

Certainly, we have more questions than answers. However, it is essential to make progress in this area if we are going to be successful at preserving shorebird populations. Otherwise, we may orient our conservation goals based on conceptual assumptions that are too simplistic and perhaps erroneous. For example, the first obvious approach with highly colonial birds is to protect concentration sites, in both breeding and non-breeding sites. However, are we sure that this is the key factor involved? The extinction of the Passenger Pigeon suggests that other more subtle factors beyond mortality in concentration sites may be involved, sometimes operating in a complicated, non-intuitive way.

In the same vein, many participants suggested that availability of alternative wetlands along the shorebirds' migratory routes could be crucial to compensate for temporary or permanent losses of traditional "refuelling" sites resulting from climatic or other unpredictable events. As every pilot knows, alternative airports are always required when planning long-range flights. In other words, assessing the availability of alternative sites for breeding, wintering, and migration remains as a critical, but unsolved, question for shorebird conservation. Therefore, the logical conservation priority is to detect, and protect with a high priority, those "hot spots" or "bottlenecks" where there are no alternative sites within the known flight range of the different shorebird species. To me this is a new area of research that deserves considerable attention and priority.

To summarise, there is a clear need for more research, with emphasis on dynamic aspects. Although monitoring and population counts are obviously needed, we should

not simply concentrate on collecting descriptive information but rather make an effort to understand the dynamic aspects of the system, particularly the interaction between habitat characteristics and shorebird ecology. Without an adequate conceptual model of the ecology of the shorebird species it would be difficult, and perhaps impossible, to develop effective conservation.

6. Promote interdiscipline

Although good natural science is essential for conserving shorebirds, WHSRN should not forget other needs in order to respond to the new challenges in conservation. We also need good science and good planning to promote education and better management at all levels. In the case of environmental education, for example, we need to find new alternatives to protect wetlands and shorebird sites where local communities are non-existing. Many wetlands in South America are empty spaces that cannot speak for themselves in political terms. In those areas the priority has to be to educate the politicians and probably the urban communities that will decide, even from a great distance, the future of the sites. Therefore we need to resource not only to ecology, but also to social sciences and other disciplines to deal in an innovative way with the peculiar problems associated with shorebird conservation

I would like to close this review by saying that this workshop has been a tremendously successful and stimulating event. The many ideas and initiatives discussed here will certainly provide the adequate momentum and guidance for the next ten years of WHSRN activity, which we all expect will be as successful as this first decade of existence that we celebrate today.

Western Hemisphere Shorebird Network: looking to the future

George Finney, Canadian Wildlife Service (Chairman, Wetlands for the Americas)

I have very briefly categorized the commitments to the group that I am proposing to put before Wetlands for the Americas and the Western Hemisphere Shorebird Reserve Network (WHSRN). I have divided these into four broad categories. There are obviously things as well that I will have missed.

1. A hemispheric shorebird conservation strategy

First, I think it is clear that the time has come to develop the hemispheric shorebird conservation strategy and I believe that it is entirely appropriate that WHSRN and WA take the lead in its development.

It is not only appropriate but it is absolutely necessary to have a broad ecosystem approach to analyse the situation

and develop conclusions. The WHSRN sites program is going to be an integral and focal part of the strategy, but that is probably not enough.

One of the strengths of the shorebird network has been that it did not grow specifically out of one place in the continent and then land on the heads of the rest. It is always difficult when you are spanning as many miles as we do in this program to consistently have the interests of parties represented, but we have tried, and the trying I think has led to a group which is more cohesive than many others that I have seen.

Therefore, in developing this shorebird strategy we will involve people broadly throughout the hemisphere and we will provide an opportunity for ample input by people who

have different perspectives and different needs throughout the western hemisphere.

2. Developing conservation approaches

A second and related commitment relates to conservation approaches. I think it is clear from this workshop that we need to make some adjustments to the conservation approaches we have in the current WHSRN program. It is also challenging us to facilitate and collectively look at the development of new conservation strategies. The identification of sites is not sufficient enough.

In the first instance, in terms of building on what we have it is clear that we need to establish, as WHSRN, a process for making the twinning of sites more routine and less mysterious, so that we can take advantage of the opportunity and the energy of site managers, researchers, biologists, *etc.* who are out there.

We have to look at the question of including the nomination of regional reserves - areas supporting < 20,000 individual shorebirds from a single species during a flyway season. (The issue of diluting WHSRN with too many sites, thus detracting from WHSRN's unique status, was brought up during workshop sessions.) I do not know the appropriate solution to this issue, but it is probably related to an ecosystem approach. As a minimum we can provide a framework for defining the areas. We are well under way in this regard with the wetlands assessment in South America.

We need to consider the whole issue of shorebird conservation when the birds are dispersed. This is an issue on the breeding areas, but it is also an issue in much of South America, particularly inland from coastal areas.

We should be focusing more on the conservation of South American sites and encourage site nominations. It is not necessarily for lack of attention that there are fewer sites nominated in South America than in North America, but rather the difficulty of getting nominations.

Finally in this section, we will assure through our programming that we don't forget the science/management relationship. From the beginning, the WHSRN Program has been built on sound science. As we proceed with the development of new strategies and new initiatives, clearly we have to take the lesson that science is absolutely critical to our management programs.

3. Strengthening our institutional support of the WHSRN Program

A third commitment is to strengthen our institutional support of the WHSRN Program. This is as an organisation. As most of you know, Manomet Observatory will become the central secretariat for the WHSRN Program and we are in the process of hiring a WHSRN Co-ordinator in Manomet. Manomet Observatory itself has committed to fundraising in order to

sponsor this position, and have dedicated some of their own core funds to do it.

WA's current staff will continue to be supporters of the WHSRN Program and its site managers. Ian Davidson will continue to be the Canada Co-ordinator. Pablo Canevari and Daniel Blanco in our South American office will continue to be the first line of contact and involved with the program delivery in South America

We clearly have to work with you on the establishment of a shorebird technical group. I am not sure, given what I have heard during the workshop, that we could stop the establishment of a shorebird technical group even if we wanted to. I think it's one idea that has come and it simply will happen. Nonetheless, WHSRN and WA can help make that happen and I think that this needs to be a new thread that we add to our fabric.

We need to facilitate improved information exchange among sites. One of the principal outcomes of this meeting, for me, was recognition of the obvious, and that is that there is a lot of strength individually at our various sites. To date we have been focusing in terms of WHSRN support and what the secretariat can do for the sites, rather than what the sites can do for each other. I have heard many people here talking to each other about the fact that I have this person that can help with a specific problem, or that we have some education information that we can give to you, or that I have a researcher that would really like to work on this program, and so on. I think that is something that WHSRN, as an organisation, has not focused on sufficiently and it will only strengthen the network, strengthen the product, and probably reduce the expectations for actual delivery of those products from our WHSRN and WA staff.

We will also do our best to facilitate training. It has been a part of our program since its inception. It is clearly not the time to drop that ball, although from time to time we have dropped it for purely financial reasons.

Information exchange is obviously a key feature and relates to the earlier points I talked about. We will shortly, have the world-wide web (Internet) site operational. I think we should work on a bulletin board for shorebird biologists or site managers, an electronic bulletin board that people can post their notes. I recognize that this is not a tool that is universally available, but for an increasing number each year, it is a tool that is available and we might as well just do it. And there are a number of good ideas related to research databases, education databases *etc.* that came up through the meeting. We will encourage their development.

In Canada the issue of bringing the attention of shorebirds and WA and WHSRN to the highest levels in my organisation has been accomplished. One of the things WHSRN can do, and it was emphasized here, is to pay attention to bringing the commitment for the objectives that we all share to higher levels within our respective organisations, be they administrative or political. The ambassadorial rôle of WHSRN and the promotional role is

an important one. It does not cost us a lot, and if it helps then it is something that we need to pursue.

4. Enhancing linkages with our international partners

My fourth point relates to enhancing linkages with our international partners. Sometimes a key feature of our program description has been that we want to act as a support for the Ramsar Convention, and one of the things that we have been doing is encouraging countries where we have WHSRN sites to join Ramsar. We have had some success and I would like to think that our efforts have, in fact, provided in some cases the first introduction of governments or site managers to Ramsar. We will continue to do that.

Our program has a linkage with World Wildlife Fund. Another important linkage that we are pursuing is with the Asian Wetland Bureau (AWB) and the International Waterfowl and Wetland Research Bureau (IWRB). This linkage was, in my view, a very good idea when it was brought up a number of years ago, but it is a very complicated arrangement and takes some time to work

through the system. If anything, this meeting has convinced me that in fact the extra strength that we will get through that alliance will enhance our programming rather than detract from it. It will help us improve our impact when action on global issues is required. Institutionally, it will provide us with needed stability.

AWB and IWRB have institutional strengths from which we could benefit. For example, their regular review of strategic planning and active use of research groups which could, in fact, form the basis for the shorebird technical group that we were talking about.

Finally, one of the things that we have heard here is that we can, from the WHSRN program, export at least the idea of linking sites and helping, through our advice and cooperation, to establish flyway shorebird networks in other regions. Whether that formally materialises into one title or not I think still remains to be seen and it is appropriate to take the caution from this group that having a single name might not be the best idea. Certainly the business of having flyway networks in other regions and have our sites appropriately linked is a good one.

Wings around the world: a global shorebird network

Rob Butler

The highly migratory nature of waders (shorebirds) has made them an attractive group of birds for international conservation of wetland biodiversity in the Americas. The Western Hemisphere Shorebird Reserve Network (WHSRN), established a decade ago, has secured over 30 reserves between Alaska and Tierra del Fuego. The aim of WHSRN is "to use shorebirds as a symbol for uniting countries in a global effort to maintain the Earth's biodiversity". However, WHSRN is designed to secure sites with large numbers of shorebirds in the Americas. Many species do not gather in large concentrations and some spend part of their annual cycle outside the Americas. Especially problematic for WHSRN are eight species that breed in Alaska and winter outside the WHSRN flyway in Oceania (Gill *et al.* 1994 (reprinted with amendments in this *Bulletin*). This problem is compounded by the Bristle-thighed Curlew *Numenius tahitensis* and Pacific Golden Plover *Pluvialis fulva* that breed in Alaska and stage or winter in the State of Hawaii. Hawaii is politically within the Americas but outside the WHSRN network. In addition, seven species breeding in the Russian Far East spend the winter in North America (Gill *et al.* 1994).

The recent establishment of the East Asian-Australasian Shorebird Reserve Network (EASRN) by the Asian Wetland Bureau (AWB) partly addresses these problems. Linking WHSRN and EASRN would provide an attractive approach for basin-wide protection of Pacific Rim

shorebirds. However, it does not address species that migrate between North America and Europe. For example, the entire *islandica* subspecies of Red Knot breed in the Canadian and Greenland arctic and migrate to Europe for the winter. A Knot reserve network that encompassed the breeding grounds in Ellesmere National Park in Canada, with the migratory staging site in the Wash in the UK and winter quarters in the Dutch and German Wadden Sea would address the problem for this subspecies. The establishment of this intercontinental reserve network should not be difficult considering the legal protection already afforded these sites.

Many other examples similar to the complexities of shorebird migration routes in the Americas occur in other parts of the world and begs for a 'Global Shorebird Network' (GSN). The GSN would parallel the conservation efforts of Wetlands International to bring world-wide attention to our conservation efforts. It would overcome the problems of species that disperse widely around the globe, provide a mechanism for sharing of expertise, and provide a world-wide voice for shorebird conservation.

Criteria for site designation in the different networks will need to reflect different population sizes in the flyways. The experience of WHSRN and EASRN show that this scenario is workable. The GSN might also include a new site designation, known as a Global Shorebird Reserve. A Global Shorebird Reserve would include a handful of sites