

Project Title: Extension [Termination Report]

Total Funds Committed: \$1,126,885

Initial Project Schedule: May 1, 1989 to August 31, 2019

Current Project Year: September 1, 2019 to August 31, 2020

Participants: D. E. Bauer, University of Nebraska-Lincoln; M. E. Clark, North Dakota State University; J. A. Held, University of Wisconsin-Stevens Point, Wisconsin; C. E. Hicks, Lincoln University; P. Hitchens, Southern IL University – Carbondale, Illinois; R. E. Kinnunen, Michigan State University; C. D. Lee, Kansas State University; J. E. Morris, Iowa State University; A. Pattillo, Iowa State University; A. Garcia, South Dakota State University, South Dakota; N. Phelps, University of Minnesota; K. K. Quagraine, Purdue University, Illinois/Indiana Sea Grant; M. Smith, The Ohio State University; C. Weeks, Michigan State University.

Industry Liaison: Dan Vogler, Harrietta Hills Trout Farm, Michigan

Reason for Termination: Completion of project objectives.

Project Objectives

1. Strengthen linkages between North Central Regional Aquaculture Center (NCRAC) Research and Extension Work Groups.
2. Enhance the NCRAC extension network for aquaculture information transfer.
3. Develop and implement aquaculture educational programs for the North Central Region)

Project Summary

The existing aquaculture industry members need relevant information on new techniques and technologies in aquaculture, as well as updated information related to changing state and federal regulations. Increasingly, a large number of individuals are interested in aquaculture as a means of agriculture diversification or urban development. The NCRAC Extension Work Group meets these diverse client needs through on-site advice, publications, and specialized workshops. As the industry matures, the advisory service needs will shift toward more specialized and advanced knowledge than is currently provided at general introductory conferences and events. Entrepreneurs and prospective aquaculturists often require an enormous amount of time to educate and can benefit from the availability of the electronic media.

Anticipated Benefits

The NCRAC Extension Work Group will continue and expand its efforts to promote and advance commercial aquaculture in a responsible fashion through its organized education/training outreach programs and through educating the public on the health benefits of commercially raised fish. The primary benefits are: increased public awareness through publications, short courses, and conferences regarding the potential of aquaculture as a viable agricultural enterprise in the NCR; technology transfer; improved lines of communication between interstate aquaculture extension specialists and associated industry contacts; and an enhanced legal and socioeconomic atmosphere for aquaculture in the NCR. The development of aquaculture education programs for the NCR has provided “hands- on” opportunities for prospective and experienced producers.

Approximately 6,000 individuals have attended workshops or conferences organized and delivered by the NCRAC Extension Work Group. Clientele attending regional workshops have gained information related to aquaculture development strategies in other areas of the country and acquired information which was of direct use to their own enterprises. Education programs also created situations where problems encountered by producers were expressed to extension personnel who later relayed them to researchers at NCRAC work group meetings for possible solutions through the research effort.

Technical Summary and Analysis

Objective 1. — Aquaculture Extension

Work Group members have:

- Served as an extension liaison, if not an active researcher, for every NCRAC-funded project;
- Assisted in developing, writing, and editing several culture manuals as well as fact sheets, book chapters, and videos based on NCRAC-funded research;

- Assisted with the planning, promotion, and implementation of taxa-specific workshops held throughout the region;
- Participated as Steering Committee members for public forums related to revision of the National Aquaculture Development Plan and the four past National Aquaculture Extension Workshops/Conferences;
- Served as a non-funded collaborator on the Regional Aquaculture Extension Specialist; and
- Met with industry representatives and university researchers involved with aquaculture to discuss how the aquaculture industry could grow in the NCR.

Objective 2. — Networking of specialists and Cooperative Extension Service (CES) - designated contacts has maximized the efficiency of education programs and minimized duplication. Individual state extension contacts often respond to 120+ annual calls from outside their respective state as well as interacting with colleagues with mutual concerns related to developing aquaculture activities. This extension network is critical to being able to match specific aquaculture questions with the best source of information.

Lee has continued to assist the Kansas Aquaculture Association by developing, printing and distributing the Kansas Aquaculture Association Directory. Bauer distributed NCRAC information to the Nebraska aquaculture industry. Clark developed an updated list of state producers for submission to the NCRAC Publications Office as well as worked with state public agency personnel concerning state/federal regulations for North Dakota producers. Pierce assumed Hicks' role in developing factsheets on pond aquaculture and sportfish management.

Pattillo developed two NCR-centered fact sheets covering aquaculture and hydroponic components of aquaponic systems and led the development of an aquaculture webinar series in 2016 and 2017 in partnership with the National Aquaculture Association and U.S. Chapter of the World Aquaculture Society. This webinar series was a partnership between NCRAC, the National Aquaculture Association and the United States Aquaculture Society and covered a range of important and timely topics. Videos are available at <https://www.ncrac.org/video>.

Objective 3. — A number of workshops, conferences, symposia, videos, field-site visits, hands-on training sessions, and other educational programs have been developed and implemented (see the Appendix for a listing of many of these activities). Through these workshops, critical issues in the private aquaculture industry have been identified, e.g., market availability, economic returns, and regulatory concerns.

Recent workshops include the 2017 Iowa Aquaculture Conference (videos of presentations located at <https://www.ncrac.org/video>) and the 2018 North Central Aquaculture Conference in Kansas City, Missouri (hosted by Missouri Aquaculture Association and NCRAC; presentations at <https://www.ncrac.org/presentation/2018-north-central-aquaculture-conference>).

NCRAC Extension contacts have served as editors for regional aquaculture newsletters as well as in-state aquaculture association newsletters; served on state aquaculture advisory councils and state aquaculture task forces; and assisted in the planning and implementation of state aquaculture association meetings.

In addition to the previously mentioned areas, NCRAC Extension contacts have been instrumental in fostering the continued growth of the aquaculture industry in the region through a variety of activities and many have worked with industry and governmental representatives to produce state aquaculture plans and improved governmental regulations. One such an example is the Aquatic Invasive Species-Hazard Analysis Critical Control Point (AIS-HACCP) plan developed by Kinnunen and Phelps to address biosecurity, particularly in regard to diseases such as viral hemorrhagic septicemia (VHS). Kinnunen and Phelps have also taught other members of the NCR aquaculture extension community about their AIS-HACCP program, in essence, they've "trained the trainers" and all AIS-HACCP materials are available at www.seagrant.umn.edu/ais/haccp.

In 2017 Pattillo coordinated a 2-day meeting of the NCRAC Publications Review Team in Des Moines, Iowa. This team of Extension, TC/E and TC/R members reviewed current NCRAC publications for content and whether or not they were still relevant to current aquaculture practices. Authors of past publications were contacted for identified updates in 2018. The departure of Pattillo in October 2017 resulted in Morris being appointed to ISU Extension in January 2018; Morris has since directed the new identified publications to be completed. ISU Extension staff have been doing the final edits and layout with the first publications have been distributed to the aquaculture community in 2019 with all publications to be completed in 2020.

Principal Accomplishments

Objective 1. — Participated in all NCRAC projects either as extension liaison or research, assisted the NCRAC community by presenting and networking to enhance the nation's knowledge of aquaculture production in the Midwest, and served as conduit between industry and research community.

Objective 2. — Networking among the extension community to enhance educational programs with minimal duplication in the region and the nation.

Objective 3. —Developed educational programs in the North Central Region include a large number of workshops, conferences, symposia, field-site visits that help to address educational needs of regional aquaculture community.

Impacts

Enhancing state-wide and regional communication and training among those in the aquaculture industry is imperative for continued growth of aquaculture in the Midwest. Aquaculture Extension Specialists are important to the distribution of aquaculture extension related materials, providing research-based information to the farmers who will use it. Additionally, promoting networking between public institutions and private aquaculturists helps enhance the transfer of aquaculture information and technology. The workshops were mainly hands-on, which enabled participants to acquire knowledge and skills in indoor recirculating aquaculture systems. Some workshop participants have started aquaculture operations after attending the workshops. Additional services include on-line educational materials, workshops, business planning assistance, facility tours and production training.

Recommended Follow-up Activities

NCRAC should summarize the Extension programs and their deliverables in manner that illustrates on the importance of regional aquaculture work to North Central universities.

Publications, Manuscripts, Workshops, and Conferences

See the Appendix for a cumulative output for all NCRAC-funded Extension activities.