

Threatened shorebird species of the East Asian–Australasian Flyway: significance for Australian wader study groups

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The East Asian–Australasian Flyway has the dubious distinction of having more threatened shorebird species than all other flyways combined. I summarise the species at risk in the flyway and where they occur. Most are resident species that are found in few countries. Their distribution, abundance and habitat requirements are poorly known or understood. This is hampering conservation efforts and reducing their effectiveness.

Over the last 20 years, the very active volunteer wader study groups in Australia and New Zealand have focussed their activities on counting, banding and flagging the abundant migratory species. The distribution, abundance and habitats of most of these species in Australia and New Zealand are now quite well understood. Therefore, it seems timely that the wader study groups should reassess the value for shorebird conservation of continuing studies of the commoner migrants at the same level of intensity. I suggest that the large body of valuable technical expertise in wader ecology that is found in these groups could have greater conservation impact if they adopted a more flyway-wide focus on species that are under threat.

INTRODUCTION

The quality and biodiversity of the world's natural environments are declining rapidly as the human population increases. Water is one commodity that is becoming scarcer as the competition between humans and environmental requirements increase. Birds such as shorebirds that use natural wetlands are coming under increasing threats of extinction as their habitats are reduced or modified (Melville 1997). Migratory shorebirds are particularly vulnerable because they undertake long flights and so require adequate food, before, during and after migration for the species to survive and breed.

There are six shorebird Flyways currently recognised and the East Asian–Australasian Flyway (EAAF) is one of the largest, with an estimate of over 5 million birds (Priest *et al.* 2002). The birds in EAAF breed in NE Asia and adjacent NW North America (Fig. 1). The majority (>70%) of birds breeding in these regions migrate southwards to spend the non-breeding season in Australia and New Zealand, where they occur in mostly coastal habitats. Potentially, of all the world's shorebirds, these are the species at highest risk as their migratory routes through E Asia are in close proximity with some of the largest concentrations of humans anywhere. This is an area where intertidal habitats are frequently reclaimed for human use (Barter 2002, Melville 1997).

Given the large number of threats faced by shorebirds in the EAAF and the limited resources available to mitigate these risks, conservation effort needs to be focussed on the species most under threat or risk of decline in the future. In the region, many national and regional bodies are increasingly using non-government organisations, including volunteer conservation groups to undertake surveys and implement threat mitigation. This has several benefits to the funding agencies, including broader community participation and the

potential to achieve a better return on funds because of the free volunteer labour.

In Australia, there are several volunteer "Wader Study Groups" whose objectives include undertaking scientific studies of shorebirds to enhance shorebird conservation. One of the objectives of the Australasian Wader Studies Group, for example, is to "formulate and promote policies for the conservation of waders and their habitat, and to make available information to local and national governmental conservation bodies and other organisations to encourage and assist them in pursuing this objective" (Gosbell 2002).

To date, the main way in which this objective has been fulfilled has been highlighting the plight of shorebirds in specific coastal land-use conflicts that impact shorebird feeding or roosting habitats. Mostly this has involved the group in writing letters of concern to the appropriate authorities. Two notable exceptions are the work of Mark Barter and Doug Watkins in surveying shorebirds and identifying significant habitats in eastern China and the Yellow Sea (Barter 2002) and studies of Australian Painted Snipes by Danny Rogers and others who have highlighted population declines in this species and its distinctive biology (Lane & Rogers 2000, Hassell & Rogers 2002) (for scientific names of the species mentioned in this paper, please refer to Table 1).

However, several other species of shorebird in the Flyway are already at risk. These need specific actions now, before their populations decline below a minimum viable level. One means of identifying shorebirds under threat is to use the criteria of the International Union for the Conservation of Nature (IUCN) (BirdLife International 2000, Garnett & Crowley 2000).

The aim of this study is (1) to summarise the ecological risk assessments of the resident and migratory shorebirds that use the East Asian – Australasian Flyway and (2) to review



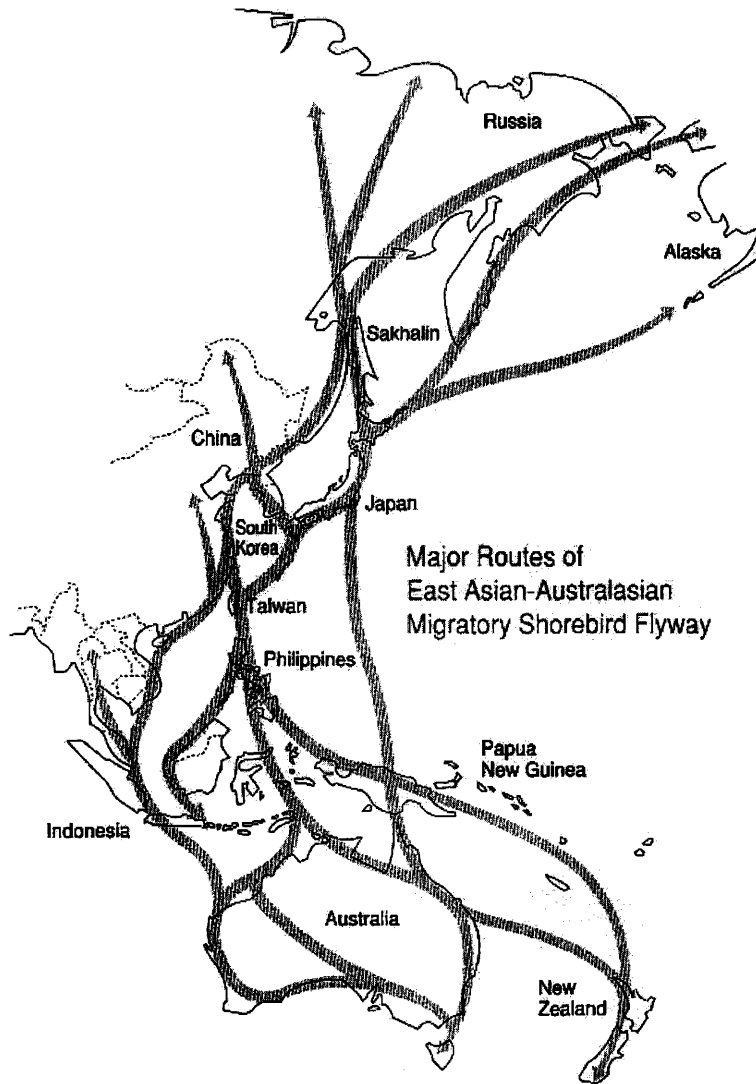


Figure 1. Map showing the extent of the East Asian–Australasian Flyway.

those assessments in the light of the recent focus of volunteer conservation effort in the Flyway by Australian wader study groups.

METHODS

Shorebirds that are regularly recorded in the East Asian–Australasian Flyway were identified from various listings such as Watkins (1993), Priest *et al.* (2002) and Hayman *et al.* (1987). Species were separated into three groups according to the location where they spend their non-breeding season – Australia, New Zealand or SE Asia. Australia and New Zealand were treated separately for two reasons: (1) Australia is the final destination of the majority of migratory shorebirds using the Flyway and (2) New Zealand has a large number of endemic resident shorebirds that are all under a degree of threat. Within each group, species were identified as migratory or resident depending on the degree of movement between countries. Species where the majority of the populations remain within the breeding range were considered resident.

RESULTS AND DISCUSSION

The East Asian–Australasian Flyway (Fig. 1) has at least 95 shorebird species that regularly occur in the Flyway (Table 1). Of these, 48 species, or over 50% are migratory, with most spending their non-breeding season in Australia (Table 2). Of the three regions identified, continental Asia has the largest number of resident species, followed by Australia. However, New Zealand has the greatest number of threatened species and only one resident species is not under some level of ecological risk (Table 2).

Australia

Migratory species

Of the 54 species that are resident or migrate regularly to Australia, none of the migratory species have been identified as being at significant risk. Of the two migratory species identified as near-threatened, Eastern Curlew and Asian Dowitcher, only Eastern Curlew occur in significant numbers



Table 1. The shorebird species that occur in the East Asian–Australasian Flyway that are resident or regularly migrate to Australia or SE Asia for their non-breeding season (Priest *et al.* 2002) and their level of ecological risk (BirdLife International 2000).

Non-breeding distribution	Population status	Common name	Scientific name	IUCN classification	Major threats	
Australia	Resident	Australian Painted Snipe	<i>Rostratula australis</i>	Vulnerable	Habitat loss	
		Australian Pratincole	<i>Siltia isabella</i>	–		
		Banded Lapwing	<i>Vanellus tricolor</i>	–		
		Banded Stilt	<i>Cladorhynchus leucocephalus</i>	–		
		Beach Stone-curlew	<i>Esacus neglectus</i>	Near threatened	Disturbance of nesting	
		Black-fronted Dotterel	<i>Eseyornis melanops</i>	–		
		Black-winged Stilt	<i>Himantopus himantopus</i>	–		
		Bush Stone-curlew	<i>Burhinus grallarius</i>	Near threatened	Nesting predation, habitat loss	
		Comb-crested Jacana	<i>Irediparra gallinacea</i>	–		
		Hooded Plover	<i>Thinornis rubricollis</i>	Near threatened	Nesting predation	
		Inland Dotterel	<i>Charadrius australis</i>	–		
		Masked Lapwing	<i>Vanellus miles</i>	–		
		Pied Oystercatcher	<i>Haematopus longirostris</i>	–		
		Plains-wanderer	<i>Pedionomus torquatus</i>	Endangered	Habitat loss	
		Red-capped Plover	<i>Charadrius ruficapillus</i>	–		
		Red-kneed Dotterel	<i>Erythrogonys cinctus</i>	–		
		Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>	–		
		Sooty Oystercatcher	<i>Haematopus fuliginosus</i>	–		
		Migrant	Asian Dowitcher	<i>Limnodromus semipalmatus</i>	Near threatened	Non-breeding habitat loss
			Bar-tailed Godwit	<i>Limosa lapponica</i>	–	
			Black-tailed Godwit	<i>Limosa limosa</i>	–	
			Broad-billed Sandpiper	<i>Limicola falcinellus</i>	–	
			Common Greenshank	<i>Tringa nebularia</i>	–	
			Common Redshank	<i>Tringa totanus</i>	–	
			Common Sandpiper	<i>Actitis hypoleucos</i>	–	
			Curlew Sandpiper	<i>Calidris ferruginea</i>	–	
			Double-banded Plover	<i>Charadrius bicinctus</i>	–	
			Eastern Curlew	<i>Numenius madagascariensis</i>	Near threatened	Non-breeding habitat loss
			Great Knot	<i>Calidris tenuirostris</i>	–	
			Greater Sand Plover	<i>Charadrius leschenaultii</i>	–	
			Grey Plover	<i>Pluvialis squatarola</i>	–	
			Grey-tailed Tattler	<i>Heteroscelus brevipes</i>	–	
	Latham's Snipe		<i>Gallinago hardwickii</i>	–		
	Lesser Sand Plover		<i>Charadrius mongolus</i>	–		
	Little Curlew		<i>Numenius minutus</i>	–		
	Long-toed Stint		<i>Calidris subminuta</i>	–		
	Marsh Sandpiper		<i>Tringa stagnatilis</i>	–		
	Oriental Plover		<i>Charadrius veredus</i>	–		
	Oriental Pratincole	<i>Glareola maldivarum</i>	–			
	Pacific Golden Plover	<i>Pluvialis fulva</i>	–			
	Pectoral Sandpiper	<i>Calidris melanotos</i>	–			
	Pin-tailed Snipe	<i>Gallinago stenura</i>	–			
	Red Knot	<i>Calidris canutus</i>	–			
	Red-necked Phalarope	<i>Phalaropus lobatus</i>	–			
	Red-necked Stint	<i>Calidris ruficollis</i>	–			
	Ruddy Turnstone	<i>Arenaria interpres</i>	–			
	Ruff	<i>Philomachus pugnax</i>	–			
	Sanderling	<i>Calidris alba</i>	–			
	Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	–			
	Swinhoe's Snipe	<i>Gallinago megala</i>	–			
	Terek Sandpiper	<i>Xenus cinereus</i>	–			
	Wandering Tattler	<i>Heteroscelus incanus</i>	–			
Whimbrel	<i>Numenius phaeopus</i>	–				
Wood Sandpiper	<i>Tringa glareola</i>	–				
New Zealand	Resident	Black Stilt	<i>Himantopus novaezealandiae</i>	Critical	Nesting predation	
		Chatham Island Oystercatcher	<i>Haematopus chathamensis</i>	Endangered	Small island range	
		Chatham Island Snipe	<i>Coenocorypha pusilla</i>	Vulnerable	Small island range	
		New Zealand Dotterel	<i>Charadrius obscurus</i>	Vulnerable	Nesting predation	
		New Zealand Snipe	<i>Coerocorypha aucklandica</i>	Near threatened	Small island range	
		Shore Plover	<i>Thinornis novaeseelandiae</i>	Endangered	Small island range	
		Variable Oystercatcher	<i>Haematopus unicolor</i>	–		
		Wrybill	<i>Anarhynchus frontalis</i>	Vulnerable	Declining breeding habitat quality	



Table 1 cont. The shorebird species that occur in the East Asian–Australasian Flyway that are resident or regularly migrate to Australia or SE Asia for their non-breeding season (Priest *et al.* 2002) and their level of ecological risk (BirdLife International 2000).

Non-breeding distribution	Population status	Common name	Scientific name	IUCN classification	Major threats	
SE Asia	Resident	Amami Woodcock	<i>Scolopax mira</i>	Vulnerable	Habitat loss	
		Bronze-winged Jacana	<i>Metopidius indicus</i>	–		
		Bukidnon Woodcock	<i>Scolopax bukidnonensis</i>	–		
		Celebes Woodcock	<i>Scolopax celebensis</i>	–		
		Dusky Woodcock	<i>Scolopax saturata</i>	–		
		Eurasian Oystercatcher	<i>Haematopus ostralegus</i>	–		
		Great Thick-knee	<i>Esacus recurvirostris</i>	–		
		Grey-headed Lapwing	<i>Vanellus cinereus</i>	–		
		Ibisbill	<i>Ibidorhyncha struthersii</i>	–		
		Javanese Lapwing	<i>Vanellus macropterus</i>	–		
		Little Pratincole	<i>Glareola lactea</i>	–		
		Malaysian Plover	<i>Charadrius peronii</i>	–		
		Northern Lapwing	<i>Vanellus vanellus</i>	–		
		Moluccan (Obi) Woodcock	<i>Scolopax rochussenii</i>	Vulnerable		Habitat loss
		Painted Snipe	<i>Rostratula benghalensis</i>	–		
		Pied Avocet	<i>Recurvirostra avosetta</i>	–		
		Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	–		
		Red-wattled Lapwing	<i>Vanellus indicus</i>	–		
		River Lapwing	<i>Vanellus duvaucelii</i>	–		
		Solitary Snipe	<i>Gallinago solitaria</i>	–		
		Wood Snipe	<i>Gallinago nemoricola</i>	Vulnerable		Habitat loss
		Migrant	Common Snipe	<i>Gallinago gallinago</i>		
			Dunlin	<i>Calidris alpina</i>		–
	Eurasian Curlew		<i>Numenius arquata</i>	–		
	Eurasian Woodcock		<i>Scolopax rusticola</i>	–		
	Green Sandpiper		<i>Tringa ochropus</i>	–		
	Kentish Plover		<i>Charadrius alexandrinus</i>	–		
	Little Ringed Plover		<i>Charadrius dubius</i>	–		
	Long-billed Plover		<i>Charadrius placidus</i>	–		
	Spoon-billed Sandpiper		<i>Eurynorhynchus pygmeus</i>	Vulnerable	Habitat loss	
	Spotted Greenshank		<i>Tringa guttifer</i>	Endangered		Habitat loss
	Spotted Redshank		<i>Tringa erythropus</i>	–		
	Temminck's Stint		<i>Calidris temminckii</i>	–		

in the parts of Australia where there are active volunteer wader study groups.

The Queensland Wader Study Group (QWSG) has studied Eastern Curlew in Moreton Bay, off Brisbane, E Australia (Finn *et al.* 2001; Driscoll & Ueta 2002). They have examined migration routes and behaviour (Driscoll & Ueta 2002) and feeding habitats during the non-breeding season (Finn *et al.* 2001). Further studies by Paul Finn (unpubl. data) have examined Eastern Curlew feeding behaviour and habitats. The group also monitors shorebird populations in Queensland and regularly counts about 25% of the Australian Eastern Curlew population (using estimates in Driscoll 1997). There has been little detailed analysis to assess long-term trends, despite almost 12 years of data.

Wilson (2001) examined Eastern Curlew trends at three sites in Victoria that have been counted regularly since 1980. The results show a steady decline of about 2% per year or almost 40% in the 19 years of counts. This is a major decline and if it is a reflection of the Flyway population as a whole, suggests that urgent action is needed to increase the population of the largest shorebird species in the world.

The other near-threatened migratory species that occurs regularly in Australia is Asian Dowitcher. The main non-breeding area is in Sumatra, Indonesia (Hayman *et al.* 1987; BirdLife International 2000), but small numbers regularly

reach Australia (probably <1,000). However, there are probably too few at any single site for conservation effort on this species to be worthwhile. Initiatives that enhance and protect the habitats of similar species, like the two godwits should contribute to the conservation of Asian Dowitchers as well. Further surveys of their Asian non-breeding grounds need to be undertaken, especially the Banyuasin delta in Sumatra where 65% of the estimated population (20,000) was counted in 1988 (BirdLife International 2000).

Resident species

Two resident endemic shorebird species are under serious risk of extinction in Australia. The Plains-wanderer is most at risk, from loss of habitat through cultivation and increased predation (Garnett & Crowley 2000). Conservation initiatives outlined in Garnett & Crowley include activities to which volunteer wader study group members could make a significant contribution. These could include surveying for suitable habitat in New South Wales and Queensland and population and habitat monitoring. Both activities would be more effective with more participants and both the QWSG and the AWSG have several members with relevant expertise and could make a valuable contribution with appropriate coordination by government conservation agencies.



Table 2. Summary by region of the number of shorebird species at risk in the East Asian–Australasian Flyway (EAAF).

Region	Population status	Threatened	Near threatened	N
Australia	Resident	2	3	18
	Migratory	0	2	36
New Zealand	Resident	6	1	8
SE Asia	Resident	3	0	21
	Migratory	2	0	12
TOTAL EAAF	Both	13	6	95
Other Flyways	Both	9	10	120

The other resident species under threat is the Australian Painted Snipe, which has only recently been shown to be distinct from Asian populations of the Greater Painted Snipe *R. benghalensis*. It is considered to be “vulnerable” (Lane & Rogers 2000). AWSG together with the Threatened Species Network and Birds Australia have started a project using volunteer observers to undertake quarterly surveys for Painted Snipe at wetlands where they have been previously seen. Garnett & Crowley (2000) identified several types of information needed for effective monitoring and recovery that are currently lacking. Volunteer wader study groups could undertake studies aimed at filling several of these gaps. These might include studies of movement, identifying the principal breeding and wintering grounds and habitat use. Such activities are already undertaken regularly by the AWSG, Victorian Wader Study Group (VWSG) and QWSG. However, the focus of most migration studies to date has only been on the common migratory wader species. The

migration paths and habitat requirements of these more abundant species have largely been established and the methods and experience gained would be valuable in studies of the Australian Painted Snipe.

Asia

Migratory species

Two migratory shorebird species that spend their non-breeding season in SE Asia are highly threatened (Table 1). Spotted Greenshank and Spoon-billed Sandpiper are among the most threatened shorebirds in the world (BirdLife International 2000). The non-breeding range of Spotted Greenshank is not fully known, so the current population estimate of up to 1000 birds may be too low. Key threats to both species are the loss of coastal wetlands in their non-breeding range (BirdLife International 2000).

Given this situation, volunteer wader study groups could make significant contributions to slowing the decline in these species by participating in regional surveys of suitable habitats in order to identify their most important staging and non-breeding sites. In some countries, these sites are already well known, but in several others their distribution is poorly documented.

In the relevant countries, surveys could be undertaken in collaboration with regional conservation organizations such as World-Wide Fund for Nature, Wetlands International and the Wild Bird Society of Japan. These groups have contacts in countries throughout the Flyway, but often lack sufficient staff or the technical expertise of shorebirds found in wader study groups. Expeditions focussing on high profile, rare or threatened shorebirds are likely to be popular among amateur ornithologists interested in shorebirds. Participants could be expected from around the world, given the interest and success of the series of expeditions to productive areas for

Table 3. The breakdown of the number of shorebird species that use the East Asian – Australasian Flyway that are at risk in each of the major countries in the Flyway (Birdlife International 2000).

Country	Threatened		Near threatened		Total
	Resident	Migratory	Resident	Migratory	
Australia	2	0	3	2	7
Brunei	0	0	1	2	3
Cambodia	0	1	1	0	2
China	1	2	0	2	5
Indonesia	1	1	5	2	9
Japan	1	2	0	2	5
Malaysia	0	2	2	2	6
Myanmar	0	2	1	1	4
New Caledonia	0	0	1	0	1
New Zealand	6	1	1	2	10
Papua New Guinea	0	0	2	2	4
Philippines	0	2	2	2	6
Russia	0	2	0	2	4
Singapore	0	2	1	2	5
Solomon Islands	0	0	1	0	1
South Korea	0	2	0	2	4
Thailand	0	2	2	2	6
Vanuatu	0	0	1	0	1
Vietnam	1	2	1	2	6



shorebirds, like Broome and Roebuck Bay in NW Australia over the last 20 years. These surveys could be an opportunity for closer collaboration between the AWSG and other similar groups, such as the International Wader Study Group.

Resident species

Three resident shorebirds of Asia are threatened. All are cryptic species of freshwater wetlands and damp forests. Two are Woodcocks and confined to small island groups where their forested habitat is being logged. For the Amami Woodcock, it is established that the most important action is to protect remaining forest habitat (BirdLife International 2000). On the other hand the Mollucan Woodcock is poorly known and its status in existing and proposed protected areas is obscure. There is an opportunity here for Australian wader study group members to undertake surveys for this species. However, the political situation in the Maluku province in Indonesia is unstable, making this impractical without extensive Indonesian government support.

The third threatened species, Wood Snipe, is a secretive bird of high altitude swamps and boggy grasslands of the eastern Himalayas (Hayman *et al.* 1987). It occurs from southern China to India and Nepal and is a partial migrant. One of the targets proposed by BirdLife International (2000) is to conduct extensive surveys of its breeding and wintering areas to determine its current distribution, migration and threats. Australian wader study group members in collaboration with local and regional authorities could easily undertake this type of work.

CONCLUSIONS

More shorebird species in the East Asian–Australasian Flyway are at risk of extinction than in the other five flyways combined (BirdLife International 2000; Garnett & Crowley 2000). Most of these (15 of 19 threatened species) are non-migratory and almost half occur only in New Zealand. Of the migratory species under threat, only two, (Eastern Curlew and Asian Dowitcher) occur in Australia during the non-breeding season. Of these, Australia is the key country for the non-breeding population of Eastern Curlew.

There are three large (>200 members) volunteer groups in Australia that focus on shorebirds. These have an Australian/Flyway-wide (Australasian Wader Studies Group) or regional Australian focus (Queensland: Qld Wader Study Group; Victoria: Victorian Wader Study Group). All have the conservation of shorebirds as one objective and all have made several important contributions to our understanding of the distribution, abundance and threats to shorebirds in the Flyway that are at risk (Barter 2002, Driscoll & Ueta 2002, Finn *et al.* 2001, Lane & Rogers 2000, Hassell & Rogers

2002). However, the focus of their activities has been on the higher-profile migratory shorebirds at the expense of more threatened resident species. As well as being one of the major activities of these groups, migration studies have focussed mainly on the most abundant migratory species.

There is a pressing need for action to improve the survival of those shorebird species that have recently been shown to be under threat. I think that it is timely for the wader study groups to reconsider their focus on the more abundant shorebirds and use their large collective skill-base more for the benefit of the species at greater risk. I have made some suggestions of the types of activities and actions that could be considered.

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