Online Producer Fish Health Certification Training Program

Chairperson:

Industry Advisory Council Liaison: Bill West, President, WI Aquaculture Association

Funding Request: $50,505

Duration: 2 years (September 1, 2008 – August 31, 2010)

Objective:

1. To develop an online Fish Health Certificate Program for producers, providing them with relevant risk assessment and management principles and practices to reduce losses due to fish diseases and set up mechanisms to collect data on the impact of the training on the individual fish operations and the industry in general.

Proposed Budgets

Institution	Principal Investigator	Objectives	Year 1	Year 2	Total
University of Wisconsin-Madison	Jeannette McDonald	1	$16,538	$17,034	$33,572
WI DATCP	Myron Kebus	1	$ 2,500	$ 1,500	$ 4,000
University of Wisconsin-Stevens Point	Chris Hartleb	1	$ 3,890	$ 2,890	$ 6,780
Iowa State University	Glenda Dvorak	1	$ 3,031	$ 3,122	$ 6,153
			$25,959	**$24,546**	**$50,505**

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Justification

Aquaculture in the U.S. continues to be the fastest growing segment of agriculture with annual increases in production averaging 17% (value of sale) and frequently, market demand exceeds production.

- Live fish are transported in great numbers throughout the U.S.
- Introduction of diseased fish can lead to severe losses on fish farms.
- Introduction of infectious diseases by trade of infected fish presents a major risk to aquaculture.

During the annual meeting of the Aquaculture Risk Management Project in 2002, stakeholders and experts representing the four aquaculture sectors identified disease as the greatest risk factor of economic concern in fish farming. Consequently, the program earmarked funds to study fish disease prevention and control and to create educational and outreach programs.

Recent events in fish health and disease detection has shown that producers are at the forefront of disease management and often suffer most when newly emerging diseases impact the industry through detection and regulation (VHS in 2006). Educating producers on disease prevention and control can help them reduce disease risks and protect their economic investment. For this reason, we propose to develop an online fish health training program for producers, providing them with relevant risk assessment and management principles and practices to reduce losses due to fish diseases. These modules should be developed, narrated, reviewed, revised, and published in an easy to access online format for producers. We intend to include modules demonstrating the appropriate preparedness, action, and assistance that producers can take when diseases are a concern at their fish farm and use current diseases of concern as relevant examples. The modules will include discussion of Viral Hemorrhagic Septicemia (VHS), Spring Viremia of Carp (SVC), Largemouth Bass Virus (LMBV), and Heterosporis. Producers who complete the online training can receive a certificate of completion. Also, the knowledge gained by producers completing the course will help them be better prepared to work with veterinarians and fish health specialists on disease concerns on the farm.

To insure we meet the needs of our intended audience, the project will include personnel with experience in fish diseases and prevention (Kebus, Hartleb, Dvorak,), fish producer education (Hartleb), and web-based learning modalities (McDonald).

The use of specialized delivery technologies, such as web-based learning, can provide efficient and timely access to learning materials (Harris 1999). Online learning allows for flexibility of access to course materials from anywhere at anytime, minimizing the issues of location and distance. (Edge and Loegering 2000). In early 2004, 63% of Americans had access to the internet and that grew to 73% by the beginning of 2006. Forty million Americans rely on the internet as their primary source for news and information about science. This is second only to television. Over 60% of Americans have said they would turn to the internet first for information about science. While 87% of internet users report they use the internet as their primary research tool because of convenience, the internet provides a better understanding of science information, and it is easier to search (Horrigan 2006).

In asynchronous online learning users can access the online material at anytime. The goal of any instructional systems is to promote learning. Therefore, as learning material is developed the educator must tacitly know the principles of the audience that is learning. This is especially true for online learning, where the educator (fish health specialist) and the learner (fish producer) are separated. Strategies should be used in online learning that allow the learner to perceive and attend to the information in an applied or working format so that it has real-world and immediate application. Anderson and Elloumi (2004) suggest that effective online learning should attempt to:

1. Present new information so that it can relate to current working knowledge.
    a. Information critical to learning should be highlighted both on the screen and verbally.
    b. Learners should be told what knowledge they should take away from each lesson.
    c. The difficulty level of the material must match the cognitive level of the learner, so that the learner can both attend to and relate to the material. This is best achieved by involving the learner in the design and development of content in the lesson.
2. Learners must construct a memory link between the new information and some related information already known and understood.
    a. Incorporate previously understood or accessed information into each module so that that the learner has a framework onto which to build and incorporate new information.
    b. Provide conceptual and real-world models and examples into each lesson module so that new information can be immediately applied.
3. Information should be presented in chucks or learning modules to prevent overload during the learning process.
    a. Online learning materials should present between five and nine items on a screen to facilitate efficient processing in working memory. Items should be reinforced with graphics and verbal commentary.
    b. A generalized information map, that may be linear, should be used to present the material. As the lesson progresses, each item in the generalized information map should be broken into sub-items. At the end of each lesson, the generalized information map should show the learner the relationship of each sub-item to the general topic.
4. Strategies should be used that promote long-term storage of knowledge gained in each lesson by understanding, applying, and evaluating the material to on-farm and best management practices.

Educational material has traditionally been presented through a variety of media including face-to-face, video conferencing, audio conferencing, radio, television, and correspondence. Each media represents some form of balance between interaction (between instructor and learner) and independence of time and distance. Web based learning supports these modalities through asynchronous delivery and digital interaction. In fact, web based content for online learning can become too large a domain if all forms of media are included, so a clearly designed set of learning modules that emphasize content, with reinforced applied examples, developed for a specific learning audience can be an effective educational tool.

Program evaluation is equally important for project output assessment for educational efforts. Evaluation can help to facilitate effective program planning, implementation and improvement. Development of assessment tools should address the users' perceptions of effectiveness and usefulness but also test the knowledge gained by the participants..

Related Current and Previous Work

In 2004, the University of Wisconsin-Madison and the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) proposed to the Aquaculture Risk Management Project (ARMP) that training veterinarians to perform Fish Health Inspections and Veterinary Health Assessments would lower the risk of disease transmission. They argued that, with their broad training in animal health and proven record of assisting animal agriculture, veterinarians are ideally suited to fill this role once appropriately trained in fish health issues. With funding provided by the ARMP, an online training program for veterinarians was created. It went online March 1, 2006 and 48 veterinarians have since taken the online course and received certification. The proposed project capitalizes on the investment already made in gathering experts and visual resources allowing the final budget to be less than half what it cost to produce the modules for veterinarians. An overview of the online course can be seen at: http://vetmedce.vetmed.wisc.edu/fhm.

The University of Wisconsin-Stevens Point Northern Aquaculture Demonstration Facility (NADF) received a USDA-Cooperative State Research, Education, and Extension Service (CSREES) grant in 2006 that included funding to assist with the development of a fish producer on-line education course and certification in aquatic animal health. The application and training of fish farmers in best management practices should be useful in to current aquaculturists and prospective fish farmers and be beneficial in the future development of a sustainable and environmentally sound industry. Many of the projects listed within the USDA-CSREES grant proposal directly address the research needs identified under the subheadings in federal Joint Subcommittee on Aquaculture, Aquaculture Research and Development Strategic Plan (JSA-SP) that was prepared for the Committee on Health, Safety, and Food of the National Science and Technology Council in 1994. The NADF's proposed partnership with the WI Department of Agriculture, Trade and Consumer Protection, Division of Animal Health, and the UW-Madison School of Veterinary Medicine to create an on-line fish producer health assessment course and certification to help detect and diagnose pathogens and diseases associated with fish farms in the northern region by directly addresses research needs identified by the JSA-SP. Educating farmers is the first line of defense and detection of diseases at commercial fish farms and is a vital part of integrated aquatic animal health management.

The Center for Food Security and Public Health (CFSPH), at Iowa State University, was established in 2002 with the mission to increase national preparedness for the accidental or intentional introduction of disease agents that threaten food production or public health. The Center has a strong history of developing and providing animal disease and prevention education at the national level to a variety of audiences, including veterinarians, livestock producers, extension specialists and the general public. The CFSPH has also conducted a number of training programs (face-to-face and web-based) on disease awareness and prevention. Course evaluations and outcome assessment tools were developed and used to obtain learning feedback for content modification and improvement for each of these programs.

Anticipated Benefits

Diseases constitute the largest single cause of economic losses in aquaculture (Meyer 1991). There are few treatments available for current and emerging aquaculture diseases and often the best treatments are education, preparedness, and following best management practices. Few fish culturists involved in aquaculture have extensive training in fish health management and detection and rely on aquatic veterinarians for diagnoses and treatments. But disease outbreak can happen rapidly and, depending on the culture system, can spread quickly and result in high mortalities. Although diseases at fish culture facilities have been around as long as aquaculture, interstate transport, stocking, wild harvest, and the emergence of exotic diseases have increased the rate of disease transmission and introduced new diseases into aquaculture facilities. Development of aquaculture drugs and diagnoses techniques of aquatic diseases often lag behind the occurrence of new and emerging diseases. Disease prevention is the principal method of dealing with the rapid occurrence of new diseases and aquaculture industry members are at the forefront of disease prevention and detection.

Aquatic animal health and fish disease management are extremely relevant to the aquaculture industry in the North Central Region because the industry has experienced both long-term and recent disease issues that have resulted in significant changes to the regulation of the industry and economic losses associated with fish mortalities and greater requirements for disease detection and assessment on the farm. As a result, the aquaculture industry has requested more information on understanding fish health and mechanisms by which fish farmers can be better trained to prepare, identify, and manage disease outbreaks at the farm. Though previous attempts at educating and assisting fish farmers with aquatic disease issues have addressed the subject with printed information and workshops, few have had region-wide impact and none have attempted to prepare the aquaculture industry for whole farm disease management.

From the proposed extension project, a series of online fish health learning modules developed for the aquaculture industry will be created and implemented to better educate the fish farmer about aquatic diseases and on-farm fish health management. By utilizing an asynchronous delivery system, an internet based set of educational modules will present best management practices that will assist the fish farmer in developing biosecurity plans and educating and bringing to the forefront risk factors in farm management and disease control. Fish farmers will not only be shown techniques for evaluating disease introduction, transmission, and basic pathological signs but will be shown how to minimize disease occurrence, prepare for infections and proper disease risk management along with explanations and examples of veterinary inspection, health assessment, and disease treatments. Our proposed work will also aid the fish farmer in understanding the veterinary health assessment report and upon completion of the online learning modules the fish farmer can obtain a certificate of completion that can help veterinarians recognize the aquaculture facility as one educated on methods of disease prevention and one prepared to cooperate with the veterinarian in implementing proper treatment procedures.

While long term impacts (e.g., environmental and economic changes) of educational training programs can be difficult to quantify, the incorporation of outcome assessments and course evaluations can provide useful information regarding the effectiveness of the program modules.

Short-term outcome indicators would reflect a change in the knowledge, skills, attitudes, motivation and awareness of participants. While intermediate outcome indicators would reflect a change in behaviors, practices, policies and procedures. These tools can serve to measure changes in awareness or attitudes as well as any response (e.g., implementation of procedure or policy changes) implemented by the fish producer on the fish farm following completion of the course. Additionally, feedback from participants is essential for continued improvement of the course.

Awareness is one of the most essential steps in disease prevention. Fish producers are the first line of defense for aquatic diseases, and therefore are essential for the prevention and detection of aquatic animal diseases. Increasing awareness of current and emerging diseases and the proper implementation of prevention and control measures among these individuals, helps not only to prevent the incursion of emerging diseases, such as VHS, but can help minimize economic impacts from more commonly seen diseases, such as heterosporis.

Objective

To develop an online Fish Health Certificate Program for producers, providing them with relevant risk assessment and management principles and practices to reduce losses due to fish diseases and set up mechanisms to collect data on the impact of the training on the individual fish operations and the industry in general.

Procedures

Part 1: Develop an online Fish Health Certificate Program for aquaculture producers

Plan: This objective involves the development and implementation of six web-based fish health learning modules developed to educate fish farmers about aquatic animal diseases and on-farm fish health management. The training program will be adapted for online delivery through the continuing education (CE) portal of the University of Wisconsin, School of Veterinary Medicine. It will be constructed as a series of six modules, each approximately 45-50 minutes in length. The modules will be web-based using narrated PowerPoint presentations and supplemental reading materials delivered using new educational technology software. Each module will conclude with a computer scored post-test randomly generated from a bank of questions. Since the goal of the modules is to have producers learn the information, should the learner not achieve a passing score they will have the opportunity to review the material and retake the test with new questions from the question bank. Successful completion of each module will also require the learner complete an evaluation of the module and will result in the award of a final certificate upon completion of all the modules. The modules topics to be included are as follows:

1. Module 1: Introduction – goals and information that aquaculture producers should ascertain from each module, types and format of questions that will be presented in post-test, and information map of the topics covered in each module.
    a. Regional Fish Production – a general description of the fish species raised in the NCR, wild harvest and fully cultured species, production levels, and economic impact.
    b. Farm Types and Culture Systems – presentation on the typical farm types in the NCR and the diseases risks associated with production systems ranging from intensive to extensive.

c. Regulatory Agencies – an overview of the agencies responsible for fish health, veterinary assessments and regulations in the NCR.

2. Module 2: Risk Management & Biosecurity – an overview of the methods used to implement risk management programs at aquaculture facilities, with an emphasis on biosecurity measures that can help reduce the risk of introduction or spread of diseases at an aquaculture facility.
    a. Best Management Practices – a review of BMP's in the NCR that help to reduce disease risk at the farm and how an on-farm management plan can both prepare and reduce the occurrence of aquatic diseases in aquaculture.
    b. Loss Events – how to prepare for, and recover when disease outbreaks occur at the farm.
    c. Continuing Education – additional educational information the producer can access to further their knowledge of aquatic animal diseases.
    d. Available Veterinary Services – types and contact information for veterinarians in the NCR.
    e. Accurate Record Keeping – detailed description of how to accurately prepare and record on-farm fish health information.
    f. State & Federal Guidelines & Policies – an overview of state and federal guidelines on aquatic animal health.

3. Module 3: Water Quality – goals of water quality management, monitoring and disease prevention.
    a. Water Condition – a review of the proper water characteristics for successful culture of various fish in the NCR.
    b. Physical & Chemical Water Components – an overview of the primary components of water that should be monitored and could be managed such as temperature, dissolved oxygen, pH, nitrogen and phosphorus components, flow, and aeration.
    c. Effluent – coverage of the production, collection, treatment, and monitoring of aquaculture facility and production system waste.

4. Module 4: Preparing for Fish Health Inspections – presentation on how and why a fish health inspection is conducted at an aquaculture facility and how the producer has a significant role in a successful inspection.
    a. What to Expect at an Inspection – an overview of the steps involved when a veterinarian inspects an aquaculture facility.
    b. How to Prepare for an Inspection – how the producer can adequately prepare for a fish health inspection and how the producer can assist the veterinarian.
    c. Regulatory Consequences – a presentation on fish health regulations including the "do's" and "don'ts" of proper fish health management at aquaculture facilities.
    d. Supplies & Equipment – a review of what the veterinarian will need to successfully complete the fish health inspection and how the producer can assist and expedite the inspection process.
    e. Collection, Shipping & Specimens – a presentation in the proper techniques for collecting voucher specimens and preparing them for shipment to a diagnostic lab.

5. Module 5: Understanding Veterinary Health Assessments – much confusion arises when a veterinarian visits a fish farm to perform their inspection and provides the producer with the health assessment. This module will provide explanations about the health assessment report and how the information can be used by the fish farmer to reduce risk, enact best management practices, and prevent and treat diseases.
    a. Understanding Veterinary Assessments & Reports – various assessments and reports will be presented showing the results of fish health inspections with detailed information on data within the report and how a fish producer can use the information to improve fish health management on the farm.
    b. Treatments & Medications - a review of various fish disease treatments and currently available medications. This sub-topic will not educate the fish farmer on how to perform their own treatments and applications of medicine but will present potential options and emphasize how a veterinarian can assist the producer in deciding on the most cost-effective treatment when disease occurs at the fish farm.
    c. Follow-up Assessments – disease prevention and treatment is an ongoing process that will be explained and overall management strategies will be presented to reduce disease risk in the future.

6. Module 6: Case Studies – detailed presentation on the emergence, detection, diagnosis, impact and prevention methods for common and recently emerging diseases. This module may be updated as newer emerging diseases appear in the aquaculture industry and additional prevention and preparedness techniques are developed.
    a. Viral Hemorrhagic Septicemia (VHS)
    b. Spring Viremia of Carp (SVC)
    c. Largemouth Bass Virus (LMBV)
    d. Heterosporis

Each module will be based on a template for an asynchronous online environment based on a Learning Management System (LMS) already used for an online training program for veterinarians created and hosted by the University of Wisconsin, School of Veterinary Medicine. This will allow aquaculture producers to complete the online certification program from their own computer and at their own pace and time. In designing the learning modules for this online fish health certification, the instructor's planned pedagogical approach described in the outline, the nature of the content, and the constraints and features of the online asynchronous environment will help determine how the producers apply the risk management techniques and recommended disease management and best management practices described in each module.

Dr. Myron Kebus is the Wisconsin State Fish Veterinarian and the primary author of veterinary Fish Health Medicine Certificate Program. It is based on long experience working with fish farmers and veterinarians on fish health. These modules will be the basis for the producer modules. Dr. Chris Hartleb is a teaching and research faculty in aquaculture and Co-Director of the UW-Stevens Point Northern Aquaculture Demonstration Facility with close connections with regional aquaculturists, Drs. Hartleb and Kebus will be responsible for developing outlines and storyboards for each module and editing content for each topic and sub-items. This includes:

- Creating the scripts and PowerPoint presentations for the modules
- Narrating the online modules and working with Jeannette McDonald in producing the online

content and PowerPoint presentations for each module,
- Using the peer reviews to edit each modules content,
- Providing comments and reviews from the pilot online modules with aquaculture industry producers so that evaluation and impact data can be forwarded to Glenda Dvorak for outcome evaluation and assessment,
- Dr. Hartleb will also serve as the liaison with aquaculture industry producers evaluating and reviewing drafts of the online modules.

Part Two: Develop outcome assessment tools to determine the impact of the online Fish Health Certificate Program for producers

Glenda Dvorak (ISU) will work closely with The University of Wisconsin to design and develop tools for evaluating the course, the level of knowledge gained by the participants and outcome indicators. Assessment will be conducted by a series of short evaluation surveys incorporated into the Fish Health Certificate Program web-based modules. These surveys will be designed to provide feedback from the participants in regards to the course (e.g., usefulness, accessibility, user-friendliness) as well as to aid in assessing the knowledge gained by the course participants following completion of each module and the course overall (short-term outcomes).

Data collected would include a short pre-assessment survey prior to the participant beginning the course. Similar questions will be repeated at the end of the course to assess any change in knowledge, skills, attitudes, motivation or awareness of the participants. Learners will take a short quiz at the end of each module as a way to enhance, as well as assess, learning of the material presented. A follow-up survey will be sent to all participants six months after completing the online training program. This will help determine 1) any actions, changes in practices, policies or procedures the participants implemented at their fish facility following the completion of the course and 2) to test retention of knowledge from the course (intermediate outcomes). Although outside of the scope (timeframe) of this grant proposal, long-term impacts should be assessed with future funding. Impacts such as changes in environmental (reduction in disease occurrence) or economic conditions (healthier fish) could be evaluated.

Data from these various surveys will be collected and forwarded to ISU as available (quarterly) and data received prior to the end of the grant cycle will be assessed and analyzed for the project final report.

Project Outputs:

This grant would provide the resources to create the online training program and test the system in Wisconsin and Iowa, or any other state requesting to participate. Once the system is operating smoothly, it could be adapted for delivery on a national basis. We envision that states could either decide to accept the producer certificate awarded through our program (reciprocity) or could work with us to modify the modules to create a state-specific program that would address specific needs of their state. Alternatively, USDA could assume full responsibility for administration of the program.

References

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W.K. Kellogg Foundation. Logic Model Development Guide. 2004. Available at http://www.wkkf.org/Pubs/Tools/Evaluation/Pub3669.pdf. Accessed August 13, 2007.

Project Leaders

State	Name	Institution
Wisconsin	Jeannette McDonald	University of Wisconsin School of Veterinary Medicine
	Myron Kebus	WI Dept of Agriculure, Trade, & Consumer Protection
	Chris Hartleb	University of Wisconsin-Stevens Point
Iowa	Glenda Dvorak	Iowa State University

Participating Institutions and Principal Investigators

University of Wisconsin School of Veterinary Medicine	Jeannette McDonald
WI Dept of Ag, Trade, & Consumer Protection	Myron Kebus
University of Wisconsin-Stevens Point	Chris Hartleb
Iowa State University	Glenda Dvorak

Budgets

Budget Explanation For University of Wisconsin School Of Veterinary Medicine (McDonald)

A. Salary and Wages. ($24, 868)
Project personnel costs are based on projected salaries and percentage time. We have included a 3% cost of living raise for Year 2. Year 1: 5% time for each of 4 production staff (Project Director, Editor, Web Developer, Graphic Artist/Programmer) to create, modify, edit, and publish 4 modules ($12,250). Year 2: 5% time for each of 4 production staff to create, modify, edit, publish the remaining modules, as well as pilot and revise all them module. ($12,618).

B. Fringe benefits. **($8,704)**
Fringe benefits rates are 35% for academic staff, as per University recommendation. These benefits include social security, retirement, health insurance, and disability insurance. Year 1: $4288. Year 2: $4416.

J. All Other Direct Costs ($16,933)
Included in this category are the subcontracts with the other partners. See individual budget justifications for details.

1. **Wisconsin Department of Agriculture, Trade, and Consumer Protection -** $4,000
2. **University of Wisconsin – Stevens Point -** $6,780
3. **Iowa State University -** $6,153

Budget Explanation For Wisconsin DATCP (Kebus)

E. Materials and Supplies. ($1,000)
Year 1: Purchase digital SLR camera and macro lens for photographing aquaculture facilities, disease prevention measures, and content for online modules ($1,000).

F. Travel. ($3,000)
Travel funds for Dr. Myron Kebus to attend the Aquaculture America conference to market the program to producers budgeted at $1500 for each of two years (total of $3000). This includes registration, airfare, ground transportation, lodging, and meals for three days.

Budget Explanation For University Of Wisconsin-Stevens Point (Hartleb)

A. Salary and Wages. ($4,000)
Year 1: Partial summer salary for Co-PD to develop outlines and storyboards for each module, including digital photographs of aquaculture facilities and disease prevention measures, time to narrate each module and work with production team, and time for liaison duties to review modules with content experts and aquaculture industry producers ($2,000). Year 2: Partial summer salary for Co-PD to complete work on modules from Year 1 ($2,000).

B. Fringe benefits. **($1,780)**
Annual costs: Year 1: 44.5% (institutional rate at UWSP) for Co-PD ($890). Year 2: 44.5% for Co-PD. ($890)

E. Materials and Supplies. ($1,000) Year 1: Purchase digital SLR camera and macro lens for photographing aquaculture facilities, disease prevention measures, and content for online modules ($1,000). Both Kebus and Hartleb will be photographing specimens, cases, examples that will be used in the modules while on their frequent farm visits. They live 2 hours apart making sharing one camera impossible.

Budget Explanation For Iowa State University (Dvorak)

A. Salary and Wages. ($4,337)
Year 1 and Year 2: Partial salary (6%) for Academic Staff at Iowa State University to peer review each module, develop outcome assessment and course evaluation tools and assess these tools during the piloting of the course. (Year 1: $2,284, Year 2: $2,353) [Differences in salary between Years 1 and 2 reflect the annual 3% salary increase at Iowa State University.

B. Fringe benefits. **($1,516)**
The fringe benefit rate for Academic Staff at Iowa State University is 32.7%. (Year 1: $747; Year 2 $769)

Schedule for Completion of Objectives

Outcomes /Activities	Yr 1				Yr 2				Responsible Party(ies)
	Oct-Dec	Jan-Mar	Apr-June	July-Sept	Oct-Dec	Jan-Mar	Apr-June	July-Sept	
Develop outline, storyboard, edits for Module 1	✓								Content Expert and Project Staff
Narrate and produce module		✓							Project Team
Peer review (content experts and producers), edits		✓	✓						Project Staff,
Pilot with producers, collect evaluation data			✓	✓	✓	✓	✓	✓	Project Staff
Develop outline, storyboard, edits for Module 2	✓								Content Expert and Project Staff
Narrate and produce module		✓							Project Team
Peer review (content experts and producers), edits		✓	✓						Project Staff,
Pilot with producers, collect evaluation data			✓	✓	✓	✓	✓	✓	Project Staff
Develop outline, storyboard, edits for Module 3		✓							Project Staff, Evaluator
Narrate and produce module			✓						Project Staff, UTMB, Design Team
Peer review (content experts and producers), edits			✓	✓					Project Staff, UTMB
Pilot with producers, collect evaluation data				✓	✓	✓	✓	✓	
Develop outline, storyboard, edits for Module 4		✓							Content Expert and Project Staff
Narrate and produce module			✓						Project Team
Peer review (content experts and producers), edits			✓	✓					Project Staff,
Pilot with producers, collect evaluation data				✓	✓	✓	✓	✓	Project Staff
Develop outline, storyboard, edits for Module 5			✓						Content Expert and Project Staff
Narrate and produce module				✓					Project Team
Peer review (content experts and producers), edits				✓	✓				Project Staff,
Pilot with producers, collect evaluation data					✓	✓	✓	✓	Project Staff
Develop outline, storyboard, edits for Module 6			✓						Content Expert and Project Staff
Narrate and produce module				✓					Project Team
Peer review (content experts and producers), edits				✓	✓				Project Staff,
Pilot with producers, collect evaluation data					✓	✓	✓	✓	Project Staff
Design and develop tools for collecting impact data				✓	✓				
Pilot test data collection						✓			
Revise tools as needed per pilot test							✓		

List of Principal Investigators

Jeannette McDonald, University of Wisconsin-Madison

Myron Kebus, WI Department of Agriculture, Trade, and Consumer Protection

Chris Hartleb, University of Wisconsin-Stevens Point

Glenda Dvorak, Iowa State University

Curriculum Vitae for Principal Investigators

VITA: JEANNETTE McDONALD, DVM, PhD

Director, Technology for Learning Center
108 AHABS Building
1656 Linden Drive
Madison, WI 53706

Phone: 608-263-5170
E-mail: mcdonal7@wisc.edu

EDUCATION

B.S. University of Northern Colorado, Deaf Education; Minor: Chemistry, Math. 1974
DVM Colorado State University, Veterinary Medicine, 1981
PhD University of Wisconsin – Madison, Distance Education. 1998.

POSITIONS

1998-present	Faculty Associate, University of Wisconsin-Madison
1996-1998	Distance Learning Consultant, School of Human Ecology and UW-Extension,
1994-1996	Graduate Project Assistant for the Distance Education/Learning Project of the Wisconsin Small Business Development Center (SBDC)
1994	Teaching Assistant, UW-Extension Small Business Development Center.
1993-1994	Project Coordinator and Curriculum Developer for the Oscar Mayer Agricultural Institute
1992-1993	Microbiologist in the Department of Medical Sciences, SVM, UW Madison

OTHER EXPERIENCE AND PROFESSIONAL MEMBERSHIPS

National Johne's Working Group – Co-chair, Education Committee
American Veterinary Medical Association
International Association for Paratuberculosis
United States Animal Health Association
Association for the Advancement of Computing in Education
Wedemeyer Award, Outstanding Distance Researcher of the Year (National competition). 1999
Wisconsin Continuing Education Association – Vice President, 1997-1999

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EDUCATION

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D.V.M. Veterinary Medicine; University of Wisconsin-Madison, 1992

POSITIONS

Director, Division of Animal Health Aquaculture Program, Wisconsin Department of Agriculture, Trade & Consumer Protection (1999-present).
Consultant, Infectious Salmon Anemia Emergency Program, USDA, Eastport, Maine, April 2002.
Adjunct professor, University of Wisconsin, School of Veterinary Medicine, Madison (2005 to present).
Owner Private Practitioner, Wisconsin Aquatic Veterinary Service (1993-1999).
Associate Private Practitioner, Lake Mills Veterinary Clinic (1992-1993).
Assistant Research Specialist, University of Wisconsin-Madison Aquaculture Program, University of Wisconsin-Madison (1987-1988).

SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

American Fisheries Society
American Veterinary Medical Association
World Aquaculture Society
Wisconsin Aquaculture Association
Wisconsin Aquaculture Industry Advisory Council

SELECTED PUBLICATIONS

Kebus, M.J. 2005. Aquaculture Fish Health. A Manual of Best Management Practices for aquaculture in Wisconsin and the Great Lakes Region. Malison, J.A., and C.F. Hartleb (eds.). University of Wisconsin Sea Grant Institute, Madison, WI.

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POSITIONS

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Researcher Assistant, Maine Cooperative Fish & Wildlife Research Unit, University of Maine (1992-1996)
Research Assistant, Lakes Fish Condition Program, University of New Hampshire (1990-1992)
Research Assistant, Rensselaer Fresh Water Institute, Rensselaer Polytechnic Institute (1988-1990)

SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

American Fisheries Society, Fish Culture Section
North American Benthological Society
Wisconsin Aquaculture Industry Advisory Council
World Aquaculture Society / U.S. Aquaculture Society

SELECTED PUBLICATIONS

Koehler, R.A., B. Sloss and C.F. Hartleb. 2007. Population distribution of North American yellow perch (*Perca flavescens*) analyzed with microsatellite loci. *in prep*.

Hartleb, C.F. and D.A. Caporale. 2007. Stock discrimination of rainbow smelt from Lake Michigan using DNA fingerprinting (AP-PCR). *in prep*.

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DVM Iowa State University, Veterinary Medicine, 2001
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POSITIONS

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Adjunct Instructor, Iowa State University, College of Veterinary Medicine (2002-2003)
Associate Veterinarian, All Creatures Small Animal Hospital, Indianola, Iowa (2001-2002)
Research Assistant, North Central Regional Aquaculture Center, Iowa State University (1995-1997)
Program Assistant, North Central Regional Aquaculture Center, Iowa State University (1993-1997)

SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

American Veterinary Medical Association
Iowa Veterinary Medical Association (Public Health Committee)
Iowa Public Health Association
Iowa Veterinary Rapid Response Team
National Society of Public Health Educators

SELECTED PUBLICATIONS

Dvorak G, Rovid-Spickler A, Roth JA. 2007. Handbook for Zoonotic Diseases for Companion Animals. Iowa State University, Ames, IA. (in press) ISBN# 0-9745525-5-0.

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