

## Pan–Arctic Shorebird / Wader Monitoring and Research Workshop in Denmark 3-6 December 2003

on

Long-term monitoring of populations and breeding performance of Arctic shorebirds  
/ waders

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A study of climate effects on breeding populations and breeding performance of  
Arctic shorebirds / waders

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and

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### Summary conclusions

Thirty-one leading experts joined the workshop, and 26 case studies and review papers were presented. During breakout-sessions, a large number of data sets from the breeding grounds as well as from staging and wintering areas were compared and analysed. The main conclusions were that Arctic shorebirds are sensitive to climate change on the breeding grounds (climate effects on staging and wintering areas were not dealt with). Spring snow cover and temperature influence arrival time, timing of egg laying, egg volume and clutch size, and July temperatures together with general weather influence chick growth and survival. Predicted warming of the Arctic may initially benefit Arctic shorebirds in most breeding areas, whereas other areas may become less suitable due to more snow, summer dryness and less predictable food resources for adults as well as chicks. However, in the longer term the High Arctic zone may be severely diminished and large areas of the Low Arctic zone may turn into sub-Arctic scrub. On top of this comes problems such as sea level rise, which may reduce staging and wintering areas considerably. That Arctic shorebirds may suffer severe population reductions is supported by molecular analyses, which point to serious population bottlenecks having occurred during earlier climatic perturbations.

Presently, many Arctic shorebird populations are decreasing. Based on present knowledge on population trends (known for 52 per cent of the 100 biogeographical populations of 37 species recognised in the Arctic), 12 per cent are increasing, 42 per cent are stable, and 44 per cent are decreasing, while 2 per cent are possibly extinct. Anthropogenic factors are to a varying extent suspected to be involved in this overweight of declining populations.

A set of recommendations was adopted, which deals with the need for improved monitoring inside as well as outside the Arctic, primarily by building on existing programmes. Since monitoring on the Arctic breeding grounds is costly and logistically demanding, it was recommended that in-depth monitoring here be supplemented with monitoring of recruitment (such as indices of juvenile ratios) on staging and wintering areas on top of the population monitoring and mortality data already available through mid-winter counts and ringing operations. The recommendations are addressed to the Arctic Council's CAFF programme, the relevant flyway agreements and conventions, as well as funding agencies

The scientific results of the workshop will be published in relevant journals.

# Coordinated Arctic Shorebird Monitoring Plan

## Preamble

At the World Summit on Sustainable Development in 2002, world leaders expressed their desire to achieve “ a significant reduction in the current rate of loss of biological diversity ... by 2010 ..... \

Within the Arctic, climate change probably constitutes the single most serious threat to biodiversity.

## Introduction

The CAFF framework document *Arctic Flora and Fauna, Recommendations for Conservation* (CAFF 2002), identifies monitoring as a key objective for the conservation of Arctic Biodiversity. More specifically the development of a Circumpolar Biodiversity Monitoring Program (CBMP) is captured by the following recommendation:

*“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”* (CAFF 2002, p. 10).

As initial components of the CBMP, seven monitoring networks have been established to start the process of developing and executing such a program, of which shorebirds (waders) were chosen as one (CAFF 2000).

In 2003, a workshop was held in Denmark to follow up on the CAFF initiative by gathering 28 of the World’s most knowledgeable and dedicated Arctic shorebird researchers, working throughout the Arctic, to make a status of present knowledge on Arctic shorebird populations and their breeding performance particularly in relation to climate variability and trends. The group included researchers from almost all Arctic nations, as well as researchers from a number of the most important countries for staging and wintering Arctic shorebirds.

The main achievements were (1) an overview of the current state of knowledge of the diverse characteristics of Arctic shorebird monitoring efforts on a Pan-Arctic scale, (2) flyway-wide comparisons of data on factors driving population changes such as recruitment for the three major flyway systems of the World, and (3) initiation of a plan for a coordinated Arctic shorebird monitoring.

This current initiative has already recognized several added values of the circumpolar approach to monitoring of shorebirds. Current information from shorebird monitoring is being used more comprehensively for analyses on regional and global issues, such as the effects of global change. Joining of datasets over wider geographical scales leads to more efficient use of existing data. Cooperation stimulated by this initiative has resulted in analyses at new geographical scales and will lead to better coordination of future activities. A start has already been made in identifying present gaps in our knowledge. Better information will in future be delivered for conservation policies and help meeting international obligations.

## Vision

The vision of this plan is to make reliable information about the population status and trends of Arctic shorebirds available in a timely manner to policy makers, managers, the scientific

community, educators, and the general public. Arctic shorebird monitoring will make a valuable contribution to the 2010 target for significantly reducing the loss of biodiversity.

### **Rationale**

Monitoring is an important tool, which provides quantified information on the variability of the natural environment and helps to detect and assess impacts of human activities. The Arctic is generally poor in species diversity but shorebirds are a notable exception, and the Arctic holds a significant proportion of species and individuals, which during their migrations link all corners of the globe.

Furthermore, Arctic shorebirds are particularly at risk from climate change, since they may come under pressure both on the breeding grounds in the form of habitat change and during staging and wintering in the form of sea level rise and anthropogenic disturbance, such as it is discussed in the ACIA report to be published early 2004.

More specifically monitoring programs can help address many important management issues such as (1) implementing multilateral environmental agreements (MEAs), (2) detecting species at risk, (3) identifying causes of population trends, (4) evaluating conservation and restoration programs, (5) setting priorities for conservation of species and habitats, and (6) acting as indicators of anthropogenic impacts in the Arctic and beyond.

### **Goals**

The goal of this plan is to ensure that existing monitoring programs for Arctic-nesting shorebirds are well co-ordinated and supported. This will be achieved by proper geographical and temporal coverage, ensuring that rigorous survey and analytical methods are used, that reports on Arctic shorebirds are issued on a regular basis, and that monitoring data are readily accessible.

Further, the goal is to co-ordinate with other bird and ecological groups within the Circumpolar Biodiversity Monitoring Program and other appropriate networks. Specific reference is made to international efforts contained in the Cadiz 2003 Conclusions of the International Wader Study Group, the Asia-Pacific Migratory Waterbird Conservation Strategy, the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), the North American Migratory Treaty Act, and others.

### **Objectives**

The objectives are to provide improved integration and collection of information on Arctic-nesting shorebirds such as trends in population size and structure, their recruitment and survival, their distribution at different times of the year and throughout the ranges of the species concerned.

Further, to develop a long-term monitoring plan for circumpolar Arctic shorebirds, based on existing monitoring initiatives in the Arctic and outside as appropriate.

[Add a sentence about timing in relation to 2010]

### **General recommendations**

- Describe the principal components of a circumpolar Arctic shorebird monitoring plan, using the Arctic Breeding Shorebird Conditions Survey and PRISM as a basis for building on, recognizing existing databases such as that at Wetlands International and the British Trust for Ornithology, as well as individual monitoring schemes and programs currently underway within and outside the Arctic.

- Identify and encourage the collection of a core set of biological variables, including demographic parameters.
- Design and expand monitoring programs to include environmental factors important for interpreting the trajectories of population trends, biological and physical, such as habitat parameters, climate data, rodent abundance, etc.
- Integrate short-term assessments into long-term monitoring programs, for providing rapid solutions to immediate management problems thereby enhancing the value of monitoring results.
- Describe the existing programs delivering monitoring information relating to Arctic-nesting shorebirds and identify the principal gaps in the current monitoring efforts.
- Identify the focal circumpolar Arctic-nesting shorebird species, based on a set of criteria, such as Arctic responsibility for species, circumpolar relevance, international obligations, current monitoring activities, degree of endangerment, etc.
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- Compile an overview of the status and trends of Arctic-nesting shorebird species.
- To achieve better data management the coordination of databases should be given special attention, facilitating the exchange of data for joint analyses and assessments at the regional or flyway level, for bilateral or multilateral comparisons, as appropriate, for instance, data exchange and analyses may be enhanced through development of standardized parameters, and the use of GIS and web-based tools.
- Form a group, which will continue to provide the appropriate leadership for maintaining such levels of communication and coordination as necessary for the implementation of a vibrant/effective circumpolar Arctic monitoring program, recognized as a network within the Circumpolar Biodiversity Monitoring Program.
- Encourage the establishment of a formal shorebird expert group to deal with conservation issues concerning Arctic-nesting shorebirds, including monitoring, endorsed by CAFF and the International Wader Study Group.

### **Specific recommendations for monitoring in the breeding areas**

- Acknowledging, that Wetlands International together with the International Wader Study Group is successfully running an “Arctic Birds Breeding Conditions Survey” for more than 10 years, in which Arctic shorebirds constitute a major part,
- further acknowledging that national and bilateral programs exist in several parts of the Arctic,
- the workshop recommends that these programmes are secured sufficient long-term funding, and that the international co-operation and co-ordination is further developed.
- As part of this process, it is recommended that the possibilities for adding a number of quantitative elements on breeding performance to the already existing Arctic Birds Breeding Conditions Survey is considered.

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

- Acknowledging, that Wetlands International and others successfully has monitored Arctic and other shorebird “midwinter” populations for many years in most parts of the World making the production of indices for long-term change possible for several species and biogeographical populations, and greater efforts are needed on Arctic-nesting birds in their wintering areas in South-America, Africa, and Asia.
- further acknowledging that tens of thousands of shorebirds are banded every year by volunteer and professional ornithologists alike, enabling analyses of breeding as well as staging and wintering areas for discrete populations together with mortality rates,
- and realising that monitoring on the Arctic breeding grounds will hardly ever be so geographically extensive that it will provide fully representative data on population trends and demography for the entire Arctic,
- the workshop recommends that this monitoring on staging and wintering sites is strengthened by collating already existing data on recruitment based on visual observations as well as banding operations, and that the collation of these data is followed up by running analysis and publication of indices as appropriate.