

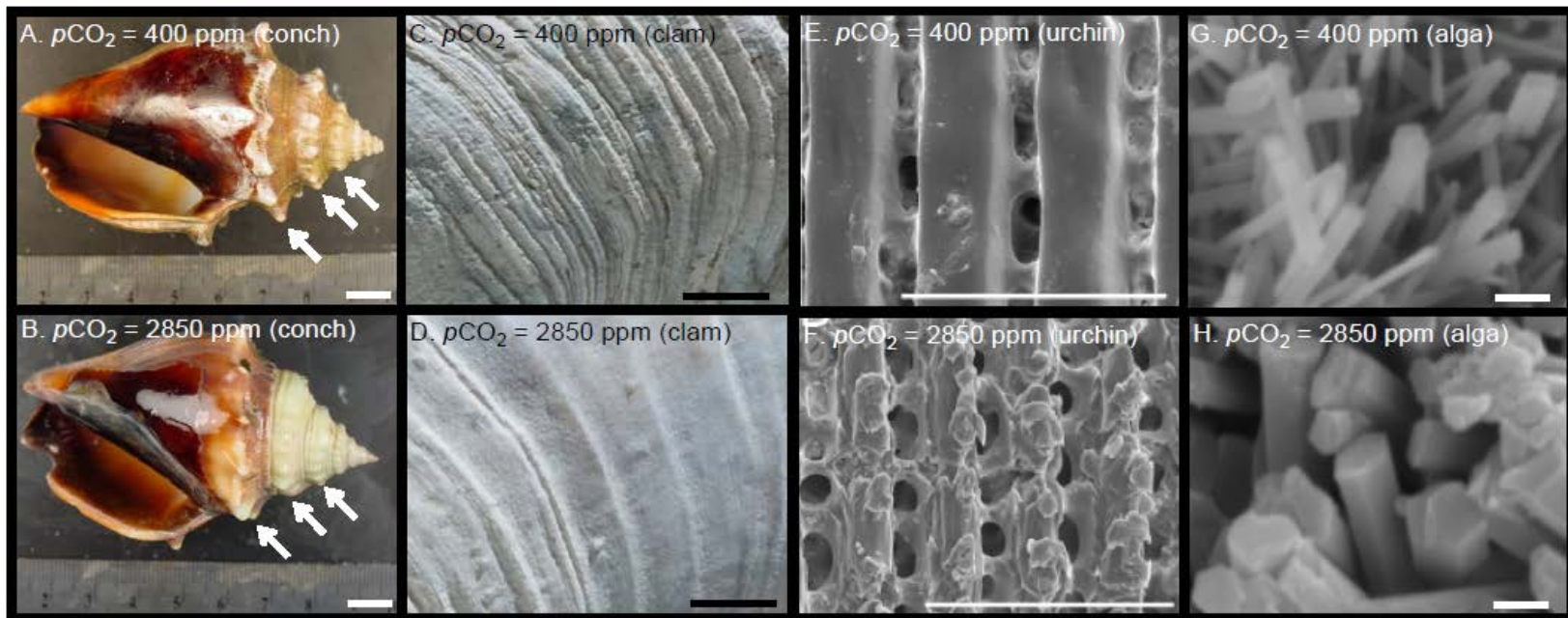
2013 RSA: Identifying Source Sink Dynamics in Scallop Populations

Jonathan Grabowski, Steve Vollmer,
Brad Harris, & Kevin Stokesbury

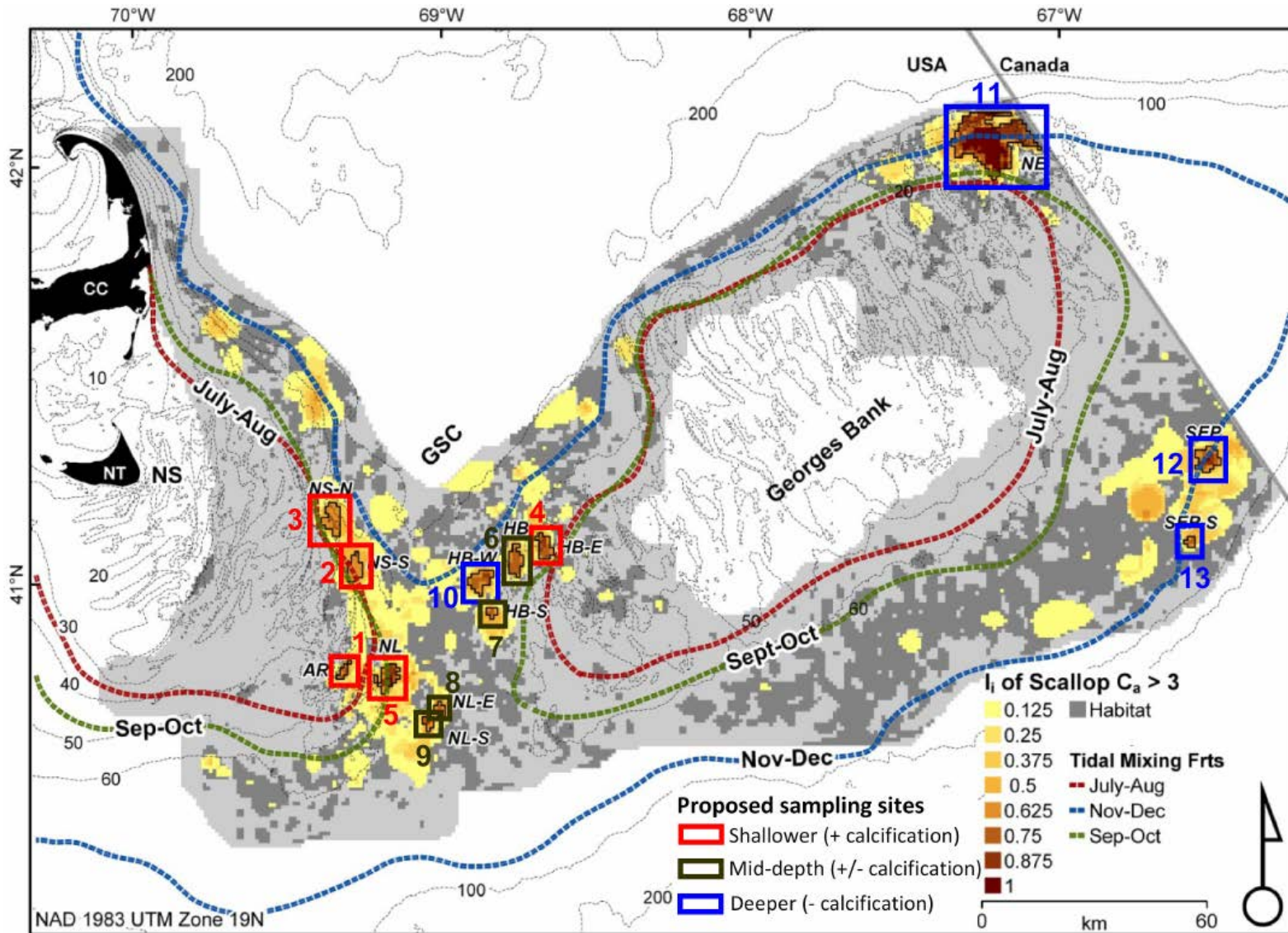


2014 RSA: INVESTIGATING THE EFFECTS OF OCEAN ACIDIFICATION AND WARMING ON THEIR SHELL PROPERTIES AND MEAT WEIGHTS

- Objective 1:** Produce high-resolution maps of seawater carbonate chemistry, temperature, and scallop properties at scallop-aggregation-sites throughout Georges Bank
- Objective 2:** Investigate effects of ocean acidification/warming on scallop calcification rates
- Objective 3:** Investigate effects of ocean acidification/warming on macrostructure, ultrastructure, and crystal morphology of scallop shells
- Objective 4:** Investigate effects of ocean acidification/warming on the biomechanics of scallop shells
- Objective 5:** Investigate effects of ocean acidification/warming on scallop meat weight



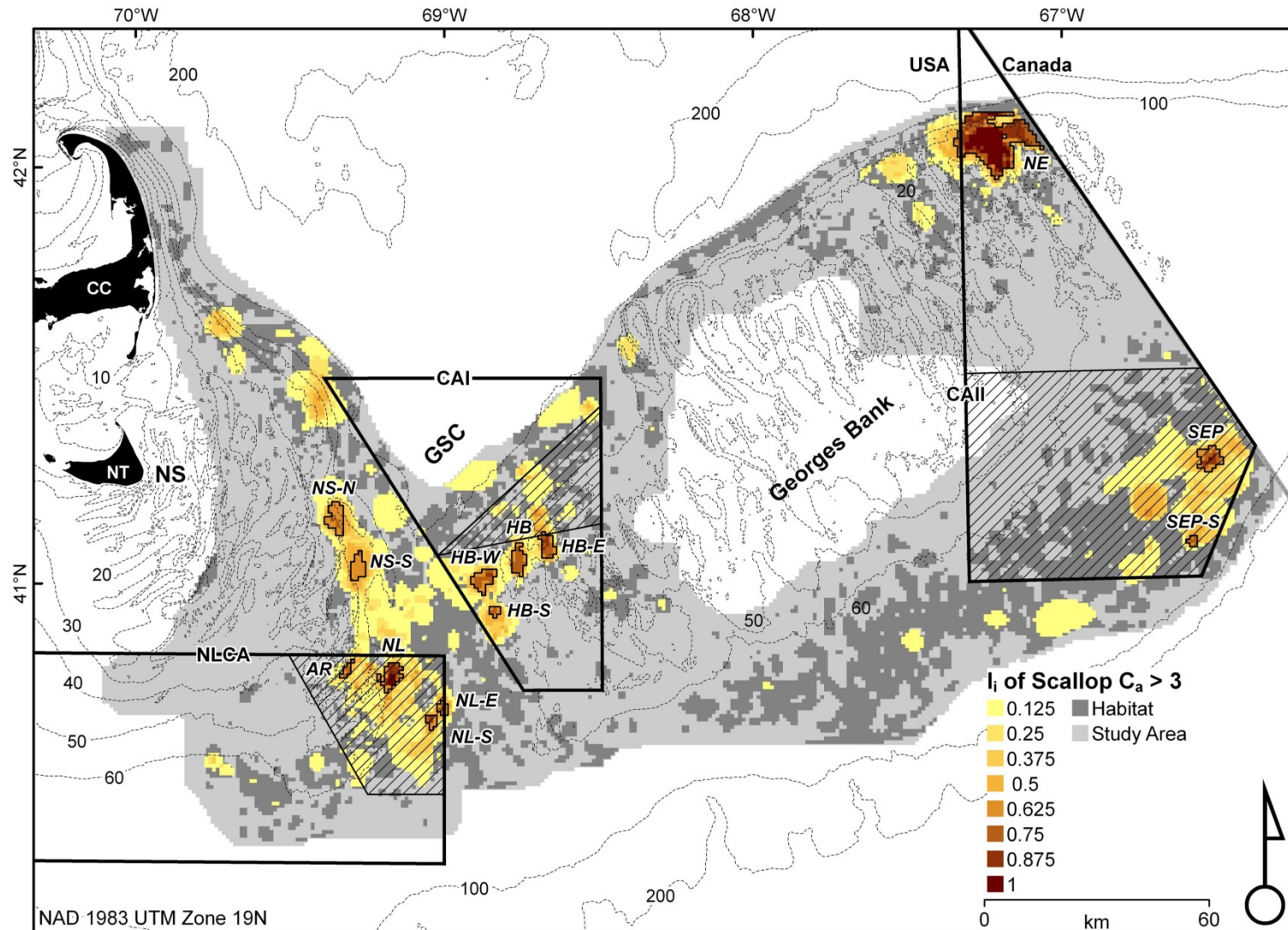
2014 RSA: INVESTIGATING THE EFFECTS OF OCEAN ACIDIFICATION AND WARMING ON THEIR SHELL PROPERTIES AND MEAT WEIGHTS



Harris and Stokesbury 2010; Harris 2011

2013 RSA: Source Sink Dynamics

Background



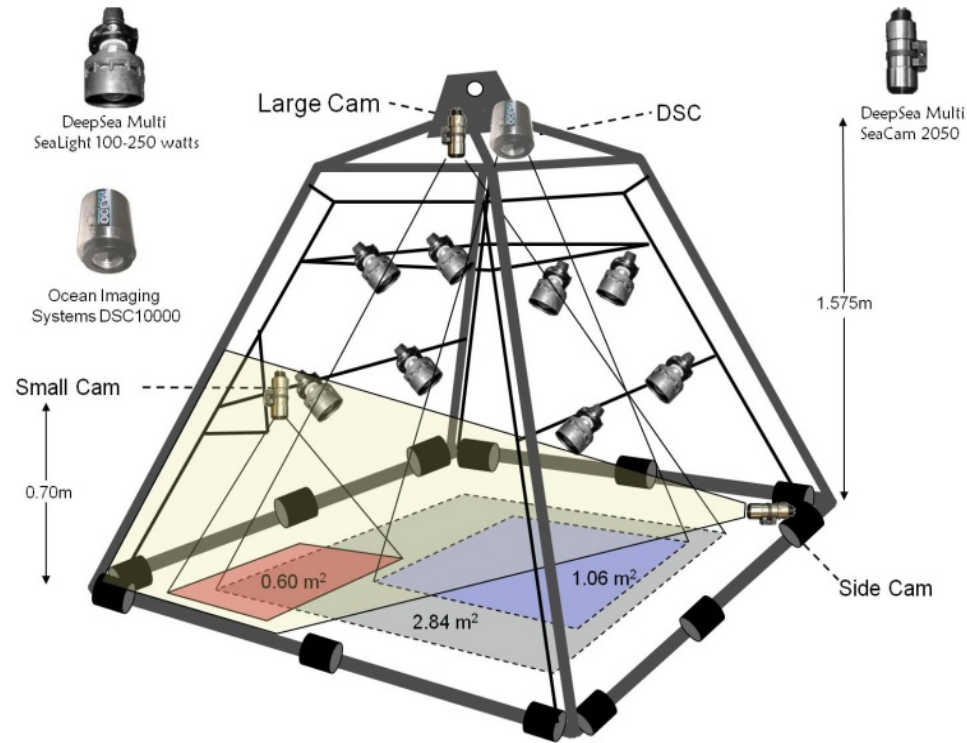
Harris and Stokesbury 2010; Harris 2011

Project Goals

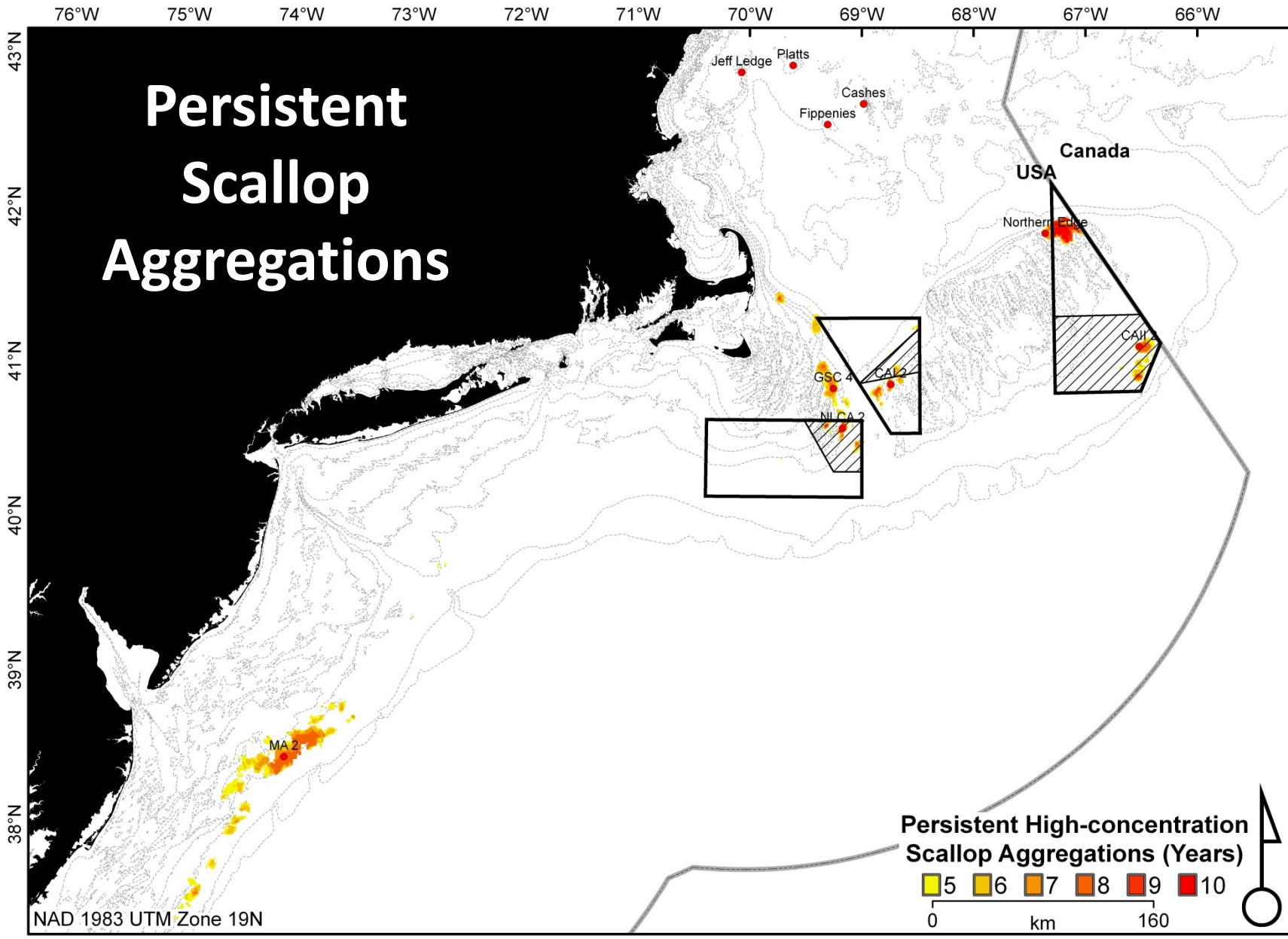
Objective 1: Determine persistent aggregations of scallops in the Gulf of Maine, Southern New England, and Mid Atlantic regions

Objective 2: Examine source-sink dynamics and the degree of connectivity among scallop populations located in each of the 4 regions of the U.S. fishery

I. Mapping Scallop Aggregations



UMass SMAST Video Surveys
(1999-2012)



II. Inferring Scallop Stock Structure with Genomics

Approach

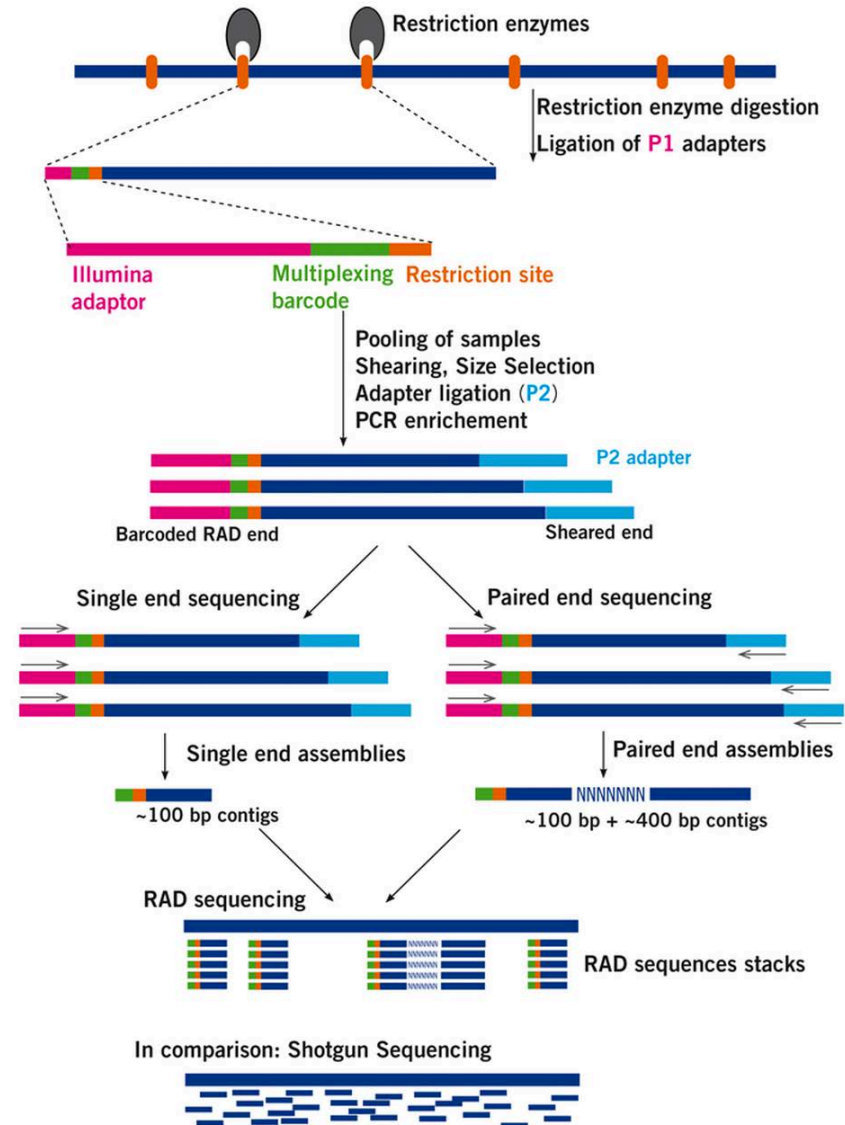
- RAD-seq [10K+ SNPs]

Atlantic Sampling

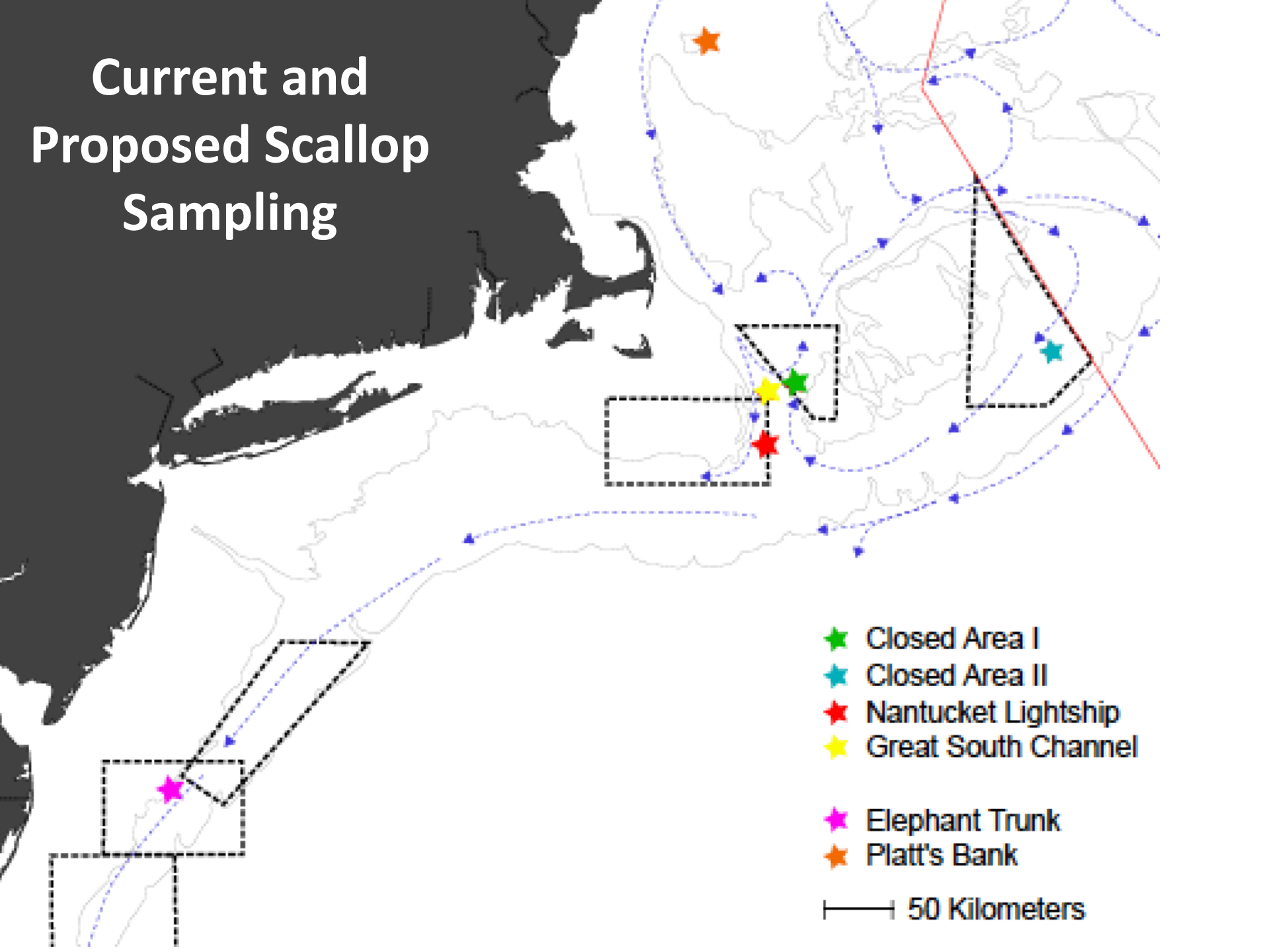
- 4 closed areas
- Adults vs. Juvenile

Questions

- Are Scallop populations interconnected and/or self-seeding?
- On what geographic scale do Scallop stocks need to be managed?



Current and Proposed Scallop Sampling



RAD-seq Provides Genome-level Resolution

MOLECULAR ECOLOGY

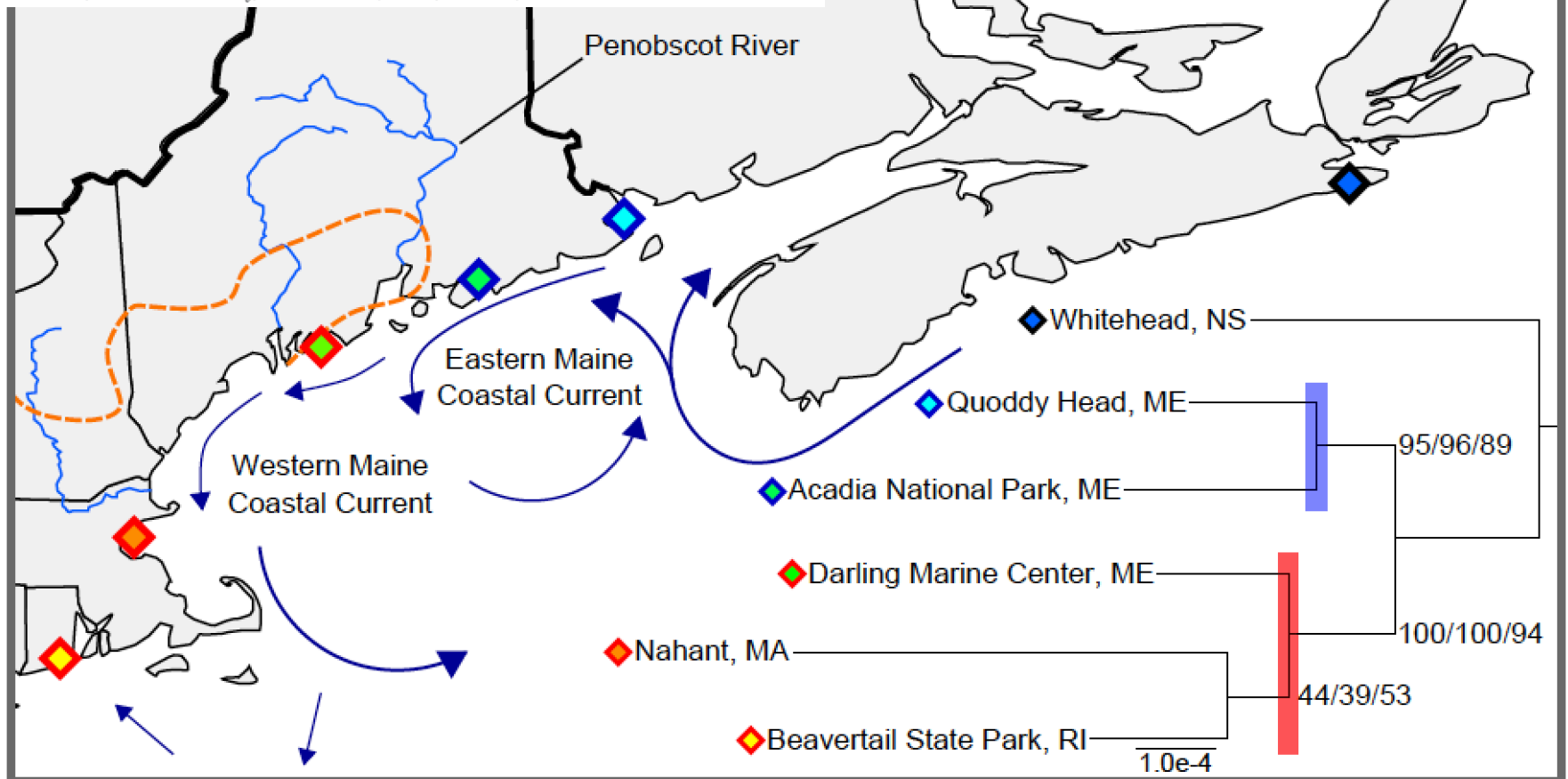
Molecular Ecology (2014)

doi: 10.1111/mec.12681

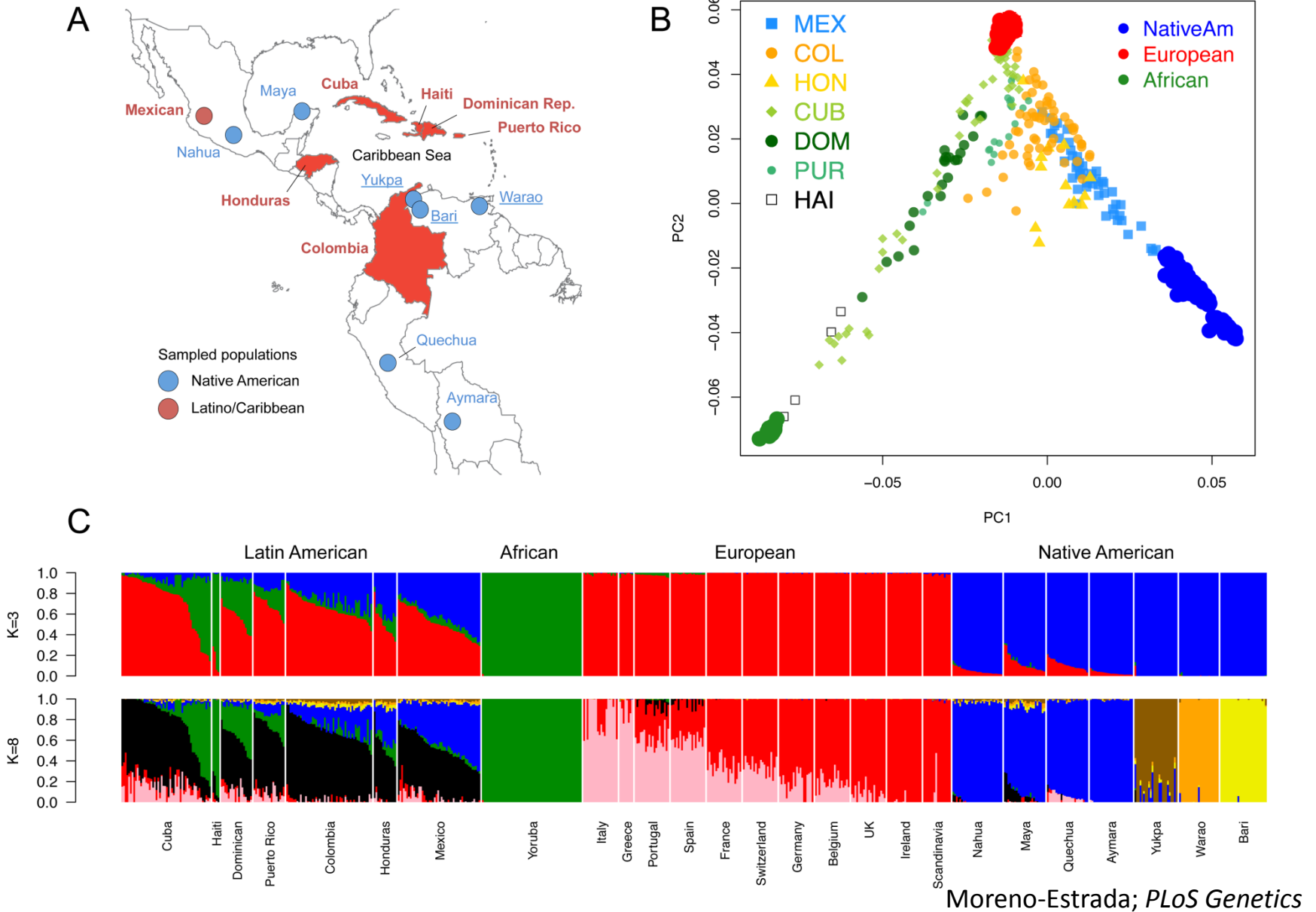
Phylogenomic analyses reveal latitudinal population structure and polymorphisms in heat stress genes in the North Atlantic snail *Nucella lapillus*

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Assigning Humans [or Scallops] to their Genetic Source



Acknowledgements

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