Bycatch of regulated species and the Nordmore grate in the Gulf of Maine shrimp fishery from Fishing Vessels NEC-SE2007-1 in the Gulf of Maine from 2009-2009 (NEC-CoopRes project)

Website: https://www.bco-dmo.org/dataset/3589
Version: final
Version Date: 2012-01-05

Project
» Northeast Consortium: Cooperative Research (NEC-CoopRes)

Program
» NorthEast Consortium (NEC)

Contributors	Affiliation	Role
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Dataset Description

"A Contemporary Assessment of the Bycatch of Regulated Species and the Nordmore Grate in the Northern Shrimp Fishery"

Since April 1992, fishermen engaged in this fishery have been required to install a finfish excluder device in their trawl net, known as the Nordmore grate.
(Richards & Hendrickson, 2006).

A data collection program was established using GMRI staff and NOAA observers to monitor and document the bycatch of regulated groundfish and non-regulated species during the 2008-2009 shrimp season. GMRI staff sampled the catch from 137 hauls (tows) over a period of 39 days (fishing trips). Initially four boats were used to collect data, one operating in the waters of northern Massachusetts, one near Boon Is., one in Saco Bay, and another in midcoast Maine. NOAA observers sampled the catch from 106 hauls over 25 fishing trips. The location of each fishing trip sampled by these observers was unknown.

GMRI and NOAA data indicated that the shrimp catch comprised almost 96% and 92% of total catch weight respectively. The proportion of regulated bycatch from both data sources was less than 2% of the total catch weight. In fifty-one percent of all fishing trips sampled by GMRI, regulated species bycatch averaged less than 1% of total catch weight, including all trips from midcoast Maine. In an additional thirty-three percent of fishing trips, regulated bycatch averaged between 1 – 2% of total catch weight. The bycatch of regulated species exceeded 5% of total catch weight in only 5% of hauls, and weighed no more than 55 lbs in any haul. All but one fishing trip sampled by GMRI staff had an average regulated species bycatch of less than 5% per haul. The boat operating in midcoast Maine consistently recorded the lowest proportion of regulated bycatch per haul, while the highest proportions were consistently recorded at Boon Is, particularly in January. Juvenile American plaice comprised almost 50% of regulated species bycatch sampled by GMRI staff. The effect of grate

orientation was tested on one boat, but did not appear to alter grate performance.

The bycatch of regulated species did not exceed 5% of total catch weight in any haul sampled by NOAA observers. American plaice similarly dominated the bycatch of regulated species, but only represented 27% of the total catch of this bycatch. Grate orientation had little impact on the proportion or composition of shrimp and regulated bycatch in the total catch. (from final report abstract)

Project goal and objectives
The primary goal of this project was to evaluate the bycatch of regulated groundfish species during the 2008-2009 northern shrimp season and assess the efficacy of the Nordmore grate in reducing the bycatch of regulated groundfish and non-regulated species.

Specific project objectives were to:
1. Monitor and document the bycatch of regulated groundfish and non-regulated species during the 2008-2009 northern shrimp fishing season using GMRI samplers and NOAA observers.
2. Compare the bycatch of regulated species during the 2008-2009 fishing season across spatial and temporal scales.
3. Determine the ability of the Nordmore grate to reduce the bycatch of regulated species to 5% or less of total catch weight.
4. Identify factors affecting the operational performance of the Nordmore grate and compare the catching performance of both upward and downward excluding grates.

Methods & Sampling

At the conclusion of each haul, all bycatch was separated from the shrimp catch and sorted by species. The catch of each regulated species was weighed to the nearest tenth of a pound and individual fish were measured to the nearest centimeter. For species caught in large numbers, only the first 100 individuals caught per day were measured due to limited time between hauls in which to collect data. Because of their prevalence in the catch, measurement of silver hake, red/white hake, and both Atlantic and river herring was recorded to the nearest centimeter. Shrimp weights were estimated by counting the number of trays filled with shrimp. Each full tray weighed an estimated 100 pounds, with partial tray weight estimated based upon the proportion filled. This method of estimation was consistent with practice by fishermen and NOAA observers. The sea samplers recorded fishing gear details and grate details including bar spacing, grate angle, and grate height, width, and orientation. Operational details concerning grate deployment, retrieval, deck handling, and maintenance was also recorded, along with location, direction, and duration of each haul. Temporal comparison of bycatch was facilitated by sampling over the course of four different months at approximately the same time each month. Catch data was then compared between locations and time.

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Data Files

File	
shrimp_nordmore_bycatch.csv	(Comma Separated Values (.csv), 122.17 KB) MD5:f97b1166b03ebb7116268ccf47522889
Primary data file for dataset ID 3589	

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Parameters

Parameter	Description	Units
date	date of haul	yyyymmdd
time	time of haul	hhmm
haul_id	haul number	integer
lat	latitude; North is positive	decimal degrees
lon	longitude; East is positive	decimal degrees
name_common	common name of animal	text
species	taxonomic name of animal	text
weight	weight of catch	pounds

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Instruments

Dataset-specific Instrument Name	Beam Trawl
Generic Instrument Name	Beam Trawl
Dataset-specific Description	The Nordmore grate consists of a rigid or semi-rigid grate of parallel bars attached to a rigid frame, with a bar spacing not exceeding 1 inch (50 CFR 648.80, 2009). The grate must be inserted in the trawl net at angle of approximately 45 degrees. The grate is oriented to exclude bycatch through a triangular escape opening located either in the top or bottom of the codend. The base of the escape opening must measure at least 19 inches across and be located immediately ahead of the grate; the sides of the escape opening are cut on an all-bar taper to an apex. If desired, a second grate with a bar spacing not exceeding 7/16th of an inch can be located 6 to 10 feet behind the first grate. The second grate is designed to exclude small shrimp from the trawl net.
Generic Instrument Description	A beam trawl consists of a cone-shaped body ending in a bag or codend, which retains the catch. In these trawls the horizontal opening of the net is provided by a beam, made of wood or metal, which is up to 12 m long. The vertical opening is provided by two hoop-like trawl shoes mostly made from steel. No hydrodynamic forces are needed to keep a beam trawl open. The beam trawl is normally towed on outriggers, one trawl on each side. While fishing for flatfish the beam trawl is often equipped with tickler chains to disturb the fish from the seabed. For operations on very rough fishing grounds they can be equipped with chain matrices. Chain matrices are rigged between the beam and the groundrope and prevent boulders/stones from being caught by the trawl. Shrimp beam trawls are not so heavy and have smaller mesh sizes. A bobbin of groundrope with rubber bobbins keeps the shrimp beam trawl in contact with the bottom and gives flatfish the opportunity to escape. Close bottom contact is necessary for successful operation. To avoid bycatch of most juvenile fishes selectivity devices are assembled (sieve nets, sorting grids, escape holes). While targeting flatfish the beam trawls are towed up to seven knots, therefore the gear is very heavy; the largest gears weighs up to 10 ton. The towing speed for shrimp is between 2.5 and 3 knots. (from: http://www.fao.org/fishery/geartype/305/en)

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Deployments

NEC-SE2007-1

Website	https://www.bco-dmo.org/deployment/58761
Platform	Fishing Vessels
Report	http://www.northeastconsortium.org/ProjectFileDownload.pm?report_id=1222&table=project_report
Start Date	2009-01-09
End Date	2009-04-14
Description	Study of bycatch using Nordmore grate on shrimp trawls in the Gulf of Maine. Date and times are local, not UTC.

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Project Information

Northeast Consortium: Cooperative Research (NEC-CoopRes)

Website: http://northeastconsortium.org/

Coverage: Georges Bank, Gulf of Maine

The Northeast Consortium encourages and funds cooperative research and monitoring projects in the Gulf of Maine and Georges Bank that have effective, equal partnerships among fishermen, scientists, educators, and marine resource managers.

The Northeast Consortium seeks to fund projects that will be conducted in a responsible manner. Cooperative research projects are designed to minimize any negative impacts to ecosystems or marine organisms, and be consistent with accepted ethical research practices, including the use of animals and human subjects in research, scrutiny of research protocols by an institutional board of review, etc.

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Program Information

NorthEast Consortium (NEC)

Website: http://northeastconsortium.org/

Coverage: Georges Bank, Gulf of Maine

The Northeast Consortium encourages and funds
cooperative research and monitoring projects in the Gulf of Maine and Georges Bank that have effective, **equal partnerships** among fishermen, scientists, educators, and marine resource managers.

At the 2008 Maine Fisheremen's Forum, the Northeast Consortium organized a session on data collection and availability. Participants included several key organizations in the Gulf of Maine area, sharing what data are out there and how you can find them.

The Northeast Consortium has joined the Gulf of Maine Ocean Data Partnership. The purpose of the GoMODP is to promote and coordinate the sharing, linking, electronic dissemination, and use of data on the Gulf of Maine region.

The Northeast Consortium was created in 1999 to encourage and fund effective, equal partnerships among commercial fishermen, scientists, and other stakeholders to engage in cooperative research and monitoring projects in the Gulf of Maine and Georges Bank. The Northeast Consortium consists of four research institutions (University of New Hampshire, University of Maine, Massachusetts Institute of Technology, and Woods Hole Oceanographic Institution), which are working together to foster this initiative.

The Northeast Consortium administers nearly $5M annually from the National Oceanic and Atmospheric Administration for cooperative research on a broad range of topics including gear selectivity, fish habitat, stock assessments, and socioeconomics. The funding is appropriated to the National Marine Fisheries Service and administered by the University of New Hampshire on behalf of the Northeast Consortium. Funds are distributed through an annual open competition, which is announced via a Request for Proposals (RFP). All projects must involve partnership between commercial fishermen and scientists.

The Northeast Consortium seeks to fund projects that will be conducted in a responsible manner. Cooperative research projects should be designed to minimize any negative impacts to ecosystems or marine organisms, and be consistent with accepted ethical research practices, including the use of animals and human subjects in research, scrutiny of research protocols by an institutional board of review, etc.

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Funding

Funding Source	Award
NorthEast Consortium (NEC)	PZ09020

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