

The wanderings of leervis *Lichia amia* (Carangidae), an estuary-dependent piscivorous predator

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3rd ICFT 13-17 July 2015



save our seas
FOUNDATION



RHODES UNIVERSITY
Where leaders learn



Background



- Sought-after estuarine-dependent carangid
- Important multi-sector fishery species
- **STOCK COLLAPSED: 14% SB/R** (Smith 2008)
- Increased fishing pressure on estuaries
- Led to public concern over leervis
- Current management regulations

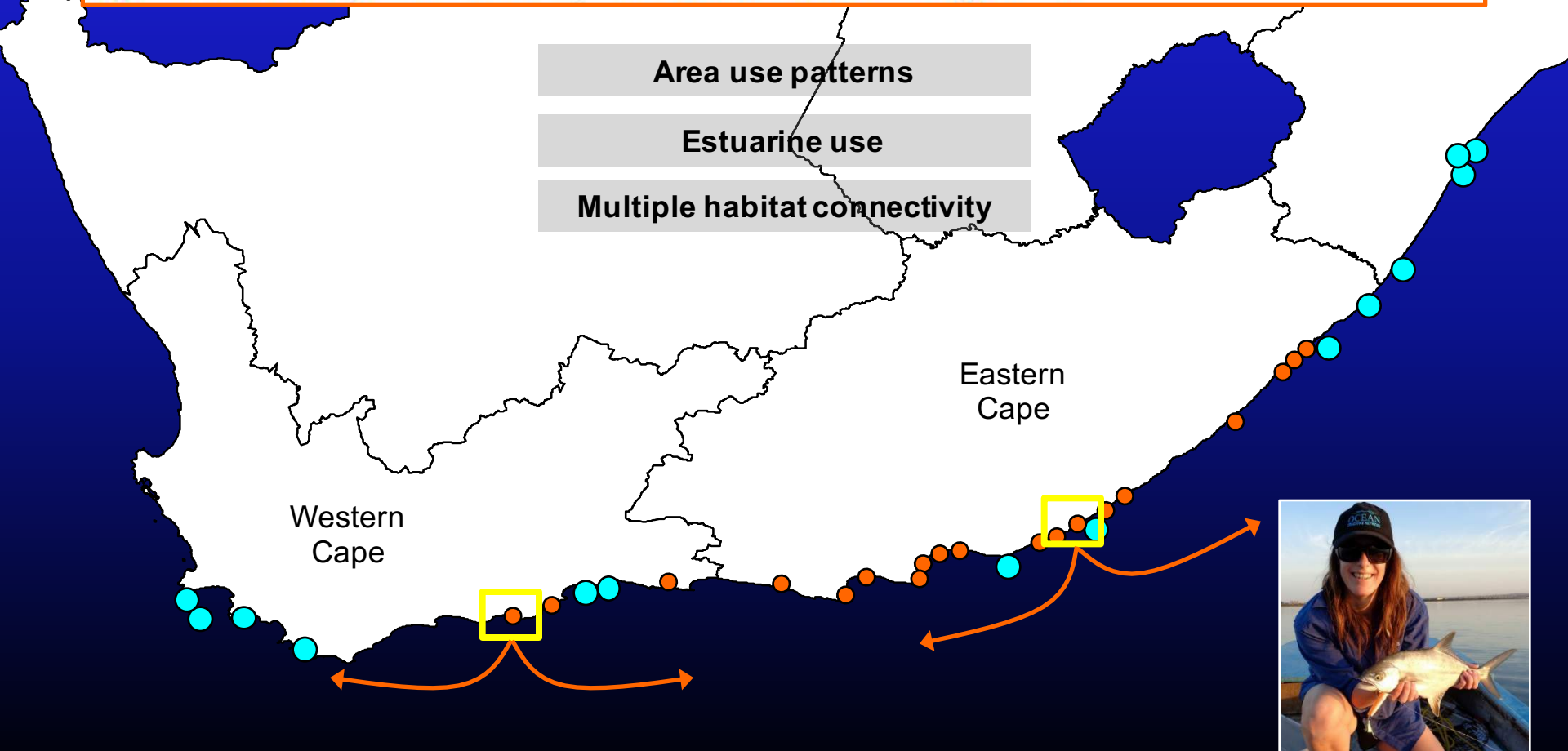


Aims and objectives

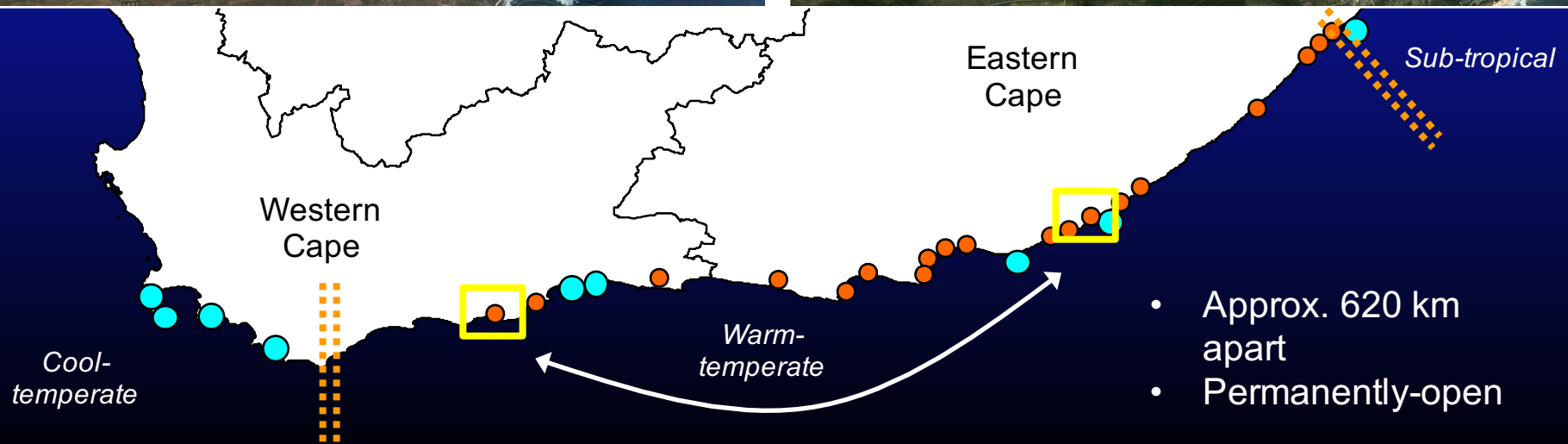
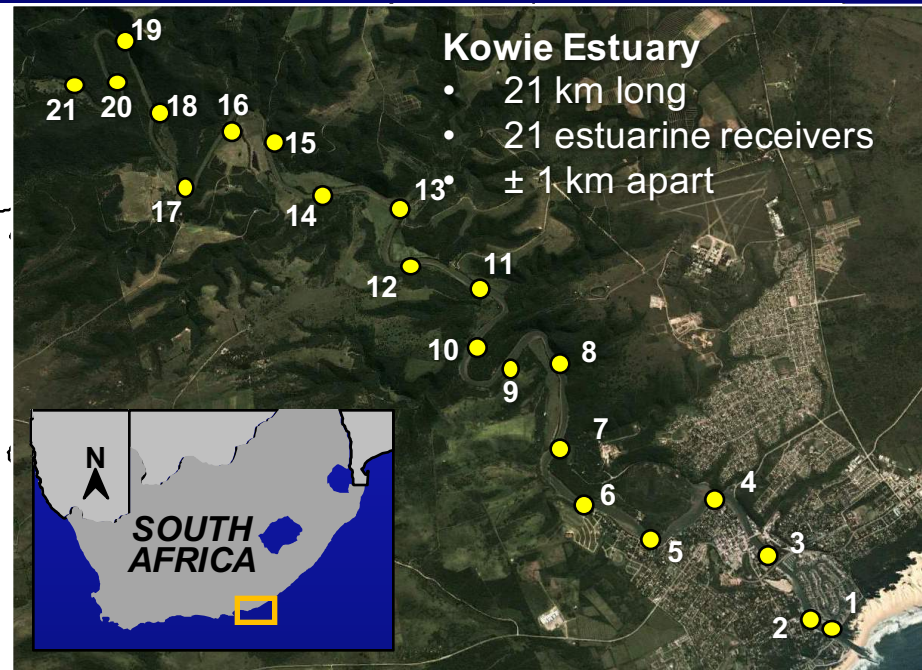
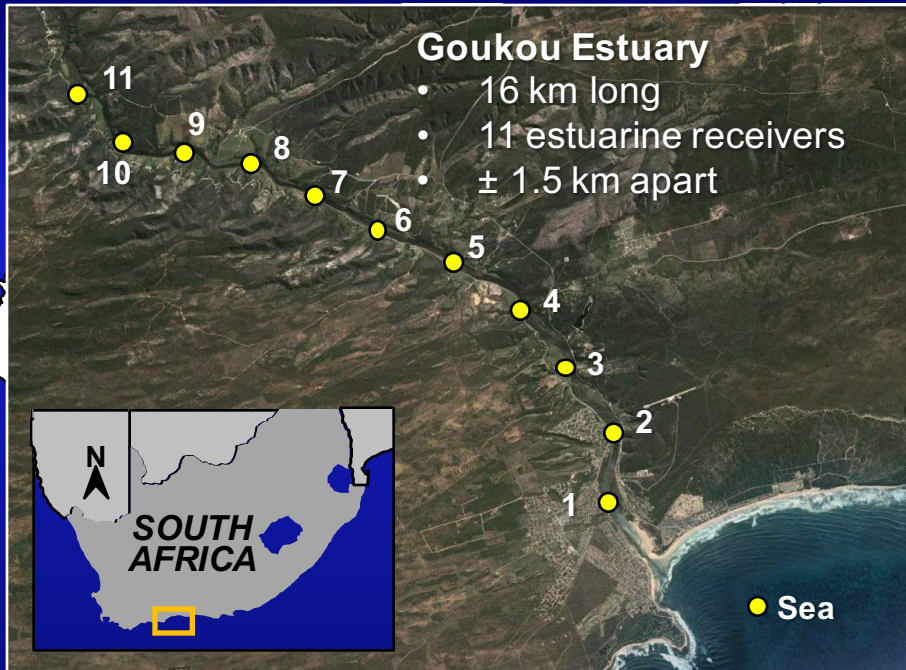


RESEARCH REQUIREMENTS

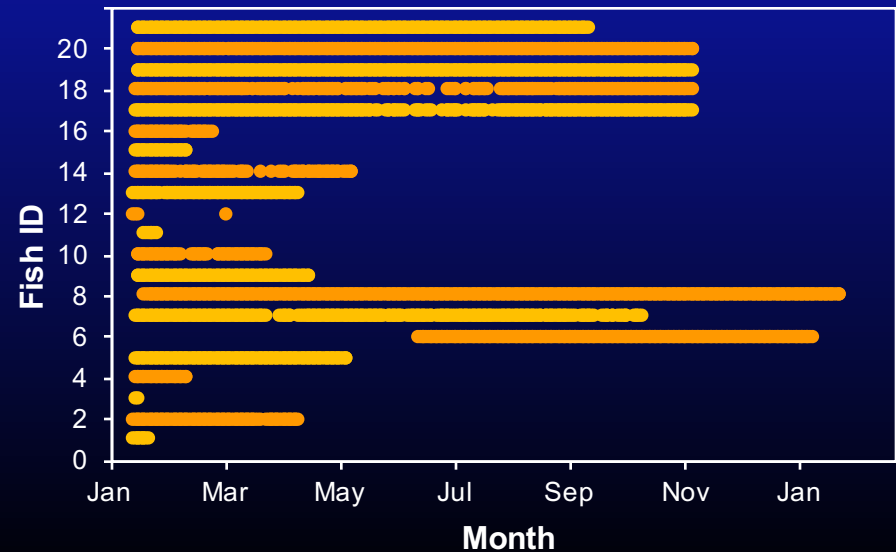
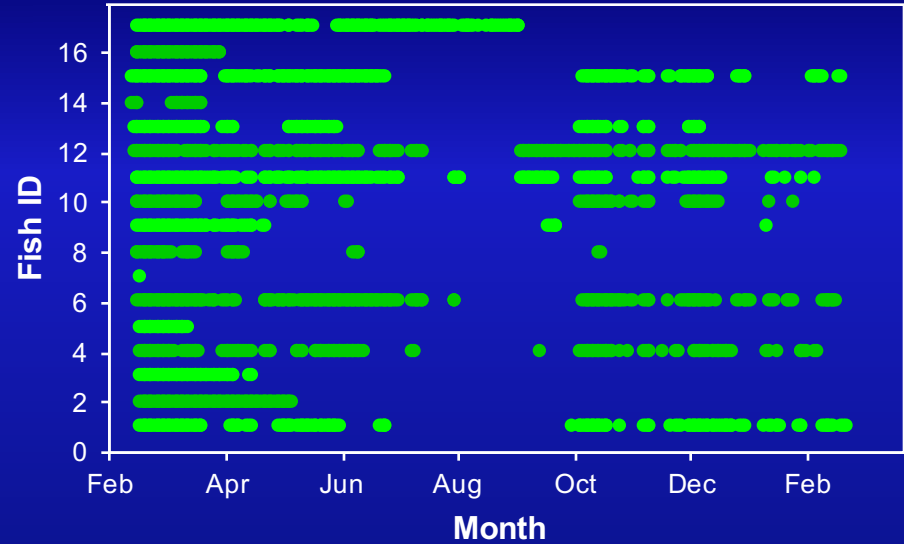
Once appropriate management actions have been implemented to enable stock rebuilding to take place, careful monitoring is required to evaluate management effectiveness. Further egg and larval studies should be conducted to identify spawning grounds. Juvenile and adult estuarine use should be quantified and estuaries of high conservation importance for this species should be identified and protected



Study site



Estuarine use



Estuarine use



Goukou Estuary

N = 17 juveniles

Mean length: 372 mm FL
(233 – 608 mm FL)

Monitoring period: 1 year

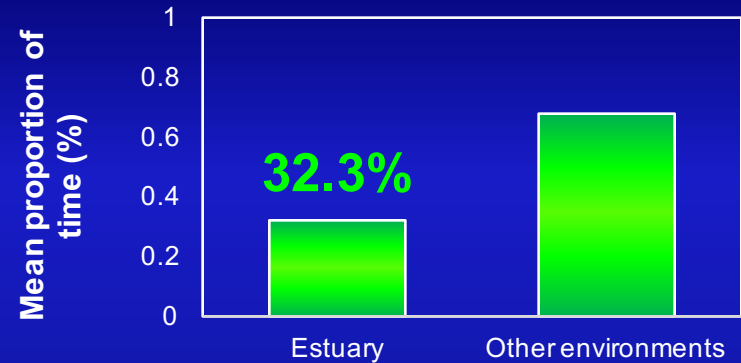


Kowie Estuary

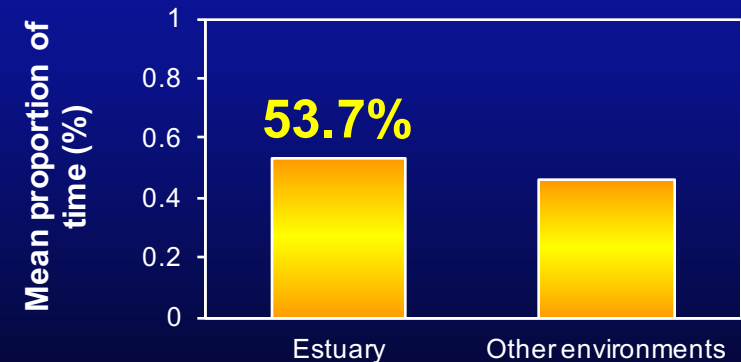
N = 21 juveniles

Mean length: 367 mm FL
(303 – 464 mm FL)

Monitoring period: 1 year



- **Mean:** 32.3% in estuary (0.2 – 100%)
- **ONE FISH:** more than 50% time in estuary



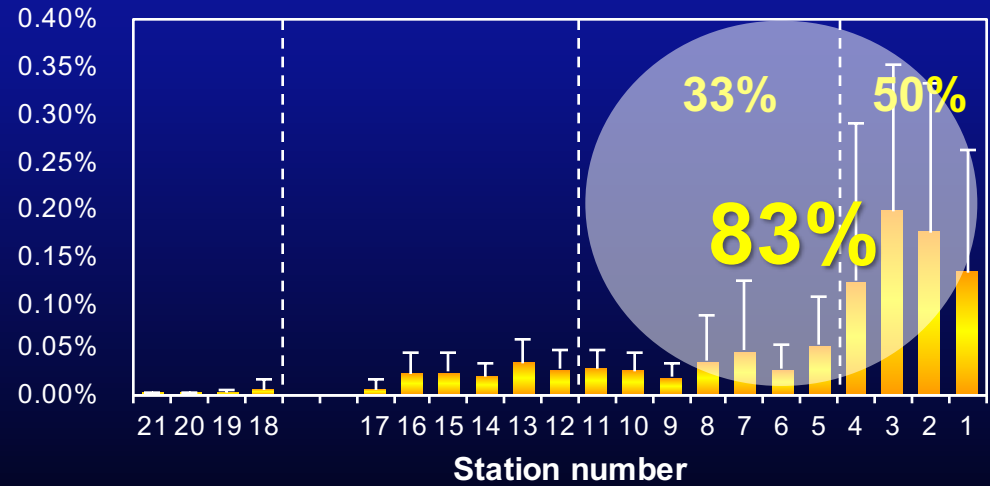
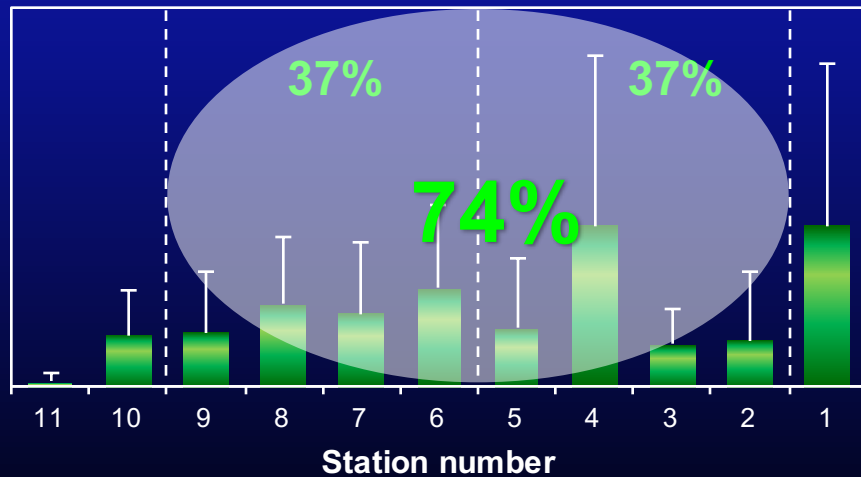
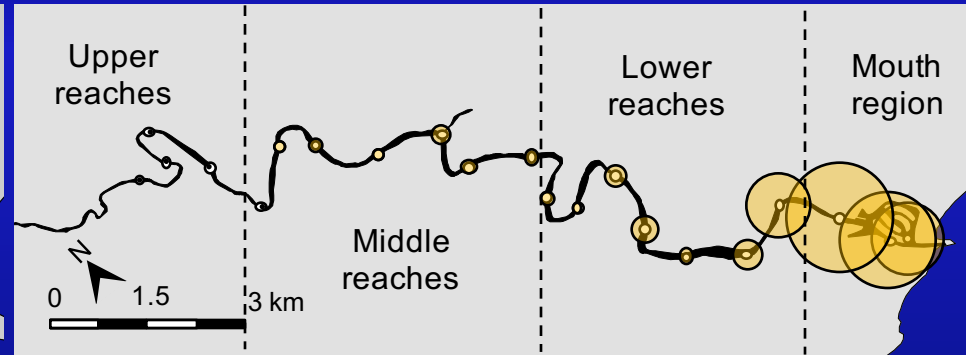
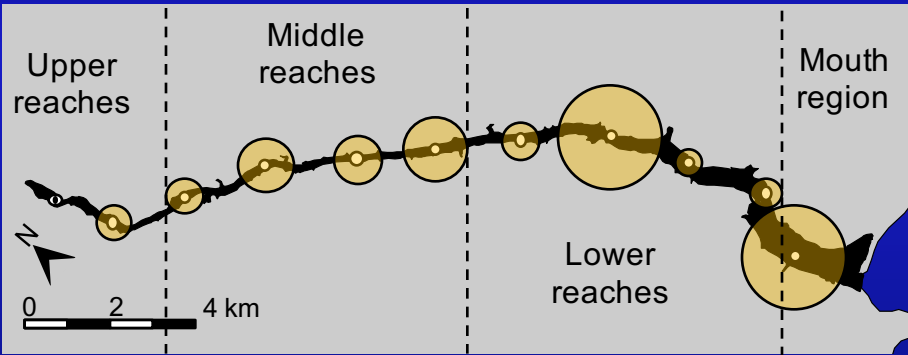
- **Mean:** 53.7% in estuary (0.2 – 100%)
- **10 FISH:** more than 50% time in estuary

Area use patterns



Goukou Estuary

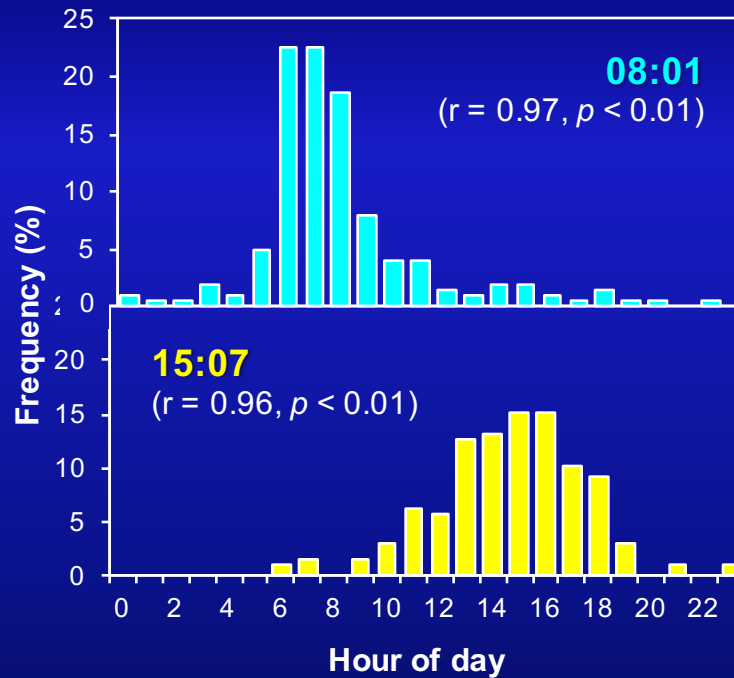
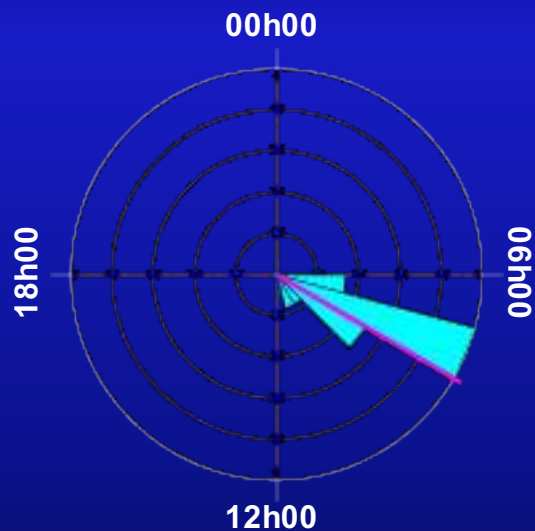
Kowie Estuary



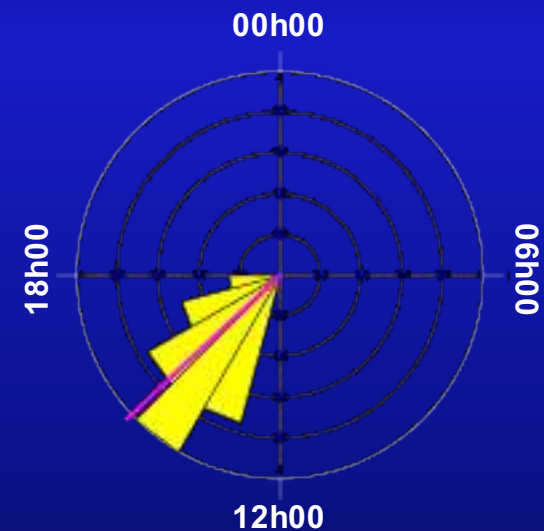
Marine excursions - Goukou



Departures



Arrivals

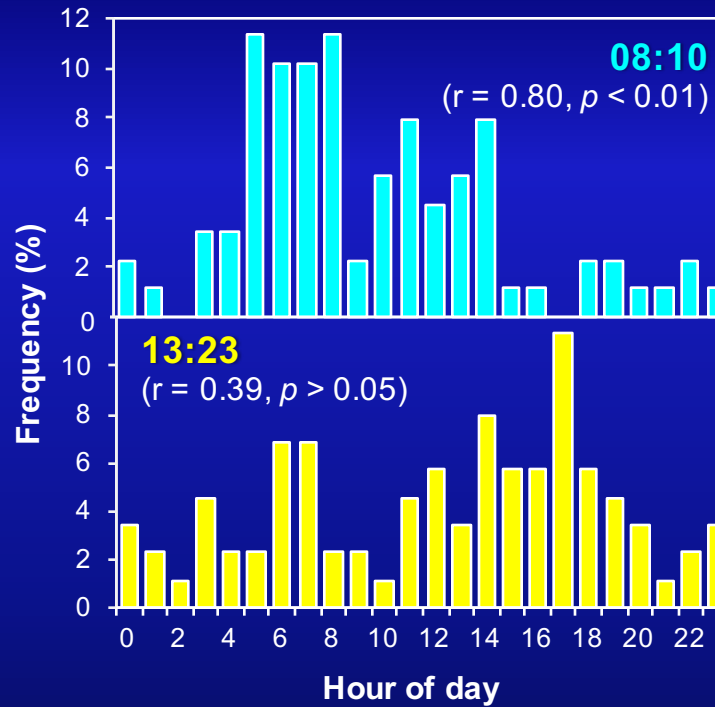
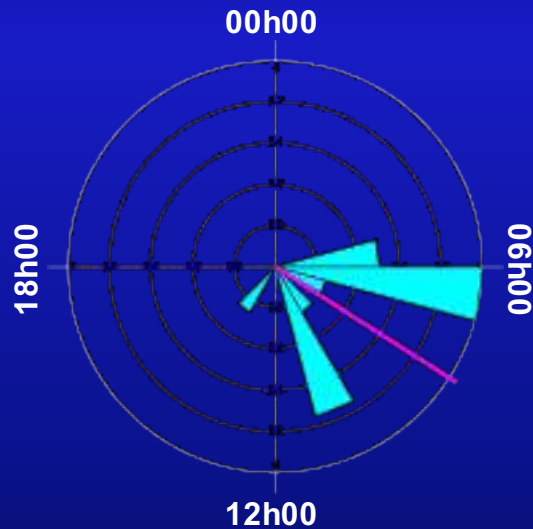


- $n = 13$ (77%) undertook marine excursions
- Mean number: 16 (1 – 39 excursions)
- Mean duration: 10 days (1 – 130 days)
- Smallest fish (< 300 mm FL) → **resident**

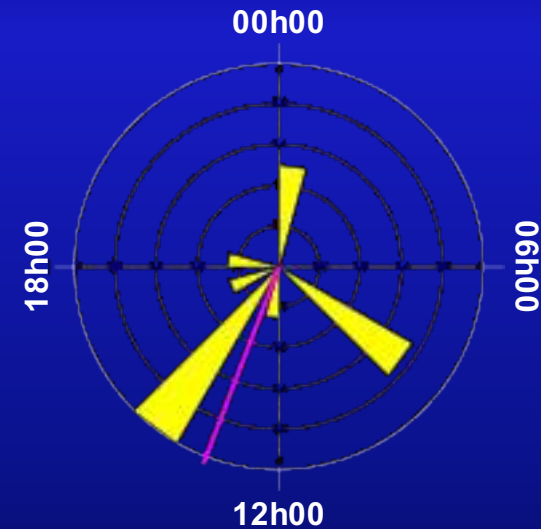
Marine excursions - Kowie



Departures



Arrivals

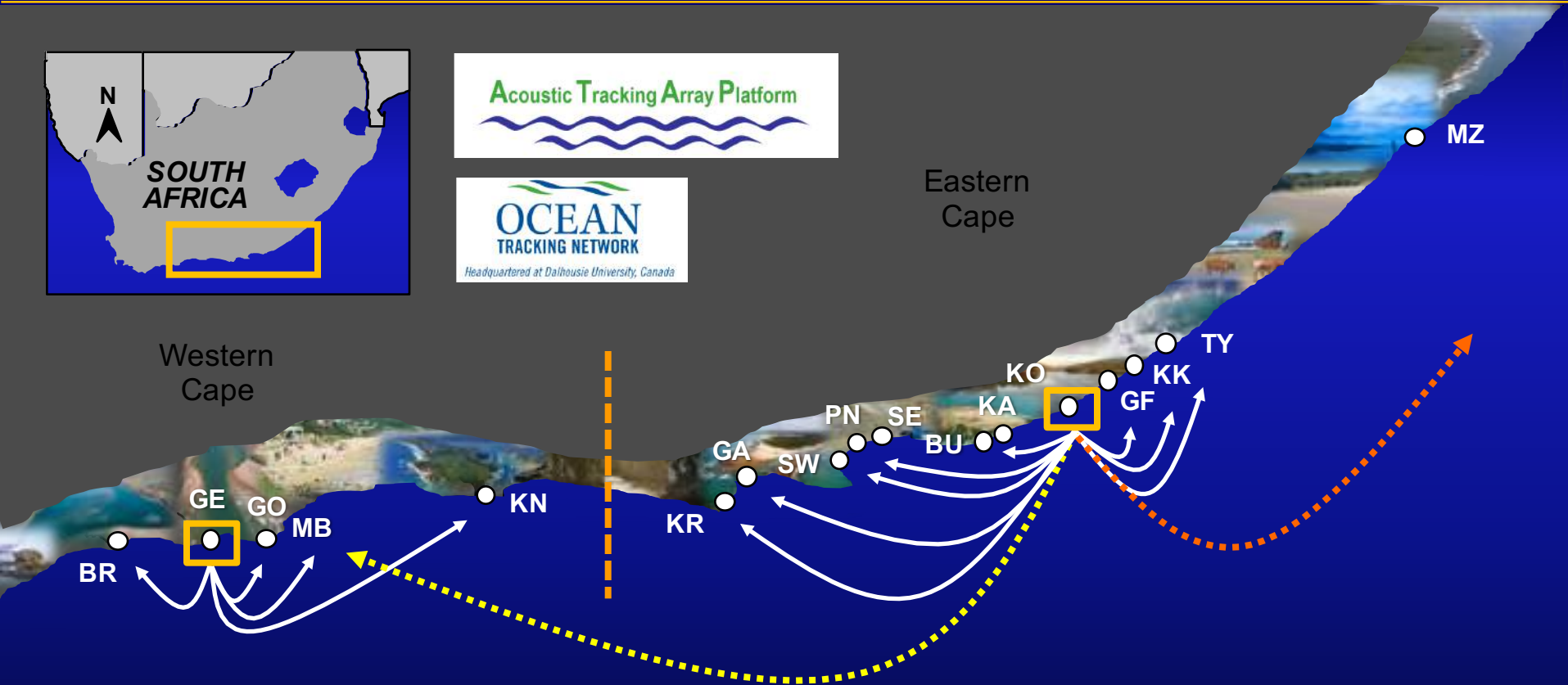


- $n = 12$ (57%) undertook marine excursions
- Mean number: 7 (1 – 22 excursions)
- Mean duration: 2 days (1 – 11 days)

Estuarine connectivity



Estuarine connectivity



Goukou juveniles:

- n = 5 (29.4%) displayed connectivity
- All within Western Cape
- 61 km west – 197 km east

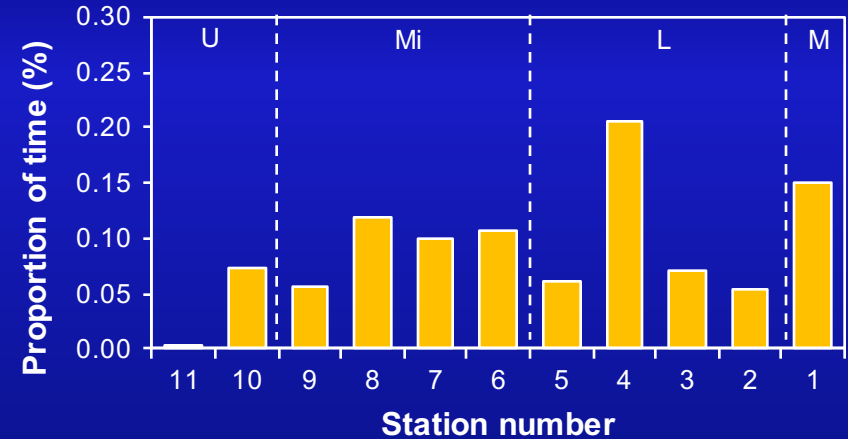
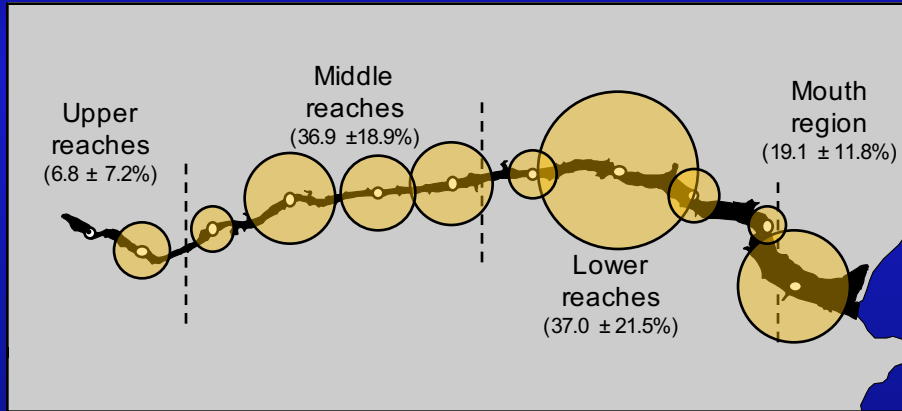
Kowie juveniles:

- n = 13 (61.9%) displayed connectivity
- All but **ONE** within Eastern Cape
- One to KwaZulu-Natal
- 521 km west – 586 km north-east

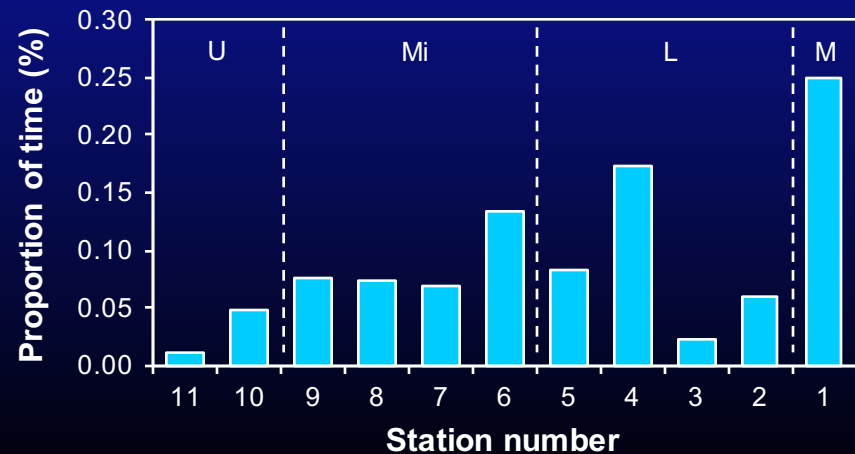
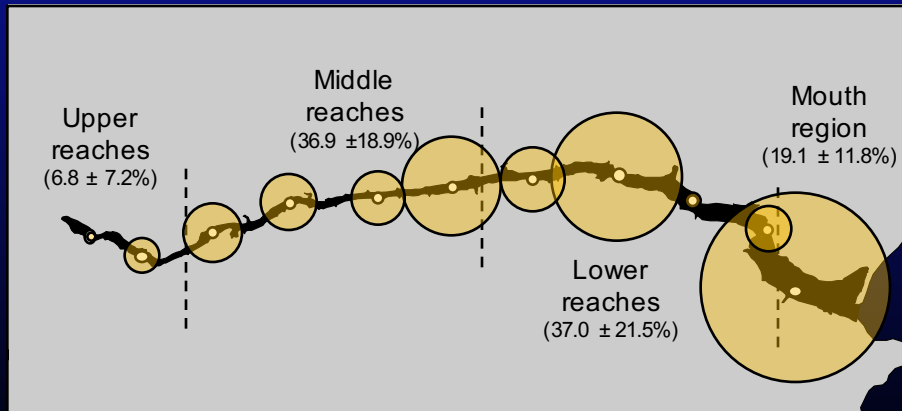
Seasonal changes - Goukou



Summer: Jan – Mar; Oct – Dec



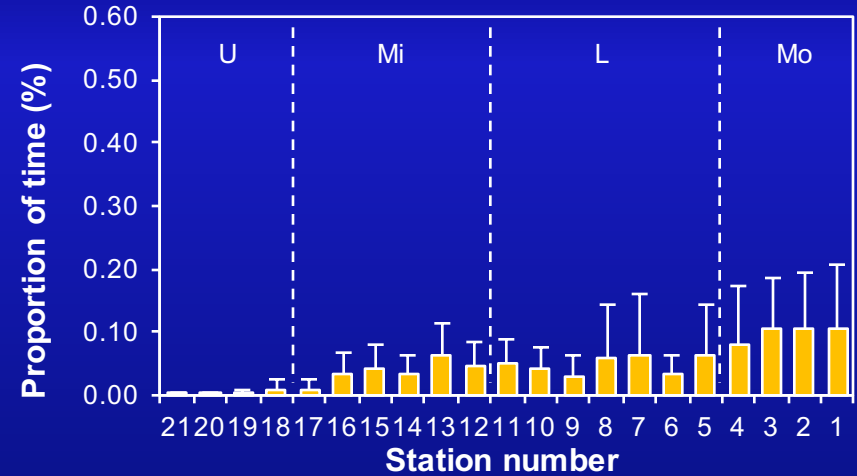
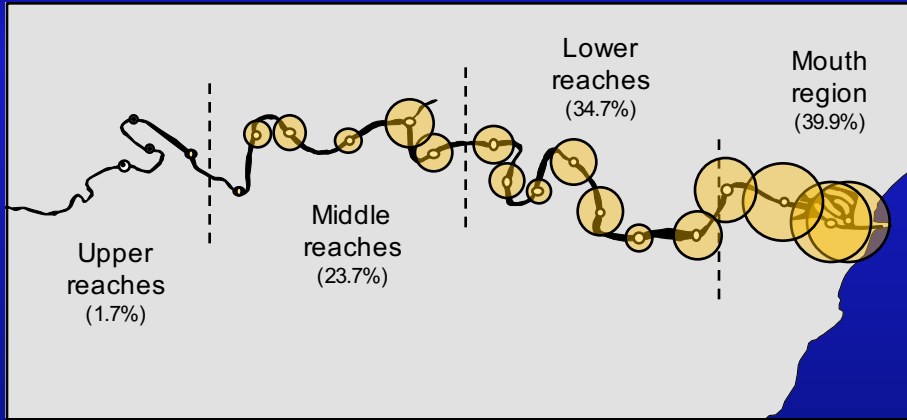
Winter: Apr – Sep



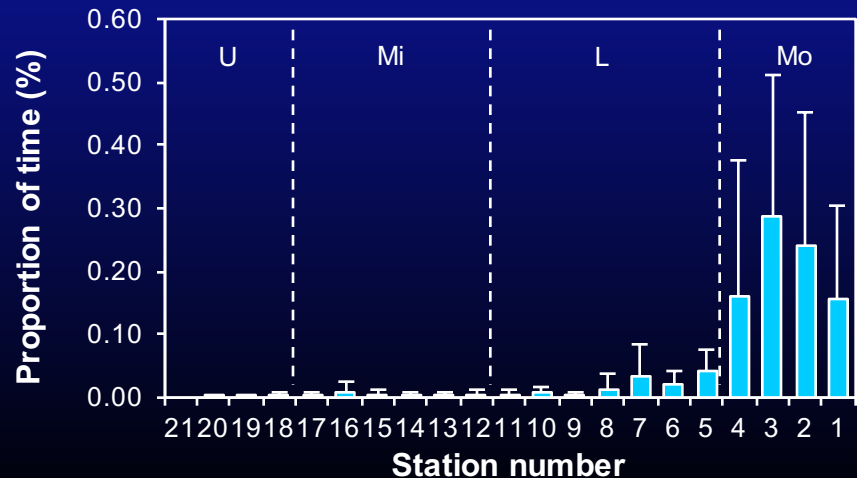
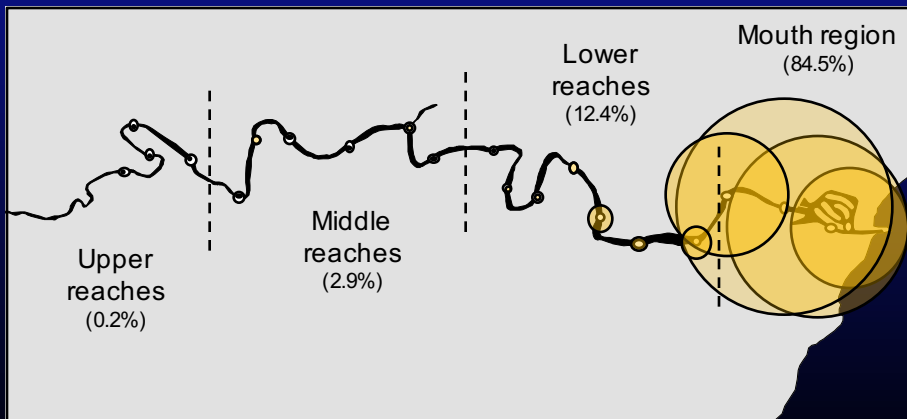
Seasonal changes - Kowie



Summer: Jan – Mar; Oct – Dec



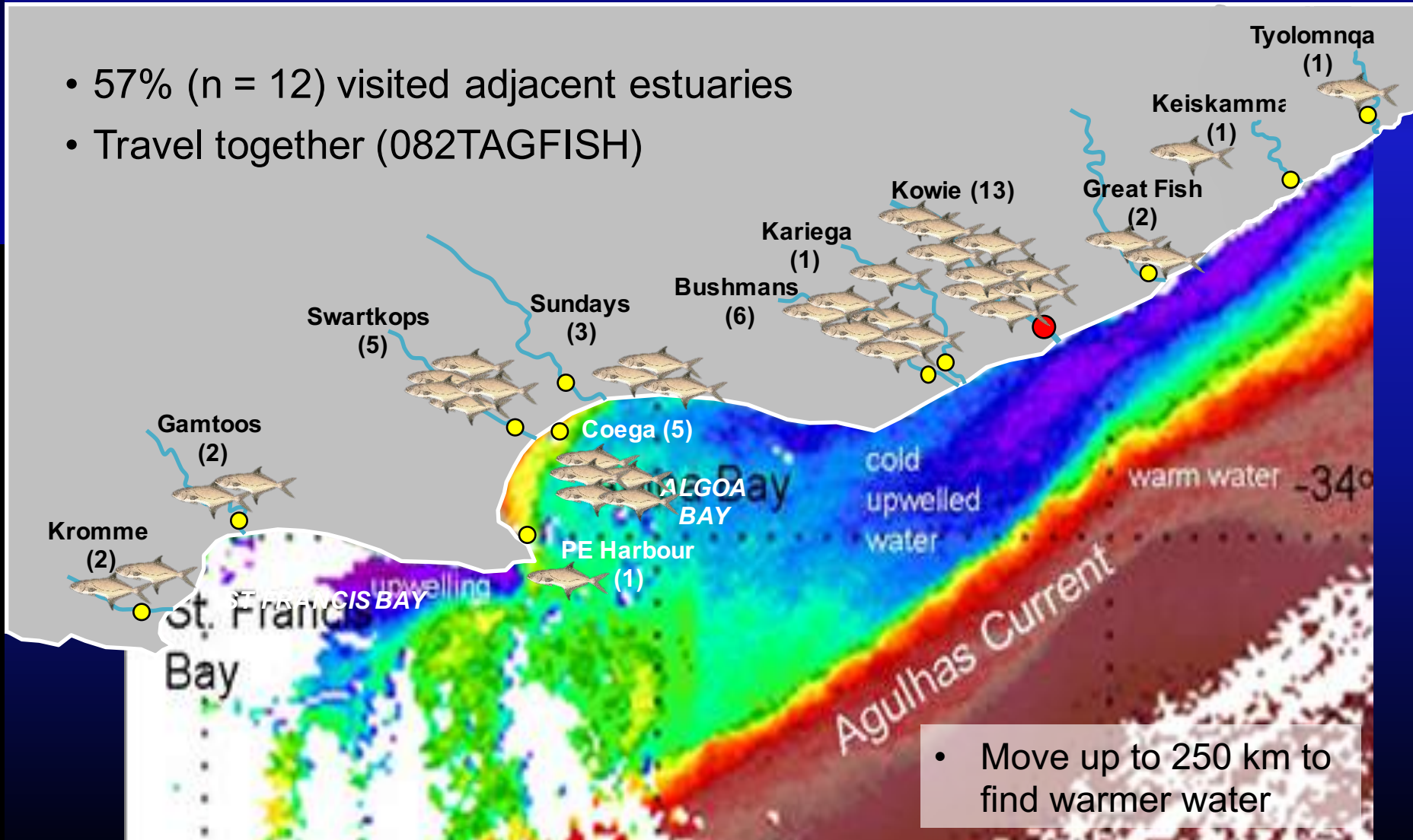
Winter: Apr – Sep



Habitat connectivity



- 57% (n = 12) visited adjacent estuaries
- Travel together (082TAGFISH)



Vulnerability - juveniles

33% recapture rate for Kowie-tagged individuals

EXAMPLE

23488: Kowie Estuary 15 Jan 13; 303 mm FL



TAGGED

**TAG
DEAD**

DART TAG

RECAPTURE

KILLED



300 days
No sea trips



Transmitter
Dart tag

15 Jan
2013

11 Nov
2013

14 Feb
2014

31 Mar
2014

03 May
2014

303 mm FL

520 mm FL

Vulnerability - juveniles

23488: Kowie Estuary 15 Jan 13;
303 mm FL (smallest)



Caught
FOUR times

Recaptured
THREE times

Tagged
TWICE

Killed
ONCE

NEVER bred once!
Not even legal size!

Take-home message



- Juvenile leervis are dependent on estuaries
- Utilise entire estuary to varying degrees
- Display multiple habitat connectivity
- Cool fish to catch



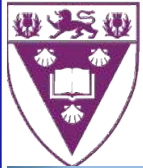
Acknowledgements



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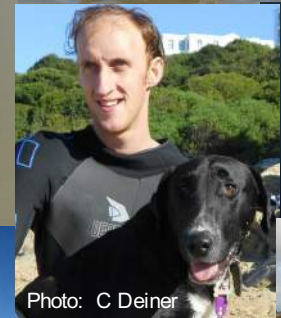


Photo: C Deiner



Photo: D Howell



Watch this space...
4th ICFT in 2017