REVIEW

Migratory shorebirds of the east Asian - Australasian flyway; population estimates and internationally important sites

Bamford, M., D. Watkins, W. Bancroft, G. Tischler & J. Wahl.

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In 1994 an Asia Pacific Migratory Waterbird Conservation Strategy 1996-2000 was developed for the conservation of migratory waterbirds, and this included an action plan with priorities. The action plan's mission statement was to achieve the long-term conservation of migratory shorebirds and their habitats in the Asia Pacific through the establishment of networks of managed sites of international importance for migratory shorebirds (Watkins and Mundkur 1997). A review of this Asia-Pacific Shorebird Action Plan 1998-2000 culminated in the Action Plan for Conservation of Migratory Shorebirds in the East Asian-Australasian Flyway: 2001-2005. This new Action Plan highlighted the need to implement statistically robust methodologies to monitor shorebird populations in Australia, New Zealand and Japan, identify sites of international importance for shorebirds where knowledge is incomplete, identify international important sites for endangered species, develop a database to collate shorebird counts in the flyway, compile and publish up-dated population estimates of shorebirds, and to inventory internationally important sites in the East-Asian Australasian Flyway. The new publication by Bamford *et al.* (2008) is a response to some of the recommendations of the Action Plan.

Population estimates and the identification of sites of International Importance in Bamford *et al.* (2008) have been a component of the East Asian Australasian Shorebird Action Plan 2001-2005 and the Asia Pacific Migratory Waterbird Conservation Strategy 2001-2005. After many years and numerous "*in prep.*" references, the electronic version of these population estimates of migratory shorebirds in the East Asian-Australasian Flyway (EAAF) became available in 2008 and is downloadable from the web. The initial up-date of population estimates in the EAAF were based on 100,000 records and presented during the Dec 2003 Australian Shorebird Conference in Brisbane. Bamford *et al.* (2008) claim to cover the period of 1982-2006, and thus including data from after the conference. Although 17% of the literature cited relates to the period 2003-2006, it appears that population estimates in Bamford *et al.* (2008) are still based primarily on the 100,000 records with no obvious impact on the data pool since 2003. This is somewhat surprising and suggests most estimates are based primarily on data collected before 2003.

The maximum count of each population in each survey region (Regional Maxima) was used to calculate the regional maxima. The sum of these regional maxima was used to calculate a country estimate and the sum of these country estimates then provided a flyway estimate of population size within the EAAF. Population estimates were largely based on count data from the non-breeding period and the authors decided that records more than 20 years old might not provide realistic indications of current population sizes. Despite this, I noticed that about 33% of the New Zealand maximum species counts in table 5.75 used data from 1987 or older, so this rule was not strictly followed in all instances.

Within the EAAF, 54 migratory species of shorebirds have been identified of which 15 are restricted to the EAAF. Population estimates were available for 34 species with data for the remaining 20 species inadequate and no estimates provided. Population numbers range between the "rarest" (spotted greenshank *Tringa guttifer*, about 1000 individuals) to "most common" species (oriental pratincole with about 2.88 million birds). The oriental pratincole alone makes up about 36% of the total estimated 8 million migratory shorebirds moving through the EAAF. A total of 400 sites of international importance were identified in the EAAF. These sites regularly support 1% of the population of a species or subspecies/geographical population of waterbird (the 1% Ramsar Convention criterion). A staging criterion of 0.25% of a population was used for the assessment of "International Importance" for staging sites. Birds sometimes move quickly through these sites.

Based on their analysis of maximum counts, Bamford *et al.* (2008) conclude that the populations of many species appear stable, while for other species improved information has allowed for an upward revision of the population size. This seems at odds with Olsen (2008), the State of Australia's Birds in which is concluded that populations of small, mostly migratory shorebirds have fallen significantly, by 65% overall. Some of the decline can be attributed to destruction of important staging sites, such as in the Yellow Sea. Whether the same or different data sets have been used for these diverging conclusions is not clear. The complexity of the use of existing data is also reported by Stroud *et al.* (2006), who state that the EAAF flyway has the highest proportion of

populations for which information on numbers and trends is lacking (85% of populations). In contrast to Bamford *et al.* (2008), Stroud *et al.* (2006) also report that in known populations on this flyway, 82% are declining and only 9% increasing. Within the EAAF, local surveys confirmed general declines with the coast of Selangor and Sarawak showing a decline of 22.4% between 1983–1986 and 2004–2006 (Li *et al.* 2007). Measurable declines were also observed in Nearctic and Palearctic shorebirds. For species with their breeding distribution in the Arctic (37 species), population trends for 52 biogeographical populations have found 12% are increasing, 42% are stable, 44% are decreasing and 2% are possibly extinct (Harding *et al.* 2007). Wilson (2001) emphasizes the complexity of Australian counts, and concludes that without new counts over large areas, Australian population estimates cannot be successfully updated. This is critical, as conservation decisions are being made with these data. The Ramsar Convention calls for updates in population estimates every 9 years. Whether the method of identifying maximum counts in a 20 year dataset provides reliable population estimates and identifies sites of International Importance required under the Ramsar Convention is questionable and it appears that the EAAF is still the flyway with the least known wader population trends in the world (Stroud *et al.* 2006).

Recent population estimates of some of the iconic species for New Zealand and Australia show some major discrepancies. For example, Bamford *et al.* (2008) give an estimate of 220,000 red knots in EAAF. Bueller and Piersma (2008) estimated the red knot population for the EAAF at 30,000 *C. c. piersmai* and 100,000 *C. c. rogersi*. Other estimates of both subspecies with similar numbers were made by Niles *et al.* (2008): 90,000 *C. c. rogersi* and 50,000 *C. c. piersmai*. A discrepancy of about 100,000 red knots between Bamford *et al.* (2008) and the latter 2 papers requires an urgent review.

The application of some numbers used surpasses the 20 year cut-off period, questioning the applicability of numbers for current population size estimates. For example, a value of 7819 red knots for Firth of Thames is the average Dec count between 1970-1977 (Sibson 1988)! Big fluctuations in red knots between sites have been reported by Schuckard (2002). Red knot numbers changed at Farewell Spit from 27,000 in 1961 to 6800 in 2001. Over the same period, numbers in Manukau Harbour increased between 1960 to 1998 from 1000 to 20,000, respectively.

Reference to a recently published 10% annual decline in the Alaskan breeding population of bar-tailed godwits between 1997 and 2005 is also missing (McCaffery *et al.* 2006), as is Melville and Battley (2006). The latter reported similar losses in New Zealand compared to Alaska of 20,000 of the 62,000 godwits at 4 main sites in New Zealand between 1994 and 2005. The 4 New Zealand sites held 2/3 of the total national population of godwits. Morrison *et al.* (2006) suggest that the Alaskan breeding population is declining and give a new population estimate of 90,000. A decline from 155,000 (Delany and Scott 2006) to 90,000 equates to a loss of 40% of the total population, whereas Bamford *et al.* (2008) state that the population is stable at 325,000 (155.000 *L .l .baueri* and 170,000 *L .l .menzbieri).*

Data from the International Waterbird Census have played an important role in developing the tools for the Ramsar Convention to designate wetlands of international importance through the 1% criterion. The use of the most current datasets for these population estimates is paramount for conservation and designation of sites of International Importance. The implications of overestimating populations of waterbirds can be very significant. If for example we use the 1% from 220,000 knots instead of a more up to date number of 130,000 knots, sites with 1300-2200 Red Knots will be excluded from the pool of internationally important sites. The same applies to bar-tailed godwits, where sites with between 900-1550 godwits will be excluded from the internationally important sites.

Bamford *et al.* (2008) have not updated literature references with new information from some of the key sites. Moroshechnaya River Estuary in NE Russia has still been assessed with 1 million shorebirds on southward migration. Schuckard *et al.* (2006) highlighted that this figure was based on the assumptions that extrapolations from the survey period to the southward migration period are correct and that the turn-over rate of shorebirds is 1 day. Moreshechnaya is about 3700 ha and is the only site in EAAF where described methodology took place. For a site with a presumed 1 million birds (12.5% of EAAF!!) these assumptions should be tested. For example, staging among the most common species, dunlin (*Calidris alpina*), and red-necked stint (*C.ruficollis*) of 6 days and 3 days, respectively, have been recorded.

It is beyond the scope of this review to go in to a detailed analysis of all taxa but improvements of the use of existing data base could have been explored as has been done in other reports. Assessments of existing counts and data are pivotal for the conservation progress on the earlier assessments that a disproportionate number of shorebirds are regarded as being threatened in EAAF. Trans-Tasman cooperation to synchronize some of the count dates for future monitoring could also be a significant step in the good direction for at least some of the species held in common.

In summary, the data presented by Bamford *et al.* (2008) need to be treated with caution and cannot

be taken at face value. The publication gives the impression that having been 'in prep' for so many years, the authors decided to publish it, but did not have the time or resources to adequately update the material.

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