

PROGRESS REPORT

Project Title: Extension¹

Key Word(S): Extension

Total Funds Committed: \$971,625

Initial Project Schedule: (May 1, 1989 to August 31, 2014)

Current Project Year: September 1, 2013 to August 31, 2014

PARTICIPANTS:

Dennis E. Bauer	University of Nebraska-Lincoln	Nebraska
Mark E. Clark	North Dakota State University	North Dakota
James A. Held	University of Wisconsin-Stevens Point	Wisconsin
Charles E. Hicks	Lincoln University	Missouri
Paul Hitchens	Southern IL University - Carbondale	Illinois
Ronald E. Kinnunen	Michigan State University	Michigan
Charles D. Lee	Kansas State University	Kansas
D. Allen Pattillo	South Dakota State University	South Dakota
Burton F. Pflueger	Iowa State University	Iowa
Nicholas Phelps	University of Minnesota	Minnesota
Kwamena K. Quagraine	Purdue University	Illinois/Indiana
Laura G. Tiu	Ohio State University	Ohio
Christopher Weeks	Michigan State University	Michigan

Industry Liaison: Mark Willows

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 (NCR).

¹NCRAC has funded a number of Extension activities, both as stand-alone projects or as components of species-or topical-specific projects, including 14 stand-alone projects deemed "Base" Extension. This Progress Report is for components of the first 13 "Base" Extension projects; a Progress Report for the 12th "Base" Extension project (an Addendum to the 11th "Base" Extension project) is contained elsewhere in this report. The first three "Base" projects were chaired by Donald L. Garling, the fourth was chaired by Fred P. Binkowski, projects 5-13 were chaired by Joseph E. Morris and the 14 project chaired by D. Allen Pattillo. A Project Component Termination Report for one of the objectives of the fifth "Base" Extension project is contained in the 1997-98 Annual Progress Report; a Project Component Termination Report for one objective of "Base" Extension projects 1-8 is contained in the 2003-04 Annual Progress Report. The 13th "Base" project is a 2-year funded project that began September 1, 2009. Fred P. Binkowski chaired the 14th stand-alone Extension project (the Aquaculture Regional Extension Facilitator [AREF]); a Termination Report for which was contained in the 2004-05 Annual Progress Report. Laura G. Tiu chaired the 15th stand-alone Extension project (Regional Aquaculture Extension Specialist [RAES]); a Termination Report for that project was contained in the 2008-09 Annual Progress Report. Christopher Weeks chairs the 16th stand-alone Extension project (Regional Aquaculture Extension Specialist [RAES]); a Progress Report for that project is contained elsewhere in this report.

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.

Project Progress

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. To better illustrate individual state extension specialist's role in regional and state extension programs, the following are a partial list.

For instance, Lee has continued to assist the Kansas Aquaculture Association by developing, printing and distributing the Kansas Aquaculture Association Directory. In a similar fashion, Bauer distributed NCRAC information to the Nebraska aquaculture industry; and in North Dakota, 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. Hicks developed three aquaculture factsheets on freshwater prawn and bluegill production while also conducting In-Pond-Raceways tests with cooperating farmers. Regional extension cooperators for the eXtension project (including the 20 12 eXtension Aquaculture Virtual Workshop), including include Jim Held, Allen Pattillo, Ron Kinnunen, and Laura Tiu who have presented on a variety of topics including aquaponics, species-specific culture (bluegill, freshwater prawn, yellow perch, and walleye), recirculating systems, prospective considerations of aquaculture operations, and HACCP training.

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. 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. An AIS-HACCP plan has also been developed by Kinnunen and Gunderson to address the growing concern of biosecurity, particularly in regard to diseases such as viral hemorrhagic septicemia (VHS). Kinnunen and Gunderson 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. More recently, Kinnunen participated in the Michigan DNR Lake Superior Citizen Advisory Committee meeting and presented how the AIS-HACCP program can be used to prevent the spread of aquatic invasive species in baitfish. The effectiveness of the AIS-HACCP is reflected in the fact that

aquatic invasive species have not been identified in the baitfish trade according to surveys conducted by Michigan DNR staff. Nick Phelps (University of Minnesota Veterinary Diagnostic Lab) and Kinnunen also conducted two Aquaculture Biosecurity/AIS-HACCP Workshops in 2012.

Several states have on-site facilities that are used for extension programming, e.g. The Piketon facilities operated by Ohio State University are used to inform the public about aquaculture as well as foster grass root support for this agriculture enterprise.

Outreach Overview

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.

Target Audiences

Current and prospective fish farmers.

Deliverables (Outputs)

Ohio Aquaculture Feed and Nutrition Workshop, May 10th in Yellow Springs, Ohio. Over 70 existing fish farmers, new and beginning fish farmers, associated industries (feed mill, brewery, protein supplements), University folks and soybean industry representatives attended the workshop held at YSI in Ohio. A variety of speakers shared the scope of the fish feed and nutrition sector, why fish feed and nutrition is so important to them and the growth and survival of their industry, and what kind of research and development is being done, or is needed to move the aquaculture feed industry forward.

Presentations available here:

<http://southcenters.osu.edu/aquaculture/boot-camp/intensive> (click on May).

Over 139 people attended the February 2013 OAA Aquaculture Conference in Wooster, Ohio. Two special sessions were coordinated by OCARD staff: Introduction to Aquaculture and Aquaculture Business. These activities keep fish farmers in Ohio up to date on the latest aquaculture research and extension activities in the Midwest and recordings are available at:

<http://southcenters.osu.edu/aquaculture/presentations/oaa-workshop-presentations-2013>.

Also, video advice from existing farmers was recorded and can be viewed here:

<http://southcenters.osu.edu/aquaculture/extension/education/advice-from-the-experts>

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Outcomes/Impacts

Regional Aquaculture information (i.e., workshop announcements, fact sheets, and product marketing) is quickly and efficiently distributed to aquaculture clients in Ohio and neighboring states. This results in Ohio fish farmers being well informed about activities and information that can enhance the success of their businesses. List serves for the North Central Region and the Indiana Aquaculture Association have been started based on the success of aqua-Ohio. Over 139 people attended the February 2013 OAA Aquaculture Conference in Wooster, Ohio. Two special sessions were coordinated by OCARD staff: Introduction to Aquaculture and Aquaculture Business. These activities keep fish farmers in Ohio up to date on the latest aquaculture research and

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Impacts Summary

Relevance.— Fish farmers require some basic extension services including responding to various questions relating to fish production. Extension activities would include providing resources relating to addressing issues such as poor water quality, diseases, low oxygen levels, water temperature, and feeding strategies. Some prospective fish farmers need farm visits to assist with hands-on experiential learning on various fish production issues.

Response.— Workshops and on-line materials developed.

Results.— Participants to acquire knowledge and skills in indoor recirculating aquaculture systems.

Recap.— In response to industry need, workshops have been identified throughout the region to address industry issues.

Publications, Manuscripts, Workshops, and Conferences

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