Marine Recreational Information Program

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Review of Fishery Independent and Dependent Data for Stock Assessments

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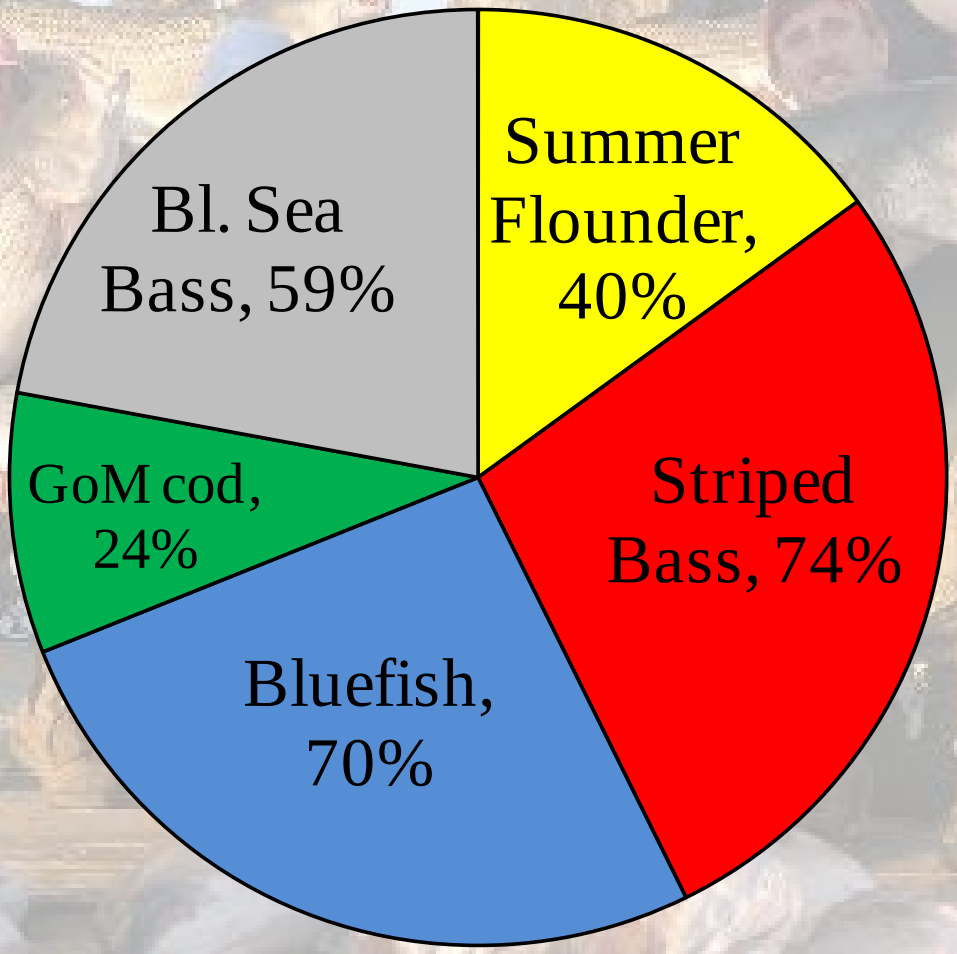
Background

- 1981- present
- National program tailored to meet regional fisheries.
- Statistical Survey designed to estimate number of trips by recreational fishermen and amount/type of catch.

Proportion Landed from Recreational Fisheries in Northeast



Background

- Formerly known as Marine Recreational Fisheries Statistical Survey (MRFSS)

- National Research Council review in 2006
  - Developed list of recommendations

- Recommended changes incorporated into Marine Recreational Information Program (MRIP)

Survey and Estimation

Two components of the survey –

- Catch per Trip via onsite surveys
- Total Effort via offsite surveys

Total Catch = Effort (trips) * Catch per trip

Catch per Trip Estimation

- Sampled in 2 month time stages (waves)
- Fishermen categories (modes):
  - Shore anglers
  - Private/rental boat anglers
  - Party (head) boats (For-Hire vessels)
  - Charter boats (For-Hire vessels)
- Catch types are:
  - Fish retained and available for inspection (A)
  - Fish released dead or only parts available for inspection (B1)
  - Fish released alive (B2). Total catch=A+B1+B2

Catch per Trip Estimation

- *"The estimation procedure for information gathered onsite does not use nominal or actual selection probabilities of the sampling design, and therefore, has the potential to produce biased estimates…"* (NRC Review)
- Sample of anglers selected in stages
- MRFSS estimation design ignored selection probabilities and sample weights – potential for bias

Catch per Trip Estimation

- Revised **MRIP** estimation design accounts for selection probabilities at all stages of sampling
- MRIP completely updated catch survey sample frame (site register)
- Added new sites, update site pressures and added information about site amenities
- Incorporates sample weights into CPUE estimation
- Design-unbiased
- Revised estimates 2004-2012

Catch Survey Design

- A new MRIP catch survey design implemented for wave 2, 2013
- Stratified sampling design
  - Time of day
  - Geographically
- Small sites clustered together to ensure coverage
- Very specific interviewing protocols
- Design will be closely monitored throughout 2013 to evaluate performance

Effort Survey Design

- Random digit dialing (RDD) survey in coastal counties
- If response is positive, queries each angler how many fishing trips were taken in the previous 2 months
- Results adjusted for non-coastal households and households with no land line telephone (both determined in dock-side survey)

Effort Survey Design

- *"The existing random digit dialing (RDD) survey suffers in [in]efficiency from the low proportion of fishing households among the general population and may allow bias in estimation from its restriction to coastal counties only"* (NRC Review)
- *"A comprehensive, universal sampling frame with national coverage should be established"* (NRC Review)
- *"Dual-frame procedures should be used whenever possible to reduce sample bias"* (NRC Review)

Effort Survey Design

- Implemented National Saltwater Angler Registry
- Tested Angler License Directory Telephone Surveys
  - Much more efficient than RDD
  - Poor response rates
  - Missing and/or inaccurate contact information
  - LOTS of people fish without a license
  - It’s not currently feasible to sample exclusively from license databases

Effort Survey Design

- Dual-Frame Mail Survey Designs
  - Sample from angler license databases and residential address frames
  - Address frame provides nearly 100% coverage
  - License sampling results in efficiency gains
  - Response rates considerably higher than telephone surveys
  - Feasible to produce estimates in timely manner
  - Continue testing through 2013

For-Hire Data

- Since 2005 For-Hire vessels sampled separately because RDD did not result in adequate sample size.
- Sampling unit is vessel (from vessel directory) not household.
- Sampling is stratified by vessel type (head boat and charter boat), state, and week, within each two-month sampling wave.

For-Hire Data

- Currently, vessels are sampled at a rate of 10% within each stratum, with a minimum sample size of 3 vessels.
- Data collection is conducted weekly within each wave. The weekly dialing is completed during the week following the specified sample week of fishing.

For-Hire Data Collections

- Currently utilize For-Hire Survey (FHS) to estimate catch and effort for charter boats coast-wide and headboats from ME-VA.
  - Weekly survey of charter boat operators
  - Dockside and at-sea observation of catch
- Vessel Trip reports (VTR) also required of Federally permitted vessels in Northeast.
- Tested electronic logbook reporting on for-hire vessels in Gulf of Mexico – not particularly effective.

Strengths

- Statistical based survey covering all components of marine recreational fisheries.
- National program which can adapt to regional differences.
- Flexible to change sampling and methods as improvements are tested in pilot programs.
- Subjected to regular review by end-users (scientists and managers).

Challenges

Issues in the Northeast:

- Sampling does not include Wave 1 (Jan-Feb)
- Prior to 2005 no sampling in Wave 6 (Nov-Dec) in Maine and New Hampshire
- Stock areas divide sampling design by state
  - Massachusetts must be divided north and south of Cape Cod for Gulf of Maine stocks.
  - North Carolina divided north and south at Cape Hatteras for several stocks.
  - Requires re-estimation that should be standardized

Challenges

Issues in the Northeast:

- Calibration required between MRIP and MRFSS (pre-2004) estimates (approaches considered in 2012 national workshop).
- Length information from released fish (B2) often inadequate.
- As program changes are instituted to improve estimates (e.g. 2013 and beyond), could encounter major changes in catch estimates.

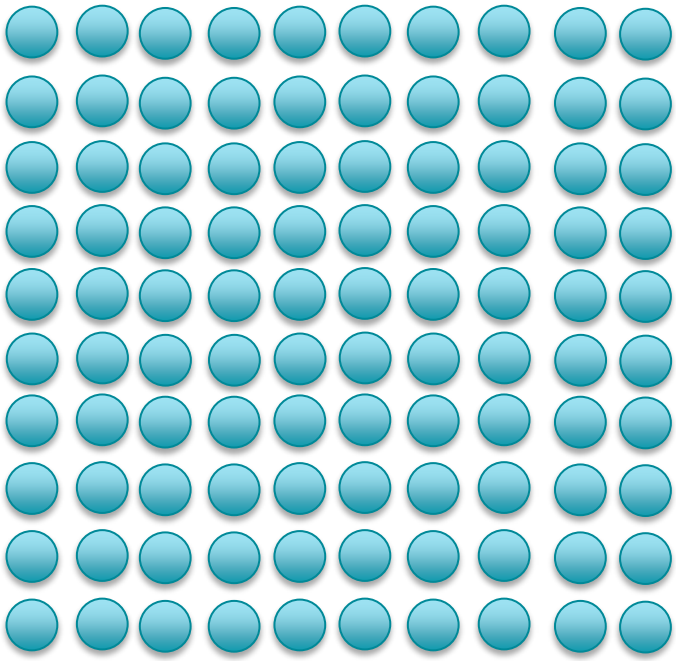
Proposed Solutions

- Finalize design of MRIP effort survey
- Revise pre-2004 estimates
- Establish standards for precision of catch estimates
- Reconcile estimates from VTR logbooks and MRIP.
- Work with stakeholders to evaluate tradeoffs among precision, timeliness and resolution

Questions?

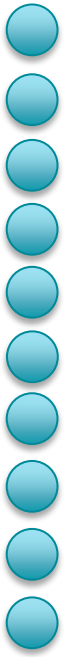
Catch per Trip Estimation

Site A



N=100

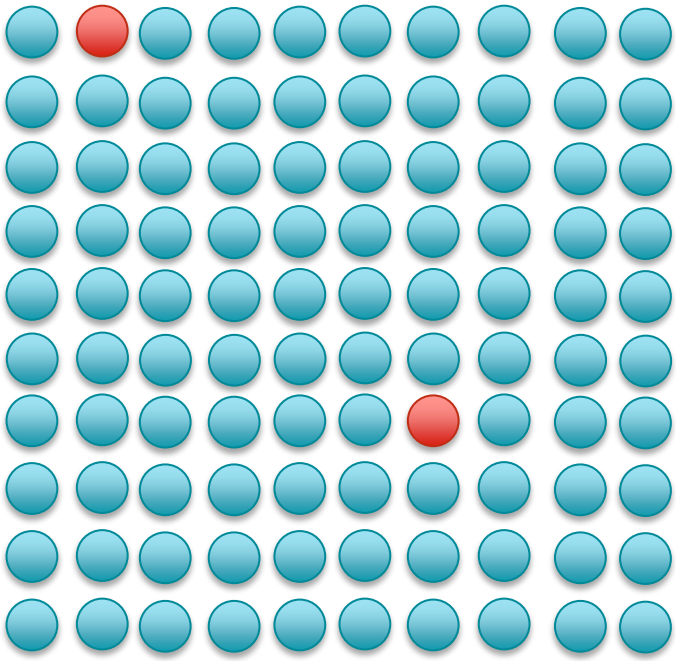
Site B



N=10

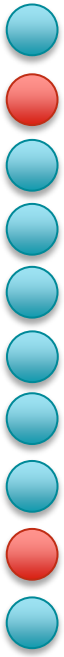
Catch per Trip Estimation

Site A



N=100
n=2
W=(100/2)=50

Site B



N=10
n=2
W=(10/2)=5

Catch per Trip Estimation

- Site A, Angler 1 = 0 fish (W=50)
- Site A, Angler 2 = 4 fish (W=50)
- Site B, Angler 1 = 12 fish (W=5)
- Site B, Angler 2 = 8 fish (W=5)
- Unweighted cpue = $\frac{0+4+12+8}{4}$ = 6
- Weighted cpue = $\frac{(0*50)+(4*50)+(12*5)+(8*5)}{50+50+5+5}$ = 2.73

Quality Control

- Unscheduled supervisor visits
- Follow-up telephone interviews with sampled anglers
- Manual review of monthly raw survey data (“fish dumps”)
- Automated checks of data
- Manual review of wave estimates
- Public posting of preliminary estimates