Proposal to improve the efficiency of the assessment process in the Population Dynamics Branch May 2013

Development of a stock assessment requires three basic processes; assembling data, model development and report preparation (which usually includes preparing presentations for reviewers and addressing follow-up questions). The relative time commitment of each process tends to be heavily weighted by assembling data and report writing whereas arguably the relative importance of model development is greater. The following proposal is an attempt to streamline the first and last part of the assessment process in order to facilitate additional time available to spend on model development.

A second objective of the proposal is to create a system which would improve the reproducibility of the assessment products. Under the current structure, individual analysts have control of the data input files, formats and data storage. In addition, each analyst is required to make subjective decisions in the data development process that are not always well documented which can create difficulties for future assessments. The proposal is to create an archive system of product input and outputs and develop a system to lessen the extent of the subjective decisions necessary.

Finally, the demands of the assessment process are likely to increase over time, including the frequency of assessments, the expectations of the products, demands to include more user groups in the process and the external scrutiny of the results. If the Population Dynamics Branch has control over few of the elements in the process, however we can control the efficiency of the process and in doing so perhaps produce increased opportunity to focus on the necessary research elements of population dynamics.

Operation:

Development and implementation of change will not happen quickly and without agreement from clients, but there are some issues we can improve in the process.

Develop standard 'Woods Hole' tables and figures

During the white hake review (and others) it was noted that reviewers come with expectations of what they will see for assessment output. The European reviewers have an ICES perspective, west coast and southeast have similar expectations based on their own standard outputs. It was suggested that the Northeast develop a standard set of tables and figures to include in each assessment. This has already begun with the R figures output in Liz Brooks' code for ASAP. We propose to extend that concept for a generic set of tables and figures for each key component of the assessment. A standard output should ease both the burden of developing assessment reports and reviewing. Information outside of this standard (perhaps tailored to assessment type) can be made available in report appendices as needed. The set should be informative enough to allow evaluation of assessments but not so extensive as to be

unmanageable. Reviewers would be expected to accept our product as complete and be discouraged from requesting additional information unless agreed to by all parties involved. A small working group will be developed to identify the appropriate figures and tables from input data and model output. These standard tables and figures would be dynamic and could evolve as people become familiar with the products.

Develop data sets to be used in development of assessments

To facilitate the development of assessments in a timely fashion, we propose creating a database of model input. This would be an intermediate product that relies on the current Oracle databases, and is refreshed at appropriate times, but is controlled by Pop Dy. For instance, a dataset could be developed which includes survey indices (at age if appropriate), survey length frequencies, etc. by species/stock. These would be updated on a regular basis using appropriate strata sets, when survey data becomes available. The database could be developed such that indices, etc. could be read directly into model software (altered to accept the new input). Avoiding the process of cut/paste within spreadsheets should also reduce the likelihood of the dreaded cutting/paste errors. Similar data sets using pre-processed information could be developed for commercial, recreational and discard data. Once again, a small working group could identify an appropriate data structure. In time, algorithms could be developed by analysts to automate some of the subjective decisions involved, such as filling in missing cells within age-length keys. It would also facilitate documenting the data which were actually used in an assessment and allow detection of changes in the base Oracle databases over time.

Develop Standard information content for assessment documents

Once an assessment model and corresponding data are finalized, the assessment report needs to be developed for review and application. Although there are some generally understood approaches, the process remains time consuming and the content somewhat subjective. We are proposing to develop a standardized approach to make the process easier. There is content management software available which could enable writers to fill in sections with text and have the document formatted by the program based on pre-established rules. Changes to the document would not require renumbering figures, tables, pages, etc. In addition, there could be some standard text language so only new values would need to be entered. This would allow the analyst to focus on the “take home message” instead of writing descriptions of the tables and figures such as the stock went up, then went down to the time series low, then increased until year x only to decline to the current catch of xx. Once again, the details will need to be further developed for benchmark and update reports.

Develop Standard TORs for benchmark and updates

It is proposed that TORs be re-structured to simplify the assessment requirements while allowing specific topics to be retained. The TORs could be in two parts. The first part is the

simple output TORs. Associated with each simple TOR are items that should be considered. The assessment report could be structured so each major category is a section in the document with standard text and standard figures and tables.

The intent of this approach is to standardize the assessment inputs, data display and documentation in order to ease the burden of assessment updates. In order to accomplish this, staff will have to relinquish some control over the process. Each would be responsible for maintaining quality checks, but would not be required to manipulate every piece of data. If analysis outside of the standard was needed, it would be up to the analyst to do whatever was necessary, but hopefully they would have more time available to do so. Additionally it will require support within the Center. If we produce a thorough assessment product (which we currently do) in a standard format, it will need to be made clear that it is all that will be available. If successful, annual updates would be relatively simple resulting in a standard product similar for all species, and benchmarks could focus on model development instead of data preparation or report writing. This should also facilitate the timely delivery of stock assessment reports.