

## Conservation Advice

### *Calidris ferruginea*

curlew sandpiper

#### **Taxonomy**

Conventionally accepted as curlew sandpiper *Calidris ferruginea* Pontoppidan, 1763. Scolopacidae. Other common names are pygmy curlew, curlew stint and redcrop.

No subspecies are recognised (Bamford et al. 2008). Taxonomic uniqueness: medium (22 genera/family, 20 species/genus, 1 subspecies/species; Garnett et al. 2011).

Cox's sandpiper (*Calidris paramelanotos*) was described as a new species in 1982, but is now known to be a hybrid between a female curlew sandpiper and a pectoral sandpiper (*C. melanotos*) (McCarthy 2006; Christidis & Boles 2008). Before 1990 there were said to be 4-7 (unverified) Australian reports of Cox's sandpiper annually (Higgins & Davies 1996), but reports are now very rare. Curlew sandpipers have also been reported to hybridise with white-rumped sandpipers (*Calidris fuscicollis*) (McCarthy 2006).

#### **Summary of assessment**

##### **Conservation status**

Critically endangered: Criterion 1 A2, (a)

*Calidris ferruginea* has been found to be eligible for listing under the following listing categories:

Criterion 1: A2 (a): Critically Endangered

Criterion 2: Not eligible

Criterion 3: Not eligible

Criterion 4: Not eligible

Criterion 5: Not eligible

The highest category for which *Calidris ferruginea* is eligible to be listed is Critically Endangered.

Species can be listed as threatened under state and territory legislation. For information on the listing status of this species under relevant state or territory legislation, see <http://www.environment.gov.au/cji-bin/sprat/public/sprat.pl>

##### **Reason for conservation assessment by the Threatened Species Scientific Committee**

This advice follows assessment of information provided by a committee nomination based on information provided in the *Action Plan for Australian Birds 2010* (Garnett et al., 2011), and experts from the University of Queensland.

##### **Public Consultation**

Notice of the proposed amendment and a consultation document was made available for public comment for 33 business days between 1 October 2014 and 14 November 2014. Any comments received that were relevant to the survival of the species were considered by the Committee as part of the assessment process.

#### **Species Information**

##### **Description**

The curlew sandpiper is a small, slim sandpiper 18–23 cm long and weighing 57 g, with a wingspan of 38–41 cm. It has a long decurved black bill with a slender tip; the legs and neck are also long. The head is small and round, and the iris is dark brown. The legs and feet are black or black-grey. When at rest, the wing-tips project beyond the tip of the tail. It has a square white patch across the lower rump and uppertail-coverts, a prominent flight character in all plumages. The sexes are similar, but females have a slightly larger and longer bill and a slightly paler underbelly in breeding plumage (Higgins & Davies, 1996).

In breeding plumage, the head, neck and underbody to rear belly are a rich chestnut-red with narrow black bars on the belly and flanks. There are black streaks on the crown, a dusky loreal stripe, and white around the base of the bill. When the plumage is fresh, the head, neck and underbody are often mottled by white tips to the feathers. The feathers on the mantle and scapulars are black with large chestnut spots and greyish-white tips (Higgins & Davies, 1996).

The non-breeding plumage looks very different, with pale brownish grey upperparts and predominantly white underparts (with a brownish-grey wash and fine dark streaks on the foreneck and breast). The cap, ear-coverts, hindneck and sides of neck are pale brownish-grey with fine dark streaks, grading to off-white on the lower face, with white on the chin and throat. There is a narrow dark loreal stripe and white supercilium from the bill to above the rear ear-coverts. (Higgins & Davies, 1996).

## **Distribution**

### *Australian distribution*

In Australia, curlew sandpipers occur around the coasts and are also widespread inland, though erratic in their appearance across much of the interior. There are records from all states during the non-breeding period, and also during the breeding season when many non-breeding birds remain in Australia rather than migrating north.

In Queensland, scattered records occur in the Gulf of Carpentaria, with widespread records along the coast south of Cairns. There are sparsely scattered records inland. In NSW, they are widespread east of the Great Divide, especially in coastal regions. They are occasionally recorded in the Tablelands and are widespread in the Riverina and south-west NSW, with scattered records elsewhere. In Victoria, they were widespread in coastal bays and inlets; despite recent declines these are still their Victorian strongholds; they are widespread in near-coastal wetlands, and they occur intermittently on inland wetlands (e.g. in the Kerang area, Mildura, and western districts). In Tasmania, they were recorded on King Island and the Furneaux Group. They mostly occur in south-eastern Tasmania, but also at several sites in north-west Tasmania, with occasional records in low numbers on the west coast. In South Australia, curlew sandpipers occur in widespread coastal and sub-coastal areas east of Streaky Bay. Important sites include ICI and Price Saltfields, and the Coorong. Occasionally they occur in inland areas south of the Murray River and elsewhere. In Western Australia, they are widespread around coastal and sub-coastal plains from Cape Arid to south-west Kimberley. They occur in large numbers, in thousands to tens of thousands, at Port Hedland Saltworks, Eighty-mile Beach, Roebuck Bay and Lake Macleod. They are rarely recorded in the north-west Kimberley, around Wyndham and Lake Argyle, and occasionally they occur inland, in areas south of 26° S. In the Northern Territory, they mostly occur around Darwin, north to Melville Island and Cobourg Peninsula, and east and south-east to Gove Peninsula, Groote Eylandt and Sir Edward Pellew Island. They have been recorded inland from Victoria River Downs and around Alice Springs (Higgins & Davies, 1996).

### *Global distribution*

The global population size of the curlew sandpiper has been estimated to be 1,350,000 (Delany & Scott, 2002; Bamford et al., 2008), however, these estimates are out of date. The global extent of occurrence is estimated at 100 000–1 000 000 km<sup>2</sup> (BirdLife International, 2014). Approximately 13% of the global population occurs in the East Asian-Australasian Flyway (180

000 individuals) (Bamford et al., 2008), however, these estimates are out of date and the true estimate is probably much lower.

The breeding range of the curlew sandpiper is restricted to the Russian Arctic from Chosha Bay east to Kolyuchiskaya Bay, on the Chukchi Peninsula, and also the New Siberian Islands (Lappo et al., 2012). It is a passage migrant through Europe, north Africa, Kazakhstan, west and south-central Siberia, Ussuriland, China, Taiwan, Japan, the Philippines and Papua New Guinea.

During the non-breeding period, they occur throughout Africa, south of southern Mauritania and Ethiopia, along the valley of the Nile River and in Madagascar. They also occur in Asia, from the coastal Arabian Peninsula to Pakistan and India, through Indonesia and Malaysia, south-east Asia and Indochina to south China and Australasia (Higgins & Davies, 1996).

## **Relevant Biology/Ecology**

### *Life history*

A generation time of 7.6 years (BirdLife International, 2014) is derived from an age at first breeding of 2.0 years, an annual survival of adults of 79% and a maximum longevity of 14.8 years, all extrapolated from congeners (Garnett et al., 2011). Estimates of apparent and true survival rate respectively for curlew sandpipers in Victoria are 73.1% and 80.5% (Rogers and Gosbell 2006). Rogers and Gosbell (2005) demonstrated that long-term decline in Victorian curlew sandpipers, although influenced by consecutive years of low breeding success, has been driven by reduced adult survival. Minton et al. (2006) confirmed that curlew sandpipers do not begin northwards migration and breeding until 2 years old.

Data extracted from the Australian Bird and Bat Banding Scheme (ABBBS) reports a longevity record of 18 years, 1.9 months (Australian Government, 2014).

### *Breeding*

This species does not breed in Australia.

In Siberia, nesting occurs during June and July (Hayman et al., 1986). The nest is a cup positioned on the margins of marshes or pools, on the slopes of hummock tundra, or on dry patches in *Polygonum* tundra (BirdLife International, 2014). Curlew sandpipers usually have a clutch size of four eggs (Johnsgard, 1981).

### *General habitat*

In Australia, curlew sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters (Higgins & Davies, 1996).

"*The Shorebird Community occurring on the relict tidal delta sands at Taren Point*" is listed as an Endangered Ecological Community in NSW (NSW DECC, 2005). The curlew sandpiper is one of 20 shorebird species that make up this community.

### *Feeding habitat*

Curlew sandpipers forage on mudflats and nearby shallow water. In non-tidal wetlands, they usually wade, mostly in water 15–30 mm, but up to 60 mm deep. They forage at the edges of shallow pools and drains of intertidal mudflats and sandy shores. At high tide, they sometimes forage among low sparse emergent vegetation, such as saltmarsh, and sometimes forage in flooded paddocks or inundated saltflats. Occasionally they forage on wet mats of algae or waterweed, or on banks of beachcast seagrass or seaweed. They rarely forage on exposed

reefs (Higgins & Davies, 1996). In Roebuck Bay, northern Western Australia, they tend to follow the receding tide to forage near the water edge (Rogers 1999, 2005) but they also feed on part of the mudflats that have been exposed for a longer period, foraging in small groups (Tulp & de Goeij, 1994).

### *Roosting habitat*

Curlew sandpipers roost in open situations with damp substrate, especially on bare shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands, occasionally roosting in dunes during very high tides and sometimes in saltmarsh (Higgins & Davies, 1996). They have also been recorded roosting in mangroves in Inverloch, Victoria (Minton & Whitelaw, 2000).

### *Feeding*

This species forages mainly on invertebrates, including worms, molluscs, crustaceans, and insects, as well as seeds. Outside Australia, they also forage on shrimp, crabs and small fish. Curlew sandpipers usually forage in water, near the shore or on bare wet mud at the edge of wetlands. On wet mud they forage by pecking and probing. They probe in shallow water, and jab at the edge of the water where a film of water remains on the sand. They glean from mud and less commonly from the surface of water, or in drier areas above the edge of the water. For a 'jab' less than half the length of the bill is inserted into the substrate; a probe is performed with a slightly open bill inserted to its full length. Curlew sandpipers may wade up to the belly, often with their heads submerged while probing. They often forage in mixed flocks (Dann, 1999a), including with red-necked stints (*Calidris ruficollis*).

The diet of the curlew sandpiper includes the following taxa (Barker & Vestjens, 1989; Higgins & Davies, 1996; Dann, 1999a):

Plants (*Ruppia* spp. seeds), Annelid worms: *Ceratonereis eurythraeensis*, *Nereis caudate*, Molluscs: Kelliidae, Gastropods: Rissoidae, Cerithiidae, Fossaridae, *Polinices* sp., *Salinator fragilis*, Hydrococcidae, Hydrobiidae, *Assimineia brazieri*, *A. tasmanica*, Crustaceans: *Cymadusa* sp., *Paracorophium* sp., Brachyurans; Sentinel Crab (*Macrophthalmus latifrons*), Insects: Diptera (Stratiomyidae, Chironomidae), adults, larvae and pupae, larvae (of Coleoptera, Dytiscidae and Scarabaeidae), Lepidoptera

Curlew sandpipers have been recorded consuming grit. In tidal waters, on the outgoing tide, the birds move onto the most recently exposed parts of the tidal flats until low tide when they disperse widely (Rogers 1999). On the rising tide, the flocks remain in areas close to the water's edge until these areas are covered and then retreat in stages rather than moving continuously as they do on the outgoing tide. Occasionally, individuals feed at high tide near the roost, along stretches of sandy beach where piles of decomposing vegetation are scattered in the high-tide zone. Supratidal feeding mainly occurs during the pre-migratory fattening periods (February-April) (Dann, 1999b). In other studies supratidal foraging has been recorded throughout the austral summer, and has been found to occur more on neap tides when tidal flat exposure is reduced (Rogers et al. 2013).

### *Migration patterns*

Curlew sandpipers are migratory. Overlapping breeding grounds occur in Siberia, and populations move south to widely different non-breeding areas which generally occur south of 35° N. Most birds migrate south, probably overland across Siberia and China, and south Asia. The northern migration occurs much further east, mainly along the south-east and east coasts of China, where staging occurs, then continuing overland to breeding areas (Higgins & Davies, 1996).

### *Departure from breeding grounds*

Males depart breeding grounds during early July, followed by females in July and early August, then juveniles in August, with juveniles usually arriving in the non-breeding range later than adults. Southwards migration is poorly known but flag resightings indicate that the main passage is initially overland, and that some birds migrate well to the west of the direct great circle route from the breeding grounds to south-eastern Australia (Minton et al., 2006). They cross Russia during July till late October, and pass through Mongolia, with a few records from inland Asia. They reach the Asian coast on a broad front between India and China in August. Adults pass through the Inner Gulf of Thailand during August, with a second influx, probably mainly juveniles, in late October and early November. Thousands pass over the west coast of Malaysia and arrive in Singapore in July and August but the migratory destination of these birds is unclear. Small numbers pass through Myanmar and Hong Kong during August-October. The relatively low numbers of curlew sandpipers, and of resightings of Australian-flagged birds on the coast of Indonesia, Borneo, the Philippines and Papua New Guinea, suggest that curlew sandpipers migrating to Australia migrate in a direct flight from staging areas on the east Asian coast. They are regular in small numbers on passage through southern Papua New Guinea, and in the Port Moresby district they arrive as early as late August. Adults are capable of flying non-stop to Australia from Hong Kong and Singapore. They reach the northern shores of Australia in late August and early September (Higgins & Davies, 1996; Minton, 1996; Minton et al., 2006).

### *Non-breeding season*

Substantial numbers of Curlew Sandpipers remain in northern Australia throughout the non-breeding season (e.g. Rogers et al. 2008). Others stopover in northern Australia before continuing migration to south-east Australia, the first birds arriving in late August, but the majority not until September. Some birds are also thought to move through the Gulf of Carpentaria to east and south-east Australia, with records from coastal Queensland and NSW. Some, occasionally hundreds, pass through north-east South Australia during late August to early December, and small numbers occur regularly in south-west NSW from early August. Some birds also move from north-west Australia, south to southern Western Australia, sometimes arriving in coastal south-western Western Australia as early as August, with small numbers also passing through Eyre, south-eastern Western Australia, mainly during August-November. Birds may return to the same non-breeding sites each year (Higgins & Davies, 1996; Minton, 1996).

### *Return to breeding grounds*

The return north begins in March, the northern route being further to the east than the southern route. Sightings of colour-marked birds, and influx at inland sites in south-eastern Australia in April, suggest some passage occurs through inland areas, and at least some birds from south-eastern Australia move to north-west Australia before leaving the mainland. Curlew sandpipers leave coastal sites in east Queensland between mid-January and mid-April, with a possible passage along the north-east coast. They migrate north on a broad front, with fewer occurring in north-west Australia than on the southern migration. Young birds stay in non-breeding areas during breeding season (Higgins & Davies, 1996). Recoveries and flag resightings indicate that a large proportion of the Australian population migrate through southern China (including Hong Kong and Taiwan), Vietnam and Thailand in the last few days of March and through April. Migration is however on a broad front and smaller numbers of birds pass through Papua New Guinea in early April to mid-May, and Bali and Sumatra during March-April. Small numbers pass through Brunei, during mid-February to May, with large numbers passing through the Philippines during March-April. The birds depart Singapore during early March, passing through Malaysia during March-April. They move through the Inner Gulf of Thailand during late March-May and depart Myanmar during May. By May the majority of recoveries and flag resightings occur on or near the Asian coast, notably on the northern coast of Bohai Bay, with other major concentrations in the Yangtze Estuary and the northern base of the Shandong Peninsula. A few pass through the Republic of Korea, Japan and Sakhalin during April-May. They first arrive in Chukotka region, Russia, during late in May or early June (Higgins & Davies, 1996; Minton, 1996; Minton et al. 2006, Hong-Yan et al. 2011).

## Descriptions of migratory pathways and important sites

Birds banded in Australia have been recovered in the upper Yenisey River and Daursky Nature Reserve, Russia, south India, Tanggu near Tianjin, many in Hong Kong, in China, Pu-tai, Chiayi and Cheng-his-li, Tainan City, Taiwan, south Vietnam, Gulf of Thailand and Java (Higgins & Davies, 1996; Minton & Jessop, 1999a, b, Minton et al., 2006). Long distance recoveries include birds banded in Victoria being recovered in Russia, at Yakutia, Verkhoyanskiy District, 11,812 km north of the banding site on the northern extremity of the breeding range and well to the west, on the Taimyr Peninsula, over 13,000 km from its banding location (Minton, 1996), and in China and Hong Kong (Minton, 1991).

The distribution of important sites is well known in the non-breeding period, with internationally important sites in Australia (22), Malaysia (2), Indonesia (1) and Thailand (1) (Bamford et al., 2008). In Australia, 9 sites are known to be important during migration, all in the southward period (Bamford et al., 2008). On northward migration Barter (2002) estimated that only 10% of the population use the Yellow Sea, most occurring in western Bohai Wan. However the discovery of very large numbers staging in Bohai Wan (Hong-Yan et al., 2011) suggests that the Yellow Sea is of more importance to the species than initially realised.

## Threats

Threats in Australia, especially eastern and southern Australia, include ongoing human disturbance, habitat loss and degradation from pollution, changes to the water regime and invasive plants (Rogers et al., 2006; Australian Government, 2009; Garnett et al., 2011).

In the non-breeding grounds of Australia, some populations of this species occurs in highly populated areas that are vulnerable to habitat alteration. It is necessary to maintain undisturbed feeding and roosting habitat along the south-east coast and at sites on the north-west coasts used during migration for the species to survive at current population levels (Lane, 1987). Coastal development, land reclamation, construction of barrages and stabilisation of water levels can destroy feeding habitat. Pollution around settled areas may have reduced the availability of food.

Curlew sandpipers are threatened by wetland degradation in East Asia where it stages on migration (Bamford et al., 2008). Specifically this species is threatened at Bohai Bay which is being developed at a rapid rate (Murray et al., 2014). Threats at migratory staging sites include environmental pollution, reduced river flows, sea level rise, human disturbance and reclamation for tidal power plants and barrages, industrial use and urban expansion (Garnett et al., 2011; Iwamura et al., 2013).

## How judged by the Committee in relation to the EPBC Act Criteria and Regulations

<b>Criterion 1. Population size reduction (reduction in total numbers)</b>			
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	<b>Critically Endangered Very severe reduction</b>	<b>Endangered Severe reduction</b>	<b>Vulnerable Substantial reduction</b>
<b>A1</b>	≥ 90%	≥ 70%	≥ 50%
<b>A2, A3, A4</b>	≥ 80%	≥ 50%	≥ 30%

A1	Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.	(a)	direct observation [ <i>except A3</i> ]
A2	Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.	(b)	an index of abundance appropriate to the taxon
A3	Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]	(c)	a decline in area of occupancy, extent of occurrence and/or quality of habitat
A4	An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.	(d)	actual or potential levels of exploitation
		(e)	the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

*based on any of the following:*

## Evidence:

### Eligible under Criterion 1 A2(a) for listing as Critically Endangered.

The global population has been estimated at 1 850 000 individuals, of which about 180 000 are found in the East Asian – Australasian Flyway (Bamford et al., 2008), however, these are old data. In Australia, 115 000 individuals were thought to visit during the non-breeding period (Bamford et al., 2008), but numbers have subsequently declined (Garnett et al., 2011).

Numbers declined on Eighty-Mile Beach, WA, by c. 59% between 2000 and 2008 (Rogers et al., 2009), at the Coorong, SA, by 79% between the 1980s and 2004 (Wainwright and Christie, 2008), at sites across Queensland by 6.3% per year between 1998 and 2008 (Fuller et al., 2009), at Corner Inlet in Victoria by 3.4% per year between 1982 and 2011 (Minton et al., 2012), at Gulf St Vincent, SA, by 71% between 1981 and 2004 (Close, 2008), and by 82% across 49 Australia sites between 1983 and 2007 (BirdLife Australia *in litt.* 2011). Models suggest that this decline is due to reduced adult survival rates (Rogers and Gosbell, 2006).

Numbers in south east Tasmania have decreased by 100% in the period 1973 – 2014, with no curlew sandpipers recorded during coordinated summer counts in 2008, and 2010 – 2014 inclusive (Woehler pers. comm., 2014).

Numbers declined less severely elsewhere in the flyway. There were no clear trends in Japan between 1978 and 2008 (Amano et al., 2010), but as discussed above, Japan is not a major part of the migration route of this species.

A subsequent and more detailed assessment by a University of Queensland team (partly funded by the Department under an Australian Research Council collaborative grant), puts the species into the critically endangered category (Fuller, pers. comm., 2014). Time series data from directly observed summer counts at a large number of sites across Australia indicate a severe population decline of 75.9% over 20 years (7.5% per year; Fuller, pers. comm., 2014). This equates to a decline of 49.1% over a 10 year period, and 80.8% over 23 years, which is three generations for this species (Garnett et al., 2011).

In large part, the observed decline in curlew sandpiper numbers across Australia stems from ongoing loss of intertidal mudflat habitat at key migration staging sites in the Yellow Sea (Murray et al., 2014). As such, qualification under criterion A2 rather than A1 is warranted. However, threats are occurring locally in Australia, such as coastal development and recreational activities causing disturbance, also impact the species.

The Committee considers that the species has undergone a very severe reduction in numbers over three generation lengths (23 years for this assessment), equivalent to at least 80.8 percent and the reduction has not ceased, the cause has not ceased and is not understood. Therefore, the species has been demonstrated to have met the relevant elements of Criterion 1 to make it eligible for listing as critically endangered.

<b>Criterion 2. Geographic distribution is precarious for either extent of occurrence AND/OR area of occupancy</b>			
	<b>Critically Endangered Very restricted</b>	<b>Endangered Restricted</b>	<b>Vulnerable Limited</b>
B1. Extent of occurrence (EOO)	< 100 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (number of mature individuals)			

**Evidence:**

**Not eligible**

The extent of occurrence in Australia is estimated to be 7 600 000 km<sup>2</sup> (stable) and area occupied 6 800 km<sup>2</sup> (stable; Garnett et al., 2011). Therefore, the species has not been demonstrated to have met this required element of this criterion.

<b>Criterion 3. Small population size and decline</b>			
	<b>Critically Endangered Very low</b>	<b>Endangered Low</b>	<b>Vulnerable Limited</b>
Estimated number of mature individuals	< 250	< 2,500	< 10,000
AND either (C1) or (C2) is true			
C1 An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future	<b>Very high rate 25% in 3 years or 1 generation (whichever is longer)</b>	<b>High rate 20% in 5 years or 2 generation (whichever is longer)</b>	<b>Substantial rate 10% in 10 years or 3 generations (whichever is longer)</b>
C2 An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(a) (ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals			

**Evidence:**

**Not eligible**

The number of mature individuals in Australia is estimated to be 115 000 with a decreasing trend (Bamford et al., 2008; Garnett et al., 2011), however, these estimates are out of date and

likely to be an overestimate. Therefore, the species has not been demonstrated to have met this required element of this criterion.

<b>Criterion 4. Very small population</b>			
	<b>Critically Endangered Extremely low</b>	<b>Endangered Very Low</b>	<b>Vulnerable Low</b>
Number of mature individuals	<b>&lt; 50</b>	<b>&lt; 250</b>	<b>&lt; 1,000</b>

**Evidence:**

**Not eligible**

The number of mature individuals in Australia is estimated to be 115 000 with a decreasing trend (Bamford et al., 2008; Garnett et al., 2011), however, these estimates are out of date and likely to be an overestimate.

The total number of mature individuals is 115 000 which is not considered extremely low, very low or low. Therefore, the species has not been demonstrated to have met this required element of this criterion.

<b>Criterion 5. Quantitative Analysis</b>			
	<b>Critically Endangered Immediate future</b>	<b>Endangered Near future</b>	<b>Vulnerable Medium-term future</b>
Indicating the probability of extinction in the wild to be:	<b>≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)</b>	<b>≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)</b>	<b>≥ 10% in 100 years</b>

**Evidence:**

**Not eligible**

Population viability analysis has not been undertaken

## **Conservation Actions**

### **Recovery Plan**

There should not be a recovery plan for this species, as approved conservation advice provides sufficient direction to implement priority actions and mitigate against key threats. Significant management and research is being undertaken at international, state and local levels.

## **Primary Conservation Objectives**

### *International objectives*

1. Achieve a stable or increasing population.
2. Maintain and enhance important habitat.
3. Disturbance at key roosting and feeding sites reduced.

### *Australian objectives*

1. Achieve a stable or increasing population.

2. Maintain and enhance important habitat.
3. Disturbance at key roosting and feeding sites reduced.
4. Raise awareness of curlew sandpiper within the local community.

### **Conservation and Management Actions**

1. Work with governments along the East Asian – Australasian Flyway to prevent destruction of key migratory staging sites.
2. Support initiatives to protect and manage key staging sites of curlew sandpiper.
3. Maintain and improve protection of roosting and feeding sites in Australia.
4. Incorporate requirements for curlew sandpiper into coastal planning and management.
5. Manage important sites to identify, control and reduce the spread of invasive species.
6. Manage disturbance at important sites when curlew sandpipers are present – e.g. discourage or prohibit vehicle access, horse riding and dogs on beaches, implement temporary beach closures.
7. Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

### **Monitoring priorities**

1. Enhance existing migratory shorebird population monitoring programmes, particularly to improve coverage across northern Australia.

### **Information and research priorities**

1. More precisely assess curlew sandpiper population size, distribution and ecological requirements particularly across northern Australia.
2. Improve knowledge about dependence of curlew sandpiper on key migratory staging sites, and wintering sites to the north of Australia.
3. Improve knowledge about threatening processes including the impacts of disturbance.

### **Recommendations**

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the Critically Endangered category:  
*Calidris ferruginea*
- (ii) The Committee recommends that there should not be a recovery plan for this species.

Threatened Species Scientific Committee

4/3/2015

### **References cited in the advice**

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