**Agenda**

**Development of Multi-Species Catch Only Models (MS-COMs)**

**January 16-18, 2018**

**Objectives**

1) Develop a simulation framework for MS-COMs analogous to the factorial design from Rosenberg et al. 2014.   
  
2) Code an initial MS-COM.   
  
3) Analyze stocks from the RAM Legacy Database to determine an appropriate range of variability in correlation structure of F time series from stocks caught in the same fishery.  That is, can we use RAM stocks to bound the covariance matrix for F?

**Location**

FAO, Viale delle Terme di Caracalla, 00153 Roma RM, Italy - Specific room location TBD

**Contact**

Olaf Jensen - olaf.p.jensen@gmail.com - Cell (in Rome): +1 609-721-0829

**Agenda**

*Day 1 - Tuesday, January 16*

9:00 - Meet at FAO entrance to get badges, get set up in conference room

9:30 - Introductions and project overview

10:00 - Discussion of

Target use of MS-COMs for SOFIA reports (current and potential future available data)

Single-species COM performance testing (including effort-tailored superensembles)

MS-COM framework (which COM to use and how to represent shared F among stocks)

Simulation testing

Use of RAM Legacy Database for model development and testing

Workflow (share Github repository and other online collaboration tools)

12:00 - Lunch at FAO cafeteria

1:00 - Small group discussions and work on model, simulation testing, and RAM Legacy analysis

4:30 - Skype with Jim Thorson

5:30 - Aperitivo

Evening: Dinner TBD

*Day 2 - Wednesday, January 17*

9:00 - Meet at conference room - report out from small groups

9:30 - Small group discussions and work on model, simulation testing, and RAM Legacy analysis

12:00 - Lunch at FAO cafeteria

1:00 - Presentation of small group progress

2:00 - Application of initial MS-COM to simulated data. Continued small group work.

5:30 - Aperitivo

Evening: Dinner TBD

*Day 3 - Thursday, January 18*

9:00 - Meet at conference room - presentation and discussion of initial MS-COM fitting results

10:00 - Integration of RAM Legacy analysis into initial MS-COM, revision of MS-COM

12:00 - Lunch at FAO cafeteria

1:00 - Presentation of revised model fitting

2:00 - Continued small group work

4:00 - Discussion of next steps:

Tasks and associated leaders

Calendar and deadlines

Planning spring check-in web meeting

Planning summer in-person meeting (possibly late August in New Jersey in conjunction with AFS annual meeting)

5:30 - Aperitivo

Evening: Dinner TBD

**Project Background and Justification**

Many data-limited fish stocks are harvested in multi-species fisheries. This places potentially informative constraints on fishing mortality when considered across multiple species in the same fishery. For example, if we know fishing mortality has increased for one species in a trawl fishery, it’s often reasonable to assume that it has also increased for other species captured in that fishery. Alternatively, when a fleet has mutually exclusive targeting opportunities, e.g. setting traps on hard vs. soft bottom, increases in fishing mortality for some species may imply decreases in fishing mortality for another. Thus, covariance in the catch (positive or negative) of different species captured in the same fishery provides information that can be used to improve data-limited assessment methods. This is relevant for SOFIA status classification because many of the unassessed stocks come from multi-species fisheries. The information needed to group stocks comprising a multi-species fishery could come from an additional question on the questionnaire given to data providers regarding grouping of stocks within fisheries.

Utilizing this information will require the development and testing of multi-species catch-only models (MS-COMs). Single species catch-only models that are based on an underlying population dynamics model, such as COM-SIR, CMSY, and SSCOM, offer a logical starting point for development of MS-COMs. A general work plan will involve adding (1) an explicit estimated effort time series to these models that is shared across all species in the model and (2) a vector of catchability coefficients (one for each species) to convert the effort time series to a fishing mortality rate. These catchability coefficients are likely to vary through time as gear or targeting changes, and it may be useful to consider the vector as the means of random variables rather than fixed coefficients. Where an effort or fishing mortality rate time series is available for one or more species in the fishery, this information can be supplied to the model and will likely improve performance. This is likely to be the case, for example, where the data-limited species are bycatch in a fishery targeting an assessed stock. Candidate models should be tested against simulated data using a multi-species extension of the framework used by Rosenberg et al. (2014).