WORKSHOP LOGISTICS

FORMAT

Informal workshop organized by the Ocean Foundation on margins of SC meetings.
Note: The workshop will be held in-person, however remote participation in the morning session is possible. Please register through the website and indicate if you attend the workshop in-person or remotely.

DATE

14 December (Sat) 2024, 9 am – 5 pm Tokyo time.

VENUE

Science Museum, 6th floor, meeting room #2

2-1 Kitanomaru Park, Chiyoda-ku, Tokyo 102-0091   Google Maps

https://event-jsf.jp/conference_room

(*13 min walk from the meeting venue for SSC BF-ME05, SSC PS14 and SC09*)

REGISTRATION

The workshop is open to all NPFC members, observers and Secretariat guests, up to 2 participants per delegation. Online registration is not required. However, participants will be invited to express their interest and sign in during the SSC PS14 meeting (11-13 December).

COFFEE/TEA BREAKS

Workshop participants will be offered coffee/tea and snacks.

LUNCH

Lunch will not be provided by the host. There is a restaurant and a café in the Science Museum.

Introduction to Management Strategy Evaluation with OpenMSE

A workshop for NPFC members to become more familiar with MSE

14 December 2024, Tokyo, Japan

Summary: Management Strategy Evaluation (MSE) is a tool that scientists and managers can use to simulate a fisheries system and test whether potential management procedures can achieve pre-agreed objectives. MSE helps to identify the management procedure likely to perform best, regardless of uncertainty, and balance trade-offs among competing objectives. The North Pacific Fisheries Commission (NFPC) is developing MSE for Pacific saury and is considering MSE for other key species. This one-day workshop held adjacent to the NPFC Scientific Committee meeting will assist member participants in learning more about the general practice of MSE and provide a more technical demonstration and exercises for those who are interested.

Workshop overview: The content and presentation of the workshop will be conducted by Blue Matter Science in two parts:

1) **Morning sessions** will introduce the philosophy, concepts and terminology of MSE. The sessions will describe the MSE process and all components. Participants will develop an understanding of what MSE is, how it can be used, how the components work together, and the role of various MSE user groups. They will become familiar with concepts including closed-loop simulation testing and how MSE calculates the performance of alternative management procedures.

2) **An afternoon session** will consist of a demonstration (coding) of all technical components of MSE using the OpenMSE R package including: operating model specification, management procedure development and tuning, running the closed-loop calculations of an MSE, calculating performance metrics, presenting MSE performance outcomes and trade-offs, and developing exceptional circumstances protocols. It is highly recommended that participants are familiar with programming using the R statistical environment and the RStudio software. Participants will become familiar with the openMSE package, learn how to build operating models for a range of fisheries, develop custom management procedures in openMSE, use MSE to evaluate the performance of management procedures for a case study, and understand how to conduct robustness testing against climate change and ecosystem effects.

Workshop presenters: Tom Carruthers and Adrian Hordyk of Blue Matter Science.

Course Overview

Part 1: MSE Philosophy and Concepts.   9:00-11:00

An introduction to the philosophy, concepts, and terminology of management strategy evaluation (MSE), using case studies to describe how MSE can address common and outstanding problems in fisheries management.

Outcomes:

- Understand what management strategy evaluation is, and how it can be used to address many fisheries management problems;
- Be familiar with the key concepts and terminology of MSE;
- Understand the concept of closed-loop simulation testing, and how MSE is used to calculate the performance of alternative management procedures; and
- Have the necessary background to pursue further capacity-building training in the technical aspects of using MSE.

Audience: General.
Required Software: None.

Part 2: MSE in Practice. 11:00-12:00.

Describe the MSE process in the form of an organized, chronological roadmap (schematic) that includes all components including membership, training, stakeholder engagement, manager feedback and direction, and the technical aspects of data analysis and coding.

Outcomes:

- Be familiar with the MSE process and how to maximize the efficiency and effectiveness of the process;
- Understand the role of various MSE user groups including oversight/facilitation, communications, technical and manager/stakeholder groups;
- Appreciate how management objectives, system uncertainties and management procedures combine to identify a robust management approach that can obtain management objectives;

Audience: General.
Required Software: None

Part 3: MSE in Practice. 13:00-17:00.

A demonstration (coding) of all technical components of MSE using the OpenMSE R package including: operating model specification, management procedure development and tuning, running the closed-loop calculations of an MSE, calculating performance metrics, presenting MSE performance outcomes and trade-offs, and developing exceptional circumstances protocols.

It is highly recommended that participants are familiar with programming using the R statistical environment and the RStudio software.

Outcomes:

- Be familiar with the openMSE packages (MSEtool, DLMtool, and SAMtool);
- Learn how to build operating models for a range of fisheries spanning data-poor to data-rich;

- Be familiar with a range of management procedures, and learn how to develop custom management procedures in openMSE;
- Use MSE to evaluate the performance of management procedures for a case study;
- Calculate exceptional circumstances protocols, and:
- Understand how to conduct robustness testing against climate change and ecosystem effects.

Audience: Technical
Required Software: Please follow the instructions below to install the software required for Part 3 of the course.

Software Installation Guide

For this course we will be using the openMSE R packages: MSEtool, SAMtool, and DLMtool.

To use openMSE you require three things:

1. The R statistical environment
2. A text editor such as RStudio for sending commands to R
3. The openMSE R package.

Installing R and RStudio

Step 1: Install R

We require at least version 4.3 of the R software.

The latest version of R can be downloaded from here: https://cloud.r-project.org/. Accept all default options during the install process.

Step 2: Install RStudio

The latest version of RStudio can be installed from here: https://www.rstudio.com/. Again, please accept all default options when installing.

Installing openMSE R Package

Step 1: Install openMSE R package

There are a number of windows open in RStudio. One is labelled 'Console' you can type commands at the bottom of this window. To install the openMSE R package type the following in the console:

```
install.packages("openMSE")
```

This command will install the *openMSE* R package on your machine. If will also install the *openMSE* dependency packages: *MSEtool*, *SAMtool*, and *DLMtool*.

Note: If any of these individual packages are already installed on your machine, they may not be updated when *openMSE* is installed.

Step 2: Confirm openMSE is working

In the RStudio console type:

```
library(openMSE)
setup()
MSE <- runMSE()
plot(MSE)
```

Several plots should appear in the RStudio Plots window. You can use the arrow buttons to scroll through the plots. If the plots appear, everything is working great!

If there are no plots, please check the R console for an error message and if possible, follow the instructions (e.g., it may ask to install a missing package).

If the problem still persists, please send a screen shot of your R console to Adrian (adrian@bluematterscience.com) before the course begins.