

FINAL REPORT

MOLECULAR GENETICS LABORATORY INFRASTRUCTURE UPGRADING (AKC-MOU 048)

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The ability to identify discrete Pacific salmon stocks is critical for formulating effective management decisions and evaluating treaty agreements. Advanced genetic techniques can increase resolution and accuracy in stock discrimination and hold great promise for wider deployment. However, combined with a need to promote efficiencies in sampling and analysis, they also provide new challenges in constructing necessary baseline data that is common and transparent for all parties. These techniques include microsatellite DNA variation, which is being used by the Canadian Department of Fisheries and Oceans (CDFO) in effective stock identification applications for Pacific salmon; and single nucleotide polymorphism (SNP) variation, which is being used by the Alaska Department of Fish and Game (ADF&G) for stock identification of Pacific salmon. NOAA's Auke Bay Laboratories (ABL) currently have capabilities and experience using both techniques, and through their high seas and marine sampling programs have a strong interest in promoting and contributing to the establishment of common standardized genetic baselines. To help achieve these baselines, and to continue to work efficiently with CDFO, ADF&G, and other genetic laboratories, ABL needed to standardize their equipment and allow for greater throughput of samples.

This final report summarizes the completion of the molecular genetics laboratory infrastructure project funded by the Northern Fund Committee under the Memorandum of Understanding AKC-MOU 048. A total of \$257,652 US was received for the infrastructure project in two increments: \$205,652 in 2005 and \$52,000 in 2006.

The first funding increment in 2005 was designed to enhance the capabilities of ABL by obtaining a new capillary-based DNA sequencer similar to the infrastructure standards currently available in other agency genetics laboratories. For example, ADF&G and Washington Department of Fish and Wildlife (WDFW) genetics laboratories have modern ABI 3730 capillary-based automated DNA sequencers, NOAA's Seattle laboratory and the Columbia River Intertribal Fish Commission (CRITFIC) laboratories have ABI 3100 capillary-based systems. The funding provided allowed ABL to purchase the equipment needed to meet the above goals. In addition, ABL received funds to upgrade an existing older lab space to make it suitable as additional genetics lab space.

Table 1. List of items purchased for molecular laboratory upgrading.			
2005 Increment			
	Item	Quantity	Cost
	ABI 3100 Genotyping System	1	\$124,000
	Service Contract for 3130	1 year	\$11,576
	ABI 7900 96 well to 384 well conversion	1	\$5,500
	ABI 9700 Dual 384 PCR machine	2	\$22,200
	Dual 96-well GeneAmp PCR machine	1	\$11,100
	Qiagen 4K15C Centrifuge	1	\$13,168
	Qiagen rotor for 4K15C	1	\$2,108
	Laboratory upgrade	1	\$16,000
	2005 Project Total		\$205,652
2006 Increment			
	Item	Quantity	Cost
	ABI PCR 96-well sample block	8	\$52,000
	2006 Project Total		\$52,000
Upgrade Project Total			\$257,652

The second funding increment for laboratory infrastructure upgrading of \$52,000 was designed to enhance the capabilities of ABL by obtaining new equipment that would greatly increase throughput capacity. The funding allowed ABL to purchase PCR machines for DNA amplification thereby increasing our input to our current sequencers.

Table 1 lists the equipment purchased and the costs of upgrading the laboratory space. All of the equipment has been installed, and the service contract and laboratory remodel have been completed. The above equipment is being used to develop salmon baselines for southeast Alaska and northern British Columbia, and to analyze sockeye mixed fishery samples from southeast Alaska fisheries.

The Northern Fund has provided to ABL 90% of the \$257,652 committed for the molecular genetics laboratory infrastructure upgrade. This final report documents the completion of both components of the upgrade project. With the submission of this report, ABL requests the final 10% (\$25,765) of the funding allocated for the project be remitted from the Northern Fund to the NOAA Alaska Fisheries Science Center.