Stock Status Subgroup Data Gaps and Research Suggestions

Identified Research Recommendation	Stock Status Subgroup Comments
Creation of a Standardized Sampling Guidance Document for the species population range.	Many of the identified research needs discussed had benefit from formation of this type of product.
Undertake an analysis of the consequences of interaction between the offshore bycatch fishery and those in the rivers	Need to ID source stock; Stock level or River Level?; Difficult to link to past catches, but could be used moving forward; This is once source needed to move to more detailed population models (away from data poor)
Improve methods to develop biological benchmarks used in assessment modeling (fecundity-at-age, mean weight-at-age for both sexes, partial recruitment vector/maturity schedules) for river herring stocks.	Data quality is the limiting factor in previous assessments; Standardization of Sampling (i.e., weight more important than length?, timing of age samples?, scale or otolith?,etc..); Coast-wide workshop
Explore use of peer-reviewed stock assessment models for use in additional river systems in the future as more data become available.	Possible after more data collection begins;
Continue genetic analyses to determine population stock structure along the coast and enable determination of river origin of incidental catch in non-targeted ocean fisheries.	Fisheries and Genetics subgroups working on it already; Include in Standardized Sampling Guidance Document; Increase genetic samples
Determine and quantify which stocks are impacted by mixed stock fisheries (including bycatch fisheries). Methods to be considered could include otolith microchemistry, oxytetracycline otolith marking, genetic analysis, and/or tagging.	Emphasis on alternative tagging methods other than genetic; Stocking reduces the strength of genetic as only tool;
Develop models to predict the potential impacts of climate change on river herring distribution and stock persistence.	Overlaps Climate Change and Stock Status; Could be incorporated into Ecosystem-Based model; NEFSC examining how to include into MARSS modeling.
Validate [better estimate] the different values of M for river herring stocks and improve methods for calculating M. Summarize existing information on predation by striped bass and other species and quantify consumption through modeling (e.g., MSVPA), diet, and bioenergetics studies.	Should be some guidance (Standardized Sampling Guidance Document?) on what to collect to help understand; As fisheries close, does it end up: Z=M+ bycatch; Predation factor; Long term and high priority limited by available data and methods used;
Continue to assess current aging techniques for river herring, using known-age fish for age validation, scales, otoliths and spawning marks. Conduct biannual aging workshops to maintain consistency and accuracy in aging fish sampled in state programs.	Already occurring and ASMFC released final report; No "Known-age Library Collection"; Age and growth staff need something more definitive to determine aging protocol for herring. When do we move from assessing to implementing improved techniques?
Investigate the relation between juvenile river herring production and subsequent year class strength, with emphasis on the validity of juvenile abundance indices, rates and sources of immature mortality, migratory behavior of juveniles, and life history requirements.	Gary Nelson (MADMF) has been working on this and presented results at ASF (August 2014); Convincing trends; Could be affecting M and productivity; The model had very little explanatory power and low predictive capabilities
Improve reporting of harvest by water body and gear.	Lot of room for improvement in terms of detail; Standardize across states;
Develop bottom and mid-water trawl CPUE indices of offshore biomass.	Very Low Priority; Strongly go against using fishery-dependent for CPUE;
Consider the use of GLM to provide better trend estimates and to better characterize uncertainty in trends.	Easy to do and should be done in next assessment: Won't "make or break" understanding of stock dynamic; Data is already available, but not a good use of time; GLM removes some of the environmental variability in indices.
Inclusion of Canadian data	Less of an issue if future focus is on river system level; Having Canadian fish data at the stock levels would be important; DFO personal communication indicated possible poor species identification; Climate change modeling might be misleading (shift rather than contraction); Would benefit the assessment

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Create a Sample Processing Repository/Fund Processing	Samples have been collected, but no money for process/analysis; It can be a bottleneck for projects; Developing an inventory of what is being collected by who is an important component; Not everybody is planning to do any post-processing of collected samples, but may be happy to provide samples to someone else for that purpose; Samples sent out or picked up for further analysis; Communication on how to store samples (can differ per analysis).
Ecosystem Modeling	Has been discussed briefly at both subgroup meetings; What data sources are needed?; Would be a good direction to go into and no other subgroup is addressing it; Some efforts are underway but not ready for management at this point; Need to understand biomass and stock status before ecosystem models; With a species so apparently impacted by the environment, ecosystem modeling is not something to be kept on hold until we figure out biomass and stock status; Ecosystem modeling is meant to improve estimates of biomass and stock status by including environmental effects on biomass and stock status
Development of better fish culture techniques and supplemental stocking strategies for river herring.	Stocking strategy that should take into consideration current scientific recommendations : use caution when stocking and use for only extirpated runs with geographically close source population; *(See Palkovacs et al. 2014. Combining genetic and demographic information to prioritize conservation efforts for anadromous alewife and blueback herring. Evolutionary Applications. 7:212-226);* See very little benefit from culture/hatchery enhancement; not incredibly supportive of trap and transport either.
Investigate contribution of landlocked versus anadromous produced fish.	Important issues for this: 1) Collection of before and after data, 2) Set-up viable impact evaluation study design before restoration project is implemented, 3) Continuation of monitoring of e.g. fishways after implementation;
Evaluate the performance of hatchery fish in river herring restoration.	USFWS in conjunction with MDNR are conducting a 6-yr project that does exactly this on the Patapsco River in Maryland; Do other efforts exist? Are methods comparable?; Don't think populations levels are at a point where hatchery production should be advocated for.
Develop comprehensive angler use and harvest survey techniques for use by Atlantic states with open or future fisheries to assess recreational harvest of river herring.	NOAA's MRIP is primarily focused on catch in marine waters and is not designed for anadromous fish that migrate up river where recreational fisheries occur.
Evaluate the use of large-scale hydroacoustic methods as a way to quantify river herring escapement (spawning run numbers) in major river systems.	Promising work by Ogburn lab using DIDSON; Acknowledging that DIDSON is expensive equipment, additional work with DIDSON could potentially be expanded to increase the spatial area of DIDSON use. Very expensive, very time intensive work
MARSS model	Investigate using just the offshore strata in order to extend the time series further back in time. Also, assume separate underlying states/stocks in the coastwide model and estimate how they interact with each other. Neither of these models are really that good now; As such put these as low priorities with higher priority of collecting improved data to facilitate the use of better models.
DBSRA model	Obtain a time-varying element for the carrying capacity (K) (versus an estimate for the parameters for the entire series). Explore use of index to tune model (X-DBSRA)