



27th of January 2018



Cetacean Photo-identification Course

By Marina Costa & Maria Taylor



Grant Munro
Austral biodiversity

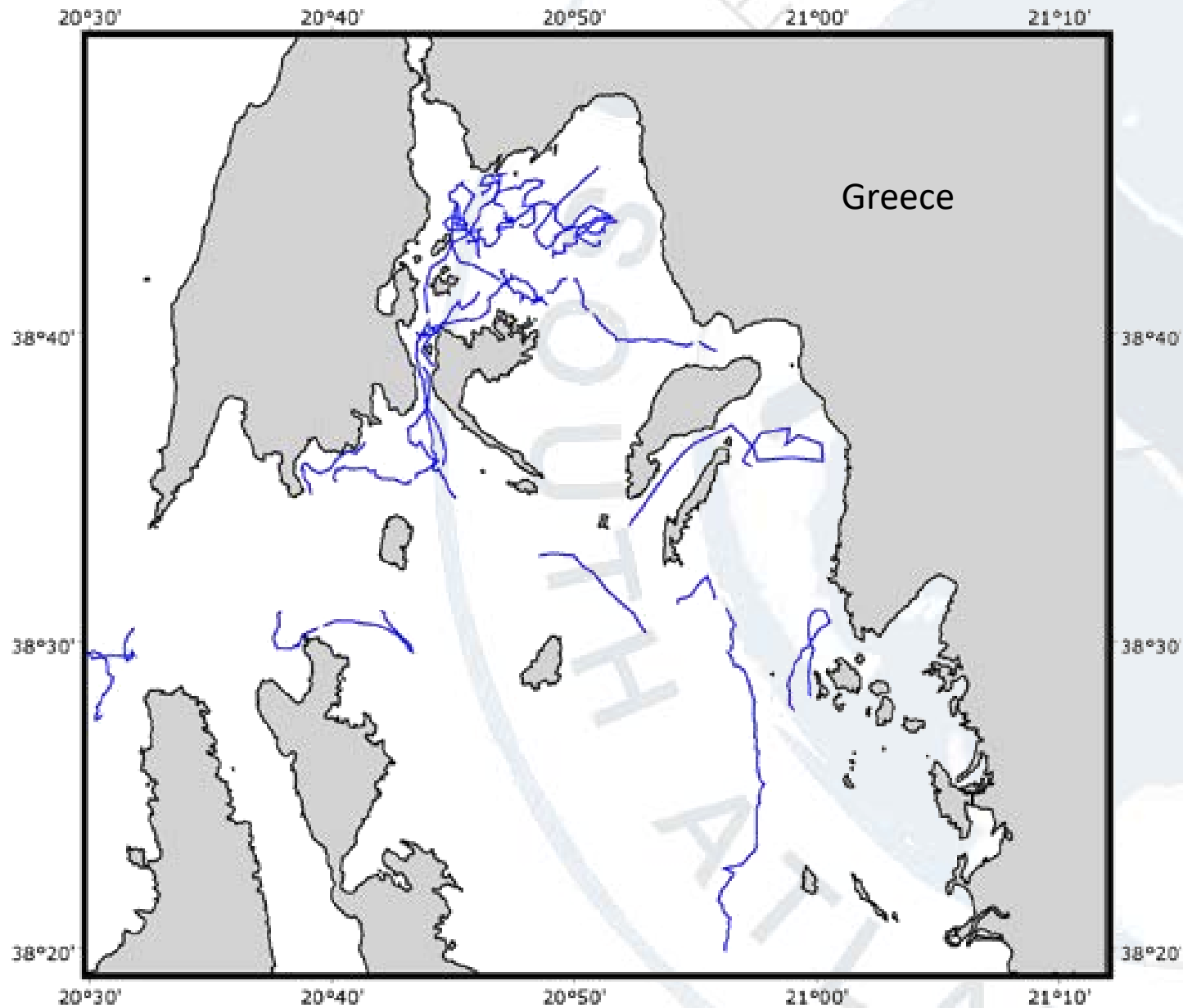
Course Programme

1	Marking and capturing: a gentle introduction	20 min
2	Code of conduct, status of conservation, and ethics in marine mammal science	20 min
3	Pre-matching procedure	15 min
4	Matching procedure and tricks	15 min
5	Exercise	30 min
Break (15 min)		
6	What we do with photo-id data	40 min
7	Exercise	10 min
8	Practice with DSLR camera: the best picture	50 min
9	How can I help?	10 min

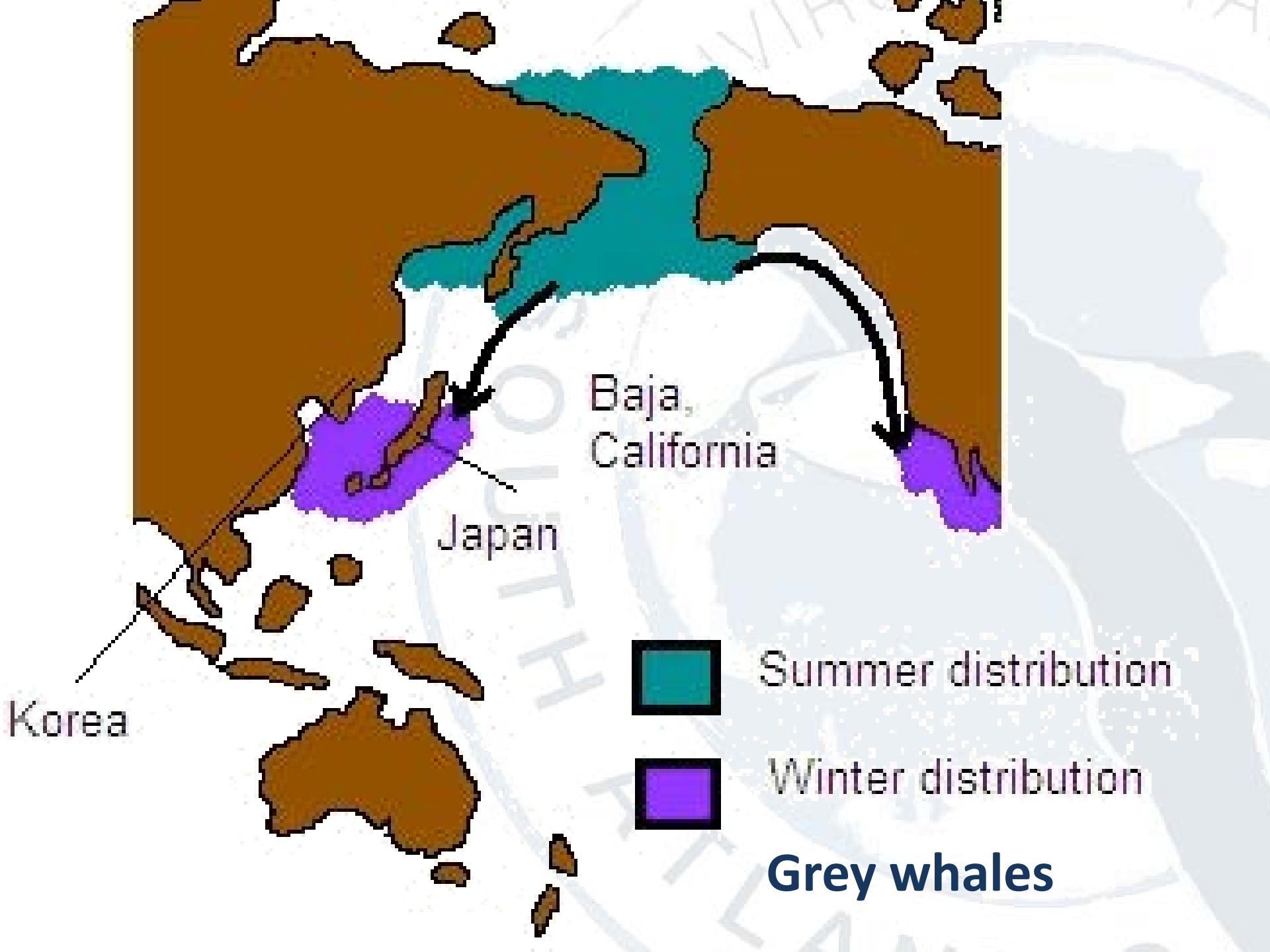
6. What we do with photo-id data



Animal movements

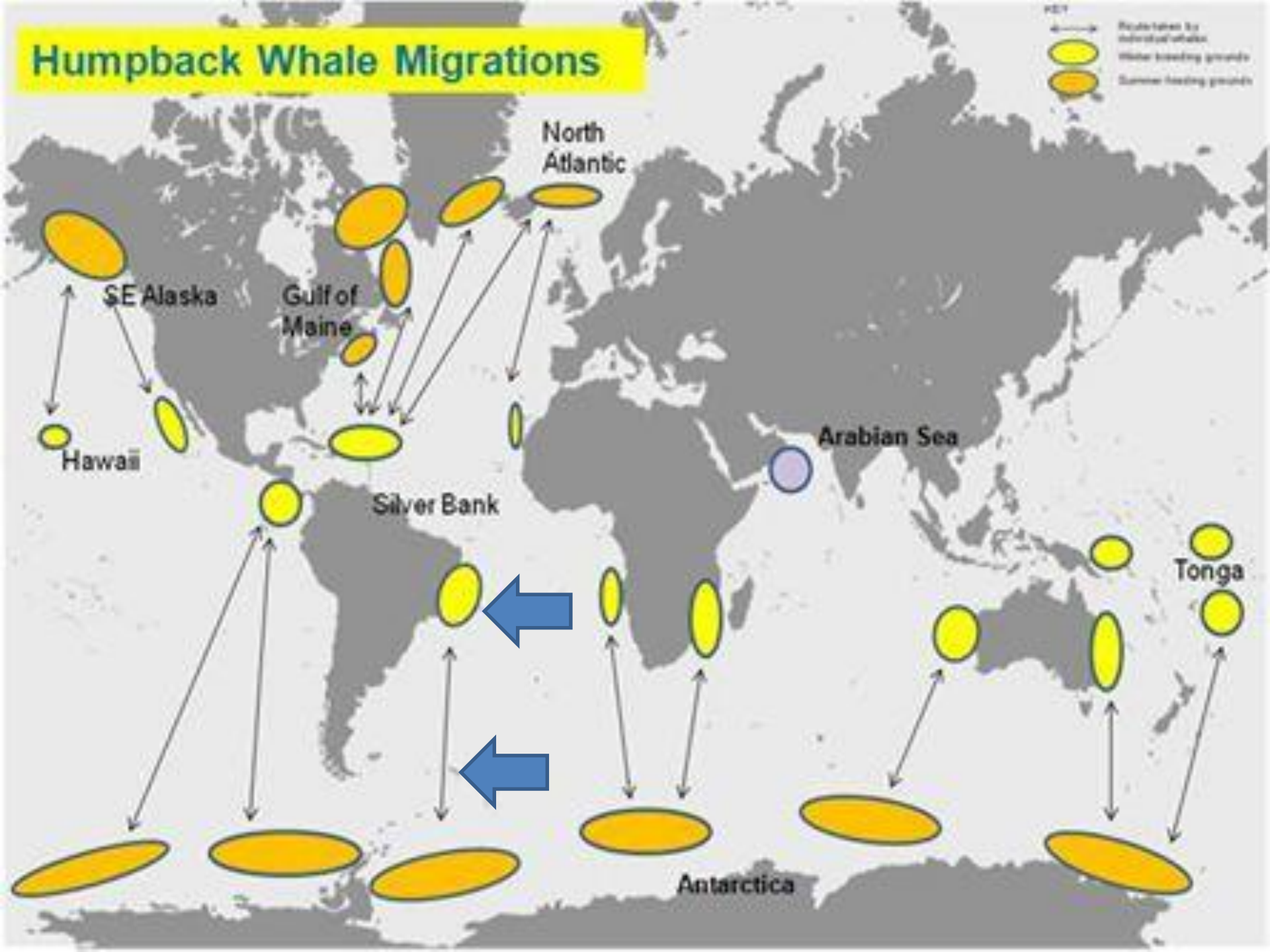


Danny



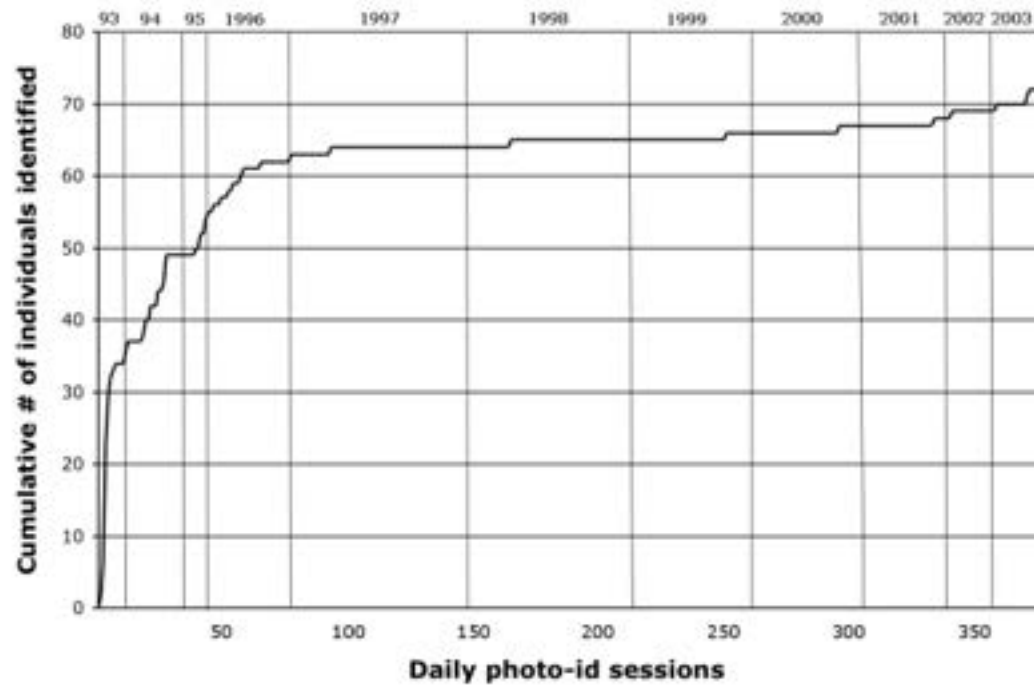
Humpback Whale Migrations

↔ Registered by individual whales
○ Winter breeding grounds
● Summer feeding grounds

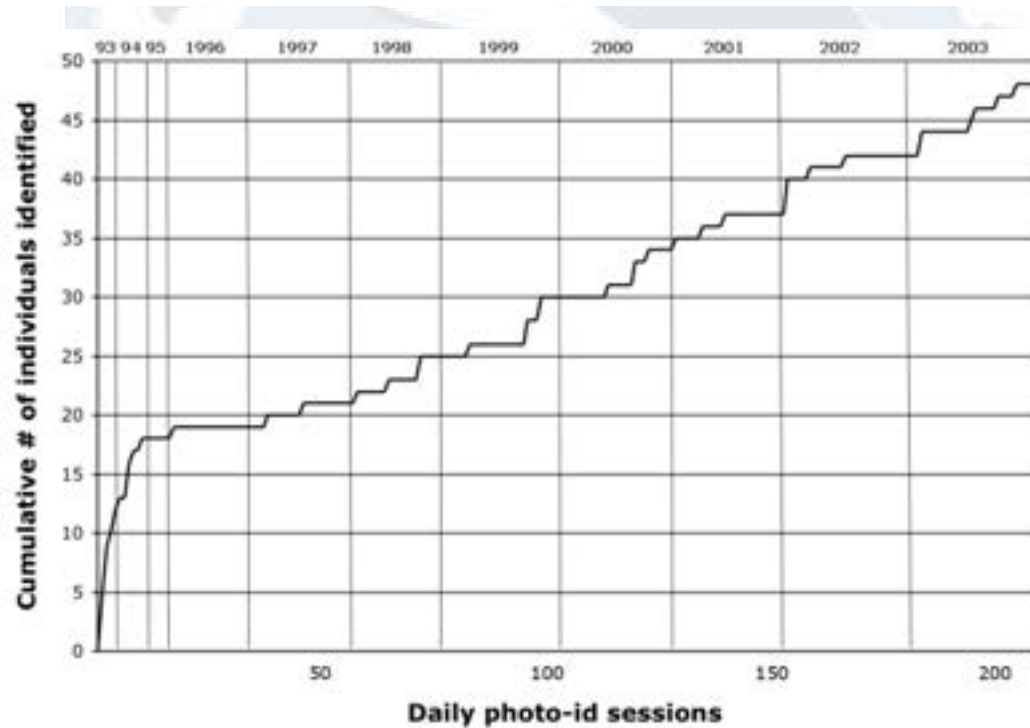


Rate of discovery (or cumulative curve)

Population closure



Population open

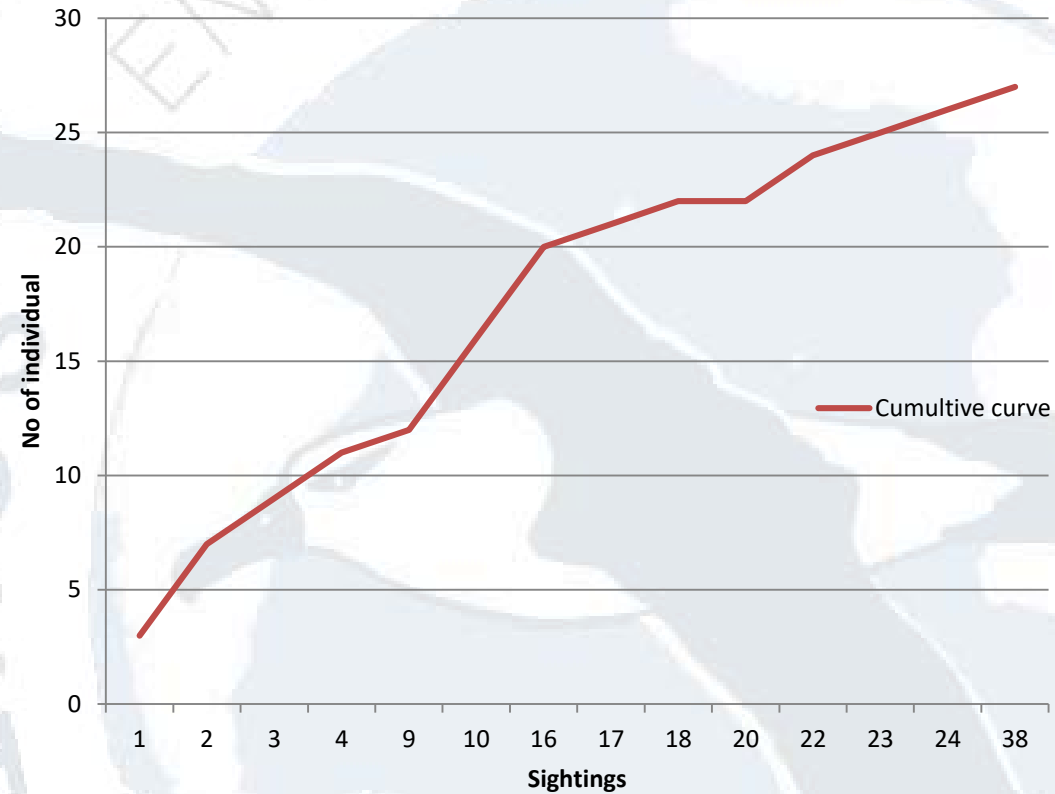


Rate of discovery (or cumulative curve)

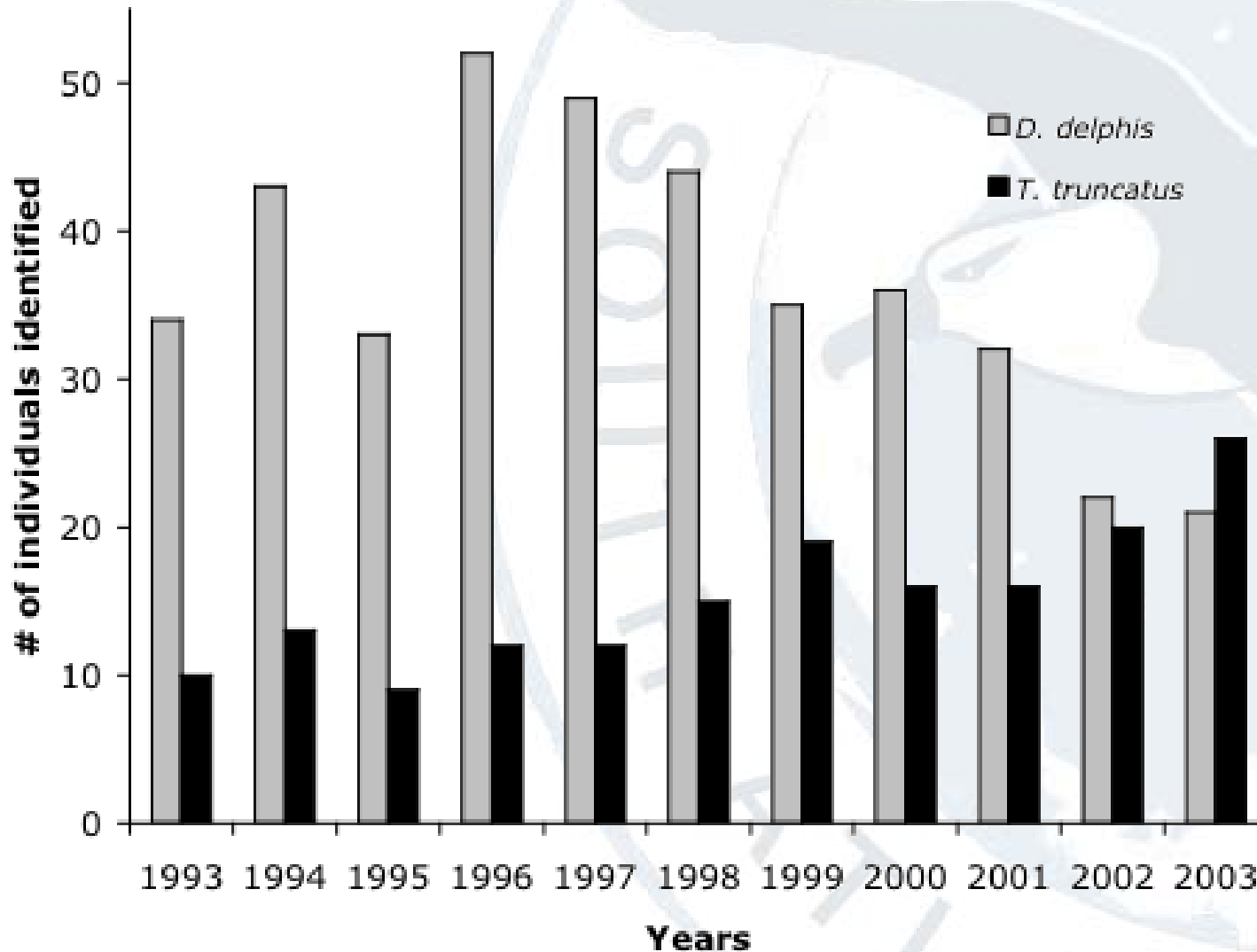
Cumulative curve of marked Peale's dolphins identified in area A and B during the first focal study conducted from the 21st of November to the 22nd of December 2016.

Cumulative curve for Peale's dolphins

Area A&B - Period 21 Nov-22 Dec 16



Number of individual identified per year



Age classes

Orca



Newborn

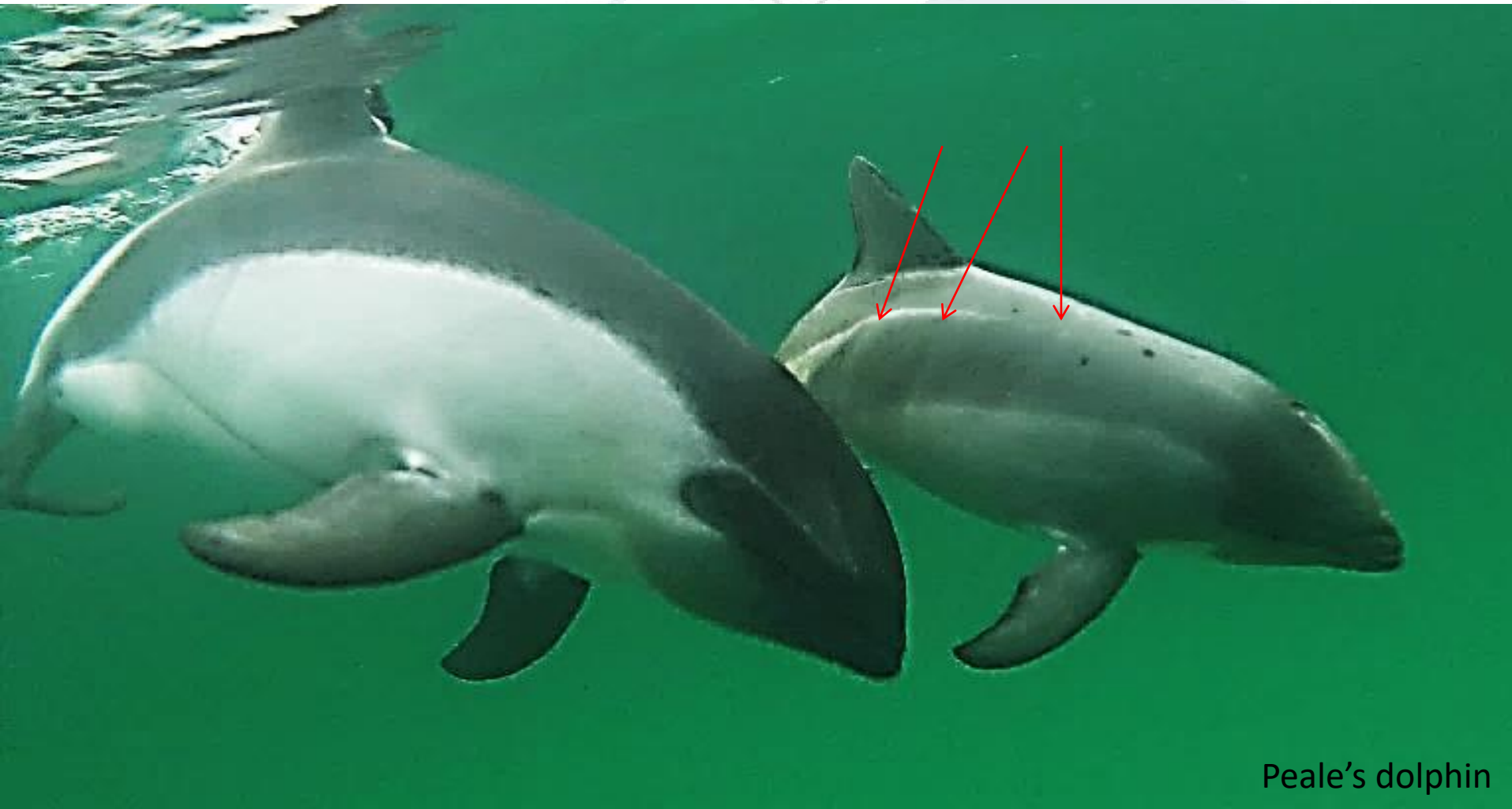
Calf

Juvenile

Adult

Yearly

Newborn



Peale's dolphin

Less than half body size of the mother
Presence of foetal crests
Clumsy at surfacing

Calf



Spinner dolphin

About half body size of the mother

Yearly - Calf



About half body size of the mother

Commerson's dolphin

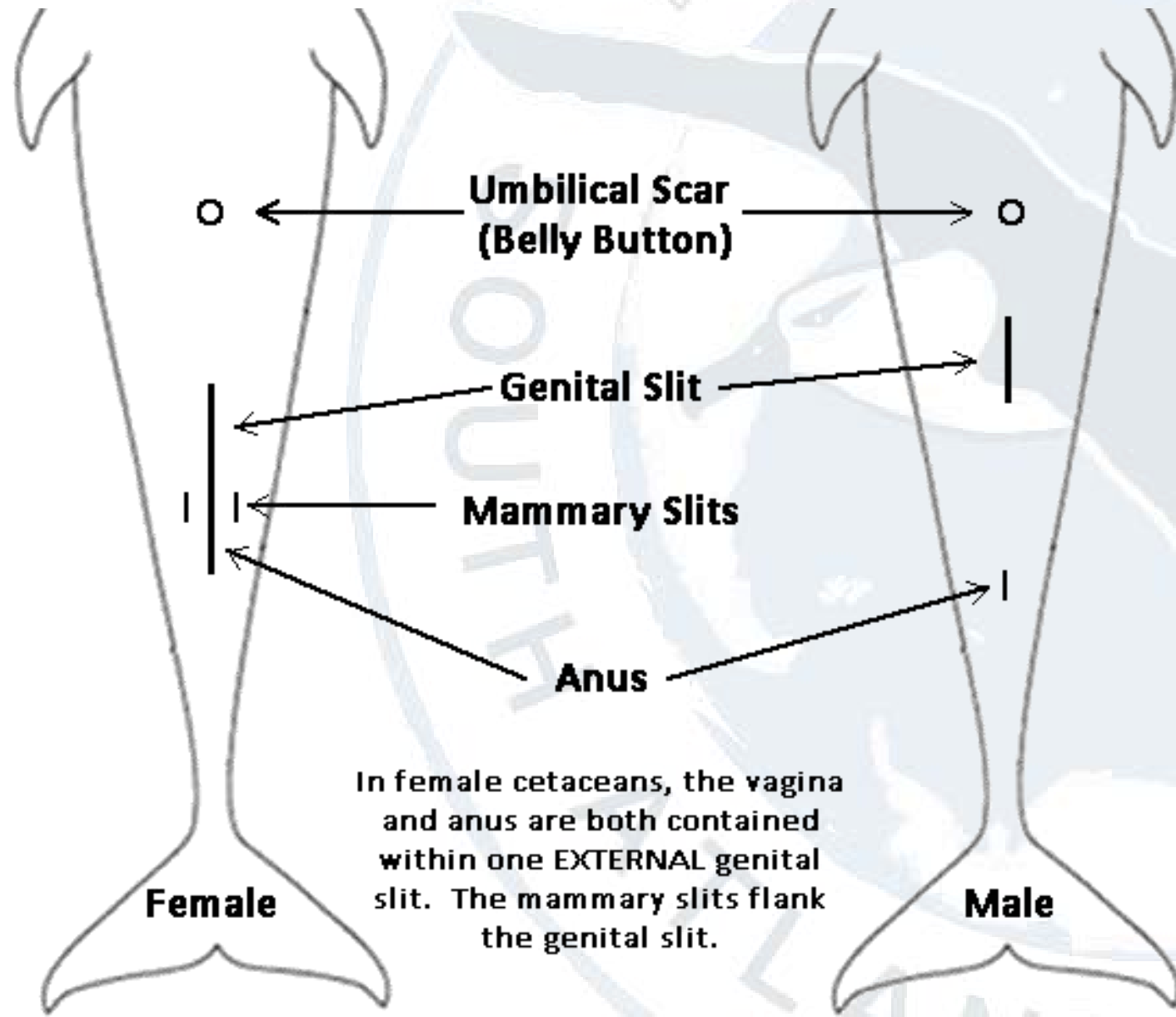
Juvenile



Indo-Pacific bottlenose dolphin

Smaller than an adult although in animals were adult female are smaller than adult males, young males can be confused with an adult female

Gender identification



Peale's dolphin

Male





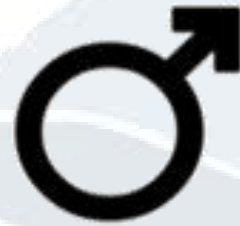
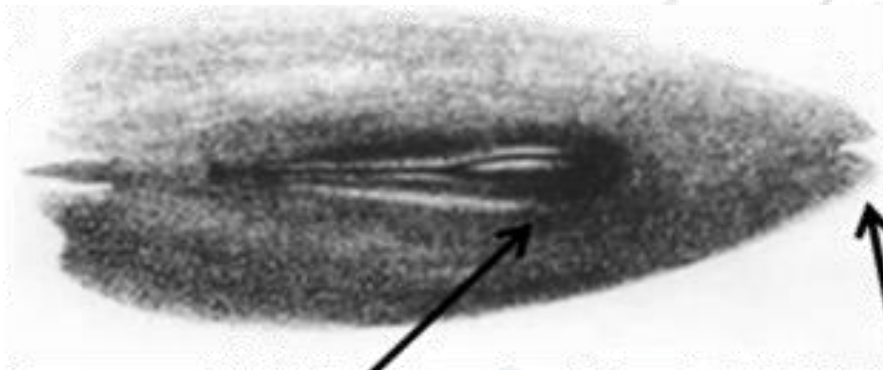
Female

Peale's dolphin



Male

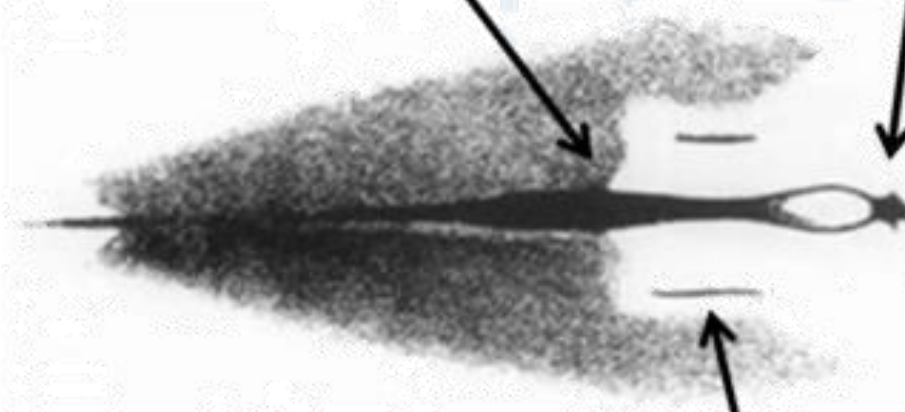
Commerson's dolphin



Male

genital slit

anus



Female

mammary gland slit

Presence of parasites

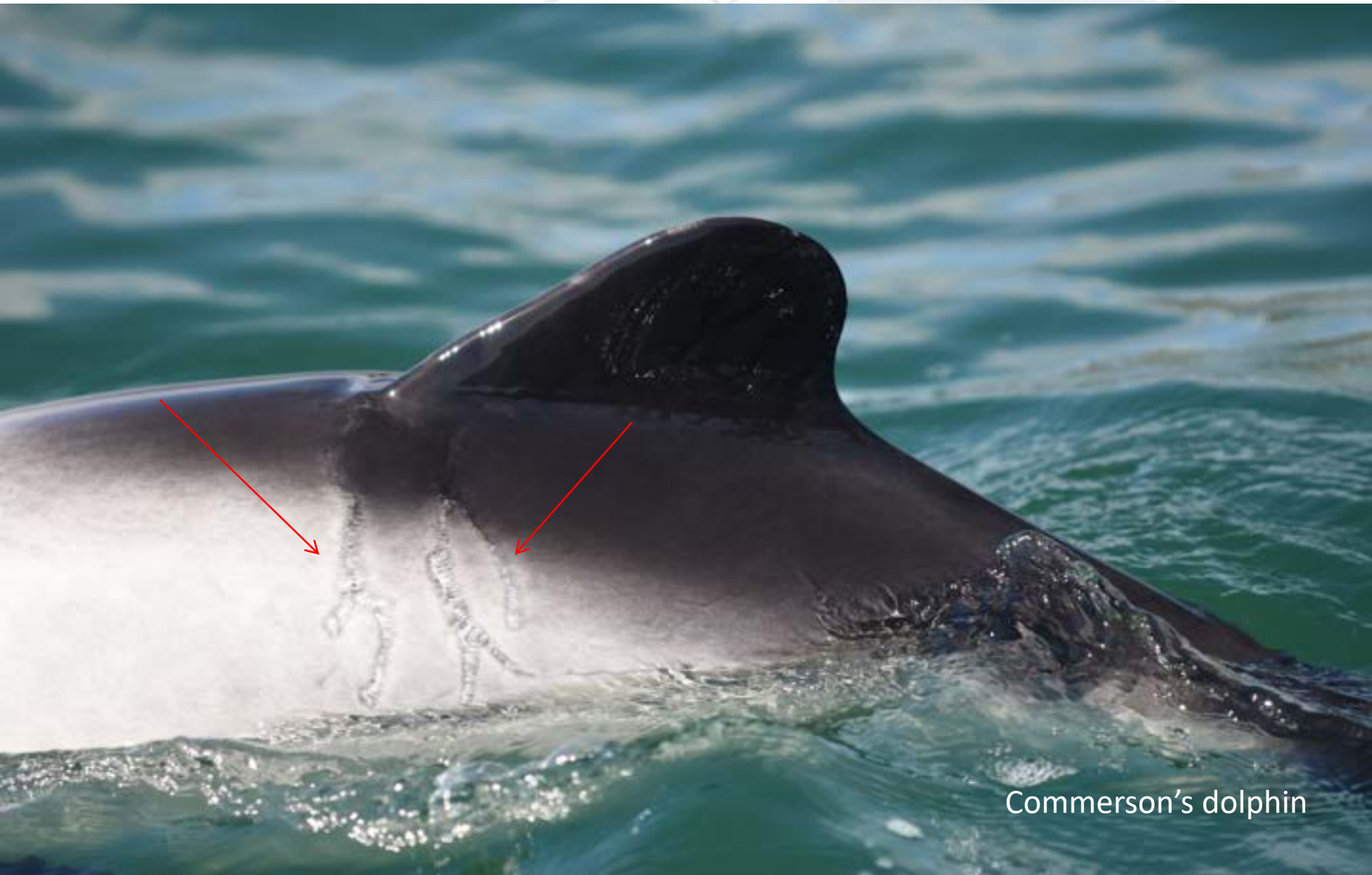


Commerson's dolphin

Interaction with individuals of the same species



Interaction with other species



Commerson's dolphin



Sea lion

Commerson's dolphins

Interaction with human activities



Fin whales – Tethys Research Institute

<http://www.repcet.com/collisions>



<http://oceanwidescience.org/whalevessel-collision-study/>



Chinese white dolphin named 'Hope'

<http://www.seashepherd.org.au/news-and-commentary/commentary/hope-is-not-a-strategy-it-s-a-chinese-white-dolphin.html>



Bottlenose dolphin – Tethys Research Institute



April 2001



September 2003



June 2004

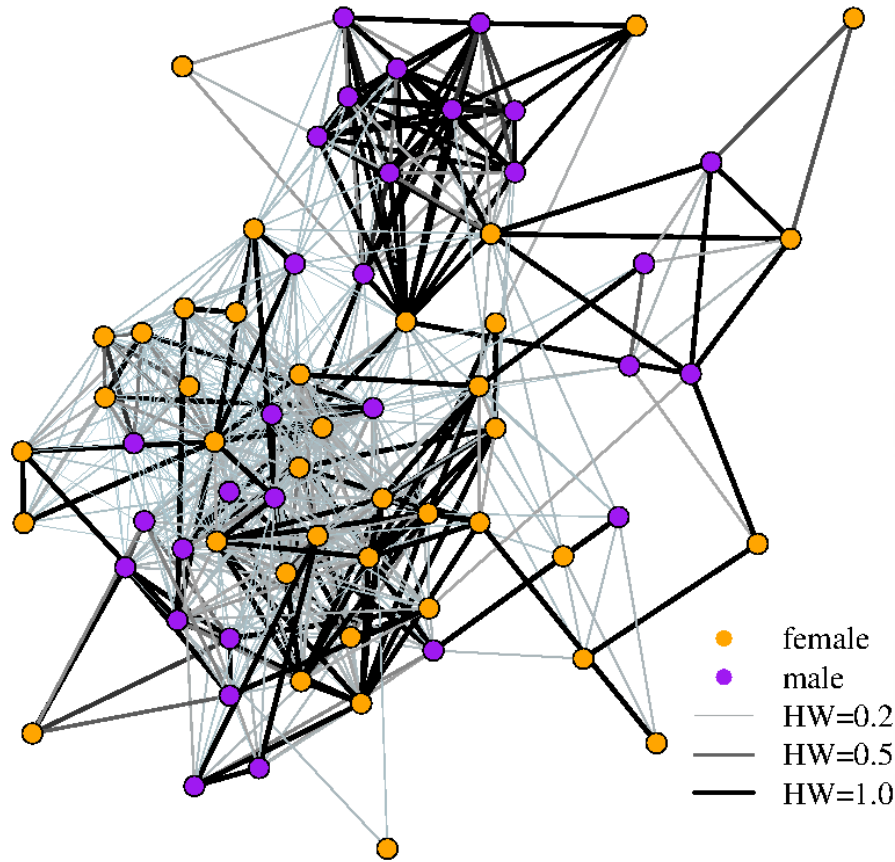


July 2005



Bottlenose dolphin – Tethys Research Institute

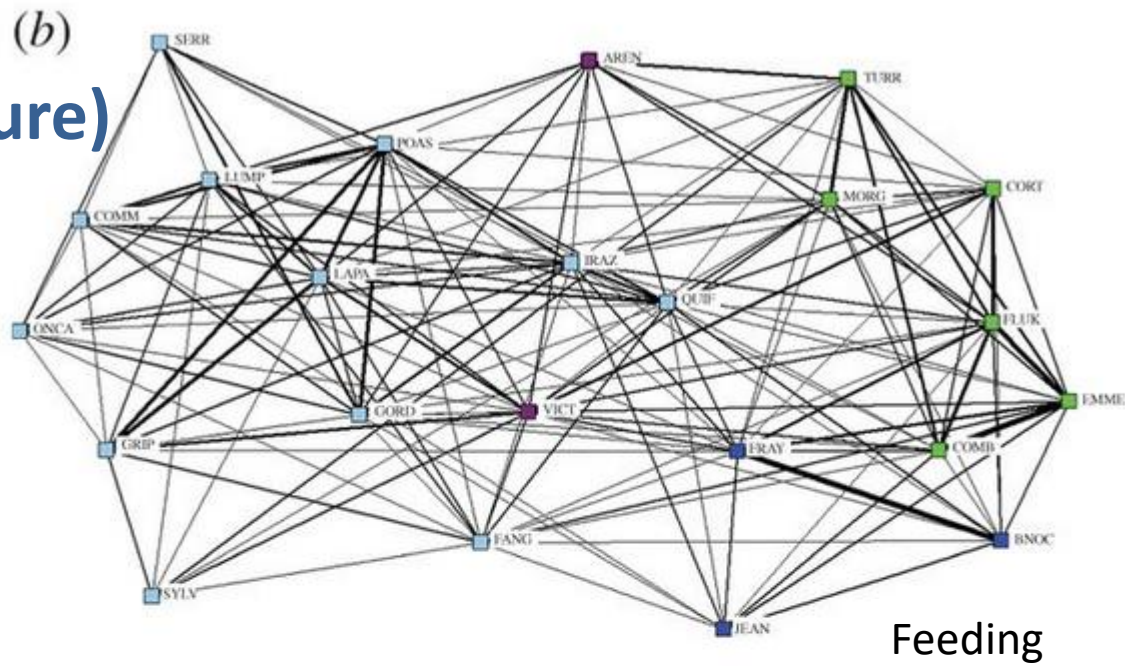
Social network (structure)



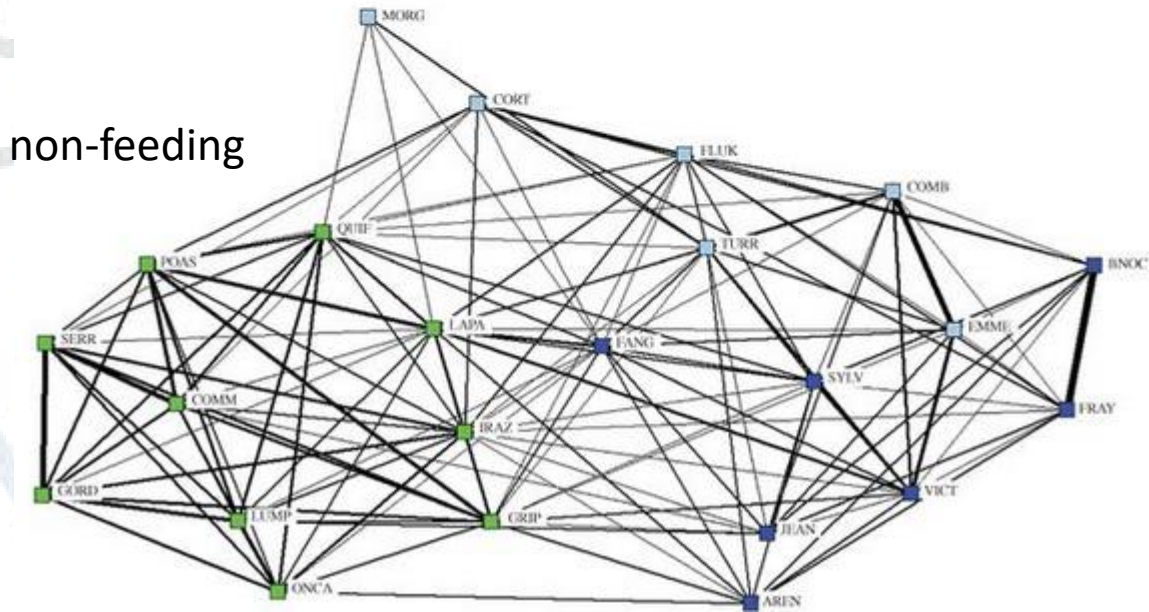
bottlenose dolphins of Shark Bay

<http://mucru.org/new-pub-the-role-of-weighted-and-topological-network-information-to-understand-animal-social-networks-a-null-model-approach/>

Social network (structure)



Sociograms of female association of bottlenose dolphins (Golfo Dulce, Costa Rica)



Males alliances

Female of bottlenose dolphins avoiding mating (Amvrakikos - Greece)



Males alliances

Spinner dolphin



Survival

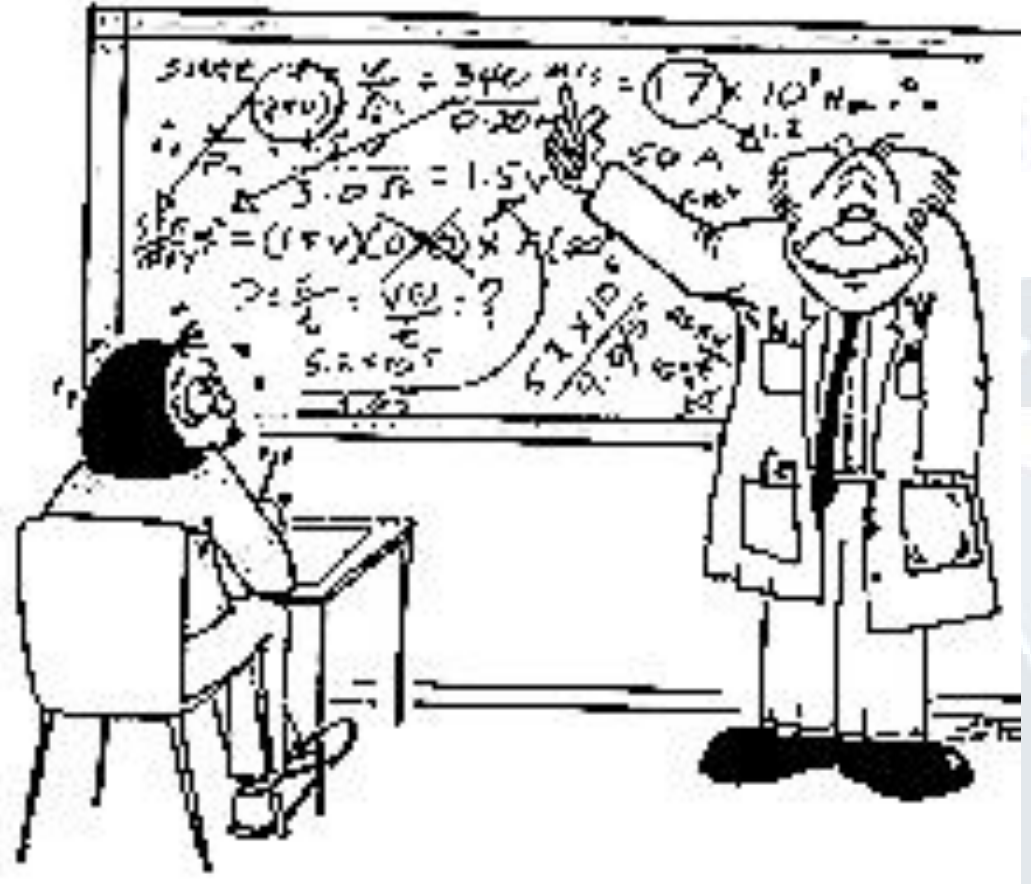


Cetacean have generally high survival rate (0.80-0.95)

Estimate population size

Petersen's index

$$N = \frac{n_1 n_2}{m_2}$$



N = estimated population size

n_1 = number of individuals identified from photographs in sample 1

n_2 = number of individuals identified from photographs in sample 2

m_2 = number of individuals identified from photographs in both sample 1 and sample 2



Let's try

Unmarked individuals



Percentage of unmarked must be estimated and added

Mark-recapture assumptions

1. Marks must be unique



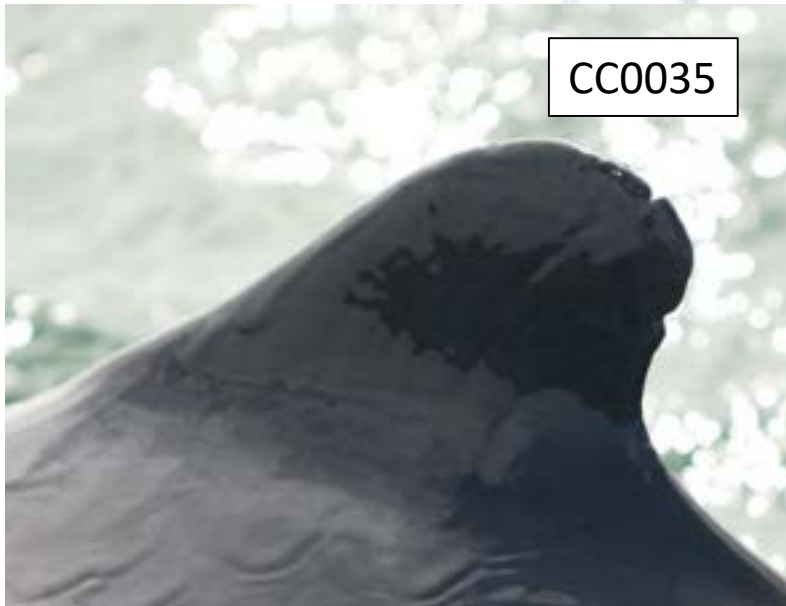
Mark-recapture assumptions

1. Marks must be unique
2. **Marks cannot be lost**



Mark-recapture assumptions

1. Marks must be unique
2. Marks cannot be lost
- 3. Marks are correctly recorded**



NO!!!



Mark-recapture assumptions

1. Marks must be unique
2. Marks cannot be lost
3. Marks are correctly recorded
- 4. Mark does not affect the ability to catch the animal***



* Problem in capture and restraint

Mark-recapture assumptions

1. Marks must be unique
2. Marks cannot be lost
3. Marks are correctly recorded
4. Mark does not affect the ability to catch the animal
5. **All individual have the same probability to be 'captured'**



Mark-recapture assumptions

1. Marks must be unique
2. Marks cannot be lost
3. Marks are correctly recorded
4. Mark does not affect the ability to catch the animal
5. All individual have the same probability to be 'captured'
6. **Marked and unmarked individual mix between sightings**

trick or
treat!

what are you
supposed
to be



I'm
a
panda.



Thank you!!!!

ENVIRONMENTAL

HEALTH