

SPC Requirements for Stock Assessments

Current and future modelling platforms

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Chat with Paul, Nick, Fabrice, and Mark
Noumea, 15 September 2022

Overview

Current Mode of Operation *Dave, Nick, John, and new stock assessors*

Changes Ahead *alternative stock assessment platforms*

FIMS Project *uncertainty about products and timeline*

Transition Plan *stages, from experimental to accepted model, resources*

Current Mode of Operation

Stock assessors are hired on 3-year contracts,
update assessments are produced every 3 years

It takes more than 3 years to become proficient enough in MFCL to produce a stock assessment, with changes involving data components and model settings

This process has worked (to a varying degree) because we have John and Nick to continually guide and mentor the new stock assessors

Without Nick and John, this process would not work

It would require at least 2 people each with 10 years of MFCL experience to have the level of expertise to take over the roles of John and Nick

With Dave Fournier retiring in 2021, the development of MFCL is severely hampered

In a few years, when John and Nick retire, the team may consist of only new stock assessors

Changes Ahead

In a few years, if the team does not have stock assessors with 10 years of MFCL experience...

...then it is not very likely that they will use MFCL to conduct the tuna stock assessments, as this would be much more challenging than the (already challenging) current mode of operation

Current stock assessment platforms that could be considered include:

Casal2, Gadget, Stock Synthesis

Future stock assessment platforms that could be considered include:

SAM with length + regions + tags

WHAM with length + regions + tags

FIMS model with length + regions + tags

SPC developed model with length + regions + tags

It is very likely that future SPC assessments will have a CKMR model component

Stock Synthesis

SS has been used for tuna assessments in the Indian Ocean and the Eastern Pacific Ocean

IOTC yellowfin assessment has 4 regions and tagging data, takes one hour to run

Current (and future) stock assessors are experienced SS users

SS has a larger developer and user base than any other platform

R4SS provides a feature-rich automated set of standard plots that are pasted directly into assessment reports

An experimental CKMR component has been added to SS

FIMS model will have a well supported transition from SS to FIMS

Casal2

Casal2 seems to have better support than SS for multiregional models with tagging data

The development team is small and the optimization engine may be less efficient than ADMB and TMB-based platforms

FIMS

Like SAM, WHAM, and bespoke assessment models, the FIMS project uses TMB that allows efficient use of random effects

The exact timeline and products from the FIMS project are difficult to predict

It is possible that it will not produce a model platform that is fit for SPC tuna assessments in the next 10 years

Transition Plan Stages

Experimental SS models

SPC workshops inviting external SS experts

Parallel/staggered MFCL + SS assessments

Full and accepted SS assessments

Ensure MFCL components are carried over to future platforms

FIMS involvement and contributions

This will involve a lot of extra work compared to the traditional work cycle, but we cannot shrug and wait a few more years...