

# Migration, shorebirds and the Port Stephens connection

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# Migration

## Why migrate?

- Conditions at the breeding grounds are inhospitable for part of the year, and there are better conditions available somewhere else.

### Examples:

- Escape bleak northern winters
- Escape extreme dry seasons
- Preference is to return to the breeding grounds because of better conditions there or because of less competition from other species

## Which creatures migrate?

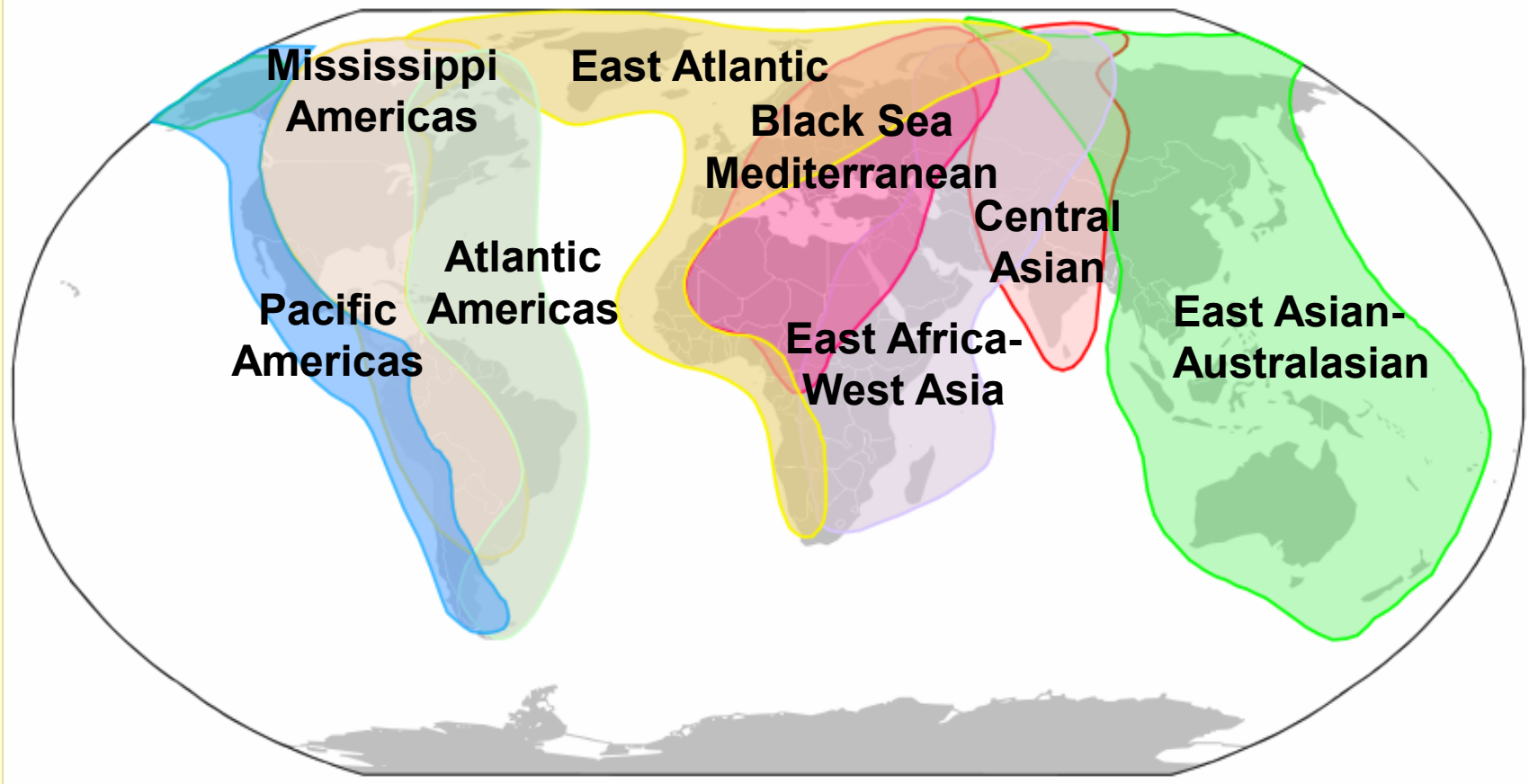
- Animals, e.g. wildebeest, caribou
- Butterflies and other insects
- Whales and fish
- Birds (1,800-2,000 species migrate: ~20% of all birds)

# The Australian context

- Many bush birds leave southern Australia in autumn, returning in spring
  - They go to northern Australia or PNG/Indonesia
  - Tens of thousands of birds per day pass through “pinch points” (e.g. Mt Sugarloaf)
- Most waterbirds and Australian endemic shorebirds go inland to breed as soon as there has been significant rain
- We have ~40 migratory shorebird species (waders) which are in Australia for most of their non-breeding season
  - Epic twice-yearly journeys
  - 25,000-30,000 km return trips!
- Site-faithfulness is the norm
  - Birds return to the same site so long as it continues to be suitable
  - E.g. a Far Eastern Curlew banded at Swan Bay in 2022 has returned every summer

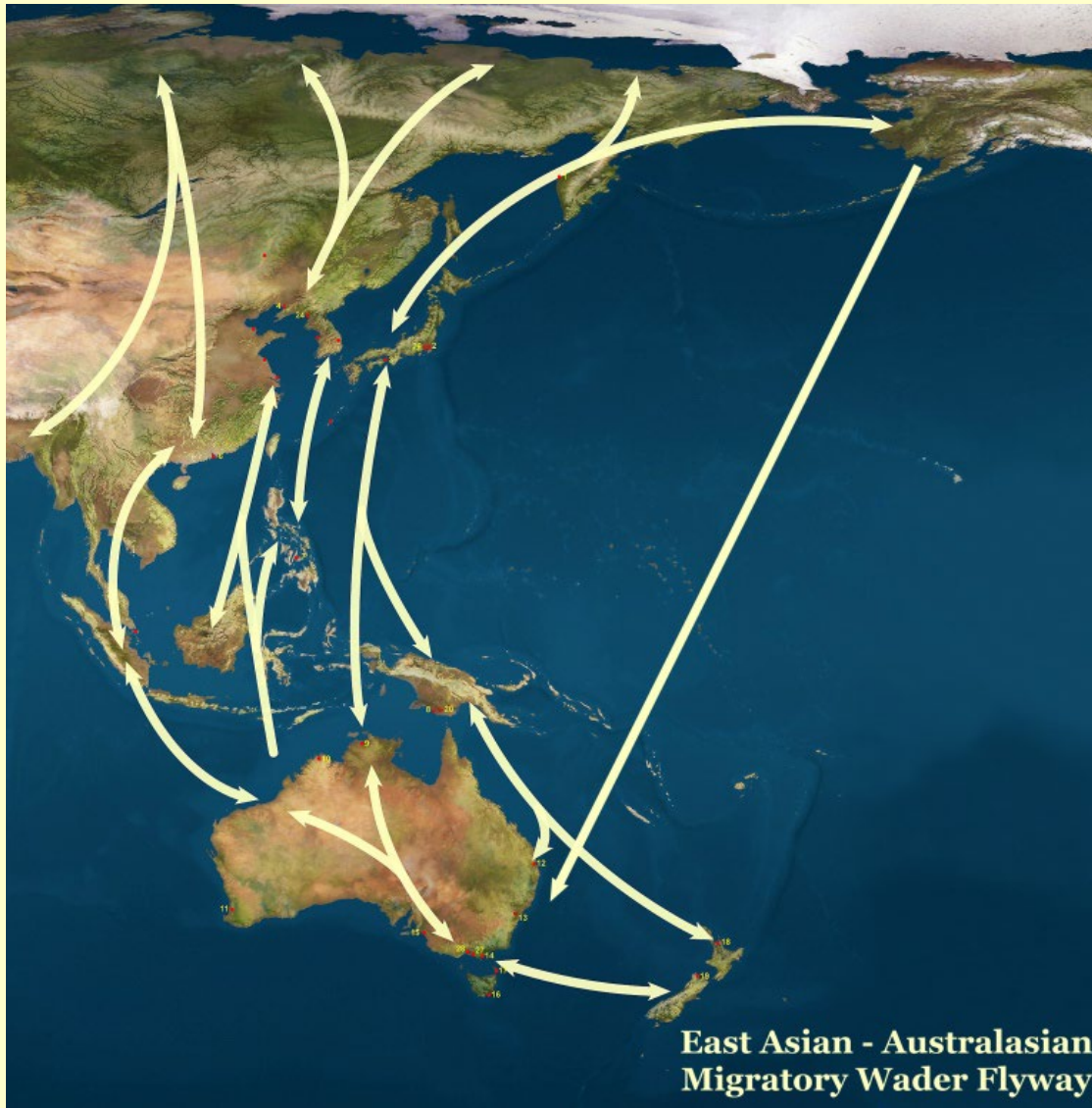
*To the moon  
and back*

# World flyways for migratory birds





# East Asian - Australasian Flyway



*Birds breed in Siberia,  
North China and Alaska  
in June and July*

*Stopover at staging  
sites in Yellow Sea*

*Migrate south to Australia  
& New Zealand*

# Studying shorebird migration

- It took a while to work out that they were the same birds
  - Plumages are different in breeding and non-breeding seasons
- Banding studies gave the first clues:
  - Start and end points
  - Some information about the route
- Use of satellite trackers from the mid-2000's
  - Heavy and only able to be used on large species (eg curlews and godwits)
- Scientists now are mainly using geolocators (measure length of day)
  - Smaller (and becoming even smaller: due to battery technology improvements)
  - Can be applied to smaller shorebirds
  - Positional accuracy is not as good

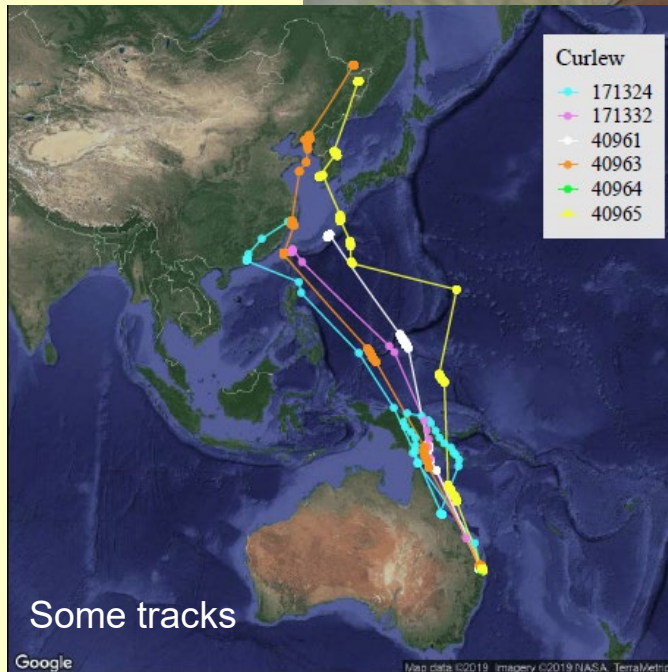


A Far Eastern Curlew in flight at Port Stephens

# Far Eastern Curlew tracking



(Photo: Amanda Lilleyman)





# Latham's Snipe

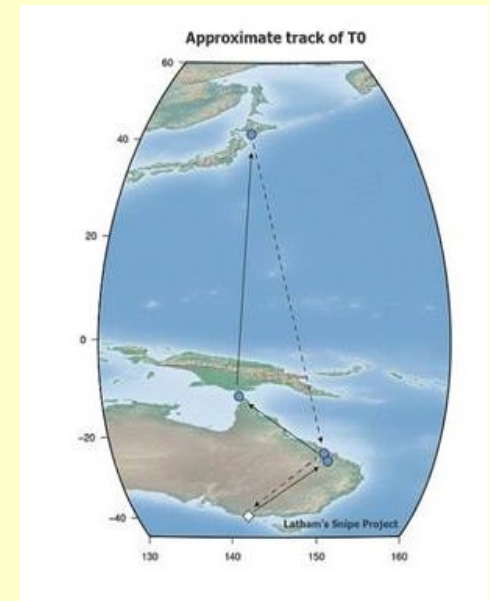
- Present in Australia August-March
  - Secretive, hard to see
- Present in Japan April-July
  - Easy to see at its breeding grounds
- Migration and behaviour are being studied in a joint project between Australian and Japanese researchers



Latham's Snipe with a tracker on its back (Photo: David Cunningham)



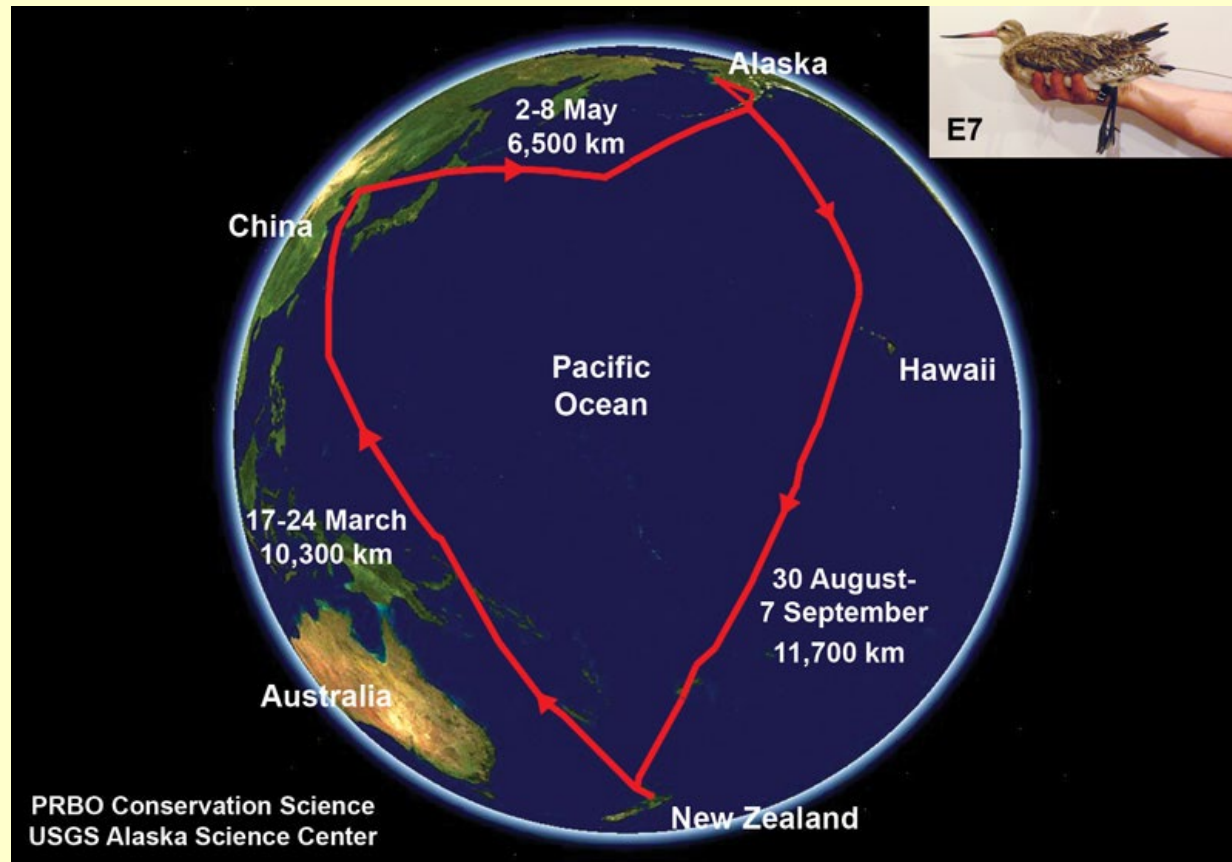
Latham's Snipe in hiding in Australia (Photo: Rob Palazzi)



Migration path taken by one of the birds



# Bar-tailed Godwit satellite tracking



- NZ scientists fitted 16 Bar-tailed Godwits with satellite transmitters
- Birds flew non-stop to Yellow Sea, then non-stop to Alaska
- One godwit E7 flew non-stop 11,700 kilometres from Alaska to NZ in 9 days
- Total round-trip 30,000km! (for a 250-350g bird!)

# Bar-tailed Godwit tracking 2

Most recent locations and north and south flight paths of eight satellite-tagged Bar-tailed Godwits updated 21 Oct 2008

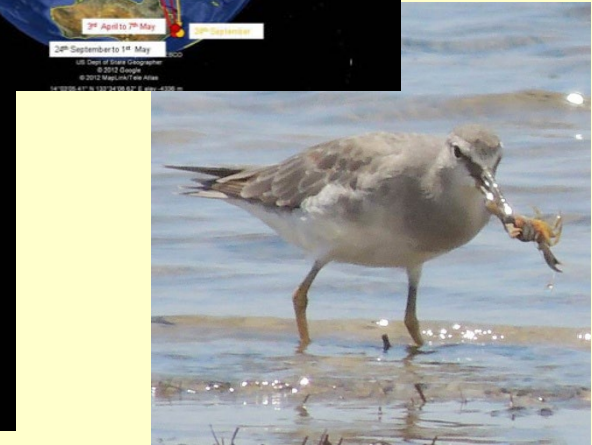
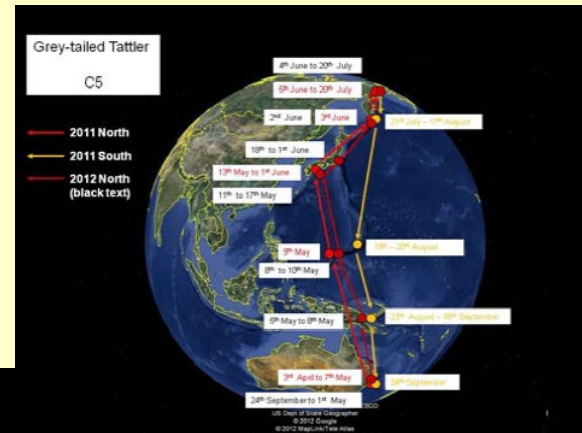
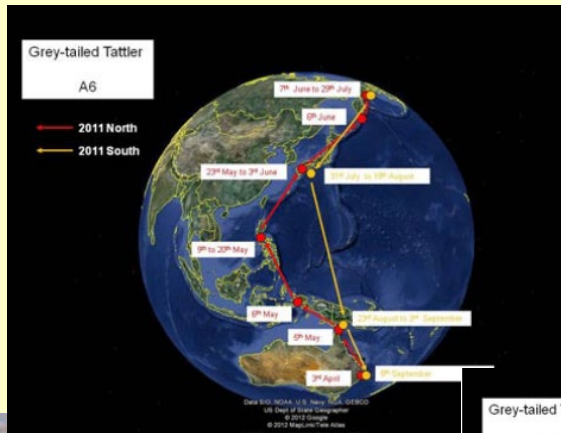


- 15 godwits fitted with satellite transmitters at Broome
- Birds flew nonstop to Yellow Sea, spent 6 weeks there, then departed for Alaska and Siberia
- Returned to Broome later that year

*November 2022: a new world record  
13,560km nonstop (in 11 days)  
Alaska to NE Tasmania*

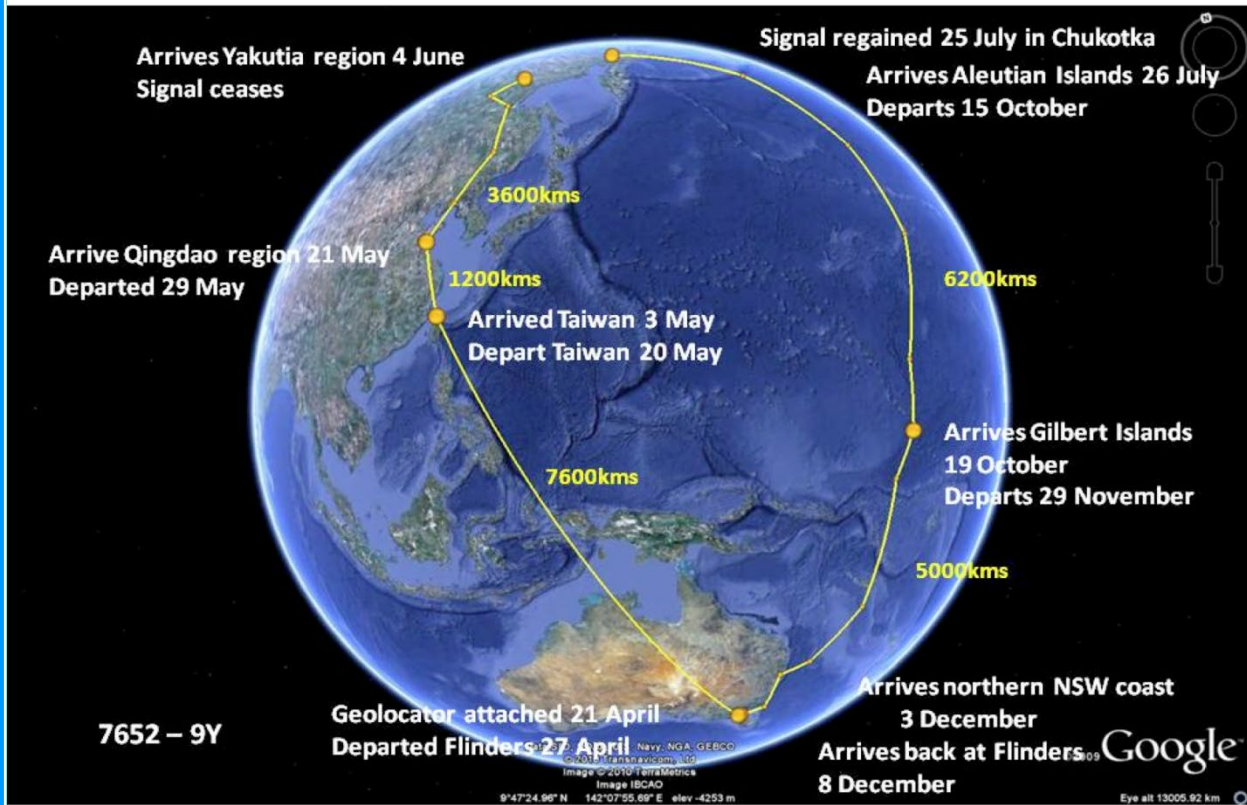
# Smaller geolocators, smaller birds...

- Since 2008, geolocator studies are being progressed to smaller shorebirds
  - Ruddy Turnstone, Greater Sand Plover, Grey-tailed Tattlers are a current study
- Grey-tailed Tattlers are unusual in that they migrate through Japan. Long distance non-stop flights remain the norm though!





# Ruddy Turnstone migration tracking



- Geolocators were fitted to some Ruddy Turnstones
- Birds flew non-stop to Taiwan, then on to their breeding grounds in 2 further stages
- Returned via the Gilbert Islands
- This bird weighs just 100-130g!



# Migratory shorebirds in Port Stephens

- Double-banded Plovers spend winters in Port Stephens
  - They breed in the South Island of New Zealand
- All the others come from northern Russia (esp. Siberia)
  - Round-trips of 25-30,000 km every year
  - The smallest species (the Red-necked Stint) weighs only ~25g
- The most common migratory species: Far Eastern Curlew, Bar-tailed Godwit, Whimbrel, Grey-tailed Tattler



*Double-banded Plover: a NZ migrant in winter*



*Red-necked Stint: a migrant from the Arctic tundra in summer*

# Port Stephens main shorebirds

## Migratory

- Pacific Golden Plover
- ***Grey Plover***
- Double-banded Plover (from NZ)
- ***Lesser Sand Plover***
- ***Black-tailed Godwit***
- ***Bar-tailed Godwit***
- Whimbrel
- ***Far Eastern Curlew***
- ***Terek Sandpiper***
- Common Sandpiper
- Grey-tailed Tattler
- ***Common Greenshank***

## Migratory (cont'd)

- ***Ruddy Turnstone***
- ***Great Knot***
- ***Red Knot***
- Red-necked Stint
- ***Sharp-tailed Sandpiper***
- ***Latham's Snipe***

## Australian Endemics

- ***Beach Stone-curlew***
- ***Aust. Pied Oystercatcher***
- ***Sooty Oystercatcher***
- Red-capped Plover
- Masked Lapwing

Species in ***Bold*** classified as threatened (NSW and/or Commonwealth Acts)