

AS WE SEE IT

The steady state economy for global shorebird and habitat conservation

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THE CURRENT SITUATION

Most shorebird species are declining; some are endangered or have become extinct, and only a few seem to be increasing (del Hoyo et al. 1996, Thompson & Byrkjedal 2001). In addition, the population health and reproductive status of many shorebird species remain unstudied and are thus uncertain (Johnson 2003). However, it can be assumed that many populations are 'stressed'. This overall situation also indicates a state of declining shorebird habitat and is well known. The current situation is summarized by del Hoyo et al. (1996, p. 409): 'The world's coasts are increasingly being developed by money-makers for intensive human use'.

There is no doubt that shorebirds can only survive in a healthy environment. Every wildlife management textbook states that wildlife is managed primarily through habitat (e.g. Braun 2005). For many shorebirds this habitat often consists of a narrow strip along the beach (Van de Kam et al. 2004), linking the 'hinterland' with the ocean. Usually these shorebird habitats are in mudflats or tidal zones heavily affected by human economic activity, but poorly studied and monitored for their species composition and ecology. Similar situations are found with some inland shorebird habitats, such as steppes.

SHOREBIRDS, HABITAT QUALITY AND ECONOMIC GROWTH

Since many shorebirds are migratory, often linking together habitats that are thousands of kilometers apart, they are 'global citizens' of the animal kingdom

(Berthold 2001), making a strong case for international conservation and management. Shorebird habitats present a difficult and complex environment for management and administration because the quality of habitats is affected by virtually all of the major ecological and economic processes on earth and across borders, including climate, hydrology, and the production and consumption of goods and services for humans (Ricklefs & Miller 2000, Walther et al. 2002). Subsequently, the quality of coastal shorebird habitats is a direct reflection of the ocean and of the hinterland upstream, which in turn is heavily affected by how humans use the land (Lichatowich 1999; see also GLOBIO Mapping Human Impacts on the Biosphere, available at: www.globio.info).

Moreover, coastlines tend to be very long, with large numbers of private landowners who have a variety of economic interests. Yet, coastal wildlife and ecology receive only relatively small consideration, related primarily to hunting and fishing or aesthetic considerations. These considerations are invariably prioritized lower than more prominent human economic interests.

Many independent sources and indicators show clearly that these habitats are degrading on a global scale (e.g. starting with Carson 1951, Boersma et al. 2002, Myers & Worm 2003), thus indicating that our use of the land — as well as of seascapes — is unsustainable. For instance, plastic pollution along coasts has been a major issue of global concern for many years (Furness 1985 for Scotland; Robards et al. 1997 for North America, F. Huettmann unpubl. data for the Russian Far East; Burger & Gochfeld 2002 for an overview), and pollution levels at sea are increasing. Hidden and chronic oil pollution (small but frequent spills in addition to the occasional disastrous spill) is still on the rise, with harmful

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effects on birds and their habitats (Burger 1997, Wiese 2002) as well as on many other denizens of the oceans (Norse & Crowder 2005). These problems apply even to areas considered 'remote' and 'wild', such as the Arctic, an area consisting of the highest shorebird species richness worldwide (CAFF 2001).

As a consequence, and as found elsewhere in the world (Wilson 1989), coastal biodiversity loss, including shorebird species, is occurring beyond any reasonable doubt. The fact that this has happened so dramatically over the last 50 yr is, we believe, tightly linked to global economic growth (see also Taber & Payne 2003 for terrestrial examples, and Rogers et al. 2003 for an example involving a major mudflat and estuary of international relevance for shorebirds). Economic growth is an increase in the production and consumption of goods and services. It entails increasing human populations and/or per capita consumption, and is generally indicated by an increasing gross domestic product (GDP). The number of endangered shorebird species, as with most other taxa, is increasing, and the causes of species endangerment read like a 'Who's Who' of the American and global economies (Czech et al. 2000, Odum & Odum 2001; compare with Swanson 1994).

Shorebird populations are responding to the habitat changes mentioned above. However, the shorebird research community has rarely promoted shorebirds as indicators of habitat quality in the same fashion as, for instance, seabirds (Furness & Camphuysen 1997, Schreiber & Burger 2002, Gaston 2004). Shorebirds do not only respond with population declines and endangerment such as the spoon-billed sandpiper *Euryorhynchus pygmeus* (CAFF 2001; see www.birdlife.org/datazone/species/?action=SpcHTMDetails.asp&sid=3060&m=0); some shorebirds have increased beyond previously known population levels. For example, oystercatchers *Haematopus ostralegus* in the eastern US have extended northward, and UK populations have greatly increased over the last 20 yr (del Hoyo et al. 1996). Pacific plover *Pluvialis fulva* populations appear to be exploding these days in most parts of the South Pacific, apparently due to extensive golf courses and widespread lawns (Johnson 2003). Cases are known where shorebirds extensively feed on offal from McDonalds fast food outlets, widely found in many shorebird wintering sites, and species have changed their wintering sites for that very reason. Masked lapwings *Vanellus miles*, black-winged stilts *Himantopus himantopus* and South Island pied oystercatchers *Haematopus finschi* in New Zealand are presumably expanding because pastoralism has created a much larger breeding habitat for them—but, on the other hand, the resultant damage to braided river systems has resulted in severe declines in species specialized to breed in them (e.g. black stilt *Himantopus novaezelandiae*, black-fronted tern *Sterna albobristata* and,

probably, black-billed gull *Larus bulleri*, wrybill *Anarhynchus frontalis* and double-banded plover *Charadrius bicinctus*).

We believe that these population declines, on the one hand, and increases and even some population explosions, on the other, all reflect a decline in ecological integrity as a direct response to human economic activity along coastlines, the oceans and the hinterlands (Blokpoel & Spaans 1991, Czech 2005). Some shorebird communities might very well show similar patterns to those observed globally for European starlings *Sturnus vulgaris*, house sparrows *Passer domesticus*, magpies *Pica pica*, crows *Corvus* spp. and pigeons *Columba* spp. Where the causes for drastic population changes are not known, it is illogical to overlook human economic activities, which are the most dominant activities affecting ecosystem composition, structure, and function (Forman 2001). For many shorebird species, the reasons for population change are already known and have been described in authoritative literature (see for instance Birds of North America species accounts <http://bna.birds.cornell.edu/BNA/>, and del Hoyo et al. 1996 for examples of coastal development decreasing shorebird nesting habitats).

There are few truly protected coastlines (Lotze et al. 2006). Most of them are located in national parks (e.g. Canadian Fundy-National Park) or at inaccessible sites of low commercial interest to humans (e.g. Kurile and Aleutian Islands; see Shtilmark 2003 for Russia). Marine Protected Areas (MPAs) are being established (Boersma & Parrish 1999; or see www.doc.govt.nz/Conservation/Marine-and-Coastal/Marine-Reserves/index.asp for New Zealand) but need to be expanded much more to include coastlines and their hinterlands (see Brown & Shogren 1998). The Ramsar Convention (www.ramsar.org/), the Western Hemisphere Shorebird Reserve Network (WHSRN <http://manomet.org/WHSRN/>) and Important Bird Areas (IBAs www.abcbirds.org/iba/) are other initiatives that seem to provide protection, but tend to lack enforcement and clear goals for excluding economic activities harming shorebirds. RAMSAR, for instance, allows for 'sustainable, human development' in its delineated sites, and IBAs have neither enforcement nor even legal mechanisms to prevent harm to the species they are supposed to protect. One can hardly call this efficient, progressive and pro-active conservation (Primack 1998), and certainly not sustainable adaptive management that assures the maintenance of ecological integrity (Walters 1986). As a society, when it comes to shorebird habitat and beyond, we have been catering primarily to the needs of the coastal real estate industry and the politically powerful macroeconomic goal of economic growth (Jorgensen & Wilcoxon 1990, Paehlke 2004).

THE STEADY STATE ECONOMY AS AN ALTERNATIVE TO ECONOMIC GROWTH

The ecological integrity of the coastlines, including the conservation of its benthos and shorebirds, as with other ecosystems, declines as a function of economic growth (Czech 2005). Examples can be seen worldwide, as illustrated by the situation of coastal salmon and eulachon (www.pac.dfo-mpo.gc.ca/ops/fm/herring/eulachon/default_e.htm), the decline of estuary biodiversity (Lotze et al. 2006) and the increased endangerment of albatross species (19 out of 21 species are endangered) due largely to overfishing (Tuck et al. 2001), as well as the many terrestrial examples world-wide (Global Millennium Ecosystem Assessment, see www.millenniumassessment.org/en/products.global.overview.asp). National and global economies grow as integrated wholes. They consist of agricultural, extractive, manufacturing, and service sectors that require physical and biological inputs, and produce wastes during the production process. As an example of the integration of economic sectors, the expanding economic activities in the interior portions of the United States are interwoven with the economic activities that directly impact the Atlantic and Pacific coastlines of the Pacific and the Atlantic (e.g. Lichatowich 1999).

Some people assume that economic growth, if resulting from technological progress, will not be harmful to coastlines and its wildlife. Yet, new technology invariably broadens the human niche and, when used in the service of economic growth, it increases the competitive exclusion of a broader array of non-human species (Czech 2003). We can ignore the issue if we choose, but let's not be mistaken: 'There is a fundamental conflict between economic growth and wildlife conservation' (The Wildlife Society 2003, p. 2), and coastal wildlife is no exception.

So what is the alternative? It is actually quite simple, although the politics of achieving it are daunting. It is called the 'steady state economy,' in which population and per capita consumption are stabilized or mildly fluctuating along with environmental conditions (Czech & Daly 2004). Details on what steady state economies entail are given for instance by Daly (1997), Daly & Farley (2003), and Czech & Daly (2004). In general terms, the establishment of a steady state economy entails macroeconomic policy reform, along with a consumer ethic opposed to wasteful or 'conspicuous' consumption.

The steady state economy is already advocated by a growing number of professional societies and conservation organizations. For example, the North America Section of the Society for Conservation Biology has adopted a position entitled 'The Steady State Economy as a Sustainable Alternative to Economic Growth'. The American Fisheries Society (AFS) has held 2 symposia

related to economic growth and fish conservation (Mead et al. 2005), and is considering adopting a position on economic growth. The Wildlife Society (TWS) has already adopted a position on economic growth, and similar deliberations are underway in the American Society of Mammalogists, the Ecological Society of America (ESA), and the North American Benthological Society. The Pacific Seabird Group (PSG) is also considering a position on economic growth.

As part of these professional society efforts, The Wildlife Society's Working Group for the Steady State Economy (WGSSE; www.wildlife.org/wg/steadystate/index.cfm) assists professional societies in developing positions and strategies for addressing the fundamental conflict between economic growth and environmental protection. The Society for Conservation Biology's Working Group for Ecological Economics and Sustainability Science has recently been formed for similar purposes.

CONCLUSION AND SUGGESTIONS

We think it is time for the Shorebird Study Community, a group often perceiving itself as a progressive advocacy group for coastline issues worldwide and with a long track record of conservation activities and success, to address the issue of economic growth. They need to take a clear position describing the conflict between economic growth and shorebird conservation. Politicians have been telling citizens for decades, that there is no conflict between economic growth and environmental protection. Therefore, we cannot blame citizens for continually supporting economic growth as a national goal. We can only blame ourselves if we don't join the effort to educate the public and politicians on the trade-offs they face (Diamond 2005).

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