

Mapping Human Communities onto Ecosystems



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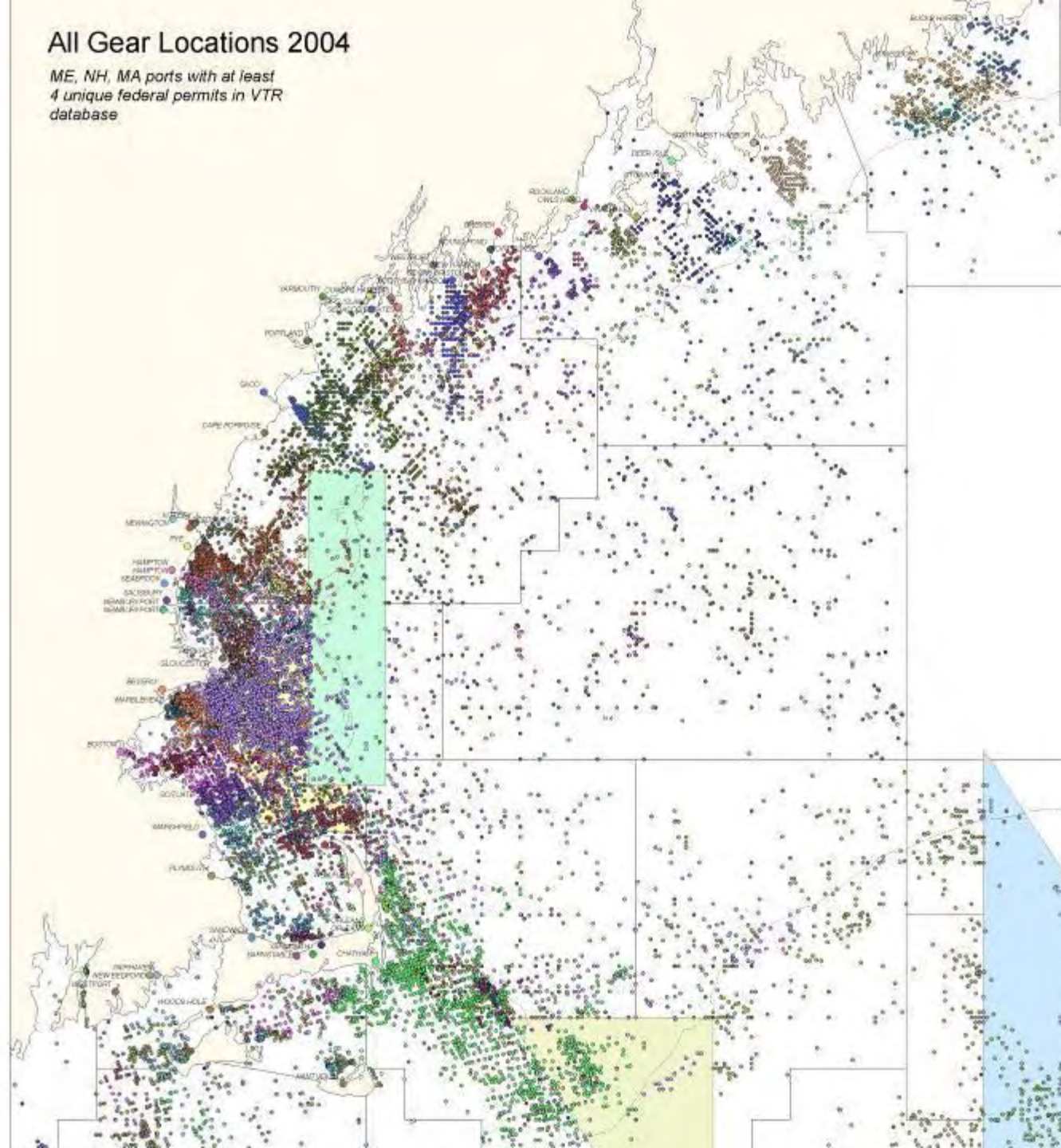
A Methodology for Mapping “Communities At Sea”

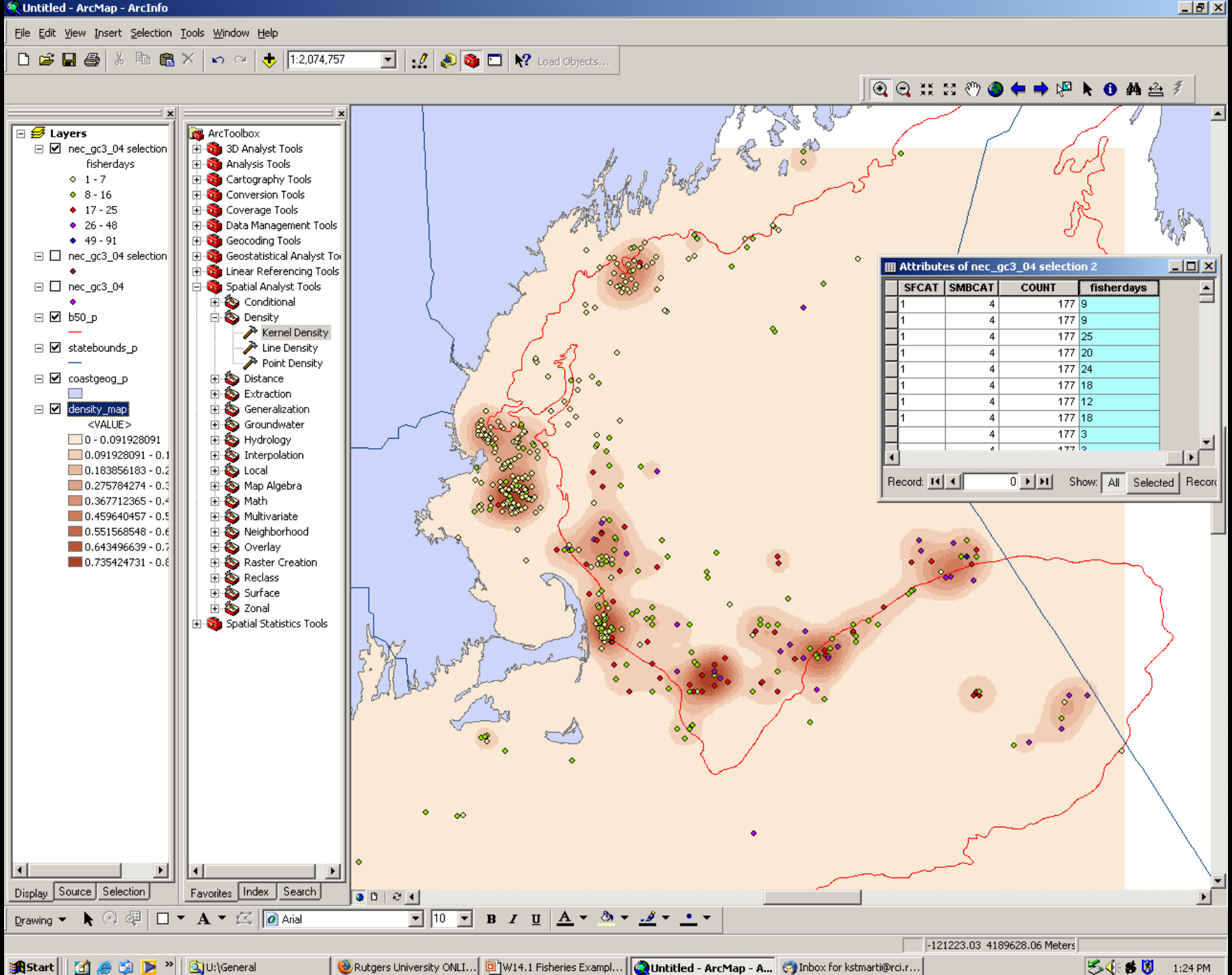
- Defining “community.”
- Using NMFS VTR data.
- Communities as starting points/places.
- Developing analyses and measurements by community.



All Gear Locations 2004

ME, NH, MA ports with at least
4 unique federal permits in VTR
database





Vessels Less than 65 feet with Otter or Pair Trawl Gear 2002-2004

Chart 1: Where in the Gulf of Maine do We Fish?

Interview ID:

Colors represent numbers of "fisherman days" per square kilometer.
Fisherman days are trip length x number of crew on board.

Fisherman days increase from green to pink/white
No color = virtually no fisherman days
Green = relatively few fisherman days
Yellow = significant fisherman days
Pink = many fisherman days
White centers = most fisherman days

Primary zones are outlined in red (50% of all fisherman days fall within the red lines). Pie charts show percent presence by port in primary zones.

Density surface based on VTR for 30271 trips by 367 vessels.

Data is from the Vessel Trip Report database 2002-2004 by permission of NMFS. Vessels reporting fishery within the study area were selected by year, gear type, and boat length and processed using a Gaussian kernel density technique (various kernel sizes were used depending upon the data).

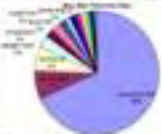
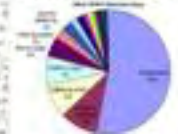
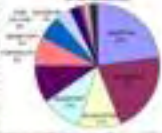
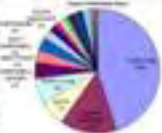
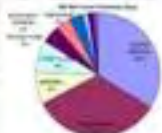
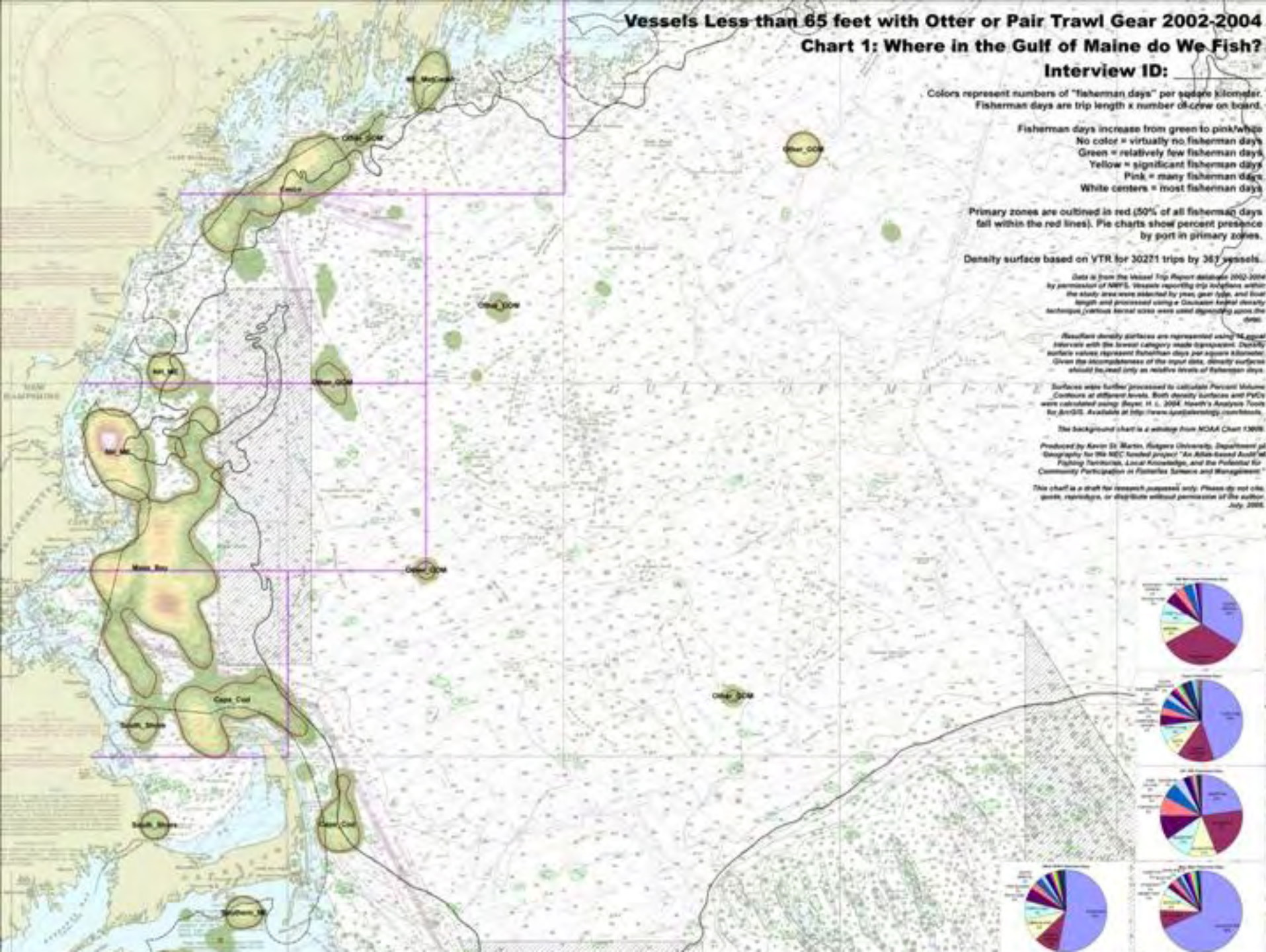
Results density surfaces are represented using 10 equal intervals with the lowest category made transparent. Density surface values represent fisherman days per square kilometer. Given the incompleteness of the input data, density surfaces should be used only as relative levels of fisherman days.

Surfaces were further processed to calculate Percent Volume Contours at different levels. Both density surfaces and PNCs were calculated using Bayes, H. L. 2004. *Bayes's Analysis Tools for GIS*. Available at <http://www.gispeople.org/softtools/>

The background chart is a reprint from NOAA Chart 13008.

Produced by Kevin St. Martin, Rutgers University, Department of Geography for the NSF funded project "An Ecosystem Approach to Fishing Resources, Local Knowledge, and the Potential for Community Participation in Fisheries Science and Management."

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[illegible]

ADD TO NAVIGATION
 Coast Guard Light List for supplemental
 aid to navigation
 List of Lights, Buoys and Fog Signals for
 United States Coast Guard Light List

Chart 2: Who Fishes in Which Locations?

Primary zones (or "Home Ranges") are outlined for each port with 4 or more vessels submitting VTRs in 2004. 50% of all fisherman days for the period 2002-2004 fall within the outlined zones for each port.

Home range zones are colored coded and match the color of the port symbol for each of the ports represented.

Large or multiple "home range" zones indicate a wide ranging fleet for a given port while small or few home range zones suggests a fleet with limited travelling. Home range shows the distribution of fisherman days across space; it does not directly show quantity of fisherman days.

Base density surface based on VTR for 30271 trips by 361 vessels.

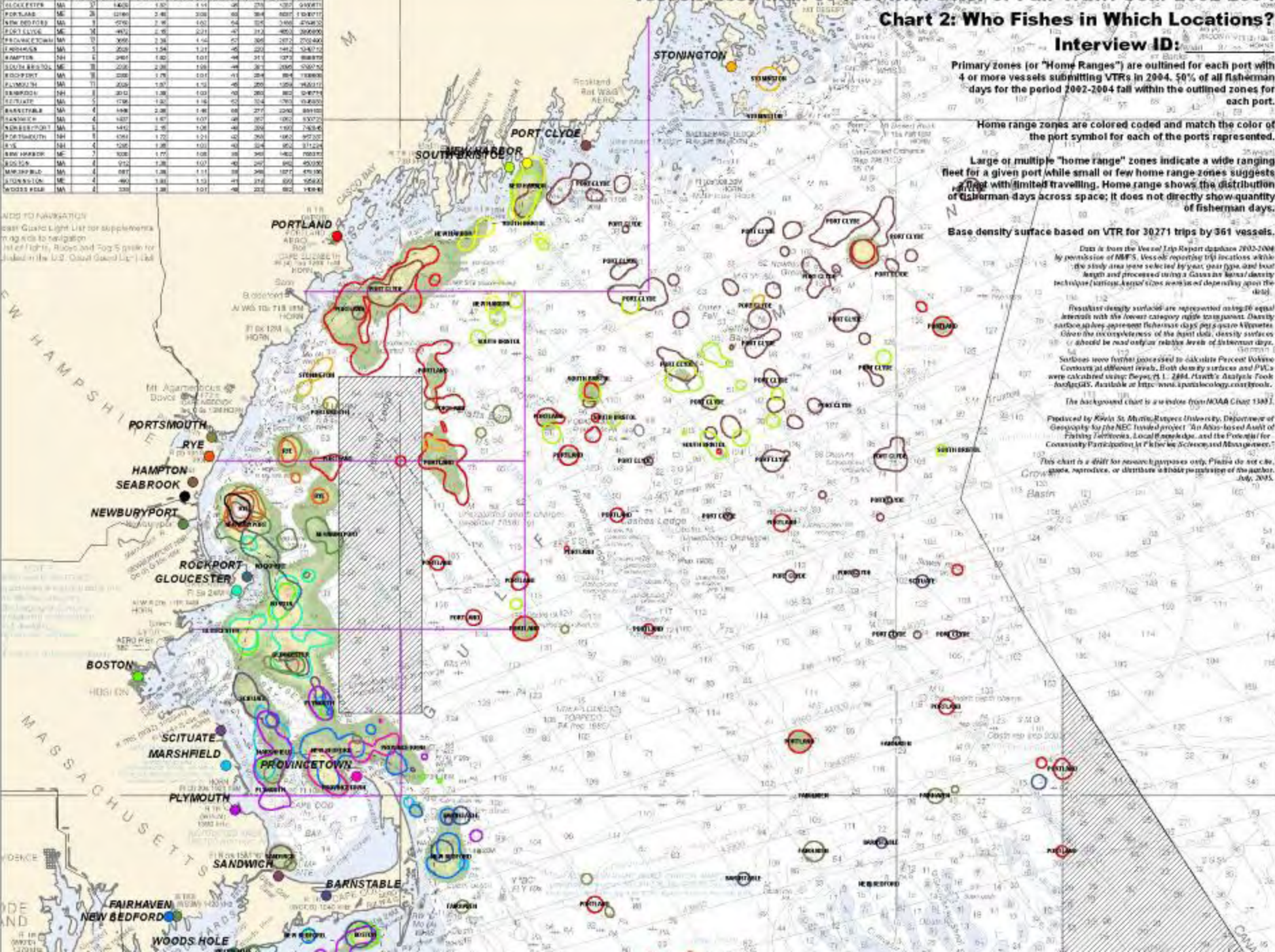
Data is from the Vessel Trip Report database 2002-2006 by permission of NMFS. Vessels reporting trip locations within the study area were selected by year, gear type, and boat length and processed using a Gao and Kohn density technique (surface areas were not used depending upon the data).

Frequency density surfaces are represented as equally spaced intervals with six lowest category value transparent. Density surfaces are represented by six days per surface. All surfaces are the same, regardless of the level of the density surfaces. The density surfaces are the same, regardless of the level of the density surfaces.

The background chart is a reissue from NOAA Chart 1300 J.

Produced by Kevin St. Martin, Rutgers University, Department of Geography for the NEC funded project "An Atlas-based Audit of Fishing Territories, Local Knowledge, and the Potential for Community Participation in Fisheries Science and Management."

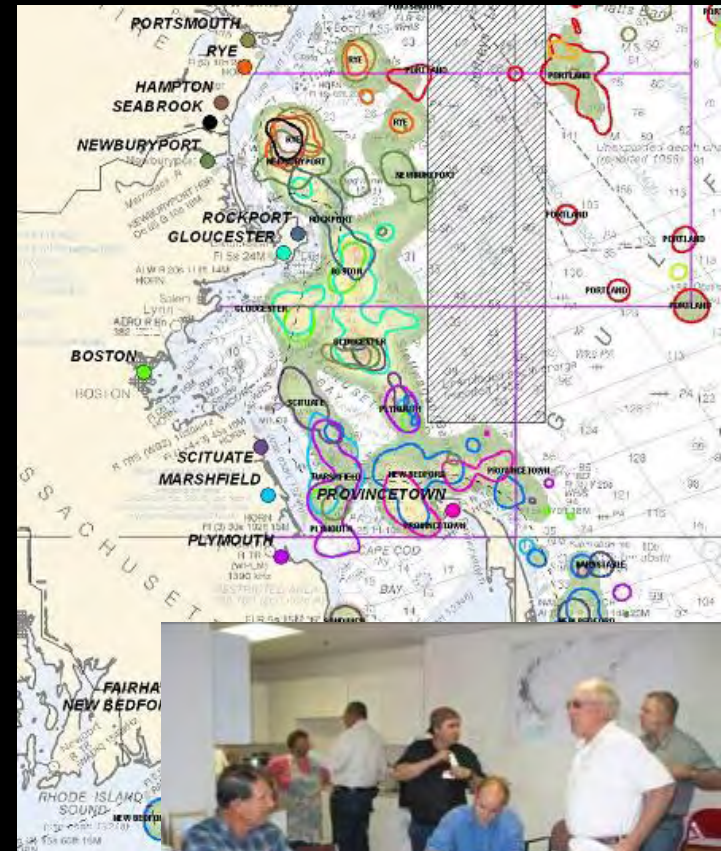
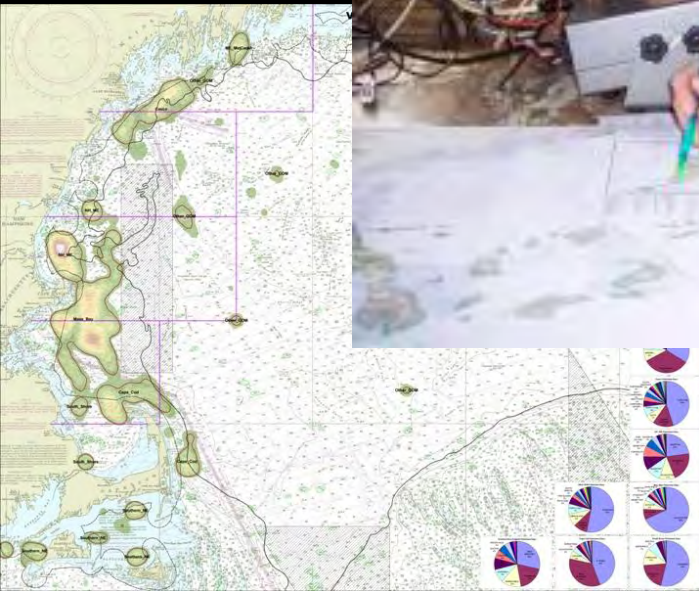
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July, 2005





Engaging Communities

- Giving meaning to locations on map.
- Giving meaning to “community”.
- Assessing LEK.

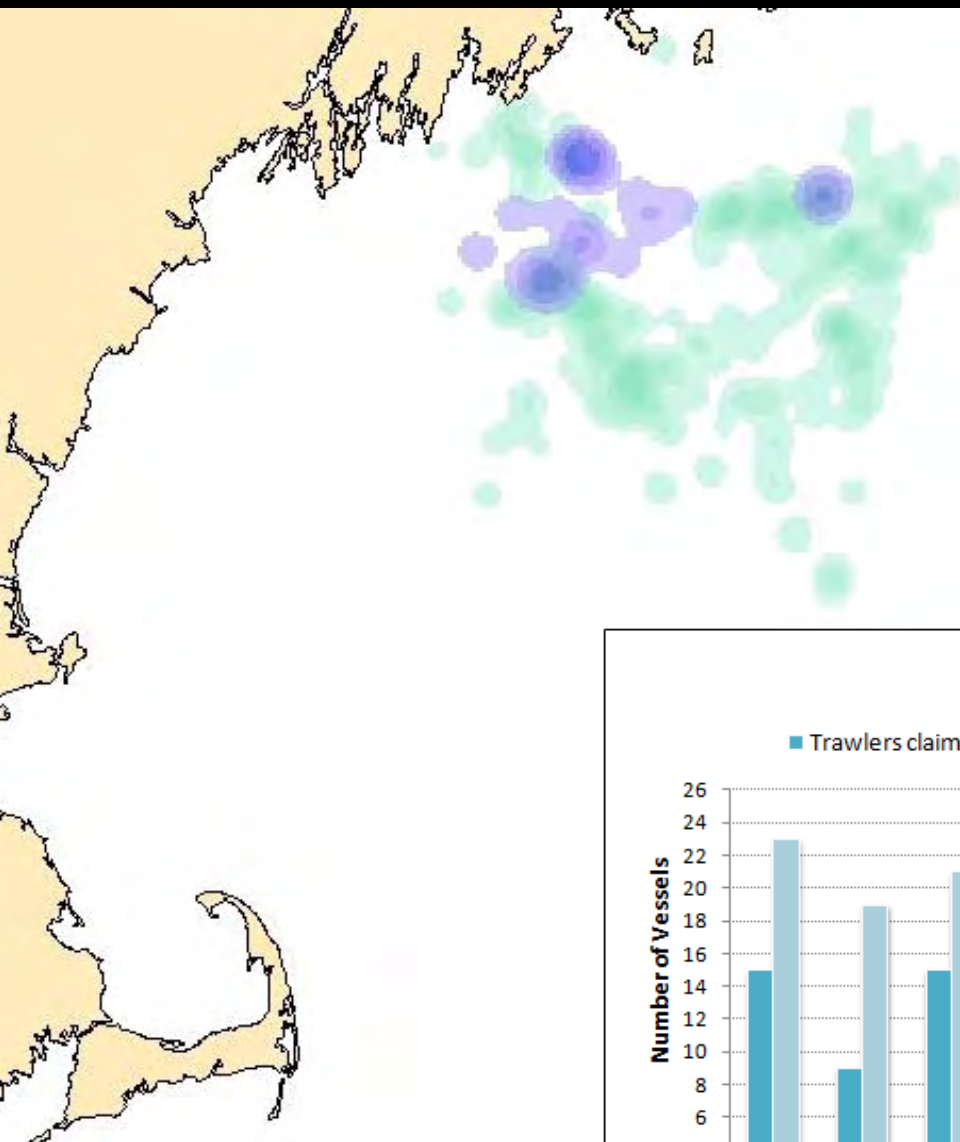


Analyses by “Community”

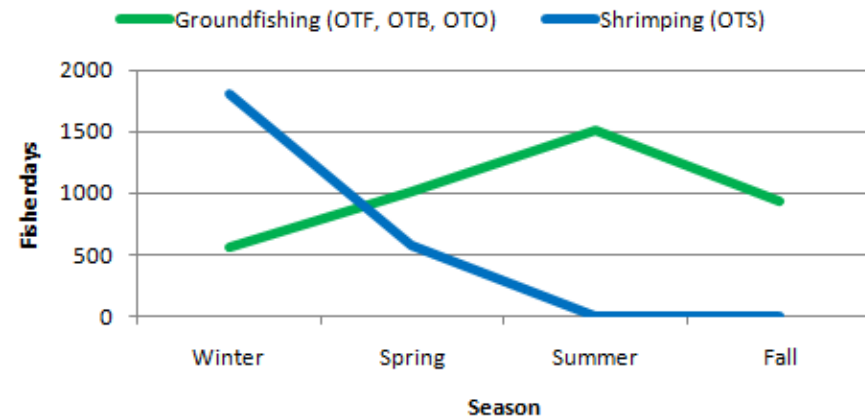
- Revealing different types of territories.
- Change over time in fishing activities and patterns.
- Relationship to particular habitats or species range.
- Impacts of place-based regulations, MPAs, MSP, etc.
- A host of measurements by “community at sea.”

Port Clyde: Community Concerns

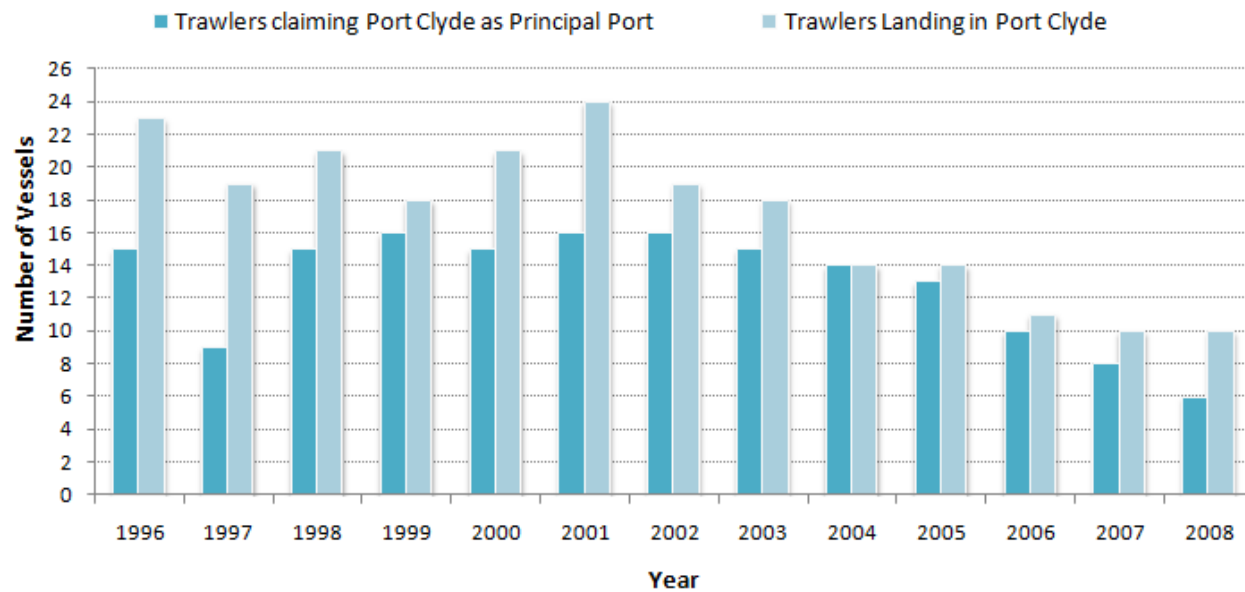
- *It's a small community cut right on the shore where I would say 80% of the people that live there rely on fishing in one way or another to survive.*
- *(W)e have people that catch the fish, people that work on the dock that handle the fish, people that drive the truck to get the fish to the fish auction, then we have the people who own the restaurants that buy the local fish to sell to people that come to eat, and the store owners doing the same, putting the fish in the store. (That's) pretty much it right there.*
- *There were more boats (in) Port Clyde and its surrounding area. Tenant's Harbor, there was a bunch of boats going out of there. Spruce Head. You know, all up and down the coast there were boats ground fishing.*



Gear Use by Seasons

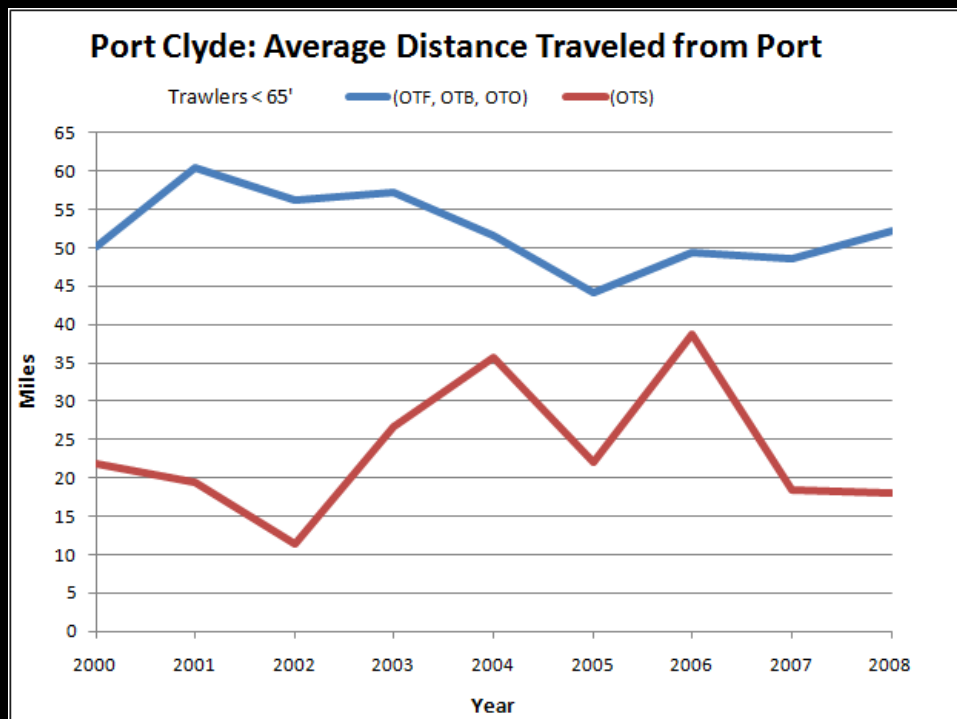


Port Clyde Groundfishing

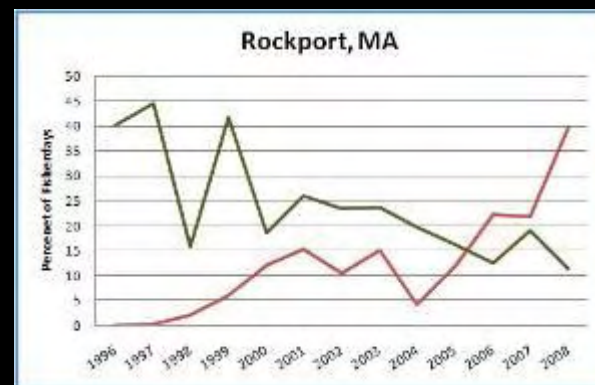
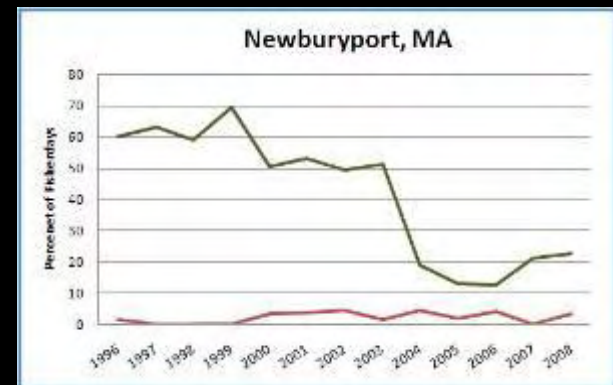
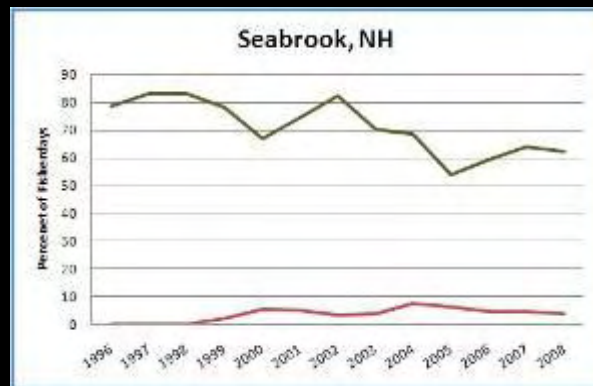
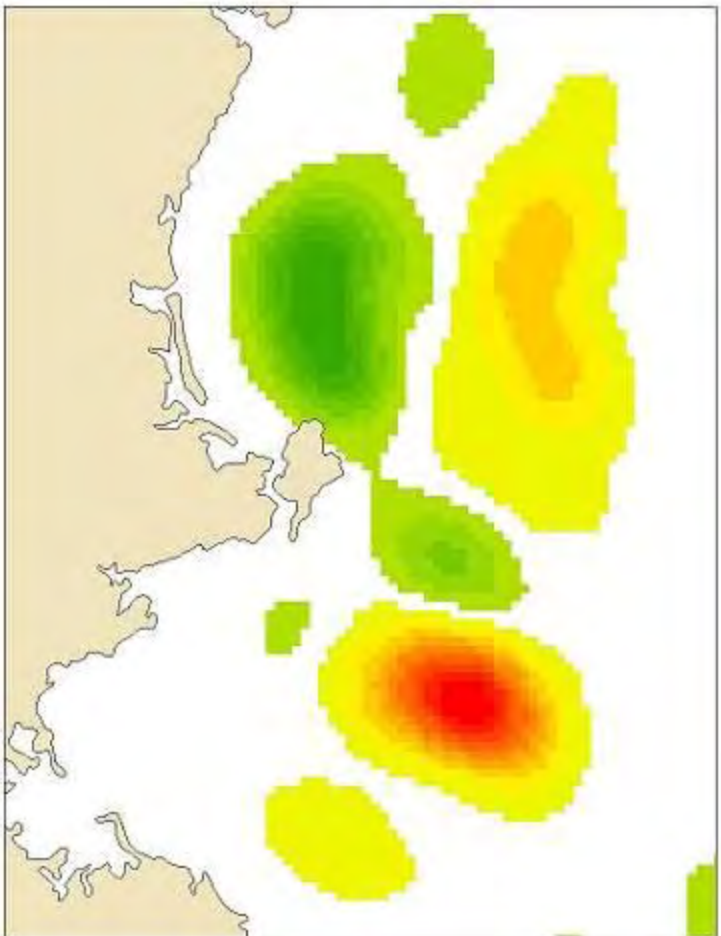


How have fishing practices changed?

- (Y)ou don't have the time to go look. You have to pretty much pray that you land right where the fish are because the clock's ticking. **It's changed fishing patterns.***



Which Communities?



Innovation in Port Clyde

- *The old way was clearly not working* and anyone who had just the smallest bit of foresight could see the end of groundfishing in Port Clyde right around the corner.
- Although we rarely talked about it, *we did feel protective and caring about the areas of the ocean that we fished.*



Communities at Sea Mapper

ALL PORTS

Addison

Bremen

Danversport

Eastport

Gloucester

Port Clyde

Showing 2444 trips
between 2003 and
2008 representing
234,000 Fisher Days.

Portsmouth

Rock Harbor

Rockland

Salem

Seabrook

Wells

Westport

Yarmouth

York

NOAA

Topo

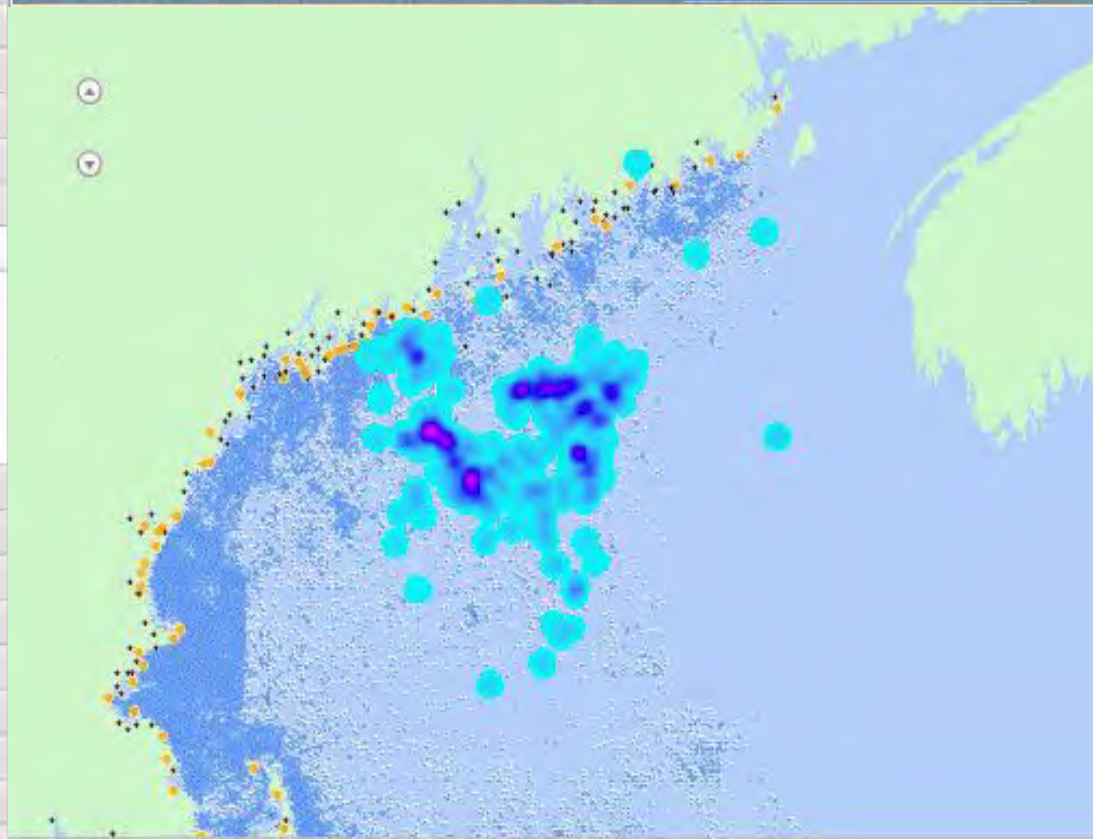
Density

Home Range

Gear

All Gear

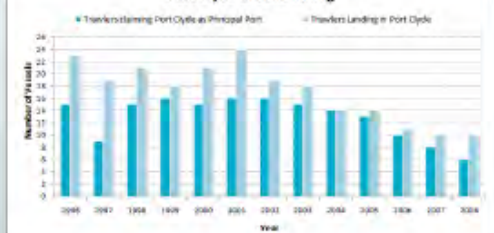
Zone



Port Clyde, ME

Over the past fifteen years, the number of boats has risen and fallen a bit in Port Clyde, but the port town remains a fishing community. "It's a small community cut right on the shore where I would say 80% of the people that live there rely on fishing in one way or another to survive," says one local trawler. "(W)e have people that catch the fish, people that work on the dock that handle the fish, people that drive the truck to get the fish to the fish auction, then we have the people who own the restaurants that buy the local fish to sell to people that come to eat, and the store owners doing the same, putting the fish in the store. (That's) pretty much it right there."

Port Clyde Groundfishing



Locals remember a time when there were more boats in Port Clyde, but most of them were considerably smaller than the large trawlers that make up most of the fleet today, a change often attributed to the decline of

Downloads

Port Clyde

Narrative

PDF

Trip Density

Port Clyde

All Gear

PDF

PDF

PDF

Percent

Volume

Contours

PDF

PDF

PDF

Conclusion

- Mapping Communities at Sea
 - Producing data about and with communities.
 - Analyses by “community at sea.”
 - Creating a basis for community engagement in spatial (and ecosystem) management and planning.

