

Date prepared: April 11, 2009

Subject: Meeting Minutes for Kittlitz's Murrelet Technical Committee Annual Meeting

Meeting date: February 22, 2009

Meeting time: 13:30 – 18:00

Meeting location: Hakodate, Japan in conjunction with Pacific Seabird Group Annual Meeting

Meeting organizer: Michelle Kissling, USFWS, Juneau; email: michelle_kissling@fws.gov; phone: 907-780-1168

Meeting attendees (see photo; from left to right): Mayumi Arimitsu, Harry Carter, Kim Nelson, Kathy Kuletz, Bob Day, Michelle Kissling, and Martin Raphael



2008 Activities

We convened the inaugural meeting of the Kittlitz's Murrelet Technical Committee on February 22, 2009 in Hakodate, Japan. Therefore, we have no activities to report for 2008 other than the official formation of the committee and compilation of interested individuals into a listserv.

Federal listing status update

- Elevated from a Listing Priority 5 to a Listing Priority 2 in the 2007 Candidate Notice of Review
- USFWS will not receive funding to begin preparing a listing package in FY09 but has requested FY10 funds
- Discussed whether we need to consider an emergency listing; questioned whether it was necessary for a species with >10,000 birds, but recognized that Kittlitz's Murrelet is a high profile species
- Identified by USFWS as a high priority species by both MBM (as a "focal" species) and the Endangered Species program (as a "spotlight" species); each program will be developing a separate, though similar, action plan for the KIMU and these plans should be available by October 2009.

Regional updates

Because researchers work across several different regions in Alaska, note that some important work was presented outside of the region in which the work took place. Please read carefully.

Northern Alaska (presented by Bob Day)

- ABR, Inc., was contracted by USFWS (Fairbanks Office) to conduct at-sea surveys near Barrow in 2009; difficult to find a vessel that would be a good (and safe) survey platform; ABR is hoping to work with researchers at Woods Hole that are conducting work in the same area and may have vessel space to offer as a ship of opportunity; K. Kuletz still has observers on vessels of opportunity in northern Alaska, but those vessels travel further offshore.
- No confirmed records at any time in the Beaufort Sea, but it would be beneficial to have information from this area.
- K. Kuletz reported that their pelagic surveys have found Kittlitz's off of Pt Barrow in the fall, and multiple surveys found Kittlitz's in spring (March-May) in open leads among the ice, mainly between St. Lawrence Is and Nunivak Is.

Western Alaska and selected sites in Southcentral Alaska (presented by Yumi Arimitsu)

- See attached summary describing results of 2008 field seasons on Agattu and Kodiak Islands
- We discussed potential researcher impacts when studying active nests; agreed this is a concern that needs attention.
- J. Piatt is exploring the use of satellite transmitters on *Brachyramphus* murrelets; M. Raphael reported results of a pilot effort to attach a satellite transmitter to one Marbled Murrelet in Puget Sound in August 2008; attachment and data collection were successful, but transmitter stopped transmitting data within a few weeks (apparently fell off the bird); J. Piatt is working with Microwave Telemetry to improve the form and function of the satellite transmitter and plans to continue the effort in 2009.
- Yumi provided summary of work in the Kenai Fjords that is the subject of her graduate project (UAF); KIMU densities were about 30% higher in 2008 than in 2007; primary productivity (measured by chlorophyll) also was higher in 2008 than in 2007; this same pattern was observed during concurrent oceanographic measurements by Shelton Gay in Prince William Sound; in 2008, KIMU population in Kenai Fjords was estimated to be 650 birds, ranging between roughly 200-1200 birds, and one juvenile was observed in mid-August.

Southcentral Alaska (presented by Kathy Kuletz)

- Summarized recent final report from Kachemak Bay (see attached Executive Summary) titled, "Abundance, distribution, and decadal trends of Kittlitz's and Marbled Murrelets and other marine species in Kachemak Bay, Alaska."
- Reviewed preliminary maps of Kittlitz's and Marbled Murrelet observations recorded during at-sea surveys conducted by observers on vessels of opportunity (primarily in Bering Sea and waters adjacent to western Alaska).
- Informed the group of upcoming project in Prince William Sound; graduate student, Andrew Allyn, from University of Massachusetts will lead project titled "Comparison of

Kittlitz's Murrelet habitat and prey in Prince William Sound, Alaska"; primary funding source is National Fish and Wildlife Federation; field work will be conducted in 2009-2010.

- NOAA Marine Mammal Observer Program recently completed bycatch studies at Kodiak and Yakutat; Kittlitz's Murrelets were taken as bycatch in gillnet fisheries in both areas; analysis of these data to estimate incidental take is currently being conducted.
- B. Day added information about development occurring in the southwestern portion of Lower Cook Inlet (near Iliamna Bay); the area has suitable habitat for Kittlitz's Murrelets, but none have been seen in the area.

Southeastern Alaska (presented by Michelle Kissling)

- See attached summary of 2008 field season results from Icy Bay.
- Matt Kirchhoff conducted work in Glacier Bay in 2008, primarily focused on examining survey methodology and design related to Marbled Murrelets.
- Plan to resurvey Yakutat Bay for *Brachyramphus* murrelets in 2009 if funding allows.
- Oregon State University graduate student, Nick Hatch, prepared full research proposal titled, "Trophic feeding ecology and reproductive energetics of Kittlitz's Murrelets in southeast Alaska"; hoping to graduate in December 2010.
- Icy Bay study expected to continue through 2011 field season.

Russia

- See attached summary of the status of Kittlitz's Murrelets in Russia.
- K. Nelson noted that additional observations of Kittlitz's Murrelets probably are available and that it would be worthwhile to compile these observations.
- We discussed the value of translating Russian reports and published papers into English; B. Day suggested investigating the Endowment Fund as a potential source of funding (**ACTION ITEM**) to reanalyze some of the data from Russia and make these data accessible in English.
- Russian colleagues Yuri Artukhin and Aleksandr (Sasha) Andreev attended the PSG meeting in Hakodate but did not arrive until after the KIMU TC meeting; they remain interested in the Russian population of Kittlitz's Murrelets and are looking forward to future collaboration.

Structure, roles, and responsibilities of KIMU TC

General discussion

- K. Nelson reviewed the formation and history of MAMU TC; essentially, the group focused on what PSG could do and what individual members could do; one of the first tasks of the MAMU TC was to hold a symposium at a PSG meeting that resulted in proceedings that compiled most current information known on MAMU.
- Agreed to meet annually in Alaska (discussed potential meeting in November 2009), but a smaller group of core members should still meet annually at PSG.
- K. Nelson suggested establishing sub-committees (as the need arises) for longer-term tasks (e.g., protocol development).
- H. Carter questioned whether we should have a Canadian government contact/member (e.g., Doug Bertram). KIMU are rarely observed in British Columbia and they may breed to some degree across the border inland from SE Alaska as MAMU do.

- B. Day raised question of the need for developing standardized protocols because of the lack of an external driving force (as opposed to MAMU); is there really a need for a “procedures manual”?
- M. Raphael recommended developing a “best practices” publication that contained guidelines for protecting KIMU (e.g., nest disturbance, boat traffic, etc.).
- We discussed writing a letter to the USFWS Alaska Region Director (Geoff Haskett) to inform him of the KIMU TC and emphasize our concern for the status of KIMU (**ACTION ITEM**).
- We considered writing a similar letter to the State of Alaska to emphasize our concern about the status of KIMU and incidental take of individuals during commercial gillnet fisheries (**ACTION ITEM**).

Short- and long-term goals

- We identified short-term (1-2 years) goals to be (1) writing letter(s) to the USFWS, State of Alaska (ADFG Commissioner), and other relevant federal agencies to inform agency leadership of the KIMU TC, offer expertise and assistance, and emphasize our concern about the status of KIMU; (2) collaborating more closely with colleagues from Russia; and (3) planning a KIMU symposium and subsequent proceedings.
- We identified long-term (3-5 years) goals to be (1) improve communication, (2) maintain project spreadsheet, and (3) revise and prioritize an information-needs “laundry list”.

Future symposium discussion

- We discussed the need to hold a symposium that results in published proceedings to summarize current information on KIMU; we agreed that the symposium should (1) be held at a PSG meeting (or PSG-sponsored event); (2) result in published proceedings in *Marine Ornithology* (if possible); and (3) occur soon (within 1-2 years). H. Carter suggested reviewing the Xantus’s Murrelet issue of *Marine Ornithology* (Volume 33(2)) that resulted from a symposium held at the 2005 Annual Meeting of PSG in Portland.
- We discussed at great length the advantages and disadvantages to two different symposium formats: (1) assigning a lead author to each topic of interest (e.g., nesting ecology, diet, etc.); and (2) inviting each researcher to present and report their own work.
- We agreed that the most valuable product would likely result from compiling information on a specific topic (described as #1 above), but this format has two major disadvantages; realistically, we would need more than one year in advance to plan and prepare for this type of symposium and some researchers/students may not be willing to provide their unpublished data at this time.
- We also discussed the unusual timing of upcoming PSG meetings in the next few years. The next PSG Annual Meeting will occur in February 2010 in Long Beach, California, but the World Seabird Conference (September 2010) is scheduled to occur within the same fiscal year in Vancouver, Canada. There will not be a PSG Annual Meeting in 2011; the PSG meeting immediately following the World Seabird Conference is scheduled for 2012 in Hawaii. It will be difficult to convene a symposium in time for the Long Beach meeting, but the next PSG meeting will not occur until Hawaii in 2012, which seems too long to wait to hold this symposium.
- We considered the following venues for the KIMU symposium: (1) PSG meeting in Long Beach (17-21 February 2010); (2) World Seabird Conference in Vancouver (7-11

September 2010); (3) Alaska Bird Conference in Anchorage (February/March 2010; would need to work with EXCO to make this a PSG-sponsored event); (4) a stand-alone KIMU symposium (PSG-sponsored) in Alaska; or (5) PSG meeting in Hawaii (February 2012). We also considered combining the symposium with a NPRB meeting, but quickly declined this idea because of so many other associated meetings with the AK Marine Science Symposium.

- We concluded that convening a symposium at the Long Beach meeting would be realistic if researchers/students presented and reported their own work instead of compiling data and information on specific topics across the entire range. We estimated that publication costs would be roughly \$5,000-\$6,000 and agreed that it would be possible to generate those funds externally (i.e., outside of PSG). Key individuals needed to be informed of our proposed symposium and proceedings: Ron LaValley (PSG Treasurer), Pat Jodice (Publications Chair), Tony Gaston (Editor of *Marine Ornithology*), and Tom Good (Scientific Program Chair, Long Beach).

Miscellaneous comments

- H. Carter raised question about the use of aluminum versus stainless steel bands.
- B. Day suggested investigating the use of forward-looking infrared (FLIR) and night vision goggles/binoculars during audio-visual surveys on land.

Unresolved agenda topics

We did not have time to review and prioritize the “laundry list” of information needs for KIMU. Prior to the meeting, we compiled a spreadsheet of recently-completed projects, current projects, and future/proposed projects (see attachment). We believe that this is a useful product and encourage all members to submit information to M. Kissling annually, who will distribute the list to members with the KIMU TC meeting minutes.

We also did not have time to discuss channels and product to improve communication among members and with agency leadership. We agreed that this topic is important and that the listserv (maintained by Erica Madison) is a good first step.

Date prepared: January 7, 2009 (updated 10 February 2009)

Subject: Proposed Agenda for Kittlitz's Murrelet Technical Committee Annual Meeting

Meeting date: February 22, 2009

Meeting time: 13:30 – 18:00

Meeting location: Hakodate, Japan in conjunction with Pacific Seabird Group Annual Meeting (Pearl Room)

Meeting organizer: Michelle Kissling, USFWS, Juneau; email: michelle_kissling@fws.gov; phone: 907-780-1168

We will hold the first official meeting of the Kittlitz's Murrelet Technical Committee on February 22, 2009 in Hakodate, Japan. At the inaugural meeting, we will discuss the structure, roles, and responsibilities of the committee, as well as receive regional/project updates, begin to develop and prioritize information needs, and identify approaches to effective communication among active participants and decision makers. Anyone interested in Kittlitz's murrelets is welcome to attend.

PROPOSED AGENDA

- 13:30-13:45 Welcome, introductions, and additions to agenda
- 13:45-14:00 Review of Federal Listing Status of Kittlitz's murrelets
- 14:00-14:45 Regional updates – 10 minute updates on significant findings, proposed work, etc.
 - Northern Alaska – Bob Day
 - Western Alaska – Mayumi Arimitsu
 - Southcentral Alaska – Kathy Kuletz
 - Southeast Alaska – Michelle Kissling
 - Russia – Yuri Artukhin?
- 14:45-15:45 Discuss structure, roles, and responsibilities of KIMU TC
 - What do we hope to accomplish in the short (1-2 yrs) and long-term (3-5 yrs)?
 - Should we consider a similar structure as the MAMU TC?
 - Should we establish sub-committees?
 - How frequently should we meet? Where?
- 15:45-16:00 Break
- 16:00-16:15 Review of past “laundry lists” of information needs and prioritization
- 16:15-17:15 Revise information needs list and discuss approaches to prioritization
- 17:15-17:45 Discuss channels and/or products for effective communication
 - Should we collate annual summaries?
 - How can we communicate best with agency leadership?
- 17:45-18:00 Wrap-up and announcements

COORDINATION WITH ABSENT MEMBERS

Given the location of the meeting, we recognize that many members will not be able to attend. If you have comments or suggestions regarding the proposed agenda topics that you would like voiced at the upcoming meeting, please send them to Michelle Kissling via email (michelle_kissling@fws.gov). At the conclusion of the meeting, a brief summary of the meeting activities will be distributed to the Kittlitz's Murrelet Listserve. Based on discussion at the meeting, we will plan to meet separately in Alaska at a later date prior to the next PSG meeting. If you are not a current listserv member and wish to join, please contact Erica Madison by phone (907-786-7081) or by email (emadison@usgs.gov).

Kittlitz's Murrelet studies in Alaska 2008: Agattu Island (AMNWR) and Kodiak Island (KNWR)

- 5-year collaboration between FWS and USGS to study Kittlitz's Murrelet on refuges
- Compare and contrast nesting ecology, breeding success, diets and behavior of KIMU in central and western parts of range
- Identify critical nesting habitat and threats to habitat or birds on the refuges
- Contribute to larger scale studies of genetics and population ecology by monitoring numbers and collecting samples of blood, feathers or egg-shell fragments
- Support satellite tagging of birds at sea, and studies of distribution and migration

2008 KIMU Study Plan implemented by Byrd, Kaler, Kenney, Williams (USFWS, AMNWR), Pyle, Lawonn, Burkett (USFWS, KNWR), & Piatt, Arimitsu, Madison (USGS, ASC)

Agattu Island Results (from Kaler et al. 2008, contact rsakaler@yahoo.com)

1. 17 nests located and monitored (range of habitats: flat, rock-free → scree-covered slopes)
2. Synchronous breeding period: early June-late August, all first nesting attempts initiated over an 11-day period (1 Jun-11 Jun). Mean hatch date = 5 Jul (30 Jun-10 Jul).
3. Chick growth rates monitored
4. Genetic material(s) (blood samples, egg shells & content, chick and adult remains, fresh fecal matter) collected at 14 of 17 nests.

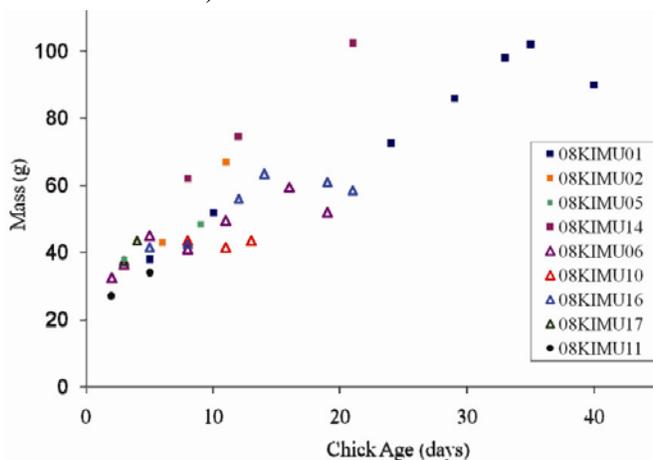


Figure 5. Changes in body mass of Kittlitz's murrelet chicks at Agattu Island, Alaska, 2008. Symbols represent individual chicks; squares are *control* nests receiving fewer visits by researchers during the 30 d brood rearing period, triangles are *disturbed* nests receiving visits by researchers every three to four days up to fledge. Circles represent a single nest which failed early in the nestling period.

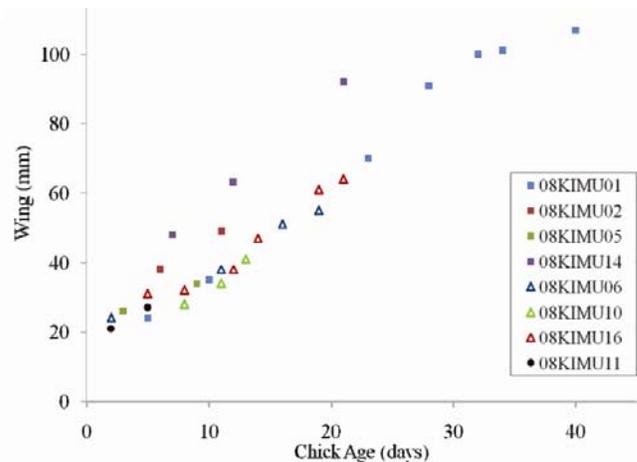


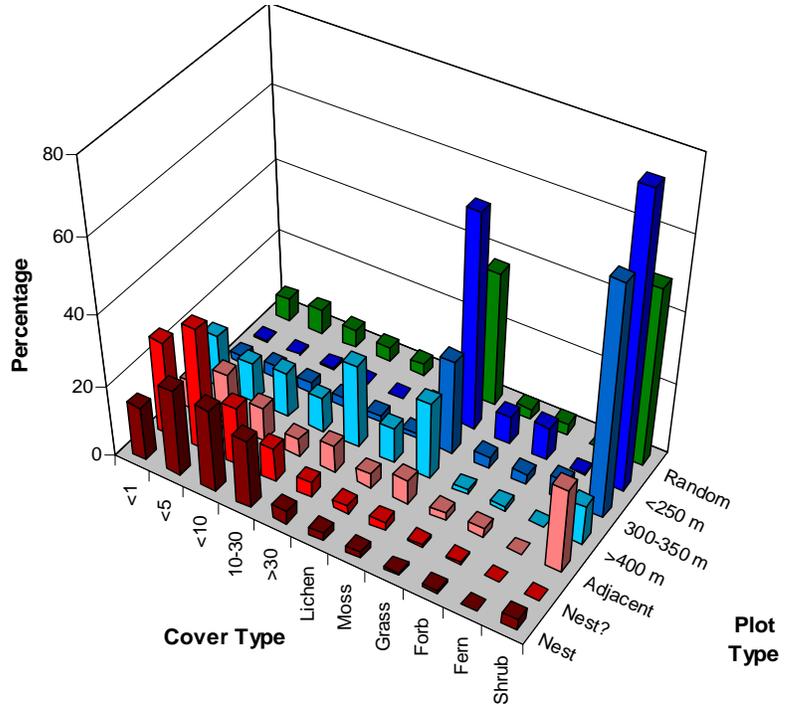
Figure 6. Changes in wing length of Kittlitz's murrelet chicks at Agattu Island, Alaska, 2008. Symbols represent individual chicks; squares are *control* nests receiving fewer visits by researchers during the 30 d brood rearing period, triangles are *disturbed* nests receiving visits by researchers every three to four days up to fledge. Circles represent a single nest which failed early in the nestling period.

5. Adult attendance most common at dusk & dawn, also during the day for some nests. Food loads carried crosswise; 3 species: Pacific cod, sandlance, Atka mackerel. Mean no. of adult nest visits/nest ranged: 1.8-6.7 visits per day. Mean visit duration ranged: 9-12 min.
6. Overall nest survival from clutch initiation to fledging: 0.06 ± 0.06 . Primary factors contributing to failure during incubation were predation & failure to hatch. Primary factors contributing to failure during nestling period were exposure or starvation. 1 chick fledged.

Kodiak Island Results (From Burkett and Piatt 2009, contact jpiatt@usgs.gov)

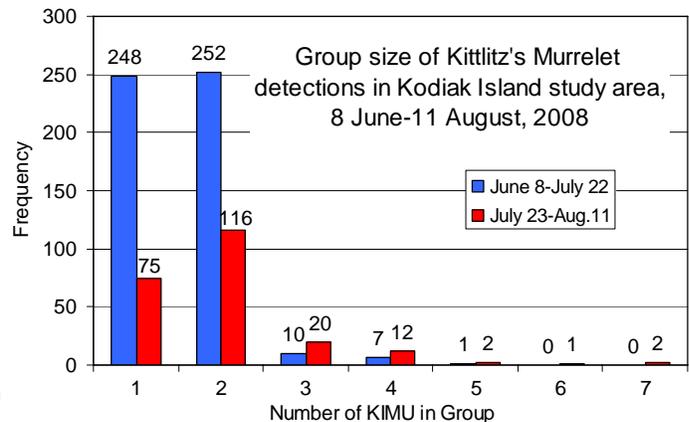
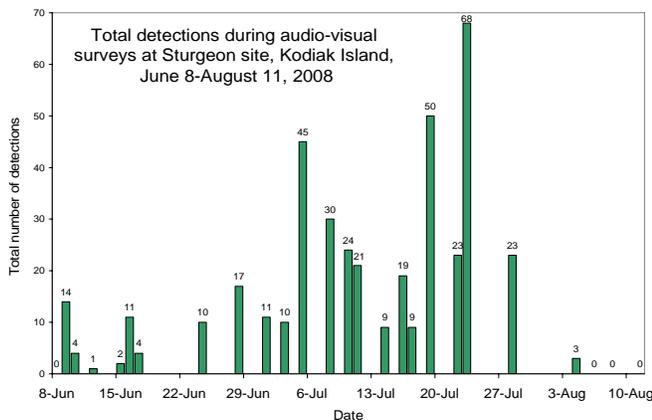
1. 5 nests (4 with adult/egg, 1 with egg fragments) located and monitored. All nests failed.
2. Asynchronous breeding period: projected hatch dates ranged 3 Jul-4 Aug, possible re-nests?
3. Genetic material collected: feathers, egg-shell fragments & egg contents, whole egg & embryo
4. Nest characteristics (% rock cover, % vegetative cover) measured at cup level, 5-m radius, & 25-m radius plot levels. Additional plots surveyed adjacent to nests, at varying elevations, and at random within study area to allow for comparison of nesting preferences over available habitat cover type.

Graph (right) shows mean percent ground cover (e.g., rocks <1cm, <5cm, vegetation, etc.) on all 5-m plot types (nest, adjacent, elevation, random) and sub-types (elevation ranges).



Nesting habitat is characterized by small rocks (1-10 cm), and very little vegetation of any kind. Despite proximity, adjacent plots are different, having more shrubs, moss and lichens. High elevation plots have some suitable nest substrate, but more large rocks, moss and shrubs than found on nests. At lower elevations, rocky substrate is absent, and vegetation cover is complete. A completely random selection of plots has only a small proportion of suitable habitat. Discriminant function analysis confirms these distinct differences among plots.

5. Completed 49 pre-dawn audio-visual surveys over 10 weeks (early Jun- mid Aug). Seasonal pattern similar to Marbled Murrelet: peak in late July, rapid decline in August (below left). Most murrelets fly in groups of 1-2 birds, but sometimes 3-7 birds, especially later in season (below right).



Summary of Kittlitz's Research in Kenai Fjords National Park, Alaska
Mayumi Arimitsu and John Piatt
USGS Alaska Science Center, Anchorage

The goal of this study was to characterize Kittlitz's Murrelet (*Brachyramphus brevirostris*) foraging habitat in terms of prey availability and oceanography within two glacial fjords (Aialik Bay and Northwestern Fjord) in Kenai Fjords National Park, southcentral Alaska. In both fjords, we conducted oceanographic, hydroacoustic, trawl, and beach seine surveys in conjunction with marine bird surveys monthly from June-August in 2007 and 2008. Analyses suggest that submerged glacial moraine characteristics such as sill depth and passage width, create unique inner fjord habitat that is characterized by cooler, fresher, more stratified, and silt-laden waters than waters of the outer fjords. Chlorophyll *a* concentrations were lower in Aialik Bay compared to Northwestern Fjord during all sampling periods. Additionally, chlorophyll *a* concentrations were lower in both fjords during the early season in 2007 compared to 2008. Phytoplankton production in these glacial fjord systems is likely limited by nutrient availability, particularly in Aialik Bay. In addition, glacial stream runoff limits light availability near tidewater glaciers and may enhance secondary production in the surface waters due to the absence of a photic cue for vertical migration. Nearshore forage species in the study area include Pacific herring (*Clupea pallasii*), capelin (*Mallotus villosus*) and Pacific sandlance (*Ammodytes hexapterus*), and ichthyoplankton analysis suggests these species use the fjords as nursery areas.

Oceanography results summary:

- Submerged moraines influence exchange of inner and outer fjord water, and these habitats are distinct
- Sediment load limits light availability near tidewater glaciers
- Northwestern Fjord was more productive than Aialik Bay during all sampling periods
- Phytoplankton bloom was late in 2007 compared to 2008
- KIMU apparently do not respond to fine-scale patterns of primary productivity, but meso-scale patterns may be important because they likely enhance secondary and tertiary productivity

Abundance, distribution, and decadal trends of Kittlitz's and marbled murrelets and other marine species in Kachemak Bay, Alaska

Kathy J. Kuletz, Elizabeth A. Labunski, and Suzann G. Speckman

U.S. Fish and Wildlife Service
Migratory Bird Management
1011 E. Tudor Rd., Anchorage, AK 99503

Final Report
June 2008

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EXECUTIVE SUMMARY

The marine avifauna of Kachemak Bay, Alaska, includes breeding populations of two unique species of seabirds, the Kittlitz's murrelet (*Brachyramphus brevirostris*) and the marbled murrelet (*B. marmoratus*). The Kittlitz's murrelet is a candidate species for listing under the Endangered Species Act, and the marbled murrelet is a species of concern in Alaska and is listed as a threatened species south of Alaska. The availability of historic data and the relative accessibility of the Kachemak Bay populations for these two species allowed us to examine decadal trends and patterns of distribution and habitat use. We used boat-based surveys and replicated historic transects where possible to determine population trends and current population size and distribution within Kachemak Bay. Based on the average of point estimates from 2005, 2006 and 2007, the July population was 10,595 (SD \pm 964) for marbled murrelets and 1,937 (SD \pm 1075) for Kittlitz's murrelets. These numbers were bolstered by an apparent influx of both species into Kachemak Bay in 2006, primarily in the north outer bay south of Anchor Point.

Because of low species identification rates in the 1993 June survey, we examined trends for total *Brachyramphus* murrelet numbers for our 2005 and 2006 June surveys. Between 1993 and 2005, June numbers of *Brachyramphus* murrelets indicated a decline of 32 %, for a per annum rate of -2.7 %. However, the higher number of murrelets in 2006 resulted in no change in the June population between 1993 and 2005-2006. August surveys indicated that between 1988 – 1999 and 2004 - 2007, densities of Kittlitz's murrelets declined significantly in the inner bay and for the entire bay, the latter by 43 %, or -18 % per annum. Marbled murrelet densities, however, remained stable and even increased in the outer bay, although this difference was not significant.

During the four years of this study (2004-2007), Kittlitz's murrelets were always present in the south inner bay at the confluence of outflow from the Grewingk and Portlock glaciers, which are land locked glaciers. This area was characterized by highly stratified water, with a thin (< 3 m) lens of turbid water covering clear water below. The influx of Kittlitz's murrelets to the north outer bay in 2006 coincided with a strong frontal feature that also had turbid water near the surface and clear water below and at the edge of the front, where the murrelets were located. We suggest that although Kittlitz's murrelets are found in water that is turbid at the surface, a layer of clear water within 5 m of the surface may be an essential feature of their foraging habitat. Further study will be needed to determine the prey and physical parameters that create optimum conditions for murrelet foraging within these types of habitats.

Distribution of marbled murrelets within the bay was broader both spatially and relative to water characteristics, occurring where water was highly stratified and well mixed. Marbled murrelets were primarily found along the south shore of both inner and outer bay, but they also occurred in the north outer bay. Neither species used areas where layers of turbid water extended deeper than $\sim 5 - 10$ m, and most were in waters < 60 m deep.

Densities of marbled murrelet juveniles (4-year mean = $0.56 \pm$ SD 0.22 birds \cdot km⁻²) were nearly five times higher than densities of Kittlitz's murrelet juveniles (mean = 0.12 ± 0.12 birds \cdot km⁻²). However, the ratio of juveniles:adults was comparable or higher for Kittlitz's murrelets. The higher juvenile ratios may be due to the earlier exodus of

Kittlitz's murrelet adults compared to marbled murrelets. Alternatively it might reflect a larger proportion of non-breeding marbled murrelets foraging in the bay.

The seasonal patterns of juvenile abundance were different between species. The density of marbled murrelet juveniles increased throughout August, whereas Kittlitz's murrelets appeared later, peaked in mid August, and then disappeared. Marbled murrelet adults also appeared to remain in the bay longer than Kittlitz's murrelet adults, and did not consistently decline in August such as has been observed in Prince William Sound. Our 2004-2007 surveys indicate that the best time to survey for juveniles on the water is generally August 10-23 for marbled murrelets, and August 10-16 for Kittlitz's murrelets. However, because there were inter-annual differences in juvenile temporal patterns, surveys would ideally be conducted 6 – 24 August for both species.

Based on our results, we encourage continued monitoring of the south inner bay for Kittlitz's murrelets and the entire south shore for marbled murrelets. To obtain peak numbers we recommend mid to late July surveys. Although it is logistically more difficult, the north outer bay shelf edge should also be monitored periodically. The periodic influx of murrelets into north outer bay likely came from the Lower Cook Inlet population, and this could be confounding our ability to detect trends for murrelets in Kachemak Bay alone. Therefore, an extended survey in Lower Cook Inlet, ideally to replicate the 1993 survey, will be needed to gauge the status of the regional population.

Brachyramphus murrelets comprised 15 – 22 % of the total marine birds in Kachemak Bay in July, based on point estimates from our surveys. In July we identified 31 species of marine birds, and of those the only breeding seabird with a population estimate as high or higher than marbled murrelets was the common murre (*Uria aalge*). Sooty shearwaters (*Puffinus griseus*) and smaller numbers of short-tailed shearwaters (*Puffinus tenuirostris*) also had high estimates. The shearwaters breed in the southern hemisphere and visit pelagic waters of Alaska during summer, and their estimates were based on a few sightings of large groups in the outer bay.

In general, the southern shore of Kachemak Bay had the highest densities of all birds, although some species were also abundant in the north outer bay. Other common species in the bay included black-legged kittiwakes (*Rissa tridactyla*), glaucous-winged gulls (*Larus glaucescens*), and pigeon guillemots (*Cephus Columba*). We did not test for trends in other species, but we suggest such analyses would be useful for management and ecosystem evaluation. Several species may have declined since 1993, including murres, kittiwakes, mew gulls (*Larus canus*), and horned puffins (*Fratercula corniculata*). The most commonly encountered marine mammal was the sea otter (*Enhydra lutris*), for which the mean June estimate for 2005-2006 was 33 % lower than the 1993 point estimate. We also observed harbor seals (*Phoca vitulina*), and occasionally recorded killer whales (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), Humpback whales (*Megaptera novaeangliae*), and minke whales (*Balaenoptera acutorostrata*). Distribution and abundance of selected species are provided in figures and tables in the appendix. All survey results were submitted to the North Pacific Pelagic Seabird Database.

2008 Accomplishments of the Kittlitz's Murrelet Cooperative Study, Icy Bay

Continuation of work from 2007 and earlier

- Captured 40 and radio-marked 32 Kittlitz's murrelets from 7 May – 5 June (proportion nesting = 3% and proportion predated = 9%)
- Located two active nests – one from a radio-marked bird and one from nest-searching; monitored one nest using remote video recording system; both nests presumably fledged young
- Sampled forage fish (mostly Pacific sand land in 2008) and macroplankton at multiple sites
- Conducted four bay-wide surveys (Figure 1)
- Monitored Caspian, Aleutian, and Arctic tern colonies
- Located and monitored (n= 39 visits) three peregrine falcon eyries and collected prey remains
- Conducted 36 behavioral watches on radio-marked (n=12) and non-radioed (n=24) murrelets
- Documented 22 different user groups in Icy Bay (including one oil spill)
- Estimated proportion of fecund females in radio-marked population in May (75%) and in July (0%); will use data to determine a Kittlitz's-specific threshold for categorizing breeders

New work in 2008

- Captured 44 and radio-marked 18 Kittlitz's murrelets (15 adults and 3 hatch-year; Figure 2) from 23 July – 2 August; one adult was predated (7%)
- Conducted eight audio-visual watches from one hour before sunset to one hour after sunrise near previously active nest areas; recorded 252 bouts of activity (2012 individual detections)
- Conducted survey from Icy Bay to Cape Yakataiga and resurveyed the Malaspina Forelands
- Conducted raptor nest survey in May (coordinated with P. Schempf, MBM and S. Lewis, ADFG)
- Submitted whole blood and feather samples (n=32) for mercury analyses (coordinated with W. Goodale, Biodiversity Research Institute); waiting for results
- Retained breast and secondary feathers and whole blood for stable isotope analyses to quantify diet composition and reproductive energetics (coordinated with D. Roby, Oregon State University)

Other news relevant to the future

- Awarded \$294,300 for FY10-12 for proposal titled, "Understanding population declines of Kittlitz's murrelets in Icy Bay, Wrangell-St. Elias National Park and Preserve"
- Formed Kittlitz's Murrelet Technical Committee under Pacific Seabird Group

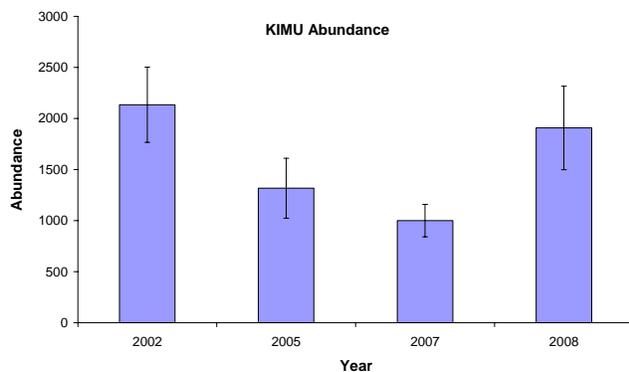


Figure 1. Population estimates of Kittlitz's murrelets in Icy Bay, 2002-2008. *Missing data from 2003-2004, 2006.



Figure 2. First Kittlitz's murrelet juvenile radio-marked at nest and relocated on water after fledging.

UPDATE ON KITTLITZ'S MURRELET EFFORTS IN RUSSIA

Date prepared: February 17, 2009

Prepared for: Kittlitz's Murrelet Technical Committee Meeting, Hakodate, Japan

Prepared by: Tom Van Pelt and Michelle Kissling

We prepared this summary of field projects, reports, and priorities to study Kittlitz's Murrelet populations in marine waters adjacent to Russia. This summary is not comprehensive and badly needs input from Russian colleagues (!!!!), but presents some highlights of our current knowledge on the Russian population of this species.

Completed projects: At-sea surveys were conducted in 2005 in the Sea of Okhotsk by Sasha Andreev and Tom Van Pelt. Results were reported in a Russian-language publication with English abstract (Andreev, A.V. & T.Van Pelt. 2007. - Distribution and Numbers of Birds in the Coastal Waters of Shelikhov Bay (Sea of Okhotsk). Bulletin of the North-Eastern Science Center of the Far-Eastern Branch of the Russian Academy of Sciences, 2007, N2, pp.4-17); Van Pelt attempted to generate funds to produce distribution maps and write up the results for an English-language journal, but has been unable to find funding to date. On this survey, the Kittlitz's population was estimated to be roughly 1,000 birds (not including the northern section of Shelikhova Bay (Sea of Okhotsk). A coastal survey was led by Andreev in 2008 to the Taigonos Peninsula area, far northern Sea of Okhotsk, but we haven't learned details of those results.

Information priorities: We know very little about Kittlitz's Murrelets in Russia. Generally, there are three key information needs:

- (1) Determine the discreteness of the Kittlitz's Murrelet populations in Russia (both within Russia and between Russia and Alaska).
- (2) Estimate population size and distribution.
- (3) Where possible, determine changes in population size and distribution- or establish surveys that will enable future detection of changes in population size and/or distribution.

With the three priorities identified above in mind, we offer the following specific possible actions:

- Survey western coastline of Kamchatka Peninsula, and extending north towards the Chukotkan area surveyed by Konyukhov et al.
- Survey remaining areas of Shelikhova Bay and northern Sea of Okhotsk
- Investigate source material in Russian museums for possible genetic sampling
- Collect genetic samples from Kittlitz's Murrelets near Magadan
- Reanalyze data used to generate 10K population estimate for KIMU along outer Kamchatkan coast.

And of course, bringing Russian scientists together with US scientists to discuss current knowledge, evaluate conservation issues, and prioritize future actions is itself a priority!

Primary contacts in Russia:

Dr. A. V. (Sasha) Andreev, Head of Ornithology Laboratory, IBPN FEB Russian Academy of Sciences, Magadan, Russia

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Dr. Nikolai Konyukhov, Bird Ringing Centre of Russia, Moscow, Russia.

Kittlitz's Murrelet Research and Monitoring Activities

Current / on-going / planned (and funded) projects (updated 18 February 2009):

Region	Area	Years	Months	PIs & collaborators	Primary Agency	Funding	Project	main objectives	Secondary objectives	Future Plans / Prospects / Notes
Arctic, Bering Sea, AI	Offshore / Pelagic	2008-2010	Feb-Oct	Kuletz (w/ Labunski, NOAA PIs)	USFWS / NOAA	NPRB	At-sea surveys on NOAA research vessels	Abundance & distribution relative to prey	Seasonal and habitat changes throughout year (includes all spp)	Data will be submitted to NPPSD. Part of multi-spp BSIERP
AK	all areas	2009 (or 2010 ?)		Kuletz	USFWS	USFWS	USFWS Focal Species Conservation Plan	Summarize Kimu Status & complete an Action Plan	Provide template / plan for USFWS actions & research priorities	A document will be available after internal review
SEAK	Icy Bay	2007-2011	May-August	Kissling, Gende, Lewis, Lukacs	USFWS, NPS	USFWS, NPS	Ecology of Kittlitz's murrelets in Icy Bay, Alaska	Estimating vital rates	Identifying important nesting and foraging areas	Annual reports prepared; final analysis and publications available in 2012
Chukchi Sea	Offshore / Pelagic	2009	Sep-Oct	R. H. Day, A. E. Gall	ABR, Inc.	USFWS	At-sea surveys off of Barrow	Distribution and abundance; study design		Hope to do surveys in Sept 2009
SWAK	Agattu Island	2006, 2008 - 2010	May-Sept	Piatt, Kaler, Williams, Byrd	USFWS, BRD	BRD, USFWS	Breeding biology	Repro success, habitat use, chick growth, diet, nest attendance		Draft reports of past work completed, continue work and produce pubs
GOA, Aleutians	Inland/offshore	2008-2013	May-August	Piatt, Pyle, Byrd, Williams, Kaler, Lawonn	USFWS, USGS	FWS, USGS	Ecology on FWS Refuges	Nesting ecology, breeding success, diets	Inland behavior, vocalizations, genetics	Expand to other locations within, between current sites
GOA, Aleutians	Offshore / Pelagic	2008-2013	May-August	Piatt, Pyle, Byrd, Williams	USGS, USFWS	USGS	At sea surveys, Satellite tagging	Abundance, trends, winter ecology	Document migration paths, samples for genetics, S-Iso	Directed and opportunistic surveys/locations

Kittlitz's Murrelet Research and Monitoring Activities

Current / on-going / planned (and funded) projects (updated 18 February 2009):

Region	Area	Years	Months	PIs & collaborators	Primary Agency	Funding	Project	main objectives	Secondary objectives	Future Plans / Prospects / Notes
SEAK	Malaspina Forelands	2008-2009	July	Kissling, Gende, Lukacs	USFWS	USFWS	At-sea surveys	Estimate population size and trend		2008 surveys complete; will complete surveys in 2009 enroute to/from Icy Bay
SEAK, SCAK	Icy Bay, GLBA, PWS	2008-2010	May-August	Hatch, Kissling, Roby	OSU, USFWS	USFWS	Trophic foraging ecology and reproductive energetics	Investigate trophic ecology in SEAK; compare with museum specimens		Data will be reported in form of a MS thesis; expected graduation Dec 2010
SEAK	Yakutat Bay	2009	June	Kissling, Kuletz, Irons	USFWS	USFWS	At-sea surveys	Estimate population size and trend (compare to 2000 surveys)	Monitor on 3-5 year schedule; tie in with Icy Bay & gillnet bycatch studies	Will complete surveys in 2009 enroute to/from Icy Bay
SEAK	Icy Bay	2007-2011	May - August	Kissling, Evers, Goodale, Gende	USFWS	USFWS, NPS, BRI	Contaminant evaluation	Determining Hg and other contaminant levels		2007-2008 laboratory results complete

Kittlitz's Murrelet Research and Monitoring Activities

Completed Projects (updated 18 February 2009)

Region	Area	Years	Months	PIs & collaborators	Primary Agency	Funding	Project	Main objectives	Secondary objectives	Products / Prospects / Notes
SCAK	PWS	1989-2007	March & July	Irons (w/ McKnight, Kuletz)	USFWS	EVOS Trustees, USFWS	At-sea surveys of random transects (25ft whalers)	Obtain population estimates	Monitor trends (2-3 year schedule); distribution in PWS	Final reports available. Earlier surveys were basis of several publications
SCAK	Kachemak Bay	2004-2007	June-Aug	Kuletz (w/ Labunski)	USFWS	USFWS/ ADFG	At-sea surveys of random (June) and systematic (July-Aug) transects	Population est & trends (compare to historic data)	Juv densities & Juv:AD ratios; distribution & marine habitat (w/CTD), prey	Final report completed. Plan to publish.
SCAK	PWS /17 fjords	2001	June-Aug	Kuletz (w/ Labunski, McKnight, Irons)	USFWS	USFWS	Targetted KIMU at-sea surveys of systematic transects	Population estimates & distribution	habitat use; seasonal changes in abundance & distribution	Final report & Kuletz et al. 2003 (MO)
SCAK	PWS / Harriman & College fjords	2003	June-Aug	Kuletz (w/ Labunski, McKnight)	USFWS	USFWS	Surveying Brmu from fast tour boat	Feasibiltiy of survey platform	Abundance & distribution through season	Final report available
SCAK	PWS / Harriman & College fjords		June-Aug	Stephensen (w/ Irons)	USFWS	USFWS	At-sea surveys of systematic transects & CTDs	Habitat use & comparison to Mamu	Seasonal changes, detailed marine habitat use	Master's Thesis under review
SEAK	Icy Bay to Leconte Bay, 'Lost Coast'	2002-2004	July	Kissling (w/ Kuletz, Brockmann, Hatch)	USFWS	USFWS	At-sea surveys (shoreline, pelagic) of outer SEAK coast	Monitor trends for Malaspina (compare to 1992 survey).	Abundance & distribution, habitat. Establish more baseline	Final report available
Arctic, Bering Sea, GOA	Offshore / Pelagic	2008-2010	Feb-Oct	Kuletz (w/ Labunski, NOAA PIs)	USFWS / NOAA	NPRB	At-sea surveys on NOAA research vessels	Abundance & distribution relative to prey	Seasonal and habitat changes throughout year (includes all spp)	Report available (2006-March 2008). Data submitted to NPPSD

Kittlitz's Murrelet Research and Monitoring Activities

Completed Projects (updated 18 February 2009)

Region	Area	Years	Months	PIs & collaborators	Primary Agency	Funding	Project	Main objectives	Secondary objectives	Products / Prospects / Notes
SCAK	PWS / Heather Bay	2006-2008	June-Aug	Allyn (w/ McKnight, Sullivan, Irons)	USFWS	USFWS, Earthwatch Institute	At-sea surveys, CTD's, behavioral observations	marine habitat use & foraging patterns	Daily & seasonal foraging activity over a shallow sill; seasonal changes in abundance	Final report in review; also proposal to continue
SEAK	Glacier Bay	2007	July	Kirchhoff	ADFG	ADFG	Survey Methods for Brachyramphus spp.	Evaluate how alternative sampling designs and methods affect precision and accuracy of surveys.	Fine scale distribution of Murrelets relative to shoreline, bathymetry, and season	Progress report.
Bering Strait	Tin City, Seward Peninsula	2008	July	Rojek	USFWS	USFWS	Nest Search	Determine if historical KIMU nesting sites in NW AK still active	Monitor productivity, if any nests were found	Trip report to be written
SCAK	Kenai fjords	2005-2008	May-Aug	Arimitsu, Piatt, Hall	USGS, NPS	USGS	At-sea surveys, oceanography, plankton, fish	Identify critical habitat, assess abundance	Seasonal changes, fjord ecology	Master's Thesis, in preparation
SEAK	Lost Coast	2008	July	Kissling, Gende, Lukacs	USFWS	USFWS	At-sea surveys	Estimate population size and distribution		2008 surveys complete; report in preparation
SEAK	Icy Bay	2008	July-August	Kissling, Gende, Lukacs	USFWS, NPS	USFWS	Post-breeding dispersal	Identify post-breeding locations	Describe timing of post-breeding dispersal	Report in preparation
SEAK	entire region	2006-2008	NA	Day and Kissling	ABR	USFWS	Plumage variation in Kittlitz's Murrelets - Phase I	Describe plumage variation of museum specimens	Relate plumage to known characteristics	Data collected; Phase II will analyze and report data (see proposed projects)

Kittlitz's Murrelet Research and Monitoring Activities

Proposed projects (in review or being written or discussed; updated 18 February 2009)

Region	Area	Years	Months	PIs & collaborators	Primary Agency	Funding	Project	main objectives	Secondary objectives	Prospects / Notes
SCAK	Kachemak Bay	2009 or 2010	June-Aug	Kuletz (w/ Labunski)	USFWS	USFWS	At-sea surveys of random (June) and systematic (July-Aug) transects	Population est & trends (compare to historic data)	Juv densities & Juv:AD ratios; distribution & marine habitat, prey	Submitted proposal within MBM/USFWS (Anchorage)
SCAK	Kachemak Bay	2009 or 2010	June-Aug	Kohler, Piatt, Kuletz ??	USFWS / USGS	??	Ground search for nests in Mts of Kachemak Bay	Locate nests, describe habitat	Distance from forage areas, nesting success. Management applications	nothing submitted or written
GOA	Offshore / Pelagic	2010-2012	Feb-Oct	Kuletz (w/ Labunski, NOAA Pis	USFWS / NOAA	NPRB	At-sea surveys on NOAA research vessels	Abundance & distribution relative to prey	Seasonal and habitat changes throughout year	Submitted pre-proposal to NPRB (NOAA is lead agency)
SCAK	PWS	2010	March, July	Irons (w/ McKnight, Kuletz)	USFWS	EVOS Trustees, USFWS	At-sea surveys of random transects (25ft whalers)	Obtain population estimates & trends (compare to historic 1989-2007)	Monitor on 2-3 year schedule. Distribution in PWS	Will submit proposals to continue surveys. Expect to continue
SCAK	PWS /5 fjords; focus on Heather Bay	2009-2010	June-Aug	Allyn (w/ McKnight, Irons, Kuletz)	USFWS	NFWF	At-sea surveys, CTD's, prey sampling	Detailed marine habitat use & prey use	Compare abundance & distribution to historic data in 5 fjords	Proposal submitted to NFWF in Dec08. Selection by xx??)
SEAK	Glacier Bay	2009-2010	July	Kirchhoff, Wright	Audubon	ADFG/AUD	Comparative feeding ecology of KIMU and MAMU	Prey-capture performance by species, habitat, time and tide	ID and disposition of held prey	good

Kittlitz's Murrelet Research and Monitoring Activities

Proposed projects (in review or being written or discussed; updated 18 February 2009)

Region	Area	Years	Months	PIs & collaborators	Primary Agency	Funding	Project	main objectives	Secondary objectives	Prospects / Notes
SEAK	entire region	2006-2007	NA	Day and Kissling	ABR	USFWS	Plumage variation in Kittlitz's Murrelets - Phase II	Describe plumage variation of museum specimens	Relate plumage to known characteristics	Most data collected; Phase II would provide funds for analysis and writing