

# Spiny dogfish discard mortality using commercial hook gear from F/V Riena Marie NEC-ST2005-1 in the Gulf of Maine and off Cape Cod, July 2006 (NEC-CoopRes project)

Website: <https://www.bco-dmo.org/dataset/3103>

Version: 7 April 2009

Version Date: 2009-04-07

## Project

» [Northeast Consortium: Cooperative Research](#) (NEC-CoopRes)

## Program

» [NorthEast Consortium](#) (NEC)

Contributors	Affiliation	Role
<a href="#">Slifka, Lara</a>	Cape Cod Commercial Fishermen's Alliance (CCCFA)	Co-Chief Scientist
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## Dataset Description

### Industry-science partnership investigating the short-term and long-term discard mortality of spiny dogfish using commercial hook gear in the Gulf of Maine.

Co-P.I.'s:

Shelly Tallack (Gulf of Maine Research Institute)

Lara Slifka (Cape Cod Commercial Hook Fishermen's Association)

### [Final Report](#)

Abstract

The unpopular spiny dogfish, *Squalus acanthias*, represents a resource which, in recent years, despite its apparent high abundance, is considered vulnerable to overfishing. This vulnerability hinges on its characteristics of slow growth, late maturation (~6 years in males and ~12 years in females), high maximum age (35-40 years) and low natural mortality ( $M=0.09$ ). One immediate problem faced by fishery managers is that while spiny dogfish are periodically caught in high numbers as bycatch (during both recreational and commercial trips), there is little information regarding the survivability of the discarded dogfish. Two recent studies have addressed dogfish discard survival from trawl gear and gillnet gear; the current study addresses survival from commercial hook gear.

This collaborative project represents a partnership between the Gulf of Maine Research Institute (GMRI), the Cape Cod Commercial Hook Fishermen's Association (CCCHFA) and commercial fishermen working with each organization in Gulf of Maine waters and Southern New England waters, respectively. The primary research objective was to investigate the short-term discard mortality rate of dogfish from different commercial hook gears. Survivability was investigated through caging studies.

## Methods & Sampling

A total of 2,418 dogfish were sampled between the two regions; of these 682 were caged by GMRI (45% males and 55% females) and 1,234 were caged by CCCHFA (27% males and 73% females). Dogfish were subject to three gear/handling treatments: 1) snubbed, 2) unsnubbed and 3) control. An overall regional difference in short-term discard mortality was observed; GMRI recorded significantly lower total mortality (7%) than CCCHFA (22%). Regional, averaged findings showed a sex effect with males demonstrating higher mortality (26%) than females (14%). The largest dogfish of each sex demonstrated greater resilience to mortality. Treatment effects were observed with mortality being highest in snubbed fish (23%), then unsnubbed fish (16%) and finally control fish (13%). Gear effects were found with highest mortality resulting from long-line gear (22%) while the different hand gear-related mortality ranged from 8-17%. The relationship between hook removal treatment and hooking severity index (HSI) was significant; severe mouth and jaw injury was most frequent in snubbed fish but was rare in control fish and the overall trend was that mortality increased with increased HSI.

Considerable variation was observed between the GMRI and CCCHFA findings; this variation was likely caused by differences in: water temperature, levels of parasitic infestation (i.e. sand fleas) and possible differences in handling, tanking and caging procedures. This study's long-term discard mortality assessments were aborted for logistical reasons and as such, these findings represent the range of likely short-term discard mortality from hook gears across the region.

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## Data Files

File
<b>dogfish_mortality.csv</b> (Comma Separated Values (.csv), 265.50 KB) MD5:1c471f1fd4038516399f1880e0ee91be
Primary data file for dataset ID 3103

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## Parameters

Parameter	Description	Units
region	Gulf of Maine or off Cape Cod. Mass.	
cruiseid	vessel name plus trip number	
month_local	month of year, local time	
day_local	day of month, local time	
yrday_local	local day and decimal time, as 326.5 for the 326th day of the year, or November 22 at 1200 hours (noon)	
haul_num	haul number	
lat_start	latitude at starting time of measurement (west is negative), in decimal degrees	decimal degrees
lon_start	longitude at starting time of measurement (west is negative), in decimal degrees	decimal degrees
lat_end	latitude at end time of measurement; in decimal degrees (negative denotes South)	decimal degrees
lon_end	longitude at end time of measurement; in decimal degrees (negative denotes West)	decimal degrees

count	sequential number of dogfish caught during a haul	
tagid	fish identification tag number	
sex	male or female	
length_cm	Length of fish from tip of nose to end of tail in centimeters	centimeters
weight_g	Weight of fish in grams	
init_fate	Fate of fish when it went into cage (A=alive, D=dead)	
stamina_haul_code	Stamina level when fish was taken off hook (1-4, 1=strong, 4=dead)	
stamina_cage_code	Stamina level when fish went into cage (1-4, 1=strong, 4=dead)	
init_hook_severity_code	Hooking severity index upon caging (0-5, 0=hooked inside, 1=small hole, 5=broken jam, large hole)	
hook_site_code	Site where hook punctured fish: 1=mouth, 2=cheek, 3=eye, 4=nose, 5=inside mouth, 6=swallowed, 7=gills, 8=tail	
male_maturity	Stage of reproductive maturation if fish was a male and it was obvious from external viewing	
female_maturity	Stage of reproductive maturation if fish was a female and it was obvious from external viewing	
fish_treatment	What treatment this fish endured (S=snubbed, U=unsnubbed or C=control)	
gear_method	What type of gear was used to catch this fish (LL=longline, R=rod, J=jig, RJ=rod or jig, HL=handline)	
fate_final	Coded Final Fate category: 0 = Dead, 1 = Alive, 2 = escaped, 3 = died in tank, 4 = released	
stamina_final	Final Stamina Index of fish when it was retrieved on it's last day(includes noncaged and longterm fish): (1-4, 1=strong, 4=dead)	
hook_severity_final	Hooking severity index upon retrieval (0-5, 0=hooked inside, 1=small hole, 5=broken jam, large hole)	
comments_fish_initial	Any relevant comment about this fish upon retrieval	
tank_duration	How long the fish was in the tank	minutes
sample_type	What sample group this fish belongs to: 1=caught only, 2=caught and caged, 3=caught, caged and used in mortality sample, 4=unknown if caged, not used in mort sample	
comments_fish_final	Any relevent comment about this fish upon retrieval	

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## Instruments

<b>Dataset-specific Instrument Name</b>	Electronic Jig Machine
<b>Generic Instrument Name</b>	Electronic Jig Machine
<b>Generic Instrument Description</b>	An electronic jig machine is used to mechanically jig a fish hook or lure with a bait casting reel without using the fishing rod to jig the lure. Normally to jig a fish hook or lure one must move the fishing rod either vertically, horizontally, or jerk the fishing line by hand. The jigging action of this bait cast reel (how rapid and how long in distance the jig will travel) will determine the desired intensity and resonance of the rattle used in the lure to attract or snag the fish. With very simple controls, the equipment functions automatically since it is programmed to suit the actual fishing area, the fishing method and the type of fish.

<b>Dataset-specific Instrument Name</b>	Fish Cage
<b>Generic Instrument Name</b>	Fish Cage
<b>Generic Instrument Description</b>	Used to catch fish.

<b>Dataset-specific Instrument Name</b>	Fishing Rod
<b>Generic Instrument Name</b>	Fishing Rod
<b>Generic Instrument Description</b>	Used to catch fish.

<b>Dataset-specific Instrument Name</b>	Long Line Fishing Gear
<b>Generic Instrument Name</b>	Longline Fishing Gear
<b>Generic Instrument Description</b>	Longlining employs a central fishing line that can range from one to 50 miles long; this line is strung with smaller lines of baited hooks, dangling at evenly spaced intervals. Longlines can be set near the surface to catch pelagic fish like tuna and swordfish, or laid on the sea floor to catch deepdwelling fish like cod and halibut. ( <a href="http://www.montereybayaquarium.org/cr/cr_seafoodwatch/sfw_gear.aspx">www.montereybayaquarium.org/cr/cr_seafoodwatch/sfw_gear.aspx</a> )

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## Deployments

### NEC-ST2005-1

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57984">https://www.bco-dmo.org/deployment/57984</a>
<b>Platform</b>	F/V Riena Marie
<b>Report</b>	<a href="http://northeastconsortium.org/ProjectFileDownload.pm?report_id=862&amp;table=project_report">http://northeastconsortium.org/ProjectFileDownload.pm?report_id=862&amp;table=project_report</a>
<b>Start Date</b>	2006-07-28
<b>End Date</b>	2006-09-20
<b>Description</b>	5 fishing vessels associated with this project, 3 off Cape Cod and 2 in the Gulf of Maine, including F/V Special J and F/V Survivor. For a complete list and a list of participants, see the Deployment Report.

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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 Fishermen'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
National Oceanic and Atmospheric Administration (NOAA)	<a href="#">PZ07009</a>

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