

## NORTH CENTRAL REGIONAL AQUACULTURE CENTER EXTENSION PROJECT

**Chairperson:** Joseph E. Morris, Iowa State University

**Industry Advisory Council Liaison:** Mark Willows, Binford, North Dakota

**Funding Request:** \$29,000

**Duration:** 2 Years (September 1, 2009 - August 31, 2011)

**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 and materials for the North Central Region (NCR).

**Proposed Budgets:**

Institution	Principal Investigator	Objective(s)	Year 1	Year 2	Total
University of Nebraska-Lincoln	Dennis E. Bauer	2 & 3	\$1,000	\$1,000	\$2,000
North Dakota State University	Mark E. Clark	2 & 3	\$1,000	\$1,000	\$2,000
Iowa State University	Richard D. Clayton	2 & 3	\$1,000	\$1,000	\$2,000
Purdue University	Mark E. Einstein	2	\$3,500	\$3,500	\$7,000
University of Minnesota-Duluth	Jeffrey L. Gunderson	1 & 2	\$1,000	\$1,000	\$2,000
Lincoln University	Charles E. Hicks	2 & 3	\$1,000	\$1,000	\$2,000
Michigan State University	Ronald E. Kinnunen	3	\$1,000	\$1,000	\$2,000
Kansas State University	Charles D. Lee	2 & 3	\$1,000	\$1,000	\$2,000
South Dakota State University	Burton W. Pflueger	3	\$1,000	\$1,000	\$2,000
University of Illinois	Michael D. Plumer	3	\$1,000	\$1,000	\$2,000
Purdue University	Kwamena K. Quagraine	1 & 2	\$1,000	\$1,000	\$2,000
Ohio State University	Geoffrey Wallat	2	\$1,000	\$1,000	\$2,000
<b>Totals</b>			<b>\$14,500</b>	<b>\$14,500</b>	<b>\$29,000</b>

**Non-funded Collaborators:**

Facility	Collaborator
Iowa State University	Joseph E. Morris
University of Wisconsin-Milwaukee	Fred P. Binkowski

## TABLE OF CONTENTS

SUMMARY OVERVIEW (PARTICIPANTS, OBJECTIVES, AND PROPOSED BUDGETS) .....	1
JUSTIFICATION .....	3
RELATED CURRENT AND PREVIOUS WORK .....	5
ANTICIPATED BENEFITS.....	6
OBJECTIVES.....	8
PROCEDURES.....	8
REFERENCES.....	10
PROJECT LEADERS.....	12
PARTICIPATING INSTITUTIONS AND PRINCIPAL INVESTIGATORS .....	13
EXTENSION PLANS AND BUDGETS	
EXTENSION PLAN, BUDGET AND/OR BUDGET EXPLANATION FOR EACH PARTICIPATING INSTITUTION	
University of Nebraska-Lincoln (Bauer – Objectives 2 & 3) .....	14
University of Wisconsin-Milwaukee (Binkowski – Objectives 2 & 3).....	19
North Dakota State University (Clark – Objectives 2 & 3) .....	20
Iowa State University (Clayton – Objectives 2 & 3) .....	25
Purdue University (Einstein – Objective 2) .....	30
University of Minnesota-Duluth (Gunderson – Objectives 1 & 2) .....	35
Lincoln University (Hicks – Objectives 2 & 3) .....	40
Michigan State University (Kinnunen – Objective 3).....	45
Kansas State University (Lee – Objectives 2 & 3) .....	49
Iowa State University (Morris – Objective 1).....	54
South Dakota State University (Pflueger – Objective 3) .....	55
University of Illinois (Plumer – Objective 3) .....	60
Purdue University (Quagraine – Objectives 1 & 2) .....	65
Ohio State University (Wallat – Objective 2).....	70
BUDGET SUMMARY FOR ALL PARTICIPATING INSTITUTIONS .....	75
SCHEDULE FOR COMPLETION OF OBJECTIVES .....	76
LIST OF PRINCIPAL INVESTIGATORS .....	77
CURRICULUM VITAE FOR PRINCIPAL INVESTIGATORS .....	78

## JUSTIFICATION

Growth in the North Central Region's (NCR) aquaculture industry mirrors, and is driven by, broader U.S. and worldwide transitions in the seafood industry. The percentage of seafood from wild fisheries is near or above its sustainable capacity and a steadily increasing percentage of seafood in the world comes from aquaculture, which accounted for this growth from 2000 to 2002 (FAO 2004). World aquaculture production in 1991 was ca. 14 million metric tons (NMFS 2002), and by 2002 had grown to ca. 40 million metric tons (FAO 2004). Currently, almost 40% of the fish and seafood consumed by humans is from aquaculture (NMFS 2007).

Increased aquaculture production can provide significant health benefits because fish provide a low fat, healthy alternative to many other types of meat. U.S. consumption of fishery products was 7.4 kg (16.3 lb) of edible meat per person in 2007, an increase over the approximately 6.7 kg (15.0 lb) per person level where it has hovered over the last decade (NMFS 2007). The value of U.S. aquaculture production has grown by roughly 5–10% each year during the past decade, and aquaculture is regarded as the fastest growing segment of U.S. agriculture. Fish are now farmed in every state and territory in the United States, and total U.S. aquaculture production in 2005 was valued at approximately \$1.1 billion (NASS 2006). Nevertheless, a wide disparity exists between domestic aquaculture production and demand, as indicated by the fact that imports of edible seafood made up 84% of the U.S. consumption (NMFS 2007).

Aquaculture-related business in the NCR continues to be an "emerging" industry. This trend has continued into the 21<sup>st</sup> century, with an estimated farm gate value of \$70+ million resulting in more than one billion pounds of seafood consumed annually. Although the NCR contains approximately 25% of the U.S. population, the regional aquaculture production accounts for less than 3% of all U.S. aquaculture production.

Aquaculture can continue to be a catalyst for new industries within our region. The steady decline in traditional family farming has aroused concern and points out the need for alternative strategies to preserve rural communities (Smith et al. 1995; Wisconsin Catholic Conference 1997; Sweet 2000; Walters 2001). Aquaculture development may provide reasonable alternatives for economic development in rural situations where dairy and other farm industries have declined and continue to experience difficulty. However, for the regional aquaculture industry to expand and thrive, its operations must be financially profitable as well as environmentally acceptable to the communities in which they are located.

Although NCR states lack the longer growing season of more southern states, making them less competitive for growing warmwater fish outdoors, our regional resources are ideally suited for the culture of marketable coldwater and coolwater food fishes, including salmonids (*Oncorhynchus* spp.), whitefish (*Salanx cuvieri*), walleye (*Sander vitreus*), yellow perch (*Perca flavescens*), hybrid striped bass (*Morone chrysops* x *M. saxatilis*), and sunfish (*Lepomis* spp.). There is also the possibility of overcoming this regional growing season limitation by using pond-reared species suited for NCR culture conditions or climate-controlled and water-conserving recirculating aquaculture systems. However, additional information is needed to better understand both the operation and the mechanics of these alternative culture operations.

Continued aquaculture expansion is likely to involve the already established demand for regionally popular commercial species. Successful aquaculture endeavors usually develop within the context of pre-existing functioning markets with relatively high prices. NCR aquaculturists have the opportunity to participate in markets that already exist for traditional wild-caught commercial species. Regional commercial fishing, especially in the Great Lakes states, continues to be more strictly regulated by quotas, and less highly valued as compared to the tourism value of recreational fishing, creating an opportunity for aquaculturists to produce products to fill this gap. As public awareness of the problem of environmental contaminants in wild-caught fish expands, there is some evidence to support the perception that aquaculture-produced fish will address the issue of seafood safety by offering an alternative (Santerre et al. 2000).

The North Central Regional Aquaculture Center (NCRAC) Extension Work Group represents one of the longest established organized programs providing aquaculture resource information and technical assistance to the NCR's commercial aquaculture industry through applied and basic research, education, and outreach. The goal for the NCRAC Extension Work Group is to focus on delivering more specialized

services to the aquaculture industry, and broaden the scope of the program for the NCR. Additionally, the numerous requests that have been received through national networking have prompted an effort to provide specialized information and nationalize the services beyond the boundaries of the NCR. NCRAC extension services will continue to expand on these efforts by providing information for regional and national application. An "Aquaculture Regional Extension Facilitator" (AREF) project overlaps with, and cooperatively enhances NCRAC extension efforts. This project is aimed at identifying and organizing aquaculture resource information to meet regional aquaculture industry needs by improving communication and interaction among the state aquaculture industry associations within the 12 NCR states.

With the growth of the aquaculture industry in the NCR, a new demand and broader market for technical information and aquaculture services has evolved. Providing quality technical assistance in all aspects of aquaculture is critical to enhance the positive momentum that the region's aquaculture industry is exhibiting. As novices enter the aquaculture industry, they seek guidance from knowledgeable and experienced persons, commonly from state and federal agencies. Experienced aquaculturists need updated information on new research findings and access to alternative rearing techniques. The need for more public outreach by NCRAC researchers is increasingly apparent. The transfer of technology to potential and practicing fish farmers requires an effective communication bridge between university researchers and the public. This is one of the primary goals of the NCRAC Extension Work Group.

Hundreds of inquiries by persons interested in the potential of NCR species for aquaculture are referred to the NCRAC Extension Program each year. To illustrate this point, in September 2008 the NCRAC Web site ([ncrac.org](http://ncrac.org)) had ca. 40,000 hits. Requests come from a range of individuals; from the mildly curious with a limited background in aquaculture, to others with limited knowledge but real physical properties or financial resources, and to experienced aquaculturists with considerable expertise and knowledge who want to apply alternative innovative techniques. The experienced aquaculturists include individuals attempting to improve or change their operations themselves and those who have reached the point where they need outside professional help. Often clients may wish to evaluate the appropriateness of equipment, species, or techniques for use in the region. These interested parties need sound advice concerning the development and operation of aquaculture ventures. The NCRAC Extension Work Group plays a vital role in providing this information.

The rapid growth of aquaculture has raised concerns that existing and future aquaculture operations may also be significant sources of pollutants and nutrient waste (EDF 1997; GLFC1999). Although aquaculture is still only an "emerging" industry in the region, the prospect of rapid growth raises fears of a negative impact, and the industry is confronted with perplexing and emotionally charged environmental issues. There is a need for further development and improvement of aquaculture rearing and management strategies to reduce and, if possible, eliminate environmental impacts. Increased use of recirculating aquaculture systems and improved technologies for recovery and reuse of nutrients and waste biosolids can aid regional growers in avoiding potential environmental conflicts that threaten to constrain further aquaculture development (Yeo et al. 2004; Summerfelt and Penne 2007). The NCRAC Extension Work Group will identify the most current information on sustainable and environmentally friendly management practices for aquaculture and will help fish aquaculturists keep up-to-date on these important issues.

Since 1989, this program has been a principal source of information, guidance, and technical assistance to the development of the regional aquaculture industry. The NCRAC Extension Work Group will work closely with the regional vocational agriculture instructors. In addition, several thousand people have attended local and regional aquaculture conferences, workshops, and lectures sponsored/co-sponsored and organized by NCRAC extension specialists. This Work Group has established a network of industry and government aquaculture contacts at the local, state, regional, and national levels. The needs and requirements of novice and practicing aquaculturists are so multifaceted that the response depends on the stage of development in the client's proposed activity. Initial inquiries can usually be suitably answered with prepared pamphlets, bibliographies, a guide to available resources (Aquaculture Resource Guide), Web pages posting answers to Frequently Asked Questions (FAQs), and Web-based links to appropriate resource information. These provide general answers and a broader view of the enterprise's possibilities.

Follow-up requests and more specialized questions require greater time and advanced materials related to these specialized topics and problems. Critical to fulfilling this type of request from clients will be the traditional one-on-one approach, with expert assistance to answer specific questions, solve problems through person-to-person or conference telephone calls, or on-site technical assistance when possible.

There is an ongoing need to develop new and relevant publications for the region's aquaculture industry. For instance, the demand for baitfish in the NCR far exceeds the supply from within the region. To meet the demand, cultured fatheads (including the rosy red variation), golden shiners, and goldfish from Arkansas are imported into the NCR. Still, significant shortages of a variety of species [including the three primary NCR aquacultured species—fatheads (*Pimephales promelas*), white suckers (*Catostomus commersoni*), and golden shiners (*Notemigonus crysoleucas*)] were reported by bait dealers (Meronek et al. 1997). Some species that are not readily found in the wild baitfish market could offer aquaculture and marketing opportunities. One such species is the spotfin shiner (*Cyprinella spiloptera*) the culture potential of which has been identified by the NCRAC Industry Advisory Committee (Gunderson and Tucker 2000).

With the growth of the regional aquaculture industry, the demand for developing more effective strategies to advance the industry must be met. This requires timely responses to critical issues, including promoting investment in the industry, advancing new technologies, enhancing communication with the regulatory agencies, and providing information to the public on the health benefits of the aquaculture products.

## **RELATED CURRENT AND PREVIOUS WORK**

The NCRAC Extension Work Group is designed to assess and meet the information needs of the various clientele groups through cooperative and coordinated regional educational programming. A network of Sea Grant and Cooperative Extension Service (CES)-designated contacts has been established to help maximize efficiency of education programs in the 12-state NCR. However, many of these contacts are part-time on aquaculture and need additional resources to meet the growing demands of the aquaculture industry.

In spite of the limited number of aquaculture full-time equivalent positions in this region, substantial progress on the previously described objectives has been made. Extension liaisons are actively involved in several research projects, e.g., baitfish, walleye, and yellow perch, and they have helped to improve the information transfer from research work groups to the public. Extension liaisons have also assisted with the planning, promotion, and implementation of past hybrid striped bass, walleye, and yellow perch workshops held throughout the region. There have been workshops on general aquaculture, fish diseases, commercial recirculation systems, aquaculture business planning, crayfish culture, pond management, yellow perch and hybrid striped bass culture, rainbow trout production, in-service training for high school vocational-agricultural teachers, and aquatic invasive species [Aquatic Invasive Species – Hazard Analysis and Critical Control Point (AIS-HACCP)] held in the region. These workshops have often been conducted using a combination of regional extension specialists and researchers as well as industry representatives. The Walleye Culture Manual has been the basis for two Walleye Culture Workshops which were held in 1996. Gunderson, University of Minnesota-Duluth (UMD); Kinnunen, Michigan State University (MSU); and Morris, Iowa State University (ISU) were active on the planning committee; Summerfelt (ISU) has been the leader for both the walleye culture manual and workshops. This 415-page manual is now available to the public for a nominal cost; it has 17 chapters and 46 case studies. The Sunfish Culture Guide has details of various facets of sunfish culture including, in part, their biology, culture, as well as their diseases. The Yellow Perch Culture Guide contains data from both past peer-reviewed publications as well as new data derived from NCRAC-funded projects on yellow perch culture.

Several fact sheets and bulletins have been completed and are available to the public both in hard copy and on the Web. In part, these publications have the following topics: (1) walleye fingerling culture, (2) salt usage, (3) starting an aquaculture operation, (4) overview of aquaculture, (5) aquaculture as a business enterprise, (6) survey of salmonid producers, (7) channel catfish culture, (8) niche marketing, and (9) plankton management for fish culture ponds. The use of these publications has helped to supplement individual states' publications in this region. In 1994 a survey was undertaken to determine the use of NCRAC extension publications in the region. It was estimated that approximately 15,000 client

questions are addressed annually by these publications; publications related to basic aquaculture topics were most often used. Aquaculture handbooks have also been developed and distributed to each NCRAC-designated aquaculture extension specialist and selected CES and Sea Grant field staff member.

Four North Central Regional Aquaculture Conferences have been held. The first was held in March 1991 in Kalamazoo, Michigan, the second was held in February 1995 in Minneapolis, Minnesota, the third conference was held in Indianapolis, Indiana in February 1997, and the fourth was held in Kansas City, Missouri in February 1999. These regional meetings were attended by hundreds of individuals including persons from Canada.

In addition to the previously mentioned areas, several NCRAC extension contacts have been instrumental in fostering the continued growth of the aquaculture industry in the region. For example, Pierce has created the Cooperative Extension Aquaculture and Marketing Educational Program to facilitate the development and implementation of aquaculture educational programs in Missouri. In addition, MSU specialists have assisted in resolving a dispute between the Michigan Department of Environmental Quality and the Michigan Aquaculture Association over effluent permit requirements for commercial fish producers and fee-fishing operators. Assistance resulted in a clarification that most Michigan registered fish farms are not required to obtain permits unless it is shown that they are discharging pollutants and causing a water quality problem in the receiving water.

The Aquaculture Technology Transfer (AT2) program at Ohio State University's Ohio Center for Aquaculture Research and Development (OCARD) is dedicated to supporting sustainable development of aquaculture in Ohio through research and extension activities focused on production efficiency, emerging species viability, diversification of farm income, and dissemination of marketing and technical information for existing and prospective operations. OCARD is active nationally and internationally as well. Aquaculture specialists attend and present research at local, national, and international conferences.

The AT2 program strives to provide information and meet the training needs of the aquaculture industry. Services include farm site visits, on-farm demonstration trials, on-line educational materials, workshops, business planning assistance, facility tours, and production training. A close working relationship with the Ohio Aquaculture Association, the producer association in Ohio (<http://southcenters.osu.edu/oaal/>), helps drive the growth and success of aquaculture in the state.

Many NCRAC extension contacts have also worked with industry and governmental representatives to produce state aquaculture plans and improve governmental regulations. It is this interaction by extension contacts that the NCRAC Board of Directors wanted to support when they voted to increase funding support for NCRAC extension contacts in 1999, which continues through this proposal. The end result is increased interaction between NCRAC extension contacts and their respective state aquaculture associations.

Beginning in 1992, some NCRAC research projects included objectives related to outreach activities related to that particular project. Activities listed in this proposal are not part of those research projects.

## **ANTICIPATED BENEFITS**

The NCRAC Extension Work Group benefits several user groups in the NCR region, including both prospective and experienced aquaculturists and aquaculture educators. Growing at ca. 12% annually, the aquaculture industry is a catalyst for increasing entrepreneurship and jobs. As aquaculture attempts to fill the gap created by wild stock declines, the proposed advisory service initiatives to assist regional aquaculture development are particularly timely and relevant. In response to the agriculture industry decline in the region (Smith et al. 1995; Sweet 2000; Walters 2001), aquaculture may be the perfect mechanism for rural regeneration. In addition, there is growing interest in urban communities to develop aquaculture, using state-of-the-art technology, e.g., recirculating systems. Aquaculture has the potential to contribute significantly to NCR's strategic economic development and positively impact the quality of life within the region. This project will serve the aquaculture industry by building improved relationships and interactions between the commercial aquaculturists and the regional aquaculture research and extension programs, financial institutions, regulatory bodies, and the general public. A healthy

aquaculture industry in the NCR will reduce the need to import fish products and help improve the U.S. trade imbalance, a fact increasingly recognized in Washington.

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. There is a sustained demand for resource information, on-site advice, 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. The following proposed extension activities are focused on meeting these changing demands.

Effective packaging of information on all aspects of aquaculture appropriate to the NCR will bridge the gap between user groups and the extension informational network. In addition, middle and high school teachers often use extension materials in their classrooms. The project components directed toward pre-service and in-service vocational agriculture teachers will make an investment in the future, and sustain the development of regional aquaculture. Continual updating of outreach information will assist NCRAC advisory service specialists in answering the needs of local communities, small businesses, industry, educational groups, and the general public. Increasingly, there is a need for better understanding and communication between the industry and the regulatory bodies to coordinate ideas, recommendations, and suggestions that would best serve the industry and the community at large.

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 knowledge 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.

Fact sheets, technical bulletins, and videos have served to inform a variety of clients about numerous aquaculture practices in the NCR and to present possible solutions to relevant problems. For instance, the 2004 NCRAC publication "Aquaculture Effluents and Waste By-Products" has been downloaded more than 300 times per month since the beginning of 2006. The demand has increased for information on the improvement of aquaculture rearing and management strategies to reduce and, if possible, eliminate environmental impacts. Also, species-specific publications on walleye, trout, and catfish (*Ictalurus punctatus*) have been used in numerous regional meetings and have been requested by clients throughout the United States. Publications on organizational structure for aquaculture businesses, transportation of fish in bags, and others are beneficial to both new and established aquaculturists.

The Aquaculture Network Information Center (AquaNIC) houses over 8,000 electronic publications, images, slide sets, videos, and directories used by more than 2.1 million stakeholders per year from 150 countries. The positive impact to the international aquaculture community is realized through accessibility to aquaculture information 24 hours per day and seven days per week. No longer are audiences limited to obtaining information during normal business hours. Financial support for AquaNIC is provided by the Mississippi-Alabama Sea Grant Consortium, Auburn University, Illinois-Indiana Sea Grant College Program, the National Sea Grant College Program, and NCRAC.

- Current and prospective producers use AquaNIC Web sites as sources of reference, i.e., species and systems pages, Regional Aquaculture Center publications, directories, and calendars of events.
- CES and Sea Grant educators will benefit from increased access to electronic media, i.e., photographs, slide sets, and publications, essential to developing outreach programs.
- All customers will benefit from the “gateway” or “portal” services provided by AquaNIC through decreased time searching for information, i.e., companies, universities involved in aquaculture, CES, and Sea Grant contacts, federal agencies, and other Web links to aquaculture information.

To measure the positive impact that the aquaculture extension initiative is having in Ohio, one only needs to look at the numbers in the most recent Census of Agriculture. The 1998 Census of Aquaculture reported 33 fish farms in Ohio with \$1,788,000 in total sales. The 2005 Census of Aquaculture reported 55 fish farms in Ohio with \$3,185,000 in total sales (USDA-NASS 2007). This means the number of fish farms in Ohio and the total aquaculture sales increased at a rate of 10% per year for this period. Ohio is now reported as the top seller (by sales volume) of yellow perch in the United States, and 4<sup>th</sup> nationally for sportfish (largemouth bass and bluegill) and baitfish. A recent review of Ohio’s 2007 list of aquaculture, propagators, and bait dealers permit holders in Ohio revealed that there are over 250 aquaculture and aquaculture-related businesses in Ohio.

Project outputs and outcomes, and later impact assessment are now being used to guide extension activities. However, there continues to be a need for extension professionals to be able to address public inquires when there may not be an economic impact. For instance, potential aquaculturists being advised not to pursue specific activities that may not be cost effective; such impacts may be hard to document but are nevertheless important to both the individual as well as for development of the aquaculture industry.

## **OBJECTIVES**

1. Strengthen linkages between the 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 Education Programs and Materials for the NCR.

## **PROCEDURES**

### **Strengthen Linkages (Objective 1)**

At least one Extension Work Group member has been assigned to each Research Work Group. In the past, multiple Extension Liaisons have been assigned to some Research Work Groups with the goal of increasing the amount of information coming out of research projects. Extension Liaisons are responsible for interacting with researchers in developing possible extension products based on outcomes of these projects as well as assisting in writing research projects’ annual and termination reports. The following table lists the current Research Work Groups and the associated extension liaison.



Research Work Group	Extension Liaison	State(s)
Baitfish	Jeffery L. Gunderson	MN
Determinative Method - Aqui-S® Marker Residue in Fillet Tissue	Joseph E. Morris	IA
Feed Training Carnivorous Fish	Joseph E. Morris	IA
Largemouth Bass Nutrition	Joseph E. Morris	IA
Methyltestosterone Feed Stability	Laura G. Tiu	OH
Methyltestosterone Target Animal Safety	Joseph E. Morris	IA
Regional Aquaculture Extension Specialist	Laura G. Tiu	OH
Sunfish Nutrition	Joseph E. Morris	IA
VHS Study	Ronald E. Kinnunen	MI

In addition to serving on research projects as Extension Liaisons, each Work Group member will:

- Attend the NCRAC Annual Program Planning Meeting,
- Participate in formal organized conference calls involving all Work Group members, to discuss aquaculture issues specific to their respective states,
- Exchange ideas via free-flowing dialogues through internet discussions, teleconferencing, and other forms of communication throughout the year, and
- Contribute to Research Work Group meetings by providing input on design and feedback based on documented industry needs. The extension person in each state has a responsibility to dialogue with scientists conducting aquaculture research supported by USDA-CSREES/NCRAC funding.

### **Enhance Extension Network (Objective 2)**

At least one contact person has been designated by CES for each NCR state, an extension contact directory has been developed and kept current, and a mechanism for sharing materials produced by individual states has been established. Specific responsibilities for each Work Group member include:

- Attending the annual in-state aquaculture meeting to assist state aquaculture associations,
- Providing copies of aquaculture extension-related materials produced in their respective state to the Chair of the Extension Work Group for distribution to all state contacts once annually,
- Providing a link between NCRAC and public and private aquaculturists and other appropriate individuals or groups in their respective state, including dialoguing with their industry representatives,
- Identifying and updating lists of key state contacts (legislators, government administrators, agency personnel, business leaders, and practicing or potential fish farmers) to receive NCRAC announcements, newsletters, and other pertinent materials,
- Utilizing the above contacts and information gathering, conveying relevant information to the Regional Aquaculture Extension Team, initially in an earlier NCRAC-Extension project, for setting priorities or determining projects to be undertaken.
- Generating an annual report for incorporation into the NCRAC Extension report. This report is to include specific outputs and impacts related to NCRAC-funded activities.

With the continued shortages in aquaculture extension personnel, this network has been critical to the ability of individual extension contacts to respond to information requests from their clients. In fact, many of these contacts often respond on a regular basis to client inquiries outside of their specific state. These activities will be continued.

## AquaNIC Support (Einstein, Purdue University)

LaDon Swann (formerly at Purdue University and now at Auburn University) established <http://www.aquanic.org> in 1994. NCRAC's directories, annual reports, and publications are posted to the NCRAC Web site. AquaNIC's support from NCRAC has been essential to any success experienced. Since AquaNIC has been online, it has become the premier Web site for aquaculture information. Each day, more than 10,000 people have chosen to use AquaNIC as an alternative or in addition to traditional means of obtaining information. As a gateway to electronic resources in aquaculture, AquaNIC has increased the timeliness and variety of information available to outreach educators, governmental agencies, and individual users while more effectively utilizing existing personnel resources. AquaNIC can be accessed anytime and, therefore, does not face the challenges associated with office hours, time zones, or weekends. Additional supportive information is in Table 1.

Table 1: General statistics for AquaNIC Use.

<b>General Statistics - Report Range: 09/01/2007 00:00:00 - 09/01/2008 23:59:59</b>		
<b>Hits</b>	Entire Site (Successful)	21,029,931
	Average per Day	57,302
	Home Page	198,714
<b>Page Views</b>	Page Views	5,198,740
	Average per Day	14,165
	Average per Unique Visitor	5
	Document Views	3,048,384
<b>Visits</b>	Visits	2,282,172
	Average per Day	6,218
	Average Visit Length	00:10:50
	Median Visit Length	00:00:01
	International Visits	13.44%
	Visits of Unknown Origin	31.06%
	Visits from United States	55.49%
	Visits Referred by Search Engines	0
	Visits from Spiders	0
<b>Visitors</b>	Unique Visitors	910,786
	Visitors Who Visited Once	770,146
	Visitors Who Visited More Than Once	140,640

### **Develop and Implement Aquaculture Education Programs and Materials for the NCR (Objective 3)**

Educational programs and materials will be developed and implemented including AIS-HACCP workshops which will be planned as needed in the NCR as well as workshops on aquatic plant management for aquaculture facilities, prawn production, and larval fish culture. Any other workshops developed and hosted by state aquaculture extension contacts will be advertised in surrounding states to take advantage of the NCRAC extension network and the individual expertise of the Extension Work Group participants. There are also plans to enhance Web-based communications through the use of streaming videos and electronic fact sheets.

### **REFERENCES**

Environmental Defense Fund (EDF). 1997. Murky Waters: Environmental Effects of Aquaculture in the United States, 198 pages.

Food and Agriculture Organization of the United Nations (FAO). 2004. The state of world fisheries and aquaculture 2004. FAO Fisheries Department, Food and Agriculture Organization of the United Nations, Rome, Italy.

Great Lakes Fishery Commission (GLFC). 1999. Addressing concerns for water quality impacts from large-scale Great Lakes aquaculture. Great Lakes Fishery Commission, Ann Arbor, Michigan.

- Gunderson, J.L. and P. Tucker. 2000. A white paper on the status and needs of baitfish aquaculture in the North Central Region. NCRAC. Michigan State University, East Lansing.
- Meronek, T.J., F.A. Copes, and D.W. Coble. 1997. The bait industry in Illinois, Michigan, Minnesota, Ohio, South Dakota, and Wisconsin. NCRAC Technical Bulletin Series #105. NCRAC Publications Office. Iowa State University, Ames.
- National Marine Fisheries Service (NMFS) .2002. Fisheries of the United States 2001.
- National Marine Fisheries Service (NMFS). 2007. Fisheries of the United States 2007.
- Santerre, C.R., R. Ingram and G.W. Lewis. 2000. Organochlorines, organophosphates, and pyrethroids in channel catfish, rainbow trout, and red swamp crayfish from aquaculture facilities. *Journal of Food* 65(2):231-235.
- Smith, T.R., L.P. Johnson, and S. Kenyon. 1995. Dairy business focus: benchmarks for the future, tips to help Wisconsin dairy farms continue to compete. Special Insert in: *The Wisconsin Agriculturalist Magazine*, Farm Progress Publications.
- Summerfelt, R.C. and C.R. Penne. 2007. Septic tank treatment of the effluent from a small-scale commercial recycle aquaculture system. *North American Journal of Aquaculture* 69:59-68.
- Sweet, J. 2000. *Agriculture in the 21st Century. Sunrise or sunset?* The Sheboygan Press. January 9, 2000.
- United States Department of Agriculture, National Agricultural Statistics Service (USDA NASS). 2007. *Census of Aquaculture (2005) Volume 3, Special Studies Part 2, AC-02-SP-2*. National Agricultural Statistics Service. Washington D.C.
- Walters, S. 2001. Farming's fragile future. *Milwaukee Journal Sentinel*, March 18, 2001.
- Wisconsin Catholic Conference. 1997. Bishop's Statement, "The Changing Role of Rural Life in Wisconsin: Implications for family farms and the Church."  
<http://www.wiconsincatholic.org/statements/ruralstatement.html> viewed on October 5, 2006.
- Yeo, S.E., F.P. Binkowski, and J.E. Morris. 2004. Aquaculture effluents and waste by-products: characteristics, potential recovery and beneficial reuse. NCRAC Publications Office, Iowa State University, Ames, and University of Wisconsin Sea Grant, Madison.

## PROJECT LEADERS

<u>State</u>	<u>Name</u>	<u>Institution</u>
<b>Illinois</b>	Michael D. Plumer	University of Illinois
<b>Indiana</b>	Mark E. Einstein Kwamena K. Quagrainie	Purdue University Purdue University
<b>Iowa</b>	Richard D. Clayton Joseph E. Morris	Iowa State University Iowa State University
<b>Kansas</b>	Charles D. Lee	Kansas State University
<b>Michigan</b>	Ronald E. Kinnunen	Michigan State University
<b>Minnesota</b>	Jeffrey L. Gunderson	University of Minnesota-Duluth
<b>Missouri</b>	Charles E. Hicks	Lincoln University
<b>Nebraska</b>	Dennis E. Bauer	University of Nebraska-Lincoln
<b>North Dakota</b>	Mark E. Clark	North Dakota State University
<b>Ohio</b>	Geoffrey Wallat	Ohio State University
<b>South Dakota</b>	Burton W. Pflueger	South Dakota State University
<b>Wisconsin</b>	Fred P. Binkowski	University of Wisconsin-Milwaukee

## PARTICIPATING INSTITUTIONS AND PRINCIPAL INVESTIGATORS

**University of Nebraska-Lincoln**

Dennis E. Bauer

**University of Wisconsin-Milwaukee**

Fred P. Binkowski

**North Dakota State University**

Mark E. Clark

**Iowa State University**

Richard D. Clayton

**Purdue University**

Mark E. Einstein

**University of Minnesota-Duluth**

Jeffrey L. Gunderson

**Lincoln University**

Charles E. Hicks

**Michigan State University**

Ronald E. Kinnunen

**Kansas State University**

Charles D. Lee

**Iowa State University**

Joseph E. Morris

**South Dakota State University**

Burton W. Pflueger

**University of Illinois**

Michael D. Plumer

**Purdue University**

Kwamena K. Quagraine

**Ohio State University**

Geoffrey Wallat

## EXTENSION PLAN FOR UNIVERSITY OF NEBRASKA-LINCOLN

(Bauer)

### Objectives 2 & 3

**Situation:** Since the departure of the previous Nebraska Aquaculture Extension specialist, there have been limited extension resources available for Nebraska aquaculturists. In spite of this limitation, there is an established aquaculture community primarily in the western region of the state.

**Justification:** There is a need to improve the availability of NCR extension materials to Nebraska aquaculturists. In addition, there is a continuing need for state workshops whereby practicing and potential aquaculturists can meet with regional and state aquaculture contacts

**Timeline:** 1–2 years for distribution of NCRAC and Regional aquaculture extension materials.

**Outputs:** Distribution of extension materials to state aquaculturists as well as working with Nebraska Game and Parks staff to host annual workshops for the industry.

**Outcomes:** Producers will be current on the newest developments that affect the aquaculture industry by keeping them informed and up to date on the most current research data, etc.

**BUDGET**

ORGANIZATION AND ADDRESS University of Nebraska-Lincoln Lincoln, NE 68583			USDA AWARD NO. Year 1: Objectives 2 & 3			
			Duration Proposed Months: <u>12</u>	Duration Proposed Months: ____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
PROJECT DIRECTOR(S) Dennis E. Bauer						
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ____ (Co)-PD(s) . . . . .						
b. ____ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ____ Research Associates-Postdoctorates . . .						
b. ____ Other Professionals . . . . .						
c. ____ Paraprofessionals.....						
d. ____ Graduate Students.....						
e. ____ Prebaccalaureate Students.....						
f. ____ Secretarial-Clerical.....						
g. ____ Technical, Shop and Other .....						
<b>Total Salaries and Wages</b> ..... →						
<b>B. Fringe Benefits (If charged as Direct Costs)</b>						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> ..... →						
<b>D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)</b>						
<b>E. Materials and Supplies</b>				\$ 400		
<b>F. Travel</b>				\$ 600		
<b>G. Publication Costs/Page Charges</b>						
<b>H. Computer (ADPE) Costs</b>						
<b>I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)</b>						
<b>J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)</b>						
<b>K. Total Direct Costs (C through I)</b> ..... →				\$1,000		
<b>L. F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K)</b> ..... →				\$1,000		
<b>N. Other</b> ..... →						
<b>O. Total Amount of This Request</b> ..... →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . .			<b>Federal Funds: \$</b>	<b>Non-Federal funds: \$</b>	<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) ..... →						
Non-Cash Contributions (both Applicant and Third Party) ..... →						
<b>NAME AND TITLE</b> (Type or print)			<b>SIGNATURE</b> (required for revised budget only)			<b>DATE</b>
<b>Project Director</b>						
<b>Authorized Organizational Representative</b>						
<b>Signature (for optional use)</b>						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS University of Nebraska-Lincoln Lincoln, NE 68583			USDA AWARD NO. Year 2: Objectives 2 & 3			
			Duration Proposed Months: <u>12</u>	Duration Proposed Months: ____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
PROJECT DIRECTOR(S) Dennis E. Bauer						
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ____ (Co)-PD(s) . . . . .						
b. ____ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ____ Research Associates-Postdoctorates . . .						
b. ____ Other Professionals . . . . .						
c. ____ Paraprofessionals.....						
d. ____ Graduate Students.....						
e. ____ Prebaccalaureate Students.....						
f. ____ Secretarial-Clerical.....						
g. ____ Technical, Shop and Other .....						
<b>Total Salaries and Wages</b> ..... →						
<b>B. Fringe Benefits (If charged as Direct Costs)</b>						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> ..... →						
<b>D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)</b>						
<b>E. Materials and Supplies</b>				\$ 400		
<b>F. Travel</b>				\$ 600		
<b>G. Publication Costs/Page Charges</b>						
<b>H. Computer (ADPE) Costs</b>						
<b>I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)</b>						
<b>J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)</b>						
<b>K. Total Direct Costs (C through I)</b> ..... →				\$1,000		
<b>L. F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K)</b> ..... →				\$1,000		
<b>N. Other</b> ..... →						
<b>O. Total Amount of This Request</b> ..... →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . .			<b>Federal Funds: \$</b>	<b>Non-Federal funds: \$</b>	<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) ..... →						
Non-Cash Contributions (both Applicant and Third Party) ..... →						
<b>NAME AND TITLE</b> (Type or print)			<b>SIGNATURE</b> (required for revised budget only)			<b>DATE</b>
<b>Project Director</b>						
<b>Authorized Organizational Representative</b>						
<b>Signature (for optional use)</b>						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.



## BUDGET EXPLANATION FOR UNIVERSITY OF NEBRASKA-LINCOLN

(Bauer)

### Objectives 2 & 3

- E. Materials and Supplies.** Annual costs to host the Nebraska Aquaculture Association Meeting including general supplies such as paper, pens, pencils, ink cartridges, toner, staples, file folders, erasers, computer disks, and mailing supplies (\$400/year).
- F. Travel.** Annual costs: transportation, lodging, and meal expenses for the PI to host a 1-day annual meeting of the Nebraska Aquaculture Association at a destination to be determined by the aquaculture association (\$600/year).

1 June 2009

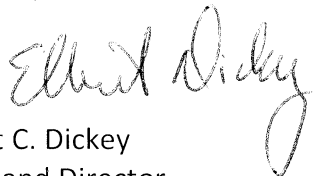
Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, MI 48842

Dear Dr. Batterson:

On behalf of the Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln Extension, as the Authorized Organizational Representative (AOR) I am pleased to offer support and approval of the collaboration of Dennis Bauer, Extension Educator in Brown, Keya Paha, & Rock Counties in the proposal titled "North Central Regional Aquaculture Center Extension Project". He will serve as the Principal Investigator of the subcontract and will have access to all of the necessary equipment, laboratory, and office space to successfully undertake this project.

Please direct any questions concerning the programmatic portions of this project to Dennis Bauer and any financial concerns or questions to Dennis Shannon, Financial Specialist, at 402-472-0744 or via e-mail at [dshannon2@unl.edu](mailto:dshannon2@unl.edu).

Sincerely,



Elbert C. Dickey  
Dean and Director

## EXTENSION PLAN FOR UNIVERSITY OF WISCONSIN-MILWAUKEE

(Binkowski)

### Objectives 2 & 3

**Situation:** To date, there is a limited amount of economic information available relative to the costs associated with yellow perch production in conjunction with recirculating system technology. To better understand these costs and to apply them to business plans, it may be necessary to conduct multiple demonstration projects. Eventually, this knowledge will be available to the stakeholders as a model for business plan development. This information would enhance capital investment opportunities. Aquaculture resource information, either general or specialized, will benefit the incoming and established stakeholders, respectively. Private industry would benefit significantly through increased interaction with aquaculture specialists who provide technical information for all aspects of aquaculture.

**Justification:** Providing aquaculture resource information, interacting with private industry, and conducting demonstration projects will provide new knowledge and expand existing knowledge which may lead to new research direction which will improve technology and contribute to industry growth.

**Timeline:** Resource information dissemination will be part of an ongoing effort for the 2-year period. Additionally, each year Binkowski and University of Wisconsin-Milwaukee staff will attend and participate in two industry annual meetings and conduct one demonstration project.

**Outputs:** Results from demonstration projects will be presented at meetings and published as part of an annual report or fact sheet. Dissemination of resource information will have an impact on increasing interest in entering the aquaculture industry and improving technical skills and the general knowledge base of established industry participants.

**Outcomes:** The outcome of efforts on these objectives will enhance collaboration between the stakeholders and professional aquaculture specialists. Through the dissemination of relevant aquaculture resource information, stakeholders should be better equipped to solve problems and take advantage of a more effective technology transfer mechanism as it applies to on-the-farm activities.

## EXTENSION PLAN FOR NORTH DAKOTA STATE UNIVERSITY

(Clark)

### Objectives 2 & 3

**Situation:** To date there has been a limited number of aquaculture operations in North Dakota. The number of private aquaculture operations compared to wild harvests for later resale in the baitfish industry is not known at this time.

**Justification:** There is a need to find producers and to improve connections among private producers working in the area to inform them of new technologies and on-line resources available from NCRAC.

**Timeline:** 2 years for comprehensive survey and 1-2 years to produce a document for submission to the NCRAC Publications Office for review.

**Outputs:** Publication of updated list of North Dakota producers for submission to the NCRAC Publications Office.

**Outcomes:** Updated knowledge of aquaculture activities in North Dakota.

**BUDGET**

ORGANIZATION AND ADDRESS Department of Biological Sciences, North Dakota State University 119 Stevens Hall, Fargo, ND 58105-5517				<b>USDA AWARD NO.</b> Year 1: Objectives 2 & 3				
PROJECT DIRECTOR(S) Mark E. Clark				Duration Proposed Months: <u>12</u>	Duration Proposed Months: ____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)	
				<b>Funds Requested by Proposer</b>	<b>Funds Approved by CSREES (If different)</b>			
<b>A. Salaries and Wages</b> 1. No. of Senior Personnel				<b>CSREES FUNDED WORK MONTHS</b>				
				Calendar	Academic	Summer		
a. ____ (Co)-PD(s) . . . . .								
b. ____ Senior Associates . . . . .								
2. No. of Other Personnel (Non-Faculty)								
a. ____ Research Associates-Postdoctorates . . .								
b. ____ Other Professionals . . . . .								
c. ____ Paraprofessionals.....								
d. ____ Graduate Students.....								
e. ____ Prebaccalaureate Students.....								
f. ____ Secretarial-Clerical.....								
g. ____ Technical, Shop and Other .....								
<b>Total Salaries and Wages</b> .....→				\$0	\$0	\$0	\$0	
B. Fringe Benefits (If charged as Direct Costs)								
<b>C.Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →				\$0	0	\$0	\$0	
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)								
E. Materials and Supplies								
F. Travel				\$500				
G. Publication Costs/Page Charges								
H. Computer (ADPE) Costs								
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)								
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)				\$500				
<b>K. Total Direct Costs (C through I)</b> ..... →					0	\$0	\$0	
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)								
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000	0	\$0	\$0	
N. <b>Other</b> ..... →								
<b>O. Total Amount of This Request</b> ..... →				\$1,000	0	\$0	\$0	
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>				<b>Non-Federal funds: \$</b>		<b>Total \$</b>		
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b> Cash (both Applicant and Third Party) .....→ Non-Cash Contributions (both Applicant and Third Party) →								
<b>NAME AND TITLE</b> (Type or print)				<b>SIGNATURE</b> (required for revised budget only)			<b>DATE</b>	
<b>Project Director</b>								
<b>Authorized Organizational Representative</b>								
<b>Signature (for optional use)</b>								

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS Department of Biological Sciences, North Dakota State University 119 Stevens Hall, Fargo, ND 58105-5517				USDA AWARD NO. _____ Year 2: Objectives 2 & 3			
PROJECT DIRECTOR(S) Mark E. Clark				Duration Proposed Months: <u>12</u>	Duration Proposed Months: _____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
				Funds Requested by Proposer	Funds Approved by CSREES (If different)		
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK</b>				
1. No. of Senior Personnel			Calendar	Academic	Summer		
a. ___ (Co)-PD(s) . . . . .							
b. ___ Senior Associates . . . . .							
2. No. of Other Personnel (Non-Faculty)							
a. ___ Research Associates-Postdoctorates . . .							
b. ___ Other Professionals . . . . .							
c. ___ Paraprofessionals.....							
d. ___ Graduate Students.....							
e. ___ Prebaccalaureate Students.....							
f. ___ Secretarial-Clerical.....							
g. ___ Technical, Shop and Other .....							
<b>Total Salaries and Wages</b> .....→						\$0	\$0
B. Fringe Benefits (If charged as Direct Costs)						\$0	\$0
<b>C.Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →				\$0	0	\$0	\$0
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)							
E. Materials and Supplies							
F. Travel				\$500			
G. Publication Costs/Page Charges							
H. Computer (ADPE) Costs							
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)							
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)				\$500			
<b>K. Total Direct Costs (C through I)</b> ..... →				\$1,000	0	\$0	\$0
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)							
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000	0	\$0	\$0
N. <b>Other</b> ..... →							
<b>O. Total Amount of This Request</b> ..... →				\$1,000	0	\$0	\$0
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>				<b>Non-Federal funds: \$</b>		<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>							
Cash (both Applicant and Third Party) .....→							
Non-Cash Contributions (both Applicant and Third Party) →							
<b>NAME AND TITLE</b> (Type or print)			<b>SIGNATURE</b> (required for revised budget only)				<b>DATE</b>
Project Director							
Authorized Organizational Representative							
Signature (for optional use)							

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

## BUDGET EXPLANATION FOR NORTH DAKOTA STATE UNIVERSITY

(Clark)

### Objectives 2 & 3

- F. Travel.** Annual costs: transportation, lodging, and meal expenses for the PI to travel to primary aquaculture/hatchery facilities in North Dakota (including federal, tribal, and private facilities) (\$500/year).
- J. Other Direct Costs.** Annual costs: miscellaneous costs (e.g., long distance phone calls, long-distance and photocopying charges (\$500/year).

*Office of Sponsored Programs Administration*

*NDSU Dept. 4000*

*1735 NDSU Research Park Drive*

*Research 1, P.O. Box 6050*

*Fargo, ND 58108-6050*

May 11, 2009

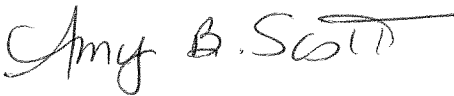
Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, Michigan 48842

**RE: North Central Regional Aquaculture Center Extension Project**

Dear Dr. Batterson:

As the Authorized Organizational Representative (AOR) I would like to inform you North Dakota State University (NDSU) wishes to participate in the above referenced project as a subcontractor to Michigan State University. Dr. Mark Clark will serve as the Principal Investigator of the subcontract and he has access to all of the necessary equipment, laboratory, and office space to successfully undertake this project. I also approve the budget as submitted for Dr. Clark's involvement in this project. Upon issuance of approval to the North Central Regional Aquaculture Center for this project, NDSU will enter into a formal agreement with your institution.

Sincerely,



Amy B. Scott  
Assistant Director

AS/nst

cc: Mark Clark



## EXTENSION PLAN FOR UNIVERSITY OF IOWA STATE UNIVERSITY

(Clayton)

### Objectives 2 & 3

**Situation:** To date, the Iowa Aquaculture Association (IAA) has continued to struggle to maintain a viable association with a limited membership. Iowa has about 440,000 recreational anglers over the age of 16 with yearly expenditures related to fishing estimated to be about \$322 million (2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation – U.S. Fish and Wildlife Service [http://library.fws.gov/nat\\_survey2006\\_final.pdf](http://library.fws.gov/nat_survey2006_final.pdf)). In addition, farm pond owners host some 1.6 million fishing trips by licensed anglers per year. Farm ponds also support fishing valued at \$7.5 million per year. Fishing accounts for \$1 million in tourist dollars to the state's economy. Many of these private ponds are stocked using fish purchased from private producers.

In the NCR, many culture fishes are initially produced in intensive situations. However, there are a limited number of extension materials that adequately describe the many facets of these operations. Improvement in the operational techniques will be instrumental in greatly increasing fry survival.

**Justification:** There is a need to improve the visibility of the IAA to the point where additional Iowa producers become members. While many public culturists utilize new technologies, e.g., out-of-season spawning of baitfish and sunfish, there is a need to disseminate this information to private culturists. This is an important issue in the NCR given our need to develop regionally-appropriate species, e.g., walleye. Also, this technology can enhance profitability of private operations.

**Timeline:** 2 years for full development of an IAA poster and a fry production fact sheet to produce a document for submission to the NCRAC Publications Office for review.

**Outputs:** Publication of an IAA poster and distribution to the Iowa State University Extension Community. Fry publications for submission to the NCRAC Publications Office.

**Outcomes:** Increased membership to IAA. The fact sheet should result in improved success in rearing NCR fry by private culturists.

**BUDGET**

ORGANIZATION AND ADDRESS Department of Natural Resource Ecology and Management Iowa State University 339 Science II, Ames, IA 5001-3221			USDA AWARD NO. Year 1: Objectives 2 & 3			
			Duration Proposed Months: <u>12</u>	Duration Proposed Months: ____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
PROJECT DIRECTOR(S) Richard D. Clayton						
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ____ (Co)-PD(s) . . . . .						
b. ____ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ____ Research Associates-Postdoctorates . . .						
b. ____ Other Professionals . . . . .						
c. ____ Paraprofessionals.....						
d. ____ Graduate Students.....						
e. ____ Prebaccalaureate Students.....						
f. ____ Secretarial-Clerical.....						
g. ____ Technical, Shop and Other .....						
<b>Total Salaries and Wages</b> ..... →						
<b>B. Fringe Benefits (If charged as Direct Costs)</b>						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> ..... →						
<b>D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)</b>						
<b>E. Materials and Supplies</b>				\$ 500		
<b>F. Travel</b>				\$ 500		
<b>G. Publication Costs/Page Charges</b>						
<b>H. Computer (ADPE) Costs</b>						
<b>I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)</b>						
<b>J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)</b>						
<b>K. Total Direct Costs (C through I)</b> ..... →				\$1,000		
<b>L. F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K)</b> ..... →				\$1,000		
<b>N. Other</b> ..... →						
<b>O. Total Amount of This Request</b> ..... →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . .			Federal Funds: \$	Non-Federal funds: \$	Total \$	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) ..... →						
Non-Cash Contributions (both Applicant and Third Party) ..... →						
<b>NAME AND TITLE</b> (Type or print)			<b>SIGNATURE</b> (required for revised budget only)			<b>DATE</b>
<b>Project Director</b>						
<b>Authorized Organizational Representative</b>						
<b>Signature (for optional use)</b>						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS Department of Natural Resource Ecology and Management Iowa State University 339 Science II, Ames, IA 50011-3221  PROJECT DIRECTOR(S) Richard D. Clayton			USDA AWARD NO. Year 2: Objectives 2 & 3				
			Duration Proposed Months: <u>12</u>	Duration Proposed Months: ____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)	
			Funds Requested by Proposer	Funds Approved by CSREES (If different)			
<b>A. Salaries and Wages</b> 1. No. of Senior Personnel			CSREES FUNDED WORK MONTHS				
			Calendar	Academic	Summer		
a. ____ (Co)-PD(s) .....							
b. ____ Senior Associates .....							
2. No. of Other Personnel (Non-Faculty) a. ____ Research Associates-Postdoctorates . . . b. ____ Other Professionals . . . . .							
c. ____ Paraprofessionals.....							
d. ____ Graduate Students.....							
e. ____ Prebaccalaureate Students.....							
f. ____ Secretarial-Clerical.....							
g. ____ Technical, Shop and Other .....							
<b>Total Salaries and Wages</b> ..... →							
<b>B. Fringe Benefits (If charged as Direct Costs)</b>							
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> ..... →							
<b>D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)</b>							
<b>E. Materials and Supplies</b>			\$ 500				
<b>F. Travel</b>			\$ 500				
<b>G. Publication Costs/Page Charges</b>							
<b>H. Computer (ADPE) Costs</b>							
<b>I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)</b>							
<b>J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)</b>							
<b>K. Total Direct Costs (C through I)</b> ..... →			\$1,000				
<b>L. F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)							
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K)</b> ..... →			\$1,000				
<b>N. Other</b> ..... →							
<b>O. Total Amount of This Request</b> ..... →			\$1,000				
<b>P. Carryover -- (If Applicable)</b> . . . . .			Federal Funds: \$	Non-Federal funds: \$	Total \$		
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>							
Cash (both Applicant and Third Party) ..... →							
Non-Cash Contributions (both Applicant and Third Party) ..... →							
<b>NAME AND TITLE</b> (Type or print)	<b>SIGNATURE</b> (required for revised budget only)				<b>DATE</b>		
<b>Project Director</b>							
<b>Authorized Organizational Representative</b>							
<b>Signature (for optional use)</b>							

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

## BUDGET EXPLANATION FOR IOWASTATE UNIVERSITY

(Clayton)

### Objectives 2 & 3

- E. Materials and Supplies.** Develop and create new Iowa Aquaculture Association production/membership poster for the producers by spring 2010. Annual costs: general office supplies including paper, toner, and mailers (\$500/year).
- F. Travel.** Annual costs: Travel within the state to assist individual producers with aquaculture and pond management problems (\$500/year). Funds will allow on-site visitations and provide educational assistance in the form of technical expertise and informational publications to county extension staff as well as state aquaculture producers.

**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

Office of Sponsored  
Programs Administration  
1138 Pearson Hall  
Ames, Iowa 50011-2207  
515 294-5225  
FAX 515 294-8000  
www.ospa.iastate.edu

June 8, 2009

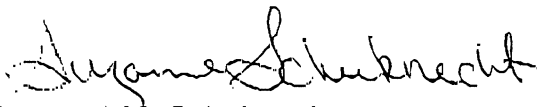
Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, MI 48842

**SUBJECT: Project entitled "NCRAC Base Extension Programming"**

Dear Dr. Batterson:

As the Authorized Organizational Representative (AOR) I would like to inform you Iowa State University (ISU) wishes to participate in the above referenced project as a subcontractor to Michigan State University. Dr. Joseph Morris (PI) and Mr. Richard Clayton (Co-PI) will serve as the Principal Investigator(s) of the subcontract and they have access to all of the necessary equipment, laboratory, and office space to successfully undertake this project. I also approve the budget as submitted for Dr. Morris's involvement in this project. Upon issuance of approval to the North Central Regional Aquaculture Center for this project, ISU will enter into a formal agreement with your institution.

Sincerely,



Suzanne M. Schuknecht  
Manager, Pre-Award Services

## EXTENSION PLAN FOR PURDUE UNIVERSITY

(Einstein)

### Objective 2

**Situation:** AquaNIC was the first U.S. aquaculture Web site and is globally one of the most widely accessed and cited aquaculture Web site. AquaNIC was visited by more than 2.2 million people who viewed almost 5.2 million pages for the 9/1/07-8/31/08 time period. This translates into more than 6,200 visitors/day, each averaging almost 11 minutes/visit. This site greatly enhances the dissemination of NCRAC extension information. Its popularity justifies AquaNIC's stated goal to serve as the gateway to the world's electronic resources in aquaculture.

**Justification:** The transfer of aquaculture information to U.S. stakeholders is part of Objective #2 for the NCRAC Extension Project – "Enhancing the NCRAC extension network for aquaculture information transfer." Table 1 indicates that a minimum of 55.49% of AquaNIC's traffic for the previous budget year came from U.S. customers (31.06% of additional traffic was from an unknown origin but it is assumed that part of that is from the United States).

**Timeline:** AquaNIC continues year in and year out to be heavily used for extension information. Other funds have been received to completely revamp and update the Web site to give it a new look and feel. An aquaculture specialist has been hired to update the materials linked to AquaNIC. The public unveiling of the new AquaNIC will be assisted by the continued funding from NCRAC.

**Outputs:** AquaNIC is expected to continue to receive the heavy usage it has in the past and, with the updated materials and looks, it will attract additional users from the U.S. and, thereby, continue to disseminate aquaculture extension information.

**BUDGET**

ORGANIZATION AND ADDRESS Purdue Research Foundation Office of Sponsored Programs, West Lafayette, IN 47907-1021  PROJECT DIRECTOR(S) Mark E. Einstein				<b>USDA AWARD NO.</b> Year 1: Objective 2					
				Duration Proposed Months: <u>12</u>	Duration Proposed Months: ____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)		
				<b>Funds Requested by Proposer</b>	<b>Funds Approved by CSREES (If different)</b>				
<b>A. Salaries and Wages</b> 1. No. of Senior Personnel				<b>CSREES FUNDED WORK MONTHS</b>					
				Calendar	Academic	Summer			
a. ____ (Co)-PD(s) . . . . .									
b. ____ Senior Associates . . . . .									
2. No. of Other Personnel (Non-Faculty) a. ____ Research Associates-Postdoctorates . . .									
b. ____ Other Professionals . . . . .									
c. ____ Paraprofessionals.....									
d. ____ Graduate Students.....									
e. ____ Prebaccalaureate Students.....									
f. ____ Secretarial-Clerical.....									
g. ____ Technical, Shop and Other .....									
<b>Total Salaries and Wages.....→</b>									
B. Fringe Benefits (If charged as Direct Costs)									
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B) →</b>									
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)									
E. Materials and Supplies				\$2,000					
F. Travel				\$1,500					
G. Publication Costs/Page Charges									
H. Computer (ADPE) Costs									
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)									
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)									
<b>K. Total Direct Costs (C through I)..... →</b>				\$3,500					
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)									
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K). →</b>				\$3,500					
N. <b>Other</b> ..... →									
<b>O. Total Amount of This Request..... →</b>				\$3,500					
<b>P. Carryover -- (If Applicable) . . . . .</b>				<b>Federal Funds: \$</b>	<b>Non-Federal funds: \$</b>	<b>Total \$</b>			
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>									
Cash (both Applicant and Third Party) .....									
Non-Cash Contributions (both Applicant and Third Party) →									
<b>NAME AND TITLE (Type or print)</b>				<b>SIGNATURE (required for revised budget only)</b>			<b>DATE</b>		
Project Director									
Authorized Organizational Representative									
Signature (for optional use)									

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS Purdue Research Foundation Office of Sponsored Programs, West Lafayette, IN 47907-1021  PROJECT DIRECTOR(S) Mark E. Einstein				<b>USDA AWARD NO.</b> Year 2: Objective 2				
				Duration Proposed Months: <u>12</u>  <b>Funds Requested by Proposer</b>	Duration Proposed Months: _____  <b>Funds Approved by CSREES (If different)</b>	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)	
<b>A. Salaries and Wages</b> 1. No. of Senior Personnel				<b>CSREES FUNDED WORK MONTHS</b>				
				Calendar	Academic	Summer		
a. ___ (Co)-PD(s) . . . . .								
b. ___ Senior Associates . . . . .								
2. No. of Other Personnel (Non-Faculty) a. ___ Research Associates-Postdoctorates . . . . . b. ___ Other Professionals . . . . .  c. ___ Paraprofessionals..... d. ___ Graduate Students..... e. ___ Prebaccalaureate Students..... f. ___ Secretarial-Clerical..... g. ___ Technical, Shop and Other .....  <b>Total Salaries and Wages</b> .....→								
B. Fringe Benefits (If charged as Direct Costs)								
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →								
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)								
E. Materials and Supplies				\$2,000				
F. Travel				\$1,500				
G. Publication Costs/Page Charges								
H. Computer (ADPE) Costs								
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)								
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)								
<b>K. Total Direct Costs (C through I)</b> ..... →				\$3,500				
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)								
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$3,500				
N. <b>Other</b> ..... →								
<b>O. Total Amount of This Request</b> ..... →				\$3,500				
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>				<b>Non-Federal funds: \$</b>		<b>Total \$</b>		
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b> Cash (both Applicant and Third Party) .....→ Non-Cash Contributions (both Applicant and Third Party) →								
<b>NAME AND TITLE</b> (Type or print)				<b>SIGNATURE</b> (required for revised budget only)				<b>DATE</b>
Project Director								
Authorized Organizational Representative								
Signature (for optional use)								

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.



## BUDGET EXPLANATION FOR PURDUE UNIVERSITY

(Einstein)

### Objective 2

- E. **Materials and Supplies.** Annual costs for server maintenance, e.g., hard drives and media (\$2,000/year).
- F. **Travel.** Annual costs: transportation, lodging, and meal expenses for the PI to visit with LaDon Swann (Mississippi/Alabama Sea Grant) to discuss AquaNIC programming issues (\$1,500/year).

May 15, 2009

Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, MI 48842

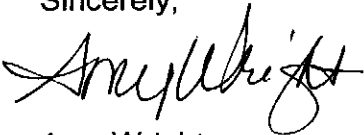
**SUBJECT: Project entitled "North Central Regional Aquaculture Center Extension Project"**

Dear Dr. Batterson:

As the Authorized Organizational Representative (AOR) I would like to inform you Purdue University wishes to participate in the above referenced project as a subcontractor to Michigan State University. Dr. Mark Einstein will serve as the Principal Investigator(s) of the subcontract and he has access to all of the necessary equipment, laboratory, and office space to successfully undertake this project. I also approve the budget as submitted for Dr. Einstein's involvement in this project. Upon issuance of approval to the North Central Regional Aquaculture Center for this project, Purdue University will enter into a formal agreement with your institution.

Any award or agreement made as a result of this proposal should be made to Purdue University with a reference to SPS #00020292.

Sincerely,



Amy Wright  
Pre-Award Manager  
Ag Sponsored Programs

## EXTENSION PLAN FOR UNIVERSITY OF MINNESOTA-DILUTH

(Gunderson)

### Objectives 1 & 2

**Situation:** Fish farmers in Minnesota have broken into several associations which function at different levels of effectiveness, in large part because of the time commitments associated with leading such organizations. As a result, there have been no state-wide aquaculture conferences in many years. This has resulted in the Extension specialist losing touch with many of the less vocal fish farmers in Minnesota. It has also decreased fish farmer awareness of NCRAC and other aquaculture research activities and resources.

**Justification:** To improve communication and awareness, the PI proposes to conduct site visits with fish farmers during each of the two years of this grant. The site visits will provide a personal connection that has been lost since annual aquaculture conferences have ceased in Minnesota. The site visits will also improve understanding of the research and extension needs of Minnesota fish farmers. During the visits, information related to updates on invasive species, VHS virus (and other pathogens), and NCRAC research activities/resources will be provided to the fish farmers. Visits will occur during times when activities are in progress so that the PI can observe major actions associated with fish farming. Summaries of research and extension needs and emerging issues will be written and provided to Minnesota fish farmers and Extension Technical Committee members each year.

**Timeline:** Two trips will be taken each year during the fall and spring to maximize the PI's exposure to relevant fish farming activities.

**Outputs:** As a result of this effort, the PI will be better able to represent the research and extension needs of Minnesota fish farmers at regional meetings such as NRCAC's annual meeting. It will help reestablish personal connections with fish farmers that were lost when state annual conferences ceased. These activities will enable the PI to better assist in the development of AIS-HACCP plans for a broader array of fish farming activities. A summary will be compiled once each year that describes research and extension needs and emerging issues. This will be shared with Minnesota fish farmers and other Extension Technical Committee members.

**Outcomes:** Expected outcomes are better directed extension and research activities. Identification of emerging issues will be important, especially if they are regional in nature.

**BUDGET**

ORGANIZATION AND ADDRESS Minnesota Sea Grant Extension Program University of Minnesota-Duluth, Duluth, MN 55812				USDA AWARD NO. Year 1: Objectives 1 & 2			
PROJECT DIRECTOR(S) Jeffrey L. Gunderson				Duration Proposed Months: <u>12</u>	Duration Proposed Months: _____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
				Funds Requested by Proposer	Funds Approved by CSREES (If different)		
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>				
1. No. of Senior Personnel			Calendar	Academic	Summer		
a. ___ (Co)-PD(s) . . . . .							
b. ___ Senior Associates . . . . .							
2. No. of Other Personnel (Non-Faculty)							
a. ___ Research Associates-Postdoctorates . . .							
b. ___ Other Professionals . . . . .							
c. ___ Paraprofessionals.....							
d. ___ Graduate Students.....							
e. ___ Prebaccalaureate Students.....							
f. ___ Secretarial-Clerical.....							
g. ___ Technical, Shop and Other .....							
<b>Total Salaries and Wages.....→</b>							
B. Fringe Benefits (If charged as Direct Costs)							
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B) →</b>							
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)							
E. Materials and Supplies							
F. Travel				\$1,000			
G. Publication Costs/Page Charges							
H. Computer (ADPE) Costs							
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)							
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)							
<b>K. Total Direct Costs (C through I)..... →</b>							
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)							
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K). →</b>							
N. <b>Other..... →</b>							
O. <b>Total Amount of This Request..... →</b>				\$1,000			
P. <b>Carryover -- (If Applicable) . . . . . Federal Funds: \$</b>				<b>Non-Federal funds: \$</b>		<b>Total \$</b>	
Q. <b>Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>							
Cash (both Applicant and Third Party) .....→							
Non-Cash Contributions (both Applicant and Third Party) →							
<b>NAME AND TITLE (Type or print)</b>			<b>SIGNATURE (required for revised budget only)</b>				<b>DATE</b>
Project Director							
Authorized Organizational Representative							
Signature (for optional use)							

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS Minnesota Sea Grant Extension Program University of Minnesota-Duluth, Duluth, MN 55812				USDA AWARD NO. Year 2: Objectives 1 & 2					
				Duration Proposed Months: <u>12</u> Funds Requested by Proposer	Duration Proposed Months: _____ Funds Approved by CSREES (If different)	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)		
PROJECT DIRECTOR(S) Jeffrey L. Gunderson									
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>						
1. No. of Senior Personnel			Calendar	Academic	Summer				
a. ___ (Co)-PD(s) . . . . .									
b. ___ Senior Associates . . . . .									
2. No. of Other Personnel (Non-Faculty)									
a. ___ Research Associates-Postdoctorates . . .									
b. ___ Other Professionals . . . . .									
c. ___ Paraprofessionals.....									
d. ___ Graduate Students.....									
e. ___ Prebaccalaureate Students.....									
f. ___ Secretarial-Clerical.....									
g. ___ Technical, Shop and Other .....									
<b>Total Salaries and Wages</b> .....→									
B. Fringe Benefits (If charged as Direct Costs)									
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →									
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)									
E. Materials and Supplies									
F. Travel						\$1,000			
G. Publication Costs/Page Charges									
H. Computer (ADPE) Costs									
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)									
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)									
<b>K. Total Direct Costs (C through I)</b> ..... →						\$1,000			
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)									
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →						\$1,000			
N. <b>Other</b> ..... →									
<b>O. Total Amount of This Request</b> ..... →						\$1,000			
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>						<b>Non-Federal funds: \$</b>		<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>									
Cash (both Applicant and Third Party) .....→									
Non-Cash Contributions (both Applicant and Third Party) →									
<b>NAME AND TITLE</b> (Type or print)		<b>SIGNATURE</b> (required for revised budget only)					<b>DATE</b>		
<b>Project Director</b>									
<b>Authorized Organizational Representative</b>									
<b>Signature (for optional use)</b>									

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET EXPLANATION FOR UNIVERSITY OF MINNESOTA-DULUTH**

**(Gunderson)**

**Objectives 1 & 2**

- F. Travel.** Annual costs: transportation, lodging, and meal expenses for the PI to visit fish farmers around Minnesota, locations to be determined.

April 29, 2009

Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, Michigan 48842

**SUBJECT: Project entitled**  
"North Central Regional Aquaculture Center Extension Project"

UM EFS#: CON...19477

Dear Dr. Batterson:

As the Authorized Organizational Representative (AOR) I would like to inform you that the University of Minnesota wishes to participate in the above referenced project as a subcontractor to Michigan State University. Jeffrey Gunderson, of the University of Minnesota Sea Grant Program, will serve as the Principal Investigator of the subcontract and he has access to all of the necessary equipment, laboratory, and office space to successfully undertake this project. I also approve the budget of \$2,000 for the period 9/1/2009-08/31/2011 as submitted for Jeffrey Gunderson's involvement in this project. Upon issuance of approval to the North Central Regional Aquaculture Center for this project, the University of Minnesota will enter into a formal agreement with your institution.

Sincerely,



Timothy B. Holst  
Director of Research Administration

C: J. Gunderson, PI  
C. Post, MN Sea Grant

## EXTENSION PLAN FOR LINCOLN UNIVERSITY

(Hicks)

### Objectives 2 & 3

**Situation:** Aquaculture in Missouri is a \$35 million industry and interest continues to grow from stakeholders and clientele interested in fish farming opportunities. A need exists to provide science-based, technical information that meets the aquaculture educational needs for a variety of clientele groups and individuals. In addition, there is a need to disseminate information and increase the application of new knowledge to existing aquaculture producers in the state through a variety of educational venues, including Missouri Aquaculture Conferences, workshops, field days, tours, and individual field visits.

**Justification:** As a result of these funds, existing educational programs and information transfer cooperatively developed with the Missouri Aquaculture Association, Department of Agriculture, Missouri Aquaculture Advisory Council, and Lincoln University will be continued and expanded to new and existing clientele. New knowledge disseminated that meets the educational needs of clientele and its application will be increased through educational programs that are conducted.

**Timeline:** 2 years.

#### Outputs:

- Aquaculture educational programs
- Fact Sheets and publications
- Identification of stakeholders

#### Outcomes:

- Increased use of applied research by stakeholders
- New practices and technologies adopted that result in increased opportunities for profitability and increased economic development from aquaculture enterprises
- Enhanced collaboration and partnerships created with the aquaculture industry in Missouri



**BUDGET**

ORGANIZATION AND ADDRESS Department of Agriculture and Environmental Science, Lincoln University Foster Hall, 904 Chestnut St., Jefferson City, MO 65101			USDA AWARD NO. Year 1: Objectives 2 & 3			
			Duration Proposed Months: <u>12</u> Funds Requested by Proposer	Duration Proposed Months: _____ Funds Approved by CSREES (If different)	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
PROJECT DIRECTOR(S) Charles E. Hicks						
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ___ (Co)-PD(s) . . . . .						
b. ___ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ___ Research Associates-Postdoctorates . . .						
b. ___ Other Professionals . . . . .						
c. ___ Paraprofessionals . . . . .						
d. ___ Graduate Students . . . . .						
e. ___ Prebaccalaureate Students . . . . .						
f. ___ Secretarial-Clerical . . . . .						
g. ___ Technical, Shop and Other . . . . .						
<b>Total Salaries and Wages</b> . . . . . →						
B. Fringe Benefits (If charged as Direct Costs)						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →						
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)						
E. Materials and Supplies				\$100		
F. Travel				\$900		
G. Publication Costs/Page Charges						
H. Computer (ADPE) Costs						
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)						
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)						
<b>K. Total Direct Costs (C through I)</b> . . . . . →				\$1,000		
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000		
N. <b>Other</b> . . . . . →						
<b>O. Total Amount of This Request</b> . . . . . →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>			<b>Non-Federal funds: \$</b>		<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) . . . . . →						
Non-Cash Contributions (both Applicant and Third Party) →						
<b>NAME AND TITLE</b> (Type or print)		<b>SIGNATURE</b> (required for revised budget only)			<b>DATE</b>	
Project Director						
Authorized Organizational Representative						
Signature (for optional use)						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS Department of Agriculture and Environmental Science, Lincoln University Foster Hall, 904 Chestnut St., Jefferson City, MO 65101			USDA AWARD NO. Year 2: Objectives 2 & 3			
PROJECT DIRECTOR(S) Charles E. Hicks			Duration Proposed Months: <u>12</u>	Duration Proposed Months: _____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
			Funds Requested by Proposer	Funds Approved by CSREES (If different)		
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ___ (Co)-PD(s) . . . . .						
b. ___ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ___ Research Associates-Postdoctorates . . .						
b. ___ Other Professionals . . . . .						
c. ___ Paraprofessionals . . . . .						
d. ___ Graduate Students . . . . .						
e. ___ Prebaccalaureate Students . . . . .						
f. ___ Secretarial-Clerical . . . . .						
g. ___ Technical, Shop and Other . . . . .						
<b>Total Salaries and Wages</b> . . . . . →						
B. Fringe Benefits (If charged as Direct Costs)						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →						
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)						
E. Materials and Supplies				\$100		
F. Travel				\$900		
G. Publication Costs/Page Charges						
H. Computer (ADPE) Costs						
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)						
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)						
<b>K. Total Direct Costs (C through I)</b> . . . . . →				\$1,000		
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000		
N. <b>Other</b> . . . . . →						
<b>O. Total Amount of This Request</b> . . . . . →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>			<b>Non-Federal funds: \$</b>		<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) . . . . . →						
Non-Cash Contributions (both Applicant and Third Party) →						
<b>NAME AND TITLE</b> (Type or print)	<b>SIGNATURE</b> (required for revised budget only)				<b>DATE</b>	
<b>Project Director</b>						
<b>Authorized Organizational Representative</b>						
<b>Signature (for optional use)</b>						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

## BUDGET EXPLANATION FOR LINCOLN UNIVERSITY

(Hicks)

### Objectives 2 & 3

- E. Materials and Supplies.** Annual costs: general office supplies including paper, toner, and mailers (\$100/year).
- F. Travel.** Annual costs: transportation, lodging and meal expenses for the PI to attend appropriate NCRAC workshops, Missouri Aquaculture Association conferences and programs, and in-state travel to selected educational programs that enhance the transfer of aquaculture information to Missouri producers and other appropriate individuals or groups (\$900/year).



# LINCOLN UNIVERSITY

820 Chestnut St.  
Jefferson City, MO 65102-0029

Office of the President

Phone: (573) 681-5042  
FAX: (573) 681-6074

June 22, 2009

Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, MI 48842

**SUBJECT: Project entitled "Base Extension Project"**

Dear Dr. Batterson:

As the Authorized Organizational Representative (AOR), this letter comes to inform you that Lincoln University in Missouri wishes to participate in the above-referenced project as a subcontractor to Michigan State University. Mr. Charles Hicks will serve as the Principal Investigator of the subcontract and will have access to all of the necessary equipment, laboratory and office space to successfully undertake this project. I also approve the budget as submitted for Mr. Hicks' involvement in this project. Upon issuance of approval to the North Central Regional Aquaculture Center for this project, Lincoln University will enter into a formal agreement with your institution.

Sincerely,

Carolyn R. Mahoney, Ph.D.  
President  
Lincoln University

## EXTENSION PLAN FOR MICHIGAN STATE UNIVERSITY

(Kinnunen)

### Objective 3

**Situation:** There is a continuing need to support regional aquaculture conferences in the NCR.

**Justification:** Participants of the Michigan Aquaculture Association Annual Conference will include speakers and aquaculture clientele from the NCR. Past conferences have attracted participants from Illinois, Indiana, and Ohio. Topics will be based on aquaculture industry information needs garnered from the Regional Aquaculture Extension Specialist (RAES) Project as well as input from the Michigan Aquaculture Association.

**Timeline:** Kinnunen's membership on the program planning committee requires one 4-day trip each year for 2 years. One trip will be during the fall and one will be during the spring to help maximize Kinnunen's exposure to relevant fish farming activities.

**Outputs:** Annual conferences will be conducted in Winter 2010 and 2011.

**Outcomes:** Formal conference evaluation will be completed by attendees.

**BUDGET**

ORGANIZATION AND ADDRESS Michigan Sea Grant, Michigan State University 710 Chippewa Square, Suite 202, Marquette, MI 49855				USDA AWARD NO. Year 1: Objective 3						
				Duration Proposed Months: <u>12</u>	Duration Proposed Months: _____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)	Funds Requested by Proposer	Funds Approved by CSREES (If different)	
PROJECT DIRECTOR(S) Ronald E. Kinnunen										
<b>A. Salaries and Wages</b>				<b>CSREES FUNDED WORK MONTHS</b>						
1. No. of Senior Personnel				Calendar	Academic	Summer				
a. ___ (Co)-PD(s) . . . . .										
b. ___ Senior Associates . . . . .										
2. No. of Other Personnel (Non-Faculty)										
a. ___ Research Associates-Postdoctorates . . .										
b. ___ Other Professionals . . . . .										
c. ___ Paraprofessionals.....										
d. ___ Graduate Students.....										
e. ___ Prebaccalaureate Students.....										
f. ___ Secretarial-Clerical.....										
g. ___ Technical, Shop and Other.....										
<b>Total Salaries and Wages..... →</b>										
B. Fringe Benefits (If charged as Direct Costs)										
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B) →</b>										
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)										
E. Materials and Supplies										
F. Travel							\$1,000			
G. Publication Costs/Page Charges										
H. Computer (ADPE) Costs										
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)										
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)										
<b>K. Total Direct Costs (C through I)..... →</b>							\$1,000			
L. F&A/Indirect Costs. (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)										
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K). →</b>							\$1,000			
N. Other..... →										
<b>O. Total Amount of This Request..... →</b>							\$1,000			
<b>P. Carryover -- (If Applicable) . . . . . Federal Funds: \$</b>				<b>Non-Federal funds: \$</b>			<b>Total \$</b>			
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>										
Cash (both Applicant and Third Party) .... →										
Non-Cash Contributions (both Applicant and Third Party) →										
<b>NAME AND TITLE</b> (Type or print)				<b>SIGNATURE</b> (required for revised budget only)					<b>DATE</b>	
<b>Project Director</b>										
<b>Authorized Organizational Representative</b>										
<b>Signature (for optional use)</b>										

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS Michigan Sea Grant, Michigan State University 710 Chippewa Square, Suite 202, Marquette, MI 49855				USDA AWARD NO. Year 2: Objectives 3						
				Duration Proposed Months: <u>12</u>	Duration Proposed Months: _____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)	Funds Requested by Proposer	Funds Approved by CSREES (If different)	
PROJECT DIRECTOR(S) Ronald E. Kinnunen										
<b>A. Salaries and Wages</b> 1. No. of Senior Personnel				CSREES FUNDED WORK MONTHS						
				Calendar	Academic	Summer				
a. ___ (Co)-PD(s) . . . . .										
b. ___ Senior Associates . . . . .										
2. No. of Other Personnel (Non-Faculty)										
a. ___ Research Associates-Postdoctorates . . .										
b. ___ Other Professionals . . . . .										
c. ___ Paraprofessionals.....										
d. ___ Graduate Students.....										
e. ___ Prebaccalaureate Students.....										
f. ___ Secretarial-Clerical.....										
g. ___ Technical, Shop and Other.....										
<b>Total Salaries and Wages..... →</b>										
B. Fringe Benefits (If charged as Direct Costs)										
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B) →</b>										
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)										
E. Materials and Supplies										
F. Travel					\$1,000					
G. Publication Costs/Page Charges										
H. Computer (ADPE) Costs										
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)										
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)										
<b>K. Total Direct Costs (C through I)..... →</b>					\$1,000					
L. F&A/Indirect Costs. (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)										
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K). →</b>					\$1,000					
N. Other..... →										
<b>O. Total Amount of This Request..... →</b>					\$1,000					
<b>P. Carryover -- (If Applicable) . . . . . Federal Funds: \$</b>				<b>Non-Federal funds: \$</b>		<b>Total \$</b>				
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>										
Cash (both Applicant and Third Party) .... →										
Non-Cash Contributions (both Applicant and Third Party) →										
<b>NAME AND TITLE</b> (Type or print)				<b>SIGNATURE</b> (required for revised budget only)					<b>DATE</b>	
<b>Project Director</b>										
<b>Authorized Organizational Representative</b>										
<b>Signature (for optional use)</b>										

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

## BUDGET EXPLANATION FOR MICHIGAN STATE UNIVERSITY

(Kinnunen)

### Objective 3

- F. **Travel.** Annual costs: transportation, lodging, and meal expenses to attend and facilitate/coordinate a 2-day annual meeting of the Michigan Aquaculture Association at a location to be determined by the aquaculture association (\$1,000/year).



## EXTENSION PLAN FOR KANSAS STATE UNIVERSITY

(Lee)

### Objectives 2 & 3

**Situation:** Kansas does not have a thriving aquaculture industry. The membership of the Kansas Aquaculture Association (KAA) is decreasing. However Kansas does have more than 150,000 privately owned farm ponds. That number is increasing each year. These ponds serve as a source of water for livestock but also have a great potential for sport fishing or aquaculture ventures. Most of the membership of KAA culture or provide fish for pond stocking. Limited information is readily available to the public concerning farm pond management. Aquatic weed management continues to be a problem for many pond owners.

**Justification:** There is a need to improve the visibility of the KAA to the point where additional Kansas producers become members. Also, private pond owners need to be made aware of new technologies to produce and manage fish and control aquatic plants. This information may not always be available from the KAA members. Opportunities exist for KAA members to sell fish if they can find customers. New pond owners want fish from local sources. Matching pond owners up with KAA members who have fish to sell helps both parties reach their goals.

**Timeline:** 2 years.

#### Outputs:

- Develop and publish the 2008-2009 Kansas Aquaculture Association Directory. Maintain the KAA Web site and update material as provided by the KAA.
- Provide assistance to private pond owners on fish culture, management, and aquatic weed control.

#### Outcomes:

- Improve awareness of the KAA.
- Present information at numerous farm pond workshops and aquatic weed program field days.
- Produce several radio programs on farm pond management.
- Provide written material as requested by the public on all phases of aquaculture.

**BUDGET**

ORGANIZATION AND ADDRESS Department of Animal Science and Industry, Kansas State University Manhattan, KS 66506-1600			USDA AWARD NO. Year 1: Objectives 2 & 3			
			Duration Proposed Months: <u>12</u> Funds Requested by Proposer	Duration Proposed Months: _____ Funds Approved by CSREES (If different)	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
PROJECT DIRECTOR(S) Charles D. Lee						
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ___ (Co)-PD(s) . . . . .						
b. ___ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ___ Research Associates-Postdoctorates . . .						
b. ___ Other Professionals . . . . .						
c. ___ Paraprofessionals . . . . .						
d. ___ Graduate Students . . . . .						
e. ___ Prebaccalaureate Students . . . . .						
f. ___ Secretarial-Clerical . . . . .						
g. ___ Technical, Shop and Other . . . . .						
<b>Total Salaries and Wages</b> . . . . . →						
B. Fringe Benefits (If charged as Direct Costs)						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →						
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)						
E. Materials and Supplies				\$250		
F. Travel				\$750		
G. Publication Costs/Page Charges						
H. Computer (ADPE) Costs						
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)						
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)						
<b>K. Total Direct Costs (C through I)</b> . . . . . →				\$1,000		
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000		
N. <b>Other</b> . . . . . →						
<b>O. Total Amount of This Request</b> . . . . . →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>			<b>Non-Federal funds: \$</b>		<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) . . . . . →						
Non-Cash Contributions (both Applicant and Third Party) →						
<b>NAME AND TITLE</b> (Type or print)			<b>SIGNATURE</b> (required for revised budget only)			<b>DATE</b>
<b>Project Director</b>						
<b>Authorized Organizational Representative</b>						
<b>Signature (for optional use)</b>						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS Department of Animal Science and Industry, Kansas State University Manhattan, KS 66506-1600			USDA AWARD NO. Year 2: Objectives 2 & 3			
			Duration Proposed Months: <u>12</u> Funds Requested by Proposer	Duration Proposed Months: ____ Funds Approved by CSREES (If different)	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
PROJECT DIRECTOR(S) Charles D. Lee						
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ____ (Co)-PD(s) . . . . .						
b. ____ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ____ Research Associates-Postdoctorates . . .						
b. ____ Other Professionals . . . . .						
c. ____ Paraprofessionals . . . . .						
d. ____ Graduate Students . . . . .						
e. ____ Prebaccalaureate Students . . . . .						
f. ____ Secretarial-Clerical . . . . .						
g. ____ Technical, Shop and Other . . . . .						
<b>Total Salaries and Wages</b> . . . . . →						
B. Fringe Benefits (If charged as Direct Costs)						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →						
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)						
E. Materials and Supplies				\$250		
F. Travel				\$750		
G. Publication Costs/Page Charges						
H. Computer (ADPE) Costs						
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)						
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)						
<b>K. Total Direct Costs (C through I)</b> . . . . . →				\$1,000		
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000		
N. <b>Other</b> . . . . . →						
<b>O. Total Amount of This Request</b> . . . . . →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . .			Federal Funds: \$	Non-Federal funds: \$	Total \$	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) . . . . . →						
Non-Cash Contributions (both Applicant and Third Party) →						
<b>NAME AND TITLE</b> (Type or print)	<b>SIGNATURE</b> (required for revised budget only)				<b>DATE</b>	
Project Director						
Authorized Organizational Representative						
Signature (for optional use)						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

## BUDGET EXPLANATION FOR KANSAS STATE UNIVERSITY

(Lee)

### Objectives 2 & 3

- E. Materials and Supplies.** Annual costs: general office supplies including paper, toner and mailers (\$250/year).
- F. Travel.** Annual costs: Transportation, lodging, and meal expenses associated with travel within the state to assist individual producers with aquaculture and pond management problems (\$750/year). Funds will allow on-site visitations and provide educational assistance in the form of technical expertise and informational publications to county extension staff as well as state aquaculture producers.



**Office of Research and  
Sponsored Programs**

PreAward Services

2 Fairchild Hall

Manhattan, KS 66506 - 1103

785-532-6804

Fax: 785-532-5944

<http://www.ksu.edu/research/>

May 21, 2009

Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, MI 48842

**SUBJECT: Project entitled "North Central Regional Aquaculture Center  
Extension Project"**

Dear Dr. Batterson:

As the Authorized Organizational Representative (AOR) I would like to inform you Kansas State University wishes to participate in the above referenced project as a subcontractor to Michigan State University. Dr. Charles Lee will serve as the Principal Investigator of the subcontract and he will have access to all of the necessary equipment, laboratory, and office space to successfully undertake this project. I also approve the budget as submitted for Dr. Charles Lee's involvement in this project. Upon issuance of approval to the North Central Regional Aquaculture Center for this project, Kansas State University will enter into a formal agreement with your institution.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Paul R. Lowe', with a stylized flourish extending to the right.

Paul R. Lowe  
Assistant Vice President for Research

## EXTENSION PLAN FOR IOWA STATE UNIVERSITY

(Morris)

### Objective 1

**Situation:** Since the inception of the Center, there has been an impression that there was a disconnect between the research and industry communities. Given the ongoing role of extension to serve as a vehicle for information transfer, there is at least one extension liaison for each research project.

**Justification:** Providing aquaculture resource information between the research and industry communities will help to improve knowledge in both directions.

**Timeline:** 2 years.

#### Outputs:

- Annual reports from each project
- Participation in regional aquaculture workshops

#### Outcomes:

- Improve awareness of aquaculture needs and potential in the NCR.

## EXTENSION PLAN FOR SOUTH DAKOTA STATE UNIVERSITY

(Pflueger)

### Objective 3

**Situation:** The aquaculture industry in South Dakota is not developed. There are several independent bait fish dealers who have not yet organized into any type of association. Such an association would be beneficial to engage practitioners in collaboration and strategic alliances that may result in an expansion of and/or confirmation of existing knowledge.

**Justification:** Providing aquaculture resource information as well as new information about baitfish culture will support continued growth of aquaculture in South Dakota. South Dakota extension personnel have continued to provide technology transfer of these new developments in the form of technical bulletins made available to industry personnel. The intent is that they can improve production and profitability. Interacting with private industry will provide new knowledge to extension personnel to enable them to understand the concerns of the aquaculture industry in South Dakota.

**Timeline:** 2 years.

**Outputs:** As an Extension aquaculture representative, collaborative efforts continue with an independent aquaculturalist in a request for funding to further several aspects. These include the role of aquaculture in midwestern diversified farming operations; aquaculture feeding trials, and health aspects of combined aquaculture/red meat production.

**Outcomes:**

- Improve awareness of aquaculture in South Dakota.
- The primary outcome from this effort will be an improved knowledge base for Extension professionals. As such, that knowledge may lead to state-specific resource materials which may be the output from this project.

**BUDGET**

ORGANIZATION AND ADDRESS South Dakota State University Grants Administration, P.O. Box 2201, Brookings, SD 57007  PROJECT DIRECTOR(S) Burton W. Pflueger			<b>USDA AWARD NO. Year 1: Objective 3</b>				
			Duration Proposed Months: <u>12</u>  <b>Funds Requested by Proposer</b>	Duration Proposed Months: ____  <b>Funds Approved by CSREES (If different)</b>	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)	
<b>A. Salaries and Wages</b> 1. No. of Senior Personnel			<b>CSREES FUNDED WORK MONTHS</b>				
			Calendar	Academic	Summer		
a. ____ (Co)-PD(s) .....							
b. ____ Senior Associates .....							
2. No. of Other Personnel (Non-Faculty) a. ____ Research Associates-Postdoctorates . . . b. ____ Other Professionals . . . . .							
c. ____ Paraprofessionals .....							
d. ____ Graduate Students.....							
e. ____ Prebaccalaureate Students.....							
f. ____ Secretarial-Clerical.....							
g. ____ Technical, Shop and Other .....							
<b>Total Salaries and Wages</b> .....→							
B. Fringe Benefits (If charged as Direct Costs)							
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →							
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)							
E. Materials and Supplies				\$250			
F. Travel				\$750			
G. Publication Costs/Page Charges							
H. Computer (ADPE) Costs							
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)							
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)							
<b>K. Total Direct Costs (C through I)</b> ..... →				\$1,000			
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)							
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000			
N. <b>Other</b> ..... →							
<b>O. Total Amount of This Request</b> ..... →				\$1,000			
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>			<b>Non-Federal funds: \$</b>		<b>Total \$</b>		
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b> Cash (both Applicant and Third Party) .....→ Non-Cash Contributions (both Applicant and Third Party) →							
<b>NAME AND TITLE</b> (Type or print)			<b>SIGNATURE</b> (required for revised budget only)			<b>DATE</b>	
<b>Project Director</b>							
<b>Authorized Organizational Representative</b>							
<b>Signature (for optional use)</b>							

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.



**BUDGET**

ORGANIZATION AND ADDRESS South Dakota State University Grants Administration, P.O. Box 2201, Brookings, SD 57007  PROJECT DIRECTOR(S) Burton W. Pflueger			<b>USDA AWARD NO.</b> Year 2: Objective 3				
			Duration Proposed Months: <u>12</u>  <b>Funds Requested by Proposer</b>	Duration Proposed Months: ____  <b>Funds Approved by CSREES (If different)</b>	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)	
<b>A. Salaries and Wages</b> 1. No. of Senior Personnel			<b>CSREES FUNDED WORK MONTHS</b>				
			Calendar	Academic	Summer		
a. ____ (Co)-PD(s) ..... b. ____ Senior Associates .....							
2. No. of Other Personnel (Non-Faculty) a. ____ Research Associates-Postdoctorates . . . b. ____ Other Professionals . . . . .							
c. ____ Paraprofessionals ..... d. ____ Graduate Students..... e. ____ Prebaccalaureate Students..... f. ____ Secretarial-Clerical..... g. ____ Technical, Shop and Other .....							
<b>Total Salaries and Wages</b> .....→							
B. Fringe Benefits (If charged as Direct Costs)							
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →							
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)							
E. Materials and Supplies			\$250				
F. Travel			\$750				
G. Publication Costs/Page Charges							
H. Computer (ADPE) Costs							
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)							
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)							
<b>K. Total Direct Costs (C through I)</b> ..... →			\$1,000				
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)							
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →			\$1,000				
N. <b>Other</b> ..... →							
<b>O. Total Amount of This Request</b> ..... →			\$1,000				
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>			<b>Non-Federal funds: \$</b>		<b>Total \$</b>		
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b> Cash (both Applicant and Third Party) .....→ Non-Cash Contributions (both Applicant and Third Party) →							
<b>NAME AND TITLE</b> (Type or print)			<b>SIGNATURE</b> (required for revised budget only)			<b>DATE</b>	
<b>Project Director</b>							
<b>Authorized Organizational Representative</b>							
<b>Signature (for optional use)</b>							

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

## BUDGET EXPLANATION FOR SOUTH DAKOTA STATE UNIVERSITY

(Pflueger)

### Objective 3

- E. **Materials and Supplies.** Annual costs: general office supplies including paper, toner, and mailers (\$250/year).
- F. **Travel.** Annual costs: transportation, lodging, and meal expenses for the PI to visit individual aquaculturists in support of extension activities related to South Dakota aquaculture (\$750/year).



South Dakota  
State University

Office of Research  
& Sponsored Programs

Admin. 124, Box 2201  
South Dakota State University  
Brookings, SD 57007-1998  
Phone: 605-688-6696  
Fax: 605-688-6167

May 20, 2009

Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University

South Dakota State University agrees to participate as a subcontractor for a project titled "North Central Regional Aquaculture Center Extension Project," sponsored by USDA. The Principal Investigator at SDSU will be Burton Pflueger and our 2-year budget for the subcontract is \$2,000.

SDSU is prepared to serve as a sub-awardee on this project and to establish an appropriate inter-institutional agreement for programmatic, fiscal, and administrative arrangements.

Sincerely,

John J. Ruffolo, Ph.D.  
Associate Vice President for Research  
[john.ruffolo@sdstate.edu](mailto:john.ruffolo@sdstate.edu)

## EXTENSION PLAN FOR UNIVERISTY OF ILLINOIS

(Plumer)

### Objective 3

**Situation:** Most rural landowners have farm ponds that need management.

**Justification:** Every year hundreds of acres of ponds have fish kills due to poor management. The number one call to Extension offices concerns vegetation control and fish kills due to poor management.

**Timeline:** 2 years.

#### Outputs:

- Publication to address fishery issues and aquatic weed management for Extension offices

#### Outcomes:

- Programs will be held that will increase the knowledge of attendees, thereby effecting the better management of acres of water
- Landowners will have management guidelines, including sources of fish, to manage resources
- Extension offices will have information to provide landowners
- Extension offices will have contact information whereby there will be increased coordination between Illinois Department of Natural Resources and Extension staff

**BUDGET**

ORGANIZATION AND ADDRESS University of Illinois Extension Mumford Hall, Urbana, IL 61801			USDA AWARD NO. Year 1: Objective 3			
PROJECT DIRECTOR(S) Michael D. Plumer			Duration Proposed Months: <u>12</u> Funds Requested by Proposer	Duration Proposed Months: ____ Funds Approved by CSREES (If different)	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ____ (Co)-PD(s) . . . . .						
b. ____ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ____ Research Associates-Postdoctorates . . .						
b. ____ Other Professionals . . . . .						
c. ____ Paraprofessionals . . . . .						
d. ____ Graduate Students . . . . .						
e. ____ Prebaccalaureate Students . . . . .						
f. ____ Secretarial-Clerical . . . . .						
g. ____ Technical, Shop and Other . . . . .						
<b>Total Salaries and Wages</b> . . . . . →						
B. Fringe Benefits (If charged as Direct Costs)						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →						
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)						
E. Materials and Supplies				\$500		
F. Travel				\$500		
G. Publication Costs/Page Charges						
H. Computer (ADPE) Costs						
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)						
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)						
<b>K. Total Direct Costs (C through I)</b> . . . . . →				\$1,000		
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000		
N. <b>Other</b> . . . . . →						
<b>O. Total Amount of This Request</b> . . . . . →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . .			Federal Funds: \$	Non-Federal funds: \$	Total \$	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) . . . . . →						
Non-Cash Contributions (both Applicant and Third Party) →						
<b>NAME AND TITLE</b> (Type or print)			<b>SIGNATURE</b> (required for revised budget only)			<b>DATE</b>
Project Director						
Authorized Organizational Representative						
Signature (for optional use)						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS University of Illinois Extension Mumford Hall, Urbana, IL 61801  PROJECT DIRECTOR(S) Michael D. Plumer				<b>USDA AWARD NO.</b> Year 2: Objective 3			
				Duration Proposed Months: <u>12</u>  <b>Funds Requested by Proposer</b>	Duration Proposed Months: ____  <b>Funds Approved by CSREES (If different)</b>	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
<b>A. Salaries and Wages</b>		<b>CSREES FUNDED WORK MONTHS</b>					
1. No. of Senior Personnel		Calendar	Academic	Summer			
a. ____ (Co)-PD(s) . . . . .							
b. ____ Senior Associates . . . . .							
2. No. of Other Personnel (Non-Faculty)							
a. ____ Research Associates-Postdoctorates . . .							
b. ____ Other Professionals . . . . .							
c. ____ Paraprofessionals . . . . .							
d. ____ Graduate Students . . . . .							
e. ____ Prebaccalaureate Students . . . . .							
f. ____ Secretarial-Clerical . . . . .							
g. ____ Technical, Shop and Other . . . . .							
<b>Total Salaries and Wages</b> . . . . . →							
B. Fringe Benefits (If charged as Direct Costs)							
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →							
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)							
E. Materials and Supplies				\$500			
F. Travel				\$500			
G. Publication Costs/Page Charges							
H. Computer (ADPE) Costs							
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)							
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)							
<b>K. Total Direct Costs (C through I)</b> . . . . . →				\$1,000			
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)							
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000			
N. <b>Other</b> . . . . . →							
<b>O. Total Amount of This Request</b> . . . . . →				\$1,000			
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>				<b>Non-Federal funds: \$</b>		<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>							
Cash (both Applicant and Third Party) . . . . . →							
Non-Cash Contributions (both Applicant and Third Party) →							
<b>NAME AND TITLE</b> (Type or print)		<b>SIGNATURE</b> (required for revised budget only)				<b>DATE</b>	
<b>Project Director</b>							
<b>Authorized Organizational Representative</b>							
<b>Signature (for optional use)</b>							

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

## BUDGET EXPLANATION UNIVERSITY OF ILLINOIS

(Plumer)

### Objective 3

- E. **Materials and Supplies.** Annual costs: general office supplies including paper, toner, and mailers (\$500/year).
- F. **Travel.** Annual costs: transportation, lodging, and meal expenses associated with extension programming in support of the Illinois aquaculture community (\$500/year).

UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

Office of Sponsored Programs  
and Research Administration  
1901 South First Street, Suite A  
South Research Park  
Champaign, IL 61820



May 11, 2009

Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, Michigan 48842

**SUBJECT: North Central Regional Aquaculture Center Extension Project**

Dear Dr. Batterson:

As the Authorized Organizational Representative (AOR) I would like to inform you that the University of Illinois Extension wishes to participate in the above referenced project as a subcontractor to Michigan State University. Michael Plumer will serve as the Principal Investigator(s) of the subcontract and he will have access to all of the necessary equipment, laboratory, and office space to successfully undertake this project. I also approve the budget as submitted for Michael Plumer's involvement in this project. Upon issuance of approval to the North Central Regional Aquaculture Center for this project, University of Illinois will enter into a formal agreement with your institution.

Sincerely,

A handwritten signature in cursive script, appearing to read 'R. K. Iyer'.

**R. K. Iyer**  
**Chair, Research Board**



## EXTENSION PLAN FOR PURDUE UNIVERSITY

### (Quagraine)

#### Objectives 1 & 2

**Situation:** Purdue University extension educators receive over 3,000 enquiries each year about aquaculture. Most enquiries relate to what it will cost to get started, what type of return to expect, what fish species should be grown, what type of production systems should be used, and where to sell the fish. The interest in aquaculture is because agriculture is generally going through a transition period, with economic pressures forcing farm and ranch operations to find innovative ways to diversify farm production and stay competitive. Most farm and ranch operations in Indiana have farm ponds and farmers appear to be exploring ways to put such ponds to commercial fish production, or at best invest in new fish farm operations as an alternative farm enterprise.

**Justification:** This project will provide educational programs in aquaculture economics and marketing, including enterprise budgeting for major food-fish species grown in Indiana, and marketing strategies to encourage farmer entrepreneurship in aquaculture. These are tools that will provide benchmarks to farmers and serve as a basis for investment decisions, comparisons, and/or improvements to the farm enterprise.

**Timeline:** 2 years.

#### Outputs:

- Aquaculture budgets
- County-level aquaculture workshop series

#### Outcomes:

- Informed and educated clientele about aquaculture economics and marketing strategies

**BUDGET**

ORGANIZATION AND ADDRESS Purdue University Sponsored Program Services, 615 W. State St., West Lafayette, IN 47907-2053  PROJECT DIRECTOR(S) Kwamena Quagraine			USDA AWARD NO. Year 1: Objectives 1 & 2			
			Duration Proposed Months: <u>12</u>  Funds Requested by Proposer	Duration Proposed Months: _____  Funds Approved by CSREES (If different)	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ___ (Co)-PD(s) . . . . .						
b. ___ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ___ Research Associates-Postdoctorates . . .						
b. ___ Other Professionals . . . . .						
c. ___ Paraprofessionals . . . . .						
d. ___ Graduate Students . . . . .						
e. ___ Prebaccalaureate Students . . . . .						
f. ___ Secretarial-Clerical . . . . .						
g. ___ Technical, Shop and Other . . . . .						
<b>Total Salaries and Wages</b> . . . . . →						
B. Fringe Benefits (If charged as Direct Costs)						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →						
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)						
E. Materials and Supplies				\$350		
F. Travel				\$650		
G. Publication Costs/Page Charges						
H. Computer (ADPE) Costs						
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)						
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)						
<b>K. Total Direct Costs (C through I)</b> . . . . . →				\$1,000		
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000		
N. <b>Other</b> . . . . . →						
<b>O. Total Amount of This Request</b> . . . . . →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>			<b>Non-Federal funds: \$</b>		<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) . . . . . →						
Non-Cash Contributions (both Applicant and Third Party) →						
<b>NAME AND TITLE</b> (Type or print)	<b>SIGNATURE</b> (required for revised budget only)				<b>DATE</b>	
<b>Project Director</b>						
<b>Authorized Organizational Representative</b>						
<b>Signature (for optional use)</b>						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS Purdue University Sponsored Program Services, 615 W. State St., West Lafayette, IN 47907-2053  PROJECT DIRECTOR(S) Kwamena Quagraine			USDA AWARD NO. Year 2: Objectives 1 & 2			
			Duration Proposed Months: <u>12</u>  Funds Requested by Proposer	Duration Proposed Months: _____  Funds Approved by CSREES (If different)	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>			
1. No. of Senior Personnel			Calendar	Academic	Summer	
a. ___ (Co)-PD(s) . . . . .						
b. ___ Senior Associates . . . . .						
2. No. of Other Personnel (Non-Faculty)						
a. ___ Research Associates-Postdoctorates . . .						
b. ___ Other Professionals . . . . .						
c. ___ Paraprofessionals . . . . .						
d. ___ Graduate Students . . . . .						
e. ___ Prebaccalaureate Students . . . . .						
f. ___ Secretarial-Clerical . . . . .						
g. ___ Technical, Shop and Other . . . . .						
<b>Total Salaries and Wages</b> . . . . . →						
B. Fringe Benefits (If charged as Direct Costs)						
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> →						
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)						
E. Materials and Supplies				\$350		
F. Travel				\$650		
G. Publication Costs/Page Charges						
H. Computer (ADPE) Costs						
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)						
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)						
<b>K. Total Direct Costs (C through I)</b> . . . . . →				\$1,000		
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)						
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K).</b> →				\$1,000		
N. <b>Other</b> . . . . . →						
<b>O. Total Amount of This Request</b> . . . . . →				\$1,000		
<b>P. Carryover -- (If Applicable)</b> . . . . . <b>Federal Funds: \$</b>			<b>Non-Federal funds: \$</b>		<b>Total \$</b>	
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>						
Cash (both Applicant and Third Party) . . . . . →						
Non-Cash Contributions (both Applicant and Third Party) →						
<b>NAME AND TITLE</b> (Type or print)	<b>SIGNATURE</b> (required for revised budget only)				<b>DATE</b>	
<b>Project Director</b>						
<b>Authorized Organizational Representative</b>						
<b>Signature (for optional use)</b>						

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

## BUDGET EXPLANATION FOR PURDUE UNIVERSITY

(Quagraine)

### Objectives 1 & 2

- E. Materials and Supplies.** Annual costs: general office supplies including paper, toner, and mailers (\$350/year).
- F. Travel.** Annual costs: transportation, lodging, and meal expenses for the PI to attend a 1-day annual meeting of the Indiana Aquaculture Association at a location to be determined by the aquaculture association (\$650/year).

May 15, 2009

Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, MI 48842

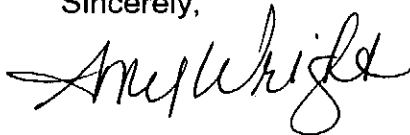
**SUBJECT: Project entitled "North Central Regional Aquaculture Center Extension Project"**

Dear Dr. Batterson:

As the Authorized Organizational Representative (AOR) I would like to inform you Purdue University wishes to participate in the above referenced project as a subcontractor to Michigan State University. Dr. Kwamena Quagraine will serve as the Principal Investigator(s) of the subcontract and he has access to all of the necessary equipment, laboratory, and office space to successfully undertake this project. I also approve the budget as submitted for Dr. Quagraine's involvement in this project. Upon issuance of approval to the North Central Regional Aquaculture Center for this project, Purdue University will enter into a formal agreement with your institution.

Any award or agreement made as a result of this proposal should be made to Purdue University with a reference to SPS #00020277.

Sincerely,



Amy Wright  
Pre-Award Manager  
Ag Sponsored Programs

## EXTENSION PLAN FOR OHIO STATE UNIVERSITY

(Wallat)

### Objective 2

**Situation:** The occurrence of VHS virus in the Great Lakes in 2005, and the subsequent USDA-APHIS federal order restricting the movement of 38 species of fish in the Great Lakes states, has caused significant shortages of baitfish in Ohio, and driven price and demand to record levels. A number of Ohio aquaculture operations have expressed interest in developing and refining baitfish culture techniques in their temperate climate. In 2008, the OCARD assisted with the formation of an Ohio baitfish growers group, consisting of 6 farmers and 10 acres of production of golden shiners. The farmers in this group all plan to expand their operations in 2009 and seek additional private growers to join in their association.

Yellow perch and bluegill remain top sellers in Ohio, both for the food fish markets and the sport fish (stocking) markets. There is a significant demand from Ohio aquaculturists and prospective aquaculturists for high quality, technical information and assistance on the culture of these species and improvements in their production capabilities. The OCARD program is conducting extensive genetics work with yellow perch and bluegill in the attempt to produce new lines of faster growing yellow perch, and to develop all-male populations of bluegill, which grow faster than females, and even hybrid bluegill at the age (2 yr+) and size (>85.0 g; 0.4 lb) required in food fish markets.

**Justification:** Providing aquaculture resource information about VHS and the federal ruling as well as new information about baitfish culture will support continued growth of aquaculture in Ohio. OCARD extension personnel have continued to provide technology transfer of these new developments in the form of technical bulletins, refereed journal articles, and workshop presentations to the Ohio clientele, with the intent that they can improve production and profitability. Interacting with private industry and conducting demonstration projects will provide new knowledge and expand existing knowledge which may lead to new research directions which will improve technology and contribute to industry growth.

**Timeline:** 2 years.

#### Outputs:

- Workshops on VHS-related issues for the aquaculture community

#### Outcomes:

- Continued growth of Ohio aquaculture industry in both baitfish and food fish sectors
- Improved fish health management
- Improved client knowledge on new baitfish and VHS

**BUDGET**

ORGANIZATION AND ADDRESS Ohio State University Research Foundation 1960 Kenney Road, Columbus, OH 43210-1063  PROJECT DIRECTOR(S) Geoffrey Wallat			<b>USDA AWARD NO. Year 1: Objective 2</b>				
			Duration Proposed Months: <u>12</u>	Duration Proposed Months: ____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)	
			<b>Funds Requested by Proposer</b>	<b>Funds Approved by CSREES (If different)</b>			
<b>A. Salaries and Wages</b> 1. No. of Senior Personnel			<b>CSREES FUNDED WORK MONTHS</b>				
			Calendar	Academic	Summer		
a. ____ (Co)-PD(s) .....							
b. ____ Senior Associates .....							
2. No. of Other Personnel (Non-Faculty) a. ____ Research Associates-Postdoctorates . . . b. ____ Other Professionals . . . . .							
c. ____ Paraprofessionals .....							
d. ____ Graduate Students.....							
e. ____ Prebaccalaureate Students.....							
f. ____ Secretarial-Clerical.....							
g. ____ Technical, Shop and Other .....							
<b>Total Salaries and Wages</b> .....							
B. Fringe Benefits (If charged as Direct Costs)							
C. <b>Total Salaries, Wages, and Fringe Benefits (A plus B)</b> .....							
D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)							
E. Materials and Supplies			\$ 500				
F. Travel			\$ 500				
G. Publication Costs/Page Charges							
H. Computer (ADPE) Costs							
I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)							
J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)							
K. <b>Total Direct Costs (C through J)</b> .....			\$1,000				
L. <b>F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)							
M. <b>Total Direct and F&amp;A/Indirect Costs (J plus K)</b> .....			\$1,000				
N. <b>Other</b> .....							
O. <b>Total Amount of This Request</b> .....			\$1,000				
P. <b>Carryover -- (If Applicable)</b> .....			<b>Federal Funds: \$</b>	<b>Non-Federal funds: \$</b>	<b>Total \$</b>		
Q. <b>Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>							
Cash (both Applicant and Third Party) .....							
Non-Cash Contributions (both Applicant and Third Party) .....							
<b>NAME AND TITLE</b> (Type or print)	<b>SIGNATURE</b> (required for revised budget only)				<b>DATE</b>		
<b>Project Director</b>							
<b>Authorized Organizational Representative</b>							
<b>Signature (for optional use)</b>							

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.

**BUDGET**

ORGANIZATION AND ADDRESS Ohio State University Research Foundation 1960 Kenney Road, Columbus, OH 43210-1063			USDA AWARD NO. Year 2: Objective 2						
			Duration Proposed Months: <u>12</u>	Duration Proposed Months: ____	Non-Federal Proposed Cost-Sharing/ Matching Funds (If required)	Non-federal Cost-Sharing/ Matching Funds Approved by CSREES (If Different)	Funds Requested by Proposer	Funds Approved by CSREES (If different)	
PROJECT DIRECTOR(S) Geoffrey Wallat									
<b>A. Salaries and Wages</b>			<b>CSREES FUNDED WORK MONTHS</b>						
1. No. of Senior Personnel			Calendar	Academic	Summer				
a. ____ (Co)-PD(s) . . . . .									
b. ____ Senior Associates . . . . .									
2. No. of Other Personnel (Non-Faculty)									
a. ____ Research Associates-Postdoctorates . . .									
b. ____ Other Professionals . . . . .									
c. ____ Paraprofessionals . . . . .									
d. ____ Graduate Students . . . . .									
e. ____ Prebaccalaureate Students . . . . .									
f. ____ Secretarial-Clerical . . . . .									
g. ____ Technical, Shop and Other . . . . .									
<b>Total Salaries and Wages</b> . . . . . →									
<b>B. Fringe Benefits (If charged as Direct Costs)</b>									
<b>C. Total Salaries, Wages, and Fringe Benefits (A plus B)</b> . . . . . →									
<b>D. Nonexpendable Equipment (Attach supporting data. List items and dollar amounts for each item.)</b>									
<b>E. Materials and Supplies</b>						\$ 500			
<b>F. Travel</b>						\$ 500			
<b>G. Publication Costs/Page Charges</b>									
<b>H. Computer (ADPE) Costs</b>									
<b>I. Student Assistance/Support (Scholarships/fellowships, stipends/tuition, cost of education, etc. Attach list of items and dollar amounts for each item.)</b>									
<b>J. All Other Direct Costs (In budget narrative, list items and dollar amounts and provide supporting data for each item.)</b>									
<b>K. Total Direct Costs (C through J)</b> . . . . . →						\$1,000			
<b>L. F&amp;A/Indirect Costs.</b> (If applicable, specify rate(s) and base(s) for on/off campus activity. Where both are involved, identify itemized costs in on/off campus bases.)									
<b>M. Total Direct and F&amp;A/Indirect Costs (J plus K)</b> . . . . . →						\$1,000			
<b>N. Other</b> . . . . . →									
<b>O. Total Amount of This Request</b> . . . . . →						\$1,000			
<b>P. Carryover -- (If Applicable)</b> . . . . .			Federal Funds: \$	Non-Federal funds: \$	Total \$				
<b>Q. Cost Sharing/Matching (Breakdown of total amounts shown in line O)</b>									
Cash (both Applicant and Third Party) . . . . . →									
Non-Cash Contributions (both Applicant and Third Party) . . . . . →									
<b>NAME AND TITLE (Type or print)</b>			<b>SIGNATURE (required for revised budget only)</b>				<b>DATE</b>		
<b>Project Director</b>									
<b>Authorized Organizational Representative</b>									
<b>Signature (for optional use)</b>									

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0524-0039. The time required to complete this information collection is estimated to average 1.00 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing the reviewing the collection of information.



## BUDGET EXPLANATION OHIO STATE UNIVERSITY

(Wallat)

### Objective 3

- E. Materials and Supplies.** Annual costs: Workshop supplies such as, folders, paper, envelopes, printer/copier, ink cartridges, etc. (\$500/year).
- F. Travel.** Year 1: Transportation, meals, and lodging for one trip to the annual Ohio Aquaculture Association Meeting (\$300); transportation to attend and present Baitfish Culture workshop in Bowling Green, Ohio (\$200). Year 2: Transportation, meals, and lodging for one trip by Research Associate to the annual Ohio Aquaculture Association Meeting to present on baitfish culture research (\$200); transportation support to bring an out-of-state presenter to teach at the Sportfish Culture School. (\$300).



Research Foundation  
Food, Agricultural, and  
Environmental Sciences Office  
April 10, 2009

590 Woody Hayes Drive, Suite 112  
Columbus, OH 43210-1057  
Phone 614-292-3721  
Fax 614-292-8555

Dr. Ted R. Batterson, Director  
North Central Regional Aquaculture Center  
Michigan State University  
13 Natural Resources Building  
East Lansing, Michigan 48842

Re: Collaborative Proposal titled: *"North Central Regional Aquaculture Center Extension Project."*

Dear Colleagues:

The Ohio State University Research Foundation is pleased to indicate our institution's willingness to participate with Michigan State University on the above referenced USDA CSREES research proposal. The budget has been reviewed and approved. The portion of the project to be conducted at this institution will be under the direction of Dr. Han Ping Wang, Research Scientist and Co-investigators: Drs. Geoff Wallat and Laura Tiu, at The Ohio State University South Centers with The Ohio State University.

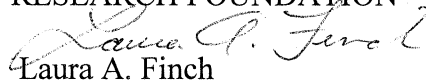
The Ohio State University Research Foundation administers all grants and contracts on behalf of the faculty of the University. Therefore, any awards should be made to The Ohio State University Research Foundation (tax I.D. #31-6401599) and directed to my attention at the following address:

The Ohio State University Research Foundation  
1960 Kenny Rd.  
Columbus, Ohio 43210

We look forward to a productive collaboration in this program. Please contact Dr. Wang at (740) 289-2071 or e-mail: [wang.900@osu.edu](mailto:wang.900@osu.edu) for technical information regarding the proposal. Questions administrative in nature should be directed to the undersigned at (614) 292-3721, or e-mail: [finch.24@osu.edu](mailto:finch.24@osu.edu).

Respectfully,

THE OHIO STATE UNIVERSITY  
RESEARCH FOUNDATION



Laura A. Finch

Senior Sponsored Programs Officer  
Food, Agricultural, and Environmental  
Sciences Office

Cc: H Wang

**BUDGET SUMMARY ALL PARTICIPATING INSTITUTIONS**

Year 1

	NDSU	PURDUE	MSU	UN-L	UMD	LU	KSU	SDSU	ISU	UI	OSU	TOTALS
Salaries and Wages												
Fringe Benefits												
Total Salaries, Wages, and Fringe Benefits												
Nonexpendable Equipment												
Materials and Supplies		\$2,350		\$400		\$100	\$250	\$250	\$500	\$500	\$500	\$4,850
Travel	\$1,000	\$2,150	\$1,000	\$600	\$1,000	\$900	\$750	\$750	\$500	\$500	\$500	\$9,650
All Other Direct Costs												
<b>TOTAL PROJECT COSTS</b>	<b>\$1,000</b>	<b>\$4,500</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$14,500</b>

Year 2

	NDSU	PURDUE	MSU	UN-L	UMD	LU	KSU	SDSU	ISU	UI	OSU	TOTALS
Salaries and Wages												
Fringe Benefits												
Total Salaries, Wages, and Fringe Benefits												
Nonexpendable Equipment												
Materials and Supplies		\$2,350		\$400		\$100	\$250	\$250	\$500	\$500	\$500	\$4,850
Travel	\$1,000	\$2,150	\$1,000	\$600	\$1,000	\$900	\$750	\$750	\$500	\$500	\$500	\$9,650
All Other Direct Costs												
<b>TOTAL PROJECT COSTS</b>	<b>\$1,000</b>	<b>\$4,500</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$1,000</b>	<b>\$14,500</b>

### **SCHEDULE FOR COMPLETION OF OBJECTIVES**

Objective 1: Initiated in Year 1 and completed in Year 2.

Objective 2: Initiated in Year 1 and completed in Year 2.

Objective 3: Initiated in Year 1 and completed in Year 2.

## LIST OF PRINCIPAL INVESTIGATORS

**Dennis E. Bauer**, University of Nebraska-Lincoln

**Fred P. Binkowski**, University of Wisconsin-Milwaukee

**Mark E. Clark**, North Dakota State University

**Richard D. Clayton**, Iowa State University

**Mark E. Einstein**, Purdue University

**Jeffrey L. Gunderson**, University of Minnesota-Duluth

**Charles E. Hicks**, Lincoln University

**Ronald E. Kinnunen**, Michigan State University

**Charles D. Lee**, Kansas State University

**Joseph E. Morris**, Iowa State University

**Burton W. Pflueger**, South Dakota State University

**Michael D. Plumer**, University of Illinois

**Kwamena K. Quagraine**, Purdue University

**Geoffrey Wallat**, Ohio State University

## VITA

Dennis E. Bauer  
BKR Extension Office  
148 West 4<sup>th</sup> Steet.  
Ainsworth, NE 69210

Phone: (402) 387-2213  
Fax: (402) 397-2065  
E-mail: dbauer1@unl.edu

### **Education**

B.S. University of Nebraska-Lincoln, 1975, Wildlife and Natural Resources  
M.S. University of Nebraska-Lincoln, 1978, Range Science

### **Positions**

Extension Educator (1978-present), University of Nebraska Extension, In Brown, Keya Paha and Rock counties.

### **Scientific and Professional Organizations**

Nebraska Cooperative Extension Association  
Society for Range Management

## VITA

Fred P. Binkowski  
Great Lakes WATER Institute  
University of Wisconsin-Milwaukee  
600 E. Greenfield Ave.  
Milwaukee, WI 53204

Phone: (414) 382-1723  
Fax: (414) 382-1705  
E-mail: sturgeon@csd.uwm.edu

### Education

B.S. University of Wisconsin-Milwaukee, 1971, Zoology  
M.S. University of Wisconsin-Milwaukee, 1974, Zoology (Fisheries Biology)

### Positions

Director (1993-present), Aquaculture Institute, Great Lakes WATER Institute, University of Wisconsin System  
Senior Scientist (1991-present), Associate Scientist (1987-1990), Senior Fisheries Biologist (1984-1986), Associate Fisheries Biologist (1981-1983), and Assistant Fisheries Biologist (1978-1980), Center for Great Lakes Studies, University of Wisconsin Great Lakes Research Facility  
Research Specialist (Fisheries) (1975-1978), Department of Zoology, University of Wisconsin-Milwaukee

### Scientific and Professional Organizations

American Fisheries Society  
Early Life History Section, American Fisheries Society  
Fish Culture Section, American Fisheries Society  
U.S. Aquaculture Society  
World Aquaculture Society

### Selected Publications

- Fulford, R.S., J.A. Rice, T.J. Miller, and F.P. Binkowski. 2006. Elucidating patterns of size-dependent predation on larval yellow perch (*Perca flavescens*) in Lake Michigan: an experimental and modeling approach. *Canadian Journal of Fisheries and Aquatic Sciences* 63(1):11-27.
- Fulford, R.S., J.A. Rice, T.J. Miller, F.P. Binkowski, J.M. Dettmers, and B. Belonger. 2006. Foraging selectivity by larval yellow perch (*Perca flavescens*): implications for understanding recruitment in small and large lakes. *Canadian Journal of Fisheries and Aquatic Sciences* 63(1):28-42.
- Fontana, F., R.M. Bruch, F.P. Binkowski, M. Lanfredi, M. Chicca, N. Beltrami, and L. Congiu. 2004. Karyotype characterization of the lake sturgeon, *Acipenser fluvescens* (Rafinesque 1817) by chromosome banding and fluorescent in situ hybridization. *Genome* 47:742-746.
- Yeo, S.E., F.P. Binkowski, and J.E. Morris. 2004. Aquaculture effluents and waste by-products: characteristics, potential recovery and beneficial reuse. NCRAC Publications Office, Iowa State University, Ames and University of Wisconsin Sea Grant, Madison. 50 pgs.
- Rosenthal, H., R.M., Bruch, F.P. Binkowski, and S.I. Doroshov, Editors. 2002. Proceedings of the 4<sup>th</sup> International Symposium on Sturgeon. *Journal of Applied Ichthyology* 18(4-6):219-698.
- Bruch, R.M. and F.P. Binkowski. 2002. Spawning behavior of lake sturgeon (*Acipenser fluvescens*). *Journal of Applied Ichthyology* 18 (4-6):570-579.

## VITA

Mark E. Clark  
Department of Biological Sciences  
North Dakota State University  
119 Stevens Hall  
Fargo, ND 58105-5517

Phone: (701) 231-8246  
Fax: (701) 231-7149  
E-mail: m.e.clark@ndsu.edu

### Education

B.A. University of Tennessee, 1987, Mathematics  
M.S. University of Tennessee, 1989  
Ph.D. University of Tennessee, 1996, Ecology

### Positions

Assistant Professor (2002-present), Department of Biological Sciences, North Dakota State University  
Postdoctoral Fellow (2000-2002), Cooperative Wildlife Research Unit, University of Montana  
Postdoctoral Fellow (1997-2000), Department of Animal Ecology, Iowa State University  
Postdoctoral Fellow (1996-1997), Environmental Sciences Division, Oak Ridge National Laboratory

### Scientific and Professional Organizations

American Fisheries Society  
Ecological Society of America  
Society of Integrative & Comparative Biology

### Selected Publications

Clark, M.E., K.A. Rose, J.A. Chandler, T.J. Richter, D.J. Orth, and W. Van Winkle. In press. Water level fluctuation effects on centrarchid reproductive success in reservoirs: a modeling analysis. *North American Journal of Fisheries Management*.

Clark, M.E. and T.E. Martin. 2007. Modeling tradeoffs in avian life history traits and consequences for population growth. *Ecological Modelling* 209:110-120.

Clark, M.E., B.J. Danielson, M.V. Santelmann, J.I. Nassauer, D. White, and K.E. Freemark. 2007. Impacts on mammal communities: a spatially explicit model. Pages 115-138 *in* Nassauer, J.I., M.V. Santelman, and D. Scavia, Editors. *From the Corn Belt to the Gulf: societal and environmental implications of alternative agricultural futures*. RFF Press, Washington, D.C. 223 pp.

Reed, W.L., M.E. Clark, P.G. Parker, S.A. Raouf, N. Arguedas, D.S. Monk, E. Snajdr, V. Nolan Jr., and E.D. Ketterson. 2006. Physiological effects on demography: a long term experimental study of testosterone's effects on fitness. *The American Naturalist* 167:667-683.

Santelmann, M.V., D. White, K. Freemark, J.I. Nassauer, J.M. Eilers, K.B. Vache, B.J. Danielson, R.C. Corry, M.E. Clark, S. Polasky, R.M. Cruse, J. Sifneos, H. Rustigian, C. Coiner, J. Wang, and D. Debinski. 2004. Assessing alternative futures for agriculture in Iowa, U.S.A. *Landscape Ecology* 19:357-374.

Bronikowski, A.M., M.E. Clark, H. Rodd, and D.N. Reznick. 2002. Population-dynamic consequences of predator-induced life-history variation in the guppy (*Poecilia reticulata*). *Ecology* 83:2194-2204.

Clark, M.E., K.A. Rose, D.A. Levine, and W.W. Hargrove. 2001. Predicting global change effects on brook and rainbow trout in southern Appalachian streams: combining GIS and individual-based modeling. *Ecological Applications* 11:161-178.



## VITA

Richard D. Clayton  
Department of Natural Resource Ecology and Management  
Iowa State University  
339 Science II  
Ames, IA 50011-3221

Phone: (515) 294-8616  
Fax: (515) 294-7874

## EDUCATION

B.S. Iowa State University, 1992, Fisheries and Wildlife Biology  
M.S. Iowa State University, 2007, Fisheries Biology

## POSITIONS

Extension Aquaculture Specialist/Ag Specialist II (2004-present) and Research Associate I (2003-2004),  
Department of Natural Resource Ecology and Management, Iowa State University  
Research Associate I (1997-2003), Iowa State University Department of Animal Nutrition and Growth  
Research Associate (1992-1997), Iowa State University Department of Animal Ecology

## SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

American Fisheries Society  
Iowa Chapter of the American Fisheries Society  
Iowa Aquaculture Association  
Sigma Xi

## SELECTED PUBLICATIONS

- Clayton, R.D. and J.E. Morris. In Press. Habituation performance of two percids to formulated feed under turbid culture conditions. *Journal of Applied Aquaculture*.
- Rosauer, D.R., J.E. Morris, and R.D. Clayton. In Press. Role of compensatory growth in walleye fingerling production. *North American Journal of Aquaculture*.
- Johnson, J.A., R.C. Summerfelt, and R.D. Clayton. In Press. Evaluation of replacement feeds for the Biokyowa feed for larval walleye. *North American Journal of Aquaculture*.
- Clayton, R.D., J.E. Morris, and R.C. Summerfelt. 2008. Comparison of soy and fish oil in practical diets for fingerling walleye. *North American Journal of Aquaculture* 70:171-174.
- Morris, J.E. and R.D. Clayton. 2007. A benthic sampler for plastic-lined ponds. *Journal of the World Aquaculture Society* 38:318-321.
- Summerfelt, R.C. and R.D. Clayton. 2007. Evaluation of open-formula grower diets for juvenile walleyes. *North American Journal of Aquaculture* 69:53-58.
- Clayton, R.D., T.L. Stevenson, and R.C. Summerfelt. 1998. Fin erosion in intensively cultured walleyes and hybrid walleyes. *Progressive Fish-Culturist* 60(2):114-118.
- Phillips, T.A., R.C. Summerfelt, and R.D. Clayton. 1998. Feeding frequency effects on water quality and growth of walleye fingerlings in intensive culture. *Progressive Fish-Culturist* 60(1):1-8.

## VITA

Mark E. Einstein  
Animal Sciences Department  
Purdue University  
3-104 Lilly Hall  
915 W. State Street  
West Lafayette, IN 47907-2054

Phone: (765) 494-4862  
Fax: (765) 494-9346  
E-mail: [meinstei@purdue.edu](mailto:meinstei@purdue.edu)

### EDUCATION

B.S. Purdue University, 1976, Cytogenetics  
M.S. Purdue University, 1981, Quantitative Genetics

### POSITIONS

Chief Web Officer for Illinois/Indiana Sea Grant College Program (2000-present), Purdue University  
Site Manager (1996-present), SGNIS (Sea Grant Nonindigenous Species)  
Site Manager (1994-present), AquaNIC (Aquaculture Network Information Center)  
Senior Statistical Associate (1991-present), Statistical Research Associate (1985-1991), Departmental  
Statistics, Animal Sciences, Purdue University  
Lab Manager (1976-1985), Quantitative Genetics, Animal Sciences Department, Purdue University

### SELECTED PUBLICATIONS

- Swann, D.L. and M. Einstein. 2000. User analysis and future directions of the Web-based Aquaculture Network Information Center. *Journal of Extension*, [On-line serial], 38(5). Available: <http://www.joe.org/joe/2000october/iw2.html>.
- Swarm, L, T. Luba, and M. Einstein. 1994. Putting multimedia to work in outreach education. Abstract for World Aquaculture Society meeting.
- Swann, L., G. Jensen, and M. Einstein. 1994. Using the Aquaculture Network Information Center (AquaNIC). Abstract for World Aquaculture Society meeting.
- Einstein, M. and L. Swann, 1994. Guidelines for submitting documents for electronic distribution. Fact Sheet.
- Swann, L., M. Einstein, J. Wheeler, and Angie McBride. 1997. Finding aquaculture information on the Internet. World Aquaculture Association Abstract.
- Miller, A.H., L. Aylsworth, M. Einstein, M.J. Flory, T. Hyde, D.A. Jensen, B.K. Miller, and M. Sales. 1997. Making high quality university research and education products readily available to the user public: A National Sea Grant Zebra Mussel and Nonindigenous Species Web Site. Proceedings of the Seventh International Zebra Mussel and Other Aquatic Nuisance Species Conference.

## VITA

Jeffrey L. Gunderson  
Minnesota Sea Grant Extension Program  
University of Minnesota-Duluth  
2305 E. 5th Street  
Duluth, MN 55812

Phone: (218) 726-8715  
Fax: (218) 726-6556  
E-mail: jgunde1@umn.edu

## EDUCATION

B.S. University of Wisconsin-Stevens Point, 1975, Biology  
M.S. University of Wisconsin-Stevens Point, 1978, Natural Resources

## POSITIONS

Associate Director, Fisheries/Aquaculture Educator and Professor (1998 to present), and Fisheries/  
Aquaculture Educator (1979 to 1998), University of Minnesota Sea Grant Extension  
Fishery Specialist/Fishery Biologist (1978-1979), Missouri Conservation Department

## SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

American Fisheries Society  
International Association of Astacology  
Sea Grant Advisory Service Association (Great Lakes Network)  
North Central Regional Aquaculture Center's Extension Technical Committee

## SELECTED PUBLICATIONS

- Gunderson, J.L. and R. Kinnunen. 2004. AIS-HACCP: Aquatic Nuisance Species – Hazard Analysis and Critical Control Point Training Curriculum. Second Edition. Minnesota Sea Grant Publication MN SG-F11. 83 p.
- Richards, C., R.P. Axler, J.L. Gunderson, C.A. Hagley, and M.E. McDonald. 2002. Assessing and communicating risk: a partnership to evaluate a Superfund Site on Leech Lake Tribal Lands. Final Report to U.S. E.P.A., Environmental Justice Program, Grant No. EQ825741. University of Minnesota Sea Grant Program, Duluth, MN 55812 Publication No. CT 13 and Natural Resources Research Institute Technical Report No. NRRI/TR-2002/23.
- Bartell, S., C. Richards, R.P. Axler, J. L. Gunderson, and C.A. Hagley. 2002. Human health risk assessment panel report. *In* Richards, C., R.P. Axler, J.L. Gunderson, C.A. Hagley, and M.E. McDonald. Assessing and communicating risk: a partnership to evaluate a Superfund Site on Leech Lake Tribal Lands. Final Report to U.S. Environmental Protection Agency, Environmental Justice Program, Grant No. EQ825741. University of Minnesota Sea Grant Program, Duluth, MN 55812 Publication No. CT 13 and Natural Resources Research Institute Technical Report No. NRRI/TR-2002/23.
- Bartell, S.C. Richards, R.P. Axler, J.L. Gunderson, C.A. Hagley. 2002. Ecological risk assessment panel report. *In* Richards, C., R.P. Axler, J.L. Gunderson, C.A. Hagley, and M.E. McDonald. Assessing and communicating risk: a partnership to evaluate a Superfund Site on Leech Lake Tribal Lands. Final Report to U.S. Environmental Protection Agency Environmental Justice Program, Grant No. EQ825741. University of Minnesota Sea Grant Program, Duluth, MN 55812 Publication No. CT 13 and Natural Resources Research Institute Technical Report No. NRRI/TR-2002-23.
- Gunderson, J.L. and R. Kinnunen. 2002. The HACCP approach to prevent the spread of aquatic nuisance species by aquaculture and baitfish operations. *In* Kinnunen, R.E., editor. Environmental Strategies for Aquaculture Symposium Proceedings. NCRAC CD Series #101, North Central Regional Aquaculture Center Publications Office, Iowa State University, Ames.

## VITA

Charles E. Hicks  
Department of Agriculture and Environmental Science  
Lincoln University  
Foster Hall, 904 Chestnut St.  
Jefferson City, MO 65101

Phone: (573) 681-5540  
Fax: (573) 635-2894  
E-mail: hicksc@lincolnu.edu

## EDUCATION

B. S. Utah State University, 1960, Biology  
M. S. Utah State University, 1964, Fisheries Science

## POSITIONS

Assistant Professor (2002 to present), Lincoln University  
Assistant Fisheries and Wildlife Extension Specialist (2000 to present), University of Missouri-Columbia  
Adjunct Staff Teacher (1997), Lincoln University  
Aquaculture Specialist (1993-1998), Missouri Department of Agriculture, Jefferson, Missouri  
Director Technical Services (1989-1993), Genesis Aquaculture, Inc., Missouri  
General Manager (1987-1989), South Florida Aquaculture Center, Florida City, Florida  
Superintendent of Fish Hatcheries (1968-1987), Missouri Department of Conservation, Jefferson City, Missouri  
Supervisor of Hatcheries (1965-1968), Utah Division of Wildlife Resources, Logan, Utah  
Biologist (1964-1965), Logan Experimental Fish Cultural Station, Logan, Utah  
Biologist (1960-1962), Fisheries Research Institute, University of Wisconsin, Seattle, Washington

## SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

American Fisheries Society  
Fish Culture Section of the American Fisheries Society  
Missouri Aquaculture Association

## SELECTED PUBLICATIONS

Hicks, C.E., Ellersieck, M.R., and C.J. Borgwordt. 2009. Production methods of food sized bluegill sunfish (*Lepomis macrochirus*). *North American Journal of Aquaculture* 71:52-58.

Pierce, R.A., Hayward, R.S., Parcell, J., and C.E. Hicks. 2007. Paddlefish production: opportunities for Missouri pond and lake owners. *University of Missouri Extension Guide*. University of Missouri, Columbia.

Graham, L.K., E.J. Hamilton, T.R. Russell, and C.E. Hicks. 1986. The culture of paddlefish—a review of methods. Pages 78-94 in J.G. Dillard, L.K. Graham, and T.R. Russell, editors. *The paddlefish: status, management and propagation*. American Fisheries Society, North Central Division, Special Publication 7, Bethesda, Maryland.

## VITA

Ronald E. Kinnunen  
Michigan State University - Upper Peninsula  
710 Chippewa Square, Ste. 202  
Marquette, MI 49855-4811

Phone: (906) 226-3687  
Fax: (906) 226-3687  
E-mail: kinnune1@msu.edu

### EDUCATION

B.S. Michigan State University, 1976, Fisheries Biology and Management  
M.S. Michigan State University, 1979, Fisheries Biology and Management  
Ph.D. Michigan Technological University, 1997, Biological Sciences

### POSITIONS

Michigan Sea Grant Extension Agent (1982-present), Upper Peninsula, Michigan State University  
Fisheries Pathologist (1981), Rangen Research Laboratory, Hagerman, Idaho  
Fisheries Biologist (1979-1980), U.S. Fish and Wildlife Service, Leetown, West Virginia

### SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

Alliance for Marine Remote Sensing  
American Fisheries Society, Fish Health Section, Salmonid Section  
International Association for Great Lakes Research

### SELECTED PUBLICATIONS

Kinnunen, R.E., M.C. Gould, and P. Cambier. 2005. Composting commercial fish processing waste from fish caught in the Michigan waters of the Great Lakes. Michigan State University Technical Bulletin. 40 p.

Pangle, K.L., T.M. Sutton, R.E. Kinnunen, and M.H. Hoff. 2005. Effects of body size, condition, and lipid content on the survival of juvenile lake herring during rapid cooling events. Journal of Great Lakes Research 31:360-366.

Pangle, K.L., T.M. Sutton, R.E. Kinnunen, and M.H. Hoff. 2004. Overwinter survival of juvenile lake herring in relation to body size, physiological condition, energy stores, and food ration. Transactions of the American Fisheries Society 133(5):1235-1246.

Hinshaw, J.M., G. Fornshell, and R.E. Kinnunen. 2004. A profile of the aquaculture of trout in the United States. Report for USDA Risk Management Agency, Federal Crop Insurance Corporation, through Mississippi State University. 46 p.

Kinnunen, R.E., editor. 2002. Environmental Strategies for Aquaculture Symposium Proceedings (December 2000). 62<sup>nd</sup> Midwest Fish and Wildlife Conference, Minneapolis, Minnesota. NCRAC CD Series #101, NCRAC Publications Office, Iowa State University, Ames.

Gunderson, J.L. and R.E. Kinnunen. 2001. Aquatic nuisance species - hazard analysis and critical control point training curriculum. Michigan Sea Grant Publication No. MSG-00-400.

## VITA

Charles D. Lee  
Department of Animal Science and Industry  
Kansas State University  
Call Hall  
Manhattan, KS 66506-1600

Phone: (913) 532-5734  
Fax: (913) 532-5681  
E-mail: clee@ksu.edu

### EDUCATION

B.S. Kansas State University, 1975, Fisheries and Wildlife Biology  
M.S. Kansas State University, 1988, Animal Sciences and Industry  
Ph.D. Candidate Kansas State University, Expected completion: December 2009

### POSITIONS

Extension Specialist-Wildlife (1995-present), Kansas State University  
Agricultural Liaison Biologist (1989-1995), Kansas Department of Wildlife and Parks  
Extension Assistant (1986-1989), Kansas State University

### SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

Kansas Chapter of the Society for Range Management  
Kansas Chapter of the Wildlife Society  
Society for Range Management  
The Wildlife Society

### SELECTED PUBLICATIONS

- Lee, C.D. and S.E. Hygnstrom. In preparation. Efficacy and hazards of Rozol to control black-tailed prairie dogs.
- Lee, C.D. and J. LeFlore. 2007. Efficacy of three in-burrow treatments to control black-tailed prairie dogs. Twelfth Wildlife Damage Management Conference. Corpus Christi, Texas.
- Lee, C.D. 1998. Deer damage control options. Kansas State University and Cooperative Extension Service Publication No. C-728.
- Lee, C.D. and R.J. Johnson. 1997. Wildlife habitat evaluation handbook-participant's manual. Kansas State University Cooperative Extension Service Publication No. MF 2266.
- Hall, D., R.J. Johnson, and C.D. Lee 1997. Wildlife habitat evaluation handbook-leader's guide, Kansas State University Cooperative Extension Service Publication No. MF 2265.
- Weins, J.R., C.S. Guy, and C.D. Lee. 1997. Streambank revetment. Kansas State University Agricultural Experiment Station and Cooperative Extension Service Publication No. MF 2294.

## VITA

Joseph E. Morris  
Department of Natural Resource Ecology and Management  
Iowa State University  
339 Science II  
Ames, IA 50011-3221

Phone: (515) 294-4622  
Fax: (515) 294-7874  
E-mail: jemorris@iastate.edu

### EDUCATION

B.S. Iowa State University, 1979, Fisheries and Wildlife Biology  
M.S. Texas A&M University, 1982, Wildlife and Fisheries Sciences  
Ph.D. Mississippi State University, 1988, Fisheries and Wildlife

### POSITIONS

Associate Professor (1995-present), Interim Department Chair (2008-present), Fisheries and Aquaculture Specialist/Associate Professor (1995-2004), Specialist/Assistant Professor (1988-1995), Department of Natural Resource Ecology and Management, Iowa State University and Associate Director, North Central Regional Aquaculture Center (1990-present)  
Graduate Research Assistant (1986-1988), Mississippi State University  
Aquaculture Manager (1982-1986), Stiles Farm Foundation  
Graduate Research Assistant (1981-1982), and Research Technician I (1980-1981), Texas A&M University  
Fisheries Biologist Aide (1979), Indiana Department of Natural Resources

### SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

American Fisheries Society: Iowa Chapter; Education, Fish Culture, Early Life History, and Fish Management Sections  
Iowa Aquaculture Association  
Phi Kappa Phi  
Sigma Xi  
World Aquaculture Society

### SELECTED PUBLICATIONS

Rosauer, D., J.E. Morris, and R.D. Clayton. In press. Role of compensatory growth in walleye fingerling production. *Journal of the World Aquaculture Society*.

Clayton, R.D., J.E. Morris, and R.C. Summerfelt. 2008. Comparison of soy and fish oil in practical diets for fingerling walleye. *North American Journal of Aquaculture* 70:171-174.

Kaatz, S.E. and J.E. Morris. 2007. Effects of formulated feed on water quality in fingerling walleye production ponds. *Scientific Papers – Animal Sciences and Biotechnologies* 40:29-36.

Morris, J.E. and R.D. Clayton. 2007. A benthic sampler for plastic-lined ponds. *Journal of the World Aquaculture Society* 38:318-321.

Quist, M.C., L. Bruce, K. Bogenschultz, and J.E. Morris. 2007. Sample size requirements for estimating species richness of aquatic vegetation in Iowa Lakes. *Journal of Freshwater Ecology* 22:477-491.

Rogge, M.L., A.A. Moore, and J.E. Morris. 2003. Organic and mixed organic-inorganic fertilization of plastic-lined ponds for fingerling walleye culture. *North American Journal of Aquaculture* 65:179-190.

## VITA

Burton W. Pflueger  
Department of Economics  
South Dakota State University  
114 Scobey Hall, Box 504A  
Brookings, SD 57007

Phone: (605) 488-4141  
Fax: (605) 688-6386  
E-mail: pflueger.burton@ces.sdstate.edu

### EDUCATION

B.S. University of Nebraska-Lincoln, 1979, Agricultural Economics  
M.S. University of Nebraska-Lincoln, 1981, Agricultural Economics  
Ph.D. University of Illinois, 1985, Agricultural Economics

### POSITIONS

Extension Economist/Extension Specialist/Professor (1995-present); Extension Economist/Extension Specialist/Associate Professor (1989-1995); and Extension Economist/Extension Specialist/Assistant Professor (1985-1989, Department of Economics, South Dakota State University)

### SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

Midwest Bankers Institute  
North Central Regional Extension Farm Management Committee  
Small Business Institute Academic Supervisor  
South Dakota Cooperative Extension Association  
South Dakota Extension Specialists Association

### SELECTED PUBLICATIONS

Pflueger, B. and L. Janssen. 2003. South Dakota agricultural land values and rental practices, 2003. Economics Commentator No. 440. South Dakota State University, Brookings.

Pflueger, B.. 2003. South Dakota farm management extension program highlights. North Central Regional Extension Farm Management Committee Report, May and October 2003.

Janssen, L. and B, Pflueger. 2003. South Dakota farmland market trends 1991-2003. Agricultural Experiment Station Bulletin C 268. South Dakota State University, Brookings.

Hamda, Y., B. Pflueger, and L. Janssen. 2003. Historical and recent trends in South Dakota's agricultural land market. Economics Commentator No. 918, South Dakota State University, Brookings.



## VITA

Michael D. Plumer  
University of Illinois  
148 E. Pleasant Hill Road  
Carbondale, IL 62903-6162

Phone: (618) 453-5563  
Fax: (618) 453-7106  
E-mail: plumerm@uiuc.edu

### EDUCATION

B.S. University of Illinois, 1971, Agricultural Science  
M.S. Southern Illinois University, 1990, Plant & Soil Science

### POSITIONS

Natural Resource Management Educator (1992-present) and Extension Agriculture Advisor (1976 present), University of Illinois

### SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

Association of Natural Resource Extension Professionals  
Illinois Extension Agricultural Association  
National Association of County Agricultural Agents  
Soil and Water Conservation Society

### SELECTED PUBLICATIONS

- Plumer, M. 2006. Utilization of annual ryegrass as a cover crop for no-till row crop production. Soil and Water Conservation Society Meeting Proceedings 2006.
- Plumer, M., R. Upton, and T. Taylor. 2006. Improving crop growth and soil structure with annual ryegrass. National Sustainable Agriculture, Research and Education Meeting 2006.
- Plumer, M. 2004. Impact on soil changes from 36 years of continuous no-till row crop production. National Association of Resource Extension Professionals Meeting 2004.
- Ebelhar, S. and M. Plumer. 1999. Management of rye & ryegrass as cover crops for no-till. Agronomy Research Report, Dixon Springs.
- Ebelhar, S. and M. Plumer. 1998. Rye cover crops for no-till soybeans. Agronomy Research Report, Dixon Springs.
- Ebelhar, S. and M. Plumer. 1999. Effects of rye cover crops and reduced herbicides rates on weed control in soybeans. Agronomy Research Report, Dixon Springs.
- Plumer, M. and E. Knake. 1996. Vegetative filter strip slows runoff. Weed Control Manual, Volume 30. Meister Publishing Company, Ohio.

## VITA

Kwamena K. Quagraine  
Department of Agricultural Economics  
Purdue University  
403 W. State St., Krannert Building  
West Lafayette, IN 47907-2056

Phone: (765) 494-4200  
Fax: (765) 494-9176  
E-mail: [kquagrai@purdue.edu](mailto:kquagrai@purdue.edu)

### EDUCATION

B.S. University of Science and Technology, Ghana, Agriculture  
M.S. University of Alberta, Edmonton, Canada, Agricultural Economics  
Ph.D. University of Alberta, Edmonton, Canada, Agricultural Economics

### POSITIONS

Aquaculture Marketing Specialist (2005-present), Purdue University  
Assistant Professor - Aquaculture Marketing (2001-2005), University of Arkansas at Pine Bluff

### SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

American Agricultural Economics Association  
International Association of Aquaculture Economics and Management  
World Aquaculture Society

### SELECTED PUBLICATIONS

- Quagraine, K.K., S.D. Hart, and P.B. Brown. 2008. An exploratory study of farmers' view on aquaculture development in Indiana. *Journal of Extension* 46(2). Online Article # 2RIB4.  
<http://www.joe.org/joe/2008april/rb4.shtml>
- Quagraine, K.K., S.D. Hart, and P.B. Brown. 2008. Consumer acceptance of locally grown food: the case of Indiana aquaculture products. *Aquaculture Economics and Management* 12(1):54-70.
- Kaliba, A.R., S. Amisah, L. Kumah, and K.K. Quagraine. 2007. Economic analysis of Nile Tilapia production in Ghana. *Quarterly Journal of International Agriculture* 46(2):105-117.
- Quagraine, K.K., T.H. Kuethe, and C.R. Engle. 2007. Arkansas catfish farmers and marketing contracts: some insights into motivations. *Aquaculture Economics and Management* 11(1):39-51.
- Neira, I. and K.K. Quagraine. 2007. Analysis of risk behavior in the U.S. farm-raised catfish market. *Marine Resource Economics* 21(4):433-443.
- Quagraine, K.K. 2006. IQF catfish retail pack: a study of consumers' willingness to pay. *International Food and Agribusiness Management Review* 9(2):75-97.
- Quagraine, K.K. 2006. Analysis of U.S. catfish fillet market share using a flexible Logistic Model. *Marine Resource Economics* 21(1):33-45.
- Quagraine, K.K. and C.R. Engle. 2006. A latent class model for analyzing preferences for catfish. *Aquaculture Economics and Management* 10(1):1-14.
- Wiese, N., C. Engle, B. Green, and K.K. Quagraine. 2006. Reducing catfish farm losses due to dockages assessed by processing plants. *Journal of the World Aquaculture Society* 37(1):60-73.

## VITA

Geoffrey K. Wallat  
Ohio Center for Aquaculture Development  
Ohio State University  
1864 Shyville Rd.  
Piketon, OH 45661

Phone: (740) 289-2071 ext. 146  
Fax: (740) 289-4591  
E-mail: wallat1@ag.osu.edu

### EDUCATION

B.S. University of Rhode Island, 1989, Aquaculture and Fishery Technology  
M.S. University of Florida, 1996, Fisheries and Aquatic Sciences

### POSITIONS

Aquaculture Specialist/Senior Research Associate (2003-present); Research Associate II/Facility Coordinator (2000-2003); and Research Assistant/Facility Coordinator (1998-2000), Ohio State University, South Centers at Piketon

### SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

American Fisheries Society – Fish Culture Section  
U.S. Aquaculture Society  
World Aquaculture Society

### SELECTED PUBLICATIONS

Wang, W.J., H.P. Wang, L. Li, G.K. Wallat, L.G. Tiu, H. Yao, and Q.Y. Wang. In press. Genetic linkage mapping and sex-specific marker locating of bluegill sunfish (*Lepomis macrochirus*) using AFLP markers. *Aquaculture International*.

Wang, H.P., Z. Gao, B. Beres, J. Ottobre, G. Wallat, L. Tiu, D. Rapp, P. O'Bryant, and H. Yao. 2008. Effects of estradiol-17B on survival, growth performance, sex reversal and gonadal structure of bluegill sunfish *Lepomis macrochirus*. *Aquaculture* 285:216-223.

Brown, B., H.P. Wang, L. Li, G. Chandler, and G.K. Wallat. 2007. Yellow perch strain evaluation. I. genetic variance of six broodstock populations. *Aquaculture*. 271:142-151.

Delwiche, J.F., R.E. Liggett, and G. Wallat. 2006. Consumer perception of cultured yellow perch (*Perca flavescens*) and its market competitors. *Journal of Food Science* 71(8):579-582.

Wallat, G., L. Tiu, H. Wang, D. Rapp, and C. Leighfield. 2005. The effects of size grading on production efficiency and growth performance of yellow perch in earthen ponds. *North American Journal of Aquaculture* 67:34-41.

Wallat, G.K., L.G. Tiu, J.D. Rapp, and R.A. Moore. 2004. Effect of stocking density on growth, yield and costs of producing rainbow trout in cages. *Journal of Applied Aquaculture*. 15(3):73-82.