

Selectivity: theory, estimation, and application in fishery stock assessment models

March 11-14, 2013

Output

- Workshop Report
 - ftp://ftp.capamresearch.org/incoming/selevtivity_workshop/report/CAPAM_Selectivity%20Workshop_Series%20Report_August%202013.pdf
- Special Issue in Fisheries Research
 - 20 papers
 - All papers online
 - Coming out later this year

General conclusions

- Selectivity parameterization
 - Time-varying selectivity
 - More flexible nonparametric forms
 - Dome shape selectivity
 - Need to develop efficient methods to estimate the smoothing parameters when using nonparametric and time varying methods.
- Time varying selectivity
 - Expected due to fisheries targeting strong cohorts, variation in growth rates, and changes in the spatial distribution of the fishery or the stock
- Spatial structure
 - Both theory and empirical evidence indicate that fish movement and availability likely lead to some doming in most cases
 - “Unusual” shapes that may have been considered unrealistic in the past are now considered more plausible
 - Determining how many fisheries to include in the analysis is important
 - Ignoring spatial structure and seasonal migration can impact estimation performance negatively and that some, but not all, of the biases can be reduced by using the “areas as fleets” approach
- Data weighting
 - The interaction between selectivity and age- or size-composition data can substantially impact estimates
 - Data weighting of composition data is inherently connected to selectivity modelling
- Diagnostics
 - Obtaining consistency in the $R0$ likelihood component profile is important
 - Data should be separated into as many fisheries as practical with selectivities shared to ensure that diagnostics can be conducted at a fine scale.
- Guide to good practice
 - Current research indicates that it is prudent to model dome-shaped and time-varying selectivity for all fisheries using nonparametric methods, particularly if a survey with constant asymptotic selectivity is available.