FY12 INVITATION
PROPOSAL SUMMARY PAGE

Project Title: Long-term Monitoring: Pelagic Monitoring Component - Long-term monitoring of humpback whale predation on Pacific herring in Prince William Sound

Project Period: October 1, 2011 – September 30, 2016

Primary Investigator(s): John R. Moran (NOAA) and Janice M. Straley (UAS)
Co-operating Investigator: Terrence J. Quinn II (UAF)

Study Location: Prince William Sound

Abstract: This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et. al.

We will evaluate the impact by humpback whales on Pacific herring populations in Prince William Sound. Following protocols established during the winters of 2007/08 and 2008/09(EVOSTC project PJ090804). We will continue to monitor the seasonal trends and abundance of humpback whales in Prince William Sound. Prey selection by humpback whales will be determined through acoustic surveys, visual observation scat analysis and prey sampling. Chemical analysis of blubber samples (stable isotopes and fatty acid analysis) will provide a longer term perspective on whale diet and shifts in prey type. These data will be combined in a bioenergetic model to determine numbers of herring consumed by whales, with the long term goal of enhancing the age structure modeling of population with better estimates of predation mortality.

Estimated Budget: : $543K total without 9%GA - $591.9K with 9%GA
EVOSTC Funding Requested:
(breakdown by fiscal year and must include 9% GA)

Fy12 - $116.9K	FY13 - $118.2K	FY14 - $128.1K	FY15- $129.9K	FY16 - $49.9K

Non-EVOSTC Funds to be used:

FY12- $25.0	FY13 -$25.0	FY14 -$25.0	FY15 -$25.0	FY16 -$25.0

Date: May 31, 2011

(NOT TO EXCEED ONE PAGE)

PROJECT PLAN

I. NEED FOR THE PROJECT

A. Statement of Problem

Humpback whale predation has been identified as a significant source of mortality on wintering Pacific herring in Prince William Sound (EVOSTC project PJ090804). At current herring and whale population levels the loss of pre-spawning herring during the fall and winter months is equivalent to the percentage of herring removed during the final years of the commercial herring fishery. Hence, top down forces (predation and disease) are the likely dominating forces constraining the current recovery. Humpback whales in Prince William Sound have a higher percentage of herring in their diet during the winter months and forage longer on wintering herring shoals than their counterparts in Southeast Alaska. With humpback whale population in the North Pacific increasing at 5-7% annually, there is a need to continue evaluating predation pressure on herring until stocks in Prince William Sound fully recover, and to proceed toward enhancing the age structure model to include a better estimate of predation for a more accurate predictor of the herring population.

B. Relevance to 1994 Restoration Plan Goals and Scientific Priorities

Please see pages 2-4 of the integrated proposal titled "Long-Term Monitoring of Marine Conditions and Injured Resources and Services," and submited by McCammon et. al

II. PROJECT DESIGN

A. Objectives

Objectives:

1) *Population estimates of humpback whales through the use of photographic mark-recapture models.* Knowing the number of whale present in PWS is essential for assessing their impact on the PWS ecosystem.

2) *Monitor the seasonal trends of humpback whales in Prince William Sound relative to prey.* EVOSTC project PJ090804 identified an correlation between the movements of whales and herring in PWS

3) *Estimate inter-annual trends in humpback whale abundance.* This objective allows us to determine if the conclusion from EVOSTC project PJ090804 are an anomaly or typical whale behavior in PWS.

4) *Determine the diet and dietary shifts of humpback whales.* A shift in prey by whales can have profound effects on herring (i.e. in Southeast Alaska, when euphausiids become available pressure on herring by whales is greatly reduced).

5) *Estimate predation rates on herring by humpback whales.* This objective quantifies predation pressure on herring for PWS.

6) *Incorporate mortality rates into herring age structure models.* This is the management component of the study, can predation whales explain fluctuations in herring populations.

The field work for this proposal will center around three (~6 days) cruises each year during the fall and winter months for years 1-4 followed by a year of data synthesis (year 5), with the outlook of continuing this pattern of monitoring for up to 20 years. Additional information on the seasonal abundance and distribution of humpback whales will be obtained using opportunistic surveys throughout the year by local residents and boat operators, as well as photo ID contributed by the killer whale project in the summers.

Project Integration

We expect strong collaboration between humpback whale, killer whale and seabird components of the pelagic monitoring projects. The proposed killer whale monitoring program will opportunistically collect humpback whale data during summers; likewise the observation of killer whales will be documented during winter humpback whale cruises. We will be able to provide a berth for a seabird observer on all humpback whale cruises.

B. Procedural and Scientific Methods

Population estimates of humpback whales through the use of photographic mark-recapture models.

We will use Nikon D-300, D-200, and D-70 cameras with 80-200 mm lenses to capture digital images of the ventral side of humpback whale flukes to identify individuals. All photographs were ranked as good, fair, poor, and insufficient quality. Photographs deemed poor or of insufficient quality were excluded from the mark-recapture analysis to avoid potential bias from matching errors. Further, photographs of humpback whale calves were also excluded, this is because the capture probability for a calf is complicated by their co-occurrence with their mothers (and is therefore not independent), and the probability of recapture in later years can be difficult as calf flukes tend to change more than adult flukes.

Time series of humpback whale abundance will be constructed using mark-recapture methods. The first photograph of a particular whale is treated as the “mark”, and subsequent photographs of the same whale are “recaptures”. Both closed and open population models will be examined.

Monitor the seasonal trends of humpback whales in Prince William Sound relative to prey.

Although mark-recapture models provide an estimate of abundance, they do not describe seasonal trends. Consequently, we used the number of unique whales seen each month for establishing seasonal patterns and adjusted the pattern to account for the estimated number of whales present. The data used to establish the attendance patterns include calves and individuals identifiable in poor quality photographs and represent a lower bound to the daily attendance pattern for whales. Daily attendance was estimated by fitting linear models to the observed numbers.

Estimate inter-annual trends in humpback whale abundance.

Long term trends in abundance will be estimated by combining observations from this study and population estimates from Restoration Project: 100804, allowing us to explore the relationship between climate, prey availability, herring populations and humpback whales.

Determine the diet and dietary shifts of humpback whales.

When groups of whales are located and determined to be feeding, effort will made to determine what the whales were eating. Direct observations of prey being consumed, remains after feeding, and sonar mapping of the prey fields observed on a dual 50/200kHz frequency echosounder will be used to determine target prey of humpback whales. Prey distinctly visible on 50kHz was presumed to be fish. Prey visible only at 200kHz were presumed to be smaller and categorized as zooplankton. Confirmation of target prey will be accomplished using herring jigs, zooplankton tows, cast nets and skim nets (used to clean swimming pools) to collect surface fish near feeding whales. Scales and zooplankton were collected behind whales feeding at the surface with the skim net. Fecal samples are collected when possible. Certainty of identification of the target prey will be recorded as certain, probable or undetermined. Only cases were the identification was certain or probable were used to identify specific prey.

Estimate predation rates on herring by humpback whales.

The large size humpback whales prevent direct measurement of ingestion rates, therefore estimates of consumption are derived from the allometry between whale size and metabolic requirements. The model combines estimates of whale size, metabolic rates, abundance, and diet with estimates of the energy content of overwintering herring to predict consumption. We will estimated the potential biomass removed for each location and winter using four different modeling scenarios because of the uncertainty in whale metabolic costs and the numbers of whale present. The different scenarios represent the range of possible estimates. Dividing the total biomass consumed under a given scenario with estimates of herring abundance yields a measure of the intensity of humpback whale predation. This ratio, referred to here as predation intensity, is not meant to indicate the actual proportion of the biomass consumed by whales, but rather as an indicator of the scale of whale predation winter under each of the modeling scenarios.

Incorporate mortality rates into herring age structure models.

Information on whale abundance will then be fed into an age-structured model for Pacific herring in order to compare the relative magnitudes of disease, whales, and other factors on the mortality of herring. This will help EVOS TC better understand what factors are preventing the recovery of herring.

Project Logistics

For this project, John Moran (NOAA) will provide overall project management, logistics, photographic field captures, prey capture, and chemical analysis. Co-PI Jan Straley (UAS) will participate in photographic field captures, and lead the analysis of photographic IDs, , providing IDs and connection to photographic ID databases for all humpback whale photographs, quality assuring that permitting requirements are met, and collaborating with other whale researchers. Dr. Quinn (UAF) will lead the modeling efforts incorporating whale predation into the herring population models.

Humpback whale vessel survey schedule for Prince William Sound.

Month	**FY12**	**FY13**	**FY 14**	**FY15**	**FY16**
Oct	6 days	6 days	6 days	6 days	Synthesis
Dec	6 days	6 days	6 days	6 days	Synthesis
Feb	6 days	6 days	6 days	6 days	Synthesis
Total vessel days	**18**	**18**	**18**	**18**	**0**

C. Data Analysis and Statistical Methods

Data analysis is limited to estimating whale abundance and modeling their bioenergetic requirements. Whale abundance will be determined from photographic data. We anticipate that whales will not forage exclusively on a single prey item. The relative abundance of different prey types in their diet will be assumed to be equivalent to the relative abundance of species collected in our mid-water trawls. Trawls will be fished at the same depths whales are observed diving. The energetic content of a unit mass of prey in a particular patch will subsequently be estimated as the mean energy content of the prey in the patch, weighted by their relative abundance. Dividing this mass specific energy content into the energy requirement of a whale (described above) will provide an estimate of the total mass of the patch a whale requires. The contribution of herring to this total mass will be determined from their relative abundance in the sample and the average mass of an individual.

Modeling: Quinn et al. (2001) and Marty et al. (2003) developed an age-structured assessment model for Prince William Sound that included disease information. Thus the model can be used to evaluate the impact of disease on population abundance, recruitment, and survival. ADF&G uses this model in its annual assessments of herring (S. Moffitt, ADF&G, pers. comm.).

The model contains information about the fisheries on PWS herring, which include purse-seine, gillnet, and pound fisheries in the spring (mainly for roe), and a food and bait fishery in the summer and fall. The model provides an estimation framework to integrate the various sources of information about Pacific herring in Prince William Sound from 1980 – 2006, including age compositions from the purse-seine fishery and spawning surveys, egg production estimates, mile-days of milt from aerial surveys, and hydroacoustic biomass estimates Marty et al. 2003, Hulson et al. 2006, Marty et al. 2006). These observations are compared to comparable model quantities in a least squares setting to obtain parameter estimates of recruitment, natural mortality, abundance, and biomass.

We propose to use this model as the basis of comparing the relative magnitudes of the various factors affecting PWS herring dynamics. Recruitment estimates at age 3 will be related to auxiliary variables related to disease, the environment, spawning stock, and predation. It is a simple matter to use the model as a simulation framework, in which alternative harvest and recruitment scenarios are developed. An example of a question to be addressed would be: If whales did not eat herring, would the population have rebounded more so than what really occurred?

Specifically the model will be used: (1) to determine if predation on adult PWS herring is significantly contributing to its failure to recover, (2) to compare the magnitude of this effect to other known factors such as disease and low recruitment, (3) to investigate whether low recruitment is a function of predation.

D. Description of Study Area

Prince William Sound: Results from EVOSTC project PJ090804 have identified humpback whale feeding aggregations whales in Sawmill Bay, Montague Strait, Elrington Passage, Prince of Wales Passage, and Port Gravina. Focusing on the waters of Sawmill Bay, where local researchers can be land based with small boats will continue to provide fine-scale temporal data, however to assess the impact of whales on herring, year three, will use larger vessels to survey all of PWS.

E. Coordination and Collaboration with Other Efforts

This project will combine the skills and location advantage of researchers from Auke Bay Lab (Rice, Heintz, Moran), Univ of Alaska Southeast (Straley), Univ. of Alaska Fairbanks (Quinn). We will coordinate with the other PI's in the EVOS TC Long- term monitoring and herring projects.

III. SCHEDULE

A. Project Milestones

Objectives

1) Population estimates of humpback whales through the use of photographic mark-recapture models. *To be met September 2015.*

2) Monitor the seasonal trends of humpback whales in Prince William Sound relative to prey. *To be met September 2015.*

3) Estimate inter-annual trends in humpback whale abundance. *To be met September 2015.*

4) Determine the diet and dietary shifts of humpback whales. *To be met September 2015.*

5) Estimate predation rates on herring by humpback whales. *To be met December 2015.*

6) Incorporate mortality rates into herring age structure models. *To be met January 2016.*

B. Measurable Project Tasks

FFY 12, 1st quarter (October 1, 2011-December 31, 2011)

October: *6 day survey of PWS*
December: *6 day survey of PWS*

FFY 12, 2nd quarter (January 1, 2012-March 31, 2012)

January: *Annual Marine science Symposium*
February: *6 day survey of PWS*

FFY 12, 3rd quarter (April 1, 2012-June 30, 2012)

Opportunistic surveys, analyze winter data.

FFY 12, 4th quarter (July 1, 2012-September 30, 2012)

Opportunistic surveys, analyze winter data.

FFY 13, 1st quarter (October 1, 2012-December 31, 2012)
October: *6 day survey of PWS*
December: *6 day survey of PWS*

FFY 13, 2nd quarter (January 1, 2013-March 31, 2013)
January: *Annual Marine science Symposium*
February: *6 day survey of PWS*

FFY 13, 3rd quarter (April 1, 2013-June 30, 2013)
Opportunistic surveys, analyze winter data.

FFY 13, 4th quarter (July 1, 2013-September 30, 2013)
Opportunistic surveys, analyze winter data.

FFY 14, 1st quarter (October 1, 2013-December 31, 2013)
October: *6 day survey of PWS*
December: *6 day survey of PWS*

FFY 14, 2nd quarter (January 1, 2014-March 31, 2014)
January: *Annual Marine science Symposium*
February: *6 day survey of PWS*

FFY 14, 3rd quarter (April 1, 2014-June 30, 2014)
Opportunistic surveys, analyze winter data.

FFY 14, 4th quarter (July 1, 2014-September 30, 2014)
Opportunistic surveys, analyze winter data.

FFY 15, 1st quarter (October 1, 2014-December 31, 2014)
October: *6 day survey of PWS*
December: *6 day survey of PWS*

FFY 15, 2nd quarter (January 1, 2015-March 31, 2015)
January: *Annual Marine science Symposium*
February: *6 day survey of PWS*

FFY 15, 3rd quarter (April 1, 2015-June 30, 2015)
Compile and analyze data.

FFY 15, 4th quarter (July 1, 2015-September 30, 2015)
Compile and analyze data.

FFY 16, 1st quarter (October 1, 2015-December 31, 2015)
Compile and analyze data. Begin writing final report.

FFY 15, 2nd quarter (January 1, 2015-March 31, 2015)

January: Annual Marine science Symposium.

Complete final report

FFY 16, 3rd quarter (April 1, 2016-June 30, 2016)

April 15 Submit final report. This will consist of a draft manuscript for publication to the Trustee Council Office.

Long-term Monitoring: Pelagic Monitoring Component - Long-term monitoring of humpback whale predation on Pacific herring in Prince William Sound

Auke Bay Lab Budget Budget Justification - $ 526K

Personnel Salaries ($8K) – Overtime for Moran

Travel ($23,400) - Five round trips to the EVOS annual meetings. 24 round trips Juneau to Cordova for field work.

Contractual/Sample Analysis ($485.6K) - Includes 72 large vessel days in PWS, soft labor to collect and process samples, Contracts for UAS (Straley) and UAF (Quinn). Contract to conduct opportunistic whale surveys in PWS.

Commodities ($26K) - To prepare samples for shipping, freight, and miscellaneous supplies.

Equipment ($0) - No new equipment will be purchased with EVOSTC funds.

Break down of UAS Budget - $ 209,787

Personnel Salaries ($178,542**) -** Funds are requested for 6.6 months of salary for PI Jan Straley (this will include field research, travel (meetings, presentations and training), administration, analysis, and report/paper writing) and 12.3 months of salary for Ms. Cedarleaf and 8 months for a yet-to-be-named undergraduate student. Ms. Straley will coordinate the third year of data collection of humpback whale photo identification data in Lynn Canal and Prince William Sound, (including Chenega/Sawmill Bay) and the second full year of field work for Sitka Sound. Ms. Straley will conduct humpback photo identification surveys twice monthly and assist project staff with hydroacoustic prey assessment surveys in Sitka Sound during the fall and winter. Ms. Straley will conduct the photo identification work in the areas of Prince William Sound outside of Chenega/Sawmill Bay in conjunction with the monthly hydroacoustic surveys. She will continue to work with the data analyst, T. Quinn, in preparing the data for quantitative analysis. She will be responsible for grant administration, oversight of the humpback whale data and final report preparation that will describe numbers, movements, distribution, and residency times of individual humpback whales in the study areas. J. Cedarleaf, research assistant, will conduct the photographic matching to various catalogs (collections of fluke photographs) in the North Pacific, manage the database (data entry and organization) and oversee photographic quality.

Benefits ($0) - Benefits are included in the associated hourly rates.

Equipment - No funds are requested for Equipment.

Travel ($) – *Domestic*: No funds are requested for Domestic Travel.
Foreign: No funds are requested for Foreign Travel.

Other/Consultants/Services ($0) – No funds are requested for Other/Consultants/Services.

Supplies ($0) – No funds are requested for Supplies.

Facilities and Administration (F&A) Costs ($31,245) - Facilities and Administrative (F&A) Costs are calculated at 17.5% of the Modified Total Direct Costs (MTDC).

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Budget Category:	Proposed FY 12	Proposed FY 13	Proposed FY 14	Proposed FY 15	Proposed FY 16	TOTAL PROPOSED
Personnel	$2.0	$2.0	$2.0	$2.0	$0.0	$8.0
Travel	$5.4	$5.4	$5.4	$5.4	$1.8	$23.4
Contractual	$103.5	$104.8	$114.7	$116.5	$46.1	$485.6
Commodities	$6.0	$6.0	$6.0	$6.0	$2.0	$26.0
Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Indirect Costs (*will vary by proposer*)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
SUBTOTAL	$116.9	$118.2	$128.1	$129.9	$49.9	$543.0
General Administration (9% of subtotal)	$10.5	$10.6	$11.5	$11.7	$4.5	$48.9
PROJECT TOTAL	$127.4	$128.8	$139.6	$141.6	$54.4	$591.9
Other Resources (Cost Share Funds)	$25.0	$25.0	$25.0	$25.0	$25.0	$125.0

COMMENTS: In-kind contribution from NOAA - Three month salary/year for Moran.

FY12-16

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley

SUMMARY

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Budget Category:	Proposed FY 12	Proposed FY 13	Proposed FY 14	Proposed FY 15	Proposed FY 16	TOTAL PROPOSED
Personnel	$2.0	$2.0	$2.0	$2.0	$0.0	$8.0
Travel	$5.4	$5.4	$5.4	$5.4	$1.8	$23.4
Contractual	$103.5	$104.8	$114.7	$116.5	$46.1	$485.6
Commodities	$6.0	$6.0	$6.0	$6.0	$2.0	$26.0
Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
SUBTOTAL	$116.9	$118.2	$128.1	$129.9	$49.9	$543.0
General Administration (9% of subtotal)	$10.5	$10.6	$11.5	$11.7	$4.5	$48.9
PROJECT TOTAL	$127.4	$128.8	$139.6	$141.6	$54.4	$591.9
Other Resources (Cost Share Funds)	$25.0	$25.0	$25.0	$25.0	$25.0	$125.0

COMMENTS: In-kind contribution from NOAA - Three month salary/year for Moran.

FY12-16

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4A
TRUSTEE AGENCY
SUMMARY

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
Moran	Humpback Whale Monitoring			2.0	2.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	0.0	2.0	
				Personnel Total	$2.0

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
JNU-CDV	0.6	6	12	0.0	3.6
Jnu ANC AMSS	0.6	1	4	0.3	1.8
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.4

FY12

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
PERSONNEL &
TRAVEL DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Contractual Costs: Description		Contract Sum
Straley (UAS)		41.5
Vessel Charters		28.0
Chemistry lab analysis contract labor- ABL		14.0
Opportunistic Surveys		10.0
Contract labor		10.0
If a component of the project will be performed under contract, the 4A and 4B forms are required.	**Contractual Total**	$104

Commodities Costs: Description	Commodities Sum
Shipping	3.0
Field Supplies	3.0
Commodities Total	$6.0

FY12

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
CONTRACTUAL & COMMODITIES DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY12

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
EQUIPMENT DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
Moran	Humpback Whale Monitoring			2.0	2.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	0.0	2.0	
				Personnel Total	$2.0

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
JNU-CDV	0.6	6	12	0.0	3.6
JNU-ANC AMSS	0.6	1	4	0.3	1.8
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.4

FY13

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
PERSONNEL &
TRAVEL DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Contractual Costs: Description	Contract Sum
Straley (UAS)	42.8
Vessel Charters	28.0
Chemistry lab analysis contract labor- ABL	14.0
Opportunistic Surveys	10.0
Contract labor	10.0
If a component of the project will be performed under contract, the 4A and 4B forms are required. **Contractual Total**	$105

Commodities Costs: Description	Commodities Sum
Shipping	3.0
Field Supplies	3.0
Commodities Total	$6.0

FY13

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
CONTRACTUAL & COMMODITIES DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY13

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
EQUIPMENT DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
Moran	Humpback Whale Monitoring			2.0	2.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	0.0	2.0	
				Personnel Total	$2.0

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
JNU-CDV	0.6	6	12	0.0	3.6
Jnu ANC AMSS	0.6	1	4	0.3	1.8
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.4

FY14

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
PERSONNEL &
TRAVEL DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Contractual Costs: Description	Contract Sum
Straley (UAS)	52.7
Vessel Charters	28.0
Chemistry lab analysis contract labor- ABL	14.0
Opportunistic Surveys	10.0
Contract labor	10.0
If a component of the project will be performed under contract, the 4A and 4B forms are required. **Contractual Total**	$115

Commodities Costs: Description	Commodities Sum
Shipping	3.0
Field Supplies	3.0
Commodities Total	$6.0

FY14

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
CONTRACTUAL & COMMODITIES DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY14

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
EQUIPMENT DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
Moran	Humpback Whale Monitoring			2.0	2.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	0.0	2.0	
				Personnel Total	$2.0

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
JNU-CDV	0.6	6	12	0.0	3.6
Jnu ANC AMSS	0.6	1	4	0.3	1.8
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.4

FY15

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
PERSONNEL &
TRAVEL DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Contractual Costs: Description	Contract Sum
Straley (UAS)	54.5
Vessel Charters	28.0
Chemistry lab analysis contract labor- ABL	14.0
Opportunistic Surveys	10.0
Contract labor	10.0
If a component of the project will be performed under contract, the 4A and 4B forms are required. **Contractual Total**	$117

Commodities Costs: Description	Commodities Sum
Shipping	3.0
Field Supplies	3.0
Commodities Total	$6.0

FY15

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
CONTRACTUAL & COMMODITIES DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY15

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
EQUIPMENT DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	0.0	0.0	
				Personnel Total	$0.0

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
Jnu ANC AMSS	0.6	1	4	0.3	1.8
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$1.8

FY16

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
PERSONNEL &
TRAVEL DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

Contractual Costs: Description		Contract Sum
Straley (UAS)		18.4
Quinn (UAF)		20.0
Contract labor		7.7
If a component of the project will be performed under contract, the 4A and 4B forms are required.	**Contractual Total**	$46

Commodities Costs: Description	Commodities Sum
Shipping	2.0
Commodities Total	$2.0

FY16

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
CONTRACTUAL & COMMODITIES DETAIL

***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
DETAILED BUDGET FORM FY 12-FY16

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY16

Program Title: Humpback Whale Monitoring
Team Leader: Moran/Straley
Agency: NOAA Fisheries/Auke Bay Labs

FORM 4B
EQUIPMENT DETAIL

PROJECT TITLE: Long-term monitoring of humpback whale predation on Pacific herring in Prince William Sound

PI: Jan Straley

START: 01 October 2011

END: 30 September 2016

DEPT #:

BANNER #:

Be sure to select the appropriate F&A rate on line 130.

Version 09/10/2010

							Year 1		Year 2		Year 3		Year 4		Year 5		Total Project
SALARIES AND WAGES							**Hours**		**Hours**		**Hours**		**Hours**		**Hours**		
Senior Personnel				**Hourly Wage**	**Leave Rate**	**Yearly Increase**											
Total Number of Hours		Employee Name															
1142.00		Jan Straley	A9 - Faculty (ACCFT)	$37.87	1.4%	1.045	174.0	$6,682	174.0	$6,982	300.0	$12,580	300.0	$13,147	194.0	$8,884	**$48,275**
			Total Senior Personnel					$6,682		$6,983		$12,581		$13,147		$8,885	$48,276
Other Personnel																	
Total Number of Hours																	
2155.90		Jen Cedarleaf, Research Technician 4	NR - Classified Staff	$21.87	21.4%	1.03	522.0	$13,857	522.0	$14,273	522.0	$14,701	522.0	$15,142	67.9	$2,029	**$60,002**
Student Employees																	
	Number of Students																
	1	to be named	ST - Undergrad, summer	$10.50	0.0%	1	348.0	$3,654	348.0	$3,654	348.0	$3,654	348.0	$3,654	0.0	$0	**$14,616**
			Total Other Personnel					$17,512		$17,927		$18,356		$18,797		$2,029	$74,619
			TOTAL SALARIES AND WAGES					**$24,194**		**$24,910**		**$30,937**		**$31,944**		**$10,914**	**$122,895**
FRINGE BENEFITS																	
Senior Personnel		Jan Straley	A9 - Faculty (ACCFT)		39.5%			$2,639		$2,758		$4,969		$5,193		$3,509	**$19,069**
			Total Senior Personnel					$2,639		$2,758		$4,969		$5,193		$3,509	**$19,069**
Other Personnel																	
		Jen Cedarleaf, Research Technician 4	NR - Classified Staff		58.9%			$8,162		$8,407		$8,659		$8,919		$1,195	**$35,341**
Student Employees																	
		to be named	ST - Undergrad, summer		8.4%			$307		$307		$307		$307		$0	**$1,228**
			Total Other Personnel					$8,469		$8,714		$8,966		$9,226		$1,195	**$36,569**
			TOTAL FRINGE BENEFITS					**$11,109**		**$11,472**		**$13,936**		**$14,419**		**$4,705**	**$55,638**
			TOTAL SALARIES AND BENEFITS					**$35,303**		**$36,382**		**$44,873**		**$46,363**		**$15,619**	**$178,533**
A. MTDC (total costs subject to F&A)								**$35,303**		**$36,382**		**$44,873**		**$46,363**		**$15,619**	**$178,533**
B. Facilities and Administration (F&A)			**Enter other rates manually**			**17.5%**		**$6,178**		**$6,367**		**$7,853**		**$8,114**		**$2,733**	**$31,243**
D. Total Direct Costs (A+C)								**$35,303**		**$36,382**		**$44,873**		**$46,363**		**$15,619**	**$178,533**
E. Total Sponsor Request (B+D)								**$41,481**		**$42,749**		**$52,726**		**$54,477**		**$18,352**	**$209,776**