have some unique challenges that are directly related to the presence or absence of the buoy line.

Unbuoyed ALDFG

The issues associated with unbuoyed ALDFG generally pertain to the persistence of fishing gear in the marine environment or on the shoreline. These include “ghost fishing,”, ecosystem impacts, public nuisance and safety issues, removal and disposal issues, and commercial fishing gear conflicts.

Ghost Fishing

Ghost fishing occurs when ALDFG in the water continues to catch and kill lobsters, crabs, and finfish long after the gear was lost or abandoned. DMF regulations mandate certain gear modifications to address the issues posed by ghost fishing. This generally requires traps be rigged with "ghost panels" that are fastened to the trap with biodegradable materials allowing them to open and release captured animals after a period-of-time. However, these devices are not entirely effective and do not consistently open as intended.

In 2010, with funding from the National Fish and Wildlife Foundation, DMF conducted a two-year study focused on characterizing the scale of the ALDFG issue in Massachusetts and the potential impacts of “ghost fishing” in Massachusetts coastal waters. This study was conducted in two phases. In Phase 1, DMF divers monitored the fate of 40 intentionally abandoned lobster traps for two years. Divers visited each trap and recorded all the contents (marine life) and the overall condition and functionality of the trap every two weeks for the two-year period. In Phase 2, DMF sent out an extensive survey to all commercial lobster permit holders which asked fishers to characterize how many traps they lost annually, the manner in which the traps were lost, and their perceptions on derelict fishing gear and ghost fishing. DMF received a 59% (n = 520) survey response rate to this survey. The key findings of this study were:

- Lobster traps abandoned for the study continued to catch and kill lobsters, crabs, and fish for the entire two-year span of the project;
- Ghost panels (devices designed to biodegrade after a few months making the trap ineffective) on the traps never failed as intended;
- Each abandoned lobster trap killed an average of approximately 4 lobsters, 6 crabs, and 1 fish per-year;
- Fishers lose up to 9% of their traps annually;
- The primary claimed causes of gear loss in order of importance were storms, vessel traffic, and conflict with mobile fishing gear (draggers, scallopers);
- DMF nominally estimates that ADLFG results in roughly $2,400,000 loss in the value of fishing gear and a $600,000 loss gross revenue from lost catch per year (due to unintended mortalities of lobsters from ghost fishing); and
- Mortalities of lobsters, crabs, and finfish resulting from ghost fishing reduce the future productivity of marketable stocks due to loss of total reproductive capacity.

Ecosystem Impacts

ALDFG is understood to present an issue to the habitat and animals present in the marine environment in several ways. At sea, ALDFG can move along the ocean bottom in such a way as to snag on corals or shipwrecks, scour eelgrass beds and other sensitive habitat, or smother productive areas. Marine animals and birds can be entrapped or entangled in ALDFG. Because the ALDFG is primarily comprised of synthetic materials, it also generates plastic and microplastic debris which can be ingested by animals along the entire food chain. On land, the issues are similar, where ALDFG can impede or alter the growth of terrestrial plants and contribute microplastics to the composition of the terrain.

Public Nuisance and Public Safety

The portion of ALDFG that washes up on shore can create a real nuisance and a genuine safety concern to the general public, as well as a management issue for municipalities and property owners. This typically occurs after large storm events whereby severe wave action washes ALDFG ashore, littering beaches and other nearshore and intertidal areas with large amounts of ALDFG. The ALDFG that washes up on the beach typically includes various types of traps, ropes, buoys and nets. In many cases, the gear is severely damaged and consists of only fragments (Figure 4). ALDFG also poses a public safety issue if not collected from the shoreline. Wire mesh panels from traps corrode over time, sometimes leaving sharp rusty edges exposed or even buried in the sand (Figure 4). These trap fragment have been known to cause cuts and puncture wounds to unknowing beachgoers who accidentally step on them.

Figure 4. Derelict lobster traps and fishing gear debris washed up on the shore of Plymouth, MA. Inset photo: Fragment of a lobster trap washed up on the shore of Plymouth, MA.

Removal and Disposal

After particularly large storms, especially Nor'easters, the amount of ALDFG that washes up on shore can be substantial. This poses a real challenge to landowners and municipalities wishing to collect and dispose of the gear. Often, the large volume of gear and the inaccessibility of its location along the shoreline make collection very difficult physically and logistically. The logistics of transporting large volumes of ALDFG are usually complex and often require the use of heavy equipment and large trucks or trailers. Furthermore, many municipal landfills and transfer stations will not accept ALDFG, especially in large volumes. Once collected best practices to reuse or recycle ALDFG are often hindered by high costs, daunting efforts, complex transportation and coordination logistics, and contamination or deterioration levels preventing end use. Finding and retrieving unbuoyed ALDFG is difficult and very costly. Locating the gear often requires the use of special side-scan sonar technology; and removing it requires towing large heavy grappling hooks behind vessels to snag the gear. Once retrieved, logistical issues related to transport, storage, and disposal remain.

Commercial Fishing Gear Conflict

ALDFG remaining on the sea floor often creates gear conflict issues with active fishing gear. In these circumstances, commercial fishers unknowingly set their traps over or tow their mobile gear through ALDFG. This causes the active fishing gear to become entangled in the ALDFG, often causing severe damage and additional gear loss, and can create a serious safety risk to the vessel and crew when multiple sets of very heavy fishing gear become entangled while the vessel is underway. These types of gear interactions have led to injury, vessels capsizing, and loss of life.

<u>Buoyed ALDFG</u>

All the above-described issues related to unbuoyed ALDFG also apply to buoyed ALDFG, except that it can be easier to locate at sea because of the surface buoys. Even more alarming however, the presence of the buoy line creates a new suite of problems, such as entangling protected whales and sea turtles and creating navigational hazards to vessels.

Entanglement Risk to Protected Species

The coastal waters of the Commonwealth seasonally host up to 85% of the entire population of North Atlantic right whales (NARW). There are only approximately 340 of these large whales left in existence and they are listed under the Endangered Species Act as critically endangered. The primary causes of mortality of NARW are entanglement in fishing gear and ship strikes. For this reason, DMF closes the commercial trap fishing in state waters from east of Nantucket to the New Hampshire border from February 1 to May 15 annually; the commercial gillnet fishery throughout state waters from January 1 to May 15 annually; and the recreational lobster fishery to the use of buoyed trap gear from November 1 – May 15. These closures correspond with the time-period and area when and where NARW are common in our waters. Buoyed ALDFG that remains in our coastal waters poses an entanglement risk to NARW's and has the potential to erode the conservation value of our fisheries closures designed to protect them. In addition to NARW, our waters also seasonally host other species of large whales including humpback, minke, and finback whales, as well as several species of sea turtles including leatherback, loggerhead, and Kemps Ridley turtles, all of which are federally protected and are prone to entanglement in fixed fishing gear.

Navigation Hazard
Buoys attached to ALDFG that remain in the ocean for a long time become "biofouled," (covered in algae and other marine organisms), the weight of which may cause the buoy to become partially submerged and thus very difficult for mariners to detect. This results in a hazard to navigation and can damage vessels that hit them, because these partially submerged buoys are very difficult to avoid, and the attached buoy line can become entangled in the vessel's propellor. For smaller vessels this can also poses a significant safety issue when buoy line becomes heavily entangled in the propellor, especially in heavy seas.

Statement of the Problem

While the problems associated with ALDFG are myriad and well understood, Massachusetts is ill-equipped to effectively manage and resolve these challenges. This is due to state law at G.L. c. 130, §§31 and 32 affording broad property rights to fishing gear, including ALDFG at sea or onshore. In effect, state law generally makes it illegal to take, recover, and remove any buoyed or unbuoyed ALDFG that is left at sea, unless said ALDFG violates state laws or regulations, at which point it may be seized by the Massachusetts Environmental Police[6]. Additionally, the owner of any buoyed or unbuoyed ALDFG that is washed ashore is afforded 30-days to recover the gear without liability for trespass and 60-days before the rights to the ALDFG are ceded to the owner of the riparian shoreline.

These statutes are antiquated. They were enacted in 1941—a time when fishing gear was biodegradable and the wooden trap gear that washed ashore was recoverable—and have not been updated or otherwise modified since. However, in the interim fishing gear has evolved. Now, gear is mostly constructed of synthetic materials. These materials persist longer in the environment, so when this gear becomes ALDFG it continues to ghost fish and, proliferate on the ocean floor. Additionally, these synthetic materials which ALDFG are constructed of are more readily damaged beyond repair and frequently not recoverable and reusable, particularly when swept ashore. Lastly, these laws do not consider impacts buoyed ALDFG may have on protected species who may become entangled in it. Accordingly, the protections once designed to afford fishers property rights to recover and reuse lost gear, now prevent efforts to clean ALDFG from our marine and nearshore environments and threaten protected marine mammals and turtles.

[6] G.L. c. 130, §9. The director, deputy directors of enforcement, chiefs of enforcement, deputy chiefs of enforcement and all environmental police officers and deputy environmental police officers or a member of the state police may, without a warrant, search any boat, vessel, fish car, bag, box, locker, package, crate, any building other than a dwelling house, any motor vehicle as defined in section one of chapter ninety, or other vehicle, or any other personal property in which he has reasonable cause to believe, and does believe, that fish taken, held, kept, possessed, transported or held for transportation or sale in violation of law, may be found, and may seize any such fish there found, and may seize any boat, vessel, fish car, bag, box, locker, package, crate, any motor vehicle as defined in section one of chapter ninety, or other vehicle, or any other personal property used in violation of the laws relative to marine fisheries and hold the same for forfeiture.

Recommended Statutory Amendment

DMF has been attempting to manage this issue for at least a decade now. In 2010, the agency received advice from its legal counsel that G.L. c. 130, §§31 and 32 afforded protections to fishing gear, but that it would be unreasonable to assume that unusable fishing gear would be afforded the same protections. Accordingly, to encourage ALDFG clean-up efforts, DMF advised groups involved in such endeavors to draw a distinction between fishing gear and marine debris. Doing so would at least allow for the removal of pieces of non-intact fishing gear from our waters and shores.

However, this was a stop-gap solution, as it did not address the full extent of the problems and challenges posed by the intersection of the state's antiquated laws with the proliferation of ALDFG. Building on the past decade of experience, DMF established this Derelict Gear Task Force to better define the ALDFG challenges in Massachusetts and to develop a more holistic and thorough approach to addressing them.

The Derelict Gear Task Force is recommending the Massachusetts Legislature amend G.L. c. 130, §31 to maintain property rights for fishing gear, but allow DMF to regulate the handling of ALDFG, and in doing so, rescind G.L. c. 130, §32. All regulations adopted by DMF would be subject to the review and approval of the Marine Fisheries Advisory Commission and the Department of Fish and Game, and subject to executive branch review and approval as established by executive order. This is consistent with the regulatory authority granted to DMF by the legislature at G.L. c. 130, §17A to govern the times, places, quantities, sizes, seasons, and methods of fishing[7]. In support of this, the Derelict Gear Task Force is also recommending the legislature amend G.L. c. 130, §1 to refine the statutory definitions for "closed season" and "open season" and adopt new definitions for "fishing gear" and "fishing gear debris." A complete redline text of these proposed statutory amendments is seen in Appendix 1.

Providing DMF with this regulatory authority to manage ALDFG is beneficial in several ways. The challenges related to ALDFG are not static and evolve over time with how fisheries are prosecuted and with changes in gear technology. By moving the management of handling ALDFG from statute to regulation, the Commonwealth can more readily respond to emerging ALDFG issues and challenges. DMF can typically amend its regulations within a six-month period and has the authority to immediately implement emergency regulations if necessary to preserve public health, safety, or the general welfare

[7] G.L. c. 130, §17A. Upon petition signed by any interested party or upon his own motion, the director shall submit to the marine fisheries advisory commission proposals relating to the management of the marine fisheries. After public hearing, notice of which shall be published in a newspaper of general distribution in the areas affected, the commission shall in writing approve or disapprove such proposals If any proposal is so approved, the director shall in accordance with such approval adopt, amend or repeal rules and regulations, subject to the approval of the commissioner, which shall govern the following activities: (1) the manner of taking fish; (2) the legal size limits of fish to be taken; (3) the seasons and hours during which fish may be taken; (4) the numbers or quantities of fish to be taken; (5) the opening and closing of areas within the coastal waters to the taking of any and all types of fish; provided that no area shall be so opened or closed without the consent of the selectmen of the town or the mayor and council of the city affected thereby. Upon request of the commission, the selectmen or mayor and council shall hold a public hearing upon the question and shall thereafter notify the commission in writing within forty-five days after such request has been received or consent will be deemed to have been granted.

of the Commonwealth[8] or as necessary for the immediate management or control of marine fisheries[9]. This approach also recognizes there are nuances regarding the types of fishing gear deployed and the ALDFG challenges related to each type of gear and enables fishery managers to develop a detailed regulatory approach that considers these dynamics. Further, the regulatory approach will be fine-tuned by the Marine Fisheries Advisory Commission[10], a public body whose members have expertise in marine fisheries and experience using a variety of different fishing gears. All such DMF regulations approved by the Marine Fisheries Advisory Commission, will also be subject to review and approval by the Commissioner of DFG and subject to review by the Healey-Driscoll Administration. The purpose of this regulatory process is to develop a comprehensive management approach that balances property rights with the need to efficiently handle and clean up ALDFG and can nimbly and timely respond to emerging issues. Accordingly, the Derelict Gear Task Force has provided additional recommendations on initial regulations.

Regulatory Framework

Once gear has been identified as ALDFG, it is important to distinguish whether the gear is intact. Intact gear may be fishable or salvageable, and therefore, may be of value to the original property owner, whereas gear that is not intact can be considered debris to be discarded, reused, or recycled. Accordingly, DMF's regulatory framework needs to clearly define the threshold between what constitutes intact fishing gear and by contrast what constitutes fishing gear debris. From here, standards for how to approach each type of ALDFG encountered can be created. The anticipated regulatory changes to define intact fishing gear and distinguish it from fishing gear debris are outlined in Appendix 2. DMF will need to develop additional regulations to manage the handling of fishing gear debris. These regulations have not yet been drafted but will consider the issues described in the paragraphs below.

Additionally, the Derelict Gear Task Force identified four categories of circumstances under which ALDFG may be encountered: (1) shore clean up; (2) directed at-sea gear removal; (3) incidental recovery (i.e., caught in other fishing gear); and (4) enforcement actions. Each category may encounter both intact ALDFG and fishing gear debris. Accordingly, DMF must create regulations that provide clear guidance regarding how the public may interact with both intact ALDFG and fishing gear debris under each of the first three circumstances; protocol for handling of gear encountered during enforcement is already adequately addressed. This guidance should include: (1) who may handle the gear; (2) when the gear may be handled; (3) collection methods; (4) from where the gear may be removed; (5) whether permitting and reporting is required; and (6) what post-removal options exist.

While the majority of ALDFG encountered in Massachusetts comes from trap gear or nets, the state's aquaculture industry is growing and aquaculture gear (e.g., cages, trays, buoys, racks, anchors) may

[8] G.L. c. 30A, §2. If the agency finds that immediate adoption, amendment or repeal of a regulation is necessary for the preservation of public health, safety or general welfare, and that the observance of the requirements of notice and a public hearing would be contrary to the public interest, the agency may dispense with such requirements and adopt, amend, or repeal the regulation as an emergency regulation.

[9] G.L. c. 130, §17(11). Subject to the notice provisions of chapter thirty A, without hearing, with the approval of the commissioner, adopt regulations declared by him to be emergency regulations necessary for immediate management or control of marine fisheries. Such emergency regulations may be limited in time but shall not remain in effect for a period of longer than forty-five days.

[10] G.L. c. 130, §1B. There shall be in the division of marine fisheries a commission to be known as the marine fisheries advisory commission hereinafter called the commission, which shall consist of nine members, qualified in the field of marine fisheries by training and experience…

become dislodged and moved off the licensed site, in effect becoming ALDFG. When this occurs, it is not uncommon for the ALDFG to contain shellfish product that was purchased and reared by the aquaculturist that is of substantial commercial value. This situation is in clear contrast to the ALDFG that is more commonly encountered and is typically void of product and of limited value to the original owner. Given this, DMF should consider developing a set of ALDFG rules specific to shellfish aquaculture gear.

Future Considerations

Future actions for managing ALDFG in MA waters should focus on improving our understanding of the gears' continuing impacts to the ecosystem and to the public, conflicts within and between commercial fisheries, quantity estimates, changes in gear technologies, constructions, and designs, and the challenges and solutions in prevention and clean-up efforts. Our suggested changes to Massachusetts state law provide a pathway for achieving our goals, specifically for prevention and cleanup operations, by easing the burden for managing ALDFG. In doing so, the other issues are also addressed. For instance, by removing ALDFG in an effective manner, we reduce the risk to marine mammal entanglements.

Adoption of the proposed statutory amendments will allow for DMF to establish a marine debris prevention and retrieval program to more effectively and efficiently respond the ALDFG-related issues. Stakeholders who are likely to be affected by gear prevention/retrieval operations include fishers, gear designers and manufacturers, fleet and port operators, recycling/disposal organizations, fisheries managers and regulators, enforcement bodies, seafood companies and eco-labelers, NGOs, and private research institutions. The latter two groups have devoted extensive time and resources to cleanup operations which will be alleviated by adjustments of the marine debris laws and regulations.

Prevention is the first line of defense against accumulation of ALDFG. Establishing a permitting and violation fee structure for owner-identifiable ALDFG, possible after changes to the General law, can help incentivize the responsible use of fishing gear and reduce loss. Reclamation of ALDFG is often costly and these associated costs to the Commonwealth could be offset with fees intended to reimburse for recovery efforts (much like towing and storing a non-compliant vehicle) and administrative time. Additionally, a fine could be considered towards those who purposely leave gear in the closed fishing area and disregard regulations. These incomes can be reapplied towards a marine debris retrieval program. Regardless, some funding and staff time must be directed towards maintaining a dedicated program. New outreach efforts would also inform commercial and recreational fishing gear users about the reasons for gear loss which can then aid in preventing loss as well as improve the identification and recovery of gear.

As we continue to run a marine debris prevention and retrieval program, we expect that stakeholders will see more of the associated benefits which will manifest in increased program involvement and recovery operations, especially from commercial trap fishers. Their uptake in new technologies and embracing marine debris identification, reporting, and recovery methods are highly valuable to these programs. Just in the two years that MA has performed buoyed trap recoveries during our seasonal closures, we have seen a dramatic reduction in ALDFG between the years. Long-term benefits of gear removal may include protections for endangered and protected species, improved stock abundance (through reduction in unintended ghost gear fishing mortality), improvements in ALDFG collection methods, new collaborations with stewards of the environment and fisheries stakeholders, new opportunities for eco-labeling (with better fishing practices and environments), and reductions in debris

safety hazards and eyesores. This program can also serve as a template for other regional authorities, adding to the benefits.

Gear reuse and recycling programs are currently difficult to identify and logistically navigate. The various people, groups, and organizations that process marine debris have costly, time-consuming, and specific storage, transportation, and processing requirements. The continuation of a marine debris prevention and retrieval program will build more cooperative relationships with these groups, help reinforce the need for their services, and identify the most efficient and cost-effective processes to achieving our common goals.

Appendix 1. Redline Text of Proposed Statutory Amendments

G.L. c. 130 § 1

''Angling'', fishing with hand line or rod, with naturally or artificially baited hook.

''Canned lobster meat or crab meat'', lobster meat or crab meat preserved by heat processing, freezing, or refrigeration, and packed in a container impervious to contamination and so sealed that once opened it cannot be re-sealed and re-used for its original purpose.

''Clam'', a marine mollusk of the species Mya arenaria commonly called the soft-shell clam.

~~''Close season'', the time during which fish cannot lawfully be taken.~~

“Close season” or “Closed season” the time during which fish cannot lawfully be taken or a time or area when and where the use of fishing gear is prohibited.

''Coastal waters'', all waters of the commonwealth within the rise and fall of the tide and the marine limits of the jurisdiction of the commonwealth, but not waters within or above any fishway or dam nor waters above any jurisdictional boundary legally established pursuant to section five of chapter one hundred and thirty in rivers and streams flowing into the sea.

''Commissioner'', the commissioner of the department of fish and game.

''Dealer'', any person who commercially handles fish.

''Department'', the department of fish and game of the executive office of energy and environmental affairs.

''Director'', the director of the division of marine fisheries.

''Division'', the division of marine fisheries.

''Fish'', any animal life inhabiting the ocean or its connecting waters including any crustacean or marine fish, whether free swimming or free moving, and any shellfish or sea worms, whether or not imbedded in the soil. All provisions of the chapter relative to fish shall, so far as apt, apply also to lobster meat and crab meat after the same has been taken from the shell.

The verb, ''to fish'', in all of its moods and tenses, to take or to attempt to take fish by any method or means, whether or not such method or means results in their capture.

''Fish car'', a box or other contrivance in coastal waters, whether floating or sunken, used for keeping fish alive.

“Fishing gear”, a trap, net, fish car, or other contrivance that is: intact; functions as it is intended to take, hold, or capture fish; and is in the water during the open season.

“Fishing gear debris”, a trap, net, fish car, or other contrivance that is: not intact; does not function as it is intended to take, hold, or capture fish; or is in the water during a closed season.

''Lobster'', the common American lobster, of the species Homarus americanus.

''Marine fisheries'', all fisheries in coastal waters.
''Open season'', the time during which fish may lawfully be taken **or a time or area where the use of a particular fishing gear is allowed**.

''Quahaug'', a marine mollusk of the species Venus mercenaria commonly called the hard-shell clam.

''Recreational saltwater fishing'', the non-commercial taking or attempted taking of finfish for personal or family use; provided, however, that the finfish are not sold, traded or bartered.

''Registered under the laws of the state'', any vessel from a Massachusetts port which is licensed to operate for commercial fishing purposes under the authority of this chapter, or any vessel from a Massachusetts port which is operated for commercial fishing purposes by any person licensed under the authority of this chapter.

''Retail dealer'', any person not a wholesale dealer who distributes fish commercially.

''Scallop'', a marine mollusk of the species Aequipecten irradians, commonly known as the cape scallop or bay scallop.

''Sea scallop'', a marine mollusk of the species Pecten magellanicus, commonly known as deep water scallop.

''Seed clam'', a soft-shell clam of a size less than the minimum prescribed in section sixty-nine and useable for planting purposes only.

''Seed quahaug'', a quahaug of a size less than the minimum prescribed in section sixty-nine and useable for planting purposes only.

''Seed scallop'', an immature scallop without the annual growth line as described in section seventy.

''Shark'', any species of the subclass Elasmobranchii; provided, however, that the term ''shark'' shall not include smooth hounds, spiny dogfish or any species in the order Batoidea.

''Shark fin'', the raw, dried or otherwise processed detached fin, or the raw, dried or otherwise processed detached tail, of a shark.

''Shellfish'', clams, conchs, limpets, mussels, oysters, periwinkles, quahaugs, razor clams or razor fish, scallops, sea clams, sea quahaugs, sea scallops and winkles.

''Short lobster'', any lobster measuring less than prescribed in section forty-four.

''Territorial waters'', the same as coastal waters.

''Truckman'', any person other than a common carrier, using a truck or other vehicle in distributing fish.

''Wholesale dealer'', any person who distributes fish commercially in bulk or for resale by a dealer, or who operates branch stores for the retail sale of fish.

A person who knowingly counsels, aids or assists in a violation of any provision of this chapter or of any rule or regulation made thereunder or knowingly shares in any of the proceeds of said violation by receiving or possessing fish, shall be deemed to have incurred the penalties imposed thereby upon the person guilty of such violation.
Whenever the taking of fish is authorized, reference is had to taking by lawful means and in a lawful manner.

Any reference to the taking or having in possession of a fish shall include the taking or having in possession of any part or portion thereof.

This chapter and regulations made under the authority thereof shall apply to all marine fisheries and fish within the jurisdiction of the commonwealth and to all vessels registered under the laws of the commonwealth. This provision shall not be construed to limit the authority of the director to protect anadromous fish by providing for their passage from the coastal waters to spawning grounds in streams and ponds in inland waters and to regulate fisheries contained therein for the taking of such anadromous fish.

G.L. c. 130 § 31
No person shall, without the consent of the owner, take, use, destroy, injure or molest ~~a weir, pound net, fish trap, seine, set net or lobster or crab pot or other fishing gear, or a fish car or other contrivance used for the purpose of storing fish, including any such fishing gear which is swept ashore by storm or tide or other natural causes and deposited upon the shore, beaches or flats, whether public or private, or take fish therefrom.~~ **fishing gear. Notwithstanding the foregoing, the director, with the approval of the Marine Fisheries Advisory Commission shall promulgate regulations that authorize or permit the removal of fishing gear debris from the waters under the jurisdiction of the Commonwealth and the adjacent coastal shoreline. Fishing gear debris collected under said authority or permission shall not be subject to chapter 134 of the general laws.**

G.L. c. 130 § 32
~~The owner of any fishing gear mentioned in section thirty-one which is swept ashore by storm or tide or other natural causes and deposited upon the shore, beaches or flats, whether public or private, may recover the same within thirty days from the time of such deposit without liability for trespass; provided, that such owner in so doing does not commit any unreasonable or wanton injury to the property whereupon such fishing gear is deposited. In the event such fishing gear shall not be so recovered within such period or recovered by other legal means within sixty days it shall enure to the riparian owner of such shore, beach or flat in the manner provided in chapter one hundred and thirty-four.~~

Appendix 2. Anticipated Regulatory Changes to Define Intact Fishing Gear and Fishing Gear Debris

Defining “intact” commercial fishing gear

(1) For a commercial trap to constitute intact fishing gear, it shall have at least three of the following elements:

(a) Buoy that is marked as set forth by 4.13.

(b) Buoy line that complies with marking and modification requirements set forth by 12.00.

(c) Current years’ trap tag associated with a valid current years’ fishing permit set forth by 6.31.

(d) Trap gear configuration requirements set forth by 6.00.

Defining “intact” recreational fishing gear

(2) For a recreational trap to constitute intact fishing gear, it shall have at least three of the following elements:

(a) Buoy that is marked as set forth by 4.13.

(b) Buoy line that complies with marking and modification requirements set forth by 12.00.

(c) A synthetic plate or wooden lath is present inside of the trap bearing an alpha-numerical sequence containing: the letter “N”; a valid recreational lobster and crab trap permit number; “-”; and a single digit from 0-9 indicating the sequential trap number in a series up to 10 as set forth by 4.13.

(d) Trap gear configuration requirements set forth by 6.00.

(e) Exception for buoyless trap gear fished from the shoreline: to constitute as intact fishing gear, it shall have to comply with (c) and (d).

If a trap does not constitute intact fishing gear, it shall be fishing gear debris.

Commercial fishers work with DMF and MEP staff to remove abandoned lobster gear in the Massachusetts Restricted Area Closure.