



Kittlitz's Murrelet Information Needs Workshop: Meeting Summary

15-16 December 2009

Anchorage, Alaska

Sponsored by: Kittlitz's Murrelet
Technical Committee

Facilitated by: Angela Matz, US
Fish and Wildlife Service, and
Debra Nigro, Bureau of Land
Management

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Document Preparation

This document was prepared by Michelle L. Kissling, Kittlitz’s Murrelet Technical Committee Coordinator. Information on the Kittlitz’s Murrelet Technical Committee can be found on the Pacific Seabird Group website (www.pacificseabirds.org).

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Introduction

The Kittlitz's Murrelet (KIMU) Technical Committee (KMTC) within the Pacific Seabird Group (PSG) was formed in August 2008 to begin addressing concerns related to the status and conservation of this rare seabird. Little is known about the basic biology of KIMU, as well as threats to the species, including those from climate change. The KIMU is currently listed as a Candidate species under the United States Endangered Species Act and is a species of conservation concern in Alaska. The purpose of the KMTC is to (1) act as a technical authority on the status, distribution, and life history of the Kittlitz's murrelet; (2) identify, encourage, and facilitate needed research; (3) address conservation problems related to the Kittlitz's murrelet; and (4) act as a liaison between research and management.

To help meet our goals, the KMTC convened a two-day workshop in December 2009 to review and prioritize information and conservation needs for KIMU in Alaska. The KMTC is open to all PSG members, and all KMTC members were invited to participate in the workshop. Thirty-nine committee members representing multiple stakeholders, including state and federal agencies, the research community, and conservation organizations, attended the meeting (Appendix 1); only 25 members participated in the prioritization process. The workshop consisted of two components: (1) information exchange through data presentations and project summaries and (2) a structured process to identify and rank broad- to narrow-scale issues, problems, projects, or tasks. The meeting's end-product was a list of projects prioritized with the criteria of feasibility, percent of the rangewide population that might be affected, and level of urgency.

This document summarizes the workshop goals, process, results, and offers recommendations in interpreting the results and improving future prioritization efforts. In addition, we included several appendices detailing participants and their affiliations, workshop agenda and presentation schedule, and lists of information needs generated at previous meetings (primarily attached for documentation purposes).

Process

Information exchange

To create a baseline of common information, the meeting opened with a series of 10 presentations (see Appendix 2; J. Piatt was unable to attend, so Y. Arimitsu briefed participants on his behalf), followed by questions, designed to make each participant current on KIMU research and management in Alaska. We asked presenters to provide a general overview of their work, not a scientific presentation, and to be available over the lunch hour to answer questions.

Identification of categories, issues, and tasks

To distill a large amount of information in a short amount of time, we used the following nested labels (broad to narrow) to help direct the brainstorming and discussion of information needs: “Category”, a broad concern or area for which information was needed, “Issue”, a specific concern for which information was needed, and “Task/Activities”, a discrete action(s) that could be performed to answer or address the “Issue” and contribute to the larger body of knowledge within the “Category”. The entire group identified “categories” before breaking into smaller groups (6-7 participants/group) to brainstorm “issues” and “tasks”. At the conclusion of the breakout group exercise, a spokesperson for each smaller group presented results to the entire group and the facilitators compiled a consolidated list of tasks. The facilitators captured the discussions through notes, video, and large posters. The identification of categories, issues, and tasks was the most time-consuming part of the workshop.

Prioritization of tasks

To prioritize tasks, we ranked each task according to three factors that the group identified to be important (Table 1). Ranking factors included (1) feasibility of the task, (2) percent of the population likely to be affected by implementing the task, and (3) urgency of the action. All participants scored each task by all three factors; score sheets were submitted to the facilitator for entry into a spreadsheet. The goal of scoring was to have numbers reflect the ranks, such that a score of “1” would also be ranked “No. 1,” a high priority. A highly feasible project, that affected much or all of the population, that addressed an issue of great concern, would score low, and therefore would be ranked high.

Table 1. Ranking factors and scoring system developed by the Kittlitz’s Murrelet Technical Committee for prioritizing conservation tasks, December 2009, Anchorage, Alaska.

Factor	Range of possible scores	Description of scores
Feasibility (includes technological capability, cost, logistics, speed of implementation).	1 to 5	1 = very feasible 5 = not at all feasible
Percent of rangewide population affected.	1 to 5	1 = affects entire population 5 = affects a few individuals
Urgency (degree of concern; also includes conservation benefit, gut feeling, professional opinion, and realizing personal or professional biases when scoring).	1 to 5	1 = of great concern 5 = of little concern

We scored tasks according to ranking factors so that each task could be compared with all others. In addition, we could compare tasks within categories or based on other topics of interest. For example, we acknowledged that tasks requiring data collection in the field would be more costly and logistically difficult than those tasks synthesizing known information. The scoring and

ranking process allowed us to compare these types of tasks separately and will allow managers and researchers to rearrange the priorities according to their own mandates, ranking criteria, and funding.

Refinement of prioritized tasks

Twenty-five participants initially scored and prioritized tasks at the workshop; however, the resulting list contained several redundancies and inadequately described tasks in the initial effort. We then refined and edited the initial issues and tasks and asked participants (only those involved in the initial prioritization at the workshop) to rescore the tasks and submit their results via email (13 of 25 of the initial participants submitted rescoring). We discussed preliminary results of the prioritization exercise at the KMTC meeting held in conjunction with the Pacific Seabird Group Annual Meeting, Long Beach, California, February 2010. The KMTC agreed that redundancies still existed in the list and therefore, we agreed to refine tasks further using scores from the second round to prioritize those tasks. During refinements, we made great effort to retain the intended purpose of the original tasks that the group derived in the workshop, focusing any changes on clarifications in wording and reductions in redundancies among list items.

Results

We identified and prioritized 34 tasks/activities to assist in managing Kittlitz's Murrelet populations in Alaska effectively. Most (62%; 21 of 34) of the tasks involved synthesis or analysis of existing information (including dissemination of information), and the remaining 38% (13 of 34) of the tasks required additional data collection or field-based activities.

We present two prioritized lists of tasks based on the type of task: Data Collection (Table 2) and Information Synthesis (Table 3). We chose to display and rank the tasks in this way because the ranking criteria inherently favored Information Synthesis tasks. In general, the Information Synthesis tasks were more feasible and affected a large percentage of the rangewide population, but were not more urgent than the majority of the Data Collection tasks. Therefore, we present the prioritized lists of these two types of tasks separately to avoid misinterpretation of the results. In addition, we present the top ten tasks by the feasibility (Table 4) and urgency (Table 5) ranking factors.

We categorized each task into three groupings: Outreach and Coordination (n=8), Population Ecology (n=15), and Potential Threats (n=11). We identified and referred to these categories during the workshop and included them in the results to assist in comparing the relative importance of tasks within similar groupings.

Table 2. Prioritized list of “Data Collection” tasks to assist in managing Kittlitz’s Murrelet populations in Alaska effectively. Tasks were developed and prioritized by the Kittlitz’s Murrelet Technical Committee, December 2009, Anchorage, Alaska.

Rank (low rank = high priority)	Data Collection Task	Information Need Category
1	Implement population monitoring plan developed by panel of experts (see Task Rank #1 in Table 3) to determine rangewide distribution, abundance, and trends; conduct surveys in areas that have not been sufficiently covered.	Population Ecology
2	Evaluate phylogeographical structure across their entire range using genetic techniques and a defensible sample size; identify data gaps and collect needed samples.	Population Ecology
3	Identify key demographic parameters, estimate vital rates, build a life history table, and develop a demographic model to identify factors at critical life stages that may affect population growth rates; investigate reasons for unsustainably low recruitment and include in demographic model.	Population Ecology
4	Compare current and historical diets to determine if changes in prey base have occurred; compare with MAMU.	Population Ecology
5	Assess movements between and among nominal populations; document distribution during the non-breeding season.	Population Ecology
6	Assess exposure to contaminants; collect and analyze samples; investigate incidence and effects of chronic oiling (P450 and dosing experiments).	Potential Threats
a7	Describe diet and energy budgets; conduct research on nutritional value of forage fish and other prey (e.g., invertebrates); evaluate the potential effects of ocean acidification, regime shift, and other climate change effects on prey base.	Population Ecology
a7	Identify key predators, quantify predation rates for each life history stage, if possible; model predator-prey interactions under climate change scenarios.	Population Ecology

Rank (low rank = high priority)	Data Collection Task	Information Need Category
^a 9	Assess current bycatch levels, and model potential impacts, include a sensitivity analysis; increase monitoring of gillnet fisheries in areas used by KIMU.	Potential Threats
^a 9	Develop and implement bycatch reduction techniques and other threat-specific mitigation measures.	Potential Threats
11	Assess lethal and non-lethal effects of vessel interactions; include effects from vessel disturbance on KIMU energetics, foraging activity, survival (from predators), and productivity.	Potential Threats
12	Monitor nearshore forage fish and invertebrates.	Potential Threats
13	Determine breeding triggers at rangewide and regional scales.	Population Ecology

^a Tied ranks represent tied scores.

Table 3. Prioritized list of “Information Synthesis” tasks to assist in managing Kittlitz’s Murrelet populations in Alaska effectively. Tasks were developed and prioritized by the Kittlitz’s Murrelet Technical Committee, December 2009, Anchorage, Alaska.

Rank (low rank = high priority)	Information Synthesis Task	Information Need Category
1	Form a panel of experts to develop a population monitoring plan that includes sampling design, survey protocols, and an observer training program to determine rangewide distribution, abundance, and trends; consider the non-breeding season.	Population Ecology
2	Synthesize current information on taxonomy, abundance, distribution, trends, and demographics in a Status Assessment; include a comprehensive threats analysis that considers the probable linkages, drivers, and potential impacts from climate change and possible effects from aquaculture, wind development, coastal development, recreational activities, and hatcheries.	Outreach and Coordination
3	Conduct regular meetings to review, coordinate, and disseminate information and to assess conservation issues.	Outreach and Coordination
4	Collate and distribute a comprehensive bibliography.	Outreach and Coordination
5	Create and maintain a GIS data layer of known nest locations.	Population Ecology
6	Form a panel of experts to develop a nest monitoring protocol to assess productivity among areas and quantify reasons for nesting success and failure.	Population Ecology
7	Promote use, sharing, and comparison of multiple nest-finding methods.	Population Ecology
8	Describe the primary constituent elements of terrestrial (nesting) habitat; assess regional differences and similarities.	Population Ecology
9	Identify spatial and temporal overlap of gillnet fisheries and KIMU to infer "hotspots" for potential bycatch issues.	Potential Threats

Rank (low rank = high priority)	Information Synthesis Task	Information Need Category
10	Develop a comprehensive outreach and education program to increase awareness of KIMU biology, ecology, and threats; develop guidelines for tour boats and recreational boaters that will minimize disturbance to KIMU.	Outreach and Coordination
11	Describe primary constituent elements of marine habitats.	Population Ecology
12	Identify spatial and temporal overlap of high vessel-traffic areas and KIMU distribution to infer "hotspots" for vessel disturbance and potential oiling.	Potential Threats
13	Develop a website to act as a "clearinghouse" for all things KIMU; link to existing databases, provide metadata function and capacity, serve outreach materials.	Outreach and Coordination
14	Update Environmental Sensitivity Index Maps; evaluate existing Geographic Response Strategies (oil spill response) in relation to known high density KIMU areas, identify gaps in protective measures, and fill gaps.	Potential Threats
^a 15	Conduct a retrospective analysis of at-sea survey data incorporating covariates.	Population Ecology
^a 15	Conduct Bayesian belief network analysis, including impact analysis, to prioritize research and monitoring for conservation.	Outreach and Coordination
17	Create mechanism to opportunistically collect and analyze incidental data and samples.	Outreach and Coordination
18	Identify spatial and temporal overlap oil and gas exploration areas and KIMU distribution to infer "hotspots" for potential oiling and risk.	Potential Threats
19	Hold an international meeting to improve collaboration with Russian colleagues (especially); specifically address risk to KIMU from at-sea driftnet fisheries.	Outreach and Coordination

Rank (low rank = high priority)	Information Synthesis Task	Information Need Category
20	Evaluate changes in sea ice and any subsequent effects on KIMU; model the relationship between changes in KIMU populations and glacial retreat in coordination with glaciologists and climatologists.	Potential Threats
21	Conduct retrospective analysis to evaluate direct and indirect effects of fisheries on KIMU.	Potential Threats

^a Tied ranks represent tied scores.

Table 4. Prioritized list of the top 10 tasks (Information Synthesis and Data Collection tasks combined) based only on the feasibility ranking factor.

Rank (low rank = high priority)	Activity or Task
1	Create and maintain a GIS data layer of known nest locations.
2	Collate and distribute a comprehensive bibliography.
3	Promote use, sharing, and comparison of multiple nest-finding methods.
4	Conduct regular meetings to review, coordinate, and disseminate information and to assess conservation issues.
4	Identify spatial and temporal overlap oil and gas exploration areas and KIMU distribution to infer "hotspots" for potential oiling and risk.
6	Synthesize current information on taxonomy, abundance, distribution, trends, and demographics in a Status Assessment; include a comprehensive threats analysis that considers the probable linkages, drivers, and potential impacts from climate change and possible effects from aquaculture, wind development, coastal development, recreational activities, and hatcheries.
6	Identify spatial and temporal overlap of gillnet fisheries and KIMU to infer "hotspots" for potential bycatch issues.
8	Develop a comprehensive outreach and education program to increase awareness of KIMU biology, ecology, and threats; develop guidelines for tour boats and recreational boaters that will minimize disturbance to KIMU.
8	Identify spatial and temporal overlap of high vessel-traffic areas and KIMU distribution to infer "hotspots" for vessel disturbance and potential oiling.
10	Update Environmental Sensitivity Index Maps; evaluate existing Geographic Response Strategies (oil spill response) in relation to known high density KIMU areas, identify gaps in protective measures, and fill gaps.

Table 5. Prioritized list of the top 10 tasks (Information Synthesis and Data Collection tasks combined) based only on the urgency ranking factor.

Rank (low rank = high priority)	Activity or Task
1	Implement population monitoring plan developed by panel of experts (see Task Rank #1 in Table 3) to determine rangewide distribution, abundance, and trends; conduct surveys in areas that have not been sufficiently covered.
2	Form a panel of experts to develop a population monitoring plan that includes sampling design, survey protocols, and an observer training program to determine rangewide distribution, abundance, and trends; consider the non-breeding season.
3	Identify key demographic parameters, estimate vital rates, build a life history table, and develop a demographic model to identify factors at critical life stages that may affect population growth rates; investigate reasons for unsustainably low recruitment and include in demographic model.
4	Form a panel of experts to develop a nest monitoring protocol to assess productivity among areas and quantifies reasons for nesting success and failure.
4	Synthesize current information on taxonomy, abundance, distribution, trends, and demographics in a Status Assessment; include a comprehensive threats analysis that considers the probable linkages, drivers, and potential impacts from climate change and possible effects from aquaculture, wind development, coastal development, recreational activities, and hatcheries.
6	Evaluate phylogeographical structure across their entire range using genetic techniques and a defensible sample size; identify data gaps and collect needed samples.
7	Assess current bycatch levels, and model potential impacts, include a sensitivity analysis; increase monitoring of gillnet fisheries in areas used by KIMU.
8	Describe the primary constituent elements of terrestrial (nesting) habitat; assess regional differences and similarities.
8	Identify spatial and temporal overlap of gillnet fisheries and KIMU to infer "hotspots" for potential bycatch issues.
8	Conduct regular meetings to review, coordinate, and disseminate information and to assess conservation issues.

Summary

The KMTC achieved the workshop goal of creating a prioritized list of conservation actions to assist in managing KIMU populations in Alaska effectively. We anticipate this list to be used by managers and researchers, depending on expertise, funding, and mandates, when allocating scarce resources. Although there were inherent flaws to the identification and prioritization process, we believe that the results provide a foundation for advancing KIMU conservation in Alaska.

Interpretation of results

Although we have met previously to identify and prioritize information needs for KIMU (prior to the official formation of the KMTC; see Appendix 3), this workshop constitutes the most comprehensive, systematic, and transparent approach to accomplishing the goal. However, we encountered several difficulties during the process, primarily related to the subjective nature of compiling information needs from a diverse group of individuals with differing degrees of expertise and experience with KIMU; therefore, we offer the following suggestions when interpreting the results:

- All tasks on these lists were submitted by members of the KMTC at the workshop and therefore indicate importance to the group. The relative ranking reflects the collective opinion of the workshop participants; however, not all members of the KMTC were able to attend the workshop.
- The prioritized lists of tasks are incomplete, and redundancies exist. We scheduled a 2-day workshop to meet our goals, but we needed additional time to generate and refine task statements. This list is dynamic and will need to be revised as tasks are completed and new issues and tasks arise.
- The ranking factors (feasibility, percent of population affected, and urgency) could have been interpreted differently among participants. For example, a field study intended to estimate reproductive success of KIMU in a specific geographic area affects a small percent of the population, yet has implications throughout the entire range of the KIMU.
- All participants had an equal voice throughout the process, yet had varying degrees of expertise and experience with KIMU. This disparity was both a strength and weakness of the process.
- The ranking factors were more valuable when considered individually (Tables 4 and 5).
- Tasks categorized as “Potential Threats” ranked relatively low overall. Workshop participants agreed that evaluating potential threats was important but, in general, believed that effective conservation of KIMU has been hindered primarily by lack of information on basic biology, distribution and abundance, and population ecology. This sentiment is best reflected in prioritized list based on the urgency ranking factor (Table 5).

Recommendations for future efforts

This document produced and endorsed by the KMTC is intended to be reviewed annually to evaluate progress on high-priority tasks and to be revised every 3 years. We recommend holding another workshop to identify and prioritize information needs for KIMU in winter 2012/2013.

Based on our experience described in this document, we can vastly improve the workshop structure and process for future efforts. To begin, we suggest the following:

- Begin workshop with a skeleton list of tasks created by organizers/facilitators, a core group of experts, and the results of this previous workshop. This approach will help reduce redundancies in the task list and will result in a more efficient use of workshop time. The workshop participants then can add and delete to the task list and can refine/reword existing tasks.
- Carefully consider and define the ranking factors to ensure participants are interpreting them consistently.
- Discuss the expected use and presentation of the results.
- Allow at least 3 days for the workshop.

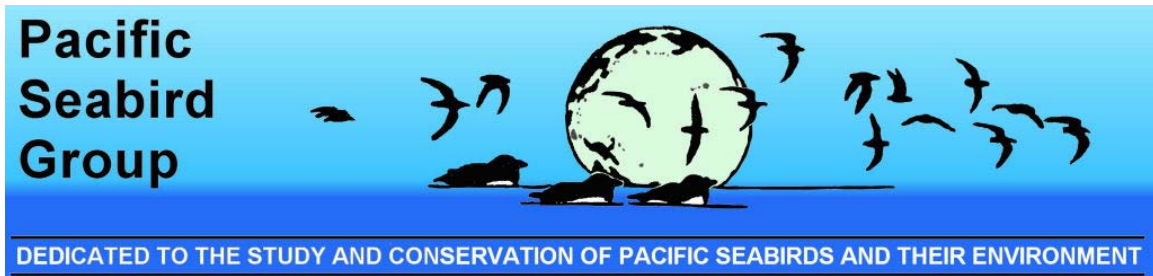
Appendices 1-3.

Appendix 1. Participant list from the Kittlitz's Murrelet Information Needs Workshop sponsored by the Kittlitz's Murrelet Technical Committee, 15-16 December 2009, Anchorage, Alaska. Asterisk indicates participant was also a presenter.

Name	Affiliation	Participated in entire workshop
Aaron Poe	U.S. Forest Service	yes
Aly McKnight*	U.S. Fish and Wildlife Service	no
Andrew Allyn*	University of Massachusetts	no
Bill Hanson	U.S. Fish and Wildlife Service	no
Bill Pyle*	U.S. Fish and Wildlife Service	yes
Bill Ritchie	U.S. Fish and Wildlife Service	yes
Brendan Moynahan*	National Park Service	no
David Janka	Auklet Charters	yes
Ellen Lance*	U.S. Fish and Wildlife Service	yes
Eric Veach	National Park Service	yes
Erin Cooper	U.S. Forest Service	yes
Gary Wheeler	U.S. Fish and Wildlife Service	yes
Greg Balogh	U.S. Fish and Wildlife Service	yes
Judy Putera	National Park Service	yes
Karen Blejwas*	Alaska Department of Fish and Game	yes
Kathy Kuletz*	U.S. Fish and Wildlife Service	yes
Kim Klein	U.S. Fish and Wildlife Service	yes
Kim Nelson	Oregon State University	yes
Leah Kenney	University of Alaska	no
Lewis Sharman	National Park Service	yes
Marilyn Myers	U.S. Fish and Wildlife Service	yes
Matt Kirchhoff*	Audubon Alaska	yes
Mayumi Arimitsu*	U.S. Geological Survey	yes

Name	Affiliation	Participated in entire workshop
Michelle Kissling*	U.S. Fish and Wildlife Service	yes
Mike Goldstein	U.S. Forest Service	yes
Nick Hatch*	Oregon State University	no
Robb Kaler*	U.S. Fish and Wildlife Service	yes
Robert Day*	ABR, Inc.	yes
Robin Corcoran	U.S. Fish and Wildlife Service	yes
Sadie Wright	Alaska Department of Fish and Game	yes
Sarah Schoen	U.S. Fish and Wildlife Service	yes
Scott Gende	National Park Service	yes
Shaye Wolf	Center for Biological Diversity	yes
Shelley Hall	National Park Service	yes
Sonja Jahrsdoerfer	U.S. Fish and Wildlife Service	no
Steve Lewis	Alaska Department of Fish and Game	no
Steve Matsuoka	U.S. Fish and Wildlife Service	no
Susan Oehers	U.S. Forest Service	yes
Tom Van Pelt	North Pacific Research Board	yes

Appendix 2. Agenda from the Kittlitz's Murrelet Information Needs Workshop sponsored by the Kittlitz's Murrelet Technical Committee, 15-16 December 2009, Anchorage, Alaska.



**PSG Kittlitz's Murrelet Technical Committee
Information Needs and Prioritization Workshop**

Date: December 15-16, 2009

Location: National Park Service Regional Office, 240 West 5th Ave., Anchorage, Rm 309

Moderator: Angela Matz, US Fish and Wildlife Service, Fairbanks

KIMU TC Coordinator: Michelle Kissling, US Fish and Wildlife Service, Juneau; email: michelle_kissling@fws.gov; phone: 907-780-1168

Workshop Goal: To identify and prioritize information needs to manage Kittlitz's Murrelet populations in Alaska effectively.

Tuesday, December 15

Introductions and guidance

10:00-10:15am	Introductions, workshop logistics, and overview of KIMU Technical Committee	Michelle Kissling
10:15-10:20am	Update on listing status	Ellen Lance

Presentations on current KIMU research and monitoring

10:20-10:30am	Overview of KIMU efforts in Northern Alaska	Bob Day
10:30-10:40am	KIMU phylogeography, demography, distribution, and seasonal movements	John Piatt/Erica Madison
10:40-10:50am	KIMU nesting ecology on Agattu Island	Robb Kaler
10:50-11:00am	KIMU nest monitoring on Kodiak Island	Bill Pyle
11:00-11:10am	Foraging ecology of KIMU in Kenai Fjords NP	Yumi Arimitsu

11:10-11:20am	Comparison of KIMU habitat and prey in PWS	Aly McKnight
11:20-11:30pm	KIMU bycatch risk assessment	Karen Blejwas
11:30-11:50pm	Overview of KIMU surveys in LCI/Kachemak, PWS, and, pelagic surveys (vessels of opportunity)	Kathy Kuletz
11:50-12:00pm	Overview of KIMU efforts in Icy and Yakutat Bays	Michelle Kissling
12:00-12:10pm	KIMU diet composition and reproductive energetics	Nick Hatch
12:10-12:20pm	Overview of KIMU efforts in Glacier Bay	Matt Kirchhoff
12:20-12:30pm	Wrap-up of presentations	Angela Matz
12:30-1:30pm	Lunch (order-in; presenters will be available to answer questions)	

Tuesday, December 15 – continued

Group discussions to identify and prioritize information needs

1:30-3:00pm	Group discussion to identify, list, and prioritize monitoring needs (related to distribution, abundance, and trend)	Angela Matz
3:00-3:15pm	Break	
3:15-4:00pm	Group discussion to identify, list, and prioritize research needs related to foraging ecology	Angela Matz
4:00-4:45pm	Group discussion to identify, list, and prioritize research needs related to nesting ecology	Angela Matz
4:45-5:00pm	Wrap-up	

Wednesday, December 16

Group discussions to identify and prioritize information needs – continued

8:00-8:15am	Summary of discussions from previous day and review of remaining tasks	Angela Matz
8:15-9:00am	Group discussion to identify, list, and prioritize other research needs	Angela Matz
9:00-9:15am	Break	
9:15-10:45am	Group discussion to identify, list, and prioritize conservation needs (related to addressing threats)	Angela Matz

10:45-11:45am	Summarize prioritized lists of monitoring, research, and conservation needs	Angela Matz
11:45-12:00am	Wrap-up; review action items; future meetings	Angela Matz/ Michelle Kissling

The Marbled Murrelet Technical Committee will meet on December 16-17, 2009. The meeting will begin at 1:30pm on December 16, immediately following the KIMU Technical Committee meeting. Everyone is invited to participate in the Marbled Murrelet meeting (see separate agenda).

Workshop Logistics

Parking – You can use the parking garage on 5th St. immediately across the street from the NPS Regional Office entrance. Take the ticket as you enter the garage and bring the ticket with you to the meeting. At the end of the day, your parking ticket will be validated.

Building access – If you do not have a NPS key card, you will not be able to enter the building without someone opening the door from the inside for you. A helpful meeting participant will check the door roughly 5 minutes prior to the morning and afternoon meeting times. Please do one of the following: (1) carpool or arrive with a NPS employee with a key card, (2) wait patiently for someone to open the door at 5 minutes prior to the meeting start time, or (3) dial Suzy Wolliver or Kathleen Kavalok (extension 3510) on the courtesy phone adjacent to the entrance (please use this as a last option – they have jobs to do!). Please, please, please try to be on time to minimize the door issue!

Presenters – If you have PowerPoint slides, please arrive at 9:30am (someone will be at the door to grant you entrance) on December 15 in order to load your presentation on to the NPS audio-visual computer. Bring your presentation on a jump drive.

Workshop Products

Workshop minutes will be distributed by January 31, 2010. Minutes will include (1) a prioritized list of monitoring, research, and conservation needs for Kittlitz’s Murrelets in Alaska, and (2) a list of action items (e.g., formation of sub-committees) generated at the workshop.

Appendix 3. Information needs for Kittlitz's Murrelets generated at three previous workshops (a list was not developed at the first workshop held on 15 October 2001, Anchorage, Alaska). An "x" indicates that the task was discussed as a priority during the respective workshop. The purpose of this table is for documentation of tasks identified at previous workshops; they are not prioritized.

Category	Task	Workshop date and location		
		19 March 2004 Anchorage, Alaska (Alaska Bird Conference)	18 October 2005 Anchorage, Alaska	23 January 2008 Anchorage, Alaska (Alaska Marine Science Symposium)
Distribution and abundance (baseline data)	Lost Coast	x	x	x
	Alaska Peninsula - north side	x	x	
	Aleutian Islands (Tanaga, Umnak, Unimak, Shumigan)	x	x	x
	Kodiak	x	x	x
	Northwestern Alaska (Bering and Chukchi Sea)	x		x
	Bering Strait ice edge (coordinate with marine mammal research)		x	
	Lisburne Peninsula		x	
	Pelagic waters - vessels of opportunity		x	
	Seward Peninsula		x	
	Cold Bay		x	
	Kamchatka Peninsula & other Russian populations		x	x
	Togiak National Wildlife Refuge		x	
Trend	Prince William Sound	x	x	x
	Kenai Fjords	x	x	

Category	Task	Workshop date and location		
		19 March 2004 Anchorage, Alaska (Alaska Bird Conference)	18 October 2005 Anchorage, Alaska	23 January 2008 Anchorage, Alaska (Alaska Marine Science Symposium)
Trend (cont.)	Glacier Bay	x	x	x
	Malaspina Forelands	x		
	Icy Bay	x	x	x
	Yakutat Bay	x	x	x
	Kachemak Bay	x	x	x
	Adak	x	x	x
	Alaska Peninsula - south side	x	x	
	Lower Cook Inlet	x		x
	Attu	x	x	x
	Unalaska		x	x
	Southeast Alaska Outer Coast		x	
	Cross Sound		x	
	Tracy and Endicott Arms		x	
	Atka/Amlia		x	x
	“Other” monitoring	Write-up Magadan survey results		x
Reassess survey data from Russia			x	

Category	Task	Workshop date and location		
		19 March 2004 Anchorage, Alaska (Alaska Bird Conference)	18 October 2005 Anchorage, Alaska	23 January 2008 Anchorage, Alaska (Alaska Marine Science Symposium)
“Other” monitoring (cont.)	Standardize survey protocols			x
	Develop monitoring protocol and schedule			x
	Identification training tools	x		
Research	Develop population model		x	
	Kenai Fjords radio-telemetry project		x	
	KIMU juvenile natural history effort		x	
	Integrate diet work with other field studies		x	
	Glacier Bay radio-telemetry project		x	
	KIMU juvenile workshop		x	
	Retrospective analysis of Prince William Sound changes in KIMU relative to habitat		x	
	Satellite telemetry with KIMU		x	
	Aleutian KIMU ecology study		x	
	Glacier Bay habitat study to address causes of decline		x	
	Capture KIMU in Kachemak Bay		x	
	Capture KIMU in Tracy and Endicott Arms		x	

Category	Task	Workshop date and location		
		19 March 2004 Anchorage, Alaska (Alaska Bird Conference)	18 October 2005 Anchorage, Alaska	23 January 2008 Anchorage, Alaska (Alaska Marine Science Symposium)
Research (cont.)	Comparative habitat use by KIMU in Prince William Sound		x	
	Icy Bay radio-telemetry project		x	x
	Capture KIMU near Magadan		x	
	Catalog Russian museum specimens/records of KIMU for genetic study		x	
	Describe foraging distribution, habitat, and behavior in relation to prey abundance	x		
	Comparative studies of foraging ecology across range			x
	Comparative studies of breeding ecology across range			x
	Comprehensive, intense study of demography and prey availability			x
	Breeding biology of KIMU on Agattu Island			x
	Nest search on Adak Island			x
	Nest search and flight behavior on Kodiak Island			x

Category	Task	Workshop date and location		
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Research (cont.)	Investigate function relationship between KIMU, tidewater glaciers, and prey			x
	Kachemak Bay studies (productivity indices)			x
	Develop demographic model and conduct sensitivity analysis			x
	Diet composition and changes using stable isotopes			x
	Conservation genetics using nuclear DNA (population structure)			x
	Collect additional blood/tissues samples			x
Conservation	Summarize spatial and temporal overlap of KIMU and gillnet fisheries	x	x	x
	Redesign gillnets to reduce bycatch		x	
	Integrate contaminants screening with other field capture studies		x	
	Effects of boat disturbance in PWS		x	
	Increase oil spill response capability		x	
	Develop and distribute bibliography			x