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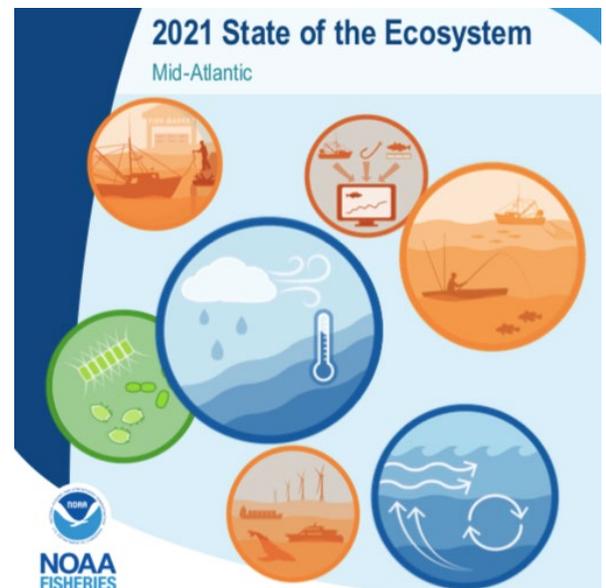
2022 AFSC Seminar Series

Sean Lucey, NEFSC

Tuesday, March 1st @ 10 am Pacific

Improving reproducibility and efficiency of ecosystem-based science by embracing open science principles

The gold standard in science is replication. Many times with ecosystem-based science it is impossible to replicate studies. The next best thing is to make the science reproducible. This can be very hard to do especially when dealing with something as complex as marine ecosystems. Even things as simple as updating an indicator can be difficult when access to original data or the methods that developed it are not easily accessible. This often leads to analysts recreating code or needing to rediscover data. Embracing open science principles can alleviate some of these issues. Here I present two examples of using open science principles. The first is the generation of annual State of the Ecosystem reports and associated risk assessment. The Northeast Fisheries Science Center produces these ecosystem status reports for the New England and Mid-Atlantic Fishery Management Councils. The latter is further refined into an ecosystem risk assessment for the Council. The production of the reports is a complex process that occurs on a relatively compact schedule. We would not be able to produce the reports without the reproducible process developed through the adoption of open data science principles. The second example is the development of an open source ecosystem model, Rpath. Rpath is an R implementation of the mass balance algorithms popularized by the Ecopath with Ecosim software. The open nature of the code has also allowed for community development of the model. Other advantages include Rpath's utilization of R scripts to run which captures all the decisions and model parameters in a transparent manner. Embracing open science does require commitment and a change to the way things were done in the past. However this pragmatic shift in the way we work can greatly improve not only the reproducibility of our work but also our efficiency.



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