

# Research Projects 2014-2016

## Minimizing Risks of *Vibrio* Bacteria in Farm-Raised Oysters Grown in Mid-Atlantic Intertidal Environments R/6410-0019

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Intertidal farm

Oyster farming is a \$300 million-plus industry in the U.S. supporting thousands of small farms and sustainable green jobs in rural areas. Farm-raised oyster production has increased rapidly along the East Coast during the last decade with production in Virginia exceeding 30 million oysters in 2013 and steady increases in Maryland and New Jersey. New Jersey's oyster farms are concentrated on the extensive intertidal sand flats of the lower Delaware Bay (Cape Shore) where they are exposed twice daily during low tide. Hatchery reared oyster seed is grown in mesh bags on racks just off the bay bottom. Farmers carefully tend the oysters for 18-30 months as they grow to market size. The confluence of estuarine and ocean waters along the Cape Shore produces a high quality oyster with a flavorful blend of salt and sweetness. The farm-raised Cape Shore oysters are sold under a variety of brand names in the expanding half-shell market where

they are consumed raw.

Recently, farmers and state and federal regulators have become increasingly concerned about vibriosis, a human illness that can be associated with consumption of raw and undercooked seafood. *Vibrios* are naturally occurring and among the most abundant bacteria in the marine environment. Although only a small fraction of environmental strains cause illness in humans, their widespread distribution in marine and estuarine environments raises concerns for seafood safety. Therefore, developing effective grow-out, harvesting, and handling methods that minimize levels of harmful *vibrios* in oysters is of paramount importance to the industry.

Principal investigator Dave Bushek and his post-doc Tal Ben-Horin at Rutgers University are working collaboratively with New Jersey Sea Grant Consortium Shellfish Aquaculture Program Coordinator Lisa Calvo and colleagues from the Virginia Institute of Marine Science to conduct parallel studies on the ecology of *vibrios* that specifically examine how regional aquaculture practices influence *Vibrio* density in oysters. Current regulations and guidance regarding intertidal shellfish culture are based on information from the Pacific Northwest where environmental conditions are significantly different from the mid-Atlantic.

Bushek, Ben-Horin and Calvo emphasize the need to obtain locally relevant scientific data to develop optimal growing and harvest practices that minimize *vibrio* risk in the mid-Atlantic region. By examining *vibrio* concentrations in relation to local environmental and farm practices, the team will evaluate risks "locally" and identify appropriate aquaculture practices to reduce consumer risk. The collaborative study promotes a regional approach that engages both state and federal regulators to ensure rapid transfer of results in support of science-based regulations.