

**WORKSHOP ON MODELING
POPULATION PROCESSES
La Jolla, California (USA)
3-6 November 2009**

Topics

- **Natural mortality**
- **Recruitment**
- **Growth**
- **Selectivity**

Format

- Background information on each topic provided to participants before the workshop
- Presentations on each topics by participants
- Focus questions provided to promote discusions

Stock Synthesis

- Each topic started off with Ian Taylor of NMFS summarizing how the process can be modeled in stock synthesis

General

- Modeling covariates (Mark Maunder and Richard Deriso)
- Modeling processes in the presence of large scale temporal and spatial variability (Juan Valero and IPHC staff)
- Effects of tagging on tagged fish, and modeling approaches (Simon Hoyle, John Hampton)

Natural mortality

- A review of methods to estimate natural mortality (Mark Maunder)
- Estimating natural mortality within a stock assessment model: an evaluation using simulation analysis based on twelve stock assessments (Hui-Hua Lee, Mark Maunder, Kevin Piner, Richard Methot)
- Proposed formulation for age-specific patterns in natural mortality (Mark Maunder)
- Preliminary estimation of age- and sex-specific natural mortality of bigeye tuna in the eastern Pacific Ocean by applying a cohort analysis with auxiliary information to tagging data. (Mark Maunder, Alexandre Aires-da-Silva, Richard Deriso, Kurt Schaefer, and Daniel Fuller)
- Sex, death, growth, and vulnerability – alternative hypotheses for tuna sex ratio variation with size and location (Simon Hoyle)

Recruitment

- Estimating the steepness of the stock-recruitment relationship in stock assessment models (Hui-Hua Lee¹, Mark Maunder, Kevin Piner, Richard Methot)
- A stock-recruitment relationship for low fecund species (Mark Maunder and Ian Taylor)
- Steepness in WCPO stock assessments (Simon Hoyle, Shelton Harley, Adam Langley)
- New ideas on bias correction for recruitment parameters (Ian Taylor)
- The Mystery of Prince William Sound Herring: A Population Dynamics Analysis (Dale Kiefer)

Growth

- Alternative methods to model growth (Mark Maunder)
- Migration ecology of the Pacific bluefin tuna , *Thunnus orientalis*, off Japan and Taiwan supported from temporal and spatial changes in the condition factors (Mikihiko Kai Chien-Chung Hsu)
- Growth of Pacific bluefin tuna and its effect on the stock assessment results. (Tamaki Shimose, Momoko Ichinokawa, and Mikihiko Kai)

Selectivity

- Evaluating and selecting methods for estimating time-varying selectivity in statistical catch-at-age analysis (Brian Linton and James Bence)
- Selectivity parameterization issues involved with stock assessments of coastal pelagic fish populations of the Northeast Pacific Ocean: Stock Synthesis model development for Pacific sardine and Pacific mackerel (Phase I) (K. T. Hill and P. R. Crone, Thursday)