

# Project Completion Report

**PROJECT CODE:** TRA-10-1

**SUBCONTRACT NO:**

**PROJECT TITLE:** Aquaculture health hazards – developing outreach services to the region’s farmers via extension and aquatic animal health professionals, using a HACCP approach

**DATES OF WORK:** 2010 - 2014

**PARTICIPANTS:** Funded cooperating personnel and institutions, agencies, and business entities including extension liaison(s) and non-funded collaborators.

Tessa Getchis, University of Connecticut  
Deborah A. Bouchard, Research Coordinator  
Joseph Buttner, Department of Biology, Salem State College  
John Ewart, Delaware Sea Grant  
Ann Faulds, Pennsylvania Sea Grant  
George E. Flimlin, Rutgers Cooperative Extension  
Doris Hicks, Delaware Sea Grant  
Craig Hollingsworth, Extension, University of Massachusetts  
Andrew Lazur, Maryland Sea Grant Extension Program  
Dale Leavitt, Roger Williams University  
Dennis McIntosh, Delaware State University  
Dana L. Morse, Maine Sea Grant/University of Maine Cooperative Extension  
Tom Rippen, University of Maryland Eastern Shore, Sea Grant Extension Program  
Gregg Rivara, Cornell Cooperative Extension  
Roxanna Smolowitz, Veterinarian, Roger Williams University  
Dan Terlizzi, Center of Marine Biotechnology  
Don Webster, Extension Specialist, University of Maryland  
Michael Chambers (replaced Ken La Valley), University of New Hampshire Sea Grant/UNH Coop. Extension  
Diane C. Murphy, Cape Cod Cooperative Extension & Woods Hole Sea Grant Program  
Robert Pomeroy, Professor and Extension Specialist, University of Connecticut  
Josh Reitsma, Cape Cod Cooperative Extension & Woods Hole Sea Grant Program  
Michael A. Rice, University of Rhode Island Cooperative Extension

**REASON FOR TERMINATION:** Indicate objective(s) completed, funds terminated, or other specific reason for project termination.

Complete.

**PROJECT OBJECTIVES:** List objectives as written in approved proposal.

Objective 1: To identify, organize and compile science-based information and educational resources about aquaculture health hazards including major diseases of aquatic organisms, pests of aquaculture species, and organisms that cause human illness;

Objective 2: To develop HACCP-style guidelines for monitoring, recording, evaluating and sampling of stocks at the farm level, and to assemble and publish technical information and guidelines as individualized protocols and responses for shellfish and finfish farmers;

Objective 3: To conduct training workshops for extension and outreach practitioners on how to apply the HACCP-type guidelines for the development of a health risk management plan for individual farms;

Objective 4: To implement local industry outreach programs where farmers are instructed on developing their own HACPP health risk plans; and

Objective 5: To complete an economic assessment of the impact of implementing a HACCP plan on individual farms in the Northeast region.

**ANTICIPATED BENEFITS:** State how the project will benefit the aquaculture industry either directly or indirectly.

We anticipate that, as a result of this project, extension professionals, aquatic animal health professionals, resource managers/regulators, and other individuals serving in an outreach capacity will possess a new tool to assist farmers in identifying and managing for aquaculture health hazards. This key information will help aquatic animal health professionals to better and more efficiently respond to mortality events. If the causes of mortality are identified quickly and definitively, losses from mortality may be able to be minimized and/or prevented in the future, leading to improved production and profitability.

**PRINCIPAL ACCOMPLISHMENTS:** Summarize in a concise form the findings for each objective for the duration of the project. Measurement data are to be given in SI units. However, to minimize confusion, a dual system of measurement may be used to express results.

- NRAC Publication Manual 2014: Northeast Aquaculture Management Guide, edited by Tessa Getchis
- NRAC Publication Fact Sheet 111-2012: General Fish Health Management (revision), produced by Paul Bowser
- NRAC Publication Fact Sheet 220-2013: Dead and Dying Shellfish: What to Do, produced by Gef Flimlin
- Grant award 2014: University of Connecticut Agriculture Extension Award to Tessa Getchis. These funds will pay for the development of a new web tool “Northeast Aquaculture Management Guide” based on the previously funded NRAC publication by the same name. The website will provide users with easy to access science-based information on aquaculture production hazards and management strategies. The website can be easily updated by NRAC extension personnel. Planned completion is Summer 2015.
- Economic Assessment: Ongoing beyond grant period. Three farms (two shellfish, one finfish) were selected as part of a case study to examine the potential economic impact of farmers’ utilization of the Northeast Aquaculture Management Guide and the practices contained within. Prior to the development of the Guide, PIs Pomeroy and Plesha met with and examined enterprise budgets for the three farm operations. The portion (line items) of the budget dedicated to some form of production hazard management was identified. The Guide was drafted and reviewed by farmers, extension specialists, aquatic health professionals and researchers within and beyond the region and finally published and distributed widely. The PIs plan to follow-up with the aforementioned farms within one year of the distribution of the guide to discuss farmers’ use of the guide, implementation of practices contained within, and potential impacts on budgetary items designated as related to production hazard management.

**IMPACTS:** In concise statements (possibly a bulleted list) indicate how the project has or will benefit the aquaculture industry either directly or indirectly and resulting economic values gained (where appropriate).

Farmers now have access to the region’s first comprehensive easy to access document containing science-based information and educational resources to help them understand the risk factors associated with aquaculture production hazards. Improved knowledge of these hazards may lead to better risk management strategies and minimization of product losses. Potential economic benefits are significant since operators who are proactive in allaying health concerns related to their products will have a competitive advantage in the marketplace.

**RECOMMENDED FOLLOW-UP ACTIVITIES:** State concisely how future studies may be structured.

**SUPPORT:** Use the format in the table below to indicate NRAC-USDA funding and additional other support, both federal and non-federal, for the project. Indicate the name of the source(s) of other support as a footnote to the table.

YEAR	NRAC-USDA FUNDING	OTHER SUPPORT					TOTAL SUPPORT
		UNIVERSITY	INDUSTRY	OTHER FEDERAL	OTHER	TOTAL	
TOTAL							

**PUBLICATIONS, MANUSCRIPTS, OR PAPERS PRESENTED:** List under an appendix with the following subheadings: *Publications in Print*; *Manuscripts*; and *Papers Presented*. For the first two subheadings, include journal articles, popular articles, extension materials, DVDs, technical reports, theses and dissertations, etc. using the format of the Transactions of the American Fisheries Society (example below). Under *Papers Presented* subheading include the authors, title, conference/workshop, location, and date(s). Example of Transactions of the American Fisheries Society citation format: Billington, N., R. J. Barrette, and P. D. N. Hebert. 1992. Management implications of mitochondrial DNA variation in walleye stocks. North American Journal of Fisheries Management 12:276-284.

Publications

- Bowser, P., 2012. General Fish Health Management (revision). USDA Northeastern Regional Aquaculture Center, NRAC Publication Fact Sheet 111-2012.
- Flimlin, G.E., 2013. Dead and Dying Shellfish: What to Do? USDA Northeastern Regional Aquaculture Center, NRAC Publication Fact Sheet 220-2013.
- Getchis, T.S. (Ed.), 2014. Northeastern U.S. Aquaculture Management Guide: A Manual for the Identification and Management of Aquaculture Production Hazards. USDA NIFA Northeastern Regional Aquaculture Center. 287pp.

Papers presented

- Getchis et al., 2015, Annual Meeting of the National Shellfisheries Association
- Getchis et al., 2012, 2013, 2014, Milford Aquaculture Seminar
- Getchis et al., 2012, 2015, Northeast Aquaculture Conference & Exposition

**Project Completion Report  
Project Title:**

**Subaward # \_\_\_\_\_  
Grant #**

**PART II**

**TECHNICAL ANALYSIS AND SUMMARY:** Describe the work undertaken and results obtained for each objective. Major results should be presented in detail, including graphs, charts, figures, photomicrographs or other presentations. Methodology should be briefly described and statistical analyses

and significance should be included where appropriate. This section of the report should be written with style similar to scientific publication. Reports previously or currently prepared for publication may be submitted as part of this section.

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**SIGNATURE PAGE**

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**SUBCONTRACT NO:**

**PROJECT TITLE:       Aquaculture health hazards – developing outreach services to the region’s farmers via extension and aquatic animal health professionals, using a HACCP approach**

**PREPARED BY:**

Tessa L. Getchis

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Project Coordinator of Subawardee

December 9, 2014  
Date