NOAA FISHERIES

Northeast Fisheries Science Center

Overview of Fishery-Independent Data

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The importance of fishery- independent data: preaching to the choir ?

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Properties of fishery-independent data

Standardized sampling: No other regional source of consistent abundance and distribution data

- Uniform sampling methodology ensures observed changes are biologically and environmentally based rather than reflecting changes in fishery behavior.
- Observations not subject to external forces that vary over time (markets, regulations, technology)

  Regulatory changes in New England groundfish fisheries over the past 40 years: International quotas, domestic quotas and trip limits, no quotas or trip limits, international boundary decisions, mesh size increases, increased minimum fish sizes, permanent area closures, more mesh size increases, larger permanent area closures, seasonal area closures, effort control and some trip limits, differential effort control by area, Annual Catch Limits, transferable catch entitlements, exempted fisheries, gear configuration requirements

  Very few periods of regulatory "equilibrium"

Properties of fishery-independent data

Statistical design

- Opportunity to minimize bias and variance
- Optimal allocation not possible in multispecies surveys, but possible to stratify in ecologically meaningful ways.

Purpose-built

- Effective collection of multiple data types simultaneously
- Specialized biological sampling

Multiple spatial, temporal scales

- Individual organism
- Habitat type
- Stock area
- Ecosystem
- Seasonal
- Inter-annual
- Multi-decadal

Applications of fishery-independent data

- Index only : trends in relative abundance; B_{msy} proxy
- With cohort slicing or age data: Z
- With aggregate catch data: reference points, abundance, mortality (AIM, CSA)
- With recruit cohort slicing, survey and commercial length frequency: F, recruitment, stock biomass (SCALE)
- With commercial gear selectivity ogive: approximate discards
- Changes in stock distributions over time (range reductions, expansions, shifts)
- Ecosystem mapping: multispecies interactions, aggregate ecosystem indices

Amen

The fine print….

Subject to species availability

Subject to variability in q by bottom type, depth, tide, day/night, sea state, …….

Roadmap for Today's Presentations

Survey Designs and Methodologies
Rob Johnston

By survey:

- Autumn multispecies bottom trawl
- Spring multispecies bottom trawl
- Sea scallop/Integrated benthic
- Surf clam/ocean quahog
- Northern shrimp

- Vessels, gear
- Gear standardization, calibration, performance
- Design, stratification, station intensity
- Catch processing

Roadmap for Today's Presentations

Shipboard Sampling, Data Quality
Chris Legault, Paul Kostovik

- Shipboard sampling design/requests (Chris Legault)
- Data acquisition: design and process (Paul Kostovik)
- Catch processing and data capture
- Quality evaluation, assurance
- Post-processing

State Surveys
Mark Terceiro

Roadmap for Today's Presentations

Age, Growth and Reproduction
Rich McBride

Sample and data
- Types
- Quantity
- Quality
- Results

Other Data Collection Activities, But Not Routinely Used in NEFSC Stock Assessments

- Food Web Dynamics: see Atlantic Herring (Wednesday)
- Atlantic Herring Hydroacoustics Survey: see Atlantic Herring (Wednesday)
- Apex Predators Program: see Southeast Fisheries Science Center (partial)