



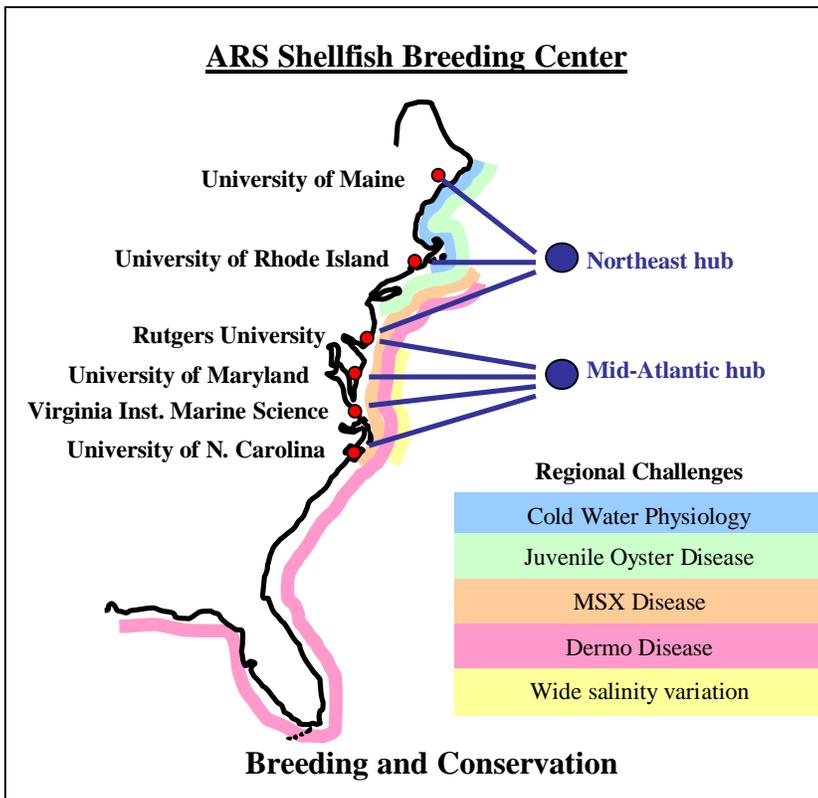
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PROPOSED USDA ARS SHELLFISH BREEDING CENTER

Shellfish aquaculture is a sustainable industry that provides tangible environmental benefits in coastal waters by improving water quality, removing excess nutrients and providing critical habitat for juvenile fish and invertebrates. East Coast Shellfish farms annually harvest over \$100 million worth of nutritious clams and oysters while supporting thousands of jobs in rural coastal communities. Shellfish farmers are challenged by wide ranging environmental conditions and several diseases that can wipe out whole crops in months. Selective breeding efforts in a variety of domesticated animals have demonstrated the potential to substantially improve disease resistance and growth rates.

A USDA ARS Shellfish Breeding Center would establish a similar breeding infrastructure, enabling shellfish geneticists to employ newly developed genetic tools to explore the genome, identify genetic markers related to higher survival and growth and perform extensive field trials. This could greatly accelerate selective breeding efforts to develop strains that survive longer, grow faster and have improved production traits. Similar efforts on the West Coast have led to the development of strains of Pacific oysters (a different species than the Eastern oyster) that grow up to 100% faster.



The proposed USDA ARS Shellfish Breeding Center would leverage existing shellfish breeding and genetic research programs in six East Coast states by hiring several ARS scientists to conduct a cost-effective, coordinated, goal-oriented program in shellfish genetics and breeding to support development of shellfish aquaculture on the East Coast. By combining the resources of constituent institutions with several additional USDA ARS scientists we expect to create a critical mass of intellectual, technical and logistical resources for research and strain development. Leveraging existing facilities obviates the need for costly new capital construction, allowing resources to be focused on bringing new intellectual resources to bear on the vexing issues currently constraining shellfish aquaculture.

PROJECTED IMPACTS

Economic development – The Center will improve the economics of production coast-wide, allowing industry to expand, creating hundreds of new jobs on farms.

Preservation of working waterfronts – Expansion of shellfish farming will benefit the processing sector and support industries such as marinas, boat builders, equipment suppliers and engine dealers.

Conservation of genetic resources – The Center activities will lead to the classification and preservation of natural genetic variation.

Responsible aquaculture – The Center will deliver tools for mitigating potential negative interactions between aquaculture and the environment.

Improved food security – Expanding domestic production of sustainably produced, nutritious shellfish will cut demand for seafood imports and help reduce our \$6 billion seafood trade deficit.



PROPOSED PROGRAM

The Shellfish Breeding Center will expand the capabilities of the cooperating institutions in Maine, Rhode Island, New Jersey, Maryland, Virginia and North Carolina. The Center's scientists will be housed at the University of Rhode Island in the newly constructed Center for Biotechnology and Life Sciences. The Center will also hire agronomy and breeding experts to work with New Jersey's Multi-Species Aquaculture Demonstration Facility and Maryland's Horn Point Lab to significantly expand breeding and growout evaluation programs. The Center will also provide resources to

expand existing research, breeding and evaluation programs at Virginia's Institute for Marine Science, University of Maine's Darling Center and University of North Carolina, Wilmington's Center for Marine Science.

These investments will provide critical resources enabling each of these institutions to expand their breeding programs and grow-out trials. Most importantly, the Center will coordinate activities and provide guidance for future breeding efforts using state-of-the-art genetics tools. The results of this work will provide benefits for shellfish farmers coast-wide.

USDA ARS CENTER RESOURCES

Each participating institution has made significant investments in facilities and intellectual resources devoted to shellfish genetics and aquaculture. Leveraging these capabilities with additional talents and resources will maximize the benefits of additional ARS investment.

The total appropriation required for ARS is \$4.3M annually. The five ARS scientists and their support would require \$2.5M (\$500,000 for each position). The remaining \$1.8M would be available for cooperative agreements averaging \$300,000 for participating institutions.

