



Broader implications of voluntary participation in fisheries management- Does showing up matter?

Danielle Brzezinski*

James Wilson, Yong Chen

danielle.brzezinski@gmail.com

*University of Maine, Orono, ME,
United States*

NOAA Brown Bag
Silver Spring, MD

Requirements for public

Within government agencies:

- APA 1946 (5 USC 500)
- NEPA 1970 (42 USC 4321)
- The regulating body or agency “*must affirmatively solicit... comments from those persons or organizations who may be interested or affected*” when preparing an environmental impact statement (40 CFR 1503.1(4) 1993)

How Voluntary Participation got into FMPs

- 1976 Fisheries Conservation and Management Act
 - Main focus foreign fleets
 - Regional control
 - Senator Kennedy

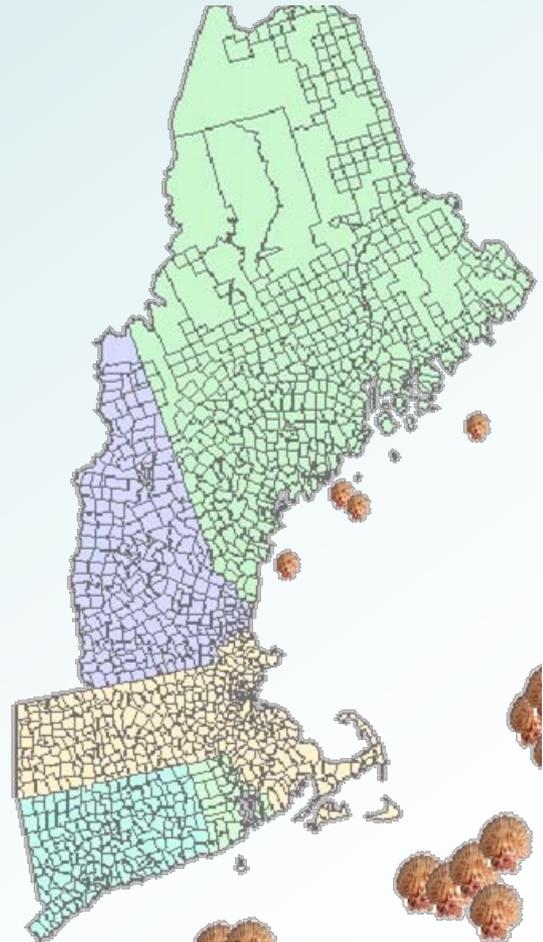
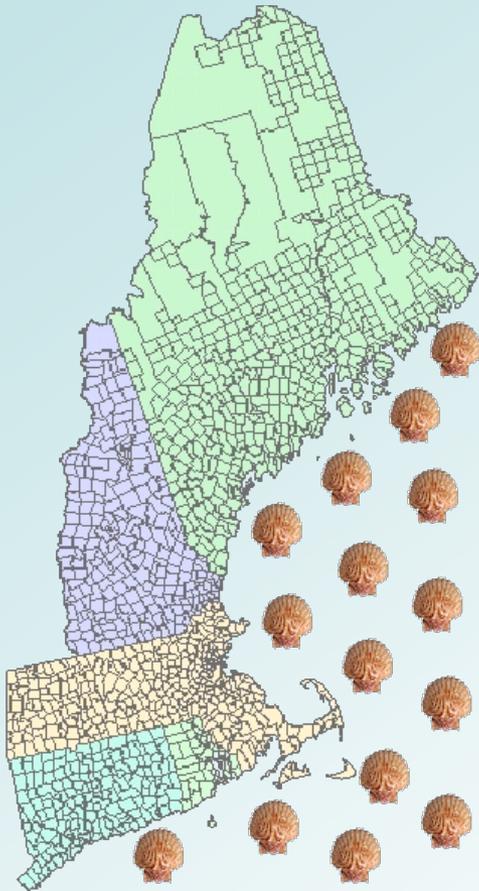
Assumptions

- 1) Stakeholders will participate and contribute to policy-making
- 2) Representative participation

Slight correction...

Heterogeneous environment (fishery)

Advantage: Influence decisions in own backyard



Disadvantages

- Participation higher for larger, closer, and more influential firms (Turner and Weninger 2004)
- Nonparticipation of moderates
- Overall low participation
- Sensitivity to attendance (Osborne et al. 2000)



Study of the NEFMC

- Regulates 9 FMPs
- Sign-in sheets
- Policy 2003-06
- Part 1: Who attends
- Part 2: Who didn't attend
 - Focus fisheries: Multi-species, Herring, Scallop

New England Fishery Management Council
50 Water Street - Mill 2 - Newburyport, Massachusetts 01950

ATTENDANCE SHEET
Travel Authorization # 06-50

ATTENDANCE AT: NEFMC Council Meeting

DATE: April 5, 2006

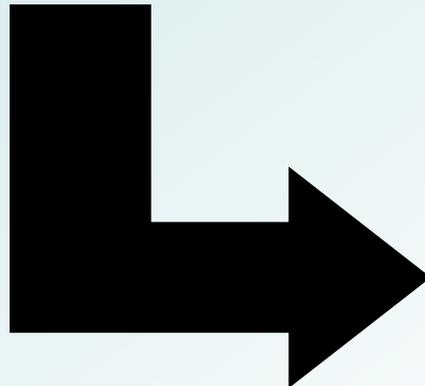
LOCATION: Mystic Hilton, Mystic, CT

CERTIFIED BY: _____

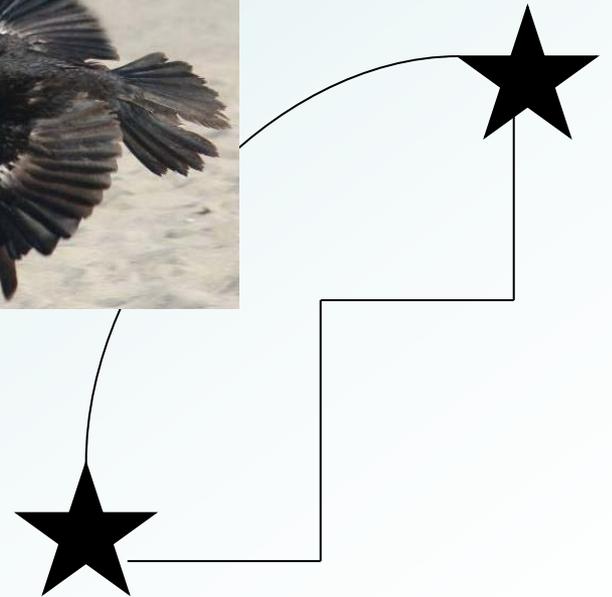
PLEASE PARTICIPANTS

PLEASE SIGN, INCLUDE ADDRESS & PHONE

CLAY'S MARLIN	44 WILLOW ST WOOD GREENBORO NC 27077	336-885-0999
PAUL CLARK	PO BOX 149 WARHAMPTON MA 02719	508-787-0618
DOU MYERS	PO Box 146 WEST CREEK D.V.	609-296-9343
Chris Zeman	Ocean	
Peter Baker	210 ... Rd. N. CHATHAM, MA 02620	508-945-2121
Keith Larson	Pinepoint Light NJ	609-494-6950
Low Elliott	Pinepoint Light NJ	609-276-5768
RONALD ENOKSEN	NEW BEDFORD, MA	
MARK BURTON	New Bedford, MA	
Walter & Sarah	Smith's ...	508-773-4507
Walter O. Larson		609-548-1025
David Fuller	FSC/CSP	
GENE BERGSON	4 WASHINGTON ST. FARMINGTON MA	508-999-9100
Kevin Debbi's	146 ... Rd. ...	960-897-0710
Geoffrey Day	Cambridge MA	617-576-2100
RICHARD TAYLOR	GLoucester	
Sig Hollman	SNEFLA	840-227-0738

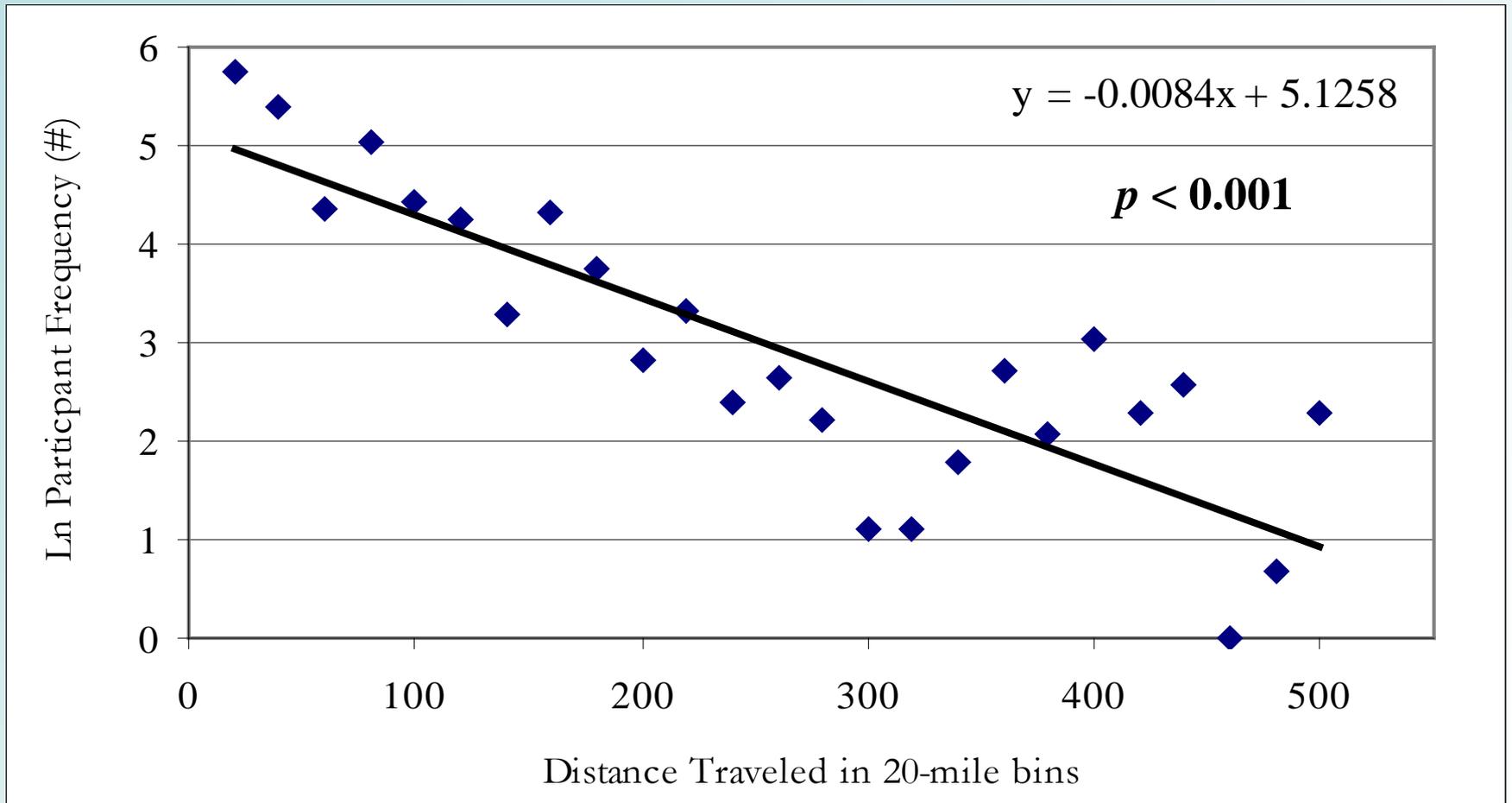


Meeting
site



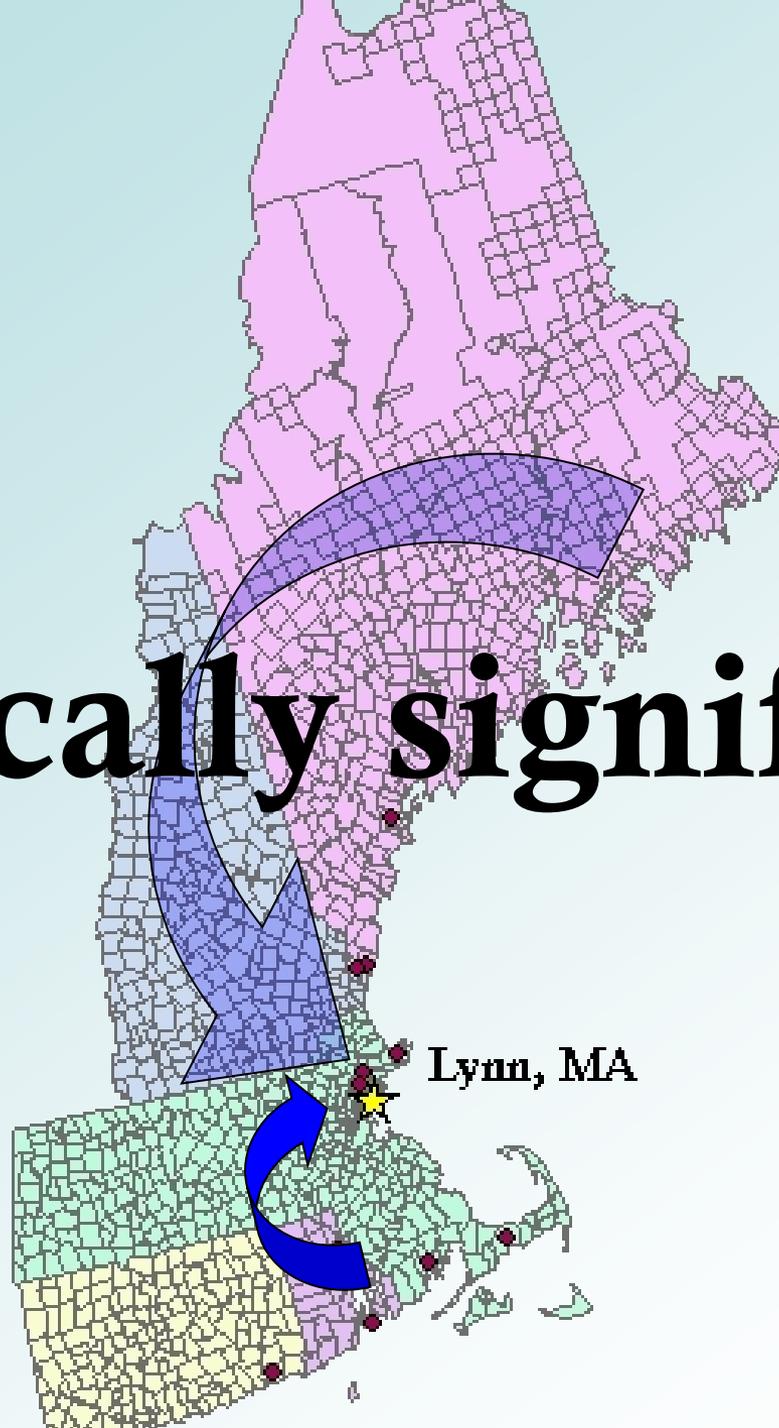
Origin

Who attended



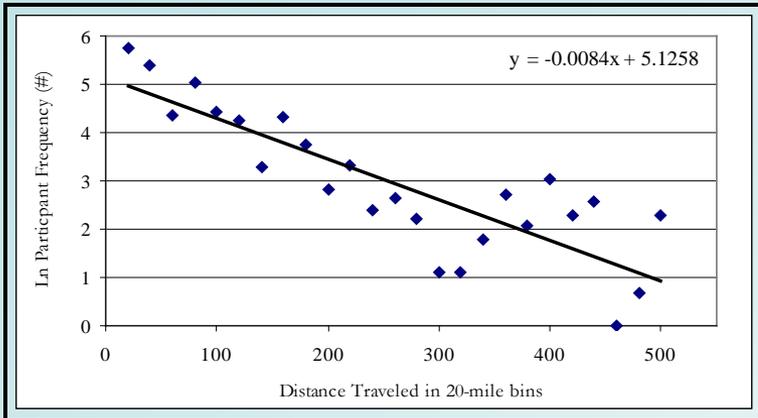
Results

Practically significant?



Representation?

- Do our attendance data reflect the industry?



Fishing boats berthed at port
Photo: Doug Motta/Mayor's Office

http://www.noanews.noaa.gov/stories2008/images/sampling_small.jpg

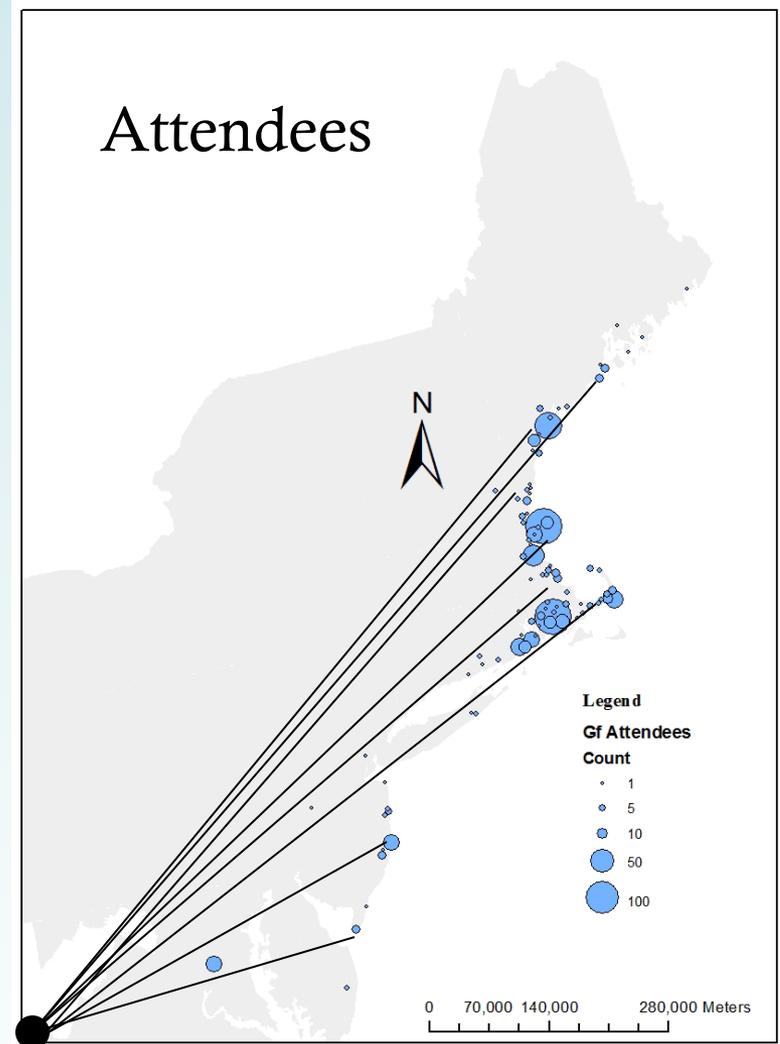
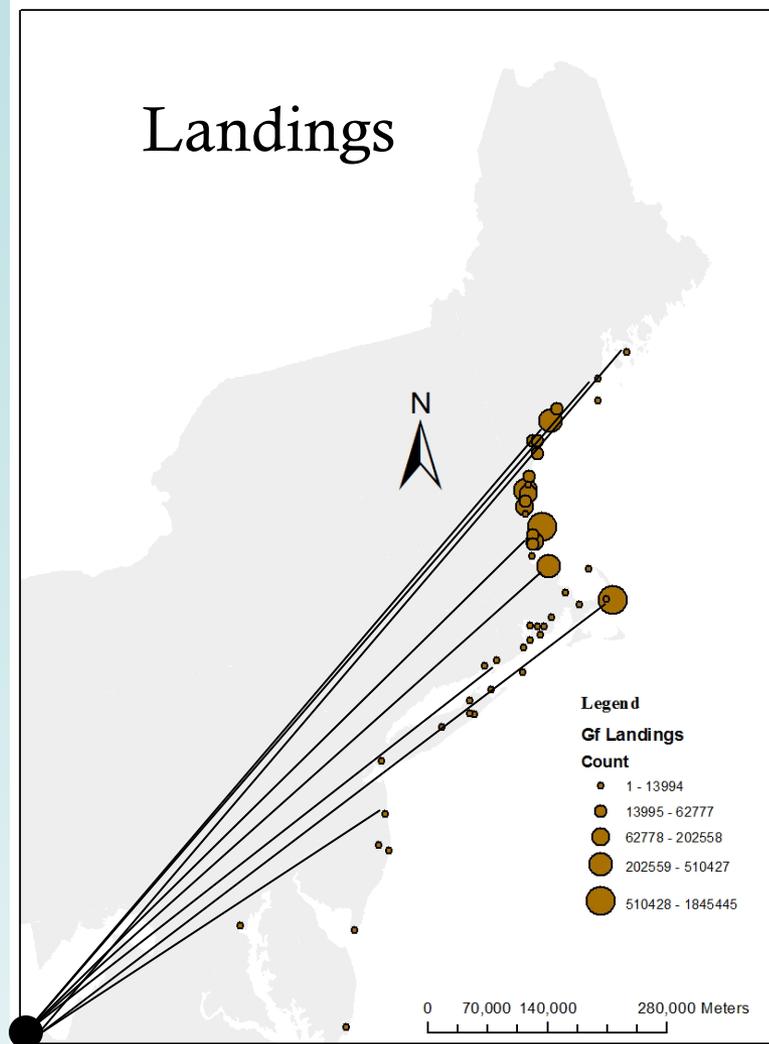
<http://www.newbedford-ma.gov/PortofNewBedford/images/fishingboats.gif>

Industry

- Permits
- Landings
- Syrjala 1996: compare two spatial distributions
 - Normalize observed densities
 - Calculate cumulative distribution function from ordering and summing distances from an origin
 - Squared difference of the cumulative distribution functions:
 - Significance from randomization

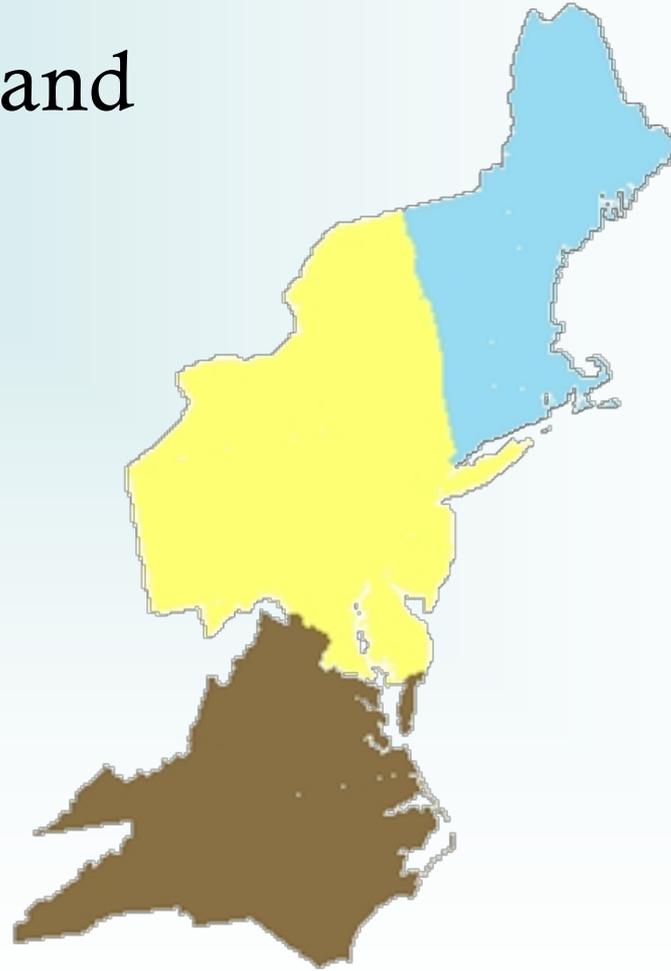


A statistical test for a difference between the spatial distributions of two populations

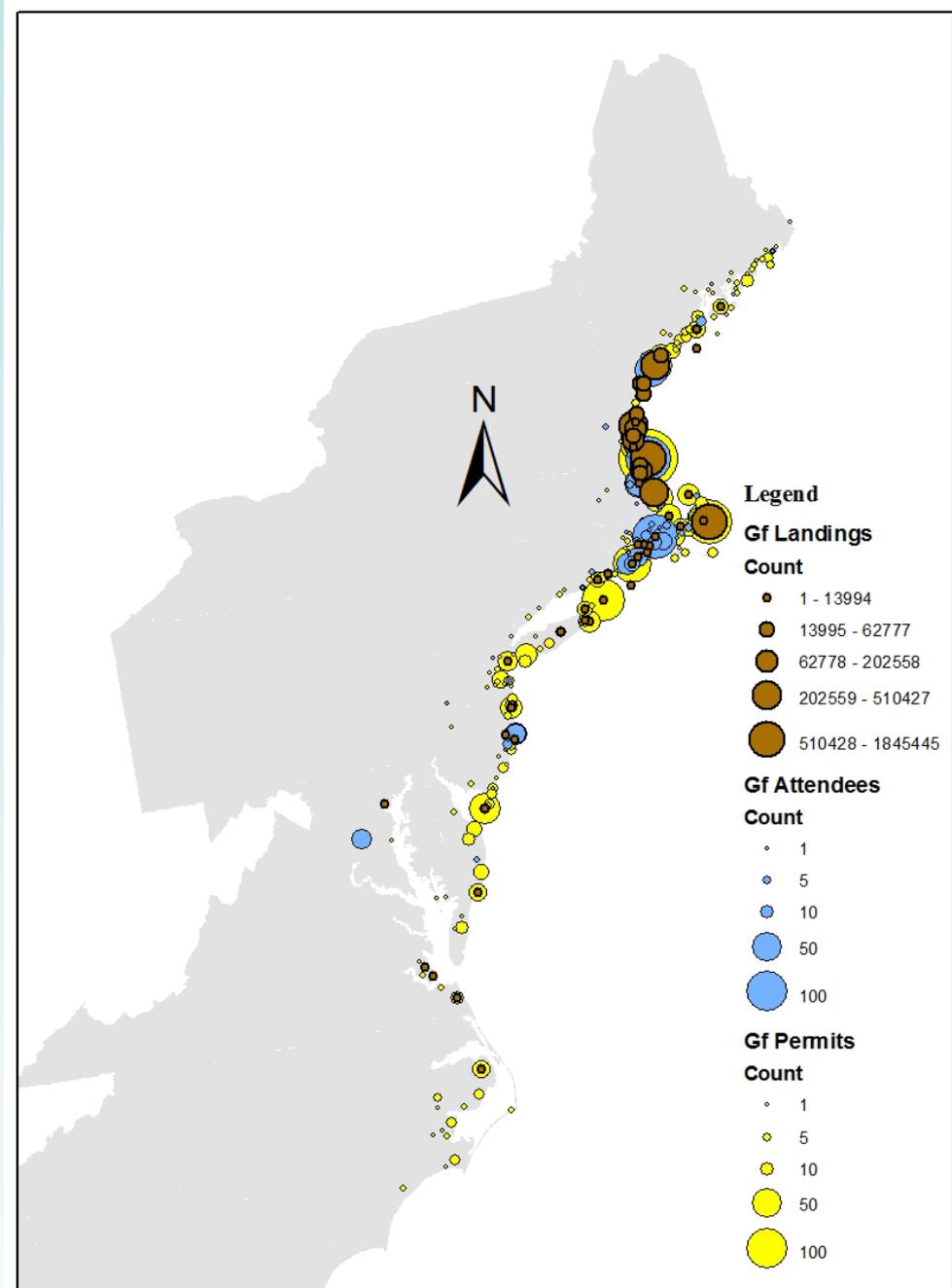


Area extent

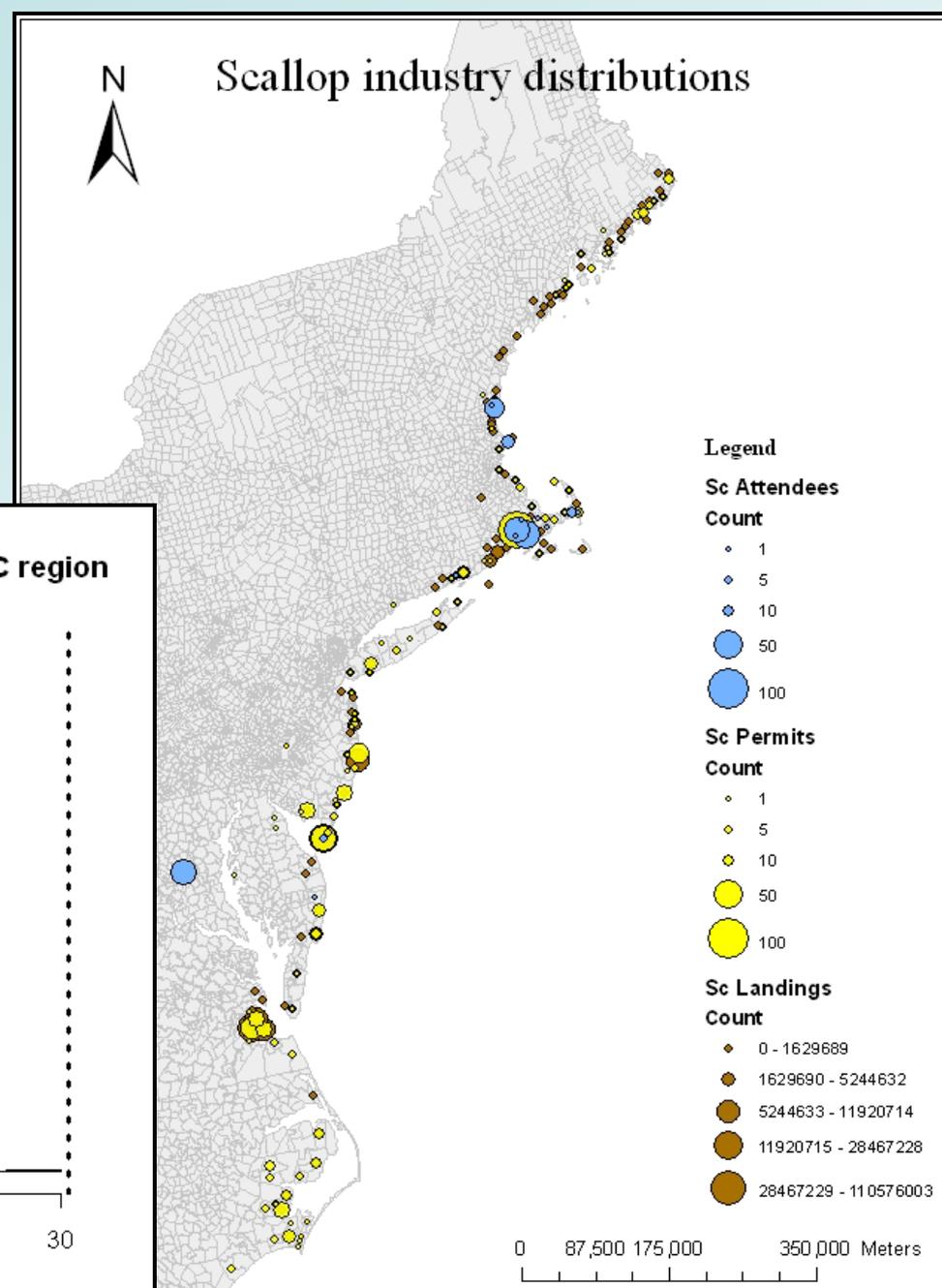
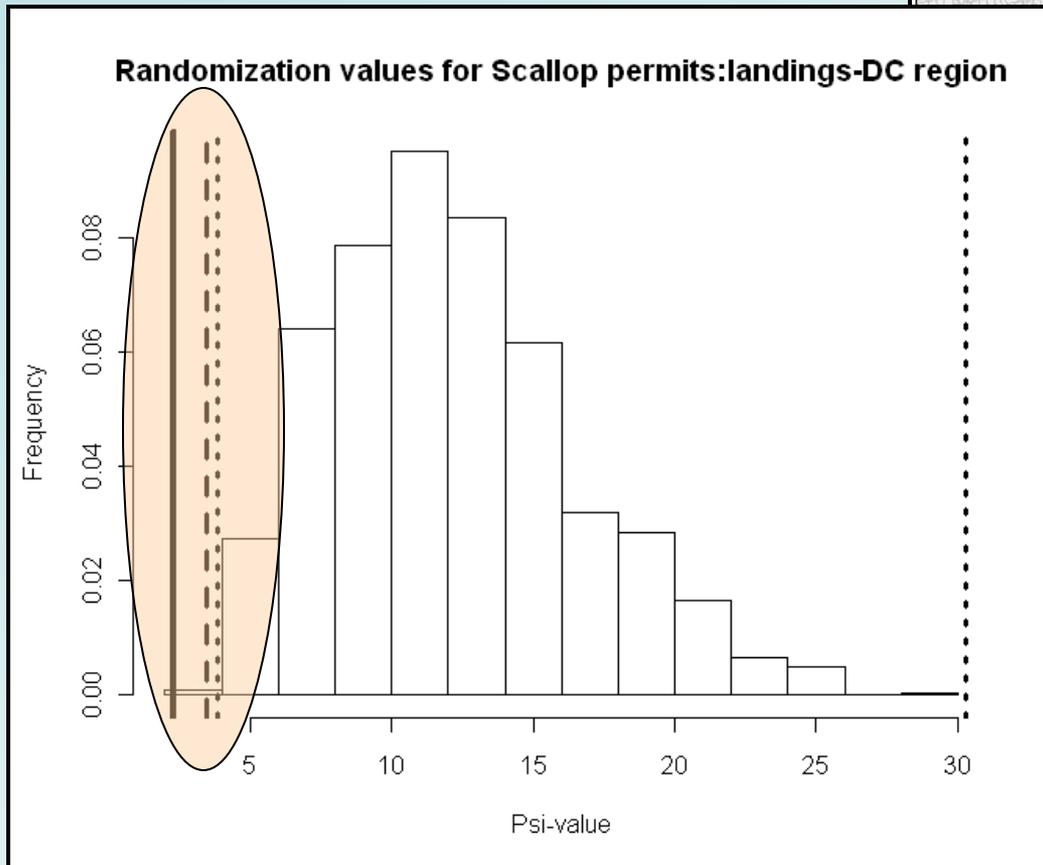
- Beyond New England



Distributions 2003-06



Significant ($\alpha < 0.05$)

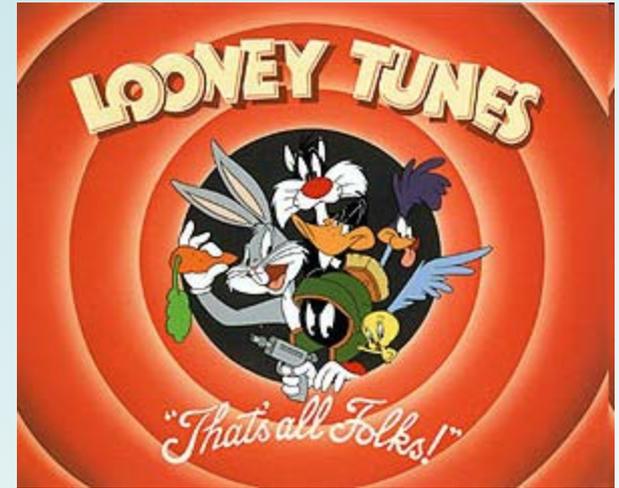


Face-value conclusions

- No significant difference between attendees and industry
- Attendance statistically similar or representative, spatially, of the industry
- Input at meetings and potential influence: accurate feedback for Council decisions

Is that it?

- Not really
 - Timing caveats
- Appropriate feedback
 - Social
 - Economic
 - Ecological



http://www.noaanews.noaa.gov/stories2008/images/sampling_small.jpg

http://www.commercial-fishing.org/plugins/p17_image_gallery/images/md_206.jpg

Assumptions

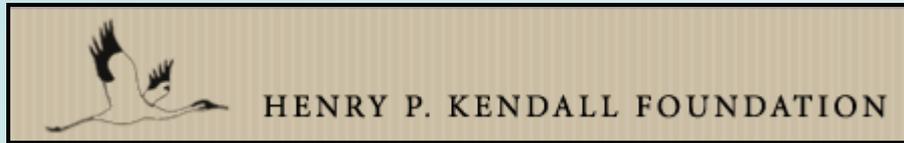
Actual situation

Predicted situation

	Homogeneous distribution	Metapopulation distribution
Homogeneous distribution	Great Job!	Sub-stock local extinctions possible
Metapopulation distribution	More time and \$ Increased involvement	Great Job!

Conclusions

- Distance a factor in attendance
- Geographically biased or representative?
 - Ψ Says representative
 - Temporal conditions
- Real impacts
 - Feedback on policy
 - Human and resource dimensions



Acknowledgments



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- University of Maine Provost Fellowship
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- Maine SeaGrant



- Assistance

- HabCam group: Dr. Scott Gallagher and Amber York, Woods Hole Oceanographic Institution; Richard Taylor and Norman Vine, Advanced Habitat Imaging System
- Dr. Dvora Hart, NEFSC/NFMS/NOAA
- Dr. Kevin Stokesbury, SMAST
- NEFMC



Who didn't attend?

- Syrjala (1996):
 - Based on a bivariate generalization of Cramer-von Mises nonparametric test for a difference b/t two univariate probability distribution functions

Ψ

$$\gamma_i(x_k, y_k) = \frac{d_i(x_k, y_k)}{D_i} \quad \Gamma_i(x_k, y_k) = \sum_{\forall x \leq x_k, \forall y \leq y_k} \gamma_i(x, y).$$

$$\Psi = \sum_{k=1}^K [\Gamma_1(x_k, y_k) - \Gamma_2(x_k, y_k)]^2.$$

Georges Bank, US

- 1994- emergency closures enacted by Secretary of Commerce
 - Overfished groundfish stocks
 - Made permanent by NEFMC
 - Closed to all bottom-tending, mobile gear
- 1999- first access trips for scallop fishing
 - Large biomass within closures
 - Industry lobbying (Edwards 2002)
- Current catches (NMFS 2007)
 - Mid-Atlantic and New England 2006
>22 million kg (84.1%); \$324,785,138 (84.4%)

National Marine Fisheries Service 2007.

http://www.st.nmfs.noaa.gov/st1/commercial/landings/annual_landings.html;

Edwards, S. 2002. Mar. Res. Econ. 16: 263-275.