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# The Miracle of Wader Migration

Rog Standen

Chair, VWSG

Victorian Marine & Coastal Forum,

June 13, 2019



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wader = shorebird



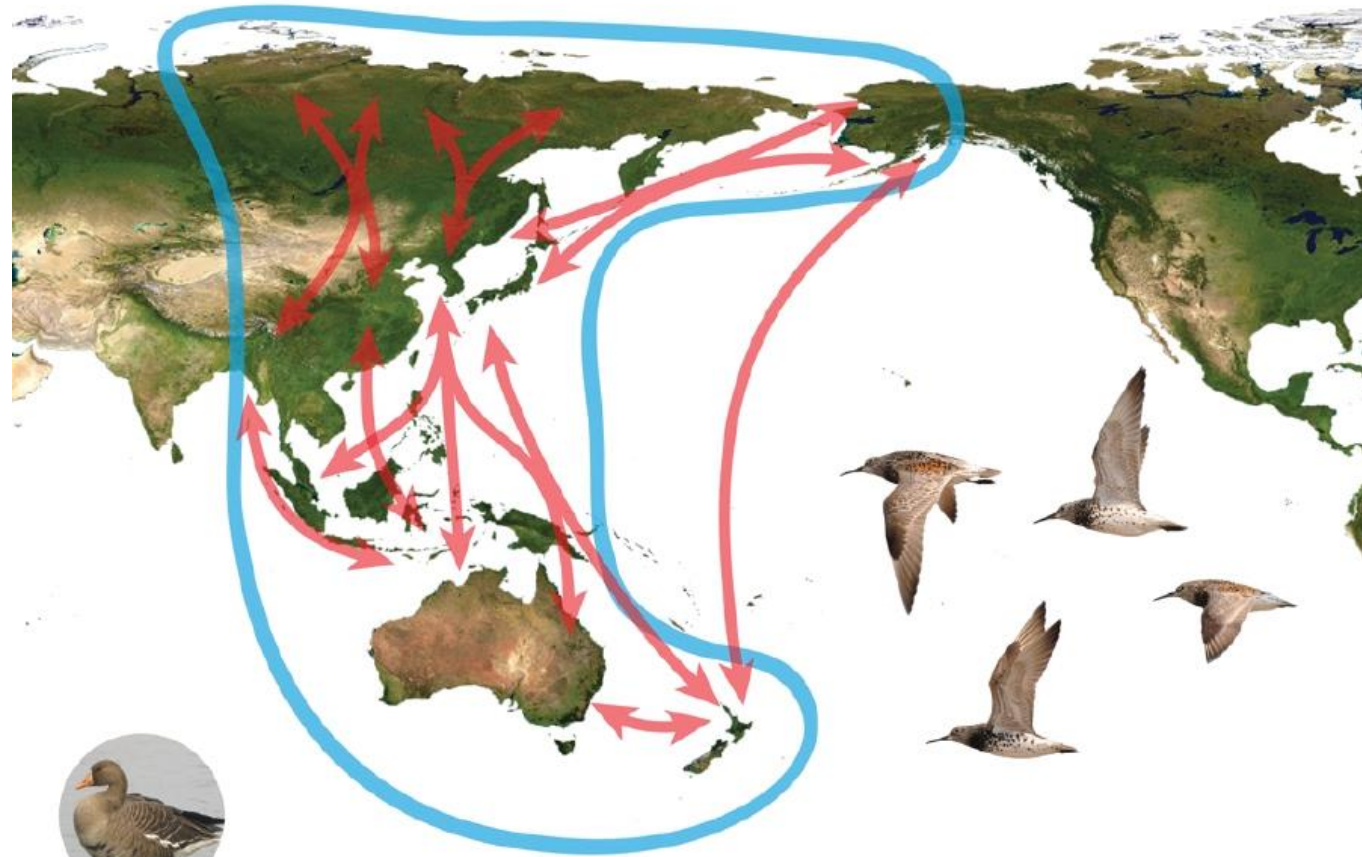


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- Waders breed in the northern hemisphere
- Stay here for our summer
- Use one of nine global flyways



## East Asian – Australasian Flyway of migratory waterbirds



**Migratory waterbirds need international cooperation**

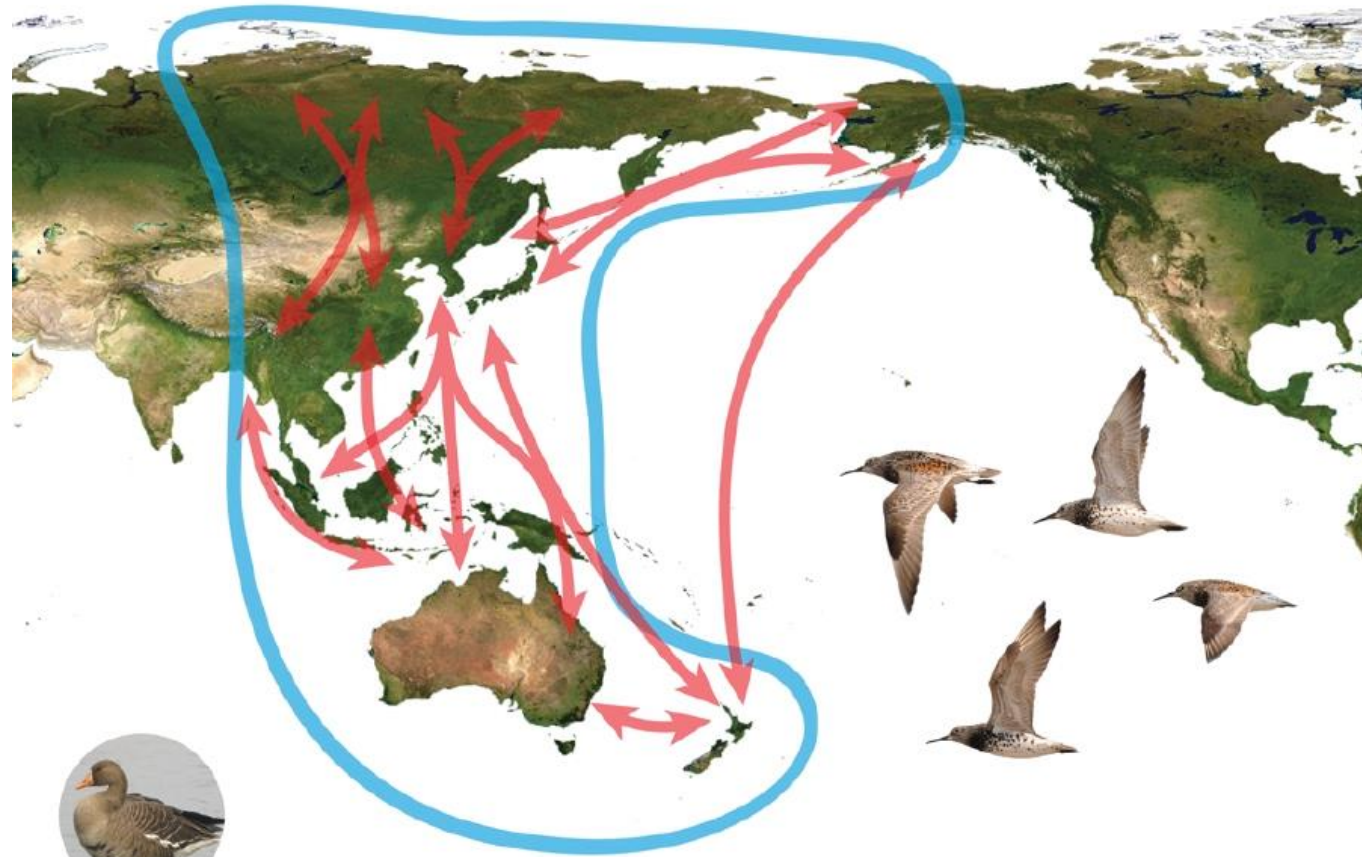


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- 22 countries (18 joined EAAF partnership)  
= complex co-ordination
- 4.5 billion people  
= lot of competition



## East Asian – Australasian Flyway of migratory waterbirds



**Migratory waterbirds need international cooperation**





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Resident  
waders are  
readily  
identified







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Migratory  
waders can be  
confusing to  
identify in  
their non-  
breeding  
plumage







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Resident  
and  
migratory  
birds can  
mix  
together





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Red-necked  
Stint

30gm

Breeds  
12,000km  
away







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Feeding  
habitat is  
mudflat







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Roosting  
habitat is  
above the  
high tide  
mark –  
preferably  
undisturbed







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Tools used  
to  
understand  
movements  
&  
population  
dynamics

banding  
leg flags  
geolocators  
satellite transmitters



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Banding alone  
was valuable,  
but limited in  
what it showed

# 1900 – banding

Biometrics/ageing/movements

Many catching methods:

Drop nets

Clap nets

Mist nets

Cannon nets





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Banding alone  
was valuable,  
but limited in  
what it showed

# 1900 – banding

Biometrics/ageing/movements

Many catching methods:

Drop nets

Clap nets

Mist nets

Cannon nets





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Large nets used at  
high tide roosts

Rob Patrick







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Cannons – buried  
behind the net

Bill Soutter







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Teams  
quickly  
extract the  
birds

Andrew Browne







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Birds are  
processed and  
released

All these  
components  
need large teams  
of volunteers







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Clive Minton  
instigator, driver,  
planner,  
doer

Chair 1978-2017

Bill Soutter







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Birds are banded  
and colour  
marked







Birds are  
measured and  
recorded







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Birds are aged,  
generally by  
moult

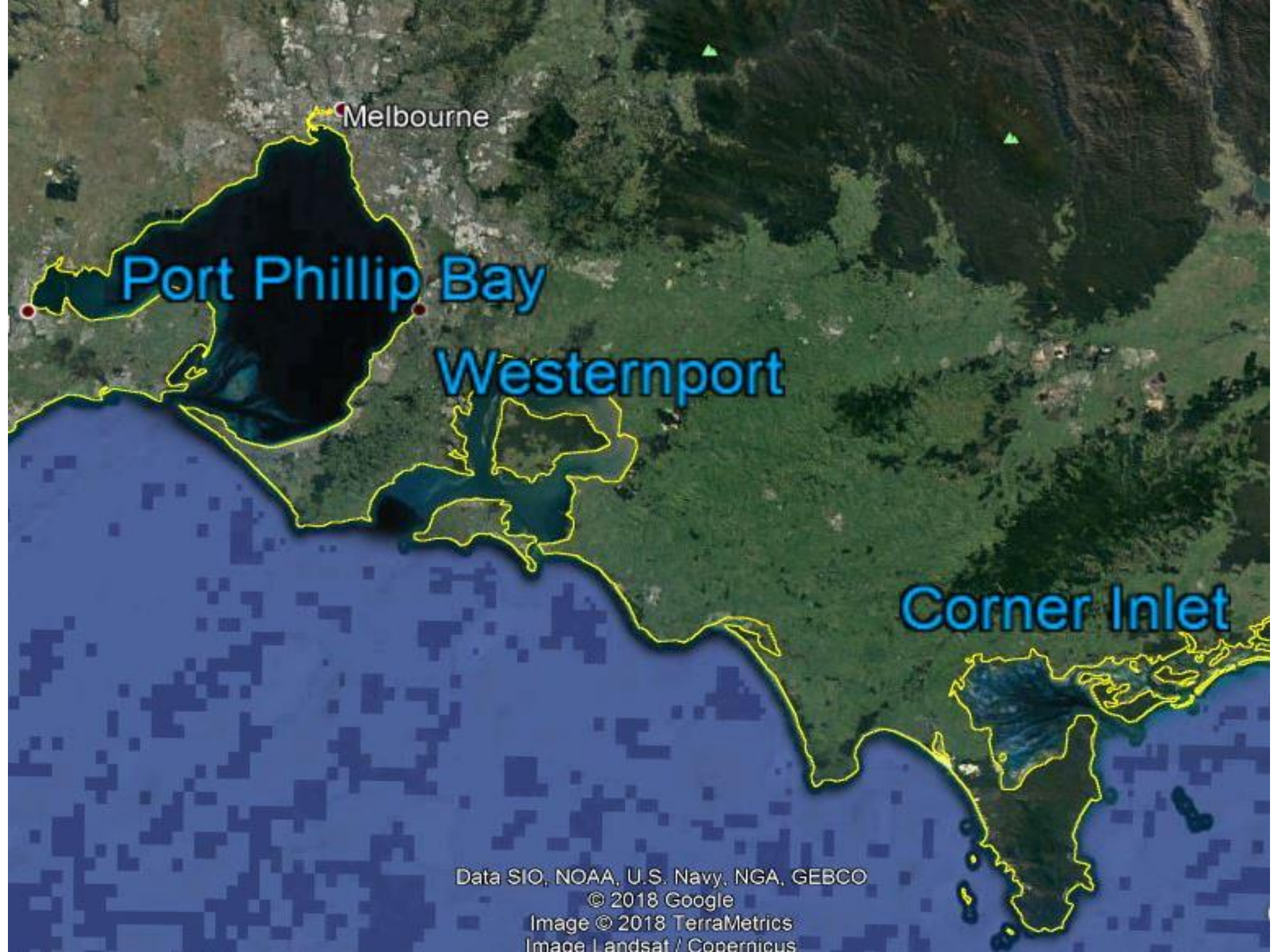






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Three main  
catching regions  
in Victoria







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Plain flags  
revolutionised  
our  
understanding of  
migration

# 1900 – banding

Biometrics/ageing/movements

# 1990 – plain leg flags

Stopover sites

Biased by where humans are





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Victorian birds are  
flagged orange







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All regions have their own colour

Upper flag	Lower flag	Country	Location
Black	Black	MYANMAR	
Black	Blue	PHILIPPINES	Philippines
Black	Green	THAILAND	Thailand Peninsular & Gulf of Thailand
Black	Orange	INDONESIA	Java & Bali
Black	White	CHINA	Chongming Island
Black	Yellow	MALAYSIA	(proposed)
Black (L)	no flag	SOUTHERN INDIA	
Blue	Black	CHINA	Hainan-Guangxi
Blue	Blue	JAPAN	Lake Komuke, Northern Hokkaido
Blue (ring)	Green	USA	Western Alaska
Blue	Green	MONGOLIA	
Blue	Orange	JAPAN	Kyushu & Okinawa
Blue	White	JAPAN	Tokyo Bay & Miyagi Prefecture
Blue	Yellow	CHINA	Bohai Bay
Blue	no flag	JAPAN	Shunkunitai, Eastern Hokkaido
Green	Black	CAMBODIA	
Green	Blue	CHINA	Jiangsu
Green (ring)	Green	USA	Northern Alaska (Canning river)
Green	Green	SRI LANKA	
Green	Orange	CHINA	Yalujiang
Green	White	SINGAPORE	
Green	Yellow	AUSTRALIA	Gulf of Carpentaria
Green	no flag	AUSTRALIA	Queensland
Orange	Black	INDONESIA	Sumatra
Orange	Blue	AUSTRALIA	Tasmania
Orange (ring)	Green	USA	North Western Alaska
Orange	Green	AUSTRALIA	New South Wales
Orange	Orange	INDONESIA	West Papua
Orange	White	SOUTH KOREA	Eastern Yellow Sea (old)
Orange	Yellow	AUSTRALIA	South Western Australia
Orange	no flag	AUSTRALIA	Victoria
White	Blue	CHINA	Taiwan
White	Green	NEW ZEALAND	South Island
White	Orange	SOUTH KOREA	Eastern Yellow Sea
White	White	NORTHERN INDIA	
White	Yellow	CHINA	Hong Kong
White	no flag	NEW ZEALAND	North Island
Yellow	Black	RUSSIA	Kamchatka
Yellow	Blue	AUSTRALIA	Northern Territory
Yellow (ring)	Green	USA	Northern Alaska (Barrow)
Yellow	Green	VIETNAM	
Yellow	Orange	AUSTRALIA	SW Western Australia
Yellow	White	RUSSIA	Sakhalin Island
Yellow	Yellow	BANGLADESH	
Yellow	no flag	AUSTRALIA	N Western Australia
Pale Green	no flag	RUSSIA	Southern Chukotka
Pale Green	White	RUSSIA	Southern Chukotka
Pale Blue	White	RUSSIA	Wrangel Island
Pale Blue	no flag	RUSSIA	Northern Chukotka
Pale Blue (ring)	Green	USA	Northern Alaska (Ikpihpuk&Prudhoe Bay)
Red (ring)	Green	USA	Northern Alaska (Barrow)



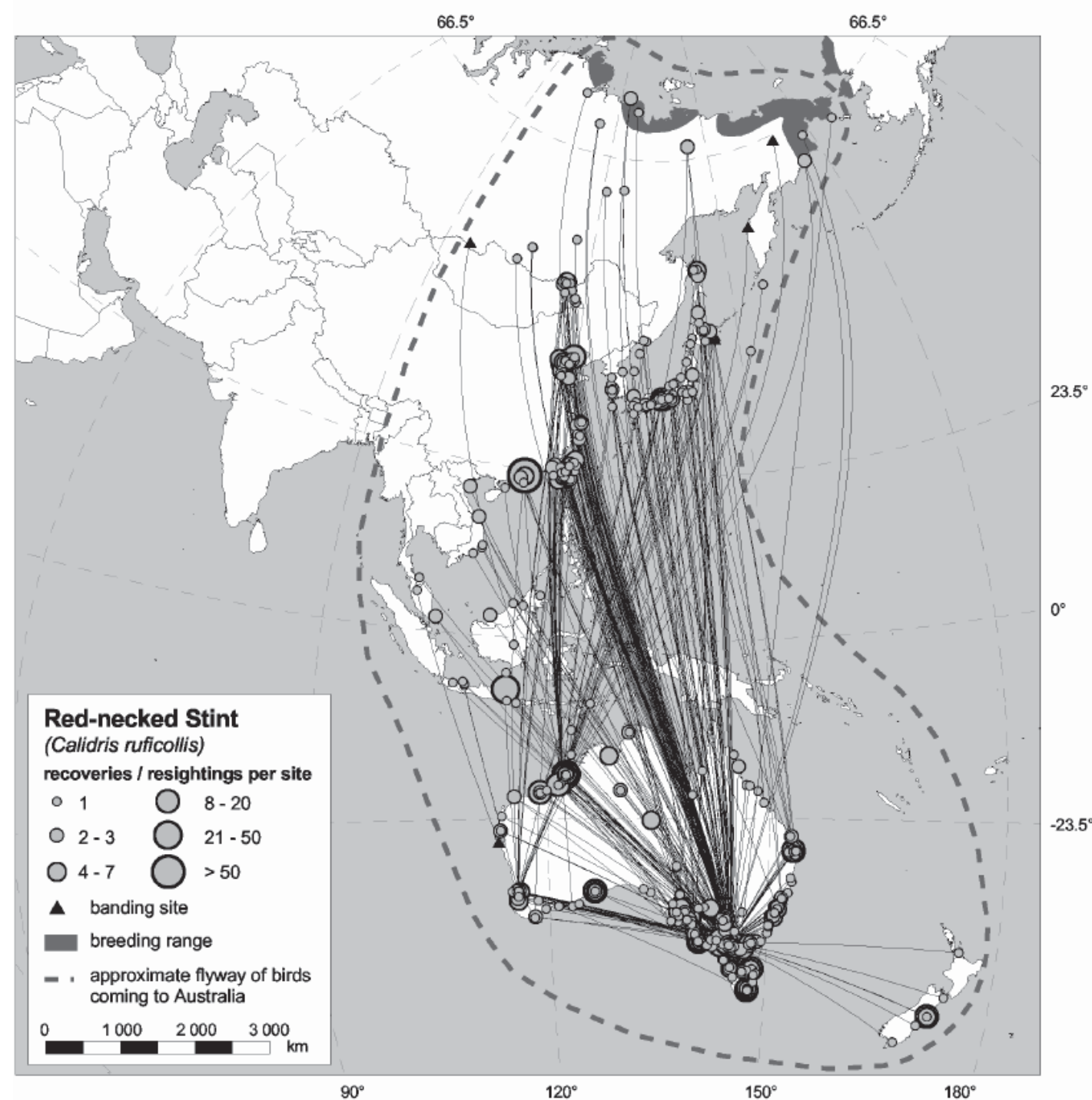


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## Red-necked Stint

- Confirmed many stopover sites
- breed in the high arctic

Minton et al, 2006, Stilt 50:135-157







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- Red-necked Stint on the arctic breeding grounds
- The timing of migration is critical

Pavel Tomkovich







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## Ruddy Turnstone

Dan Weller



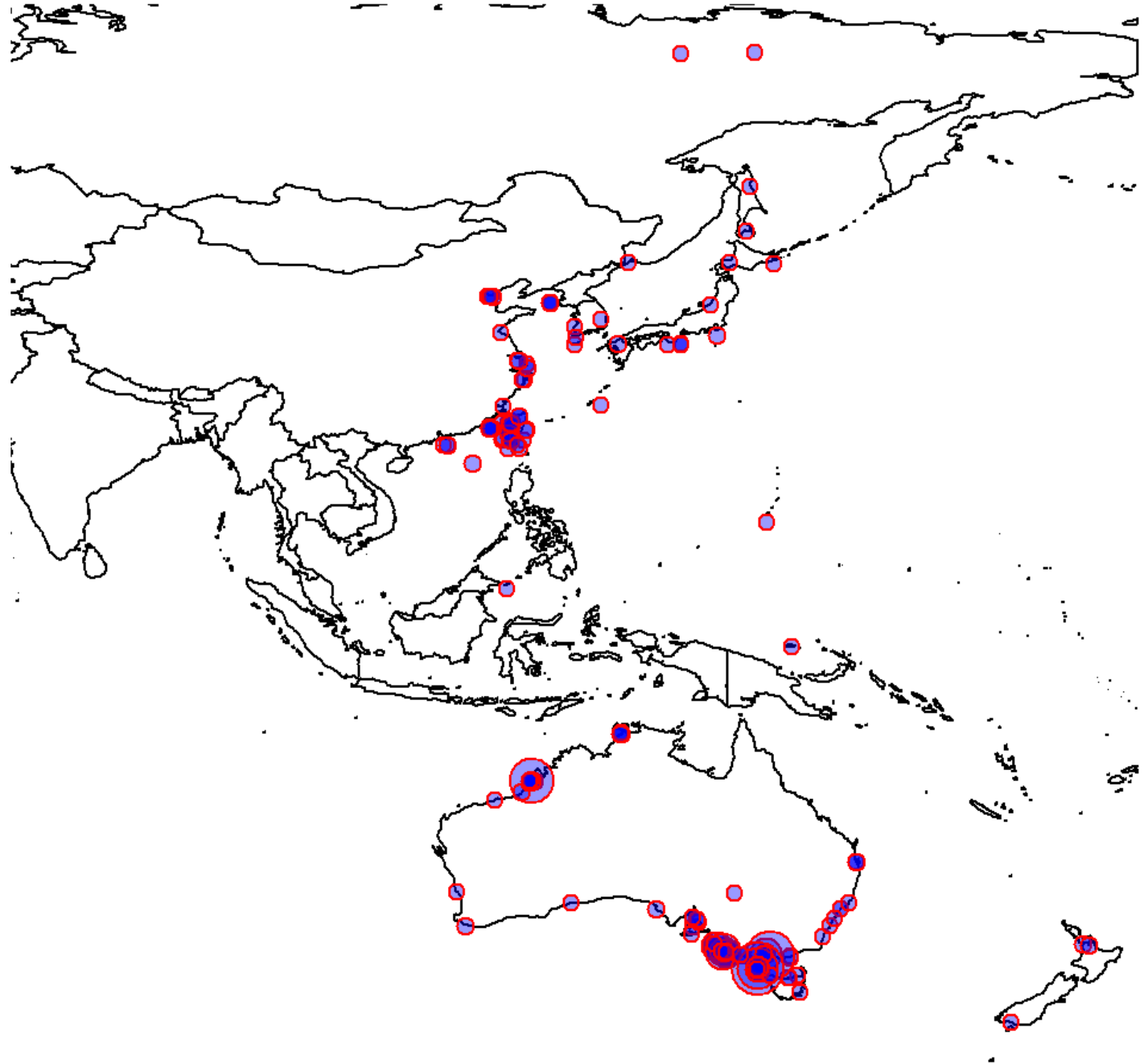




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## Ruddy Turnstone

- Stopover sites as shown from flag sightings and recoveries



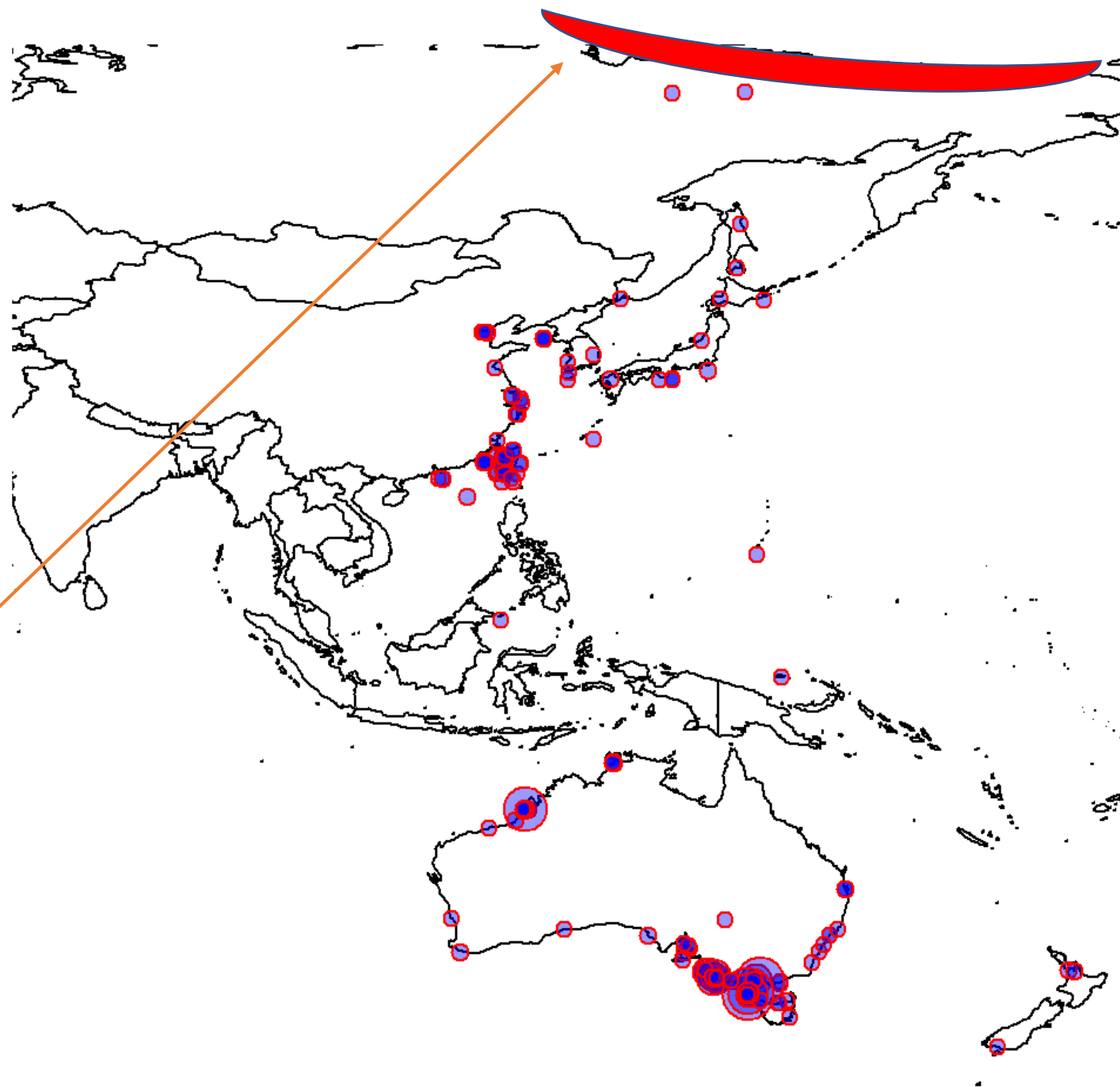




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## Ruddy Turnstone

- Stopover sites as shown from flag sightings and recoveries
- None from the breeding grounds







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# Ruddy Turnstone flag sightings

Ruddy Turnstone

Country	northward	southward
Hong Kong	17	0
Taiwan	159	129
China (mainland)	15	8
South Korea (Yellow Sea)	27	10
Japan	3	30
North-west Australia	0	59
Guam, Philippines, PNG		scattered





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# Ruddy Turnstone flag sightings

## Ruddy Turnstone

- Hong Kong (north)
- Japan (south)
- NWA (south)

Country	northward	southward
Hong Kong	17	0
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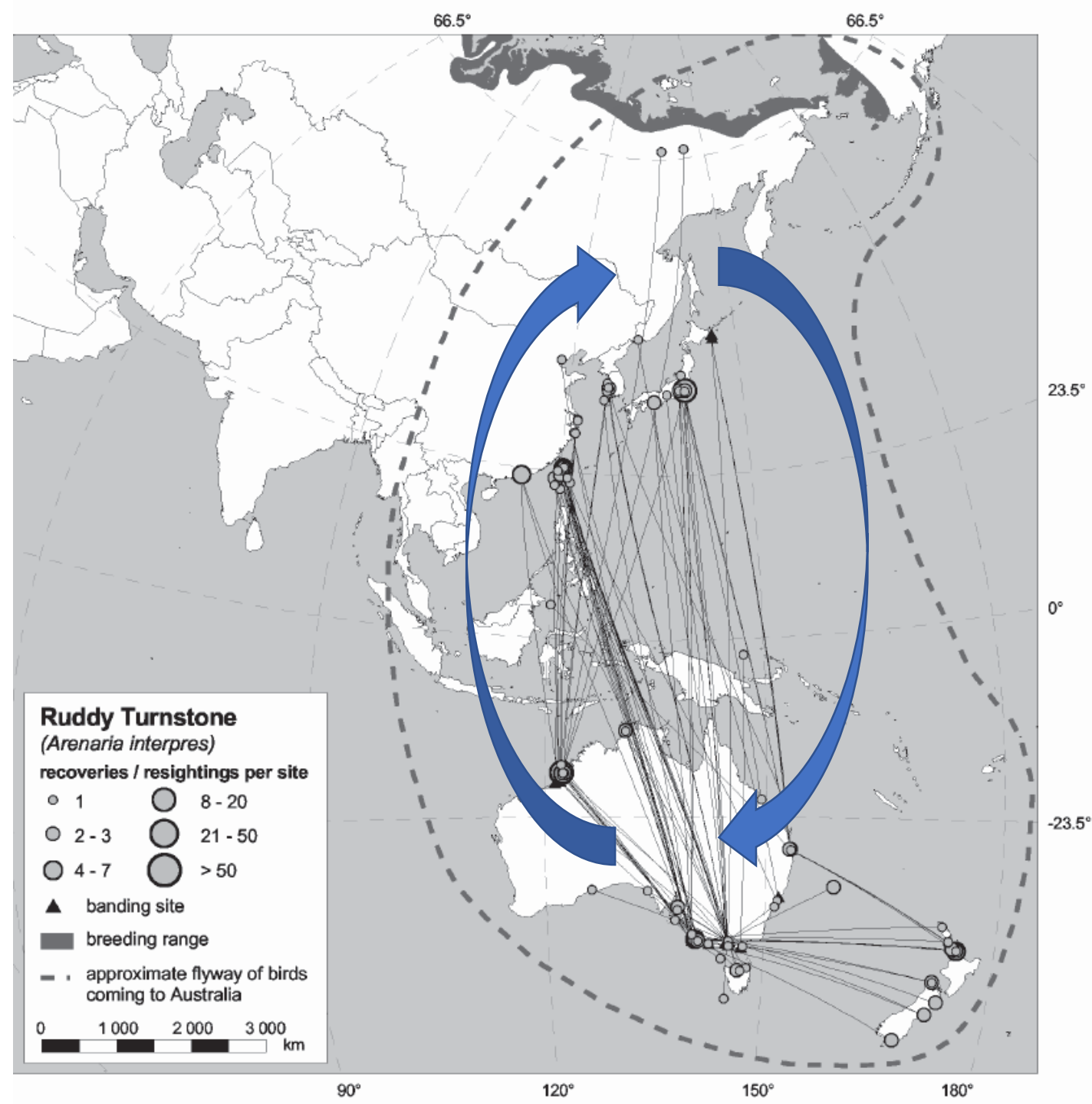


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## Ruddy Turnstone

- Northward westerly
- Southward easterly
- Leap-frog Australia when on northward migration

Minton et al, 2006, Stilt 50:135-157







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- The next revolution

**1900 – banding**

Biometrics/ageing/movements

**1990 – plain leg flags**

Stopover sites

**2003 – engraved flags**

Individually known birds/duration of stopover/  
age at migration





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Curlew Sandpiper (H0)

Western treatment Plant,  
Werribee







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## Curlew Sandpiper (H0)

- Banded when aged 1 on 28 Dec '13
- Seen 7 Jul '14 (first overwintering here as too young to migrate)
- 24 Nov '14 (photo)
- 24 Oct '15 (after first migration)
- 17 Feb '18 (after three migrations)





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## Bar-tailed Godwit



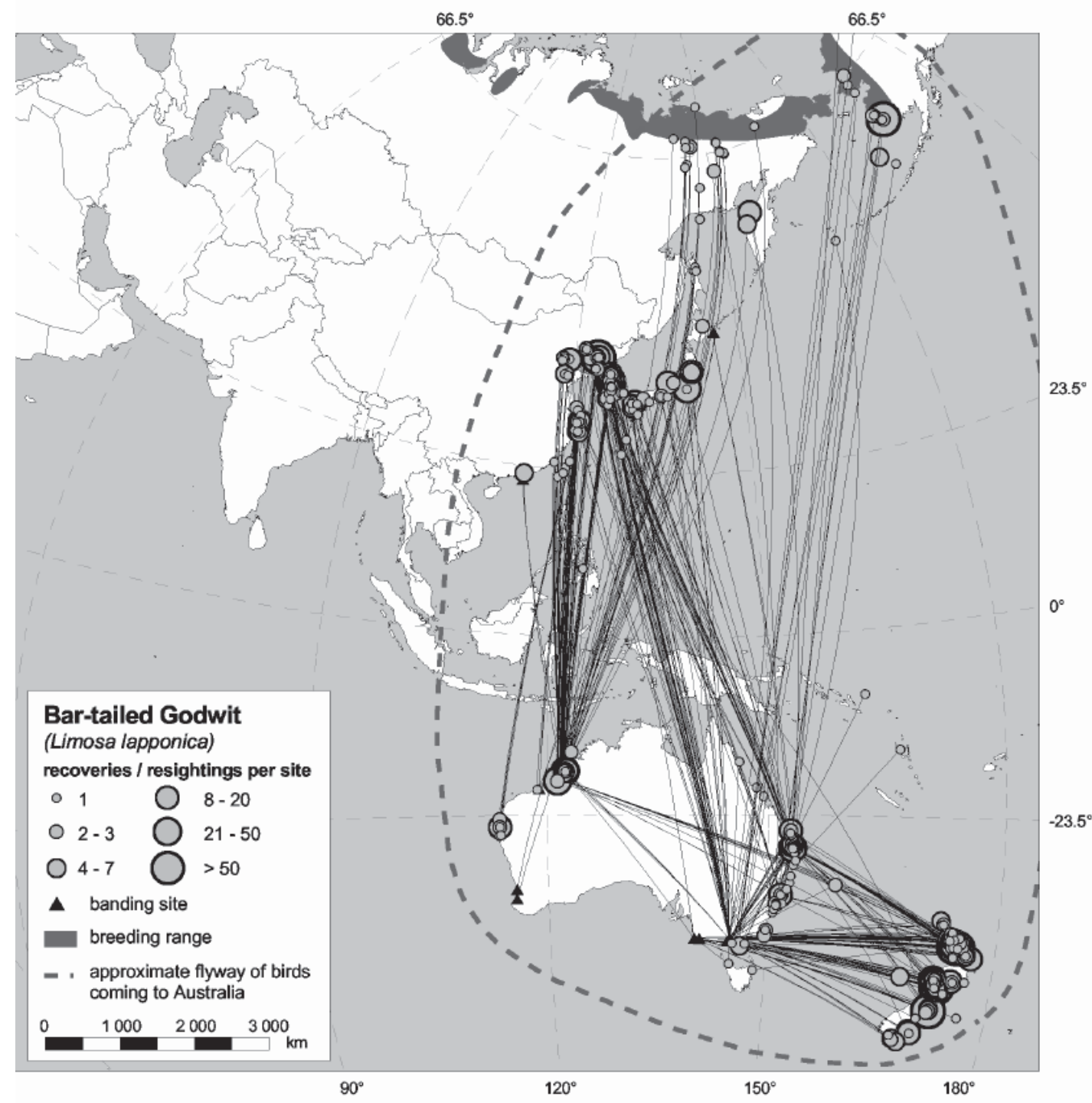




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## Bar-tailed Godwit

Minton et al, 2006, Stilt 50:135-157





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## Bar-tailed Godwit 'T0'

Andreas Kim







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## Bar-tailed Godwit

‘T0’ sightings

Stopover  
duration:  
20-45 days

Banded:  
Corner Inlet aged 1, 2009

Observed:  
Aphae Island  
April 2011, 12, 13, 14, 15, 16, 17, 18, 19?

New Zealand  
November 2013

Andreas Kim, Dr Kim Seok-  
Yee/Tony Habraken





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## Bar-tailed Godwit

‘T0’ sightings

8,500km –  
finds it  
everytime







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Bar-tailed  
Godwit

‘T0’ sightings

Mudflats  
galore







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Igor Dorogoy





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Need:

- site-faithful birds
- Need to retrieve the device
- Not accurate locations

**1900 – banding**

Biometrics/ageing/movements

**1990 – leg flags**

Stopover sites

**2003 – engraved flags**

Individually known birds/duration of stopover/age at migration

**2009 – geolocators**

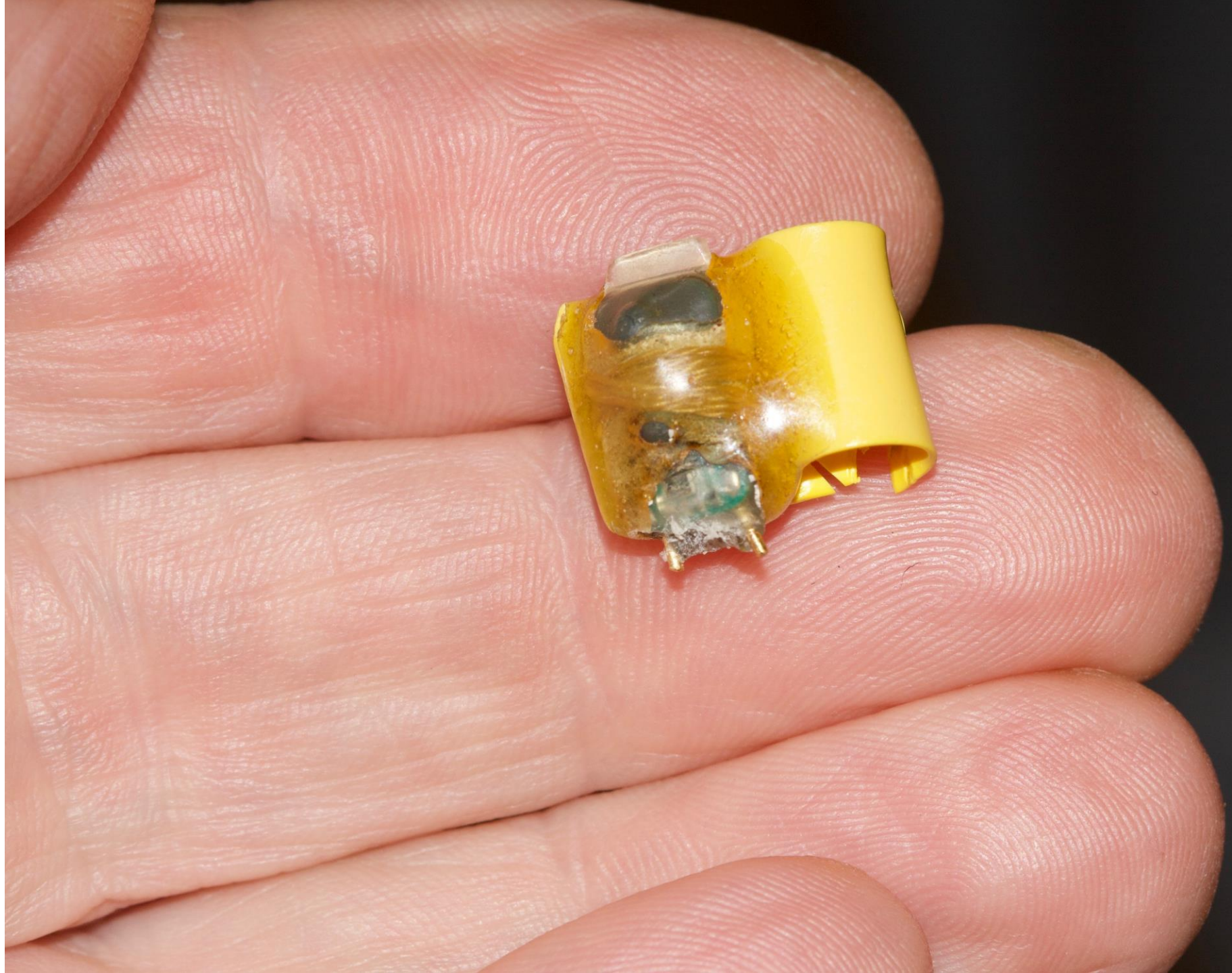
Complete journey/breeding success/migration speeds





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Geolocator  
fitted for a  
Ruddy  
Turnstone  
-tiny

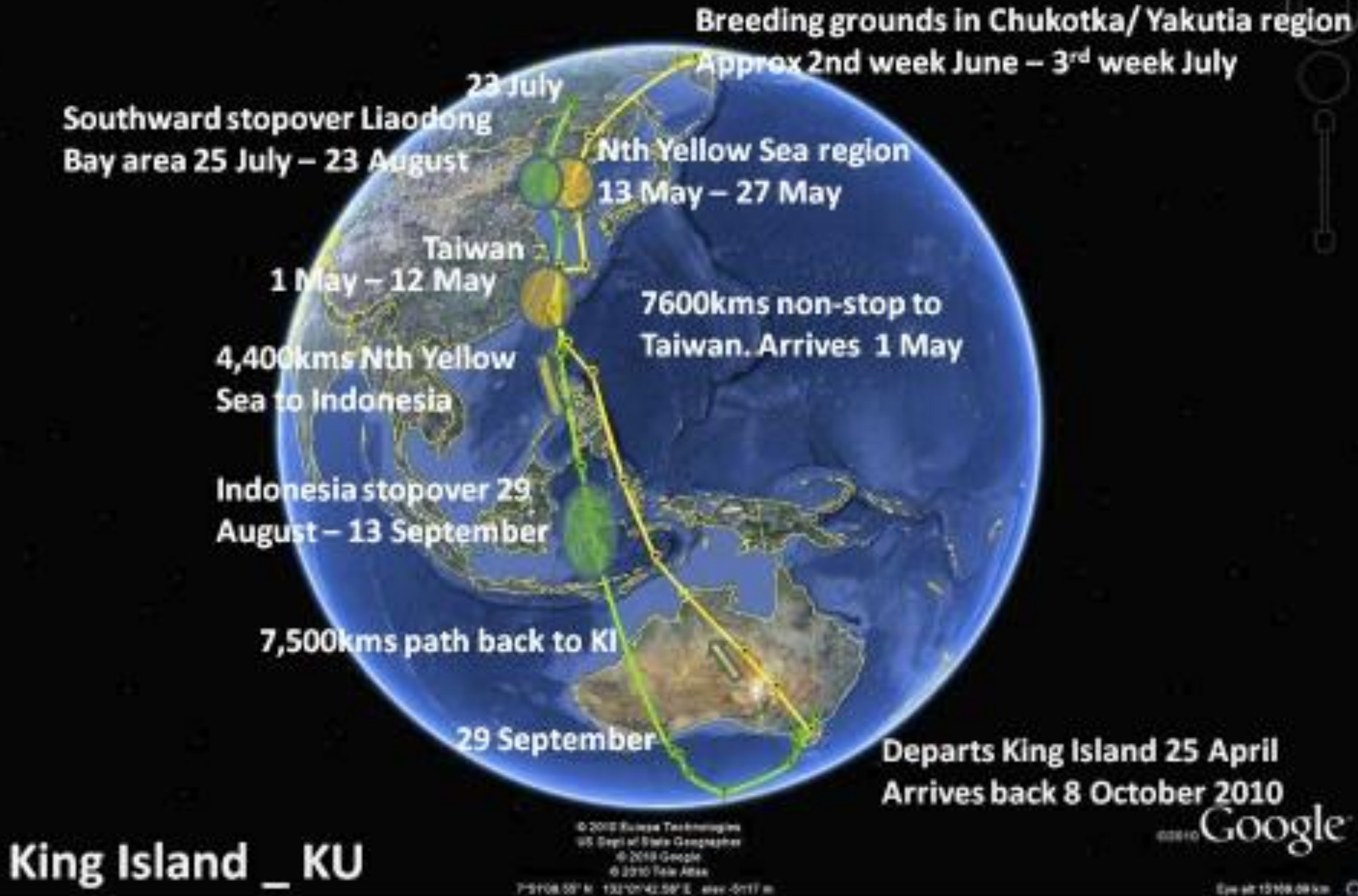






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Ruddy  
Turnstone





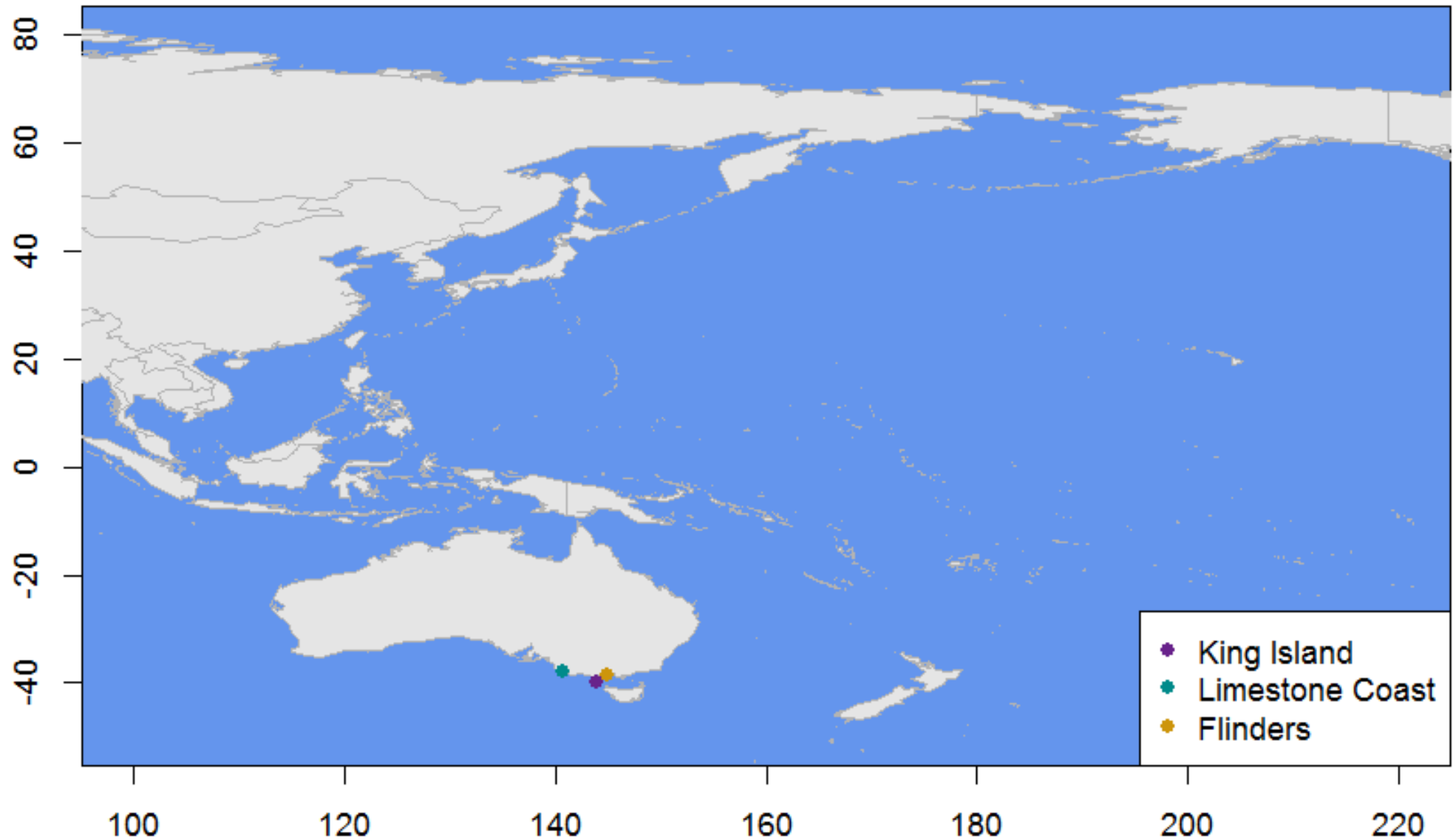


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## Ruddy Turnstone

- Geolocator tracks
- Confirm flag sightings
- Go to breeding sites

25 March



Meijuan Zhao

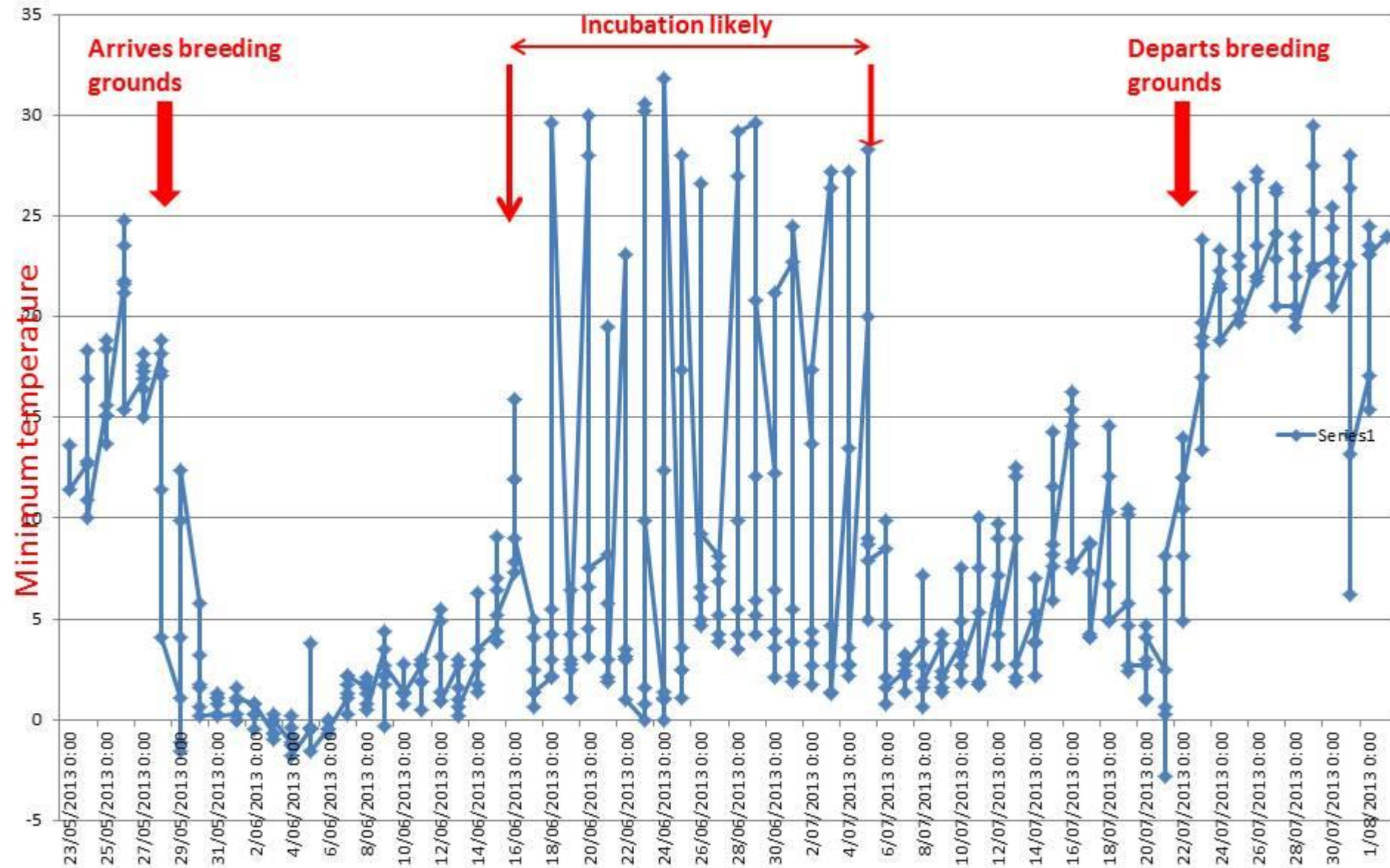




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## Ruddy Turnstone

- Temperature recorded
- Tells us the likelihood of incubation



Ken Gosbell





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## 1900 – banding

Biometrics/ageing/movements

## 1990 – leg flags

Stopover sites

## 2003 – engraved flags

Individually known birds/duration of stopover/age at migration

## 2009 – geolocators

Complete journey/breeding success/migration speeds

- expensive
- real-time
- very accurate

## 2014 – Satellite transmitters





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## Far Eastern Curlew

- Internationally threatened species
- Western Port

Andrew Browne







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## Far Eastern Curlew

- Very large bird  
>600gm
- Solar panel to  
run the  
transmitter

Andrew Browne







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## Far Eastern Curlew

Andrew Browne







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## Far Eastern Curlew

Andrew Browne







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## Far Eastern Curlew

Andrew Browne







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## Far Eastern Curlew

- Just see the solar panel and transmitter back pack

Andrew Browne







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## Far Eastern Curlew

- Feeding and roosting sites
- Western Port
- Near Koo Wee Rup



National Environmental Science Programme

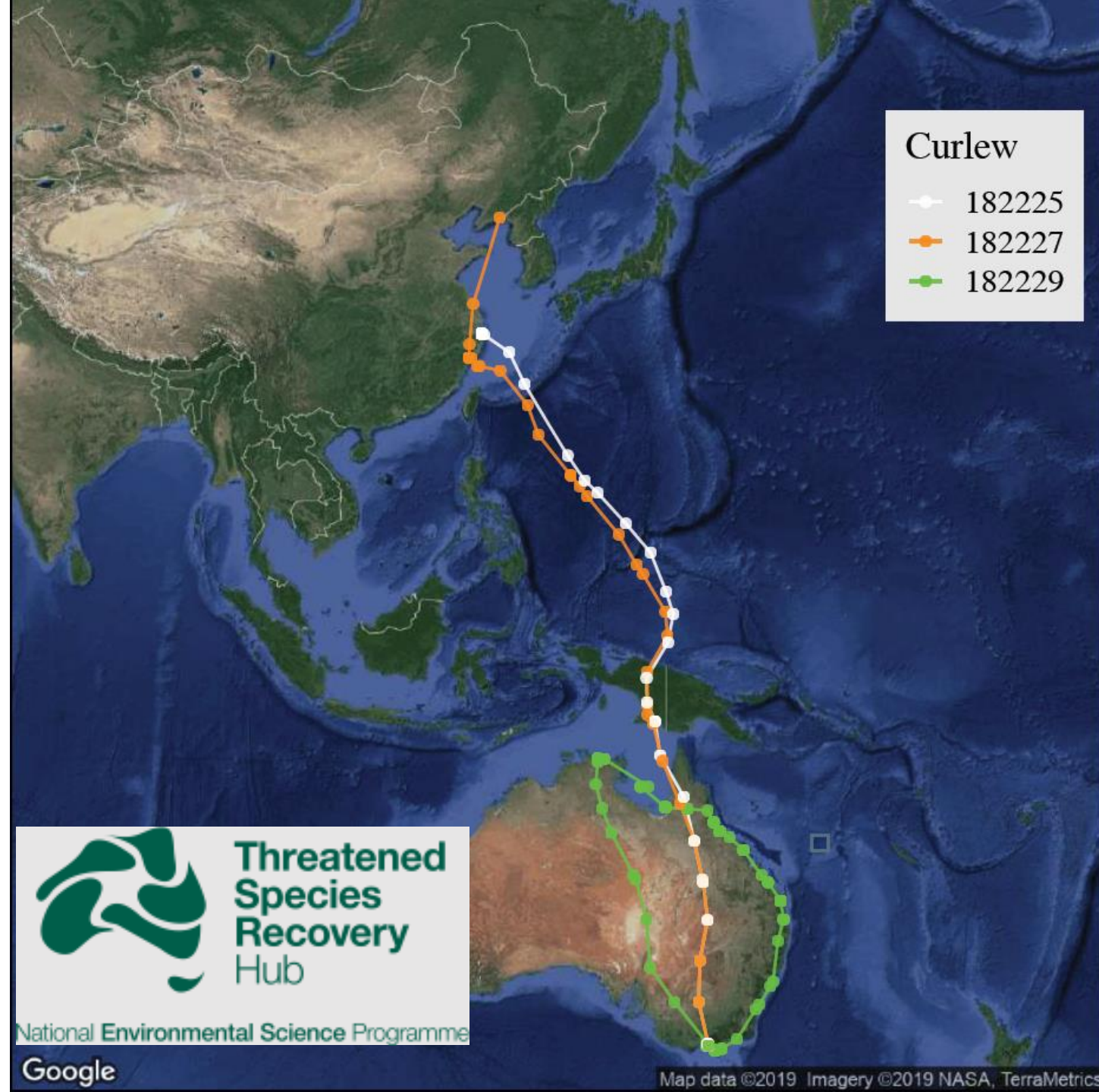




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## Far Eastern Curlew 'Koo', 'Wee' & 'Rup'

- Two left together for China
- One delayed (green 'RUP')







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## Far Eastern Curlew 'Koo'

- Refuelling  
near Zhoushan  
(South of Shanghai)



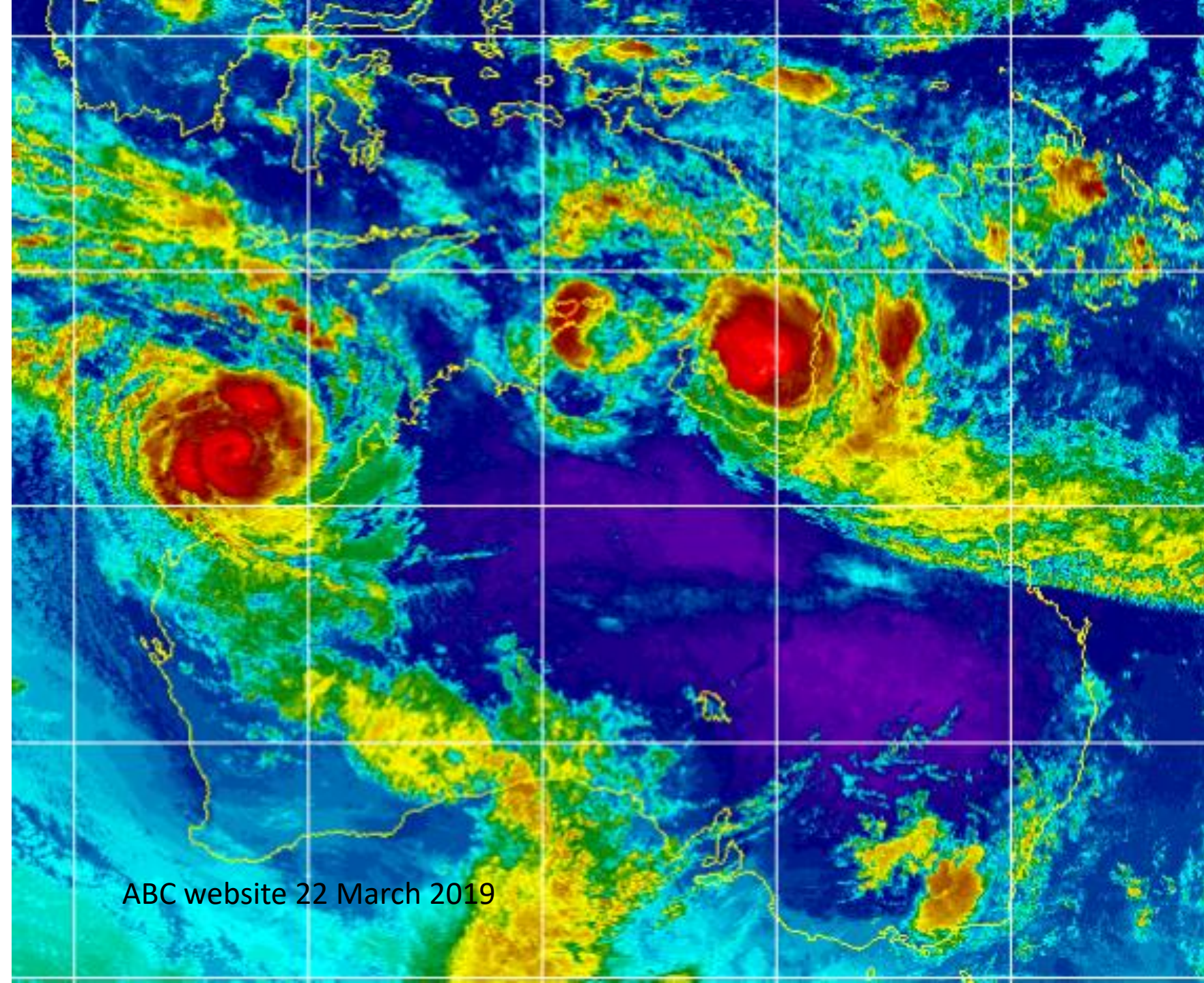




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## Far Eastern Curlew 'Rup'

- Battled its way below the cyclone to rest on the Queensland coast
- Tired, too late to migrate, returned to Western Port



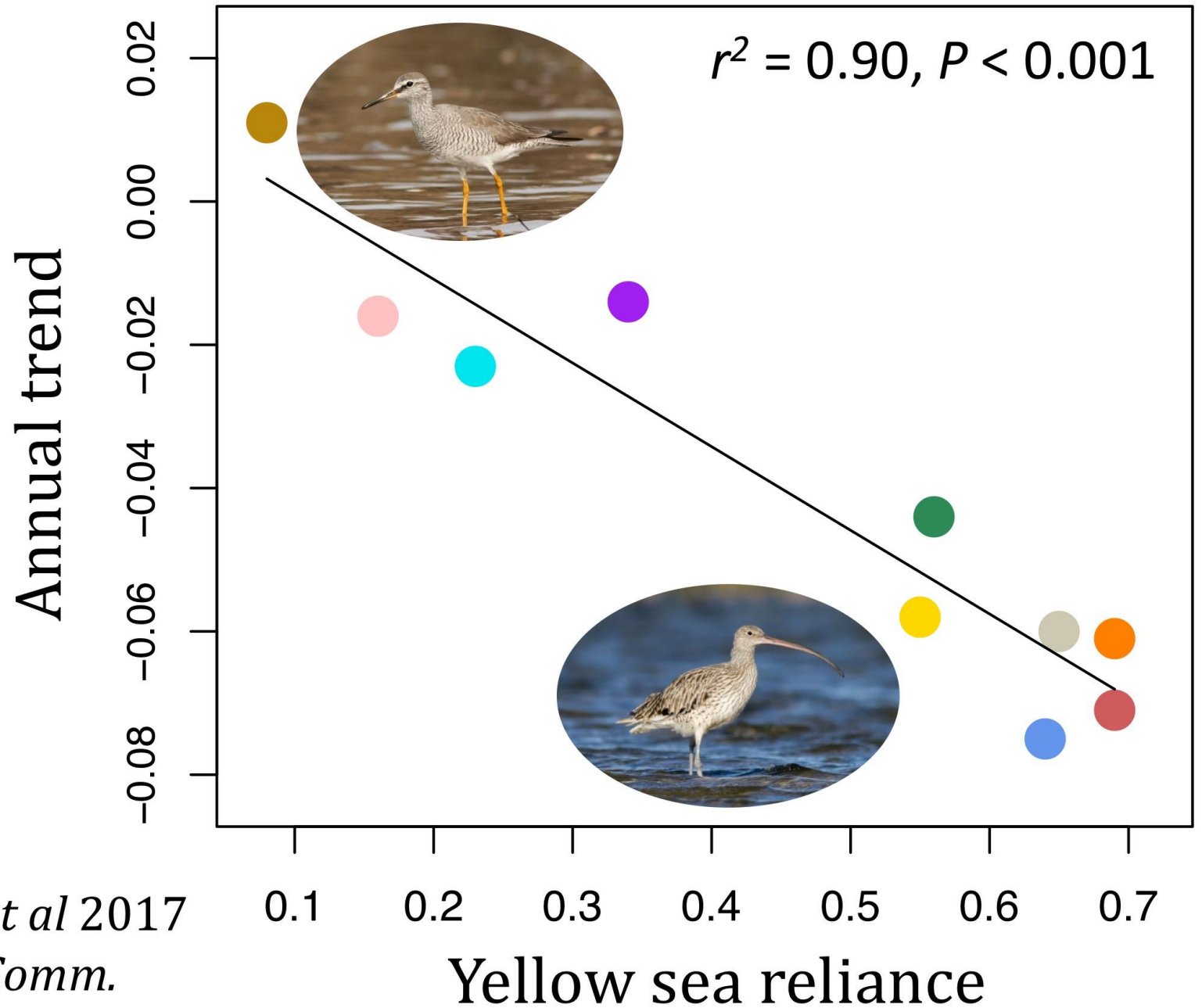
ABC website 22 March 2019





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Yellow Sea  
migrants decline  
more quickly



Studds *et al* 2017  
*Nature Comm.*

Richard Fuller





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Yellow Sea  
migrants  
decline  
more  
quickly

Population  
counts

Reliance on Yellow Sea



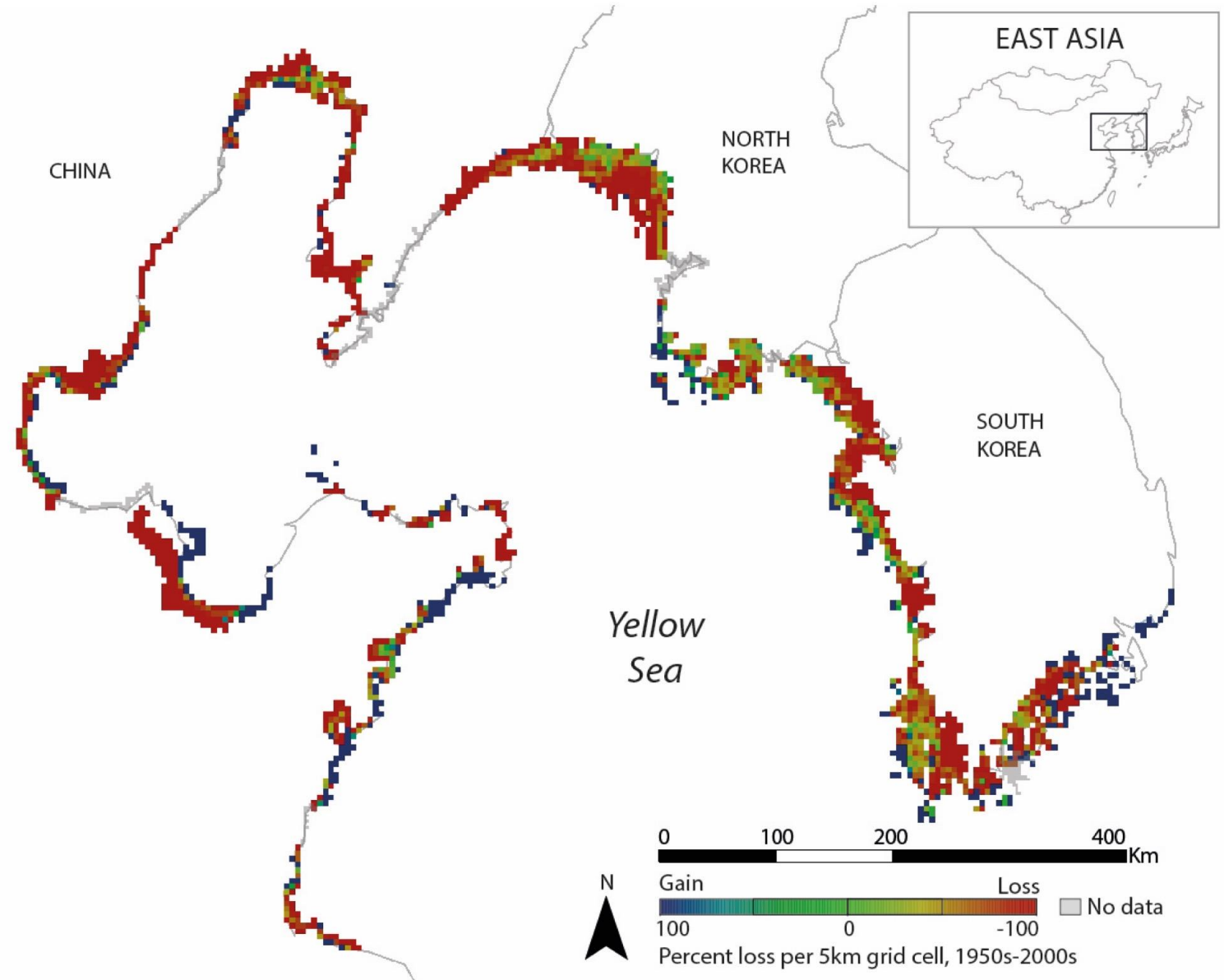




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## Coastal Collapse in East Asia

- Loss of feeding  
areas in tidal  
flats







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## Arctic breeders

- Face similar predators to our resident beach nesting birds

Pavel Tomkovich







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Phil Battley





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Thank you for the opportunity to talk  
about these amazing birds

- Please get in touch if you or someone you know is interested in joining our group (pick up a card from me)

[www.vwsg.org.au](http://www.vwsg.org.au)





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# A Big Thanks To

- Clive Minton for his drive and resilience
- The thousands of VWSG day volunteers and backroom servants
- Birders sending in sightings
- ABBBS for approvals and recovery records
- State departments and associated ethics committees for permits to catch and handle the birds
- Parks Victoria and PINP for logistical support and access approval
- Private landholders for access permission
- Coastcare, Wettenhall Foundation, corporations, university partners and private supporters for funding