

# Temperature data from the Red Crab stock assessment project: 100-600 fathoms, from the Canadian border (Hague Line) to approximately Hudson Canyon from 2002-2005 (NEC-CoopRes project)

**Website:** <https://www.bco-dmo.org/dataset/3433>

**Version:** final

**Version Date:** 2007-03-08

## Project

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

## Program

» [NorthEast Consortium](#) (NEC)

Contributors	Affiliation	Role
<a href="#">Wahle, Richard A.</a>	Bigelow Laboratory for Ocean Sciences	Principal Investigator

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## Dataset Description

### Red Crab Tag Data

**Project Leader:** *Richard A. Wahle*, Bigelow Laboratory for Ocean Sciences

**Additional Participants:**

*Jon Williams*, Benthic Fishing Corp.

*Yong Chen*, University of Maine

**Companion objects:**

[red crab sampling data](#)

[red crab camera data](#)

[red crab tag data](#)

[red crab tag return data](#)

[red crab trawl log data](#)

[red crab trawl data](#)

"The objectives of the main project were to: (1) Employ camera-based and net-trawl sampling methodology established by an earlier NMFS red crab surveys (Wigley et al. 1975) to determine whether abundance, size structure, and sex composition of the population has changed significantly at the same sites sampled in 1974, (2) Conduct sea sampling to better characterize the commercial catch, (3) Conduct tagging to obtain much needed information on red crab growth rates and movement, and (4) Develop three stock assessment modeling approaches of different complexities (size-structured yield-per-recruit model, production model, and size-structured simulation model) to evaluate the dynamics of the red crab stock, estimate current status of

the fishery, and evaluate alternative management strategies. The supplemental project compared the efficacy of otter-trawl to net trawl in this application.

The benthic sled system for camera surveys combined with net trawl collection generated the first population density estimates and demographic data of red crab in 30 years. The comparison of the two net trawl methods confirmed that otter trawls were the most efficient approach in these surveys. Results of the main project indicated that the abundance of the largest crabs targeted early in the history of the fishery (males >114 mm, 4.5 inches) is down by approximately 42% since 1974. Based on sea sampling data the fishery now harvests smaller male crabs, and the standing biomass of crabs currently harvested is on a par with 1974 levels. The abundance of smaller males and females is substantially higher than in 1974. Some 9600 crabs were tagged over the course of the study, and of about 300 returns there was little evidence of growth, which is consistent with prior evidence of slow growth for this species. However, the limited growth data curtailed application of the stock assessment models. The full parameterization of these models awaits additional growth data. Models are implemented as Excel spread sheets that and are available from the PI, and will be easy for the user to update as data become available. These results were a key component of the NMFS red crab stock assessment conducted in 2006. *"(extracted from: Final Report Submitted to the NORTHEAST CONSORTIUM, December 11, 2006)*

**Questions regarding this data set should be directed to:**

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**Methods & Sampling**

The benthic sled system for camera surveys combined with net trawl collection generated the first population density estimates and demographic data of red crab in 30 years. The comparison of the two net trawl methods confirmed that otter trawls were the most efficient approach in these surveys. Results of the main project indicated that the abundance of the largest crabs targeted early in the history of the fishery (males >114 mm, 4.5 inches) is down by approximately 42% since 1974. Based on sea sampling data the fishery now harvests smaller male crabs, and the standing biomass of crabs currently harvested is on a par with 1974 levels. The abundance of smaller males and females is substantially higher than in 1974. Some 9600 crabs were tagged over the course of the study, and of about 300 returns there was little evidence of growth, which is consistent with prior evidence of slow growth for this species. However, the limited growth data curtailed application of the stock assessment models. The full parameterization of these models awaits additional growth data. Models are implemented as Excel spread sheets that and are available from the PI, and will be easy for the user to update as data become available. These results were a key component of the NMFS red crab stock assessment conducted in 2006. "

**Data Processing Description**

"The objectives of the main project were to: (1) Employ camera-based and net-trawl sampling methodology established by an earlier NMFS red crab surveys (Wigley et al. 1975) to determine whether abundance, size structure, and sex composition of the population has changed significantly at the same sites sampled in 1974, (2) Conduct sea sampling to better characterize the commercial catch, (3) Conduct tagging to obtain much needed information on red crab growth rates and movement, and (4) Develop three stock assessment modeling approaches of different complexities (size-structured yield-per-recruit model, production model, and size-structured simulation model) to evaluate the dynamics of the red crab stock, estimate current status of

the fishery, and evaluate alternative management strategies. The supplemental project compared the efficacy of otter-trawl to net trawl in this application.

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## Data Files

File
<b>redcrab_temp.csv</b> (Comma Separated Values (.csv), 10.17 MB) MD5:226eeafe902066379e4ac784c3ba6f0f Primary data file for dataset ID 3433

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## Parameters

Parameter	Description	Units
year	year of sampling	YYYY
date_local	local date of sampling	mm/dd/yy
temp	temperature of water	degrees Celsius
depth_psi	depth of camera sled	meters
time_local	local time of day; format: hour and decimal minutes	hhmm.mm
site	code for sampling location	text
yrday_local	local day and decimal time, as 326.5 for the 326th day of the year, or November 22 at 1200 hours (noon)	

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## Instruments

<b>Dataset-specific Instrument Name</b>	Camera
<b>Generic Instrument Name</b>	Camera
<b>Dataset-specific Description</b>	camera sled: Nikon Coolpix 990 digital still camera modified with a programmable intervalometer and computer interface software designed by Engage Technologies. The camera was housed in a deep-sea titanium housing and was coupled to a Benthos model 382 strobe (on loan from the National Undersea Research Center at the University of Connecticut). The camera was aimed perpendicular to the sled at a height of 1m with a downward angle of 35 degrees. In that position the camera viewed a total area of 10 m <sup>2</sup> and an effective illuminated area determined to be 6.6 m <sup>2</sup> . This was determined using a grid subdivided into 0.01 m <sup>2</sup> squares placed horizontally on the sea bed in front of the camera. The system was programmed to take photographs every 15 sec; at a speed of 2 knots a photograph was taken approximately every 14m, a 30 minute tow resulting in about 120 images.
<b>Generic Instrument Description</b>	All types of photographic equipment including stills, video, film and digital systems.

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## Deployments

### NEC-RW2001-1

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57766">https://www.bco-dmo.org/deployment/57766</a>
<b>Platform</b>	F/V Krystal James
<b>Report</b>	<a href="http://northeastconsortium.org/ProjectFileDownload.pm?report_id=635&amp;table=project_report">http://northeastconsortium.org/ProjectFileDownload.pm?report_id=635&amp;table=project_report</a>
<b>Start Date</b>	2002-04-24
<b>End Date</b>	2005-11-25
<b>Description</b>	Otter trawl- and camera-based sampling of red crabs, tagging study. <b>Methods &amp; Sampling</b> camera-based and net-trawl sampling of deep sea red crabs

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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)	<a href="#">04-815 and PD PUZE043</a>

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