Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: **Horseshoe Crab Plan Development Team**

FROM: **Horseshoe Crab Technical Committee**

DATE: **June 29, 2022**

SUBJECT: **Technical Guidance to PDT on Biomedical Mortality Threshold**

Background

In October 2021, the Board assigned the following task to the Plan Development Team (PDT): review the threshold for biomedical mortality to develop biological based options for the threshold and to develop options for action when the threshold is exceeded; also, review the best management practices (BMPs) for handling biomedical catch and suggest options for updating and implementing BMPs. The PDT tasked the Technical Committee with reviewing available information to address this task and recommending potential methods for developing biologically based options for the biomedical mortality threshold. They also requested the TC review the BMPs and recommend any updates.

The TC met in April and June to discuss this task and provide guidance to the PDT. The TC's discussion and recommendations are summarized below.

Technical Committee Recommendations on Biomedical Mortality Threshold

The TC's direct response to the PDT's task to develop biologically based options for the biomedical mortality threshold is that given the available data, it is not possible to recommend a scientifically based threshold for biomedical mortality. The TC evaluated all available information on horseshoe crab populations and biomedical collections. The key issue that prevents the TC from recommending a biologically based threshold is the lack of population estimates for the coast and all regions except for the Delaware Bay. It should be underscored that without such population estimates, it is not possible to recommend coastwide mortality limits from any source, not just biomedical mortality.

To examine the effects of biomedical mortality for the Delaware Bay only, a sensitivity analysis was conducted using varying levels of biomedical mortality in the existing catch multiple survey analysis (CMSA) and projection models for the region. The results of this analysis are included in the attached memo to the TC and Stock Assessment Subcommittee dated April 21, 2022. The analysis indicates that, on average, the Delaware Bay population estimate was not very sensitive to increasing the biomedical harvest in the region by assuming all biomedical mortality was on female crabs in the Delaware Bay. The projection model showed that increasing biomedical removals to larger quantities (e.g., 200-300 thousand female crabs) over time can lower the equilibrium values of the population in the future. While these analyses can inform the TC and SAS discussions about the influence of removals on population estimates, it should be noted that levels of biomedical mortality vary at a regional level along the coast and the Delaware Bay region may not be an appropriate proxy for the Atlantic coast. Biomedical mortality can have different impacts regionally, depending on the size and condition of a particular stock as well as the level of biomedical mortality.

As there is no technical basis for the coastwide biomedical mortality threshold, the TC recommends focusing on the best management practices for handling of horseshoe crabs for biomedical use. Improving upon the existing BMPs and/or developing some standard requirements states could implement for biomedical operations may provide an avenue for reducing lethal and sublethal effects on horseshoe crabs. The TC will convene again to discuss this issue in more detail and develop recommendations for the PDT to consider related to the BMPs.