



CAPAM workshop on the creation of frameworks for the next generation general stock assessment models

The Center for the Advancement of Population Assessment Methodology (CAPAM) in collaboration with the National Institute of Water and Atmospheric Research Ltd (NIWA) will host a technical workshop on the creation of frameworks for the next generation general stock assessment models at the Victoria University of Wellington, New Zealand November 4-8, 2019.

Contemporary integrated fish stock assessments are complex and require sophisticated software, which takes substantial resources to develop. Fourth generation languages (e.g. TMB) aid development of these models, but generating new applications remains expensive and highly technical. Unfortunately, there are too few resources in terms of funding and skilled scientists to develop applications for all the populations that require assessment.

For this reason, several general models have been developed that can be applied in a wide range of situations. General models have benefits beyond ease of application. A common model provides a common language for scientists to discuss methods and results. Comprehensive analysis and testing improve reliability, give confidence to stakeholders, simplify review, and can result in guidelines for model assumptions. In fisheries stock assessment several general models (e.g. a4a, CASAL, Gadget, MULTIFAN-CL, SAM, Stock Synthesis) have been funded and developed by disparate groups with little coordination, but are nevertheless very similar in structure. However, due to differing objectives, they have some significantly different features. For example, MULTIFAN-CL was developed for tuna and therefore includes spatial structure and tagging data, while SAM focusses on random processes.

Development of the next generation general model will require collaboration among a diverse group of scientists to take advantage of knowledge spread among the different disciplines: Efficient estimation algorithms from mathematicians and statisticians; Efficient programming from computer scientists; Modelling assumptions from population dynamicists and biologists; Likelihood functions from statisticians; Information requirements from fishery managers.

The goal of the workshop is not to develop the next generation stock assessment model, but to bring together a diverse range of researchers to discuss frameworks for next generation general models, to set the foundation for those interested in development, and to initiate collaborations to ensure success. Topics covered include: coding philosophies and software structure, the underlying language base, hosting the project, stock assessment model features, user interface and good practices defaults, coordination, project planning, and funding.

Scientists are encouraged to present work from both ongoing research and completed studies. Please submit a presentation title and abstract (one-page maximum) by August 30, 2019 (earlier submission is encouraged). Presentations will have a 20-minute maximum and 10-minute question period. For information about the workshop, please contact the Chair Mark Maunder (mmaunder@iattc.org), and visit the CAPAM website (www.CAPAMresearch.org) for updates. Funding for the workshop is provided by Fisheries New Zealand.

CAPAM workshop on the creation of frameworks for the next generation general stock assessment models: First announcement