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Lake Clark National Park

Fisheries Biotechnician Training: Final Report

Fisheries Biotechnician Training Program

Final Report for Project 03-046

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Ray RaLonde of the University of Alaska Fairbanks Marine Advisory Program conducts a field session on aquatic habitat assessment.

Abstract

The Fishery Biotechnician Training Program was developed to address a need for qualified applicants to fill existing field positions on fisheries research and monitoring projects, particularly in the Bristol Bay region. FIS funding was used to develop and support a comprehensive field-based training program for Bristol Bay area residents to provide the skills and certifications necessary to be work-ready for government and private agency fisheries technician jobs. The training program combined classroom-style instruction with hands-on field experience and targeted young adults aged 18 years and older. Participants lived in a model field camp located on Six-Mile Lake near Nondalton and attended classroom and lab sections taught by federal and state fishery biologists and other agency professionals. Students successfully completing the three-week program received three university credits from the University of Alaska Fairbanks, a stipend and a certificate of completion from the National Park Service.

Introduction

The Fishery Biotechnician Training Program was developed to address a need for qualified applicants to fill existing field positions on federal fisheries research and monitoring projects in the Bristol Bay region. FIS funding was used to develop and refine the curriculum piloted in a National Park Service (NPS) biotechnician training course and to implement the revised program in 2004. The Fishery Biotechnician Training Program addressed the following four objectives:

1. To build local capacity to work in research field camps and gather data for fisheries research and monitoring programs.

2. To develop a pool of trained fisheries technicians to fill positions on federal, state and locally funded fisheries research and monitoring projects.

3. To develop a model training program that can be used throughout the National Park Service system in Alaska and by other federal and state agencies to train individuals as fisheries technicians.

4. To encourage local individuals to pursue additional training and education related to biological sciences and to consider professions in fisheries biology.

The program benefits the National Park Service by creating a pool of work-ready residents with basic technical skills and expanding opportunities for local hire. It also provides opportunities for partnering with local tribes and governments, schools and universities, non-governmental organizations and state and federal agencies.

Methods

The program curriculum was initially designed to provide Bristol Bay residents with the skills and certifications necessary to be work-ready for federal and state positions as fisheries technicians. The project took a market-based approach to determine course content and structure and began by interviewing fisheries managers from the National Park Service, U.S. Fish and Wildlife Service, U.S.G.S Biological Resources Division and the Alaska Department of Fish and Game regarding the knowledge and skills they would want in a field technician.

The general consensus was that a well qualified field technician should understand the necessity of accurately recording scientific data and be able to properly collect basic biological information. They should have a general understanding of salmonid biology including gross anatomy, lifecycles and habitat requirements and be familiar with fish enumeration methods such as counting towers, weirs, mark/recapture studies, tagging, and radio telemetry.

Several field biologists mentioned that one of their greatest challenges in retaining locally hired field technicians is that many people hired to work on fisheries projects have no idea of the living and working conditions of a fisheries field camp, what the work entails and the importance of accurate data recording. One ADF&G manager shared his experience of hiring local residents to work on a counting tower project only to have them walk off the job because they found the work monotonous and the living conditions too rustic. This same manager later discovered that tower counts recorded by the crew had been made up and were useless.

Federal fisheries biologists were particularly interested in prospective employees who had completed the Department of the Interior Motorboat Operator Certification Course (MOCC) and Helicopter/Aviation Safety (B3) class. These courses are required to operate DOI motorboats and to fly in DOI aircraft and represent 36 hours of specialized training to receive certifications valid for three years.

Based on information from the interviews, we worked with the University of Alaska Fairbanks Bristol Bay Campus to develop a three-week field-based training program that would provide participants an opportunity to experience living and working conditions associated with fisheries research and monitoring projects. The course design stressed safety, best practices for living and working in remote field camps and interpersonal relations, along with the biological sciences components. Since the program targeted rural Alaska residents with little or no formal training in science or fisheries biology, the science portions of the course combined classroom sessions with hands-on field practicums to provide opportunities for experiential learning. The course also acknowledged traditional ways of knowing and included a section on the value and importance of traditional ecological knowledge in fisheries research and monitoring activities.

The resulting curriculum included 160 contact hours covering the following content areas:

8 hrs. Introduction to Field Work

- Interpersonal Relationships
- Teamwork

8 hrs. Traditional Ecological Knowledge

- TEK and the European scientific method
- Recording and documenting TEK

8 hrs. Camp Set-Up and Leave No Trace training

- Camp siting
- Food storage and handling
- Disposal of human and solid wastes
- Safety

8 hrs. Working Safely in Bear Country

- Managing bear/human interactions
- Proper use of bear resistant containers
- Proper use of pepper spray deterrents
- Installing and using electrical fencing

16 hrs. Aquatic Habitat

- Water chemistry
- Macroinvertebrate identification and bioassessment
- Stream habitat assessment

16 hrs. Basic Salmonid Biology

- Lifecycles
- Habitats
- Identification and gross anatomy

16 hrs. Collecting Biological Information

- Freshwater fish identification
- Non-lethal methods for capturing fish
- Proper handling of live fish
- Measuring fish and recording age, sex and length data
- Scale and tissue sampling
- Collecting and preparing otoliths

40 hrs. Fish Enumeration Methods

- Weirs
- Counting Towers
- Mark/recapture
- Tagging and radio telemetry
- Test fishing
- Sonar and video monitoring

40 hrs. Safety

- DOI Motorboat Operators Certification Course
- DOI Helicopter/Aviation Safety Training
- First Aid and CPR

The course was designed to draw on the experience and expertise of professional fisheries biologists and other specialists working for resource agencies to teach specific topics of the curriculum. Instructors were recruited from the NPS and other federal agencies, the University of Alaska and non-governmental organizations to provide students with subject experts and teachers who could be mentors as well as prospective employers.

Since the program involved the operation of motorboats and other equipment belonging to the NPS, prospective students were required by policy to be at least eighteen years of age. This focused recruiting efforts on young adults aged 18 to 26 who were in college, just out of high school, or out of school and looking for alternative career and employment opportunities. In order to make the training program attractive to this age group, we worked with the University of Alaska Fairbanks (UAF) Bristol Bay Campus to offer the course for college credit and secured a grant to provide student stipends for successful completion. To be logistically feasible, the program was limited to ten participants. This ensured a high instructor:student ratio and a safe environment for learning and working.

Once the course structure and content were determined, there were many factors to consider for selecting an appropriate site for the model field camp. The Old Nondalton village site was chosen because it had basic camp facilities used to conduct tribal gatherings and an annual bible camp. “Old Village” is located adjacent to Lake Clark National Preserve and approximately two miles from Nondalton which has an airport and basic emergency services. It also had the advantage of being located near the NPS counting tower on the Newhalen River.

The selection of Old Village determined the infrastructure needed to construct the field camp. Since basic cooking, bathing and storage facilities were already in place, the primary camp needs were a large space to serve as a classroom and common area, student and staff housing, electrical power, refrigeration and a water supply.

Students installing a weir on Alexie Creek under the direction of Dave Nelson, NPS fisheries biologist.

Results

Students were recruited through the UAF Bristol Bay and Kuskokwim Campuses, the Lake and Peninsula School District and area tribal councils. The application package included a program application form conforming to NPS personnel regulations and policies and an optional medical history form. Additional forms outlined the program's policies and standards, what applicants could expect while participating in the program and a list of things to bring (Appendix A).

The training program was conducted at the Old Village field camp from July 12 to July 30 with seven students aged 18 to 23 years old. Ten students initially enrolled in the course—two from Port Alsworth, five from Nondalton, two from Dillingham and one from Kwethluk—however the dry spring and summer of 2004 led to an active fire season and three Nondalton students dropped out to work on the local fire crew. The seven students remaining successfully completed the course and received three UAF science credits. Students also received letter

grades based on their understanding and application of the concepts and techniques taught in the training course, attendance of classes and field trips, participation in individual and group activities, teamwork, and compliance with the standards and policies outlined for the training program.

The students lived on-site at the field camp except for four days at the Lake Clark National Park headquarters in Port Alsworth during the boating and aviation safety portions of the course. Students, instructors and camp staff were housed in large tent-cabins with cots and shared communal meals prepared by a camp cook hired by the Nondalton Tribal Council. The camp kitchen was a small portable building equipped with a propane range and refrigerator and surrounded by an electrified bear fence. Students and camp staff took turns doing dishes after meals and hauling water from a small stream about 100 yards from the kitchen facility.

Course instructors were flown to Nondalton and transported to the camp by boat. Classroom sessions were held in a 17'x32' weatherport-type portable building that also served as the camp common area for meals and evening activities. The classroom was equipped with tables, chairs, a laptop computer, digital projector, VCR, and dissecting microscopes. Electrical power was supplied by a 3000-watt Honda generator.

Lake Clark National Park provided boats and fuel for transporting students, instructors and equipment to and from the camp and field trip sites. Rangers delivered fuel and supplies as part of their regular lake patrols and back hauled camp garbage to Port Alsworth for incineration. The camp staff maintained daily contact with the Park headquarters and called by radio each morning at 0803 to report on camp operations, local weather and the camp plan for the day.

Instructors

Instructors for the course were recruited from a variety of agencies and organizations and were selected for their knowledge, experience and expertise in their respective fields:

Mary McBurney, Training Program Coordinator:
Introduction to Field Work, First Aid and CPR

Larry Merculieff, Deputy Director of the Alaska Native Science Commission:
Traditional Ecological Knowledge

Nancy Stimson, NPS Alaska Region LNT Coordinator and Interpretive Specialist:
Leave No Trace

Derek Stonorov, author of Living in Harmony With Bears:
Working Safely in Bear Country

Dan Bogan, Research Associate, UAA Environment and Natural Resources Institute:
Macroinvertebrate Identification and Bioassessment

Mike Kelly, Fisheries Biologist, UAA Environment and Natural Resources Institute:
Meg Burgett, Environmental Educator, UAF Cooperative Extension Service:
Water Chemistry

Ray RaLonde, Associate Professor, UAF Marine Advisory Program:
Stream Habitat Assessment

Dr. Troy Hamon, Chief of Resources, Katmai National Park and Preserve
Basic Salmonid Biology

Dr. Glenn Chen, Fisheries Biologist, Bureau of Indian Affairs
Dr. Carol Ann Woody, Fisheries Biologist, USGS
Dan Young, Fisheries Biologist, Lake Clark National Park and Preserve
Collecting Biological Information and Fish Enumeration Methods

Roy Wood, Chief of Interpretation, Katami National Park and Preserve
DOI Motorboat Operators Certification Course

Ken Barnes, NPS Alaska Region Aviation Program Manager
DOI Helicopter/Aviation Safety Training

Partnerships

Some of the greatest benefits of the Fishery Biotechnician Training Program were from the opportunities it presented for partnering with other agencies and organizations to develop and deliver the course.

The *Fisheries Information Service* provided operating funds that were used for student tuition, student and instructor transportation, a portable classroom, textbooks, course materials and equipment, and groceries.

The *UAF Bristol Bay Campus* was one of the earliest program partners and worked with the University of Alaska Fairbanks (UAF) School of Fisheries and Ocean Sciences to offer the training program as a three credit Fisheries 101 course starting with the 2004 summer semester. The Campus assisted with recruiting students from the Bristol Bay region and provided insurance and reduced tuition for program participants. They also furnished dissecting microscopes, and a

propane refrigerator for the camp kitchen.

The *UAF Cooperative Extension Service* provided funding for student travel from Dillingham to Nondalton and hired a logistics coordinator to assist with the day-to-day operations of the field camp and provide peer support for students.

The *Kijik Corporation* and *Holy Transfiguration of Our Lord Russian Orthodox Church* provided the Old Village campsite at Old Nondalton.

The *Nondalton Tribal Council* administered the student stipends for the training program and hired a camp cook and work crews to set up and take down the camp. This partnership was formalized under a cooperative agreement and funded by a grant from the NPS Public Lands Corps program.

The *Lake and Peninsula School District* assisted with recruiting students, distributing information and application packets and provided exhibit space at the District's academic fair to promote the training program.

The *Native American Fish and Wildlife Society* provided instructors, equipment and class materials to teach the water chemistry, macroinvertebrate identification and bioassessment, and stream habitat assessment sections of the course.

NPS Volunteers participating in the NPS Volunteers in Parks program made necessary repairs to the existing cooking and steam bath facilities at Old Village. They also built two new outhouses, constructed a gravity-fed water system to make water hauling more convenient and assisted with setting up the camp facility.

Students sampling Liz's Slough.

Discussion

Success of the Fisheries Biotechnician Training Program can be quantified in different ways depending on the time scale. Short term success, for example, can be measured by the number of participants who successfully complete the course each year. Using this standard, which recognizes that course completion is not assured for all participants, the 2004 program was 100 percent successful. However, if we apply the course grading criteria for receiving college credit, we can get a better sense of which students most clearly demonstrated the aptitudes and qualities of a well-qualified prospective biotechnician. These criteria included:

- understanding and application of concepts and techniques taught
- attendance of classes and field trips
- participation in individual and group activities

- teamwork
- compliance with program standards and policies

Using the grading criteria, four of the seven students (57%) received a "C" for the course, one (14%) a "B" and two (29%) earned an "A." The "A" and "B" students (43%) were generally self-starters and the people most interested in the course and motivated to learn. They were also currently in college or enrolled to start college in the fall and had an interest in the biological sciences. These students clearly demonstrated aptitude for performing technician work and were comfortable living and working outdoors in a field setting. They have all expressed an interest in working next summer as biotechnicians, either for the NPS or other agency.

The four students who received a "C" were generally less enthusiastic and interested in the course work and activities requiring reading or math were especially challenging for them and did not hold their attention. However most enjoyed working outdoors and "doing things" such as learning to operate a boat, minnow trapping and test fishing and working with weirs. While these students were not as impressive as prospective employees as those receiving "As" and "Bs," most had at least one area where they excelled. One young woman, for example, particularly enjoyed the counting tower section and went to work for the NPS several days after graduating on the Newhalen counting tower.

In the mid-term, success for the training program can be evaluated by the number of people getting jobs after completing the course. This involves a commitment to maintaining contact with students after graduation to encourage their interest in biotechnician work and to assist them with job placements. 2004 was the third year a biotechnician training course had been offered and data from the previous two years indicate the effectiveness of this approach for increasing local hire.

2002 was the pilot year for the training program and eight of nine (88%) participants completed the course. Of the eight, three (38% of the 2002 graduates) were hired by Lake Clark National Park in 2003 and one (13%) in 2004 to work on fisheries projects.

The 2003 class graduated seven of seven participants. In 2004, four students (57%) found jobs as a result of completing the biotechnician training program. Two (29% of the 2003 graduates) went to work for Lake Clark National Park, one (14%) was hired by the University of Alaska and another (14%) got a biotechnician job with the Alaska Department of Fish and Game.

The prospects for graduates of the 2004 class getting jobs are consistent with the previous two years and follow-up with students will be done during the winter 2004 and spring of 2005 to encourage interest in positions for the 2005 field season and assist with job placement.

Students try out personal flotation equipment and practice survival skills as part of the DOI Motorboat Operators Certification Course (MOCC).

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The National Park Service provided $20,000 in funding support for this project through the Public Lands Corps Program.

The University of Alaska Fairbanks Cooperative Extension Service provided funding for a camp logistics coordinator and student transportation through a Memorandum of Understanding under agreement number G9910030016.

Appendix A

Policies and Standards

Fisheries Biotechnician Training Program

The following policies are necessary to insure that you have a safe, positive and successful experience in the biotechnician training course. Please read each policy carefully. Failure to follow these policies may result in your dismissal from the course, forfeiture of your stipend and failure to receive a certificate of completion.

1. **Course Registration:** The course has a maximum capacity of ten participants. Applications for the biotechnician training program must be filled out completely and include three references. Program applicants are also requested to fill out a medical history form. Individuals selected to participate in the training program will be contacted by phone no later than June 15, 2004. Individuals not selected to participate will be contacted by mail.

2. **Drugs and Alcohol:** Drugs (except those prescribed to you by a physician) and alcohol are strictly prohibited during the training program. This means that you will not possess or drink alcohol, or possess or take any illegal drugs while participating in the course or staying in the training field camp. Violation of this policy will result in immediate dismissal from the program and forfeiture of the stipend and college credits.

3. **Class Schedule:** This program is a comprehensive training course that will cover a broad range of topics related to fisheries technician work. This means that you will be participating in class sessions and field trips seven days a week for the 20-day training period. Classes will start promptly at 9:00 a.m. each morning and wrap up by 6:00 p.m. in the evening. Lunch will be from noon until 1:00 p.m. and there will be frequent breaks throughout the day to help keep you energized. There will also be short reading assignments for you to complete in preparation for certain class sessions. You are expected to be on time and to come to class prepared and with your assignments completed.

4. **Lights Out:** Lights out is at 10:00 p.m. each night when the camp operations and facilities close down for the day. All participants will be expected to be in their tents by that time.

5. **Time Off:** You will not have much time off except for a few hours after dinner and brief coffee breaks during the day. However, there may be times when classes wrap up ahead of schedule and the instructors will allow you to take additional time off.

6. **Absences:** This is a residential training program and you are expected to attend all class sessions and participate in all field trips in order to qualify for the course certificate of completion and college credits. Absences will generally not be allowed, except for extraordinary circumstances. Leaving the camp without permission of the training program coordinator or missing classes or field trips will jeopardize your successful completion of the course and may result in your dismissal from the training program.

7. **Medical/Health Problems:** You are requested to fill out a medical history form as a part of the application process. It is important that you provide as accurate and complete information as possible so that we can avoid preventable medical emergencies. If you have a physical limitation, serious allergies or if you are taking medication for an illness, contact Mary McBurney, the training program coordinator so that she is aware of your situation. This is a safety precaution to help prevent accidents and respond to medical emergencies that may arise and does not mean that you will be disqualified from participating in the training program. It is intended to insure that you and the other students have a safe environment in which to live and learn during the course.

8. **Equipment and Clothing:** Bring ALL the required equipment and clothing items specified on the *Things to Bring* list with you to the training course. Arriving at the training site with inappropriate equipment and clothing may result in your being cold, wet and uncomfortable—and less able to focus on learning

9. **Meals and Maintenance Responsibilities:** You will be with a group of 12 or more individuals for the entire training program. Meals will be served family style and all participants will take responsibility for setting tables, clearing up after meals, and keeping their tents and the common areas—including the outhouses and steam bath—neat and clean. If necessary, a daily list of duties will be posted and everybody will be expected to chip in and help.

10. **Use of National Park Service and University of Alaska Equipment:** During the training course you will have access to boats and other motorized vehicles, computers and other electronic devices, specialized laboratory equipment and power tools. You are not to handle or operate any equipment not signed out to you without the express permission of the training program coordinator or a course instructor. Violation of this policy may jeopardize your successful completion of the course and result in your dismissal from the training program.

11. **Reserved Rights:** The training program coordinator and the University of Alaska reserve the right to subjectively dismiss any student in the event that a student exhibits behavior that threatens the health or wellbeing of themselves or any other individual, fails to abide by the policies and standards outlined for the training program, fails to complete the course requirements, or is felt to be detrimental to the goals of the training program. Students dismissed from the program will forfeit their stipend and will not receive a certificate of completion or college credit.

12. **Course Completion and Grading:** To receive college credit for completing the training program, you will be given a letter grade at the conclusion of the course. Students will receive letter grades based on their understanding of the concepts and techniques taught in the training course, attendance of classes and field trips, participation in individual and group activities, teamwork, and compliance with the standards and policies outlined for the training program. Students who successfully complete the training program will receive a certificate of completion, a stipend and college credits.

13. **Course Stipend:** Students who successfully complete the training course will receive their stipend no later than two weeks after the conclusion of the training course.

14. **Student Agreement:**

I have reviewed and understand the preceding policies and standards for the fisheries biotechnician training program. I agree to comply with these policies and standards for the duration of the course and take responsibility for my behavior and actions.

Printed Name: _____

Signature :_____

Date: _____

What To Expect

What Can I Expect?

You will be living, learning and working in a model research field camp for three weeks with a staff of professional fisheries researchers and up to nine other participants. You should expect a very busy and intense three weeks of learning and practicing skills that will make you eligible for jobs working as a fisheries biotechnician.

You will get tired and your brain will fill up with all kinds of new and important information. You may also get physically tired at times from lifting, transporting, and setting up supplies and equipment, and during hands-on field demonstrations. You will not have much time off except for a few hours after dinner to rest and recharge your batteries. You will need to take personal responsibility for keeping your energy level high by getting adequate sleep, eating and drinking properly, dressing appropriately for the weather and managing your free time. Classes will start promptly at 9:00 a.m. and wrap up by 6:00 p.m. each day. Lights out will be at 10:00 p.m. when the camp closes down for the day. All participants will be expected to be in their tents by 10:00 p.m.

While some of this may sound intimidating, you should also expect to have a fun and rewarding experience meeting new people, making new friends, sharing experiences and learning new things. You are going to be learning skills and gaining hands-on experience from some of the foremost experts in fisheries field research in Alaska. In addition to teaching, many of the instructors have active fisheries research and monitoring projects and will be interested in meeting you as a potential employee.

What are the Facilities Like?

You will be staying in a model field camp set up at the Russian Orthodox Church Camp located at Old Nondalton. The camp has a zero tolerance policy for alcohol and drugs that will be strictly enforced. You will be sharing a weatherproof tent cabin with up to two other participants. The tents will be divided into men's and women's' tents and have individual cots for sleeping and tote boxes for storing clothing and personal effects. There is also a steam bath for bathing. Since you will be living in a camp setting, there are no laundry facilities for washing clothes—except a washtub for hand washing small items. So bring plenty of socks and underwear, and enough clothes to get you through the training program.

You will be expected to take personal responsibility for keeping your tent clean and making sure that all snacks, candy and gum, toothpaste, soaps, deodorants, lotions and other fragrant items are stowed in bear-proof containers (which will be provided) at all times when not being used. The camp takes bear safety very seriously, so no food will be allowed in the sleeping tents. All your meals will be provided and freshly prepared by a camp cook and there will be plenty of coffee, tea and snacks on hand to give you a boost during the day. Cooking for a large number of people is a lot of work, so you will be expected to pitch in from time to time to help clean up after meals and tidy up the dining area.

Your typical day will consist of classroom learning in the morning and hands-on learning and field trips in the afternoon. Classes will be relaxed and casual and you are encouraged to ask questions about things that are new to you or that you don't understand. The staff wants you to feel confident and comfortable with the new skills you'll be learning and practicing. They are also concerned about your safety and wellbeing and will help insure that you and the other students have a safe environment in which to live and learn during the course.

Things To Bring

You will be spending a lot of time outdoors, so you need to come prepared for a variety of weather conditions. We encourage you to dress appropriately throughout the course as if you were a biotechnician working on a fisheries project.

You will be issued a set of raingear and a pair of rubber gloves for the training period, but you should plan on bringing the following items:

Head:
Warm hat (this can be a knitted hat or one made of polar fleece)
Ball cap or some other hat with a visor

Hands:
Warm gloves or mittens

Upper Body:
Cotton tee shirts or tops
Long sleeve wool sweaters or shirts
Polar fleece jacket
Sweatshirts
Light jacket or windbreaker
Thermal underwear tops

Lower Body:
Sweat pants
Jeans or long pants
Thermal underwear bottoms
Shorts

Feet:
Hiking boots or sturdy shoes
Tennis shoes
Rubber knee boots, hip boots or hip waders
Socks (lots of them)

Personal Gear:
Sleeping bag and pillow
Towel and washcloth
Sunglasses (preferably with polarized lenses)
Sunscreen and lip balm
Toiletries (toothbrush and toothpaste, soap, shampoo, razor and shaving cream, etc.)
Water bottle
Day pack or fanny pack
Pocket knife
Wrist watch

Optional:
Camera and film
Reading materials such as books or magazines
Musical instruments for evening jams (guitars, harmonicas, etc.)

Appendix B

Bibliography of Course Texts

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