

GULF OF MAINE LOBSTER FOUNDATION



Project Title

Ventless Trap Survey (VenTS)
Development Fund Award 04-380c

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Contact Information:

Patrice McCarron, Executive Director
Gulf of Maine Lobster Foundation
PO Box 523 Kennebunk, ME 04043
207-985-8088
207-985-8099(fax)
gomlf@gwi.net

A handwritten signature in dark ink that reads "Patrice McCarron". The signature is written in a cursive, flowing style.

Patrice McCarron, Principal Investigator

Abstract:

The Ventless Trap Survey (VenTS) was established in Canada and the United States in 2000, to develop a low cost fishery independent index of juvenile lobster abundance that could be used as a predictive tool to help manage the lobster fishery and that directly involves industry in data collection. Specifically, it is a trap based sampling program conducted by volunteer lobstermen year-round in the Gulf of Maine and Atlantic Canada. The Gulf of Maine Lobster Foundation (GOMLF) manages the US portion of the project.

The purpose of this NEC Development Project was to standardize the US portion of VenTS with Canada, to expand our outreach and to recruit additional US participants. The standardization was successful and we are continuing our international relationship with Canadian scientists and fishermen. The level of participation in the US has increased and we continue to recruit more participants each season.

The data collected through the VenTS has been used to derive fishing exploitation rates in Canada and in the most recent Canadian stock assessment. Results indicate that ventless traps are an excellent tool for monitoring juvenile abundance. The US portion of VenTS has now produced a 5 year time series of data showing the overall trend in sublegal lobsters has decreased from 2000 to 2004. A comparison on the juvenile component of the catch from the VenTS project (fishery-dependent) with juvenile abundance indicators from the trawl survey (fishery-independent) indicated that VenTS and trawl surveys data are highly correlated. This positive association affirms the significance of the VenTS results and the need to continue with this cost effective and low-impact study of the juvenile lobster population.

Introduction:

VenTS is one of two projects that comprise a larger coordinated international effort to collect data on juvenile lobsters. The GOMLF manages the US portion of the project and works closely with a non-profit industry-based research organization in Canada, the Fishermen and Scientists Research Society (FSRS) which manages the VenTS project in Canada.

The Ventless Trap Survey (VenTS) follows the vision of NEC's programmatic goals by developing partnerships between commercial fishermen, scientists and managers. GOMLF works directly with lobstermen who volunteer their fishing time, boat time, and traps to collect data for this project.

VenTS uses traps, the primary method of harvest for lobster, in a systematic way that standardizes for trap design and location, and develops specific protocols for recording biological information of the catch. The lobster fishery is inherently a pursuit fishery, following the exploitable biomass throughout the course of a fishing season. By requiring traps to remain stationary and modifying the design to retain sublegal lobster, the lobster resource may be monitored independent of fishing activity.

In the United States VenTS was initiated by the Maine Department of Marine Resources (DMR) and the New England Aquarium (NEAq) with the enthusiastic support of industry in 2000 (nearly 80 volunteers for the 2000 season). Despite strong industry support, VenTS did not have a secure funding base and the DMR lacked the outreach capacity to fully implement the program. In 2002, the Gulf of Maine Lobster Foundation (GOMLF) assumed responsibility for coordinating the project. Through small annual grants from Maine's DMR Lobster Advisory Council (LAC) and this NEC Development Grant, the GOMLF has slowly rebuilt, standardized and expanded VenTS.

VenTS has been the primary contributor of recent (2003-2004) information available for stock assessments in Atlantic Canada, as budget cuts have limited the ability of the Department of Fisheries and Oceans to collect information on the region's most valuable fishery. Estimates directly generated from VenTS have been used to characterize trends in abundance, generate annual exploitation rates, estimate regional egg production and evaluate the impacts of management measures (gauge increases) (Claytor and Allard 2003, FSRS 2003).

In the United States, stock assessment methodology is in a time of transition where new models and biological reference points are being developed and a more inclusive approach to stock indicators has been embraced. In a recent review of assessment models, a peer review panel composed of top assessment biologists, endorsed the concept of multiple stock indicators and strongly advocated for increased collection of data on the lobster resource (ASMFC 2004).

The impetus for this NEC Development Fund grant grew out of an international meeting in 2003 between GOMLF and FSRS during which both projects were reviewed and a strategy to standardize the two projects and conduct an annual exchange was developed. In addition to standardizing the project, GOMLF saw the need to increase participation within Maine and into Massachusetts to get a broader understanding of the juvenile lobster populations along the coast and will increase the confidence of the VenTS time series.

Project objectives and scientific hypothesis:

The primary purpose of the overall VenTS project is to develop a long-term time series of size and abundance data on the sublegal portion of the lobster population. There is currently size and abundance information collected on commercial catch through state sea sampling programs, as well as information on larval lobsters and newly settled lobsters from state and independent researchers. VenTS fills the gap between these two bodies of work and will provide essential data to the lobster stock assessment process.

The objective of this NEC Development Fund grant was to standardize this juvenile lobster data collection with the existing program in Canada, expand outreach and recruit additional US participants. As stated in the project proposal, NEC Development Fund grants money were proposed to 1) purchase and distribute standardized ventless traps based on the FSRS design and distribute them to project participants; 2) purchase and

distribute standardized gauges; 3) revise and distribute standardized waterproof logbooks to project participants; 4) create a single database format for use by FSRs and GOMLF to allow for standardized data management; 5) improve distribution of results to lobstermen; and 6) increase participation in the US portion of the project.

Participants:

Patrice McCarron, Principal Investigator
Erin Pelletier, Project Coordinator
Gulf of Maine Lobster Foundation
PO Box 523
Kennebunk, ME 04043
207-985-8088

Rachel Clemens Grisham, Intern
Southern Maine Community College
Marine Science Program
2 Fort Rd
South Portland, ME 04106

Patty King, Project Manager
Carl MacDonald, Project Scientist
Ross Claytor, Project Scientist
Fishermen & Scientist Research Society
PO Box 25125, Halifax, NS, Canada

Carl Wilson, Lobster Scientist
Alison Sirois, Lobster Scientist
Maine Department of Marine Resources
PO Box 8
W Boothbay Harbor, ME 04575

David Casoni
Mass Lobstermens Association
8 Otis Place, Scituate, MA 02066

Volunteer Lobstermen:

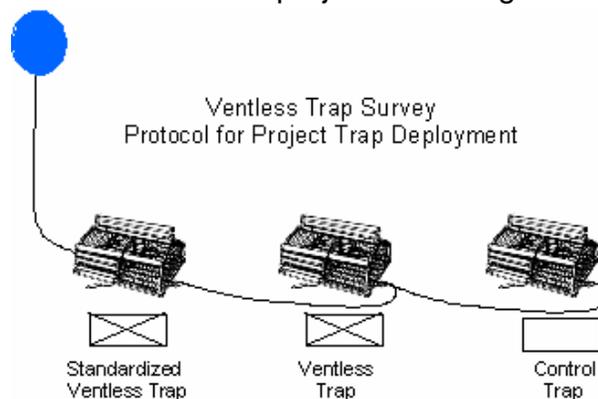
Richard Carver, Rockland, Maine
Woody Post, Owls Head, Maine
Ben Doliber, Swans Island, Maine
Thomas Bridges, Corea, Maine
Ricky Alley, Islesford, Maine
Elliott Thomas, Yarmouth, Maine
Ray Gilliam, Sebasco Estates, Maine
Brian Tarbox, North Yarmouth, Maine
Walter Day, Vinalhaven, Maine
Jason Day, Vinalhaven, Maine
Greg Whitten, South Portland, Maine
Jon Carter, Hulls Cove, Maine
Bobby Ingalls, Bucks Harbor, Maine
Troy Jellison, Sorrento, Maine
Shahram Kasaei-Fard, Portland, Maine
Paul Swidrak, Woolwich, Maine
Jim Dow, Owls Head, Maine
David Johnson, Long Island, Maine
Jason Hillman, Orrs Island, Maine
Danny Luny, Frenchboro, Maine

Jim Clark, Georgetown, Maine
Darryl Chadwick, Bristol, Maine
Dana Faulkingham, Westport Island
Dan Miller, Tenants Harbor, Maine
Zach Whitener, Long Island, Maine
George Sprague, Machiasport, Maine
Mike Myrick, Cushing, Maine
Mathew Thomson, Monhegan Island
Robert Bracy, Monhegan, Maine
Dan Murdock, Monhegan, Maine
Sherman Stanley, Monhegan Island
Matt Weber, Monhegan, Maine
David Boegel, Monhegan, Maine
Lucas Chioffi, Monhegan, Maine
George Stover, Freeport, Maine
Mark Cheney, Pemaquid, Maine
Pat White, York, Maine
Steve Robbins, Stonington, Maine
Brad Parady, Kittery Point, Maine
John Carver, Green Harbor, MA

Methods:

VenTS relies on commercial lobstermen to collect data on the size, sex, and reproductive stage of lobsters, bottom type, depth, wind speed and direction, bait, location of fishing, pounds landed, number of traps hauled for the day and bottom temperature. VenTS data monitors juvenile capture rates in set locations over time.

The data collection protocols were changed as a result of this project. The original protocol used from 2000 to 2003 required lobstermen to fish a “double” comprised of a control trap and a vent disabled trap, both of which were provided by the lobsterman. In order to standardize this project with Canada, lobstermen now follow the joint US/Canadian VenTS protocol, consisting of a “triple” with a control trap, ventless trap (both supplied by the lobsterman as before) and a standardized ventless trap (provided by GOMLF).



The protocol requires lobstermen to set the ventless deployment at a fixed site throughout the year. The VenTS protocol provides lobstermen with guidance on where to fish the trap (recommended in <10F depth on hard bottom) and the required haul frequency (recommended a minimum once every 2 weeks). However volunteer lobstermen have the final decision on where to fish the trap and how often to haul based on what is feasible for them. Because this project relies on many volunteers located throughout the Gulf of Maine, it is not possible to set a rigorous protocol with regard to the location of the trap (specific location, bottom type, depth) and the haul frequency. Fishermen must be able to choose a single location that they can reasonably tend to the trap for the duration of their fishing season. It is most important that the trap remain in a set location throughout the season and from year to year, and that the variables (depth, bottom type, etc) are accurately recorded in the logbook.

GOMLF provides each participant with a logbook and experimental measuring gauge with specific instructions on how to set the traps using the VENTS protocol. Each trap is marked with an experimental GOMLF tag as well as their state issued tag to ensure accurate data collection.

At the end of the year, lobstermen mail data to GOMLF where it is entered into the newly designed Access database, which was developed through these NEC Development Grant project funds. Results and reports are generated for distribution to the industry and scientific community. GOMLF purchased Arcview software to improve reporting and aid in outreach and recruitment of participants for this project.

Data:

GOMLF developed an Access database to house the VentTS data. The database is based on the FSRs database, and was developed through a collaboration between FSRs data subcommittee, DMR lobster biologist Alison Sirois and GOMLF.

Standardizing this project with Canada entailed the very time consuming task of manually reentering past years' data from an Excel spreadsheet to the newly developed Access database. This process was finished during the summer of 2004. This standardization will allow us to continue our long term data collection in conjunction with our Canadian partners and data can also be easily shared with Maine Department of Marine Resources.

Our data is currently not available online but can be supplied upon request. Below is a sample page of our database which shows some of the information requested from ventless trap haul and how the data is entered into Access.

Microsoft Access - [VentlessTripInformation]

File Edit View Insert Format Records Tools Window Help

MS Sans Serif 10 B I U

Back to Main Menu 541 Next Fisherman

Tag Number and Fishermen with Site Data Already in the Database

Date: 7/6/2004 Wind Direction: SW & SSW 203 -247 d.
Time: 6:30:00 AM Wind Speed: 4 - 6 knots
SoakDays: 6 Comments:
Bait: Herring (unclass.)

TrapType	GaugeType	TrapNumber	Size	Sex	Legal	Berried	Vnotch	Comments
22	66	1	7	0	0	<input type="checkbox"/>	<input type="checkbox"/>	
22	66	1	9	1	0	<input type="checkbox"/>	<input type="checkbox"/>	
22	66	1	11	0	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
22	66	1	12	0	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Catch For the Day- Please note in trip comments if no catch data was recorded

TotalTH: 250 TotalLbs: 450 TenMinSq: 0

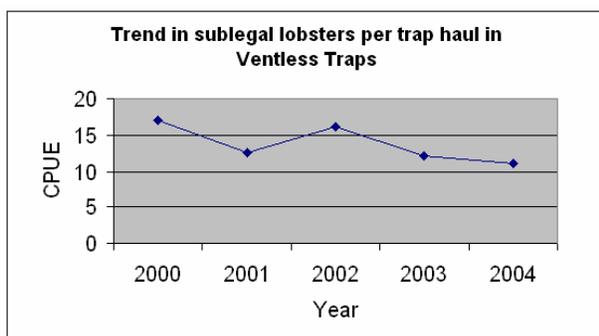
Area where commercial traps were hauled

Start 3:09 PM

Our goal is to look for long term trends within the juvenile lobster population and to continue monitoring of the same locations for several years. To date, more than 60 lobstermen have participated contributing 4,284 trap hauls comprised of 1,984 ventless, 426 standardized ventless and 1,874 control traps. More than 41,000 lobsters have been sexed and measured comprised of nearly 30,000 lobsters from the original ventless traps, 4,750 lobsters from the standardized ventless traps introduced in 2004 and 5,540 lobsters from the control traps.

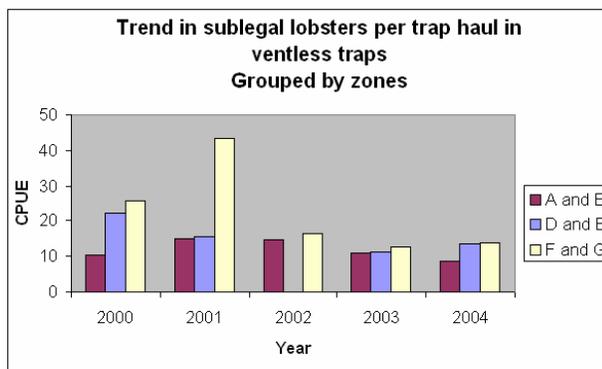
An analysis of the catch rates between the project traps indicates that ventless traps are an excellent tool for monitoring juvenile abundance. Lobstermen were concerned that

the standardized ventless trap would not catch lobsters, but the trap proved effective. Both the standardized ventless and ventless traps dramatically increase the sub-legal component of the catch from 1.6 lobsters/trap in the control trap to 10.2 lobsters/trap in the standardized ventless trap and 11.2 lobsters/trap in the ventless trap. Catch per trap of legal size lobsters shows the opposite relationship with control traps catching 1.12 lobsters/trap and standardized traps yielding only 0.77 lobsters/trap and 0.94 lobsters/trap for the ventless.



Data from the ventless traps from 2000-2004 were used to look at the relative number of sublegal lobsters by trap haul. The overall trend in sublegal lobsters has decreased from 2000 to 2004. The catch per unit effort in 2000 was 17.02 compared to 11.09 in 2004.

Over the course of the project the number of traps hauled each year has varied depending on the number of active participants. A decrease in the number of traps sampled may increase the variance of the catch per unit of effort, in other words, less observations equates to less confidence in the results. Therefore, it is important to continue data collection to better understand if these data indicate a significant trend.



Results and conclusions:

The VenTS project has not produced any immediate results or conclusions because it is designed as long-term monitoring project. As stated in the data section of this report, the 5 year time series has produced some interesting trends and appears to support conclusions of other long-term monitoring projects such as the trawl survey. Despite having only 5 years of data in the time series, VenTS has been the primary contributor of recent (2003-2004) information available for stock assessments in Atlantic Canada. Estimates directly generated from VenTS have been used to characterize trends in abundance, generate annual exploitation rates, estimate regional egg production and evaluate the impacts of management measures (gauge increases).

The results of the NEC Development Fund portion of the VenTS project have been quite positive. The primary objective of this NEC Development Fund was to standardize our Ventless Trap Survey with the existing program in Canada. We were very successful in this task and can now move forward with our data collection and international data sharing. As a result of NEC Development Grant, GOMLF and FSRS have agreed to

conduct an annual exchange to bring industry participants, scientists and other stakeholders together to review the results of the project and continue to learn from each other's efforts. To date, three annual meetings have been held.

Partnerships:

The Ventless Trap Survey would not be possible without the collaboration between lobstermen and scientists. Lobstermen are the primary data collectors, taking time each week to haul the ventless traps and record their catch data. VenTS has produced a core of dedicated volunteer lobstermen who donate their fishing time, boat time and gear to make this project happen. They do this because they strongly believe that this data is critical to helping fishermen and scientists to better understand the state of the lobster resource.

The VenTS project has attracted participation from a group of US and Canadian scientists. The scientists serve to review data collection protocols and project design, analyze the data and critically review the contribution of this research to our understanding of the lobster population.

The fishermen and scientist collaboration is furthered through the annual US/Canadian meetings sponsored by GOMLF and FSRS. These meetings bring project participants and scientists together to review the year's experiences, results, and discuss future directions for the project. This has been very positive for all involved.

The VenTS project is managed by two non-profit organizations: FSRS and GOMLF. These organizations serve to keep fishermen and scientists connected, support fishermen collecting data in the field, and foster communication between US and Canadian scientists. This has proved extremely successful and could serve as a model for future projects to engage many fishermen from a wide geographic area and scientists from various institutions to collaborate in long-term monitoring projects.

Impacts and applications:

In the United States, stock assessment methodology is in a time of transition where new models and biological reference points are being developed and a more inclusive approach to stock indicators has been embraced. In a recent review of assessment models, a peer review panel composed of top assessment biologists, endorsed the concept of multiple stock indicators and strongly advocated for increased collection of data on the lobster resource (ASMFC 2004). It is anticipated that the VenTS time series will play a critical role in future stock assessments.

Data from the VenTS project is also of great importance to fishermen, who are keenly interested in understanding the trends of sublegal lobsters in their area from year to year and over time. This data is also of great interest to many other scientists, who are interested in relating the results of their individual research to the baseline data collected through the VenTS time series.

Related projects:

VenTS is part of the larger international US/Canada collaboration. GOMLF manages the US portion of the project, while FSRS manages the Canadian portion of the project.

VenTS investigators also liaise regularly with state scientists. Specifically, we have made our project data and protocols available to state lobster biologists from New Hampshire and Massachusetts. Massachusetts Division of Marine Fisheries has embarked on a short term research project involving ventless traps. The results of this project will help to verify the importance of ventless traps as a tool to monitor juvenile lobster abundance. If the Mass DMF project verifies that ventless traps are a good indicator of juvenile lobster abundance, the VenTS program will become a critical low cost long-term monitoring tool for states.

Recently, the Atlantic States Marine Fisheries Commission (ASMFC) acknowledged the utility of further investigating the use of ventless traps to monitor juvenile lobster abundance. This program will help to bring each of the Gulf of Maine states into a research program utilizing ventless traps. GOMLF will continue to work with ASMFC and the states to share our project design and protocols and integrate into this new research effort.

In addition to the NEC Development Grant, the VenTS project has received funding from Maine's Lobster Advisory Council (LAC) since 2003. This funding has allowed the VenTS project to continue.

Presentations:

February 20, 2004: Erin Pelletier and Patrice Farrey traveled to the FSRS Annual Meeting in Halifax, NS to present "An Overview of the Ventless Trap Survey", but the meeting was cancelled due to a blizzard.

March 5, 2004: Erin Pelletier presented "The Ventless Trap Survey" powerpoint presentation as part of Lobster Summit at the Maine Fishermen's Forum in Rockport, ME. Patty King and Carl MacDonald also presented on the FSRS Recruitment Project at that meeting.

March 15, 2004: Patrice Farrey presented "The Ventless Trap Survey" powerpoint presentation at a Zone G meeting in Kittery, Maine.

March 30, 2004: Erin Pelletier presented "The Ventless Trap Survey" powerpoint presentation at the Lobster Advisory Council in Augusta, Maine.

March 31, 2004: Patrice Farrey presented "The Ventless Trap Survey" powerpoint presentation at a Zone E meeting in Wiscasset, Maine.

April 6, 2004: Erin Pelletier presented "The Ventless Trap Survey" powerpoint presentation at Zone D meeting in Rockland, Maine.

April 7, 2004: Patrice Farrey presented “The Ventless Trap Survey” powerpoint presentation at a Zone C meeting in Vinalhaven, Maine.

April 12, 2004: Erin Pelletier presented “The Ventless Trap Survey” powerpoint presentation at the MLA meeting in Damariscotta, Maine.

April 23, 2004: Erin Pelletier presented “The Ventless Trap Survey” powerpoint and display at the Lobster Institute’s Lobster Town Meeting in Portland, ME.

May 10, 2004: Erin Pelletier presented “The Ventless Trap Survey” powerpoint presentation at the MLA meeting in Ellsworth, Maine.

May 10 and 11, 2004: Erin Pelletier and Patrice Farrey distributed project materials and held training sessions at:

- Milbridge, Maine
- Southwest Harbor, Maine
- Rockland, Maine
- Wiscasset, Maine
- Portland, Maine



February 23-25, 2005: Erin Pelletier presented “The Ventless Trap Survey” powerpoint presentation at US/Canada Collaborative meeting in Truro, NS.

July 27-28, 2005: Patrice McCarron was due to present “The Ventless Trap Survey” powerpoint at the Atlantic Veterinary Center meeting at the University of Prince Edward Island in PEI, Canada. Due to illness, Patter King from FRS made the presentation on behalf of GOMLF.

Student participation:

Rachel Clemens Grisham, Intern from Southern Maine Community College, S Portland, Maine. Rachel assisted in data entry during the summer of 2004.

Future Research:

VenTs is a low cost fishery independent index of juvenile lobster abundance that could be used as a predictive tool to help manage the lobster fishery. With 5 years of data collected to date, GOMLF intends to continue our collaboration with FRS and work with lobstermen and scientists to build a long-term time series. Early results have shown a positive association between the VenTS time series and the trawl survey data. This affirms the significance of the VenTS results and the need to continue with this cost effective and low-impact study of the juvenile lobster population.