

OUT OF BALANCE:

INDUSTRIAL FISHING AND THE THREAT TO OUR OCEAN





Photo: Fisherman's Voice

INTRODUCTION

The report before you exposes a threat to New England's coastal waters that has gone largely unnoticed for too long: the mismanagement of our Atlantic herring resource. Over the past decade a fleet of industrial-scale fishing vessels has dramatically expanded its operations in the region and now catches well over 150 million pounds of herring annually. Because herring form the cornerstone of the marine ecosystem—feeding whales, seabirds, striped bass, tuna and numerous other predators, the ecological reverberations of such intense fishing pressure spreads far and wide. These ships fish 24 hours a day, breaking up schools of herring, and scattering predators that rely on the fish for food and survival. While the full impact of removing massive amounts of the ocean's key forage species will take years to assess, we know for certain today that haddock, seals, seabirds, tuna, severely imperiled river herring, and other species that interact with Atlantic herring are being swept up and killed by the massive nets.

It doesn't have to be this way. Not long ago, herring were harvested in a sustainable manner with traditional small-scale gear from the shores of Cape Cod to the eastern stretches of the Maine coast. Unfortunately, the National Marine Fisheries Service—the government agency responsible for conserving the public's marine resources—has not adequately updated its rules to match the killing power of the industrial fleet and as a result the resource and the coastal communities that rely on it are in peril. For example, since the first midwater trawler arrived in 1994 less than three percent of the thousands of fishing trips carried federal observers. By contrast, similar fisheries on the West Coast and in Canada are required to maintain 30 to 100 percent coverage. What's more, the catch the midwater trawlers bring to shore isn't even weighed to ensure the fleet is staying within limits. Particularly in light of the repeat collapses in New England's historic cod, halibut, river herring and other fisheries in recent years, such a gamble with the health of the ocean's cornerstone species is irresponsible and should be unacceptable in the management of a public resource.

Today, as we have seen in numerous fisheries around the world, managers have the tools at their disposal to allow harvesters to make a living from the ocean *and* safeguard its health—common sense steps like increasing the number of observers on fishing vessels at sea and weighing and certifying the catch on land. But we must act now before it's too late. The herring fishery is a public resource and you have the right to demand that it is taken care of properly. To learn more and get involved, go to www.herringalliance.org. Together we can take care of this critical species, but we need your help.

A handwritten signature in black ink, appearing to be 'Peter Baker'.

Peter Baker, Project Manager
Atlantic Herring Campaign
Pew Environment Group

EXECUTIVE SUMMARY:

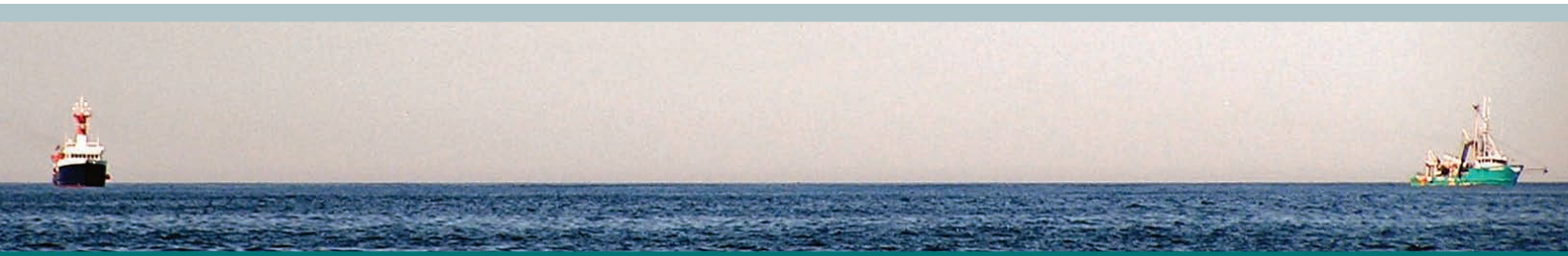
THE OCEAN'S KEYSTONE SPECIES AT RISK

Virtually every major predator in the waters of coastal New England eats Atlantic herring (*Clupea harengus*). The small schooling fish is indispensable to the ecosystem because it consumes vast amounts of microscopic plants and animals known as plankton—the foundation of the ocean's food web—and thus unlocks their productivity for humpback whales, white-sided dolphins, giant tuna, cod, striped bass, seabirds and numerous other species that depend on herring for food and survival.



As the ocean's keystone species, herring made the development of the region's legendary commercial fishing industry possible—providing forage for cod, haddock and other groundfish, bait for lobstermen, and sardines for human consumption. Today the resource continues to support commercial and recreational fisheries with a value of over a billion dollars, as well as an eco-tourism sector that includes whale watching, birding, and boating. Indeed, from both an ecological and economic perspective, it is no exaggeration to describe herring as the most important fish in the sea.

Humans have continuously harvested the region's herring since pre-colonial times, but the time period since 1961 has had the most impact on the marine ecosystem. In the first half of the twentieth century, herring were primarily harvested from coastal waters with relatively conservation-friendly gear called weirs, stop seines and purse seines. But during the 1960's, the scale of the fishery changed dramatically. In the ensuing two decades, a fleet of foreign factory trawlers began catching previously unimaginable amounts of groundfish, mackerel and herring with giant nets called trawls. In 1968 alone, more than a billion pounds of herring were extracted from the ecosystem. The heavy fishing pressure eventually led to the collapse of the herring population on Georges Bank, prompting Congress to expel the foreign trawlers through the Magnuson-Stevens Fishery Conservation and Management Act, passed in 1976.



*F*ish populations gradually rebounded during the 1980s and 1990's, and with the overall herring population recovering, investments in herring harvesting and processing capacity increased to capitalize on the growing resource.

At the center of the fishery's new business model in the 1990's would be the midwater trawler: the largest fishing vessel the region had seen since the departure of the foreign fleet. Up to 165 feet in length, the ships dwarf the quintessential New England fishing boat, which is only 40 to 50 feet from stem to stern. The vessels' nets are just as imposing, spanning the width of a football field and the height of a five-story building. The midwater trawler build-up began in 1994. Within a decade, more than twenty of the large ships were plying the region's waters. The fleet became more efficient when the trawlers increasingly began towing a large net—known as a pair trawl—between two vessels.

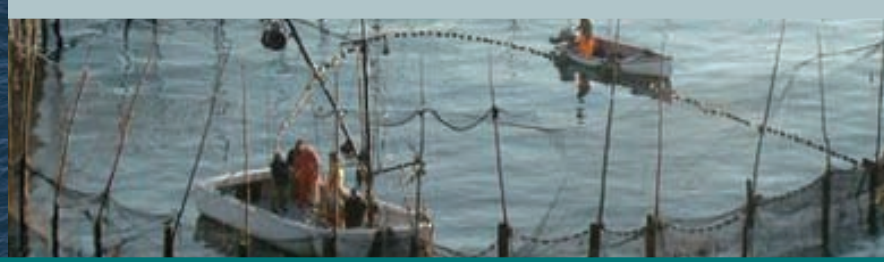
Today, stock assessments claim that herring are not overfished, but the analysis only looks at the population's overall health and does not effectively consider the changing needs of predators, or that the critical inshore segment of the stock is bearing the brunt of the fishing effort. In addition, there are emerging concerns about the overall impacts of the industrial fishery on herring and other ocean wildlife. In fact, a diverse array of new evidence suggests that regulatory steps must be taken to protect the resource and the ecosystem it supports.

First, emerging research on the dietary needs of ocean predators indicates that fishery managers may underestimate the amount of herring eaten by marine mammals, seabirds, and numerous fish species. Managers do not specifically set aside herring in order to meet the changing needs of predators;

rather, a static estimate is used to account for what is called natural mortality. This method of calculation ignores the fact that efforts to bring back herring predators, such as cod, will require additional herring for these species as forage. As one scientific paper notes, "lacking these considerations, an over-optimistic picture of sustainable yield may result, and important trophic links may be severed if a prey resource is overfished." Even this recent study did not include the dietary needs of significant herring consumers, such as haddock, puffins, and terns despite other evidence in the literature that they are important herring predators. The findings underscore the high level of uncertainty that currently characterizes our understanding of predator needs, and thus the need for precaution in making important management decisions about forage fish like herring.

Second, a lack of government oversight has raised questions about bycatch in the fishery (non-targeted species that are accidentally killed or injured by fishing gear). In order to have statistically justifiable bycatch estimates for fisheries like the midwater trawl industry that can capture rare species, like threatened marine mammals, at least 50 percent of those fisheries' trips should carry an observer to monitor catch. However, less than three percent of the vessels' trips taken in New England since 1994 carried observers, which has likely led to an underestimation of the fishery's impacts. As we will see, the rare but serious bycatch events involving marine mammals, giant tuna, and groundfish documented by government officials show that higher levels of monitoring are needed.

Third, current rules allow the trawlers to dump nets loaded with fish at sea if the crew believes they contain excessive bycatch. Not only is the practice wasteful, the fish that are dumped cannot be reliably quantified and may undermine



Chessie Johnson Photo

the management of other fisheries like cod and haddock. Worse, the crews are allowed to do this even when observers are on board, which further weakens what little bycatch data in the fishery is collected. Furthermore, the ships dump “un-pumped” fish at the conclusion of the vessels’ pumping operations. These “operational discards” also go un-sampled, and in conjunction with the use of sorting grates that separate catch by size, may disguise significant bycatch mortality including marine mammals.

Finally, approximately 60 percent of all the herring landed in New England today are caught in the coastal waters of the Gulf of Maine even though the area is estimated to have only 18 percent of the region’s total herring population. This concentrated fishing effort may cause what is known as “localized depletion,” in which key areas of the ocean utilized by predators are stripped of the amount of herring necessary for them to thrive. By focusing efforts inshore, the trawlers are able to reduce costs, but may disproportionately burden this portion of the ecosystem and the small-boat fisheries that rely on it.

Managers at the National Marine Fisheries Service, New England Fishery Management Council and Atlantic States Marine Fisheries Commission can help safeguard the herring resource and the ecosystem it supports over the long-term by taking the following actions:

- (1) The fishery’s annual catch limits must reflect the best available information about the dietary needs of the ocean’s predators and be set conservatively in order to ensure that those needs are met.
- (2) A robust monitoring system needs to be developed to ensure compliance with landings and bycatch standards.
- (3) Closures must be established to protect habitat essential to the life cycle of herring and other species, including spawning protections and feeding considerations such as adequate availability of prey to predators, and to reduce bycatch and gear conflict.

Throughout history, the ocean has shown a remarkable ability to regenerate from overexploitation. But it must be given a chance. Balance must be returned to New England’s Atlantic herring fishery.



Photo: Becky Hale

“What’s left of our groundfish fleet will face further restrictions while midwater trawl vessels fishing for herring will still be allowed to fish in the most precious areas we have set aside to enhance recovery. One of these vessels will legally be able to land more haddock in one day than most of us will catch in an entire year. One of these vessels has the potential to have more interaction with juvenile groundfish than a great number of us put together. This must come to an end.”

Craig Pendleton is a lifelong groundfisherman from Camp Ellis, Maine. He is the owner and captain of the F/V *Ocean Spray*.

AN ABBREVIATED LIFE HISTORY

OF THE MOST IMPORTANT FISH IN THE SEA

The Atlantic herring, or sea herring, is one of the most abundant fishes in coastal New England—making it a familiar sight to commercial fishermen, recreational anglers, bird watchers and other naturalists.

With a streamlined torso, silvery scales and protruding jaw, the herring resembles its cousins, the blueback herring and alewife. At around 12 or 13 inches in length and weighing in at about a pound, a full-grown sea herring can be distinguished from its relatives by steely blue scales on its upper body, a short fin located on the middle of its spine, an oval cluster of teeth on the roof of its mouth, and the lack of rough ridges (called scutes) found on the belly of the alewife and blueback but not sea herring.

For protection, herring gather in dense schools, with individuals on the outside sacrificed to predators in order to shield the core group. The fish's shiny scales also provide a measure of safety—serving as camouflage by scattering light in the open water. However, the signature luster can also alert fishermen on the surface to the presence of a school and the tightly packed fish are vulnerable to giant trawl nets.

On this side of the ocean, the fish is widely distributed from the Outer Banks of North Carolina to the Labrador Sea, with distinct breeding populations recognized in the waters of Maritime Canada as well as a combined stock in both the Gulf of Maine and Georges Bank. However, research suggests that an additional sub-population may reside in shallower waters near the coast of Maine, a distinction we will see, with important implications for sustainable management.

Herring migrate hundreds of miles to eat and reproduce throughout the year. As mentioned, the fish provide a critical link between the ocean's smallest organisms and its largest—by converting vast amounts of energy from plankton into a form that can be consumed by cod, tuna, whales, birds and even us.

The species is generally thought to begin spawning in the waters of Maritime Canada in late August, with activity progressing southward through the Gulf of Maine in the fall, and concluding on Georges Bank in late December. However, fishermen and scientists have long described separate spawning events in Maine's coastal waters later in the year, indicating the existence of a locally adapted population there. And, while the region's overall herring population has recovered substantially in recent years, some coastal populations (and the ecosystems they help sustain) appear to be at risk.

For example, schools of juvenile herring (or sardines) have “all but vanished” from inshore habitat, according to the Gulf of Maine Research Institute. Additionally, a 2001 study showed a reduction in the species' overall spawning activity off the middle and eastern coast of Maine since the early 1990s.

Furthermore, other research suggests that the fishing industry may not be leaving enough herring in the ocean for the predators that rely on the forage. In recent years, for example, scientists and naturalists have been particularly concerned about declining availability of herring for



Zack Klyver, USFW

ATLANTIC HERRING: A KEYSTONE SPECIES IN THE GULF OF MAINE

BY JOHN CRAWFORD

With its multitudes of inter-dependent sea life, the Gulf of Maine ecosystem is a complex system that has given us great natural wealth for centuries in New England—whales, codfish, and striped bass, for example.

When human activities cause major changes in an ecosystem, we must also expect that the products the ecosystem offers us will change. Some of the players in an ecosystem are particularly influential—and when we tinker with these parts of the system the impacts can be relatively enormous, or disastrous depending upon your point of view!

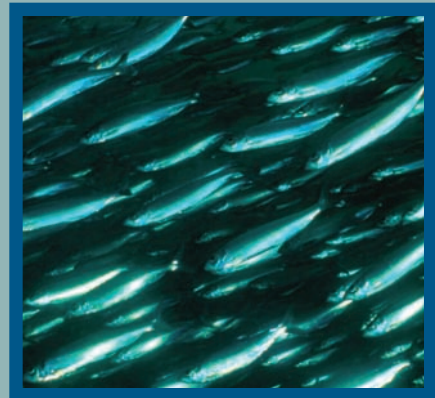
This is especially true for certain animals such as top predators like codfish or massively abundant animals, such as Atlantic herring, that serve as food for other animals in the ecosystem. Because of their essential role, ecologists call these species *keystone species*. Like the apical wedge in a stone arch, the keystone, these species keep the ecosystem from collapsing.

The Atlantic herring (*Clupea harengus*) is a keystone species in the Gulf of Maine ecosystem—historically occurring in huge abundance and serving as a major food source for many of the ecosystem's predators including endangered whales, codfish, striped bass, bluefin tuna, and humans.

If there is anywhere that a *precautionary approach* should be used, it is in the management of the exploitation of species like the herring. When vast quantities of herring are removed each year (i.e., hundreds of thousands of tons) this has a major impact on the availability of food for other fish and for struggling whale populations and this causes impacts that ripple throughout the whole ecosystem.

As predators, humans have a well-known history of being blinded by the apparently limitless abundance of some species only to discover too late the devastating impact of unrestrained harvesting. The extinction of passenger pigeons is a familiar example from our history on land. Like the passenger pigeon, the abundance of herring and other fish in the Gulf of Maine appeared so vast that possibility of jeopardizing fisheries, or the ecosystem, seemed remote.

In the 1960's herring were still so abundant that hundreds of local sardine (i.e., young herring) canneries thrived in coastal Maine but almost all of these have now vanished. In 1968 nearly half a million tons of herring were harvested in the region but within about two decades the commercial catch dropped by over 90%.



Jon Whitman

Herring are especially vulnerable to our fishing efforts because they form huge schools and aggregate on special spawning grounds. Modern fishing methods can rapidly eliminate whole schools or spawning aggregations. Thus, we should exercise restraint when it comes to herring. This animal supports many critical linkages in the food web and should be guarded cautiously to ensure the health of the Gulf of Maine ecosystem.

The author, who holds a doctorate in biology, is a senior scientist at the Conservation Law Foundation and visiting scientist at the Boston University Marine Program.

threatened puffin and other seabird populations on Maine's remote islands. Research conducted by the National Audubon Society found that in 2005 the presence of herring was severely reduced or absent at every nesting colony studied. Consequently, tern productivity was below average and "some breeding puffins and razorbills either deferred nesting or perished at sea," according to the organization's Spring 2005 Newsletter. "Collectively these data suggest that herring populations are declining; these declines coincide with an increase in the quantity of herring harvested by midwater and pair trawls."

Another study showed that despite an overall increase in herring, there has been a sharp decrease in the fat content of bluefin tuna that swim a thousand miles or more to gorge on the forage in New England's waters. The researchers hypothesized that the decline may in part result from localized depletion of herring requiring the bluefin to swim farther and harder to get a meal. In fact, marine scientists attributed a recent decline in the number of whale sightings in the Gulf of Maine to the same phenomenon.

Other fisheries experts believe that midwater trawling may be responsible for the persistent decline of threatened blueback herring and alewife populations, in spite of a series of restoration projects in the past few decades and even with fishery closures in four states. Also known as "river herring"—because they spawn in the rivers and streams of their birth—we now know that hundreds of thousands of pounds of the fish are being accidentally captured by midwater vessels when they travel to the ocean to feed.

Trophic Importance of Herring

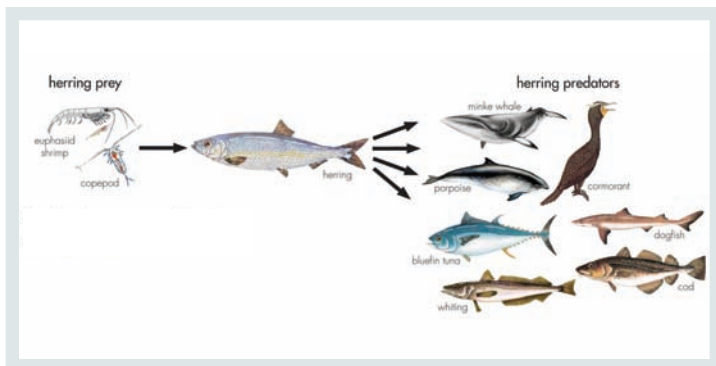


Image: Northwest Atlantic Marine Alliance

Because of uncertainty regarding the role herring play in relation to the ocean's major predators, the unknown impact of increased fishing effort on the inshore segment of the population, and a lack of reliable data about the vessels' catch and bycatch, scientists and conservationists are calling for a new level of precaution in the management of the ocean's keystone species.



Mike Crocker

“Herring are a linchpin in an ocean web of life that sustains us, provides us with opportunities for relaxation or adventure, and contributes to our sense of well being, even when we are far from saltwater. There are still too many people participating in the fisheries management process who fail, or refuse, to recognize the public nature of the herring resource and its importance to others with an equally valid stake in the outcome of the management decisions made. We need to complete a shift in our collective mindset so that our herring management decisions are consistently made with future generations of the public and all fishermen in mind.”

Roger Fleming, is an attorney for Earthjustice and lives in Appleton, Maine with his wife Amy and son, Miles.

THE HERRING FISHERY



Mike Crocker

While New England's herring fishery has undergone dramatic changes since severe overfishing occurred in the 1960s and 1970s, it remains essential to the region's marine resource-based economy. Today, more than fifty percent of all the herring caught goes to the lobster bait market, making it indispensable to that \$260 million fishery. Most of the remaining fish is canned or smoked for human consumption, and increasingly, frozen for export at a value of nearly \$30 million a year. However, arguably the species' most important role is as a forage foundation that supports countless ecological relationships in the marine ecosystem.

The history of the Atlantic herring fishery runs deep. Native tribes harvested herring for sustenance with weirs—large pens constructed out of tree branches and brush—that trap schools in shallow water at low tide. A similar practice was adopted by European settlers and continued to provide the region with a substantial amount of herring as late as the 1980s.

During the colonial period, a sizeable commercial harvest developed to supply the region's cod fishermen with bait and continued to grow until the cod fleet increasingly switched from hook-and-line gear to bottom trawls in the early 1900s.

But the rise of Maine's lobster fishery in the 1860s, and about a decade later, the development of the state's sardine industry, sustained a robust harvest for another hundred

years. During the first half of the nineteenth century purse seiners—vessels that circle schools of fish with large sinking nets—increasingly became a principal gear in the fishery. From 1900 to 1940, landings ranged between 176 and 200 million pounds annually. World War II caused an increased demand for canned fish and landings grew steadily, peaking at more than 530 million pounds in 1948, before stabilizing to pre-war levels in the 1950s. At the time, approximately 50 canneries in Maine employed thousands of workers and packed an average of three million cases of sardines a year.

The 1960s witnessed a major turning point in the fishery, with the arrival of foreign factory trawlers—giant ships that netted and processed fish onboard—from the Soviet Union, Germany and other European nations. The ships mostly stayed offshore, but the intensity of the fishing exacted a severe toll on many of the region's stocks. In 1968 alone, more than a billion pounds of herring were extracted from the resource, leading to a precipitous decline in landings and the eventual collapse of the Georges Bank stock in the late 1970s. At the urging of the region's fishermen, Congress passed the Magnuson-Stevens Fishery Conservation and Management Act in 1976, which effectively banned foreign fishing, and the resource was able to recover.

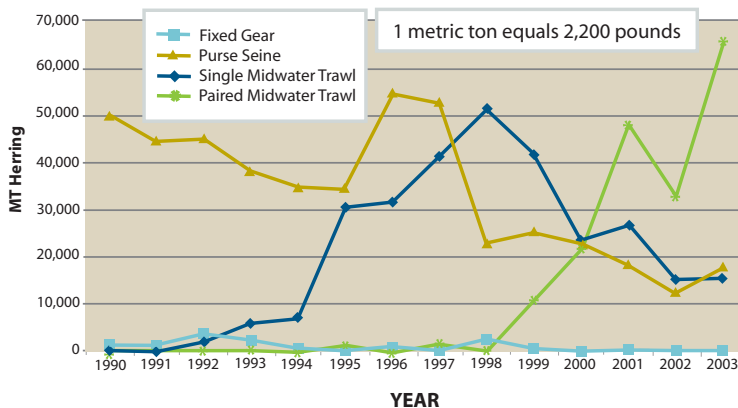
Since the collapse, the herring fishery has experienced several shifts, beginning with the sharp decline of traditional stop seine and weir operations, whose landings fell from more than 96 million pounds in 1981 to only about 350,000

pounds annually in recent years. The traditional sardine industry has also virtually disappeared. Maine, once the largest producer of sardines in the world, is now home to the country's last remaining herring cannery.

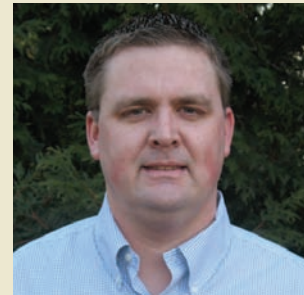
Since 1989, herring landings have been on the rise, with most of the catch coming from coastal waters. While the figures do not exceed historic levels, the decline of juvenile herring inshore, and a significant reduction in the size and number of spawning events off Maine, could mean the population of fish there is nearing its productive limit in some areas.

Starting in the mid-1990's, pressure on coastal herring stocks further intensified with the arrival of domestic midwater trawlers. At the time, the government had encouraged investment in the fishery to capitalize on the growing resource, particularly the offshore stock on Georges Bank. However, the landings distribution since then clearly shows that this promise has not been fulfilled, and instead the vessels have increasingly focused their efforts in coastal waters. In 1995, more than 234 million pounds of herring were harvested, an increase of almost 100 million pounds from the previous year. By 1998, just four years after the midwater trawler build-up began, the ships had decisively replaced purse seines as the fishery's primary technology.

Herring Landings by Gear-Type



Herring Landings by Major Gear Type, (1990-2003). This figure shows that the fishery has recently evolved from the use of purse-seines to the utilization of primarily mobile gear in the form of single and paired midwater trawls. According to the NEFMC, "landings from purse seines averaged 46,407 mt from 1995-1999 compared to 21,659 mt from 2001-2005. Pair trawl landings were only about 1,000 mt in 1995 and 1996 compared to 65,660 mt in 2003 and 57,660 mt in 2004. Midwater trawl landings also have declined over the time series, as many midwater trawl vessels have converted to pair trawling." (Figure and quote from NEFMC, 2006)



Courtesy Photo

“The conservation of Atlantic herring will signal two major paradigm shifts in how the United States manages its ocean fish populations. First, that our government has finally shifted away from its much-criticized ‘single-species’ commercial catch management approach toward a more holistic management style that recognizes the important role that Atlantic herring plays as part of the greater ocean ecosystem. Second, that our regional fishery management council system is no longer dominated by the few large-scale commercial fishery operators and is finally responsive to the broader community of stakeholders that depend on healthy and abundant Atlantic herring populations, including commercial and recreational fishermen, whales, tuna and other large fish, and seabirds.”

Christopher Zeman has worked for numerous ocean conservation organizations, including Oceana, American Oceans Campaign, and The Ocean Law Project, on the conservation of ocean fisheries in New England. He remains an avid recreational fisherman and lives in River Vale, New Jersey.

BAN BRINGS BOOM

TO TRADITIONAL INSHORE HERRING FISHERY

BY CHESSIE JOHNSON | November 2007



Photos by Chessie Johnson

Traditional Canadian herring fishermen celebrate the ban on midwater trawlers in the inshore Gulf of Maine.

“I have never seen so many herring in one place. I have been fishing herring for a long time and dreamed of fishing days like this all my life.” said a crewmember on the Polly B (a purse seiner) out of Grand Manan (Maritime Canada) and was not the only fisherman pleased with this year’s herring fishery. Processors report that this year, they have bought over twice the total tonnage of last year, or the year before, and some may triple last year’s disappointing harvest. The plants still have their summer crews working, the latest for the extra workers for many years.

The past two mild winters are credited with helping to rebuild the stock, although some cite another possible reason for the bountiful harvest. One boat owner suggested that new restrictions in US waters has helped the harvest. “The quantity of fish is the highest I’ve seen for years, and I credit the controls

on mid-water trawlers. Without them hauling up everything, there’s a chance for more fish to move up the coast.” Boat owners and captains are wont to provide exact figures, for competitive reasons, but all agreed that this was an exceptionally good year, both for the quantity of fish available and for the fair weather that allows them to lengthen the season.

Miner Matthews of Campobello Island, owner of the Man O’ War weir on the backside of Campobello Island, said, “This is the latest in the season we have ever fished the weirs on the island. The storms wreck the weirs because the weed builds up on the nets throughout the summer and fall. We’ve had good weather, more herring and good prices this year.” Miner and other weir owners pull nets, an investment of as much as \$50,000, in the fall when bad weather threatens. Kyle Fletcher said, “This has been the best herring

year in anyone’s memory. Sometimes this summer, we were working two tides a day, going from Campobello Island, Grand Manan and over to Blacks Harbour. Except for the first few days of the season, the price has held up good.”

Kenneth Fitzsimmons, a fisherman on Campobello, summed up the mood of everyone involved in the weir fishery this year. “The herring has been good this year. Everyone’s happy.” And, with a large mass of herring and prospects for another mild winter, many expect ‘everyone’ to be happy again next year.

This article first appeared in the November 2007 issue of Fisherman’s Voice, which covers fishing issues for eastern Maine and Maritime Canada.

A NEW GENERATION OF INDUSTRIAL TRAWLERS

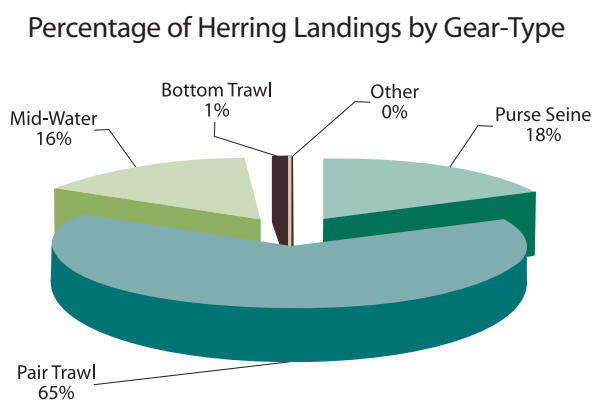


Today, working individually and in pairs, midwater trawlers account for more than 80 percent of the region's total herring catch. The vessel's rapid ascendance as the fishery's dominant gear-type speaks to its tremendous efficiency and power. To be sure, the industrial fishing system has been made even more efficient with the rise of "pair trawling," where two ships team up to tow larger equipment that has too much drag for one vessel to handle alone. In 1995, pair trawlers landed approximately two million pounds of herring; by 2004 that number had climbed to more than 127 million pounds.

The term midwater trawl refers to the depth at which the gear is supposed to be used. Unlike groundfish vessels, which tow their nets on the bottom, midwater equipment was designed for use higher in the water column. However,

former trawler captains have said they frequently went after schools of herring on the bottom, putting groundfish and other species in jeopardy. In fact, herring are known to congregate near the seafloor during the day, and the 24-hour nature of midwater trawl operations led to an acknowledgement in the herring fishery's management plan that the gear is often fished near or on the bottom. Fisheries observers have also documented metallic debris mixed in with the catch, further indicating that the gear is scooping up items that have sunk to the seafloor. In contrast, purse-seine gear can only be fished near the surface and is therefore used only at night.

What's more, the back of a midwater trawl net is made out of approximately 1 1/2-inch mesh, which is necessary to hold the small herring, but could threaten virtually any larger species that swims in its path. By comparison, the region's groundfish fleet uses nets with 6 1/2-inch holes to minimize impact to juvenile and other undersize fish. Representatives of the midwater fleet frequently downplay this risk, but the numerous cases of bycatch documented by government officials, and extensive testimony about seals, whales, groundfish and other species killed by the trawlers indicates otherwise. All this, coupled with little effective government oversight at best, means the true impact on the ecosystem is unclear.



A snapshot of 2003 Atlantic herring landings by gear type (figure from NEFMC 2004).

MIDWATER TRAWLERS AND THE DECLINE OF NEW ENGLAND'S BLUEFIN TUNA FISHERY

BY PETER KAIZER



Sue Flood

Recent stories in the national media have appropriately highlighted the plight of the Atlantic's giant bluefin tuna, which migrates thousands of miles across the ocean to feed in the Gulf of Maine each summer, by describing the serious overfishing occurring in the eastern Atlantic and Mediterranean Sea.

The European Union, along with Asian and African nations, have been blatantly exceeding their allocations of the fish under ICCAT (International Commission for the Conservation of Atlantic Tunas), for years and this is cause for great concern.

No self-respecting tuna fisherman in the United States would deny the importance of getting those nations to comply with ICCAT rules. The U.S. fishery has made great strides in conserving bluefin—by cutting quotas and following strict size rules—while other ICCAT signatories have gone in the opposite direction.

However, there is another problem in the waters of coastal New England that many believe is preventing our fishermen from meeting a relatively small share of the tuna quota in recent years. That is the increase in large midwater trawl vessels, which harvest tremendous amounts of herring, a key forage fish that brings the bluefin tuna and other highly migratory species like swordfish and sharks into our waters.

The drop in our bluefin tuna landings coincided exactly with the arrival of the industrial-size midwater fleet, which has depleted herring schools in the inshore Gulf of Maine, on the backside of Cape Cod and in the Great South Channel, resulting in lower tuna landings and poorer quality fish!

At the same time, Canada began seeing more herring—and tuna—than ever before. Consequently, the fish we once captured in New England during

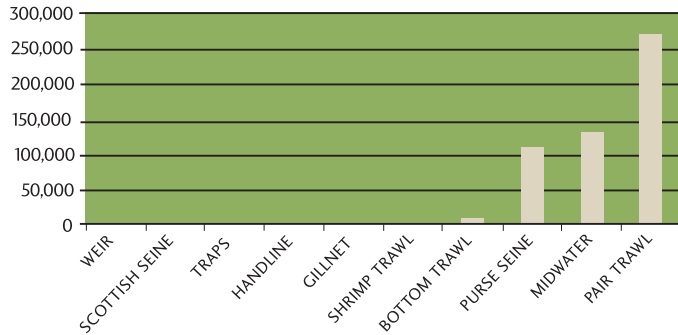
the summer migrated to Canadian waters where there is more forage.

Further evidence of the link between midwater herring trawling and the decline of the tuna landings occurred in the summer of 2007, when the trawlers were banned from the inshore Gulf of Maine during the key summer feeding months; overnight the tuna came back.

While no sustainable fishery advocate would argue against putting more pressure on ICCAT to better enforce its quotas, there are steps we can take in our own backyard to protect the health of the tuna and groundfish fisheries today, by closing waters within 50 miles of the coast to midwater trawling permanently.

The author is a tuna fisherman from Nantucket, Massachusetts.

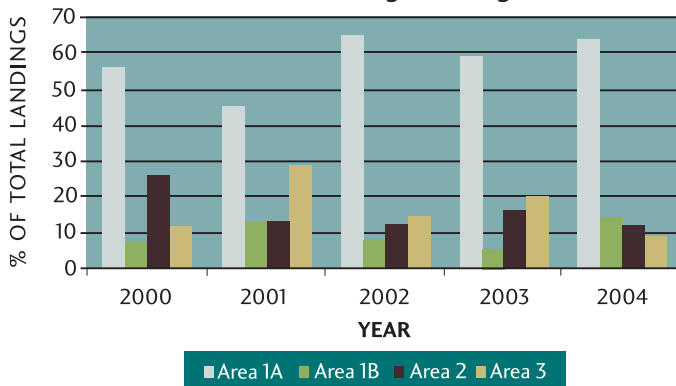
Side-by-side Comparison of Herring Landings by Gear-Type



1 metric ton equals 2,200 pounds

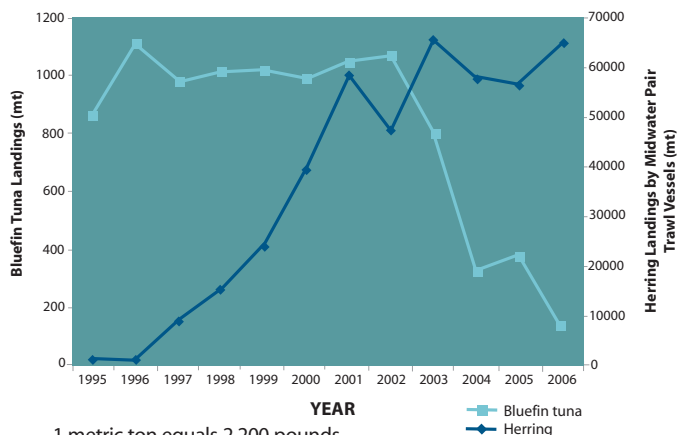
Cumulative Atlantic Herring Landings (Metric Tons) by Gear Type, 2001-2005 (figure from NEFMC 2006)

Where Herring are Caught



Distribution of Herring Fishing by Management Area, 2000-2004. The vast majority of effort on the herring fishery occurs in Area 1A, the inshore and most fragile portion of the ecosystem. (figure from NEFMC 2006)

New England Bluefin Tuna Landings in Comparison to Herring Landings by Midwater Pair Trawl Vessels (metric tons)



1 metric ton equals 2,200 pounds

Bluefin tuna landings in New England compared with Atlantic herring landings by midwater pair trawlers during the same period (Source: NMFS/NEFMC).



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“Since the midwater fleet really began to gear up heavily in 1998, my fishing community has witnessed a steady decline, not only in herring, but also mackerel, alewives, and groundfish. Our landings records confirm this. We desperately need a 50 mile buffer zone to keep the giant ships away from delicate inshore habitat before it’s too late.”

Kurt Martin, owner and operator of F/V *Time Bandit*, is a lifelong fisherman from Cape Cod. Over the years he has made a living as a lobsterman, groundfisherman, tuna fishing, and also owns and operates a weir fishing operation.

LOW-TECH MANAGEMENT FOR A HIGH-TECH INDUSTRY



Chessie Johnson

For generations, New England's fixed gear and purse seine herring operations provided the region with a sufficient supply of product, while co-existing with the ecosystem and other sectors of the fishing industry. However, since the arrival of today's midwater trawlers, there has been a sharp increase in reports of bycatch, a decline in marine mammals and bluefin tuna found in coastal waters and numerous instances when the trawlers were blamed for towing up tens of thousands of dollars worth of lobster gear—all of which point to the need for more robust fishing rules to protect the long-term viability of herring and the wider marine ecosystem.

Today, the resource is managed as a single stock in both the Gulf of Maine and Georges Bank. The strategy helps scientists streamline the process used to estimate the region's overall herring population, but there is considerable debate over whether it is the most prudent approach, because additional herring stocks have long been described in coastal waters. In fact, some fisheries experts believe that the disproportionate abundance of herring on Georges Bank makes the inshore population appear to be much healthier than it actually is.

As mentioned above, new evidence suggests that managers may not adequately consider the amount of herring consumed by predators when they estimate the overall size of the resource. A failure to explicitly include the current

needs of predators in the stock assessment may lead to prescribed harvests that are too large for the stocks to support. Nevertheless, the estimate is used to determine the fishery's annual catch limit, which is divided across four sub-areas: inshore and offshore components of the Gulf of Maine, south of Cape Cod, and near Georges Bank.

In 1994, the arrival of the new midwater trawlers on the scene heightened the risk of over exploitation. Prior to the adoption of a formal fishery management plan in 1999, which set overall and area-specific total allowable catch limits, landings increased dramatically with the inshore Gulf of Maine taking the brunt of the effort—nearly 200 million pounds were taken from Area 1A in 1997. The high landings appear to have taken a toll on the marine environment as indicated by the decline in puffin, tern, and razorbill nesting in those years. To be sure, the harvest limits were implemented largely due to such concerns, but even after, the fleet continued to overshoot those limits. For example, in 2006 the limit for the back side of Cape Cod was surpassed by about 30 percent before the end of the season; the next year the fleet exceeded its pre-June limit for the inshore Gulf of Maine by more than 60 percent.

These figures may mask an even worse problem. The herring fishery's management plan calls for a limit on total catch, but something is being lost in translation and managers do not take the critical step of factoring in total discards as derived from observer data, as is the case in



other fisheries in New England with hard catch limits. In practice this allows the fleet to land and sell herring right up to, or even beyond the allowable total catch limit, as demonstrated by total herring sales in 2006 which alone are in excess of total supposed catch and discards. The system fails to account for the significant amounts of herring that are discarded at sea for a variety of reasons. Federal and other observer data document large herring bycatch events for such reasons as poor fish condition, fish of unmarketable size, presence of bycatch, gear malfunction, or because the vessel is full. These discard events on observed trips may have estimated sizes, but these are based on a visual estimate and the discarded catch cannot actually be sampled to determine composition. Also, landed fish are never weighed. Instead, managers rely on good-faith estimates provided by seafood dealers and vessel captains, in contrast with similar U.S. fisheries which mandate the use of certified scales by vessels and processors.

To make matters worse, the midwater fleet operates with less government oversight than fisheries of a similar scale in the U.S. For example, if the same vessels were in Alaska, they would be required to have observers onboard for 30 to 100 percent of their fishing trips, compared to the barely three percent coverage in New England since 1994. Pelagic midwa-

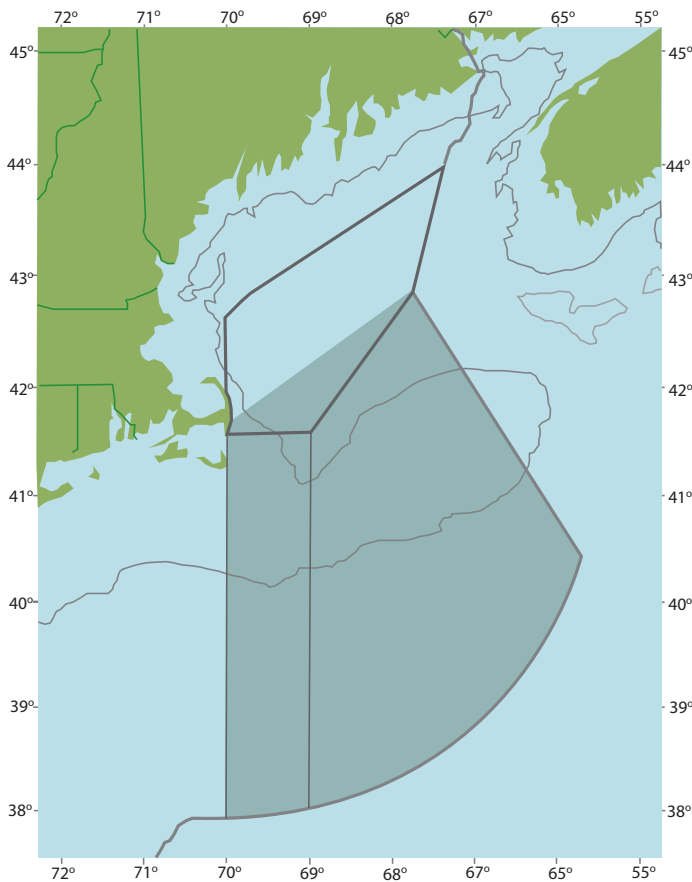
ter trawl vessels off the coast of Oregon and Washington are subject to rigorous monitoring as well—they either carry 100% observer coverage or are required to prove the retention of all catch for shoreside sampling. Monitoring in the New England herring fishery has improved in recent years, but government budget shortfalls and inadequate regulations have kept observer coverage levels too low to accurately measure the vessels' bycatch.

In fact, on the relatively rare occasions when observers were present, alarming reports of bycatch emerged. For example, after officials from the Maine Department of Marine Resources looked at just 27 of the nearly 800 midwater trips taken in the 1997-1998 fishing season, they reported 2,770 pounds of bluefin tuna killed by the trawlers. The fact that this bycatch cannot be extrapolated points out the shortcomings of such low levels of monitoring, but does not change the fact that it could potentially translate into nearly 100,000 pounds of dead giant tuna every year. Federal observers have documented multiple takes of pilot whales and white-sided dolphins by midwater trawl gear despite very limited coverage. In 2004, after a temporary pilot program increased monitoring, three midwater vessels were caught trying to land illegal juvenile haddock in unknown but potentially very large amounts, possibly over 30,000 pounds. Other reports describe

whales that were killed or injured by the gear. Again, these cases represent only a small fraction of the thousands of midwater trips that have been taken, which means it is likely that the real impact is far greater.

And, even when midwater trawlers have observers onboard, a regulatory loophole still prevents an accurate accounting of bycatch. Today, the trawlers are allowed to dump entire nets of fish—a practice known as “slippage”—if the crew suspects those nets contain excessive amounts of juvenile herring, herring in poor condition, river herring, groundfish, marine mammals, or other unwanted catch. In fact, recent studies on similar fisheries found that “slippage” does take place due to the presence of bycatch and that furthermore this practice likely results in under-estimation of that bycatch, potentially including marine mammals.

Finally, the midwater fleet persuaded managers to let them fish in areas closed to groundfish vessels for the protection of recovering cod, haddock, flounder and other species, by claiming their gear does not catch groundfish, or catches only negligible amounts. Midwater trawl vessels fishing in these groundfish nurseries have a bycatch threshold of one percent of the total haul. Overall, the vessels are permitted five percent bycatch. However, even if the ships just captured one percent, which is impossible to verify due to a lack of oversight and widespread discarding, the harvest is so large the amount potentially translates into more than three million pounds of groundfish discards per year. To put the midwater fleet’s scale of operations in perspective, the entire allowable catch of haddock for groundfishermen in the Gulf of Maine in 2008 is 2.7 million pounds. In fact, active groundfishermen are in federal court today challenging the legality of the closed area double standard.



Atlantic Herring Management Areas. Clockwise from Cape Cod Bay, and delineated by the solid lines, are the pre-Amendment 1 boundaries for Area 1A, Area 1B, Area 3, and Area 2. The shaded area shows the new boundary for Area 3 that was implemented through Amendment 1 and is currently in use. (Figure from NEFMC, 2006)

SOLUTION



Left to Right: USFW, Zack Klyver, Zack Klyver

Beginning in the summer of 2007, after fisheries managers responded to the calls of commercial fishermen, salt-water anglers, conservationists and concerned citizens, the inshore Gulf of Maine was closed to midwater trawling from June through September. Within months, there were reports of more herring, striped bass, bluefin tuna, whales and seabirds than had been seen in the waters for years. The experience not only illustrates the negative impact midwater trawlers are having on the ecosystem, it also shows that relatively small management steps can restore the ocean's productivity and increase its economic benefits for all of its users exponentially.

The National Marine Fisheries Service, the Atlantic States Marine Fisheries Commission and the New England Fishery Management Council must build on these gains by adopting the following management actions:

- No midwater trawling in Groundfish Closed Areas.
- No midwater trawling within 50 miles of shore.
- No midwater trawling in areas with high fixed gear interactions.
- A shore-based monitoring system that provides certified offloads, actual weights, and real-time catch monitoring.
- 100 percent observer coverage levels.
- Onboard sampling of all catch or maximized retention and shoreside sampling (prohibit at-sea dumping).
- Bycatch caps monitored in real-time.
- Gather the information necessary to quantify the importance of herring to the ocean's predators. Incorporate this

information into herring fishery regulations.

- Revise harvest targets and limits to ensure Atlantic herring populations are maintained above the fishery's maximum sustainable yield. For example, fishing targets should be set sufficiently below annual catch limits to prevent overages.
- Calculate and explicitly establish a set-aside or allocation of herring for its predators that considers the increased demands as these populations continue to grow.
- Apply strategies to protect herring and its predators in the places and times when the species are at greatest risk from trawl nets.

A robust herring resource is critical to the health of New England's marine ecosystem and the long-term productivity of its fisheries and coastal economy. The collapse of the region's herring resource in the 1970s and then its groundfish stocks in the late 1980s clearly shows what happens when fisheries management puts the interests of short-term profits ahead of sustaining the ocean's long-term productivity. We must act now to avoid making the same mistake again. To learn more and get involved please go to www.herringalliance.org.



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Chessie Johnson, Zack Klyver,

The Herring Alliance, a project of the Pew Environment Group, was formed in May 2007 and includes the following organizations:



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