Preliminary Agenda

Natural Mortality: Theory, estimation and application in fishery stock assessment models

Monday

9:00 Introduction to multispecies models and context (30)
9:30 Introduction to Rceattle() (15)
9:45 CEATTLE demo using Rceattle() Bering Sea model (45)
   • Single-species vs multi-species
   • Model sensitivity
   • Suitability and diet uncertainty
   • Retrospective and simulation testing

10:30 Email & Coffee Break (15)

10:45 Climate-informed projections: long-term advice using multispecies (15)
11:00 Climate projection demo using futR() (45)
   • Fit recruitment models using futR()
   • Run model selection via AIC
   • Project the model using future climate indices and Rceattle() + futR()
   • Compare projections between single- and multi-species models with and without climate

11:45 Wrap up and discussion (15)

12:00 Lunch (60)

13:00 CAPAM M Introductions (UW, NOAA, CAPAM) (30)

Session 1 (Life history)

13:30 Kai Lorenzen. Natural Mortality and Life History: A Primer for Fisheries Scientists. (60)
14:30 Akihiro Manabe. Revisit the mechanism: why is natural mortality size-dependent? (25)

14:55 Coffee Break (20)

15:15 Owen Hamel. TBA (25)
15:40 Paul Regular. The role of starvation in the collapse and slow recovery of northern cod (25)
16:05 Discussion (25)

Session 2 Estimating M (Single species considerations)

16:30 John Pope. Groping for understanding of Natural Mortality: #M2 (60)

17:30 Close and Reception at SAFS
Tuesday

9:00 Arni Magnusson. When M goes high: Estimating natural mortality rate from low-contrast fisheries data (25)


9:50 Ashleigh J. Novak. How good does acoustic telemetry data have to be to improve estimates of natural mortality in stock assessment models? (25)

10:15 Coffee Break (20)

10:35 Jacob Krause. Using telemetry to estimate natural mortality (25)

11:00 John Wallace. Comparing Life History Based Natural Mortality Estimates to Tagging and Telemetry Studies (25)

11:25 Bill Clark. Analytical determination of the parameters of an age-structured model (25)

11:50 Lunch (60)


14:05 Paige Eveson. Estimating a natural mortality vector covering the lifespan of southern bluefin tuna (60)

15:05 Coffee Break (20)


16:15 Shareef Siddeek. Age- and length- based approaches to estimating natural mortality using tagging and fisheries data: The example of the eastern Aleutian Islands, Alaska golden king crab (*Lithodes aequispinus*) (25)

16:40 Discussion (50)

17:30 Close
Wednesday

9:00 Yong Chen. Dealing with temporally varying natural mortality in size-structured assessment models: a simulation-based evaluation of methods (25)

9:25 Michael Wilberg. Spatio-temporal patterns in natural mortality estimated using a stage-structured model for oysters in Chesapeake Bay, Maryland (25)

9:50 Coffee Break (20)

Session 3 Estimating M (Multispecies and ecosystem considerations)

10:10 Eva Plaganyi. Multispecies approaches to modelling natural mortality rates (60)


11:35 James Thorson. Spatio-temporal analyses of marine predator diets from data-rich and data-limited systems (25)

12:00 Lunch (60)

13:00 John T. Trochta. Using Bayesian model selection to evaluate different ecosystem effects on natural mortality in stock assessment of Prince William Sound herring (25)


14:40 Coffee Break (20)

15:00 Skyler Sagarese. Enhancing single-species stock assessments through socioeconomic and ecosystem contributions: accounting for red tide mortality in past and future population dynamics for Gulf of Mexico Red Grouper (*Epinephelus morio*) (25)

15:25 Elizabeth Ng. Do predator stomach contents provide an index of prey abundance? (25)

15:50 Discussion (40)

16:30 Close
Thursday

Session 4 (Applications, modelling platforms and implementation)

9:00 Holly Kindsvater. Life history diversity, natural mortality, and fisheries reference points (60)

10:00 Ian Taylor. Modeling natural mortality in Stock Synthesis: options available, common practices, and what to avoid (30)

10:30 Coffee Break (20)

10:50 Christine Stawitz. Spatially-structured stock assessments: a comparison between the Metapopulation Assessment System and Stock Synthesis (25)

11:15 Geoff Tuck. Uncertainty regarding natural mortality for eastern Australian orange roughy (25)

11:40 Jonathan Smart. Accounting for mass mortality events in an age-structured model for South Australian Sardine (Sardinops sagax) (25)

12:05 Lunch (60)

13:05 Merrill Rudd. New Zealand rock lobster: estimating natural mortality in a length-structured Bayesian model (25)


14:20 Coffee Break (20)

14:40 Cecilia O’Leary. Incorporating oceanographic dependent time-varying natural mortality and recruitment into Bayesian hierarchical models: a summer flounder empirical study (25)

15:05 Kathryn Doering. A Bayesian model for estimating bivalve natural mortality with application to oysters in Chesapeake Bay, Maryland (25)

15:30 Mikihiko Kai. Standardization of age-specific natural mortality rate for North Pacific blue shark (25)


16:45 Discussion (40)

17:25 Close
**Friday**

**Session 5 (Consequences of error)**

9:00 André Punt. Consequences of Error in Mortality Rate Modelling (60)

10:00 Bill Clark. Effects of an erroneous natural mortality rate on a simple age-structured stock assessment (25)

**10:25 Coffee break (20)**

10:45 Jessica Tengvall. How (un)sustainable is MSY when dynamics in natural mortality are ignored? (25)

11:10 Phillip Neubauer. Indirect impacts from climate variability on natural mortality: Consequences for stock assessments (25)

11:35 Claudio Castillo-Jordán. Evaluating the impacts of fixing or estimating natural mortality, across life histories and data availability (25)

**12:00 Lunch (60)**

13:00 Alfonso Perez-Rodriguez. Impact of a wrong M assumption on fisheries management and population risks (25)

13:25 Nis Jacobsen. The impact of natural mortality on reference points and management strategies of forage fish populations (25)

13:50 Jason Cope. Upgrading from M 0.2: an application-based method for accessible estimation, evaluation and uncertainty characterization of natural mortality (30)

14:20 Discussion (30)

**14:50 Coffee Break (30)**

15:20 Final discussion (60)

16:20 Close