

New Bedford Fishing Vessel Evolution: Eastern-Rig Vessels

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Changes in fishing gear and vessel design were integral to the development of New Bedford's fishing industry. New vessel designs were needed to maximize the potential of the new gear. At the start of the 20th century, New Bedford fishermen utilized small sailing craft such as catboats, sloops and small fishing schooners. Vessel registers from the time show that several older fishing schooners from other ports spent their final years fishing out of New Bedford. They fished using various gear including handlines, tub trawls, swordfish harpoons and early beam trawls.

Flounder Draggers

The early flounder draggers, as they were called, were small sloops that towed a beam trawl on the sandy bottom for flounder. They were powered by sail alone until Dan Mullins used the auxiliary powered EDNA J. MORSE as a flounder dragger in 1909. Auxiliary power at this time was in its infancy, the engine was there to assist the sails. As larger, more powerful engines became affordable to commercial fishermen, the relationship between sail and engine would flip. However, larger engines would require larger vessels that could withstand the engine vibrations and stress of towing a net.

The MARY

Starting with Dan Mullins, the New Bedford fleet began motorizing their vessels and also adopted the otter trawl. After World War I, Captain Mullins ushered in a new era in New England fishing with the MARY, a prototype of what would eventually be called an Eastern-rig dragger.

As far as design and rig, the MARY originally was a small, typically rigged auxiliary fishing schooner for her time. The first of the so-called "schooner-draggers." Since her hull was essentially built for sailing, she could be successfully employed in the summer harpoon swordfish fishery. Schooner-draggers remained a variant of the Easter-rig dragger that retained more of a sailing hull. The graceful lines of these vessels made them ideal for swordfishing, mackerel seining, and other (non-dragging) fishing methods. Although ports like Gloucester had many of these vessels in their early dragger fleet, New Bedford fishermen were quicker to adopt the fully powered variant that was ideal for full-time groundfishing or scalloping.

Captain Mullins soon realized that on a vessel of MARY's size, the schooner rig was cumbersome when dragging and so would later rig her as a ketch. This mast configuration, with the smaller mast just forward of the pilothouse, is what most small to medium Eastern-rig draggers would adopt going forward.

What made the MARY special was her fishing gear. She was the first small vessel to otter trawl using gallous (or gallows) frames: Metal brackets mounted along the starboard rail

used by the large “beam trawlers” for raising and lowering the otter doors and net. Previous to this innovation, early draggers used a pair of booms to set the net. The smaller sloop-rigged vessels would often tow their nets from the mast-head.

Another first by the MARY was the use of two-headed winch, a precursor to the larger drum winches draggers would adopt in the 1920's and based upon the steam-driven winches used by the Boston beam trawlers. Originally the early drag nets were hauled back by the fishermen themselves, before Captain Mullins started using a primitive single head winch connected to the engine. Like many great innovators, Captain Mullins didn't necessarily invent, instead he combined and refined various preexisting elements into something completely new. He had Hathaway Machinery further develop this equipment which would become standard on the draggers to come.

This was a pivotal moment in fishing technology. Now small, privately owned vessels could fish like the big “beam trawlers” out of Boston (actually otter trawlers, but called beam trawlers because of their size and design). These vessels, usually built of steel, in excess of 250 gross tons and powered by steam engines, were far beyond the means of anyone save the large fishing companies of Boston. The MARY demonstrated that for a relatively modest investment, a “captain-owner” or a small company could see impressive returns in a short time. The MARY cost Captain Mullins approximately \$22,000, after her first two trips dragging for yellowtail flounder, the vessel stocked \$7800.

Although he essentially created the Eastern-rig dragger, Captain Mullins was not finished. He would continue to help refine both the fishing gear and the vessels that comprised New England's fishing fleets for many decades.

Eastern-Rig Draggers

Whether used for dragging or scalloping, the Eastern-rig dragger was a powerful looking vessel, designed to be good in rough seas for many days at a time. They came in various sizes, the largest exceeding 120 feet long with carrying capacities well over 200,000 pounds. They had profiles that ranged from the sweet lines of a schooner to the brute power of a steamship. Unlike the steam trawlers of the Boston fleet, whose designs were taken from European vessels, Eastern-rig dragger design evolved from the New England sailing fleet. Shipbuilders and designers who supplied the local fleets of fishing schooners adapted to create hulls that better suited this new type of fishing.

Like the fishing schooners before them, most of the Eastern-rig draggers were built of wood. White oak was preferred and the larger wooden draggers were constructed using sawn-frames, incorporating the oak's natural grain instead of using steam to bend the frames. Planking was usually white oak and/or yellow pine and decking was white pine. While some vessels were fastened with copper or galvanized spikes, many were fastened with traditional locust “trunnels.” After World War II, wooden fishing vessel construction gave way to steel hulls. However the Eastern-rig design was retained for many decades.

The larger draggers usually had a raised superstructure in the bow called a whaleback, which protected the crew from high seas and also added storage space. The pilothouse rose above the engine room in the stern, allowing the skipper to navigate and also observe the work on deck. Just forward of the pilothouse would be the drum winch, used to lower and then haul in the net.

Below deck the crew lived, ate, and slept in the fo'c'sle (forecastle) located in the bow. Like their fishing schooner predecessors Eastern-rig fo'c'sles were usually cramped, bunk-lined cabins that also housed the galley. When not working on deck, this is where the crew ate their meals, socialized, and rested up. Just aft of the fo'c'sle was the fish hold, located amidships. On an Eastern-rig, most of the space below deck was for storing fish. Before the trip this area would be loaded with ice and as fish was caught it would be sent down below either through the main hatch or through smaller deck plates. The fish itself was separated by species and size and stored in compartments called wing pens, located on the port and starboard sides. The fish and ice were contained in the pens by using small planks called pen boards that fit in slots in the pens. This aspect of fishing has changed little from the days of sail. Behind the fish hold was the engine room where the power plant, transmission, batteries and other assorted equipment were kept. This is also where a chain drive connected the engine to the drum winch located on deck.

The larger draggers carried a two-masted “schooner rig” which was used with the winch to haul in the catch over the rail and onto the deck. Medium sized draggers carried either a ketch-rig (smaller mast just forward of pilot house) or yawl-rig (smaller mast just aft of pilot house). The small or “baby draggers” usually carried a single mast and eventually, many of the large, Eastern-rig vessels would remove the mainmast as the gear was further refined. Many Eastern-rig draggers carried a set of riding sails to keep the vessel steady since some had a reputation of rolling in heavy seas. In the right conditions, even these small spreads of canvas could also add a couple of knots of speed to the vessel.

One of the distinctive pieces of equipment on an Eastern-rig dragger were the gallous (gallows) frames: iron or steel A-frames mounted on the starboard side of the vessel. It was from these structures that the trawl doors were suspended. The doors acted as the shoulders and hips of the vessel as she towed the net. The larger draggers, like the steam-driven beam trawlers, carried gallous frames on both sides of the vessel. This double rig allow the big boats to have one net in the water at all times, this could be critical in the days before synthetic fiber nets. Draggers would often tear up their nets on the hard bottom, which would require mending by the “twine men.” Much time and money could be saved by having one net fishing while the other was being repaired.

How they fished – Dragging

The process of setting out and hauling back the net on an Eastern-rig dragger required teamwork. The crew on deck had to coordinate their efforts in order set the net correctly, to haul the catch on deck and to avoid injury. Even with a good crew, the chances for injury were everywhere: Men at the gallous frames ran the risk of getting their hands jammed by the doors, when setting up the hookup block to the tow warps at the stern. A

crewman had to extend out over the rail, regardless of sea conditions. When it came time to unload the catch, a load of fish suspended from the mast could swing like a 10,000 pound wrecking ball. However when it all worked well, and it usually did, dragging was safer, more efficient, and more profitable than anything that came before.

When setting out the net on an Eastern-rig dragger, the net was taken from storage along the rail and cast over the side. The vessel was swung in a wide arc to get the net into position as the winch let out the cables. The doors were then lifted slightly by the winch to unhook the hanging chains and then the doors lowered as the vessel steamed forward. The gear was set to the required depth and then the brakes applied to the winch. The entire apparatus trailed off the port or starboard side of the stern. Then the two tow cables were hooked together using a “hookup block,” and the winch breaks eased just enough in order to slip if the net became “hung up” on an underwater obstruction.

After towing the net for a given amount of time (from 30 minutes to 2 hours) the net was “hailed back” using the deck-mounted winch. Eastern-rig draggers often had to go “beam-to,” with the net on the leeward side of the vessel. As the doors rose from the bottom they were secured by the gallous chains, meanwhile the net began to float to the surface and the ground cables were hauled by the winch until the wings of the net came up. If another tow was planned, then the vessel often only hauled in the cod end of the net with the help of a bull rope that connected the headrope to the cod end. The mast or masts along with the winch would be used as a derrick to haul the cod end above the deck. When the slip not was undone the catch would spill out on deck and contained by checker boards that fitted in slots on the deck. If the catch was too big to handle in one load, the bull rope could be used to “split the bag” into a more manageable size.

How they fished – Scalloping

When sea scalloping began in the late 1920's it was the Eastern-rig design that was first adopted. The sea handling abilities of the design had already been proven and all that was needed was the specialized gear needed to tow the scallop dredges. Unlike Eastern-rig draggers, Eastern-rig scallop vessels are still holding their own in their branch of the industry. Today there are still Eastern-rig scallopers in the New Bedford fleet, some getting a second career after years of dragging for groundfish in other ports.

When rigged for scalloping the Eastern-rig boats carry distinctive gear that separates them from the draggers. Scallopers carry port and starboard gallous frames up forward, but none aft. Originally the gallous frames were the same used in dragging, however newer vessels use larger frames of a different design. Where the after gallous frames are located on a dragger, scallopers have shucking stations. On larger vessels this area is enclosed to create a shucking room. Scallopers also have long booms off of the mainmast from which the scallop dredges are raised and lowered.

Unlike dragging, scallopers tow from both sides of the vessel at the same time. The booms lower the dredges into the water and are then connected to the towing cables through the gallous frames. When it is time to haul back, the dredges are hauled to the

sides of the vessel and brought on board by the winch and booms. The heavy steel dredges and chain bags have the potential to damage the vessel when being raised and lowered and so both wood and steel Eastern-rig scallopers carry extra protection along their midship section. The deck itself can also be damaged, so many scallopers use reinforced “dump decks” to empty out the dredges.

When the dredges are on deck, the crew must disconnect the tow cables from the dredge and then attach it to the end of the chain bag. The dredge and bag are then lifted with the winch and boom so the scallops fall from the bag and onto the deck. Once the bags are empty and the dredges back in the water, the crew begins sorting or “picking” the pile. Scallops are placed in baskets in preparation for shucking to remove the “meats” from the shells and viscera. This tiresome and monotonous work is where a scalloper really earns his keep. A good shucker goes as fast as he can until the pile is done, taking mere seconds to shuck a scallop with shells and viscera going overboard. The scallop meats are then packed into muslin bags, rinsed with seawater, and then carefully put down below in the fish hold.