2019 update on the nematode, *Sulcascaris sulcata*: Spatial distribution and effect on the sea scallop fishery

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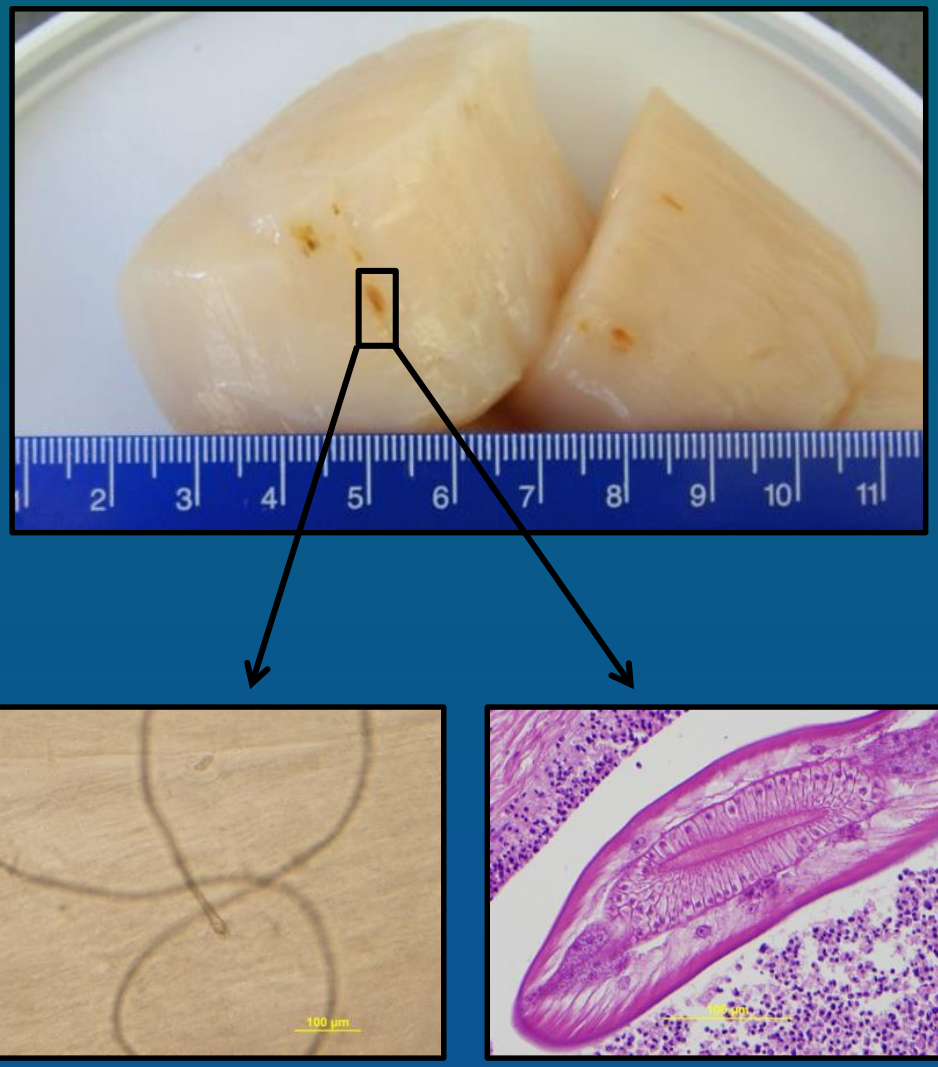
August 27-28, 2019

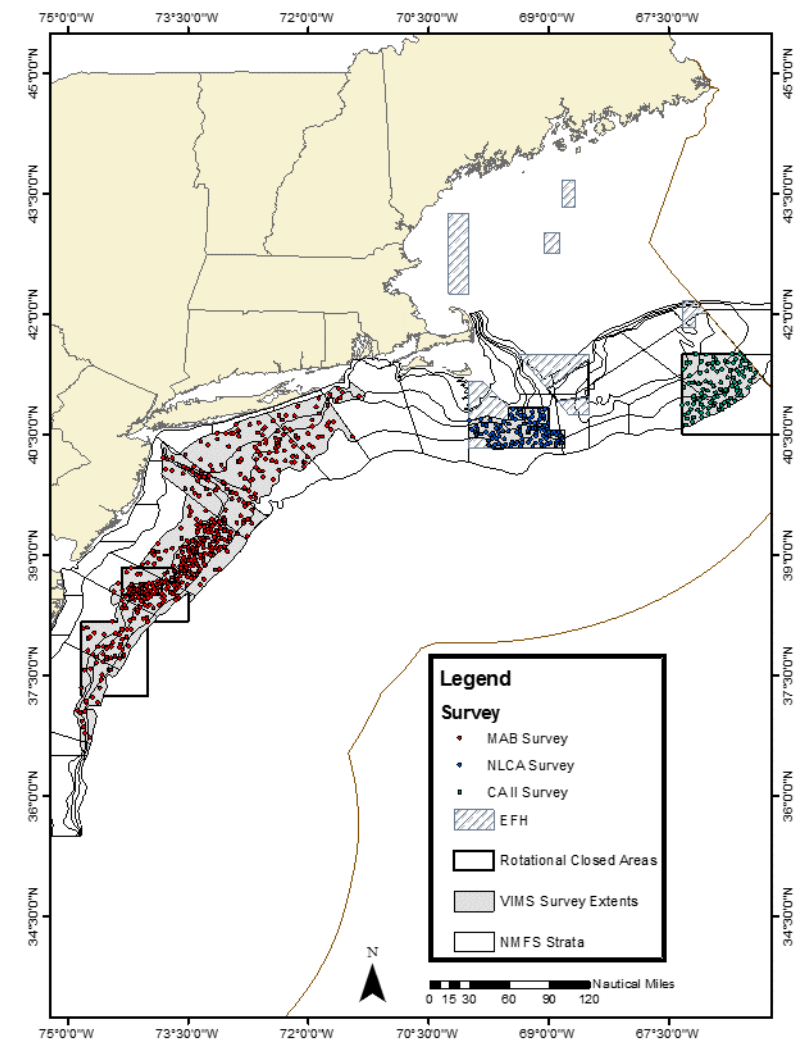
VIMS | William & Mary
Virginia Institute of Marine Science

A persistent epizootic

- Nematodes were first observed in 2015 in the newly re-opened MAAA.
- Research efforts have focused on species identification, biology, life history and spatial distribution.
- 5 years of survey information related to spatial extent of affected scallops.

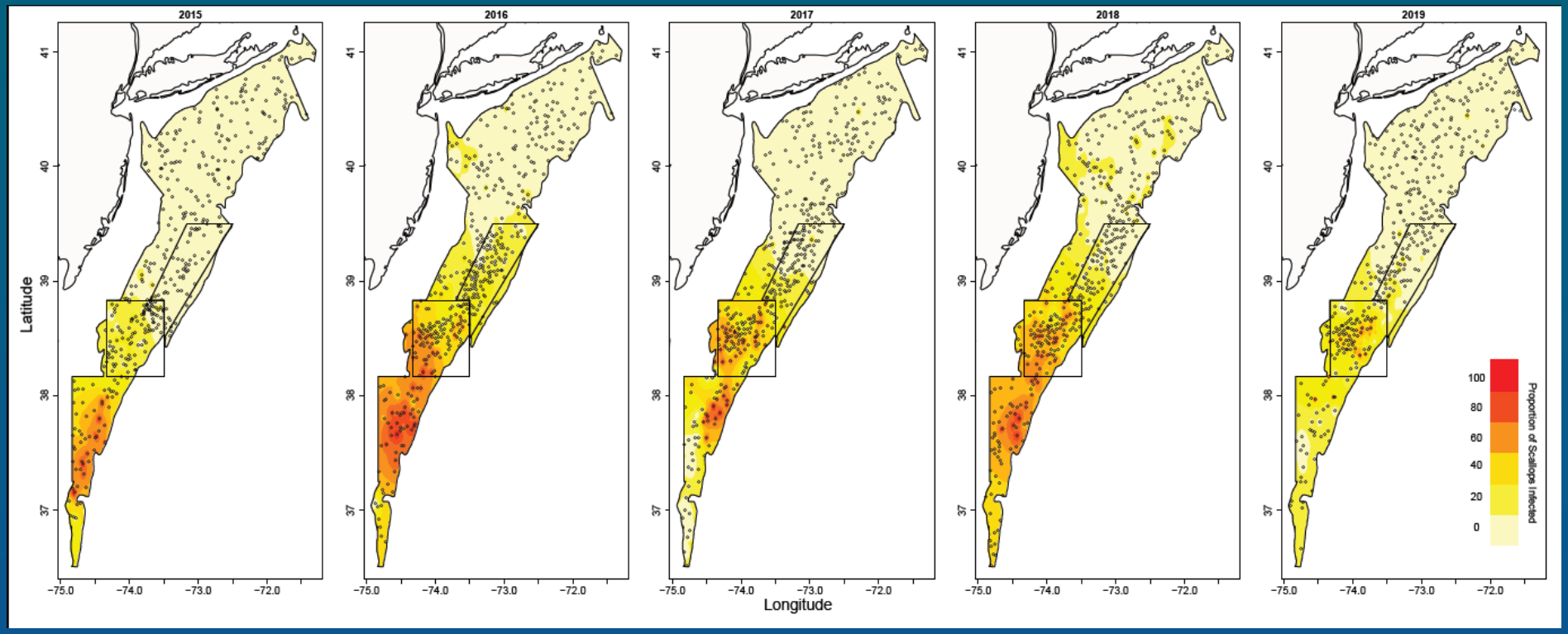


Parasite surveillance



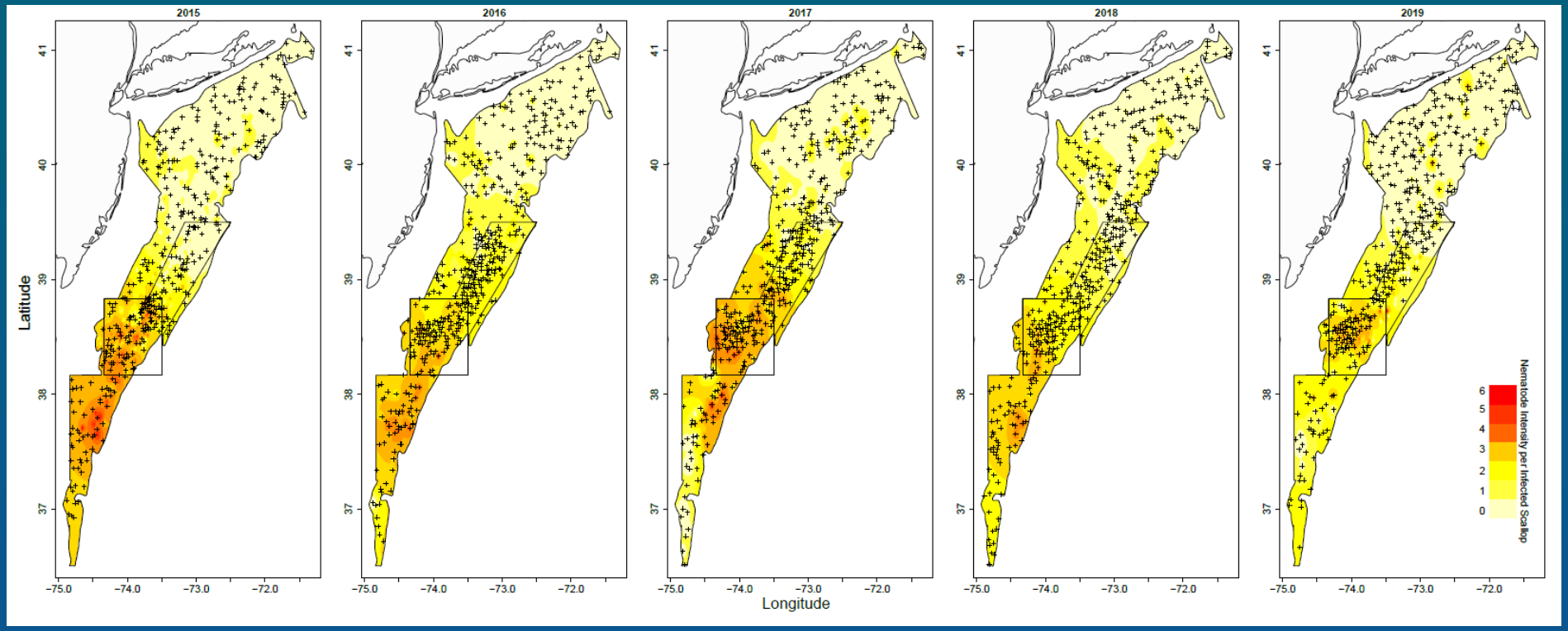
- For the 2015-19 surveys, VIMS expanded the biological sampling protocol to capture the spatial extent of the parasite as well as the prevalence and intensity of infected scallops.
- Sampled 15 animals at every station that had scallops .
  - Histological and genetic samples.
  - Gross observation of the number of infected scallops/sample (prevalence).
  - Gross observation of the number of nematodes/scallop (intensity).

Nematode Prevalence 2015-19



- % of scallops in a sample that contain at least one lesion.
- Northward expansion 2015-16.
- Apparent stabilization of the spatial extent 2016-17.
- Possible slight northward expansion from 2017-18.
- Reduction in prevalence in 2019

Nematode Intensity 2015-19



- Number of lesions in scallops that had at least one lesion.
- Northward expansion 2015-16.
- Apparent stabilization of the spatial extent 2016-17.
- Possible slight northward expansion from 2017-18.
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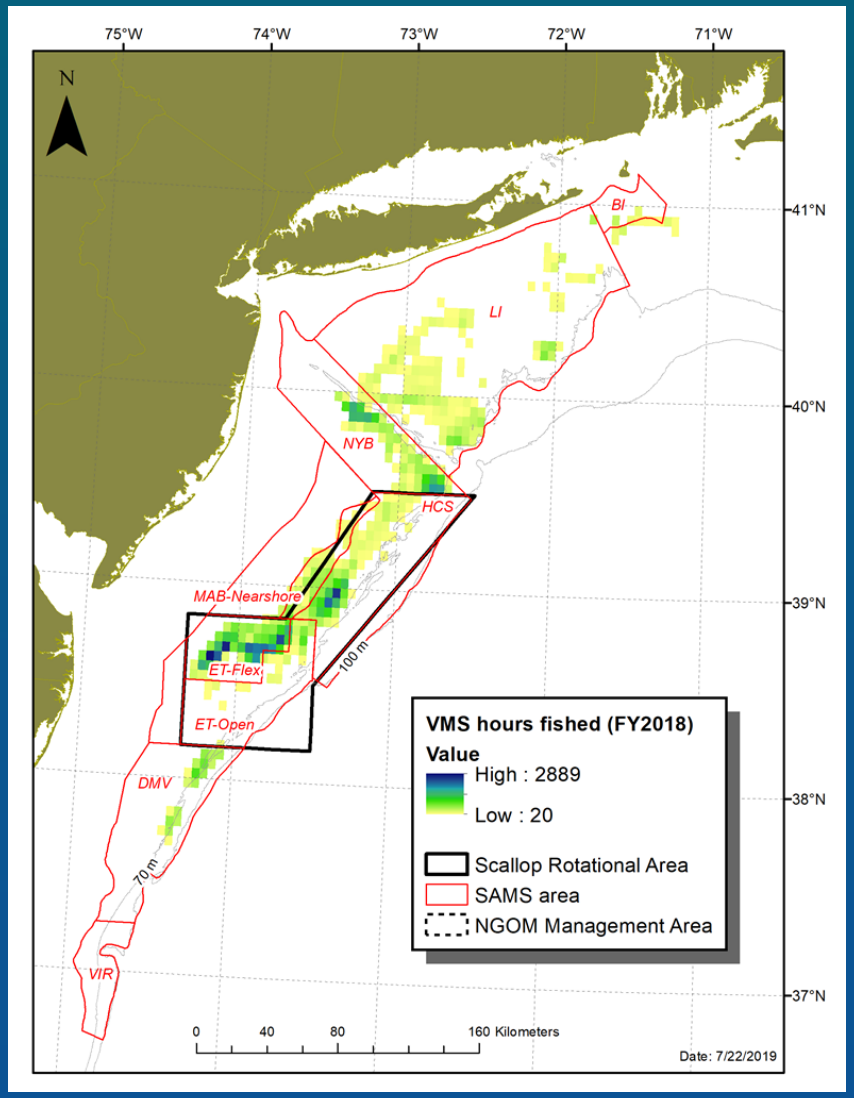
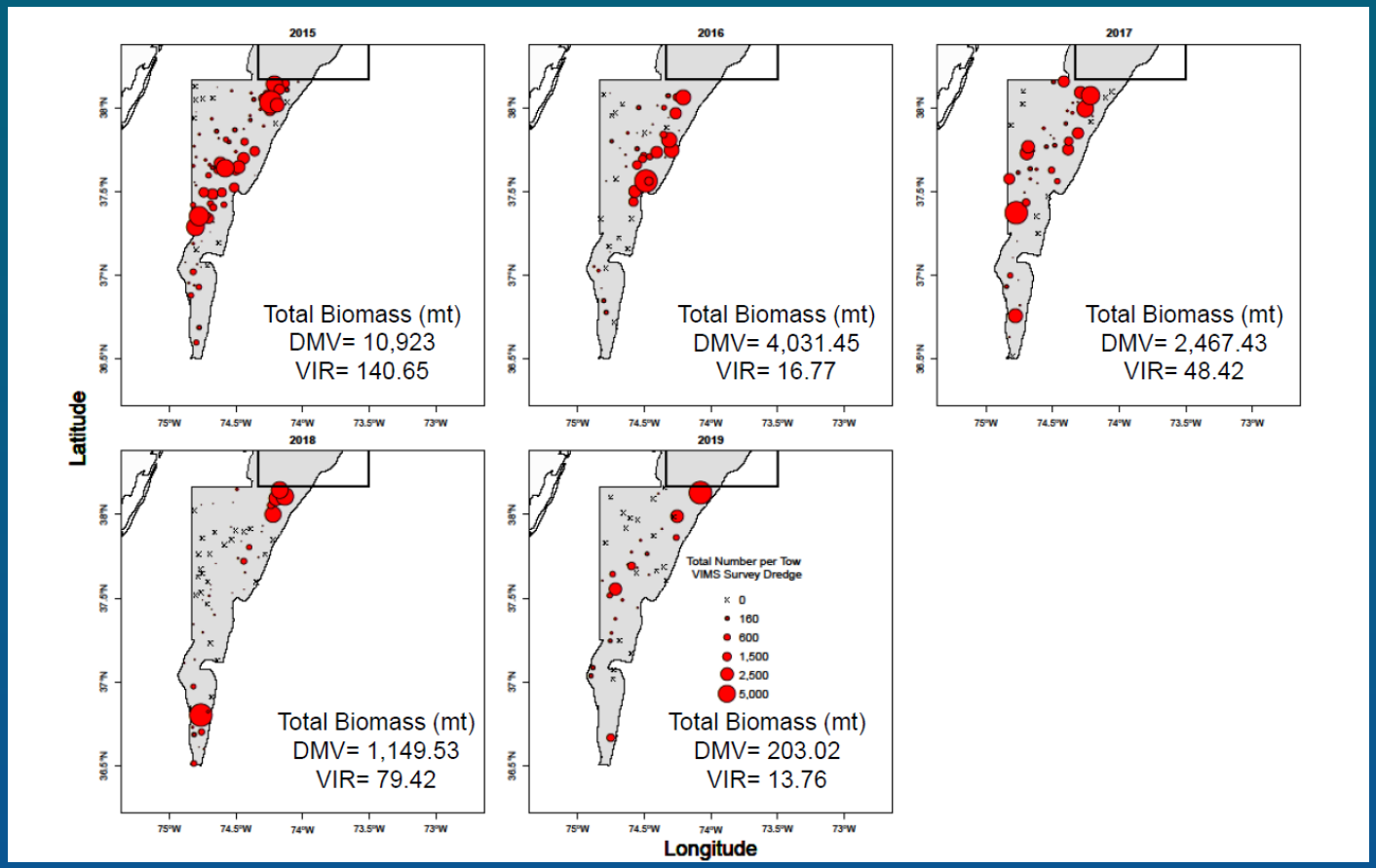
2018 Fishing Effort

- Aggregate annual fishing effort.
- MAAA effort centered upon “flex and HC portions.
- Very little effort in Southern ET and DelMarVa.
- Potentially influenced by product quality issues?



The demise of the DMV



- We assume that the nematode does not contribute to scallop mortality.....but
- Scallop biomass in the DMV had been reduced by two orders of magnitude over 4 years in the absence of significant fishing.
- Continues to be small pulses of recruitment but does not survive.

Summary

- Data suggests that nematode distribution appeared quickly, had stabilized, but in 2019 was observed to be reduced for both prevalence and intensity.
- Distribution in affected areas is patchy.
- Southern areas of the resource (i.e. DMV, ETCA) are most affected.
- Contributing to elevated mortality??? DMV??
- Nematodes may be affecting the distribution of fishing effort.

Concluding thoughts

- Disease/parasites can represent a significant driver.
- For scallops grey meats and nematodes have the potential to shape how we view the resource.
- Indirect effects can be important
  - Elevated levels of F (from discards)
  - Redistribution of fishing effort.
- Effective biomass may be an appropriate framework.
  - Is it beneficial to attempt to anticipate this effect in projections/specifications?