

FINAL RPT

OWEB Grant 206-837 Summary
Oregon Hatchery Research Center-ODFW

Project Title: Capital equipment to support research projects at the Oregon Hatchery Research Center (OHRC)


OL 9/14/07

Project Description:

The mission of the OHRC is to understand the mechanisms that may create differences between hatchery and wild salmon and steelhead, develop approaches to best manage any differences in order to meet fishery and conservation objectives, and help Oregonians understand the role and performance of hatcheries in supporting and protecting Oregon's native fish. The OHRC will foster and support a wide range of research and education projects and provide unique state-of-the-art facilities, including four replicate simulated streams. Information gained at the Research Center will help answer questions vital to the success of the Oregon Plan for Salmon and Watersheds and the Native Fish Conservation Policy. The capital equipment that we have purchased utilizing this OWEB Grant was vitally needed to support the day-to-day operations of the facility and to provide the infrastructure necessary for both short and long term research projects. The table bellows shows a description of the equipment purchases as well as the indirect charge to ODFW.

The equipment purchased is and will be used for the following:

1. Video Equipment.

This video system is necessary for researchers to document the behavior patterns of both adult and juvenile (hatchery and wild) fish as they interact with each other and their habitats in the simulated stream channels. The installed cameras are state-of-the-art equipment and allow for viewing under extremely low light conditions and are located in two of the four simulated channels. The four camera system allows viewing of two entire streams. Although cameras are currently placed in two streams, the infrastructure was placed in the adjacent streams for future expansion and flexibility. The system can be viewed live by researchers in the lab, or visitors in the interpretive center. Video is also recorded and can be saved for future viewing. It is necessary to monitor fish behavior (= passage) in the fish ladder as the responses to barriers and fish ladders is likely to be a significant difference between wild and hatchery fish. With our underwater camera we will have the ability to monitor this behavior. The underwater camera system is portable and can be used to view the activity and movements, as well as social interactions, of young fish being held under controlled conditions in the wet lab and/or simulated streams. The images obtained from these cameras will be analyzed to discern critical aspects of fish behavior. Some of the images will be made available for public viewing at the OHRC, OSU, Hatfield Marine Science Center and on the World Wide Web. This vital equipment will allow the simulated streams to achieve their full research potential and is critical to achieving the mission of the OHRC.

2. PIT Tagging and Detection Equipment.

Techniques for marking and identifying both adult and juvenile fish have made rapid advances in the last few years. Fish tags have become smaller and capable of obtaining larger amounts of information with the advent of PIT tags (passive integrated transponders, which relay information about the fish to ground based antennas and computers). This equipment will allow researchers at the facility to have access to the latest technology available for tracking and

monitoring experimentally and naturally reared fish throughout their entire life history and is fundamental to the success of the OHRC. The equipment is placed in two of the facilities simulated stream channels and currently allows tracking and monitoring of movements of fish within each channel. The system can be moved and/or expanded for future, larger tracking projects.

3. Analytical Lab Equipment.

These are necessary items to determine accurate weights for fish and chemicals, separate solutions and prepare tissue samples for storage. They are all standard items in most fishery labs. This equipment is vital to the operation of the OHRC because we need to determine the age and health of all the experimental organisms kept at the facility. It was critical to purchase this type of equipment to view and digitize the growth and age patterns present on fish scales and otoliths. It is also necessary for identifying microorganisms and parasites that may cause disease or be related to health problems in experimental fishes. Both the dissecting and stereo-zoom microscopes allow the operator to examine images under variable and extreme magnifications and to analyze resultant images with state-of-the-art digitalizing computer software via a digital camera. Those images are viewed, edited, and stored on a sole-purpose desktop computer in the laboratory. A laptop will allow use of the equipment off-site for research and educational purposes. Turbidity, PH, Dissolved Oxygen and light meters were purchased and will be used on-site for long term monitoring at the Center.

4. Age and Growth.

Determination of age and growth of fishes is a critical part of the experimental work to be conducted at the Center. To do this research, we must first extract and prepare the calcified structures (otoliths, scales, bones, fin rays) that are the basis for these techniques. The saw, grinding unit and polishing unit are all necessary items of equipment that must be used in preparing these tissues for microscopic examination. The equipment is ready for use and currently stored on-site in the OHRC laboratory space.

5. Field Collecting Equipment.

In order to sample both naturally reared and hatchery produced fish as they migrate upstream and downstream of the OHRC we have purchased a drift boat to allow us to safely navigate and sample the main-stem of the Alsea River. One of the most useful and efficient means of collecting and sampling fish in freshwater is to use an electrofishing device. This is a technique that utilizes an electronic apparatus to produce an electric field that temporarily stuns fish and allows for their subsequent capture. We have purchased a backpack unit which is a standard method used throughout the world to sample and collect fishes and are a basic tool in many modern fisheries investigations. The unit has been useful sampling fish in Fall Creek, as well as routine sampling and fish removal from our simulated stream channels. Survey suits were purchased for both on and off-site surveying for research and monitoring, as well as a variety of collection nets and seines.

6. Tagging and Tracking.

Specialized equipment (ultrasonic and radio receivers) is needed to track individually tagged fish (wild and hatchery origin) in Fall Creek, the estuary and when they enter salt water, as well as other water bodies. Oregon State University purchased radio receivers and reusable tags as match for the grant. The equipment is currently being used on a project in the Clackamas River. Eighty Summer Steelhead have been surgically implanted with radio tags, half of which the

gonads of the fish were surgically removed. During the summer and fall 2007, the fish will be tracked to determine location and behavior of the fish. The information should show differences in patterns of location and behavior of the two groups of fish.

7. Rotating Drum Screen.

Initial operations of the water intake facility at the OHRC during revealed that large amounts of sediment are capable of entering the facility during these events. The consequence of the silt and fine debris in the water supply is that the ultra-violet (UV) equipment used to sterilize the effluent from the quarantine room will not operate effectively under these conditions. This would result in un-sterilized water being released into the pollution abatement pond and subsequently into Fall Creek. The drum screen filter will alleviate this potential problem and also allow us to UV treat and sterilize the water entering and exiting the wet lab and quarantine room as needed. The filter has been purchased, and we have contracted with Tetra Tech, KCM to design and engineer the installation of the filter. The tentative installation date is the fall 2007.

A description of the dollars spent for this OWEB grant for capitol equipment:

Number	Item	Notes	Cost/Est.	OWEB Spent	Match Spent (ODFW/OSU)	Total Spent
1	Video Equipment	Stream channels, fish ladder, wet lab	\$50,000	\$36,929.19	\$270.57 (ODFW)	\$37,199.76
2	PIT Tag & Detection System	Stream channels	\$45,000	\$51,751.50	\$0	\$51,751.50
3	Analytical Lab Equipment	Microscope, balances, software	\$41,000	\$30,639.27	\$2,896.60 (ODFW)	\$33,535.87
4	Age and Growth	Otolith & scale saw, grinder & polisher	\$12,000	\$0	\$8,891.05 (OSU)	\$8,891.05
5	Field Collecting	Electro-fishing uni collecting boats, nets	\$33,000	\$4,999.00	\$13,262.57 (ODFW)	\$18,261.57
6	Tagging and Tracking	Ultrasonic, radio, tags & detectors	\$17,000	\$0	\$52,096.48 (OSU)	\$52,096.48
7	Drum Filter	Filtration for, tank farm & wet lab	\$50,000	\$15,000	\$51,020.00 (ODFW)	\$66,020.00
	INDIRECT	10% to ODFW	\$14,000	\$14,000		
	TOTAL			\$153,318.96	\$128,437.27	\$281,756.23

Conclusions:

The purchased capital items are fundamental to the successful operation of the OHRC and could not have been purchased without these funds provided by the OWEB. The Oregon Department of Fish and Wildlife and Oregon State University greatly thank OWEB for this generous grant.

206-837 OWEB EXPENSE DETAIL

CATEGORY	DATE	OSU	ODFW	OWEB	DESCRIPTION	
(1) VIDEO EQUIP	1/31/07			\$1,789.37	B246086 material for conduit install	
	1/31/07			\$2,959.72	B246085 material for conduit install	
	2/1/07		\$270.57		B246090 conduit & expansion couplers	
	3/7/07			\$2,047.00	Perlmutter (touch screen)	
	4/2/07			\$8,825.25	75% dep. Furhman (underwater camera & acc.)	
					\$2,961.75	25% Furhman (underwater camera & acc.)
	6/28/07			\$18,346.10	Video system OSU B259535	
			\$0.00	\$270.57	\$36,929.19	subtotal
(2) PIT TAG EQUIP	5/30/07			\$51,751.50	Bio-Mark B259527	
		\$0.00	\$0.00	\$51,751.50	subtotal	
(3) LAB EQUIP	9/5/06			\$866.50	turbidity meter	
	9/6/06			\$801.60	PH & DO meters	
	3/14/07			\$626.32	MS Office software C68834	
	3/14/07			\$1,470.00	HP Laptop C68835	
	3/14/07			\$1,960.00	HP Desktop C68836	
	3/13/07			\$12,956.00	Microscope & Camera B246099	
	2/28/07			\$4,819.00	Image Pro Software B246095	
	2/26/07			\$4,948.00	DM100 Microscope B246094	
	5/8/07			\$585.46	digital lab scales RC VISA	
	5/25/07			\$1,606.39	Li-Cor light meter & acc. B259522	
	6/18/07		\$2,896.60		Balance & Vibra-mount B259526	
		\$0.00	\$2,896.60	\$30,639.27	subtotal	
(4) AGE & GROWTH	6/30/07	\$8,891.05			Otolith saw, grinder & polisher	
		\$8,891.05	\$0.00	\$0.00	subtotal	
(5) FIELD COLLECT	7/11/06		\$7,312.25		backpack electro-fisher (smithroot)	
	6/28/07			\$4,999.00	Koffler Boat B259521	
	6/26/07		\$3,630.35		Survey suits, etc. B259504	
			\$1,687.47		Duraframe Nets B259514	
			\$632.50		Boat Acc. (joseph VISA)	
		\$0.00	\$13,262.57	\$4,999.00	subtotal	
(6) TAGGING & TRA	6/26/07	\$31,800.00			Lotek receivers and re-useable tags	
	6/26/07	\$17,940.00			Lotek receivers	
	6/26/07	\$656.48			Floy tags	
	6/18/07	\$1,700.00			Dell Laptop for Tagging/Tracking project	
		\$52,096.48	\$0.00	\$0.00	subtotal	
(7) DRUM FILTER			\$26,880.00		ODFW-OHRC portion of filter cost	
				\$15,000.00	OWEB portion of filter cost	
			\$24,140.00		Filter Design & Eng. (Tetra Tech, KCM.)	
		\$0.00	\$51,020.00	\$15,000.00	subtotal	
	Indirect			\$14,000.00	indirect payment to ODFW	
	TOTAL	\$60,987.53	\$67,449.74	\$153,318.96		
			TOTAL	\$281,756.23		