



BlueBRIDGE








# WECAFC Assessment VRE

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-  Introduction – WECAFC
-  Project goals
-  Stock assessment tools desired
-  Implementing tools in the infrastructure
-  Future project plans

- ☑ FAO Regional Fishery Body (REFB) with 34 Members since 1973.
  - ☑ Regional database (RDB) on fisheries required to becoming a fully competent RFMO (WECAFC 13 and 14 2012,2014)
  - ☑ Adopted recommendation to become a Regional Fishery Management Organization (RFMO) (WECAFC 15 June 2016)
  
- ☑ WECAFC FAO-Fishery Resource Monitoring System (FIRMS) Partnership endorsed at WECAFC 14 (2014)
  - ☑ WECAFC-FIRMS Partnership mechanism to develop RDB
  - ☑ WECAFC-FIRMS collaborate with BlueBRIDGE Assessment to implement stock assessment capacity within a VRE

# My Role – Project Outline






- ☐ Identify stock assessment capacity needs of WECAFC
  - ☐ DLMtoolkit model comparison and MSE
  - ☐ CMSY optimal yield estimation
  - ☐ Length based stock status indicators
  
- ☐ Validate the suitability of these tools
  - ☐ Computational requirements
  - ☐ GUI interface development
  - ☐ Training needs
  
- ☐ Integrate selected assessment tools in infrastructure
  - ☐ Standardization of workflow
  - ☐ Central code and data repository
  - ☐ Reproducibility

- ❑ WECAFC is concerned about data poor/limited stocks
  - ❑ Pressing need to understand effects of parameter uncertainty
  - ❑ Varied sources and types of data (Catch, CPUE, Length Frequency)
  - ❑ Large number of possible assessment approaches
  
- ❑ Management Strategy Evaluation
  - ❑ End to end harvest control rule validation
  - ❑ Importance of implementation effectiveness
  - ❑ Identify bottlenecks in management to improve sampling

# DLMtoolkit Requirements

- Real time analysis
  - Important tool in management/scientific committee meetings
  - Used to test hypotheses during discussion
  
- Real time analysis MSE
  - Perform 1000's of simulations
  - Comparing dozens of harvest control rules
  - Each control rule must be fast <5 seconds

## CMSY

-  Currently available in DLMtoolkit (outdated by Dataminer)
-  Working to port existing Dataminer method to DLMtoolkit
-  Link Dataminer methods to DLMtoolkit
-  Challenges with runtime
-  Automated publishing of results

## LBI tool

-  Currently available as standalone shiny app
-  Issues identified in publishing workflow

# Implementation in Infrastructure

- ☐ Requirements to host an R Shiny app in the infrastructure
  - ☐ What is the optimal workflow?
  - ☐ Who is responsible for which tasks?
  - ☐ How can portions of this task be automated?

Task	Knowledge Requirements	Assignee	Automation
Conceive Assessment Methodologies	Stock Assessment , Population Dynamics	Assessment Scientists	No
Develop Shiny App	R, Stock Assessment Techniques	Users	No
Write Dockerfile	Linux, R, Docker	?	Maybe
Build Docker Image	Docker	?	Yes
Publish Shiny App	Docker, VRE, Shiny Proxy	Developers	Maybe



# Possible Approaches

## Write Dockerfile

-  Templates

-  Container It -- <http://o2r.info/2017/05/30/containerit-package/>

-  Applicability of Building in Windows (Linux Docker machine)

## Build Docker Image

-  DockerHub automated image builder






## Publish Shiny App

-  Can this be automated to pull updated Docker image?

-  Can the shiny proxy configuration file be automated?

-  How can Users and Developers best help each other?

## Direct collaboration with developers CNR

-  Implement CMSY/LBI in DLMtoolkit (WECAFC July)
-  Application to example species of interest for WECAFC (July )
-  Automation of assessment output reporting (WECAFC, FAO August)
-  Incorporate DLMtoolkit into infrastructure (WECAFC, FAO, ENG, CNR August)
-  Connect DLMtoolkit with WECAFC RDB data repository (WP4)

# QUESTIONS

