



Mr. Gregory Balogh, Coordinator
Arctic LCC

1 March 2011

Dear Mr. Balogh,

For the last decade, U.S. Shorebird Conservation Plan (USSCP) partners have endeavored to improve the understanding and conservation of shorebirds in the U.S. and throughout their entire ranges. We believe the goals of the USSCP overlap well with the mission and goals of Landscape Conservation Cooperatives (LCC), and therefore present an opportunity for collaborative conservation action for one of the Service's trust resources.

We would like to thank you and the other members of your team for providing significant support during FY10 for the Arctic Shorebird Demographics Network and the Spatial Habitat Analysis project on shorebirds. The support from the Arctic LCC was critical to establishing the Arctic Shorebird Demographics Network. This international project has grown to include not only the climate change aspects funded by the Arctic LCC (*i.e.*, insect phenology and surface water) but includes partnering with several university and federal entities on the relationship between NDVI and shorebird nest initiation, disease prevalence and transmission in shorebirds, and use of light-level geolocators to track Dunlin. Clearly the existence of this Network has allowed new opportunities that would not have been possible otherwise. Although the Spatial Habitat Analysis project is just beginning, we are excited about the possibility of this project expanding into new areas as well.

We encourage you to continue supporting the implementation of the Arctic Shorebird Demographics Network during the final three years of this project (2012 and 2014), and we look forward to providing critical and timely products to you in the near future on the previously funded projects.

Thank you again,

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John Cecil, National Audubon Society
Chair, U.S. Shorebird Conservation Plan



Ms. Deb Schlafmann, Coordinator
California LCC

1 March 2011

Dear Ms. Schlafmann,

For the last decade, U.S. Shorebird Conservation Plan partners have endeavored to improve the understanding and conservation of shorebirds in the U.S. and throughout their entire ranges. Across the U.S. we have formed regional partnerships of shorebird researchers and NGO, state, and federal conservation practitioners to address the science and conservation needs to support shorebird populations during migration and on their wintering and breeding grounds in the U.S. For efficiency and greater impact, those regional working groups have integrated shorebird conservation needs and expertise into Joint Venture partnerships across the country. We recognize that the development of Landscape Conservation Cooperatives (LCC) will need to address a great diversity of biota. We put forth that as conservation approaches of LCCs are advanced, shorebird needs be incorporated explicitly and that LCCs leverage the resources of existing partnerships, including the shorebird conservation community and Joint Ventures to achieve the conservation goals for a significant component of the U.S. Fish and Wildlife Service's (Service) trust resources.

All indications are that shorebirds are extremely vulnerable to climate change because of their unique life history and the habitats they use throughout their annual cycle, such as arctic tundra, coasts, and grasslands. The long-distance migration of many shorebird species compounds climate change effects. Central to the Service's ability to adapt conservation strategies or mitigate for climate change effects is an understanding of how species might respond to a changing environment and to monitor and evaluate the actual response. Knowledge of what environmental factors currently limit shorebird populations is rudimentary and limits our ability to predict future response to habitat change. Similarly, there are few ongoing monitoring systems to track changes in shorebird populations in response to environmental change.

We appreciate the LCC's support of the project, *A Broad-Scale, Multi-Species Monitoring Protocol to Assess Wintering Shorebird Population Trends in Response to Future Land Use and Climate Change*, and work by the U.S. Geological Survey on understanding the impacts of climate change on ecology and habitats of waterfowl, shorebirds, and other waterbirds in FY2010. We hope the California LCC will continue to support shorebird science projects in the region that reflect priorities outlined in the Southern Pacific Shorebird Conservation Plan, the Central Valley Joint Venture

Monitoring and Evaluation Plan, and the San Francisco Bay Joint Venture Implementation Plan. We specifically suggest:

1. Continuing to support the development and implementation of a system to track changes in migratory and wintering shorebird population size, distribution, and movements to assess the impacts of changes in habitat availability.
2. Continuing to support development of systems to track the changing habitat landscape for shorebirds during migration and winter. In the highly managed interior landscape of the Central Valley, this will entail tracking land use change as well as major changes in management of wet habitats (wetlands and flooded agriculture). In the San Francisco Bay estuary and immediate coast, this will entail tracking habitat loss, particularly due to sea level rise and major habitat alterations completed for tidal marsh restoration.
3. Determining the limiting resources for shorebirds during migration and winter. This will entail assessment of carrying capacity of major habitat types as well as the development of management strategies to increase the carrying capacity of a potentially reduced amount of total habitat.
4. Expanding modeling efforts to predict the impacts of changes in habitat availability and carrying capacity from changes in climate and human land use on migrating and wintering shorebird populations.

For further information on the Shorebird Conservation Plans, the resources of its partners, and the needs stated above, please contact Catherine Hickey, PRBO Conservation Science, Petaluma, CA; 415-868-0371, ext. 307; chickey@prbo.org.

Thank you for your consideration,

A handwritten signature in black ink, appearing to read "John Cecil". The signature is fluid and cursive, with the first letter of each name being significantly larger and more stylized.

John Cecil, National Audubon Society
Chair, U.S. Shorebird Conservation Plan



Mr. Michael Pellant, Coordinator
Great Basin LCC

3 March 2011

Dear Mr. Pellant,

For the last decade, U.S. Shorebird Conservation Plan partners have endeavored to improve the understanding and conservation of shorebirds in the U.S. and throughout their entire ranges. We believe the goals of the USSCP overlap well with the mission and goals of Landscape Conservation Cooperatives (LCC), and therefore present an opportunity for collaborative conservation action for one of the Service's trust resources.

All indications are that shorebirds are extremely vulnerable to climate change because of their unique life history and the habitats they use throughout their annual cycle, such as arctic tundra, coasts, and grasslands. The long-distance migration of many shorebird species compounds the effects of climate change on their populations. Central to the Service's ability to adapt conservation strategies or mitigate for climate change effects is 1) an understanding of how species will likely respond to a changing environment, and 2) the ability to monitor and evaluate the actual response. Knowledge of what environmental factors currently limit shorebird populations is still rudimentary and limits our ability to predict future response to habitat change. Similarly, few monitoring systems have been deployed to track changes in shorebird populations in response to environmental change.

Therefore, we are submitting a few high priority actions for shorebirds for you to consider in development of the Great Basin LCC that address biological planning, conservation design and implementation, and monitoring and evaluation components of the Strategic Habitat Conservation cycle. These ideas draw on actions presented in regional shorebird conservation plans and Joint Venture implementation plans.

1. There is a need for uniform, comprehensive wetland inventory/typing for Great Basin, which might be accomplished through improvements to the National Wetland Inventory. This geographic information is essential for understanding how shorebirds will respond to wetland alterations caused by climate change and assessing the vulnerability of shorebird species.
2. A comprehensive monitoring system is needed to track shorebird population responses to current management actions and future climate changes. Wetland changes will affect both breeding and migrating shorebirds. Some methods and case studies have been

developed to monitor changes in numbers and functional use of wetlands. Understanding variability in migrant shorebird use of wetlands will entail gaining information on the relationship of invertebrate prey and wetland condition.

3. As with wetlands, monitoring systems should be put in place to evaluate changes in grassland systems and the breeding shorebirds that depend on these habitats, such as the Long-billed Curlew.

For further information on these potential projects, please contact Rob Doster, Migratory Bird Program, Sacramento, CA; rob_doster@fws.gov; 530-934-2801;

Thank you for your consideration,

A handwritten signature in black ink, appearing to read "John Cecil". The signature is fluid and cursive, with the first letter of each word being significantly larger and more prominent.

John Cecil, National Audubon Society
Chair, U.S. Shorebird Conservation Plan



Mr. Mike Carter, Coordinator
Great Plains LCC

3 March 2011

Dear Mr. Carter,

For the last decade, U.S. Shorebird Conservation Plan partners have endeavored to improve the understanding and conservation of shorebirds in the U.S. and throughout their entire ranges. We believe the goals of the USSCP overlap well with the mission and goals of Landscape Conservation Cooperatives (LCC), and therefore present an opportunity for collaborative conservation action for one of the Service's trust resources.

All indications are that shorebirds are extremely vulnerable to climate change because of their unique life history and the habitats they use throughout their annual cycle, such as arctic tundra, coasts, and grasslands. The long-distance migration of many shorebird species compounds the effects of climate change on their populations. Central to the Service's ability to adapt conservation strategies or mitigate for climate change effects is 1) an understanding of how species will likely respond to a changing environment, and 2) the ability to monitor and evaluate the actual response. Knowledge of what environmental factors currently limit shorebird populations is still rudimentary and limits our ability to predict future response to habitat change. Similarly, few monitoring systems have been deployed to track changes in shorebird populations in response to environmental change.

Therefore, we are submitting a few high priority actions for shorebirds for you to consider in development of the Great Plains LCC that address biological planning, conservation design, and monitoring and evaluation components of the Strategic Habitat Conservation cycle. Species of high conservation priority include the Mountain Plover, Snowy Plover, and Long-billed Curlew.

1. Determine the effects of windpower and associated energy transmission on the distribution, productivity and survival of the priority grassland-breeding shorebirds.
2. Determine landscape-level movements of breeding Snowy Plovers in the southern Playa Lakes region of Texas in response to changing habitat conditions at saline lakes and how climate-change induced reductions in river flows in the Southern Great Plains will affect breeding Snowy Plover populations.

3. Determine the role playa lakes play in providing stopover habitat for migrant shorebirds and how hydrologic changes will affect shorebird migration ecology.

For further information on these potential projects, please contact Suzanne Fellows, Migratory Bird Program, U.S. Fish and Wildlife Service, Denver, CO; 303-236-4417; Suzanne_Fellows@fws.gov.

Thank you for your consideration,

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John Cecil, National Audubon Society
Chair, U.S. Shorebird Conservation Plan



Mr. Michael Carrier, Coordinator
North Pacific LCC

1 March 2011

Dear Mr. Carrier,

For the last decade, U.S. Shorebird Conservation Plan (USSCP) partners have endeavored to improve the understanding and conservation of shorebirds in the U.S. and throughout their entire ranges. We believe the goals of the USSCP overlap well with the mission and goals of Landscape Conservation Cooperatives (LCC), and therefore present an opportunity for collaborative conservation action for one of the Service's trust resources.

All indications are that many shorebird species are extremely vulnerable to climate change because of their unique life history traits and the habitats they use throughout their annual cycles, such as those found in arctic tundra, coastal areas, and grasslands. The long-distance migration of many shorebird species compounds the effects of climate change on their populations. Central to the Service's ability to adapt conservation strategies or mitigate for climate change effects is 1) an understanding of how species will likely respond to a changing environment, and 2) the ability to monitor and evaluate the actual response. Knowledge of what environmental factors currently limit shorebird populations is still rudimentary and limits our ability to predict future response to habitat change. Similarly, few monitoring systems have been deployed to track changes in shorebird populations in response to environmental change.

Therefore, we are submitting a few high priority actions for shorebirds for your consideration in developing the North Pacific LCC that address biological planning, conservation design and implementation, and monitoring and evaluation components of the Strategic Habitat Conservation cycle. These ideas draw on actions presented in regional shorebird conservation plans and Joint Venture implementation plans.

1. Track changes in migratory and wintering shorebird population size, distribution, and movements to inform assessments of the impacts that might occur due to changes in habitat quality or availability. Changes may be due to direct climate change impacts or major land use changes in response to factors such as water reallocation and habitat restoration efforts for other sensitive species. Currently a monitoring program for shorebirds in the North Pacific LCC is being developed for two of the most abundant shorebirds, the Western Sandpiper and Dunlin, and methods to estimate population sizes

are being developed for the Red Knot and Black Oystercatcher, which are birds of conservation concern.

2. Track the changing habitat landscape for shorebirds during migration and winter, both along the coast and at inland wetlands. In highly managed interior landscapes, this will entail tracking land use change as well as major changes in management of wet habitats (wetlands and flooded agriculture). In estuaries and the immediate coast, this will entail tracking habitat loss, particularly due to sea level rise, and major habitat alterations completed for tidal marsh restoration. Tracking habitat changes will be an important means to monitor the dynamic challenges faced by shorebird populations, and will be essential for developing assessments of ongoing or predicted future impacts to shorebirds.

3. Identify limiting resources for shorebirds during migration and winter. Although not trivial, assessment of carrying capacity of major habitat types is needed to develop management strategies that will effectively increase the carrying capacity of a potentially reduced amount of total habitat.

4. Initiate modeling to project the potential impacts of changes in habitat availability and carrying capacity from changes in climate and human land use on migrating and wintering shorebird populations. Such efforts will identify the species or areas in which those species would be most at risk, and should therefore help direct or focus future actions to conserve shorebirds and their habitats.

For further information on these potential actions, please contact Brad Andres, National Coordinator, U.S. Shorebird Conservation Plan; brad_andres@fws.gov; 303-275-2324.

Thank you for your consideration,

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John Cecil, National Audubon Society
Chair, U.S. Shorebird Conservation Plan



Mr. Andrew Milliken, Coordinator
North Atlantic LCC
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, Massachusetts 01035-9587

3 March 2011

Dear Mr. Milliken,

For the last decade, U.S. Shorebird Conservation Plan partners have endeavored to improve the understanding and conservation of shorebirds in the U.S. and throughout their entire ranges. We believe the goals of the USSCP overlap well with the mission and goals of Landscape Conservation Cooperatives (LCC), and therefore present an opportunity for collaborative conservation action for one of the Service's trust resources.

All indications are that shorebirds are extremely vulnerable to climate change because of their unique life history and the habitats they use throughout their annual cycle, such as arctic tundra, wetlands, coasts, and grasslands. The long-distance migration of many shorebird species compounds the effects of climate change on their populations. Central to the Service's ability to adapt conservation strategies or mitigate for climate change effects is 1) an understanding of how species will likely respond to a changing environment, and 2) the ability to monitor and evaluate the actual response. Knowledge of what environmental factors currently limit shorebird populations is still rudimentary and limits our ability to predict future response to habitat change. Similarly, few monitoring systems have been deployed to track changes in shorebird populations in response to environmental change.

Therefore, we are submitting a few high priority actions for shorebirds for you to consider in development of the North Atlantic LCC that address biological planning, conservation design and implementation, and monitoring and evaluation components of the Strategic Habitat Conservation cycle. These ideas draw on actions presented in regional shorebird conservation plans and Joint Venture implementation plans.

1. Improve sea level rise models and supporting data for the entire Atlantic Coast to evaluate impacts to shorebirds using beaches, marshes and other tidal wetlands for nesting, roosting and foraging. Current models (e.g. SLAMM) are not adequate to meet this need.

2. Develop species-habitat models for representative and priority shorebird species using coastal habitat types that can predict likely impact to populations under different sea level rise scenarios and determine impacts of climate change (through sea level rise, increased acidification and other factors) on key shorebird forage species and shorebird energetics during breeding, migration, and winter.

3. Develop models that can predict the migration of coastal wetlands inland and identify existing protected and managed lands that are currently available to accommodate this migration and opportunities to protect additional coastal areas to allow for this migration.

4. Design a shorebird monitoring program that uses consistent protocols and is designed to guide management decisions at multiple spatial scales and evaluate the effectiveness of conservation actions. Monitoring endeavors should build on existing shorebird monitoring programs such as the Program for International Shorebird Monitoring (PRISM), the International Shorebird Survey (ISS), and the Flyway Integrated Waterbird (waterfowl, shorebird and wading bird) Monitoring and Management project.

For further information on these potential projects, please contact Caleb Spiegel, Migratory Bird Management, U.S. Fish and Wildlife Service, Hadley, Massachusetts; 413-253-8490; Caleb_Spiegel@fws.gov.

Thank you for your consideration,

A handwritten signature in black ink, appearing to read "John Cecil". The signature is fluid and cursive, with a large initial "J" and "C".

John Cecil, National Audubon Society
Chair, U.S. Shorebird Conservation Plan



Mr. Rick Nelson, Coordinator
Plains and Prairies LCC

3 March 2011

Dear Mr. Nelson,

For the last decade, U.S. Shorebird Conservation Plan partners have endeavored to improve the understanding and conservation of shorebirds in the U.S. and throughout their entire ranges. We believe the goals of the USSCP overlap well with the mission and goals of Landscape Conservation Cooperatives (LCC), and therefore present an opportunity for collaborative conservation action for one of the Service's trust resources. We appreciate the Plains and Prairies LCC support of shorebird research projects in 2010.

All indications are that shorebirds are extremely vulnerable to climate change because of their unique life history and the habitats they use throughout their annual cycle, such as arctic tundra, coasts, and grasslands. The long-distance migration of many shorebird species compounds the effects of climate change on their populations. Central to the Service's ability to adapt conservation strategies or mitigate for climate change effects is 1) an understanding of how species will likely respond to a changing environment, and 2) the ability to monitor and evaluate the actual response. Knowledge of what environmental factors currently limit shorebird populations is still rudimentary and limits our ability to predict future response to habitat change. Similarly, few monitoring systems have been deployed to track changes in shorebird populations in response to environmental change.

Therefore, we are submitting a few high priority actions for shorebirds for you to consider in the development of the Plains and Prairie Potholes LCC that address biological planning, conservation design and delivery, and monitoring and evaluation components of the Strategic Habitat Conservation cycle. Species of high conservation priority include the Piping Plover, Long-billed Curlew, Upland Sandpiper, Marbled Godwit, and Wilson's Phalarope.

1. Identify limiting factors of the priority grassland-breeding shorebirds to determine the causes of breeding range contractions with changes in climate and habitats.
2. Determine elements of shorebird migration, such as stop-over habitat use, length of stay, body condition, and migration routes and assess how changes in climate could affect shorebird migration through the plains and prairies.

For further information on these potential projects, please contact Neal Niemuth, Habitat and Population Evaluation Team, U.S. Fish and Wildlife Service, Bismarck, North Dakota, 701-355-8542, Neal_Niemuth@fws.gov.

Thank you for your consideration,

A handwritten signature in black ink, appearing to read "John Cecil". The signature is fluid and cursive, with the first letter of each name being significantly larger and more prominent.

John Cecil, National Audubon Society
Chair, U.S. Shorebird Conservation Plan



Mr. Ken McDermond, Coordinator
South Atlantic LCC

30 March 2011

Dear Mr. McDermond,

For the last decade, U.S. Shorebird Conservation Plan (USSCP) Council has endeavored to improve the understanding and conservation of shorebirds in the U.S. and throughout their entire ranges. The U.S. Shorebird Conservation Plan Council represents a collective of individuals and organizations interested in the long-term conservation of the hemisphere's shorebirds. We believe the goals of the USSCP overlap well with the mission and goals of Landscape Conservation Cooperatives (LCC), and therefore present an opportunity for collaborative conservation action for one of the continent's important natural resources.

All indications are that shorebirds are extremely vulnerable to climate change because of their unique life history and the habitats they use throughout their annual cycle, such as arctic tundra, coasts, and grasslands. The long-distance migration of many shorebird species compounds the effects of climate change on their populations. Central to our ability to adapt conservation strategies or mitigate for climate change effects is 1) an understanding of how species will likely respond to a changing environment, and 2) the ability to monitor and evaluate the actual response. Knowledge of what environmental factors currently limit shorebird populations is still rudimentary and limits our ability to predict future response to habitat change. Similarly, few monitoring systems have been deployed to track changes in shorebird populations in response to environmental change. However, we appreciate the South Atlantic's support of the International Shorebird Survey enhancement last year.

Therefore, we are submitting a few high priority actions for shorebirds for you to consider in development of the South Atlantic LCC that address biological planning, conservation design and implementation, and monitoring and evaluation components of the Strategic Habitat Conservation cycle. These ideas draw on actions presented in regional shorebird conservation plans and Joint Venture implementation plans. Many of the actions suggested here will benefit other species of interest to the LCC.

1. Improve sea level rise models and supporting data for the entire Atlantic Coast to evaluate impacts to shorebirds and other species (e.g., sea turtles) using beaches, marshes and other tidal wetlands for nesting, roosting and foraging. Current models (*e.g.*, SLAMM) are not adequate to meet this need.

2. Develop species-habitat models for representative shorebird species using coastal habitat types that can predict likely impact to populations under different sea level rise scenarios and determine impacts of climate change (through sea level rise, increased acidification and other factors) on key shorebird forage species and shorebird energetics during breeding, migration, and winter. These methods could be applied to other species.

3. Develop models that can predict the migration of coastal wetlands inland and identify existing protected and managed lands that are currently available to accommodate this migration and opportunities to protect additional coastal areas to allow for this migration.

For further information on these potential projects, please contact Laurel Barnhill, U.S. Fish and Wildlife Service, Laurel_Barnhill@fws.gov.

Thank you for your consideration,

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John Cecil, National Audubon Society
Chair, U.S. Shorebird Conservation Plan



Ms. Karen Murphy, Coordinator
Western Alaska LCC

1 March 2011

Dear Ms. Murphy,

For the last decade, U.S. Shorebird Conservation Plan partners have endeavored to improve the understanding and conservation of shorebirds in the U.S. and throughout their entire ranges. We believe the goals of the USSCP overlap well with the mission and goals of Landscape Conservation Cooperatives (LCC), and therefore present an opportunity for collaborative conservation action for one of the Service's trust resources.

All indications are that shorebirds are extremely vulnerable to climate change because of their unique life history and the habitats they use throughout their annual cycle, such as arctic tundra, coasts, and grasslands. The long-distance migration of many shorebird species compounds the effects of climate change on their populations. Central to the Service's ability to adapt conservation strategies or mitigate for climate change effects is 1) an understanding of how species will likely respond to a changing environment, and 2) the ability to monitor and evaluate the actual response. Knowledge of what environmental factors currently limit shorebird populations is still rudimentary and limits our ability to predict future response to habitat change. Similarly, few monitoring systems have been deployed to track changes in shorebird populations in response to environmental change.

Therefore, we are submitting a few high priority actions for shorebirds that address biological planning, conservation design, and monitoring and evaluation components of the Strategic Habitat Conservation cycle for you to consider when developing the Western Alaska Development and Operations Plan.

1. Support the implementation of a long-term monitoring program (*i.e.*, the Program for Regional and International Shorebird Monitoring) for shorebirds that would provide information on habitat use and population size and trends.
2. Support the establishment and long-term implementation of an Arctic Shorebird Demographics Network whose goal is to gather information on potential mechanisms behind shorebird declines that can be measured on the breeding grounds. Obtaining sites on the Yukon Delta would be especially important given its very high shorebird breeding densities.

3. Provide funds to equip a multitude of shorebird species with inexpensive geolocator devices that would allow migration timing and pathways to be determined. Obtaining such information would allow the potential risk to each species to be fully quantified, be it through loss of coastal staging areas, interrupted climate patterns that aid migration, or loss of essential nonbreeding areas.
4. Evaluate potential impacts to breeding and staging shorebirds from coastal erosion and salt water inundation.
5. Using existing survey data and state-of-the-art satellite imagery, develop habitat use models for breeding shorebirds to predict across the landscape where shorebirds are likely to be. This would allow the adaptive placement of energy developments to minimize impacts to shorebirds and other species.

For further information on these action items, please contact Rick Lanctot, Shorebird Coordinator, U.S. Fish and Wildlife Service, Anchorage, Alaska, 907-786-3609, Richard_Lanctot@fws.gov

Thank you for your consideration,

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John Cecil, National Audubon Society
Chair, U.S. Shorebird Conservation Plan