

Feedback from members attending the 17th Annual Alaska Shorebird Group meeting in Anchorage, Alaska, on 8 December 2011. Information listed in **bold** represents information denoted by members during the meeting. Other items are taken from Version II of the Alaska Shorebird Group Plan.

BCR 1: Aleutian / Bering Sea Islands

Primary Conservation Objectives

- Implement breeding and nonbreeding population monitoring programs for priority species, particularly Black Oystercatchers and *ptilocnemis* and *couesi* subspecies of Rock Sandpipers.
- Assess the importance of the Aleutian Islands in supporting trans-Pacific migrants.
- Determine the subspecies of Dunlin breeding on St. Lawrence Island. **Suggestion: check UAF collections.**

Priority Conservation Issues: Pollution

- Identify sites where large concentrations of Rock Sandpipers and Black Oystercatchers occur in the region. **Ruthrauff et al. have a manuscript that estimates island-specific populations and densities of Pribilof Rock Sandpipers (submitted to Condor).**
- Identify the nest-site characteristics of Black Oystercatchers in order to recognize characteristics (e.g., elevation, beach exposure) that may increase risk of exposure to marine-derived pollution. **USFS (Mike Goldstein) sponsored a master's student to look at this in Prince William Sound.**
- Ensure that shorebird conservation concerns are addressed in oil spill response plans.

Priority Conservation Issues: Habitat Conversion and Degradation

- Assess patterns of habitat degradation due to introduced ungulates at Pribilof, St. Matthew, and Hall islands.
- Compare Rock Sandpiper habitat use at pristine (Hall Island), recovering (St. Matthew Island), and impacted (Pribilof Islands) sites. Compare habitat-specific measures of reproductive success (e.g., hatching success, fledging success) across these sites. **Suggestion: work with St. George Tribal Government to study impact of proposed reindeer enclosure.**
- Advise local governments and management agencies on potential impacts of habitat alteration to shorebird species; promote the removal of introduced grazers at sites lacking their population regulation.

Priority Conservation Issues: Invasive and Problematic Species

- Participate with key groups and agencies (e.g., *Stop Rats!*, AMNWR, Pribilof Island tribal governments) in the planning and implementation of programs to eradicate introduced mammals.
- Develop and implement studies to assess the response (i.e., recolonization, breeding success, site fidelity) of Black Oystercatchers and Rock Sandpipers following eradication efforts.

Priority Conservation Issues: Climate Change and Severe Weather

- Encourage long-term studies synthesizing measures of shorebird breeding phenology (e.g., mean nest initiation, mean hatch date) and environmental conditions (e.g., temperature, snow depth, snow persistence).

Suggested new threat: Transportation and Infrastructure: The Great Circle Shipping Lane passes through this region (remember Selendang Ayu?).

BCR 2: Western Alaska

Primary Conservation Objectives

- Develop national and international partnerships to foster habitat protection in regions to which BCR 2 shorebirds migrate. **Growth and collaboration in region fostered by Global Flyway Network, and connections via *arctica* Dunlin.**
- Monitor subsistence harvest of shorebirds and engage subsistence users in global shorebird conservation efforts.
- Acquire additional habitat recognition through formal designation as WHSRN or East Asian-Australasian Flyway Partnership network sites. **The Yukon Delta has been proposed for addition to the East Asian-Australasian network but going forth depends on willing participation by refuge.**
- Promote and expand flyway-wide educational efforts in the Pacific Basin. **Bob Gill (USGS) has continued to raise awareness about plight of shorebirds using the Yellow Sea region. He conducted field work in China in 2011 and also participated in an international conference [invited speaker]; attended conference in South Korea [invited speaker]; co-authored Information Memorandum for Rhea Suh, Assistant Secretary for Policy, Management and Budget). In addition, Nils Warnock representing Alaska Audubon and ASG sent a letter protesting proposed developments in South Korea. Rick Lanctot participated in an international meeting in Taiwan (invited speaker) where he addressed migratory connectivity between Alaska and Taiwan.**
- Determine better estimates of population status and investigate causes of shorebird population declines. **Lee Tibbitt (USGS), through her role in the Global Flyway Network project, has showed how satellite telemetry can be used to examine migratory movements of Red Knots and Bar-tailed Godwits through the Yellow Sea region.**
- Implement long-term population monitoring programs for priority species, including Bristle-thighed Curlew, Hudsonian Godwit, Marbled Godwit, Bar-tailed Godwit, and Black Turnstone. **Suggestion: add Red Knots to this list. Jim Johnson (USFWS) conducted Red Knot studies on Seward Peninsula and areas north of Cape Krusenstern (part of BCR3) to delineate breeding range, and assess migratory movements and reproductive ecology.**
- Encourage the acquisition and protection of priority shorebird habitats throughout the flyway by land trust or conservation agencies. **See aforementioned efforts to publicize intertidal habitat loss in Yellow Sea region.**

Priority Conservation Issues: Climate Change and Severe Weather

- Identify and prioritize shorebird habitat currently not protected within BCR 2, and along flyways used by BCR 2 shorebirds during the nonbreeding season, for protection (e.g., GAP analyses, **vulnerability analyses**).

- Encourage the acquisition and protection of these priority shorebird habitats by land trust or conservation agencies.
- Conduct modeling studies to examine the impact of changing environmental conditions (e.g., sea level rise, storm severity) on shorebird habitats. Protect environments where shorebirds have the maximum opportunity to respond to the challenges of climate change. **River Gates (USFWS) currently collecting breeding ecology and climate change data with multiple focal species at Cape Krusenstern (just north of BCR2).**

Priority Conservation Issues: Habitat Conversion and Degradation

- Contribute biological expertise to those planning new developments, and promote mitigation measures to limit the negative impacts on important shorebird habitats throughout the flyways.
- Develop and implement flyway-wide conservation initiatives that define shorebird habitat needs and protect important habitats.
- Promote existing flyway-based shorebird conservation programs, including the Western Hemisphere Shorebird Reserve Network, Shorebird Sister Schools Program, and the Pacific Shorebird Migration Project.

Priority Conservation Issues: Biological Resource Harvesting

- Develop and implement better subsistence harvest surveys for shorebirds.
- Develop better estimates of population status of large shorebirds vulnerable to subsistence harvest (e.g., Bristle-thighed Curlew, Bar-tailed Godwit). **Kristine Sowl (USFWS) repeated breeding ecology study on Nulato Hills originally conducted by BJ McCaffery in the late 1980s and early 1990s.**
- Develop quantitative population models to determine if populations of large shorebirds can sustain human harvest and, if so, of what magnitude.
- Engage subsistence users in shorebird conservation initiatives.
- Develop flyway-wide management strategies for species taken by subsistence hunters.
- Work with Alaska Migratory Bird Co-Management Council, USFWS, and other stakeholders to educate the public about the potential impacts of subsistence harvest on shorebirds and to develop workable enforcement protocols for the illegal harvest of large shorebirds.

BCR 3: Arctic Plains and Mountains

Primary Conservation Objectives

- Develop models to predict the effects of long-term climate change on shorebird populations.
- Model cumulative impacts on shorebird populations of oil and gas development on the Arctic Coastal Plain.
- Assess and implement methods for monitoring shorebirds during the breeding and post-breeding seasons. **Roy Churchwell is conducting post-breeding surveys and food resources studies on the Arctic NWR. PRISM surveys have been summarized to generate population estimates for the North Slope.**
- Study breeding ecology to identify factors limiting population size. **Arctic Shorebird Demographics Network camps have been established at Cape Krusenstern (USFWS), Barrow (USFWS), Ikpikpuk (WCS), Canning River (USFWS), and Colville River (USGS) to monitor demography.**
- Determine factors regulating the temporal and spatial distribution of post-breeding shorebirds at stopover sites along the Arctic Coast. **Roy Churchwell is assessing how food resources and the availability of river deltas are related to shorebird presence and numbers.**
- Develop habitat-based models to predict the presence of breeding and post-breeding shorebirds on the Arctic Coastal Plain. **Sarah Saalfeld (Manomet/USFWS) using PRISM survey data to develop predictive habitat maps for breeding shorebirds.**

Priority Conservation Issues: Energy Production and Mining

- Identify important areas used by breeding and post-breeding shorebirds and advocate for protection, or development of GRS, for the most important sites. **Audrey Taylor and Roy Churchwell's (UAF) PhD work are assessing distribution of postbreeding shorebirds. PRISM survey summaries of population density and distribution will help show location of best breeding areas.**
- Assess the impacts of oil and gas development on shorebird communities and evaluate mitigation options. **WCS and USFWS has led previous efforts to assess predation rates of bird nests at varying distances from infrastructure, and WCS is continuing to conduct video camera monitoring of bird nests. WCS will be examining nesting bird use of rehabilitated oil field pads at Prudhoe Bay.**
- Use habitat-based models to evaluate the probability of occurrence of breeding and post-breeding shorebirds at proposed development sites. **Sarah Saalfeld, Rick Lanctot,**

and Stephen Brown's recent work on developing predictive models of habitat use by shorebirds. Also, Joe Liebezeit is working at Teshekpuk Lake Special Area to assess shorebird productivity away from oil fields.

- Work with industry to conduct study of shorebirds and ensure that adequate spill response equipment, personnel, and plans are in place. **Jim Johnson (USFWS) has collaborated with personnel at Red Dog Mine to support Red Knot surveys in Cape Krusenstern region.**
- Collaborate with stakeholders to promote industry environmental compliance.
- Contribute biological expertise about shorebirds to future planning efforts, and promote mitigation measures to limit any negative impacts to important shorebird habitats. **Audubon AK, TWS, and WCS have commented on IAP/BLM EIS.**
- Assess potential impacts of mining and renewable energy development on shorebird communities and evaluate options for mitigation.

Priority Conservation Issues: Invasive and Problematic Species

- Encourage studies that examine natural and human-altered patterns of predation on shorebirds. **Joe Liebezeit (WCS) will be conducting an artificial nest study to assess predation using video cameras. USFWS is investigating how shorebird hatch is affected by fox removal at Barrow.**
- Encourage efforts to reduce the availability of human food and artificial den and nest sites to predators. **See paper by Liebezeit et al. 2009, Ecological Applications.**
- Provide biological expertise and mitigation recommendations to address this issue in proposed developments. **Audubon, WCS, and TWS provided recommendations to BLM on NPR-A IAP/EIS. Also, Andres et al. (in prep.) manuscript on TLSA shorebird population estimates.**

Priority Conservation Issues: Transportation and Infrastructure: Shipping Lanes

- Assess the value of shorebird habitats along shipping and transportation lanes and at port sites to mitigate impacts on populations.
- Develop models to assess the potential impact of spills of various sizes, locations, and time periods on shorebirds.

Priority Conservation Issues: Climate Change and Severe Weather

- Model potential impacts on shorebird populations from changing environmental conditions (e.g., snow depth and snowmelt, permafrost) on shorebird habitats. **David Ward (USGS) and Kirsty Gurney (UAF) are investigating on bird arrival and nest initiation relate to NDVI (green-up) and spring thaw dates. Long-term nest monitoring at Barrow (USFWS) and Prudhoe Bay (WCS)**

- Monitor the timing of shorebird hatch in relation to insect emergence. **The Arctic Shorebird Demographics Network is investigating how invertebrate emergence relates to shorebird hatch and the possibility of a miss-match occurring.**
- Assess how coastal erosion and saltwater intrusion into freshwater littoral habitats along the coast may impact the quality of habitats used by post-breeding shorebirds.
- Collaborate with researchers undertaking manipulative studies (e.g., the Barrow Biocomplexity Project) to examine the effects of tundra drying and flooding on shorebird nesting and foraging habitat.

BCR 4: Northwestern Interior Forest

Primary Conservation Objectives

- Develop and implement standardized methods for estimating densities of shorebirds in boreal forest and upland habitats.
- Assess the feasibility of using the Alaska Landbird Monitoring Survey to monitor population trends of breeding shorebirds.
- Promote and expand outreach efforts to elevate the profile of boreal forest and upland-nesting shorebirds. **Chris Harwood will give boreal shorebird presentation at ABO in Fairbanks, March 2012.**
- Assess the effects of climate change (e.g., wetland drying) on boreal forest shorebirds.
- Develop habitat-based models to predict the occurrence and distribution of breeding shorebirds on areas that are difficult to access. **Chris Harwood (UAF) MSc. Project will model Whimbrel breeding distributions in boreal area.**
- Assess the use of ephemeral habitats by migrant shorebirds and identify any important areas. **Surveys are being conducted in the interior regions by UAF (Brad G.)**
- Assess shorebird use of Cook Inlet in winter.

Priority Conservation Issues: Oil, Gas, and Mining

- Monitor the status of the Rock Sandpipers wintering in Cook Inlet. **Manuscript to be submitted for publication in 2012 summarizing 15 years of Rock Sandpiper winter surveys in upper Cook Inlet (Ruthrauff et al., USGS).**
- Assess the impacts of energy production on shorebird populations and evaluate options for mitigation. **Sadie Wright (formerly of ADF&G, now NMFS) initiated study to assess susceptibility of Rock Sandpipers to hydrocarbon pollution in upper Cook Inlet. Dave Tessler and Karen Blejwas continuing study; lab analysis awaits.**
- Identify important areas used by priority species and advocate for their protection.
- Assess the impacts of mining on shorebird populations and evaluate options for mitigation.
- Contribute biological expertise about shorebirds to groups planning new developments, and promote measures to mitigate impacts on important shorebird habitats.
- Collaborate with stakeholders to promote industry environmental compliance.

Priority Conservation Issues: Climate Change and Severe Weather

- Develop models to assess the potential impacts of global climate change on shorebird distribution and population size in the region.
- Monitor the impact of global climate change on wetlands and other habitats used by boreal- and upland-nesting shorebirds.
- Encourage studies that examine the impact of drying wetland habitats on aquatic insect populations.
- Assess the potential decoupling of chick hatch from the peak availability of aquatic insect populations.

BCR 5: North Pacific Rainforest

Primary Conservation Objectives

- Continue monitoring shorebird populations and their habitats on the Copper/Bering and Stikine river deltas and other regional stopover sites.
- Monitor survival and other vital rates of Black Oystercatchers. **ADFG coordinated large study to examine breeding ecology of BLOY in various locations in Prince William Sound; analysis and manuscript in prep.**
- Develop a breeding habitat suitability model for Black Oystercatchers to help target survey efforts and to improve estimates of global population size. **USFS sponsored Master's student to develop habitat suitability model.**
- Assess nonbreeding distribution of Black Oystercatchers and the migratory connectivity between the breeding and wintering areas. **Matthew Johnson (USGS) and many others collaborated on satellite and conventional radio transmitter study to investigate movements of breeding BLOY. See paper published in Condor.**
- Implement spring migration monitoring programs for Surfbirds and Black Turnstones, including estimates of the numbers of each species that occur in the region. **Mary Anne Bishop (PWSC) and Audrey Taylor (USGS) are conducting telemetry study and geolocator study to investigate migratory connectivity of these two species.**
- Estimate numbers of Red Knots during spring migration at sites where the species is known to occur (e.g., Copper River Delta and Yakutat Forelands). Conduct an intensive spring survey of the Stikine River Delta to determine whether the species occurs there and, if so, in what numbers.
- Promote and expand flyway-wide educational efforts in the Pacific Basin.

Priority Conservation Issues: Recreation and Work in Natural Habitats

- Determine the indirect effects of human-induced disturbance on oystercatcher reproductive success by examining the effects of recreational disturbance on predators. **Caleb Spiegel (formerly USGS and now USFWS) and Julie Morse (formerly UAF and now TNC) conducted MSc. studies to investigate how reproductive success of BLOY varies with recreation.**
- Examine the effects of vessel wakes on oystercatcher productivity and develop spatially-explicit management recommendations on maximum vessel size and speed in high traffic areas. **Mike Goldstein and Dave Tessler have knowledge on this subject.**
- Work with National Park Service and U.S. Forest Service to develop site-management plans for high-use campsites in Kenai Fjords, Glacier Bay, and Prince William Sound to minimize effects on breeding oystercatchers.

Priority Conservation Issues: Pollution

- Identify areas in BCR 5 with large concentrations of Black Oystercatchers, Surfbirds, and Black Turnstones. **Recent work by Mary Anne Bishop (PWS Science Center) and Audrey Taylor (USGS) to track SURF and BLTU in PWS.**
- Identify characteristics of Black Oystercatcher nest sites that potentially increase risk of exposure to marine-derived pollution.
- Review oil spill response plans to ensure that shorebird conservation concerns are addressed.
- Document Surfbird and Black Turnstone foraging habits in Prince William Sound including their response to changes in extent and availability of Pacific herring spawn. **Mary Anne Bishop (PWSC) has investigated changes in Pacific Herring spawn over the past 25 years.**

Priority Conservation Issues: Climate Change and Severe Weather

- Develop models to examine the potential impacts of changing environmental conditions (e.g., sea level rise, storm severity) on habitats used by shorebirds during breeding and migration.
- Participate in collaborative projects to examine the impact of warming sea temperatures on marine invertebrate communities.