

## Arctic-breeding waders: a new initiative for research and monitoring

In December 2003, thirty members from the International Wader Study Group (IWSG) from twelve countries met in Denmark to discuss the co-ordination of research and monitoring of Arctic-breeding waders, both in the Arctic and elsewhere. The outcome was a decision to form the Committee for Holarctic Shorebird Monitoring (CHASM). This was strongly welcomed by the IWSG's Executive Committee when it met at Edinburgh on 3 April 2004 and it was decided to adopt CHASM as an IWSG 'project'.

I congratulate those who organised the Denmark meeting, Hans Meltofte, Elin Pierce, Aevor Petersen, Liv Wennerberg and Thomas Berg, for their initiative and thank the first co-chairmen, Rick Lanctot and Mikhail Soloviev, for being willing to take it forward.

What follows is an outline of CHASM's vision for the future of co-operative monitoring of and research into Arctic-breeding waders. The document is not fixed, but rather is a proposal meant for future discussion. All who wish to contribute are urged to communicate their views and their ideas as well as their reservations or criticisms to either or both of the first chairmen. It is planned to hold a workshop during the IWSG annual conference at Papenburg, Germany, in November 2004 to investigate ways to improve and co-ordinate existing programs for monitoring arctic-breeding shorebirds within and outside the Arctic.

*Hermann Hötker*  
Chairman, International Wader Study Group

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## Monitoring Arctic-nesting shorebirds: An international vision for the future

Conclusions from The Pan-Arctic Shorebird/Wader Monitoring and Research Workshop  
Karrebæksminde, Denmark, 3–6 December 2003

BY THE COMMITTEE FOR HOLARCTIC SHOREBIRD MONITORING (CHASM)



### Preamble

The Pan-Arctic Shorebird/Wader Monitoring and Research Workshop brought together 30 specialists to discuss monitoring and research of Arctic-nesting shorebirds. The meeting was held in Karrebæksminde, Denmark from 3 to 6 December 2003. Participants from seven Arctic nations, as well as five nations visited by Arctic migrants during the non-breeding season, convened with two primary objectives:

1. to summarize existing shorebird monitoring protocols and to explore opportunities for integrating them more effectively at a global level and
2. to discuss the effects of climate change on those populations which have been monitored and studied to date.

This document presents the collective vision of the participants in regard to objective one, and as such, the document outlines the goals, an initial objective, and preliminary recommendations for globally integrated monitoring of Arctic-nesting shorebirds. Participants acknowledged the need to establish an informal working group, which would take the lead on moving the workshop's vision forward. Specifically, this Committee for Holarctic Shorebird Moni-

toring (CHASM) was formed as the essential first step for guiding the implementation of an effective circumpolar program for monitoring Arctic-nesting shorebirds. CHASM is a "project" within the International Wader Study Group and has been recognized as the shorebird biodiversity network within the Circumpolar Flora and Fauna's Circumpolar Biodiversity Monitoring Program. A circumpolar monitoring program will help ensure that existing monitoring programs continue to be well coordinated and supported, while simultaneously integrating them into a Holarctic program. Participants suggested a number of essential items needed to develop a comprehensive circumpolar Arctic shorebird monitoring plan, and provided more specific recommendations for monitoring shorebirds in breeding and nonbreeding areas.

### Background

Arctic-nesting shorebirds (or waders) are among the most evocative creatures on our planet. Their tenacity while breeding in harsh northern environments, their spectacular concentrations, prodigious long-distance migrations, and the athletic grace of their aerial acrobatics inspire awe and appreciation. These wonders, however, are in jeopardy. There is a growing agreement among shorebird biologists from around the world that many shorebird populations are declining, some precipitously. A handful of species may soon tumble into the chasm of extinction.

Such declines give cause for concern. The loss of shore-



bird populations or entire species would be directly counter to the stated desire of world leaders to significantly reduce the rate of loss of biological diversity. Arctic-breeding shorebirds are important members of wetland communities. Such habitats are under intense threat from human development and yet support some of the most diverse animal communities on earth. The potential ecological impact on the health and integrity of wetlands caused by the disappearance of shorebirds is unknown. The reduction or loss of shorebird populations may be a symptom of habitat degradation, but it may also be a cause of further degradation as well. Because shorebirds are critically dependent upon distinct staging sites spread across many nations and vast latitudinal distances, they effectively integrate, and thus their status reflects, environmental conditions over much of the globe. The essential reproductive activities of Arctic-nesting shorebirds occur in those northern regions of the planet most likely to experience the earliest and most severe effects of global warming. Sea level rise induced by climate change also poses a threat to the inter-tidal areas favored by these birds outside the breeding season. As long-distance migrants from these threatened habitats, shorebirds may serve as important messengers of global climate change.

Our ability to learn lessons from Arctic-nesting shorebirds is currently limited by a lack of sufficiently detailed, scientifically rigorous, and spatially comprehensive population information. Improved and more coordinated monitoring would allow suspected population trends to be confirmed and provide better estimates of the rates of change. This information, in turn, would be used to form many important management decisions, including:

1. detecting species at risk,
2. identifying causes of population changes,
3. evaluating conservation and restoration programs,
4. setting priorities for conservation of species and habitats,
5. acting as indicators of anthropogenic impacts in the Arctic and elsewhere, and
6. implementing multilateral environmental agreements.

Given this wealth of potential benefits, there is clearly an urgent need for more effective and extensive monitoring of shorebird populations.

### **The Pan-Arctic Shorebird/Wader Monitoring and Research Workshop**

In response to this need, 30 specialists gathered in Denmark from 3 to 6 December 2003 to discuss monitoring and research of Arctic-nesting shorebirds. Participants from seven Arctic nations, as well as five nations visited by Arctic migrants during the non-breeding season, convened with two primary objectives:

1. to summarize existing shorebird monitoring protocols and to explore opportunities for integrating them more effectively at a global level and
2. to discuss the effects of climate change on those populations which have been monitored and studied to date.

For both objectives, there was a concerted effort to expand

the discussion beyond a simple presentation of results to date. Instead, workshop participants worked together to explore new and creative avenues for collaboration and coordination. For example, several new analyses were initiated at the workshop, including a synthesis of efforts to estimate shorebird productivity on an annual basis across multiple flyways, as well as a compilation and pan-arctic analysis of short-term climate-related effects on shorebird breeding performance. Perhaps the most important outcome of the workshop, however, was the participants' shared vision concerning the need for an improved approach to monitoring shorebird population sizes and demographics. This document presents the collective vision of the Pan-Arctic Shorebird/Wader workshop, and outlines goals, an initial objective, and preliminary recommendations for globally integrated monitoring of Arctic-nesting shorebirds.

### **Vision**

To coordinate and integrate monitoring of Arctic-nesting shorebirds at a global scale by collecting and synthesizing information on the population status and trends of all populations of Arctic-nesting shorebirds at all stages of their life-cycles, and to make that information available in a timely manner to policy-makers, managers, the scientific community, educators, and the general public.

### **Rationale**

Monitoring programs allow biologists to assess the status and trends of animals, and to detect and assess the effects of human activities on these same animals. The Arctic region, while generally poor in species diversity, is home to a disproportionately large number of shorebirds. Indeed, roughly 20% of the world's shorebird species and some 30 million of the roughly 100 million individual shorebirds in the world breed in the Arctic. Population estimates have been derived recently for the 100 biogeographical populations of the 37 most typical Arctic nesting shorebird species. Numerical trends were identified in 52 of these, 12% of which are thought to be increasing, 42% stable, 44% decreasing and 2% probably extinct. All of these Arctic-nesting species migrate to temperate and tropical regions of the globe, and through these migrations, Arctic-nesting shorebirds link every continent except Antarctica and visit nearly every country on earth.

### **Goals**

1. *Enhance the collection of scientifically rigorous monitoring data, and the coordination and support of existing and new monitoring programs for Arctic-nesting shorebirds.*

This goal will be achieved by:

- a. supporting new and continued funding of monitoring programs,
- b. providing a framework within which shorebird data are collected, analyzed, and integrated across large spatial and temporal scales, and
- c. preparing regional and global reports on a regular basis.



## 2. Integrate these monitoring efforts with the Circumpolar Biodiversity Monitoring Program.

At the 2002 World Summit on Sustainable Development, world leaders expressed their desire to achieve "a significant reduction in the current rate of loss of biological diversity". To achieve this goal, the Circumpolar Arctic Flora and Fauna (CAFF) group identified monitoring as a key objective for the conservation of Arctic biodiversity. Accordingly, CAFF initiated the Circumpolar Biodiversity Monitoring Program (CBMP) to 'build on national and international work to implement a program to monitor biodiversity at the circumpolar level that will allow for regional assessments, integration with other environmental monitoring programs, and comparison of the Arctic with other regions of the globe'. Arctic-nesting shorebirds were among seven monitoring networks chosen by CAFF to provide adequate monitoring of circumpolar biodiversity as initial components of the CBMP. Workshop participants see their interests and concerns dovetailing markedly with those of the CBMP.

## 3. Establish formal coordination with other international and regional programs.

A variety of existing conservation groups and programs share an interest in shorebirds, other wetlands species, and/or the habitats used by Arctic-nesting shorebirds throughout the year. Examples include the International Wader Study Group, the Asia-Pacific Migratory Waterbird Conservation Strategy, the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), and the North American Migratory Bird Treaty Act. Concerted efforts should be made to integrate Arctic-nesting shorebird monitoring into the activities of these diverse programs.

### Initial objective

To sustain the enthusiasm and impetus of the workshop, participants acknowledged the need to establish a formal working group, which would take the lead on moving the workshop's vision forward. Specifically, this Committee for Holarctic Shorebird Monitoring (CHASM) was formed as the essential first step for guiding the implementation of an effective circumpolar program for monitoring Arctic-nesting shorebirds. Such a program should ensure that existing monitoring programs continue to be well coordinated and supported, while simultaneously being integrated into a Holarctic program. As such, the group fulfils the need for a shorebird-monitoring network within the Circumpolar Biodiversity Monitoring Program. In addition, CHASM will also be a project within the International Wader Study Group. CHASM's members represent different regions of the circumpolar Arctic as well as temperate areas where Arctic-nesting shorebirds occur during the non-breeding season. Drs. Richard Lanctot and Mikhail Soloviev will serve as the first co-chairs of CHASM.

### General recommendations

The principle recommendation of the workshop participants is to fully develop and implement a circumpolar Arctic-nesting shorebird monitoring program. Such a program requires the preparation of a plan that will include and build

upon the existing Arctic Birds Breeding Conditions Survey and the Program for Regional and International Shorebird Monitoring (and the latter's predecessors such as the International and Maritimes National shorebird surveys). It will also be essential to recognize and take advantage of the contribution of existing waterbird population databases compiled by Wetlands International, the results of bird ringing compiled by the British Trust for Ornithology, and smaller monitoring schemes and programs currently underway within and outside the Arctic. The following features should be included in the final plan, although individual components should be completed as time permits with an overall goal of having the entire plan completed by 2006.

- ❑ Description of the existing monitoring programs providing information on Arctic-nesting shorebirds, and the identification of gaps in which species and subspecies are monitored and where additional monitoring is needed in and outside of the Arctic.
- ❑ Identification, definition, and encouragement of the collection of a core set of biological variables, including population (e.g., size and structure, seasonal distribution) and demographic (e.g., recruitment and survival) parameters of Arctic-nesting shorebirds.
- ❑ Expansion of existing monitoring programs to include the additional shorebird biological parameters identified above, as well as environmental factors important for interpreting the trajectories of population trends, including physical and biological parameters, such as climate, habitat, predator, and alternative prey variables.
- ❑ Identification of priority Arctic-nesting shorebirds based on a set of criteria, such as distribution across the circumpolar Arctic, international obligations, current monitoring activities, degree of endangerment, and available information. Such a prioritisation will assist managers in determining how and where to allocate limited funds, and determine the potential to form international collaborations.
- ❑ Identification of the best locations at which to survey individual shorebird species and subspecies so as to maximize logistical and financial efficiency.
- ❑ Sharing and collaborative analyses of regional and global databases, by paying special attention to the design, creation, collection and entry of data. The creation of meta-databases will facilitate the exchange of data for joint analyses and assessments at the regional or global level, and allow comparisons between Arctic and non-Arctic regions. For instance, data exchange and analyses may be enhanced through the use of GIS and web-based tools.
- ❑ Improvement of existing status and trend assessments of Arctic-nesting shorebirds by conducting detailed species-by-species syntheses of existing data and knowledge at local and regional levels.
- ❑ Integration of short-term biological studies into the long-term monitoring program so as to address immediate management concerns.



### Specific recommendations for monitoring in the breeding areas

1. Acknowledging that Moscow University, with the support of Wetlands International and the International Wader Study Group, has successfully conducted the "Arctic Birds Breeding Conditions Survey" for more than 10 years, in which Arctic-nesting shorebirds constitute a major part, and that national and bilateral programs exist in several parts of the Arctic, the workshop participants recommend that these programmes receive sufficient long-term funding, and that international co-operation and co-ordination be further developed.
2. Workshop participants further recommend that a number of quantitative elements (e.g., breeding performance, prey and predator abundances) be added to the existing Arctic Birds Breeding Conditions Survey, as deemed necessary and appropriate given the program's overall goals.
3. Immediate funding should be sought to monitor and conduct research on Arctic-nesting shorebirds currently thought to be under severe decline and under threat of becoming endangered or extinct. Potential candidates for study include the Slender billed Curlew, Bristle-thighed Curlew, Far Eastern Curlew, Spoon-billed Sandpiper and Buff-breasted Sandpiper, which are Globally Threatened according to current IUCN Red List Criteria.

### Specific recommendations for monitoring in the non-breeding areas

1. Acknowledging:
  - that monitoring shorebirds on the Arctic breeding grounds will never be geographically extensive enough to provide fully representative data on population trends and demography for the entire Arctic-nesting shorebird community,
  - and that Wetlands International (through the International Waterbird Census) and others have successfully monitored Arctic-nesting shorebirds and other

bird populations along their migration routes for many years in many parts of the world, allowing long-term population indices to be developed for several species, subspecies, and biogeographical populations,

- and realizing that tens of thousands of shorebirds are banded every year by volunteer and professional ornithologists alike, enabling changes in discrete populations to be detected on breeding as well as staging and wintering areas,

the workshop participants encourage increased monitoring of Arctic-nesting shorebirds, especially in their wintering areas in the Neotropics (Caribbean, Central and South America), Africa, Australasia, Asia, Europe and Oceania. Such monitoring efforts should include delineation of wintering ranges at the species, subspecies and population levels, establishment of monitoring networks and survey protocols, collection of data by local observers, and sharing of data after they are collected. The International Waterbird Census provides a framework within which internationally coordinated counts can take place.

2. Workshop participants further recommend that monitoring on staging and wintering sites be strengthened by collating, analysing and publishing results on shorebird recruitment collected from visual observations and banding operations. Biologists studying several populations of swans, geese and ducks have already undertaken similar efforts. Results from such collaborations should be explicitly linked to thresholds (e.g., specific population sizes and/or trends) that will trigger specific types of directed research and management tasks.

### Future workshop participation

As a first step in implementing the objectives of this document, a two-day workshop is being held during the International Wader Study Group meeting in Papenburg, Germany, on 4 and 5 November 2004. Participants will investigate ways to improve and coordinate existing programs that monitor shorebirds in and outside of their Arctic breeding grounds. All interested parties are encouraged to attend.

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### CHASM CONTACTS

All communications concerning the CHASM initiative should be sent to either or both of the first joint chairmen, Rick Lanctot and Mikhail Soloviev:

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