



Atlantic States Marine Fisheries Commission

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MEMORANDUM

August 1, 2012

TO: American Eel Board
FROM: American Eel Technical Committee
SUBJECT: Management Options in Response to Benchmark Stock Assessment

In May 2012 the Board tasked the American Eel Technical and Stock Assessment Sub-committees to develop management options to reduce mortality in response to the findings of the 2012 benchmark stock assessment for American eel, which concluded the American eel stock is depleted. The TC and SAS met July 23-25, 2012 in Baltimore, MD to develop the following recommendations for reducing mortality on each life stage of American eel.

Commercial Fisheries

Glass Eel Fisheries

Although the information available for the 2012 assessment did not identify a relationship between glass eel recruitment and adult catch and survey data, the TC recommends precautionary management of fisheries targeting this early life stage given the depleted status of the stock, including the continuation of current ASMFC regulations which prohibit any new glass eel fisheries from developing. The TC also recommends that expansion of current glass eel fisheries be curtailed in a way that recognizes the fisheries in Maine and South Carolina are prosecuted quite differently. The TC expressed considerable concern over increased effort and illegal activity in the past two years in response to an exponential increase in glass eel prices.

The following suite of options was proposed as potential new management measures that could decrease glass eel fishing effort and mortality below current levels:

1. *Effort Reductions* – Effort reductions have the potential to lower mortality on glass eels and prevent future expansion of the fishery. Measures could include seasonal closures, increasing the number of days per week gear cannot be fished, a reduction of available permits for glass eel harvesters, a gear distance requirement, and a reduction of gear. To be effective, regulations would need to be designed such that fishers cannot compensate for lost time or gear. If the Board wishes to consider effort reductions, the TC can closely examine the timing and prosecution of the glass eel fisheries in Maine and South Carolina to provide specific recommendations for each state.
2. *Coastwide Closure* – The glass eel fishery has increased dramatically since 2011. The high market process for glass eels has increased to record levels and attracted substantial poaching activity. The TC expressed concern over the potential for these elevated harvests to impact recruitment in other jurisdictions. The TC was concerned about the inability of state and federal agencies to prevent poaching with the current regulations and funding limitations. The most effective way to prevent mortality on glass eel and curtail poaching would be to close the glass eel fishery coastwide. Without additional dedicated funding to increase policing of glass eel sales and distribution activities, significant illegal harvest of glass eels will continue to occur if the fishery remains open.

The following suite of options was proposed as potential new management measures that would prevent future increases in fishing effort and expansion of new markets that target young eels:

1. *Coastwide quota for glass eel harvest* – Future increases in harvest of glass eel could be prevented by a coastwide quota. In addition, coastwide quotas would simplify oversight and enforceability of the export market. The TC can provide recommendations on a range of quota levels by state based on history of the fisheries in SC and ME. Timely reporting of glass eel harvest would be necessary to monitor quotas.
2. *Prevent expansion of fishery on young pigmented eels* – The TC was concerned about reports that export markets are expanding to include the purchase of small, newly pigmented eels for culture. In order to prevent additional fishing mortality on young eel (YOY/age 1), the TC would recommend requiring all catch be graded on boat or streamside with return of bycatch to waters where harvested. Additional options include prohibition of the possession of pigmented eel with a small allowable tolerance. Careful definition of glass and pigmented eels would be needed for regulations to be effective.
3. *Increase glass eel dealer restrictions and requirements* – The TC was concerned with reports of sudden increases in the number of dealer licenses and of unscrupulous dealers who conducted business without following through on reporting requirements. Requiring a trip level hail ticket system and bond requirements for dealers (returned at end of season if reports are complete) would help ensure accurate reporting of glass eel harvest. A cap or reduction in the number of glass eel dealers would also help address the underreporting problem by preventing people without a long-term interest in the fishery from entering.

Yellow Eel Fisheries

Given the depleted status of the stock, the TC recommends decreasing fishing effort and mortality on the yellow eel phase. The following suite of options was proposed as potential new management measures that could decrease yellow eel fishing effort and mortality below current levels:

1. *Increase minimum size to 8-12 inches* – A minimum size limit could be used to reduce mortality on yellow eel. The TC is conducting a SLYME model analysis to quantify the effectiveness of an increase in the minimum size from 6 inches to 8-12 inches at a coastwide and regional scale. Even modest (10-50%) gains achieved in eggs-per-recruit would benefit the depleted stock. This measure has the additional benefit of preventing development of new markets for small yellow eel.
2. *Establish a maximum size limit* – A maximum size limit would reduce fishing mortality on yellow eels that are near maturation and help prevent mortality on mature silver eels. The TC is conducting a SLYME model analysis to quantify the effectiveness of different maximum sizes at a coastwide and regional scale. Even modest (10-50%) gains achieved in eggs-per-recruit would benefit the depleted stock. Implementation of maximum size regulations may be best achieved seasonally to enhance protection of outmigrating silver eel.

The following suite of options was proposed as potential new management measures that would prevent future increases in fishing effort targeted at yellow eels:

1. *Effort Reductions* – Establishing a cap on the number of eel permits would help prevent future expansion of the yellow eel fishery. Current number of permits issued and fished (2010 or 2011 numbers):

State	# Permits or Licenses Issued
ME	~ 30 coastal pot and ~10 inland pot
NH	33 permits issued (7 active)
MA	121 permits
RI	Information not available
CT	4 permits
NY	21 licenses
PA	No commercial fishery
NJ	148 permits
DE	65 permits issued (15 active)
MD	Information not available
DC	No commercial fishery
PRFC	49 licenses(20 active)
VA	427 permits (256 permits <100 pots; 136 permits between 100-300 pots; 35 permits 300+ pots)
NC	26 licenses
SC	0 permits
GA	0 permits
FL	29 permits

2. *Coastwide quota* – The DB-SRA model used in the stock assessment has been modified and enhanced according to peer review panels’ suggestions and can be used to provide management advice on current catch levels relative to maximum sustainable yield. Although this approach relies on strong assumptions and data poor assessment methodologies, it can provide general advice on sustainable harvest levels at the coastwide scale given historical catch and survey trends. State-specific breakdown of coastwide quota cannot be generated by the DB-SRA and would need to be determined based on comparison of historical fishery performance by state.

Silver Eels

The TC strongly recommends greater protection of mature silver eel as a way to maximize the conservation potential of management actions. In addition to the maximum size limit discussed above, the following suite of options were proposed as potential new management measures that could decrease silver eel fishing effort and mortality below current levels:

1. *Moratorium on silver eel permits/fisheries* – Prohibition of fisheries specifically targeting silver eels would enhance the conservation of outmigrating silver eel. However, prohibiting possession of silver eels was considered unrealistic by the TC because identification of silver eels is not always obvious.
2. *Seasonal closures* – Several options for seasonal closures may help enhance survival of outmigrating silver eel, including shortening the fall fishing season for all fisheries and

establishing rolling closures northward along the coast based on timing of the outmigration. Rolling closures would be most effective given the geographic specificity of the timing of silver eel migration events.

3. *Gear and season restrictions* – In order to maximize the survival of outmigrating silver eel, the take of eel in fall fyke and pound net fisheries could be prohibited.

Recreational Fisheries

1. *Reduce recreational bag limit* – Although recreational harvest of eel is believed to be low compared to commercial harvest, reductions in all sectors may be warranted given the depleted nature of the stock. There is currently a 50 fish per day per angler creel limit in place under the FMP. Two jurisdictions (Maryland and D.C.) have a lower creel limit in place. Two states (Georgia and Florida) do not have any possession limits in place due to the fact that no recreational fishery is known to occur. South Carolina just passed legislation requiring a 50 eel per day creel limit with a six inch size minimum restriction

Monitoring

Although numerous data sources were submitted for review during the stock assessment process, American eel are a data poor species because almost all surveys do not specifically target American eel.

1. *Increase commercial and recreational reporting requirements* – The TC reiterated the reporting requirement recommendations from the 2012 stock assessment:
 - a. Improve compliance with existing reporting requirements outlined in FMP.
 - b. Require standardized reporting of trip-level landings and effort data for all states in inland waters. Data should be collected using ACCSP standards for collection of catch effort data.
 - c. Estimate catch and effort in personal-use and bait fisheries
 - i. Monitor catch and effort in personal-use fisheries that are not currently covered by the MRFSS or commercial fisheries monitoring programs.
 - ii. Implement a special-use permit for use of commercial fixed gear (e.g., pots and traps) to harvest American eels for personal use. Special-use permit holders should be subject to the same reporting requirements for landings and effort as the commercial fishery.
 - d. Improve monitoring of catch and effort in bait fisheries (commercial and personal-use).
 - e. Estimate non-directed fishery losses by improved monitoring of discards in targeted and non-targeted fisheries. Continue to require states to report non-harvest losses in their annual compliance reports.
2. *Conduct evaluation of ASMFC eel survey program* – The TC recommends a workshop be held to conduct a comprehensive evaluation of eel survey programs coastwide to identify systems where glass, yellow, and silver eel monitoring can occur. Opportunities to enhance/piggyback on current survey and biosampling efforts would be identified. The potential to exchange glass eel surveys for targeted silver eel escapement surveys would be examined by geographic region as one way to enhance the collection of data for all life stages given current budgets restrictions.
3. *Increase yellow eel indices of abundance* – The current assessment suffers from a lack of targeted eel surveys that can be used to develop reliable indices of yellow eel abundance. If possible, the TC recommends development of targeted yellow eel surveys in each geographic region to generate indices of abundance.
4. *Develop silver eel indices of abundance* – The current eel assessment suffers from a lack of targeted eel surveys that can be used to develop reliable indices of silver eel abundance. If possible, the TC recommends development of targeted silver eel surveys in each geographic region to generate indices of abundance.

5. *FERC relicensing* – The TC recommends that a list of dams up for FERC relicensing be created and that a set of survey, sampling, and monitoring protocols be developed to assist each state agency in ensuring eel monitoring programs are implemented wherever practicable.

Habitat

To meet the goal of increasing eel recruitment the TC is highly supportive of efforts to increase eel passage. The TC recommends the development of quantifiable eel habitat enhancement goals through the development of a coastwide eel habitat GIS database by the next benchmark stock assessment. The goal of the database would be the generation of coastwide, regional, state, and watershed maps that would: 1) quantify the amount of available habitat relative to historical habitat and 2) identify major barriers to eel migration. This information would allow the ASMFC to prioritize eel habitat enhancement programs at coastwide, regional, and state scales. Efforts should be coordinated with existing GIS efforts already underway in Canada and Puerto Rico.

Law Enforcement

The TC has identified the following measures that could help reduce illegal activity and enhance enforcement of regulations. The TC requests the LEC be asked to provide feedback on these and other management measures proposed above.

1. *Encourage states to increase penalties for violations* – The TC noted that many state penalties are outdated or simply not effective given the market price for the product (e.g., glass eel price during the 2012 season were on average \$2,000/lb, yet fines were low relative to a poacher's earning potential).
2. *Increase pre-season coordination of glass eel fishery enforcement efforts* – Cooperation and coordinated planning between state and federal enforcement agents and state biologists prior to the opening of the spring glass eel fishery would help improve detection of poaching.
3. *Synchronize dealer and export reporting* – The TC recommends that state agencies work with FWS law enforcement agents to identify a way in which dealer reports can be used to enhance enforcement of export market regulations.
4. *Increase cooperation and communication regarding violations* – The TC recommends improved communication between state and FWS law enforcement officials regarding violations. Information exchange and education regarding foreign import markets (Haiti, Dominican Republic) would be beneficial as well.