

Project #: B67

Title: BSIERP Patch Dynamics Study

Principal Investigator(s) and Recipient Organization(s):

Andrew Trites, *University of British Columbia*, a.trites@fisheries.ubc.ca
Kelly Benoit-Bird, *Oregon State University*, kbenoit@coas.oregonstate.edu
Vern Byrd, *US Fish & Wildlife Service*, Vernon_Byrd@fws.gov
Lee W. Cooper, *University of Maryland Center for Environmental Science*, cooper@cbl.umces.edu
Jacqueline M. Grebmeier, *University of Maryland Center for Environ. Science*, jgrebmei@cbl.umces.edu
Chad Jay, *US Geological Survey*, chad_jay@usgs.gov
Scott Heppell, *Oregon State University*, scott.heppell@oregonstate.edu
David Irons, *US Fish & Wildlife Service*, david_irons@fws.gov
Sasha Kitaysky, *University of Alaska, Fairbanks*, ffask@uaf.edu
Kathy Kuletz, *US Fish & Wildlife Service*, kathy_kuletz@fws.gov
Dan Roby, *USGS /Oregon State University*, daniel.roby@oregonstate.edu

Contract Period and Amount of Funding:

October 2007-September 12, 2012: \$2,385,016

Report Period:

1 April 2009 through 30 September 2009

Report Date:

1 October 2009

Lead Author of Report:

Andrew W. Trites

Proposed timeline and milestones within report period:

Walrus and Benthics

<i>What</i>	<i>Who</i>	<i>Start (2009)</i>	<i>Other key dates</i>
Submit 2008-2010 field collected benthic data to NSF BEST CADIS archive (core funding), co-linked to BSIERP data center	Grebmeier, Cooper	April-March	2009-2011
Submit relevant archived benthic data and/or cross-link to already submitted data at NSF EOL/UCAR site	Grebmeier, Cooper	April-March	2009-2010
Continue bivalve L/W and caloric content study, retrospective and current field collected data analysis	Grebmeier, Cooper	ongoing	2008-2010
Progress report to NPRB	Jay, Grebmeier, Cooper, Trites	October, April	Semi-annually 2008-2010

Forage Fish

<i>What</i>	<i>Who</i>	<i>Start (2009)</i>	<i>Other key dates</i>
Finalize vessel charter for B77 (and B67)	Benoit-Bird and Heppell	April	
Prepare protocols for data collection and order needed supplies	Benoit-Bird, Heppell	May	Review annually as needed
Load gear and ship supplies to Alaska	Benoit-Bird, Heppell, students, techs	June	
Conduct field studies	Benoit-Bird, Heppell, students, techs	July-August	Complete field studies in August each year 2008-2009
Analysis of acoustic data	Benoit-Bird	Ongoing	
Analyze CTD data	Benoit-Bird, student	October	
Finish species ID	Heppell, student	September	
Energetic content analysis	Heppell, student	Ongoing	
Attend 2009 BSIERP Principal Investigators meeting	Heppell	October	

Northern Fur Seals

<i>What</i>	<i>Who</i>	<i>Start (2009)</i>	<i>Other key dates</i>
Review and update protocols for 2009 field season	Battaile, Nordstrom, Trites	April - June	
Organize / procure supplies & logistics for 2009 field season	Nordstrom, Battaile, Trites	April - June	
Staff training on tags purchased for 2009 field season	Battaile, Nordstrom, Trites	May	
Train field personal	Battaile, Nordstrom, Trites	June - July	
Relay eddy locations to BSIERP sampling vessels	Nordstrom	July - August	
Conduct field studies, capture, tag, retrieve tags and consolidate data	Battaile, Nordstrom, Research assistants	July - September	
Complete NPRB progress reports	Battaile, Nordstrom, Trites	April 1, October 1	Semi-annually 2008-2010
2009 field season data analysis	Trites, Battaile, Nordstrom	On going	Annually

Seabird and Mammal Surveys

<i>What</i>	<i>Who</i>	<i>Start (2009)</i>	<i>Other key dates</i>
Coordinate with other BSIERP-PDS PIs	Kuletz, Benoit-Bird, Heppell	April - Sept	annually as needed
Hire graduate student	Kuletz	June - October	Nathan Jones hired for field season & working towards Masters
Purchase equipment and	Kuletz, Jones	March-July	Replace supplies as needed

supplies			
Prepare protocols for data collection	Kuletz, Jones	March-June	Review annually as needed
Obtain permits to allow collection of kittiwakes and murrens at sea	Kuletz, Jones	March-June	Submit proposal to NPRB and IACUC in April; state, federal permits granted.
Conduct surveys at sea	Kuletz, Jones, Hoover	July - August	Field work conducted by Jones & Hoover
Process carcasses of birds collected at sea in 2009; send stomach and tissue samples to contractors for analysis.	Kuletz, Jones, Roby	September - November	Sub-sample of stomachs sent in Sept 2009; rest will be processed and sent in Nov 2009.
Edit and submit survey data	Kuletz	August-March	annually
Prepare progress report	Kuletz	September	Annually

Seabirds (UAF)

<i>What</i>	<i>Who</i>	<i>Start (2009)</i>	<i>Other key dates</i>
Compile and submit 2008 data on stress & stable isotopes	Kitaysky	March-April	April 2009
Stable isotope analysis of black-legged kittiwake blood samples collected at the Pribilofs during previous years (2003-2005)	Kitaiskaia	April	September'09
Secure housing for field work at the Pribilofs	Byrd, Trites, Irons, Kitaysky	April-May	
Coordinate logistics of field camp on Pribilofs	Byrd, Trites, Irons, Kitaysky	April-May	
Order data loggers and field supplies	Kitaysky, Young, Dorresteijn	April-June	
Revise protocols for data collection	Kitaysky, Young, Dorresteijn	April-May	
Have protocols reviewed by other team members	Kitaysky, Barger	April-June	
Coordinate field approaches to avoid conflicts	Byrd, Trites, Irons, Kitaysky	April-June	
Train field personnel	Kitaysky	June	
Conduct field studies: deploy dataloggers, collect blood and diet samples	Dorresteijn, Young, Youngren, field tech	July-August	September
Complete NPRB progress reports	Kitaysky, Dorresteijn, Young, Youngren	October 1	

Project Summary:

The goal of our study is to undertake a coordinated fine-scale study of birds and mammals, and their forage base to determine the consequences of spatial patterns (patches) on predator-prey dynamics. We will thereby establish mechanisms that control the abundance and distributions of top predators in the Bering Sea, and provide models with data to predict how and why these species respond to changes in the physical and biological environment.

Our research is addressing the BSIERP hypothesis that climate-ocean changes will displace predictably located, abundant prey (hot spots) necessary for successful foraging by central place (seabirds and fur seals while nurturing young) and hot spot (baleen whales, walrus) foragers. We are also testing the hypothesis that central place foragers will shift their diet, foraging locations or rookery locations to increase foraging opportunities (based on differential foraging success).

Progress Summary:

Walrus & Benthos. Organic carbon and nitrogen content for surface sediments from Healy 09-01 have been completed. We also made progress with our additional milestone to prepare retrospective prey field data sheets for the northern Bering Sea for data collected in 2006 for comparison with the previous tagged walrus collections by co-PI Chad Jay. We have completed sorting all samples collected on the 2008 Healy early spring cruise for our collaborative predator-prey patch dynamics study. Sediment grain sizing has also been completed for the HLY0901 cruises.

We are analyzing 2006, 2008, and 2009 data with assistance from resource selection modeling consultants contracted in-kind by USGS. We are identifying the suite of benthic infauna that are a “proxy” for areas of high carbon deposition and associated benthic biomass that will increase the prey field base for the higher trophic level consumers in the region (walruses and spectacled eiders). We have been studying options for choosing the most ecologically-meaningful scales of analysis and various methods of spatial interpolation for each data set (i.e., walrus use, benthos, ice coverage). By exploring the spatial structure of the data, we plan to contribute to a better understanding of walrus habitat utilization.

We consulted with statisticians specializing in resource selection modeling and spatial analysis to discuss data structure and analysis approach. Walrus tracking data for the three study years (2006, 2008, and 2009) have been prepared for analysis. We have identified the archived sea ice data that will be used in the analysis for these years and the data will be compiled in fall 2009.

Blubber samples were collected from 34 walruses by hunters during the EWC/USFWS cooperative biosampling program in Savoonga and Gambell in May 2009. These samples will be analyzed for lipid content and the data will be delivered to the BSIERP data manager in February 2010. This sampling concludes the second and last of the two-year BSIERP funded spring walrus blubber sampling. Summaries of these data will be presented to the Eskimo Walrus Commission in December 2009.

Forage Fish. Preparations for the cruise were ongoing from the beginning of April through mid-July. Our cruise ran from July 17th to August 12th. Since that time we focused on sample analysis, data analysis, and preparation of data for presentation. Fish sampling proximate analyses (lipid, protein, total caloric content) from the 2008 cruise were completed in early July. We also assisted with the diet analysis and proximate analysis of the collected-at-sea seabird samples. Finally, we began adding the 2009 data to the databases for both directed sampling (trawl) and acoustic mapping that were created after the 2008 cruise; and conducted preliminary spatial analysis of physical and biological oceanographic parameters, acoustic and trawl-based maps of prey distributions.

Seabird and Mammal Surveys. Two USFWS observers were hired to conduct seabird and marine mammal surveys in conjunction with the prey/oceanographic crews on board the *F/V Frosti* and the *F/V Goldrush*. Both observers were graduate students with the University of California, Moss Landing Marine Lab. Nathan Jones began his work with the PDS in 2008 and Brian Hoover began working with

us in 2009. Weather made surveying challenging, particularly because we were attempting to conduct more crepuscular and night time surveys in 2009, in response to changes in the prey sampling effort and indications that birds were foraging during those hours. The observers devised a method of conducting transects at night using night-vision monoculars, and together the two teams surveyed a total of 2553 km of transects, with 247 of those conducted at night. Raw data has been edited and preliminary examinations of distributions suggest that thick-billed murrens had higher densities in waters closer to the Pribilof Islands than in 2008, particularly near St Paul Island, although their densities also remained high near the shelf break at Pribilof Canyon. Black-legged kittiwake densities were higher on the shelf to the west of St Paul Island and north of St George Island than in 2008, although they still had high densities on the shelf break as well. The distributions of murrens and kittiwakes found during at-sea surveys were consistent with results from the telemetry study. Further analysis on seabird distribution relative to the prey base will begin in 2010.

In 2009, the at-sea observers collected 145 birds (black-legged kittiwakes and thick-billed murrens) to examine diet and prey selection relative to prey distribution. These data will be combined with the 86 murrens and kittiwakes collected in 2008 under project B64. A subsample of 21 murre stomachs was sent for immediate analysis and the remaining carcasses will be processed in November 2009. We will contract with Kathy Turco for prey identification and volumetric measurements of remaining stomachs, and with a university lab to conduct stable isotope analysis (SIA) on muscle, liver, and a secondary feather sample from each bird. The SIA was completed on samples from birds collected in 2008, and preliminary results suggested differences in trophic level and diet sources between breeding season and spring (during feather growth) for black-legged kittiwakes, but not for thick-billed murrens. The SIA also suggested that murrens were feeding at a lower trophic level than the kittiwakes, consistent with the greater proportion of euphausiids in murre stomach samples. However, both murrens and kittiwakes were feeding at a higher trophic level in late summer, compared to earlier in the summer. Preliminary results from the 2009 subsample of murrens found stomach mass to be higher in murrens collected between late evening and early morning hours, compared to birds collected mid-day. This is consistent with our observations that birds appeared to be traveling to forage grounds and foraging in crepuscular or even nighttime hours, which is when the prey sampling crews found certain types of prey to be near the surface.

Northern fur seals. Custom capture equipment was manufactured in-house and major field equipment ordered for the Pribilofs was received in Vancouver. Oversized items were shipped to St. Paul via barge and were stored until arrival of the field team. New data-loggers were produced by Wildlife Computers and staff attended a special training session to familiarize themselves with the tags and the communications software prior to departure. Housing for the BSIERP team on St. Paul was finalized late May with fur seal and seabird researchers sharing the same duplex from the 2008 season.

Field assistants were trained and gear was tested during the first week of the 2009 field season.. Animal captures commenced on July 11th and continued through to September 19th. A total of 46 females were instrumented of which 45 were re-captured and tags recovered. One seal did not return to the rookery after leaving on July 18th and the tags were not recovered. Capture totals exceeded our initial goal of 30 individuals and were evenly distributed across the field season. Sea-surface height data were downloaded daily until mid-August to locate eddies around the Pribilofs and Bogoslof. The BSIERP sampling vessel was directed to an eddy SW of the Pribilofs to deploy drifters on July 30th as fur seal and seabird foraging tracks showed the eddy was possibly used by the instrumented animals.

Seabirds (UAF). We met our objectives for the collection of field samples (see table); and finished all of the planned hormonal and stable isotope analyses of samples collected in 2008, and the stable isotope analyses of samples collected during 2003-2005. We also submitted 2008 data to the BSIERP data manager, and conducted analyses of 2008 diving profiles.

Summary of field samples collected by UAF Seabird teams on St. Paul and St. George Islands during July-August 2009.

SPECIES	LOCATION	BLOOD SAMPLES* (# individuals sampled)		DIET SAMPLES* (# individuals sampled)	CEFAS LOGGERS	
		HORMONES	STABLE ISOTOPES		DEPLOYED	RETRIEVED
TBMU	St. Paul I.	70	70	27	34	25
BLKI	St. Paul I.	23	22	9	n/a	n/a
TBMU	St. George	54	54	34	31	20
BLKI	St. George	27	27	6	n/a	n/a

* - does not include samples collected by the collaborating BSERP projects

Lessons learned and project adjustments:

Walrus and benthos. The polynya south of St. Lawrence Island was extensive in 2009 due to sustained strong northerly winds; and the radio-tagged walruses mostly occupied the eastern and western sides of the polynya, similar to 2008. USFWS-EWC bio-sampling program and hunters from Gambell and Savoonga was significantly increased to obtain a larger number of blubber samples from the spring harvest this year compared to last year (2008).

Forage Fish. We needed to adjust the logistics of our sampling plan because of some equipment losses incurred during the 2009 cruise. Doing so allowed us to complete our tasks and complete sampling across the entire sampling universe as originally planned.

Seabird and Mammal Surveys. We compared stomach samples from colony-based regurgitations to those of birds collected at sea to avoid unnecessary lethal sampling of birds for diet determination. We found that for black-legged kittiwakes, which fed heavily on myctophids in 2008, both methods yielded similar results, and thus we could use colony sampling for dietary data. However, colony-based methods were not adequate for thick-billed murres, because the prevalence of euphausiids in adult diets was only evident in birds collected at sea. We therefore applied to state and federal agencies for permits to collect murres. It subsequently became apparent early in the breeding season that the high number of breeding failures among kittiwakes would result in few sampling opportunities, or in the case of birds at Bogoslof Island, birds were not readily accessible. We therefore re-applied for changes in our permits to allow collection of black-legged kittiwakes as well as murres. It would have saved time and effort to submit a more comprehensive permit request early in the year, to insure that the dietary studies could be fully implemented under any circumstances.

Behavioral observations and the collection of birds in 2008 indicated that birds were often feeding between evening and early morning, therefore we altered both our timing of collections and our survey protocol. Preliminary examination of the data suggests that both the night time surveys, and collection of birds during twilight hours, provided data that will substantially improve our understanding of seabird foraging patterns in the Bering Sea.

Northern fur seals. Preliminary analysis of the 2009 fur seal data showed that fur seals fed over large areas of the Bering Sea (ranging about 200 km from St. Paul Island), but did not reveal any preferred feeding locations or hot spots. The on-shelf area to the east of St. Paul was notably under-utilized and may represent a shift in foraging locations due to the strength of the cold pool from the previous winter. This hypothesis will receive a great deal of attention as oceanographic data analysis progresses. Our biggest challenge remains the need to develop appropriate spatial statistical software. A statistician working for the UBC Marine Mammal Research Unit has been working with some of the tracking data

collected from northern fur seals and will be guiding our analysis. Data loggers from Wildlife Computers proved to be very reliable.

Seabirds (UAF). No adjustments were made.

Integration activity:

Walrus and benthos. PI Jay met with hunters and elders in Savoonga in coordination with NPRB Project #B69 (Subsistence harvest, users and LTK ecosystem perspective) to discuss local and traditional knowledge of walrus in the St. Lawrence Island region. PI Grebmeier and Cooper will attend the Girdwood meeting with other BSIERP researchers in October 2009 while PI Jay is contributing to the 18th Biennial Conference on the Biology of Marine Mammals in Québec City.

Forage Fish. We integrated our sampling with that of the other Patch Dynamics investigators; and will continue this integration work with the larger BSIERP work when PI Heppell attends the annual BSIERP PI meeting in October.

Seabird and Mammal Surveys. The seabird and mammal survey portion of the PDS was closely interdependent between the Pribilof (B67) and Bogoslof (B77) Projects. The at-sea PDS component depended on close cooperation among PIs of the prey sampling component, and the seabird observers worked closely with the OSU PIs and crew. We also collaborated with the seabird colony telemetry component, which provided the vessel crews with the foraging locations of tagged birds. Results from the telemetry study suggest that there is very little overlap in foraging areas between birds from the different islands, and therefore it should be possible to assign probabilities of colony of origin to birds collected at sea. We assisted in the planning and implementation of the drifter and satellite tracking data on eddies. Analysis of survey data and of seabird diet will be done in conjunction with the OSU component. It will also rely on data collected during the broad-scale BSIERP and seabird studies. Survey data will be submitted to the North Pacific Pelagic Seabird Database, and these files will be provided to the BSIERP data manager.

Northern fur seals. In addition to continued participation in future PI meetings, we further integrated our field work with that of the seabird studies. Day to day field collaboration with the seabird crews occurred on both Bogoslof and the Pribilof Islands along with more fully integrated day-to-day living. Fine tuning of tagging schedules maximized data collection and minimized disturbance to the animals. A successful collaboration with Wildlife Computers resulted in the production of the new 3 dimensional dive profile logger and the use of a smaller CTD.

Seabirds (UAF). During July-August PI and field crew members participated in weekly conference calls with other PIs and field crews.

Education and Outreach:

Andrew Trites and Vern Byrd presented summaries of 2008 findings and 2009 research plans for the Patch Dynamic Studies to the Tribal Government of St. Paul Island and members of the community during Bering Sea Days in April 2009.

Walrus and benthos. Cooper and Grebmeier visited PolarTREC teacher Deanna Wheeler's school in Indian Head, Maryland in May 2009 for day-long presentations to various classes. Additional future efforts are planned including development of a sister school relationship between the J.C. Parks School in Indian Head and the community school in Savoonga, on St. Lawrence Island. Weblinks to many of the public outreach efforts that have been made are available at <http://arctic.cbl.umces.edu> and include a full page article in the Baltimore Sun, podcasts, and other media appropriate for public education and outreach. PI Jay presented an update of the walrus-benthos project to Savoonga hunters and elders during the integrated LTK Savoonga activity described above. The BSIERP walrus-benthos project was

highlighted in a segment on National Public Radio, Encounters (Aired September 9, 2009, by Elizabeth Arnold).

Forage Fish. No specific forage fish outreach was undertaken. We have a wide variety of digital images from the 2009 BSIERP patch dynamics cruise, some of which have already been provided to NPRB for outreach and publicity purposes. Others are available upon request.

Seabird Telemetry & Logistics (FWS). Kathy Kuletz visited St Paul Island in July 2009 and visited the field crews and some of their study sites. She also attended public lectures related to the seabird work on the island. Digital images from the field season will be provided to NPRB for their use.

Northern fur seals. Chad Nordstrom presented fur seal findings to members of the St. Paul Community School in September which was followed by an extensive Q&A session.

Seabirds (UAF). Ine Dorresteijn has successfully completed and defended her MS thesis project (UAF - University of Amsterdam). Public lectures were given to local communities by field crew leaders Ine Dorresteijn (St. Paul I.) and Rebecca Young (St. George I.). Local surveys (part of R. Young dissertational research) on the use of seabirds and their importance to the Pribilovian /Aleut cultures have been conducted on St. Paul and St. George Islands.

Work Plans (2009-2012 Tasks, Assignments, Timeline):

Walrus and Benthics, BSIERP B67 Walrus prey patch dynamics in the St. Lawrence Island polynya
Chad Jay, chad_jay@usgs.gov, 907-786-7414; Jackie Grebmeier, jgrebmei@cbl.umces.edu

<i>What</i>	<i>Who</i>	<i>When</i>	<i>Other key dates</i>
Plan/prepare for field work in March	Grebmeier, Cooper (NSF funding)	Jan-Feb	2010
Benthic macrofaunal and sediment data collections-spring 2010 ship TBD)	Grebmeier, Cooper	March	2010
Submit 2008-2010 field collected benthic data to NSF BEST CADIS archive (core funding), co-linked to BSIERP data center	Grebmeier, Cooper	April-March	2009-2011
Submit relevant archived benthic data and/or cross-link to already submitted data at NSF EOL/UCAR site	Grebmeier, Cooper	April-March	2009-2010
Continue bivalve L/W and caloric content study, retrospective and current field collected data analysis	Grebmeier, Cooper	ongoing	2008-2010
Progress report to NPRB	Jay, Grebmeier, Trites	October, April	Semi-annually 2008-2010
Attend BEST-BSIERP PI meeting	Grebmeier, Cooper, Jay	October	Annually 2008-2010
Supply telemetry data to data manager	Fischbach, Jay	November	2009
Report on activities to Eskimo Walrus Commission	Jay, Fischbach, Iversen	December	Annually 2007-2011
Complete an initial analysis of	Jay, Grebmeier,	March	2010

2006, 2008, and 2009(?) data	Fischbach, Cooper		
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Forage Fish. BSIERP B67, Forage Fish Patches Pribilof Islands, Kelly Benoit-Bird, 541-737-2063, kbenoit@coas.oregonstate.edu

<i>What</i>	<i>Who</i>	<i>Start (2009)</i>	<i>Other key dates</i>
Complete NPRB progress reports	Benoit-Bird, Heppell, Co-PI's	March, October 2010	Semi-annually 2008-2010
Analysis of acoustic data	Benoit-Bird	Ongoing, 2009	
Analyze CTD data	Benoit-Bird, student	October, 2009	
Energetic content analysis	Heppell, student	Ongoing, 2009	
Attend 2009 BSIERP Principal Investigators meeting	Heppell	October, 2009	
Attend and present at 2010 Alaska Marine Science Symposium	Benoit-Bird, Heppell, students	January 2010	
Manuscript preparation and submission	Benoit-Bird, Heppell, students	January 2010	
Thesis preparation, student defenses	Students	Not yet determined	

Seabirds (USFWS), BSIERP B77, Seabird At-Sea Distribution and Diet, Kathy Kuletz, 907/786-3453, kathy_kuletz@fws.gov

<i>What</i>	<i>Who</i>	<i>Start (2009)</i>	<i>Other key dates</i>
Submit semi-annual Progress Report and update Work Plan	Kuletz	October & April	Provide at-sea component to Trites for PDS report
Liaison with other BSIERP & PDS collaborators	Kuletz, Irons, Byrd, Roby, Kitaysky. Trites	October –January	Meetings during October PI meeting and January AMSS, 2009-2011. & as needed.
Work with graduate students and contractor to process and summarize survey data; submit to BSIERP data manager	Kuletz, Jones, Hoover	October – March	Annually; Submit data to BSIERP data manager as it is processed. (by April)
Process birds collected at sea and contract for stomach and SIA of tissues and feathers.	Kuletz, Jones	August – December	Do proximate composition analysis on subset; apply for additional funds if continued.
Exchange data with prey survey PIs for analysis of seabird-fish data	Kuletz, Benoit-Bird, Heppell	November – December	Continue annually, 2009-2012
Data analysis and providing summaries to collaborators	Kuletz, Jones, Hoover, Benoit-Bird, Heppell, Trites, Irons, Roby, Byrd, Renner, Kitaysky	Jan-March	Work with graduate student. Annually, 2009-2011
Examine seabird response (foraging, productivity) to changes in prey base. Work	Kuletz, Benoit-Bird, Heppell, Jones, Hoover,	January, 2010	Collaborative; Continue 2009-2012

on publications.	Irons, Roby, Byrd, Renner, Kitaysky		
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Northern fur seals. BSIERP B67, Fur seal foraging and patch dynamics, Andrew Trites, 604-822-8181, a.trites@fisheries.ubc.ca

<i>What</i>	<i>Who</i>	<i>Start (2009)</i>	<i>Other key dates</i>
2009 field season Data Analysis	Battaile, Nordstrom, Trites	Ongoing	
Attend 2010 NPRB Alaska Marine Science Symposium and BSIERP PI meeting	Trites, Battaile	January	
Supply data to data manager	Battaile, Nordstrom, Trites	January	Ongoing
Complete NPRB progress reports	Battaile, Nordstrom, Trites	April 1, October 1	Annually
Report to communities of Dutch Harbor / Unalaska	Trites	TBD	Semi-annually 2008-2010
Complete publications	Collaborative among various PIs	January 2010	2009-10, Continue thru 2012

Seabirds (UAF) BSIERP B67, Seabird Diving, Stress & Stable Isotopes - Pribilof Islands, PI- Kitaysky, 907 474-5179, ffask@uaf.edu

<i>What</i>	<i>Who</i>	<i>Start (2009)</i>	<i>Other key dates</i>
Analyses of stress hormones	Kitaiskaia, grad students	September'09	Finish by March' 10
Analyses of stable isotopes	Kitaiskaia, graduate students	September'09	Finish by March' 10
Analyses of diving records	Kitaysky, Watanuki (collaborator), graduate students	September'09	Preliminary data by March' 10
Summarize available data on SIA, stress, and diving	Kitaysky, Kitaiskaia, grad students	October, PI meeting	
Supply data to data manager	Kitaysky, grad students		April-May' 10
Complete NPRB progress reports	Kitaysky, grad students	April 1	April 1, 2010