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OREGON SALMON COMMISSION

December 29, 2006

Oregon Watershed Enhancement Board
775 Summer Street NE, Suite 360
Salem, OR 97301-1290

RE: OWEB I/A Grant #206-828

FINAL REPORT

COOPERATIVE RESEARCH ON OREGON OCEAN SALMON (CROOS)

The Pilot CROOS Project partners are the Oregon Salmon Commission (OSC), Coastal Oregon Marine Experiment Station (COMES) under Oregon State University (OSU), Oregon Sea Grant, National Marine Fisheries Service (NMFS), Community Seafood Initiative, Oregon Department of Fish and Wildlife (ODFW), and the Oregon Watershed Enhancement Board (OWEB). A coalition of fishermen and scientists are in the leadership roles.

Organizational meetings have been held since March 16 to begin planning the project, developing a budget, developing the protocols and trainings, determining procedures for hiring vessels, developing the website, and other steps necessary to implement the project.

Budget for this grant:

The original budget for this grant consisted of:

Hardware for approximately four dataloggers	\$24,876
Genetics Supplies	\$3,059
Collection Equipment	\$1,365
Oceanographic data collection equipment	<u>\$10,700</u>
Total Budget	\$40,000

This grant and budget allowed us to purchase the equipment necessary to begin the pilot project as soon as the season opens allowed and before the full grant was approved by OWEB and the Emergency Board.

As equipment was purchased and the project evolved, we found that we needed to supply the vessels with specific equipment (tool box, tape measure, tweezers, scissors, collection envelopes, GPS, etc.) for taking the samples. The original plan was for 50 vessels to do the study. It was decided early on to allow more vessels to participate, thus requiring more supplies. Therefore a

*Report approved
TS 12/29/06*

budget amendment request was submitted to OWEB (September 20, 2006) to transfer \$8,700 from the Oceanographic Data Collection category to the Collection Equipment category.

The amended budget consists of:

Hardware for approximately four dataloggers	\$24,876
Genetics Supplies	\$3,059
Collection Equipment	\$10,065
Oceanographic data collection equipment	<u>\$2,000</u>
 Total Budget	 \$40,000

Exhibit A – OWEB Grant #206-828 Financial Ledger shows each check that was paid out, check number, amount, and budget category it was assigned to. The bottom of the page shows the total amounts paid out in each category and the amount remaining in the categories.

Exhibit B – OWEB Grant #206-828 Financial Statement is a summary of the budget, budget categories, and budget variance.

Start-up Phase Summary:

Per the grant agreement, “A final report will be produced by January 2, 2007 summarizing the numbers of vessels and fishers utilized during this start-up phase; the numbers of fish harvested and samples taken by the vessels during the start-up phase; and the findings, implications and lessons learned about the technologies and methodologies employed.”

At the time this equipment grant was approved, four fishermen volunteered their time and vessels to collect data and begin the sampling process. They fished three openers (June 4-7, 11-14, and 18-21).

Upon the full grant approval, vessels/fishers were signed up to participate in the project. The original plan was to contract with 50 vessels to fish up to 4 openers each (12 days). An opener is defined as the open periods and locations as regulated by the Pacific Fishery Management Council (PFMC) - June 25-28, July 9-11, 16-18, 23-25, August 1-3, September 17-30, and October 17-31 (with each calendar week being an opener in September and October). Since this season was declared a disaster, it was decided that we needed to give more fishermen the opportunity to participate in this project. As fishermen signed on, they understood that they might not be able to fish for 4 openers (12 days). All were very happy and just glad to be involved in the project.

As of August 15, 2006 (start-up phase):

87 vessels are on the list with fishermen from the following counties;

Benton, Clackamas, Coos, Curry, Douglas, Garibaldi, Lane, Lincoln, Linn,
Marion, Tillamook, and Yamhill

47 vessels had participated in at least 1 opener (3 days)

307 days had been fished

1,862 fish had been sampled

\$142,600 had been distributed to vessels for participation

Since the vessel received an additional \$100 per day (maximum of 3 days per opener) for having a crew onboard to assist, some fishermen have added a crew for the study. We were glad to see the hiring of additional industry members who may not otherwise have had an opportunity to participate because of the curtailed fishing seasons.

One area of concern was that the project would not fairly distribute the research dollars within the fleet or that there would be favoritism shown or that smaller vessels would not be able to participate.

As the project progressed, these concerns appear to have been eased. The decision that, to date, literally every Oregon resident permit holder who requested to be involved either has or will be contracted for some days of data collection, has gained broad approval for the fairness of the project. The fact that even those fishermen who were late in contacting us (after the published cutoff date and the July training session) are still going to get at least some days of eligibility, has been perceived by those fishermen and the fleet at large as fair.

In order to participate in the project, fishermen attended a training to learn the data collection process. Several trainings were held.

The science team created a set of protocols that explain:

- Electronic fish data collection using a laptop computer, handheld computer, and GPS receiver
- Data collection using handwritten logbooks
- General procedure for each Chinook harvested
- Placing metal bar code tag on fish
- Scale sampling procedure
- Genetic sampling protocol
- Stomach collection protocol – only three boats per opener

This set of protocols has evolved through discussions with the advisory group and the fishermen involved and been fine-tuned for clarification and simplicity.

Several of the vessels are equipped with electronic data loggers for recording data.

The vessels receive a toolbox containing a GPS unit, batteries, measuring tape, zip ties, sample envelopes and bar codes, and a 3-ring binder with data sheets. Information to be entered on the envelopes is name, date, time, fathoms of capture, length of fish, check off that DNA dried tissue and scale samples are done.

Once collection is complete, samples are dropped off in Newport at a drop box, or mailed from other ports to the lab in Newport.

No one anticipated the amount of work involved with logistics in this project, but most of the problem issues (gathering samples, distributing supplies, contract and invoicing procedures, etc.) have been addressed and improvements have been made. In Newport, the drop box, the central supply distribution site, and check distribution site have worked well. Schiewe Marine Supply, Englund Marine Supply, and the Port of Newport have been great assets in this.

The handheld GPS units are working well from the fleet perspective, and the process for downloading the data from them to a computer for use by the lab seems to be satisfactory so far.

Selecting boats for testing the datalogger units has been difficult, both due to the size/space requirements of the units and to some general aversion to learning new technology 'on the fly' without a bit more time to get familiar with the units. After some initial bugs were addressed, the fishermen using the dataloggers found them to work quite well.

After the samples were collected onboard the vessel and delivered to the lab in Newport, the scientific team analyzed the data by extracting the DNA. Using protocols developed by the Chinook Technical Committee funded by Genetic Analysis of Pacific Salmonids (GAPS) group, the most likely stock origin of the samples was assessed.

Science Results during start-up phase:

Using eight weeks of data collection (3 weeks before funding, 5 weeks after funding), the scientists have put information on charts and maps.

1,522 fish samples had been processed

1,263 had been genotyped

Overall assignment to Klamath was approximately 5%

The charts/maps in Exhibit C show some of the ways the data can be displayed.

Pie chart identifying percentage of each stock of Chinook

Coastal map showing location fish was caught

Map with overlap of 2 weeks identifying by color the week the fish was caught and Klamath fish

The advisory group and the scientists are continuing discussions about the best way to display the data on maps and charts.

Overall Summary:

The project began rapidly with fishermen immediately collecting data as soon as the funding was approved. The advisory group has talked about the amount of work that has been done in such a short time. Since the first opener on June 25, much has been accomplished, not only with the logistics and equipment, but the scientific data and presentation.

This project demonstrated that fishermen could be used to collect the data, the data could be sent by mail without harm, the scientists could extract the DNA and correctly assign most samples to existing Chinook populations, and the data could be displayed for information purposes. There are things that can be improved and we are working on them. The enthusiasm for this project has gone beyond the immediate group to management entities and other states.

The final report (due March 31, 2007) for the full grant project (OWEB I/A 206-832 At Sea DNA Research Project) will have the complete data collection information (technologies used), final numbers of fishers/vessels contracted and involved in the project, scientific results, and recommendations for future projects.

INCOME	Year to Date	Budget	Variance
Balance			
Grant Income	36,000.00	40,000.00	4,000.00
Total Income	36,000.00	40,000.00	4,000.00
EXPENDITURES			
Hardware for dataloggers	24,876.00	24,876.00	0.00
Genetics Supplies	3,059.00	3,059.00	0.00
Collection Equipment	10,065.00	10,065.00	0.00
Oceanographic Collection	2,000.00	2,000.00	0.00
Total Expenditures	40,000.00	40,000.00	0.00

Week 6, n = 170

- CA-Coast
- CA-CV-fa
- CA-CV-sp
- Klamath-R.
- L-Col-R.-fa
- L-Col-R.-sp
- L-Fraser-R.
- Mid-Col-R.-tule
- Mid-OR-Coast
- N-CA/S-OR-Coast
- Rogue-R.
- Snake-R.-fa
- S-Puget-Sound
- U-Col-R.-su/fa
- W-Vancouver-Is.



