

FULLY
REVISED
FIFTH
EDITION

TWO OCEANS

A guide to the marine
life of southern Africa

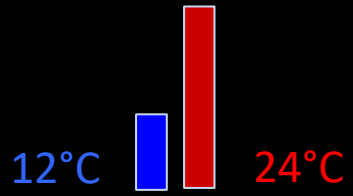
George Branch
Charles Griffiths
Margo Branch
Lynnath Beckley

Two Oceans: meeting of the ways

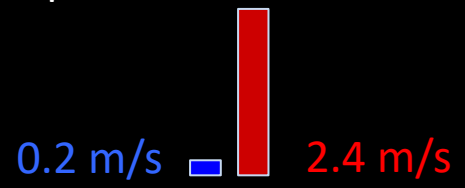
George and Margo Branch
Department of Biological Sciences,
University of Cape Town



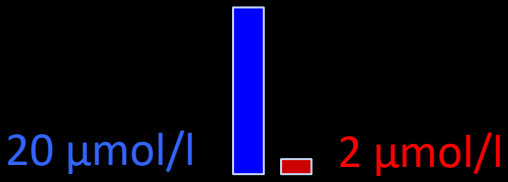
Temperature



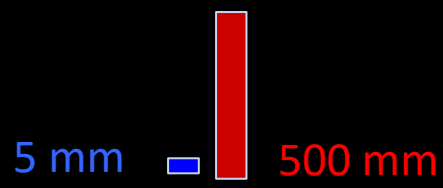
Speed



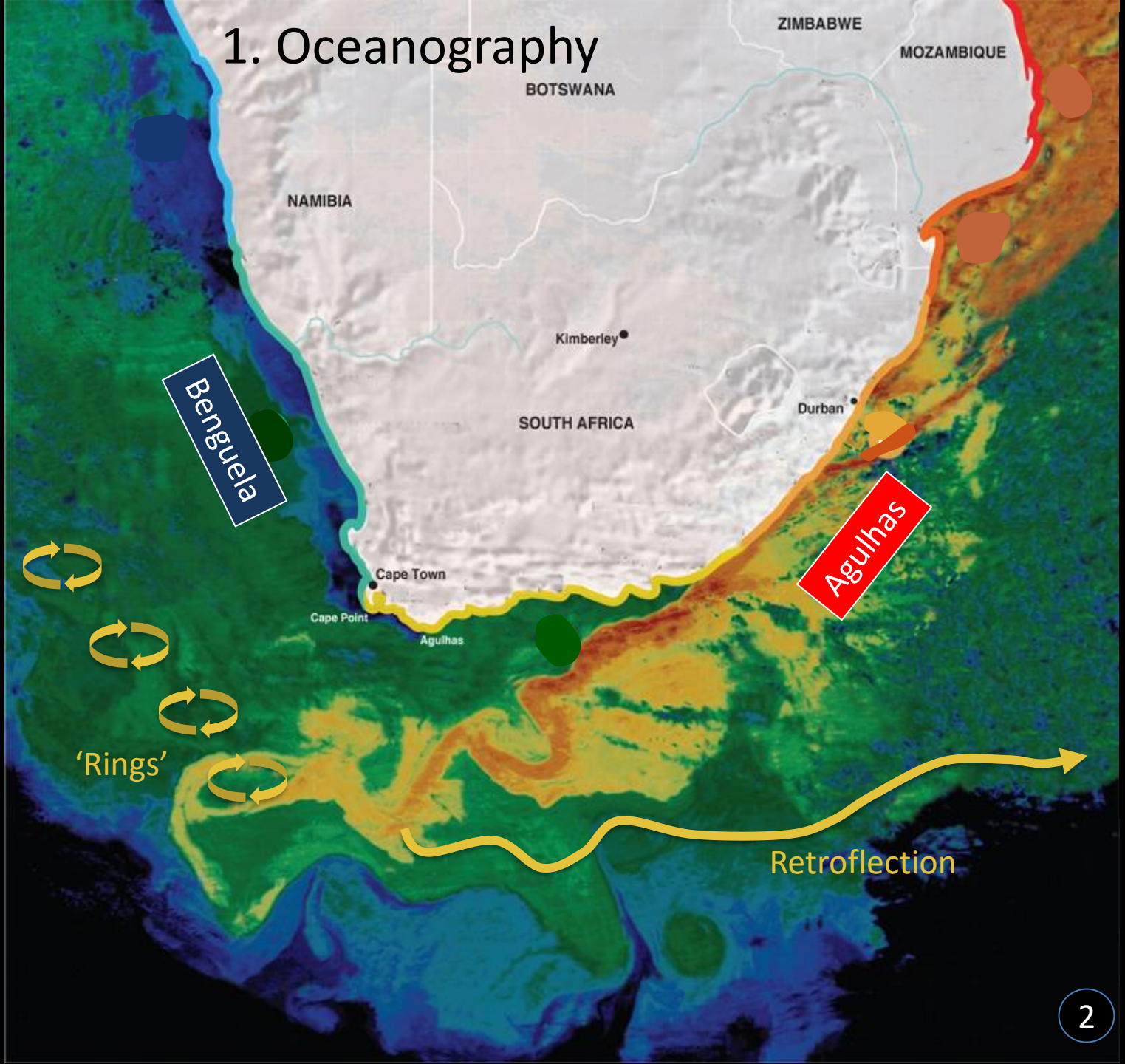
Nutrients

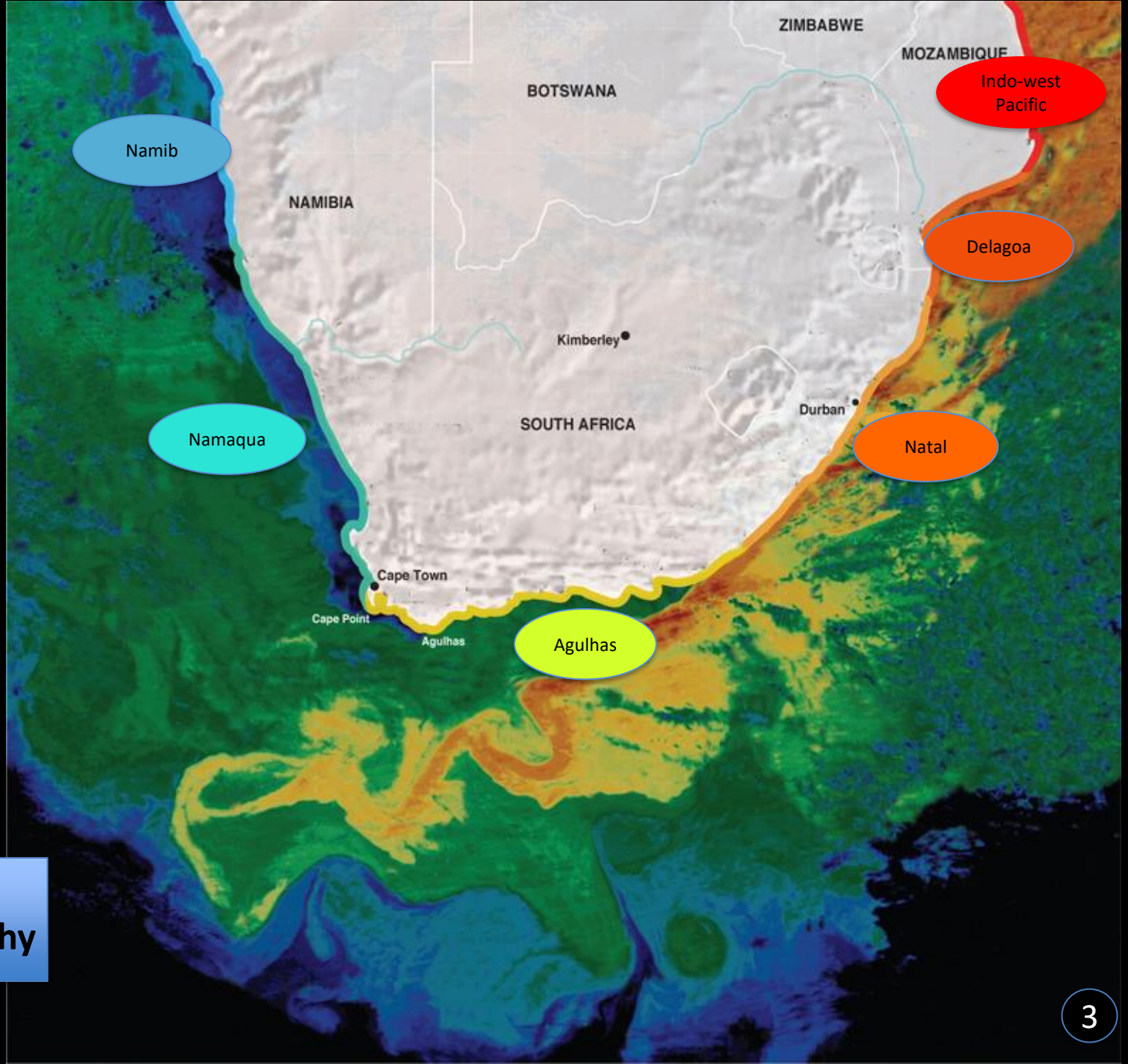


Rainfall



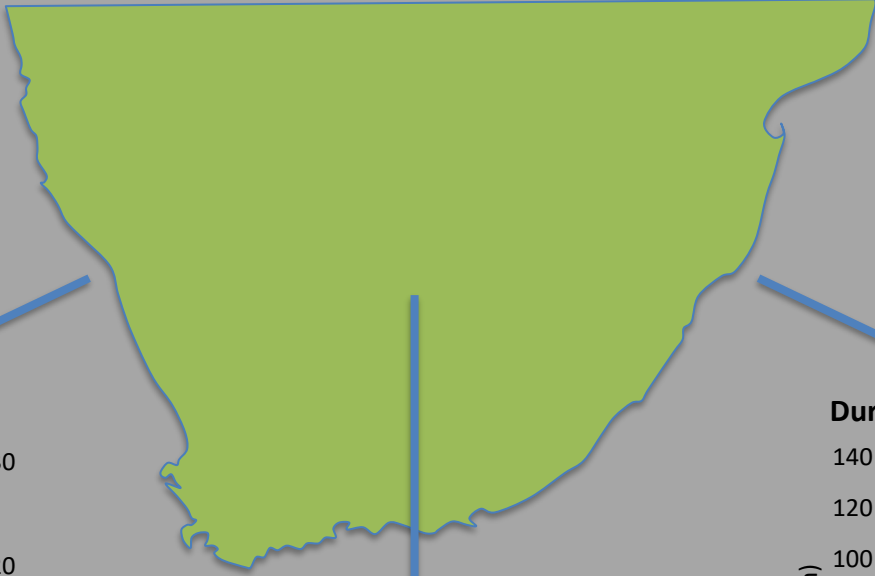
1. Oceanography



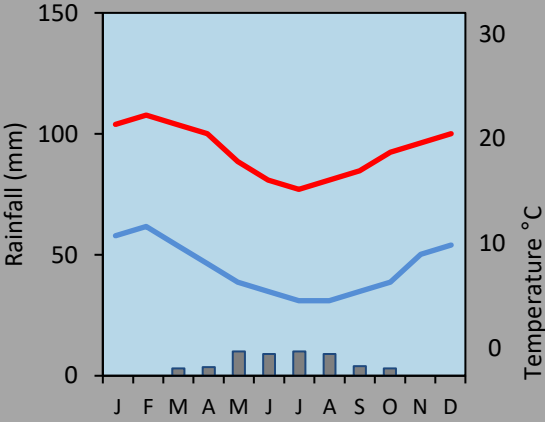


**Marine
Biogeography**

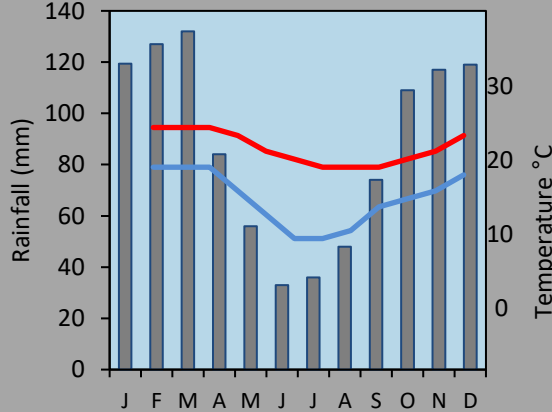
Effects of currents on terrestrial climate



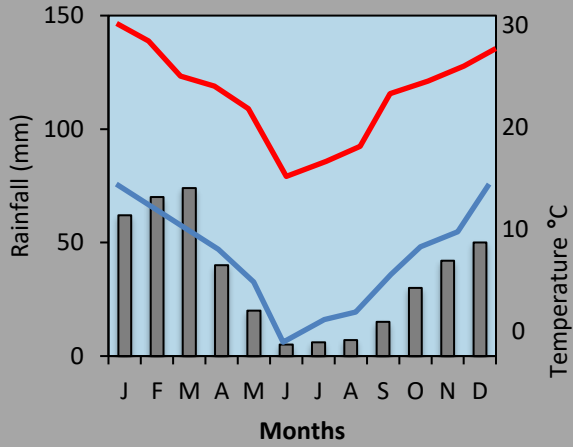
Port Nolloth

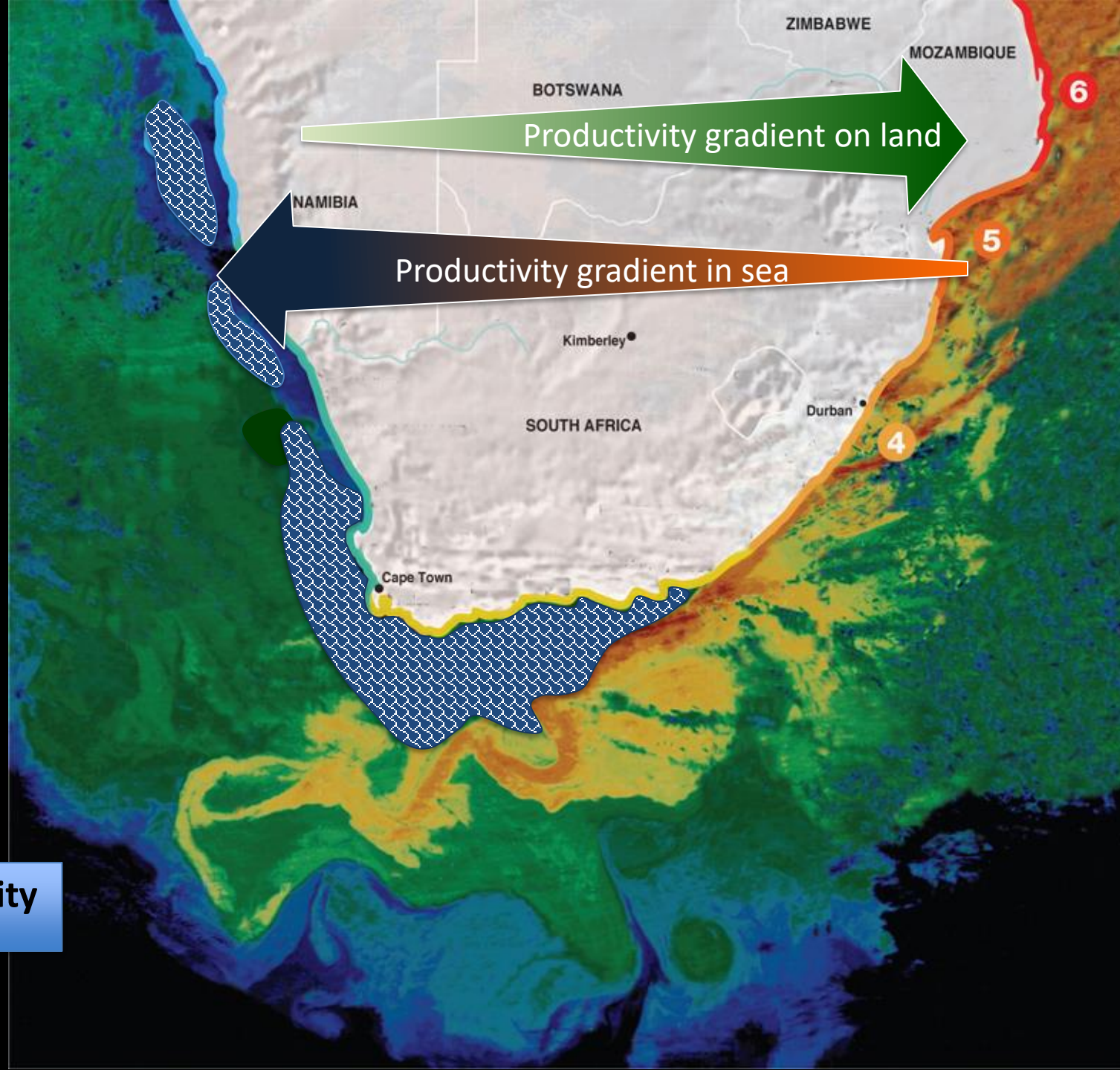


Durban



Kimberley





Deserts on Land

Forests & agriculture on Land

High productivity in sea

Low productivity in sea

Major fishing grounds

Productivity

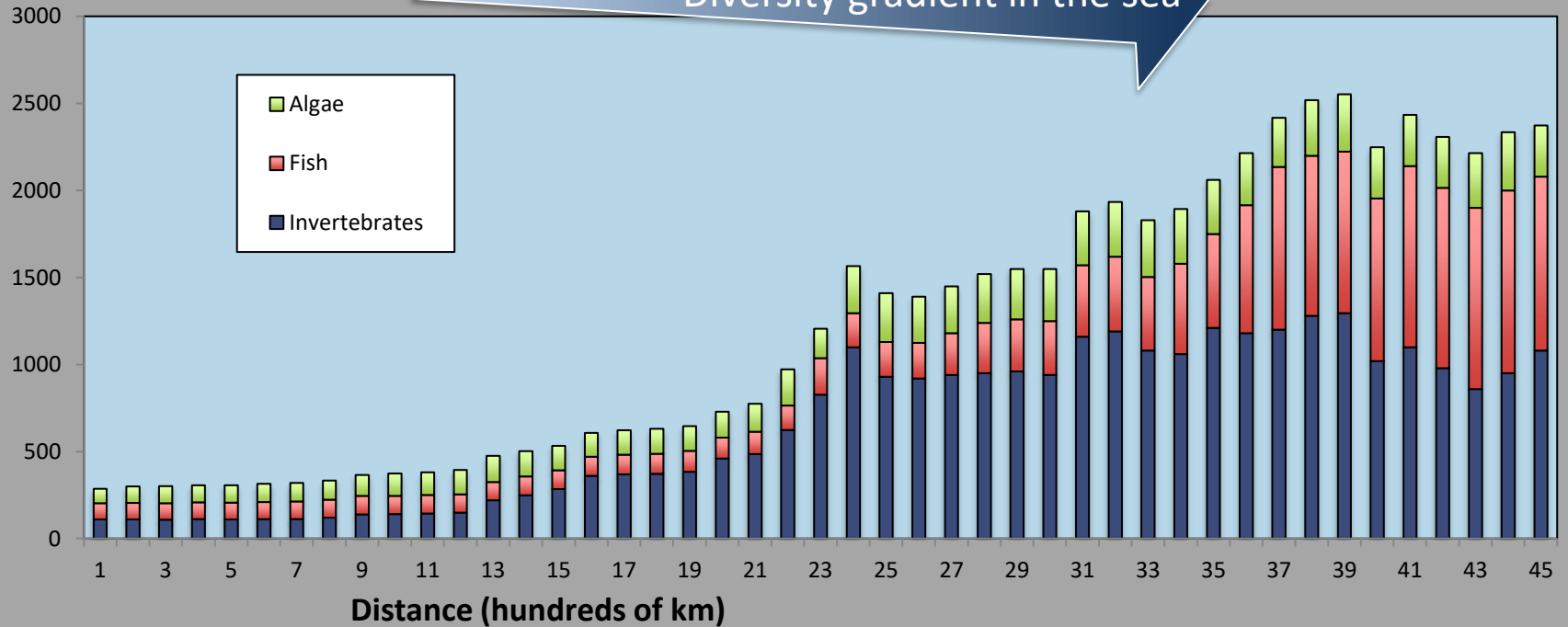






Effects on biodiversity

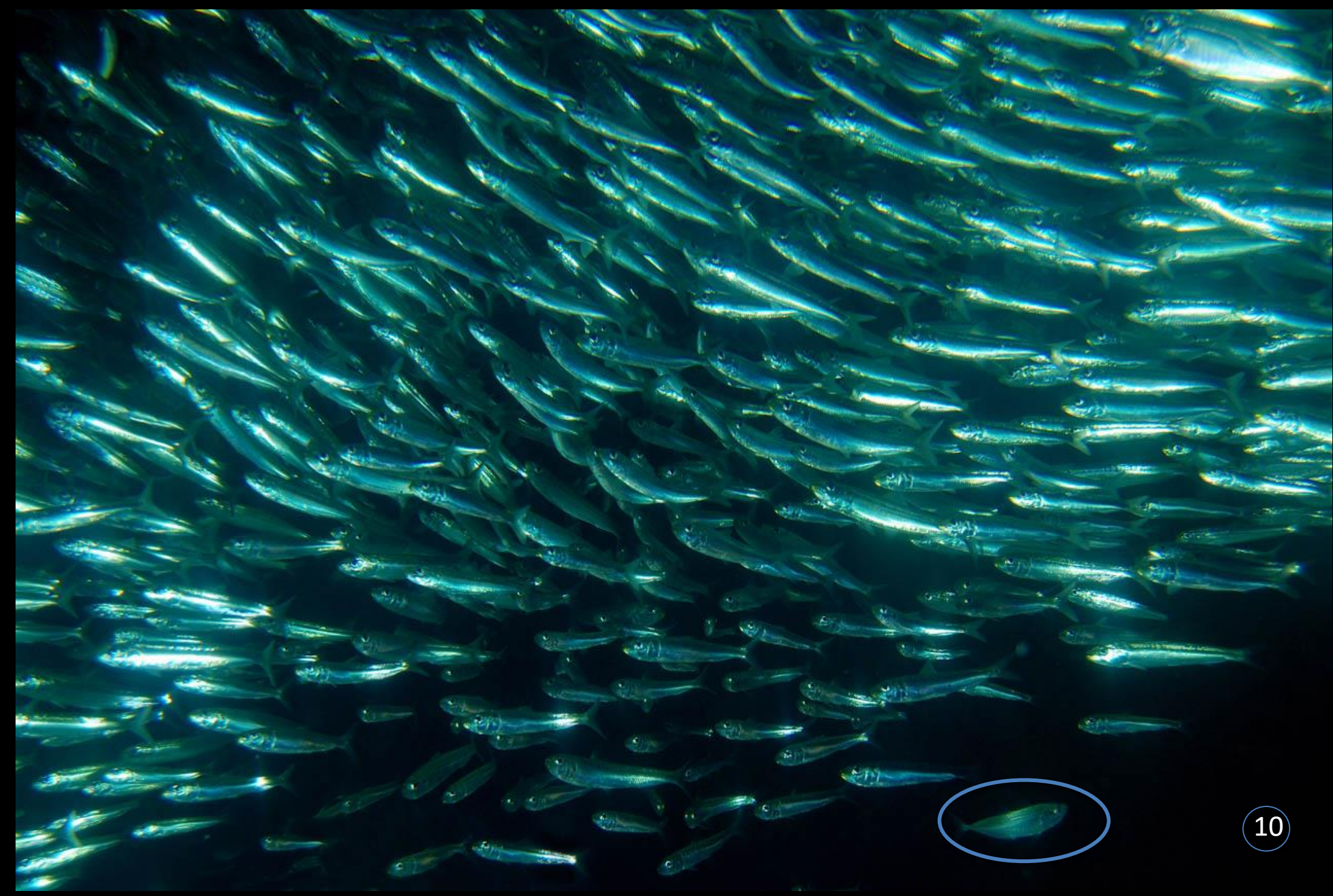
Number of species per 100-km intervals



West Coast

South Coast

East Coast





Really important life

2. Contributions of the Two Oceans Aquarium to marine science

Bob Steneck's hypothesis:

Encrusting corallines

thrive in...

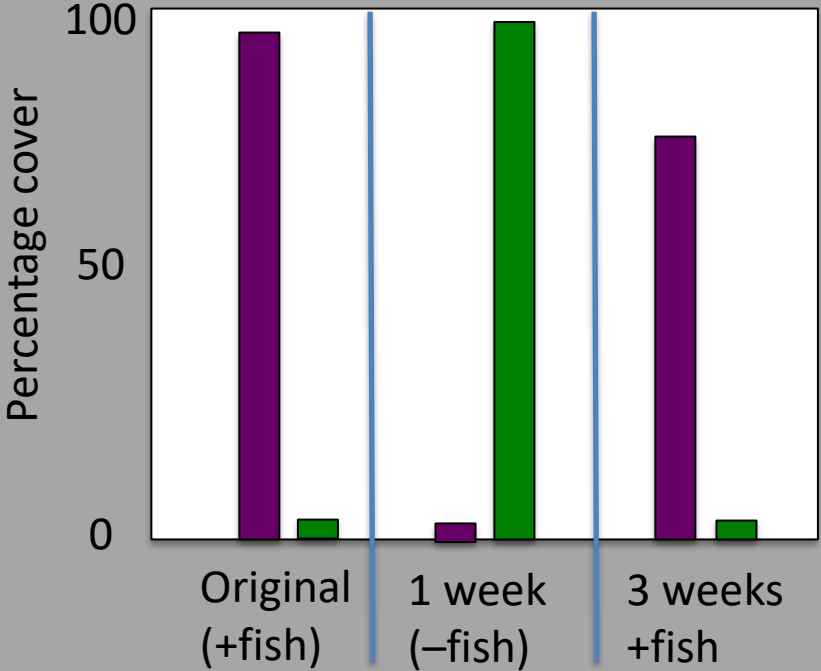
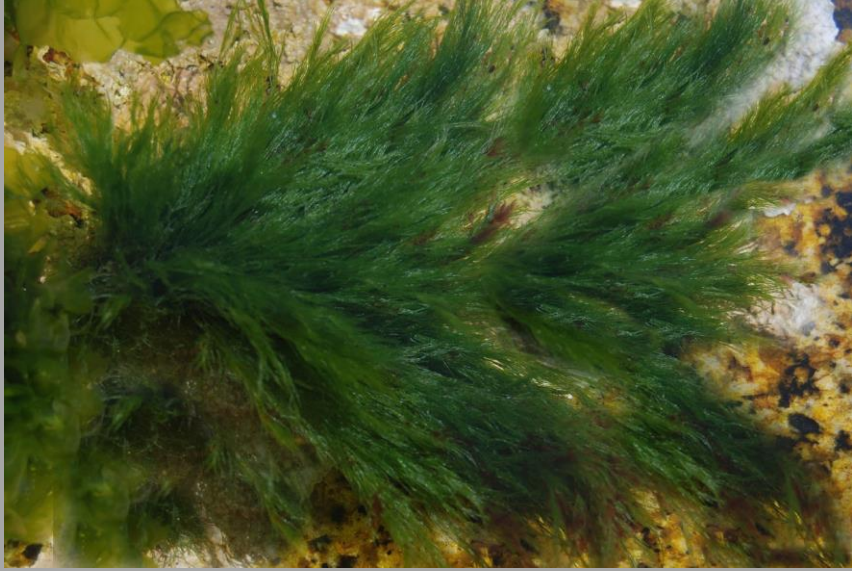
- (a) Low productivity
(=low light)**
- (b) High disturbance
(=grazing)**



Fish present in aquarium

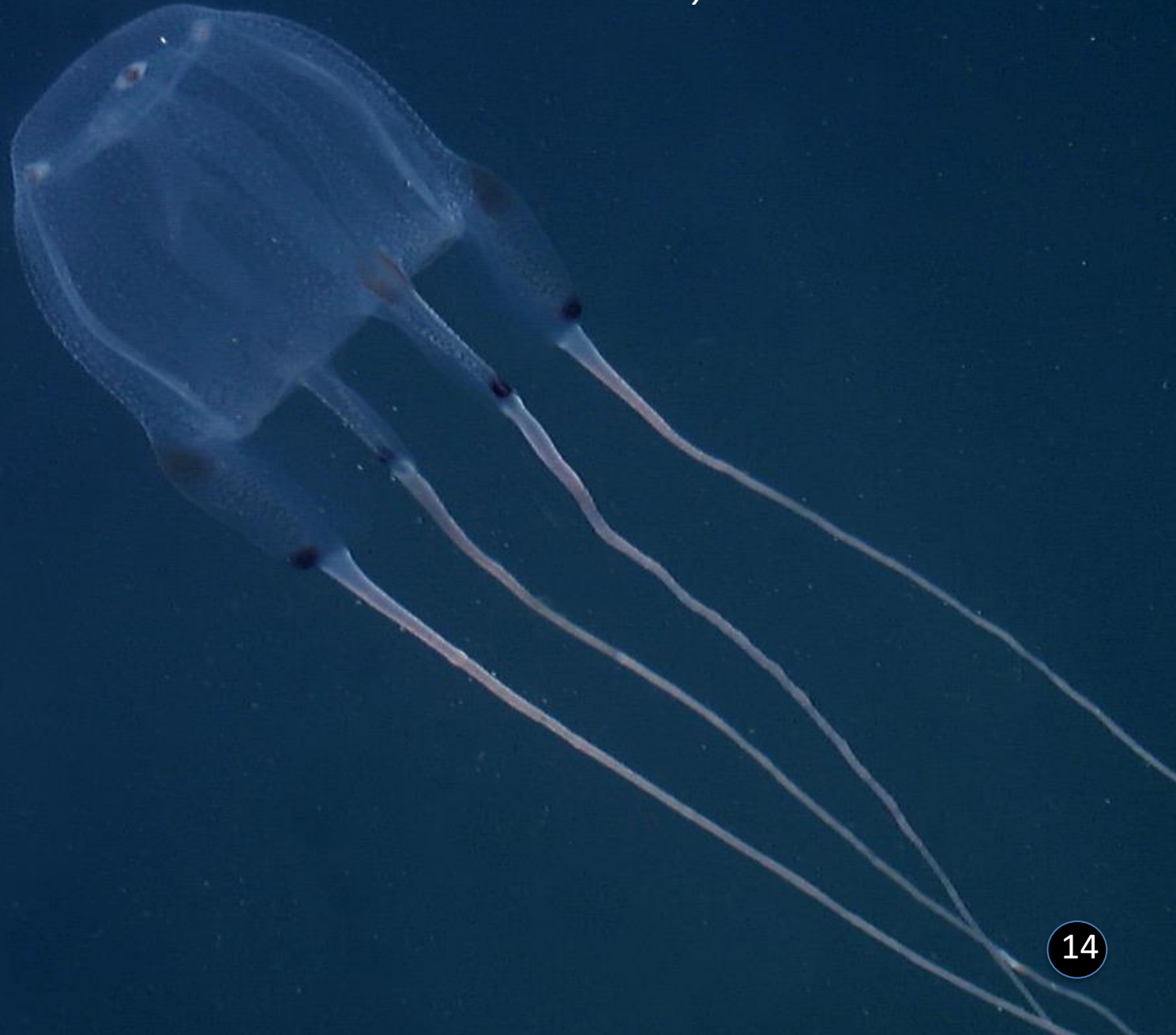


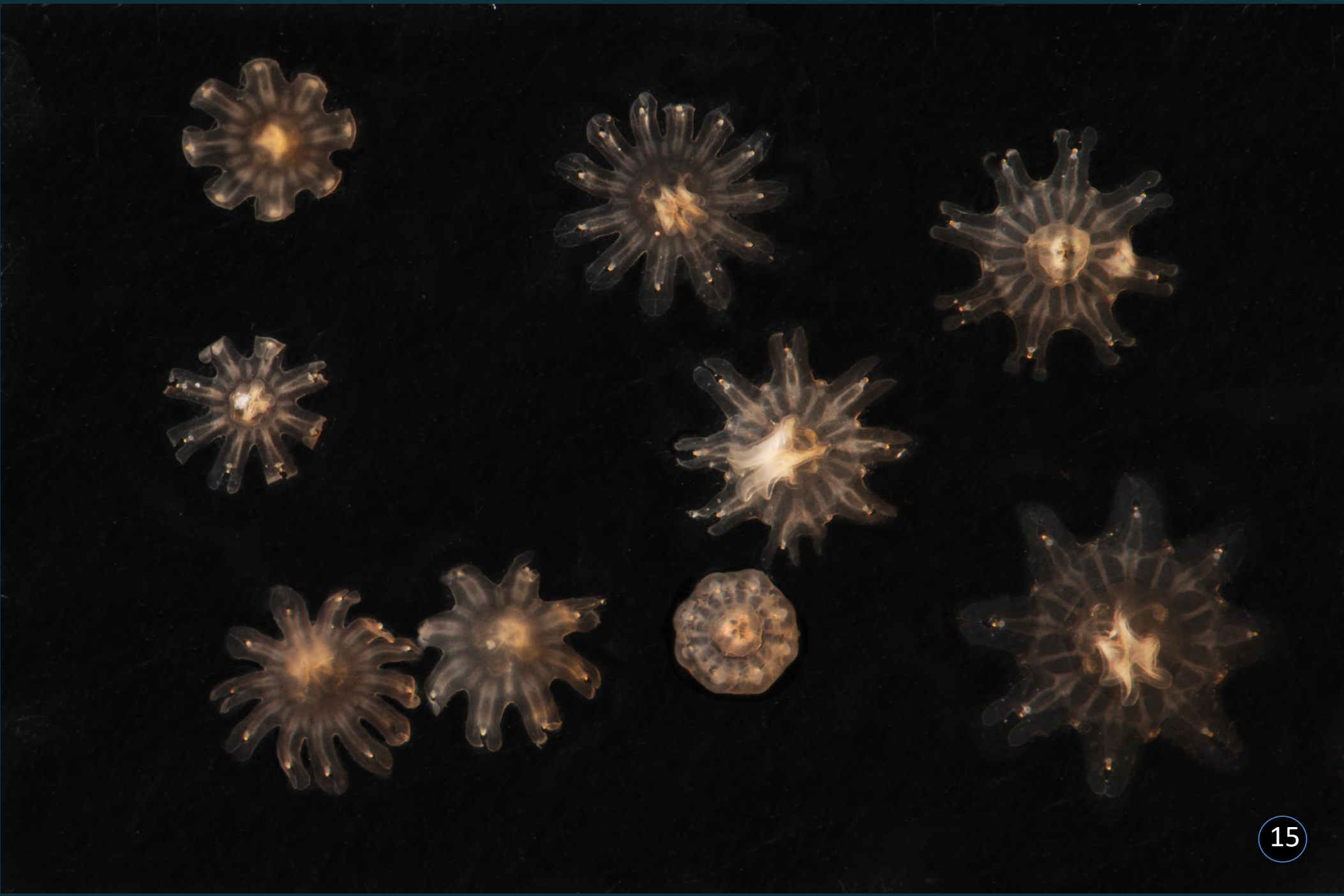
After 'experimental' removal of fish

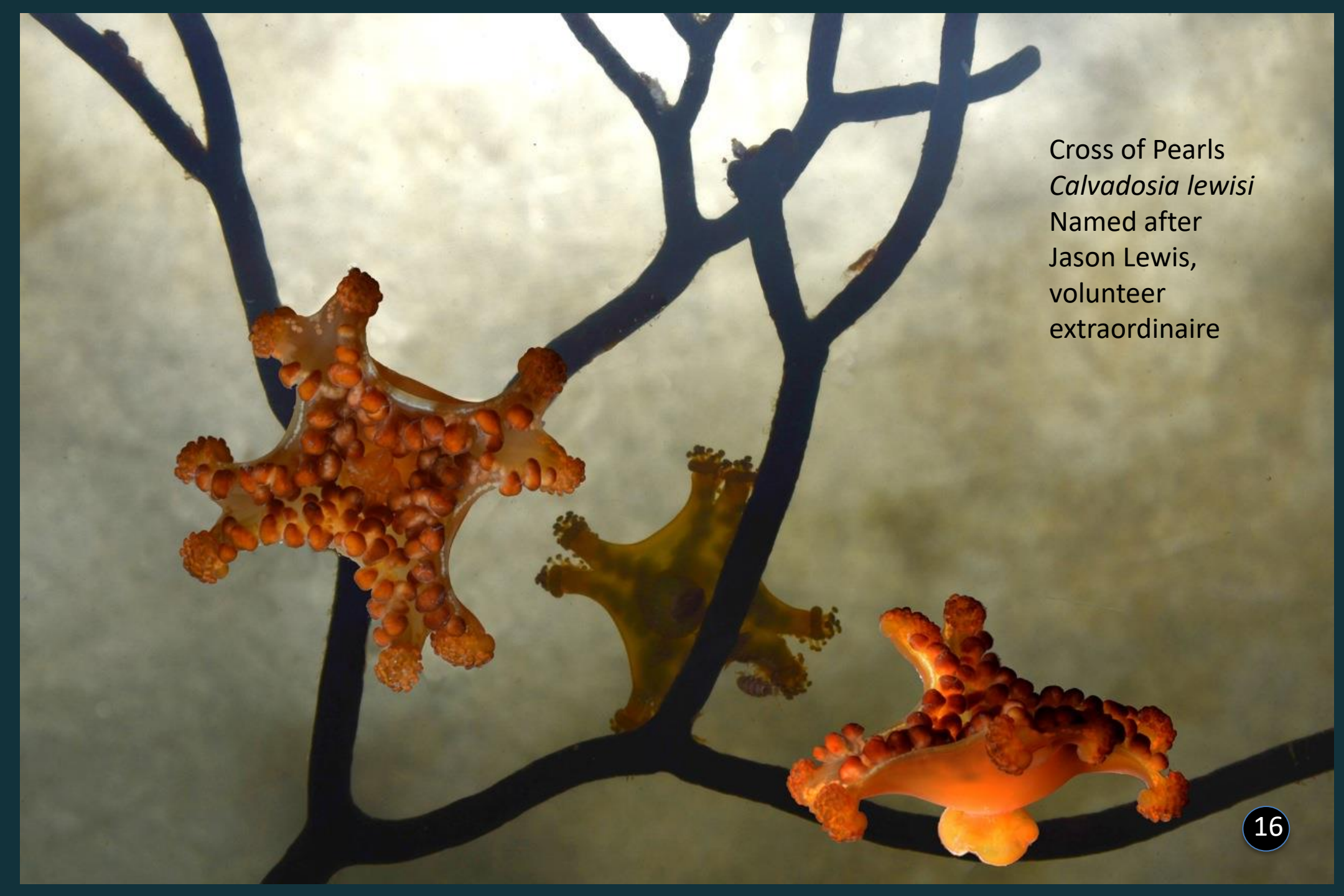


Discovery of new species
at Two Oceans Aquarium

Carybdea branchi







Cross of Pearls
Calvadosia lewisi
Named after
Jason Lewis,
volunteer
extraordinaire

An aerial photograph showing a vast, dense bloom of reddish-brown jellyfish covering a large area of the ocean's surface. The water is a deep teal color, and the jellyfish appear as a thick, textured carpet of small, rounded organisms. A white, foamy wake from a boat is visible in the lower-left quadrant, cutting through the jellyfish. The overall scene illustrates a significant marine ecological event.

3. But change is afoot.....

Including.....

Coastal warming
& cooling

Depletion of fish

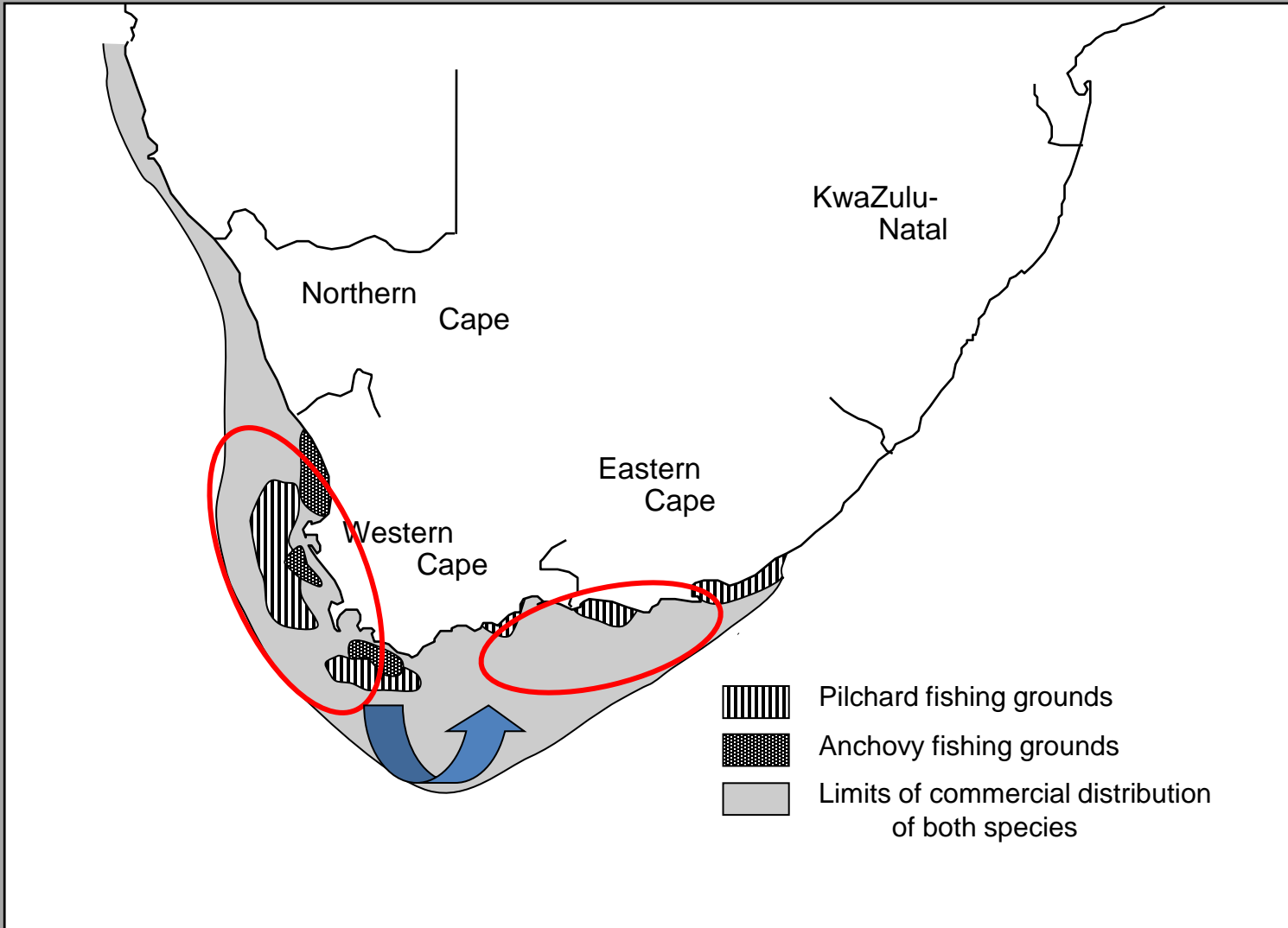
Geographic shifts

‘Jellyfish explosion’ in
the Northern Benguela:
12.2 MMT in the 2000s

Geographic shifts of pelagic fish



Photo: Dennis King



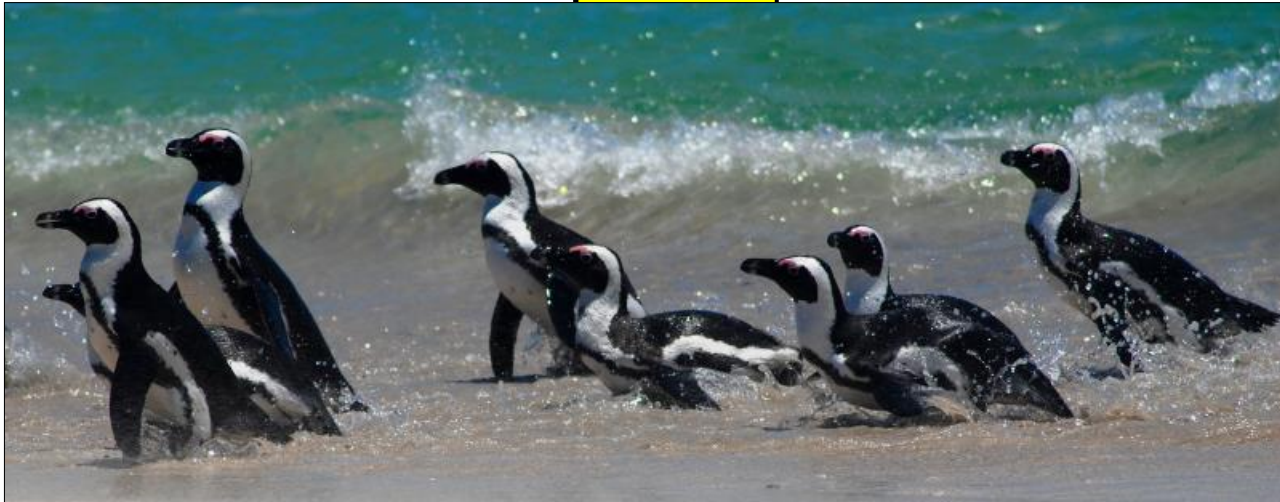
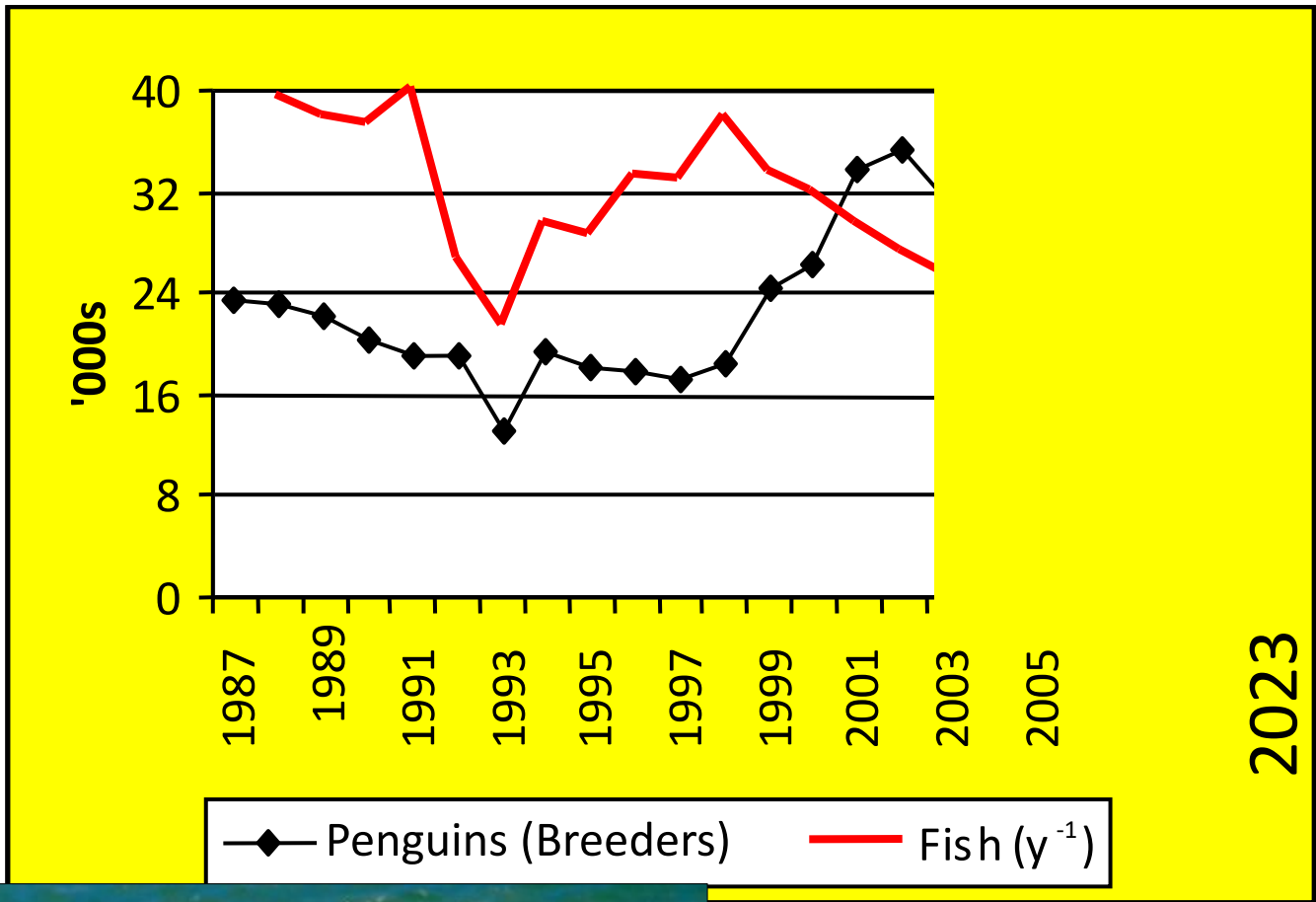
Dassen Island 1930



Dassen Island 2008



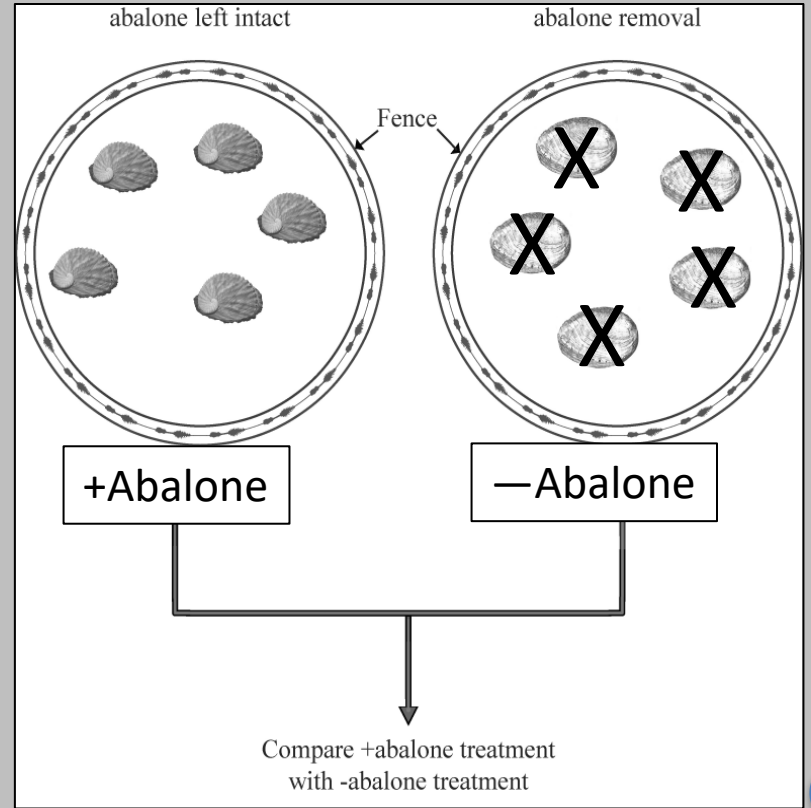
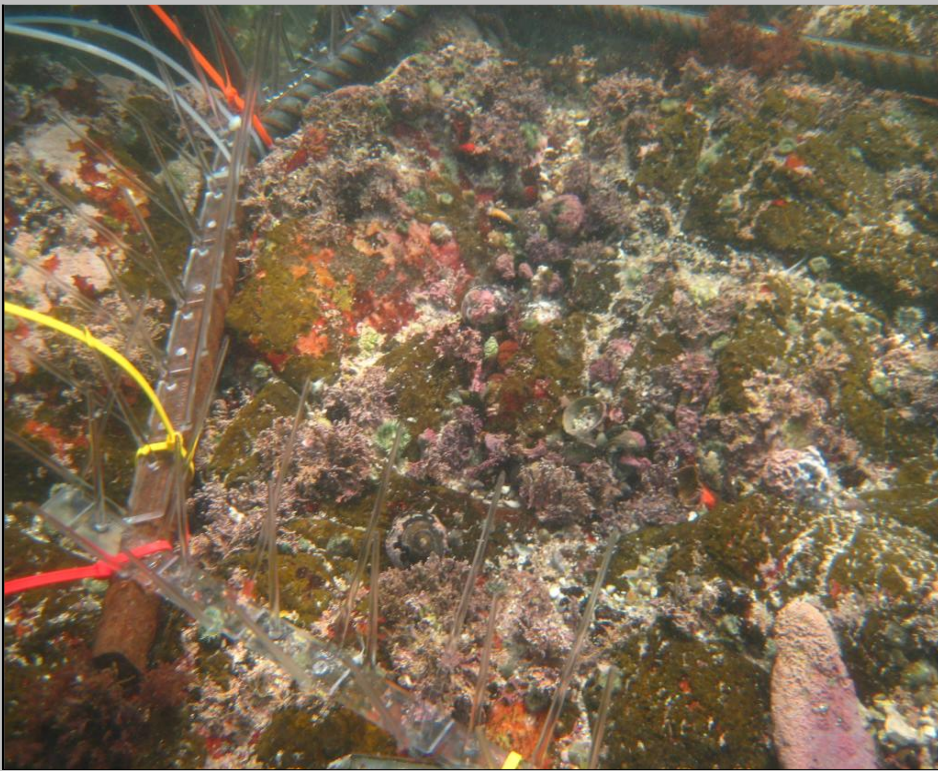
Penguins on west coast

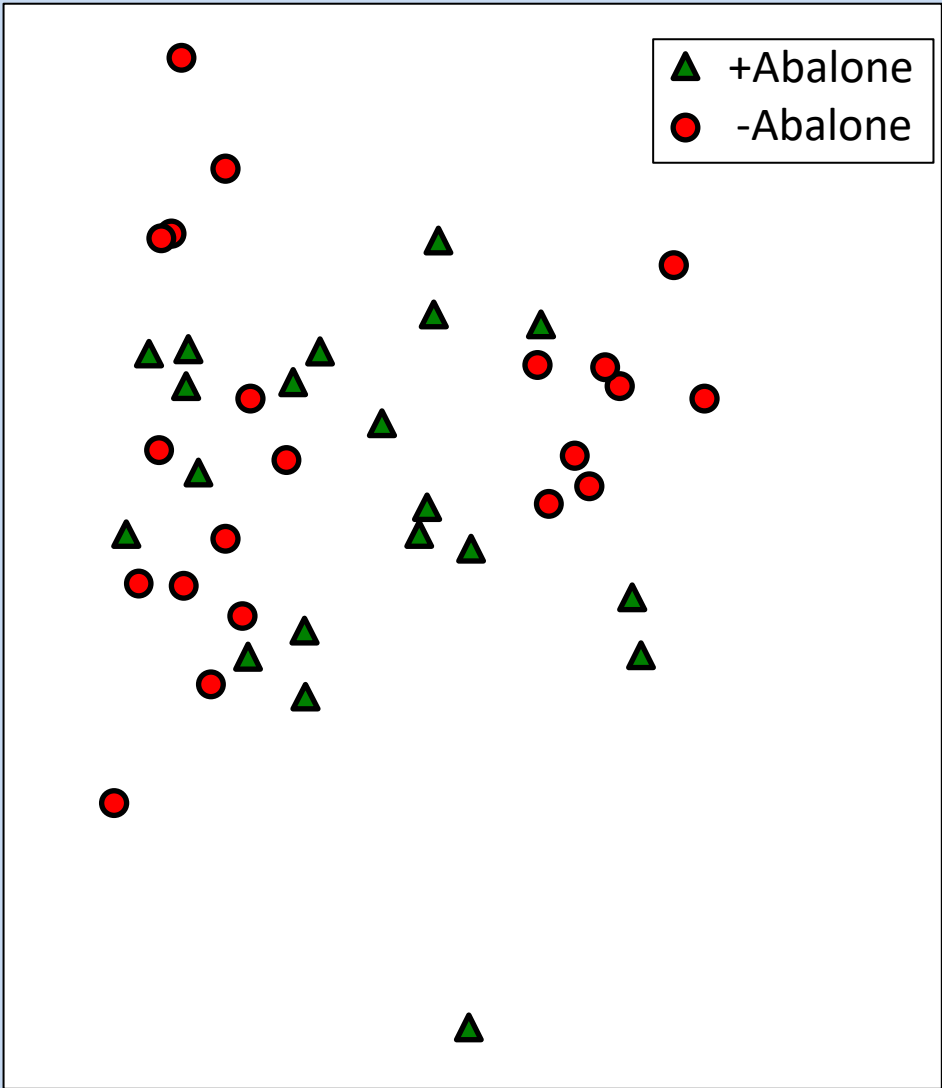
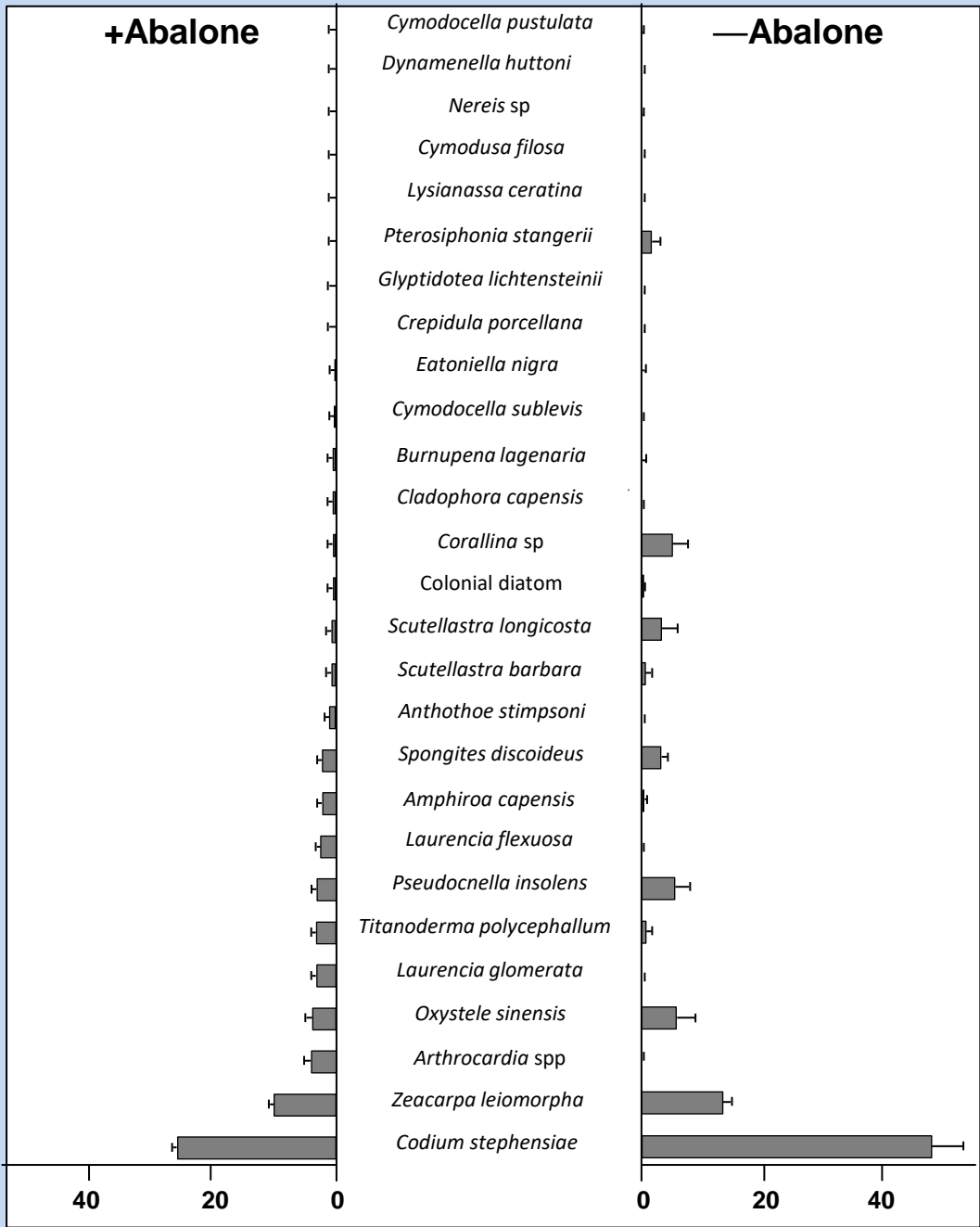


Data: Rob Crawford

4. Ecosystem effects of commercially important species

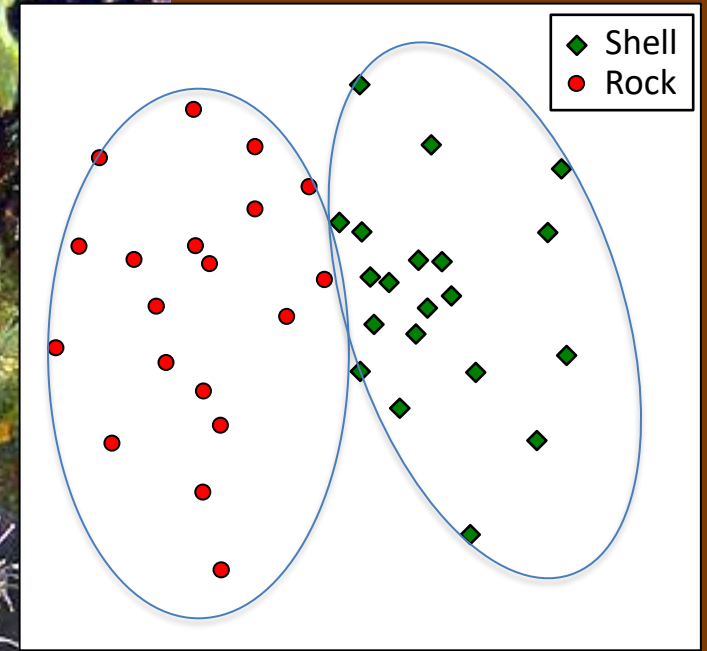






No significant difference

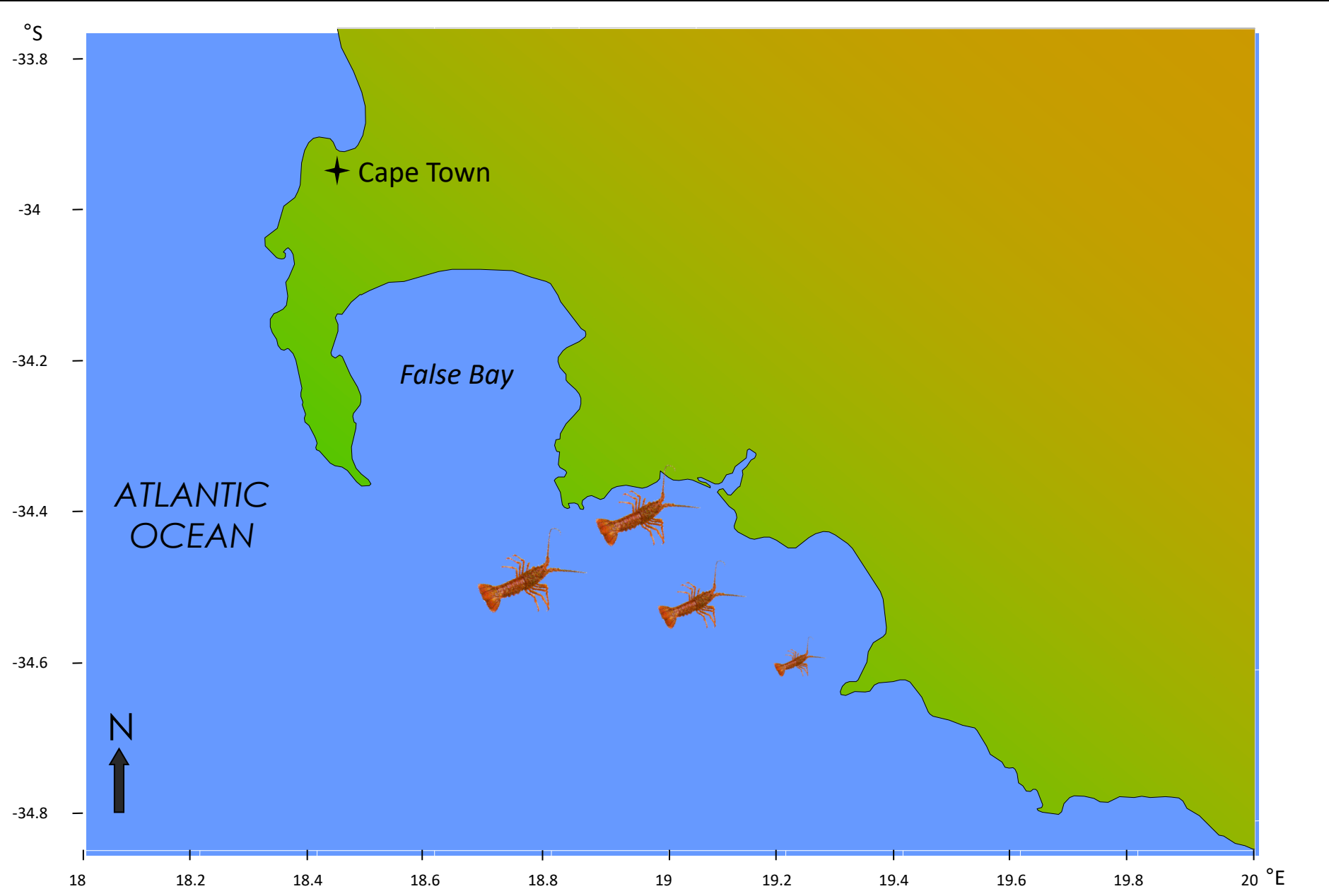
Life on shells vs. rocks



Unique communities on shells vs. rocks, boosting diversity

Rock lobsters on the march...







Bye-bye happiness...

Abalone recruits: settlement site



Abalone juveniles: shelter & feeding sites under urchins

Photo: Rob Tarr

Abalone juveniles under urchins

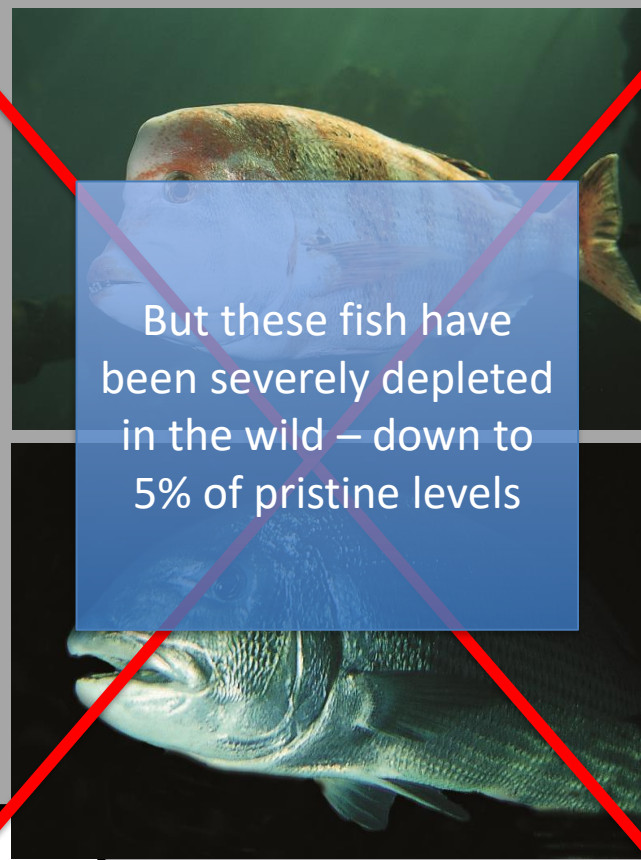
I think we' re gonna die....





Lara Atkinson
+ kelp tank at
Two Oceans
Aquarium!

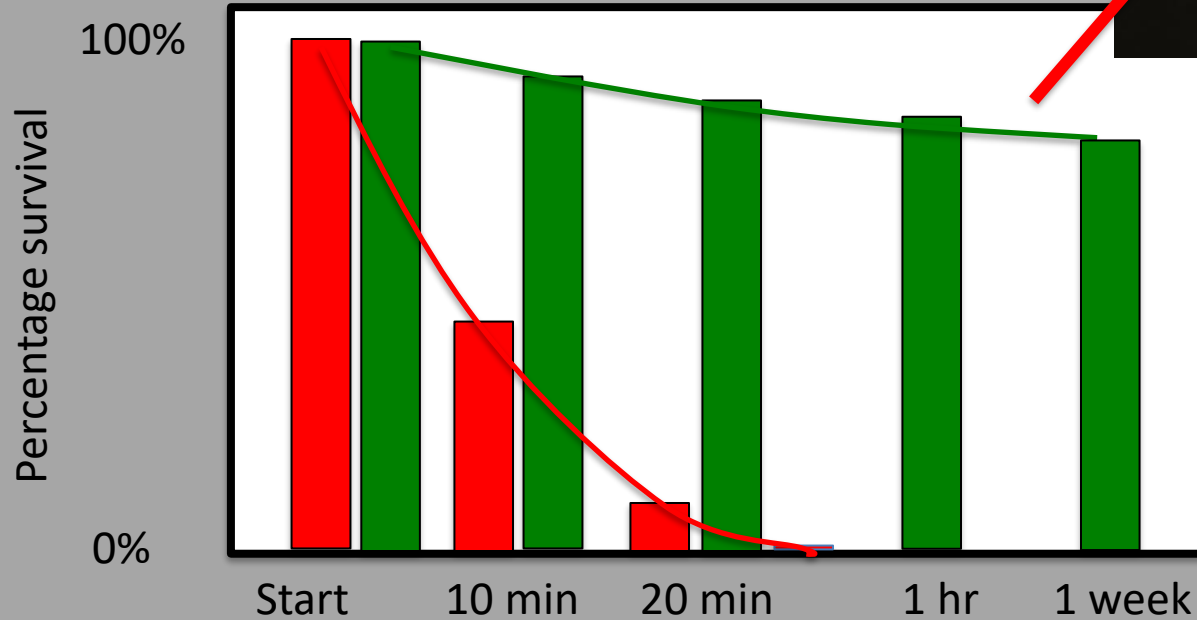


+



But these fish have
been severely depleted
in the wild – down to
5% of pristine levels

-  Lobsters tethered in the open
-  Free to move, sought shelter





+ or -



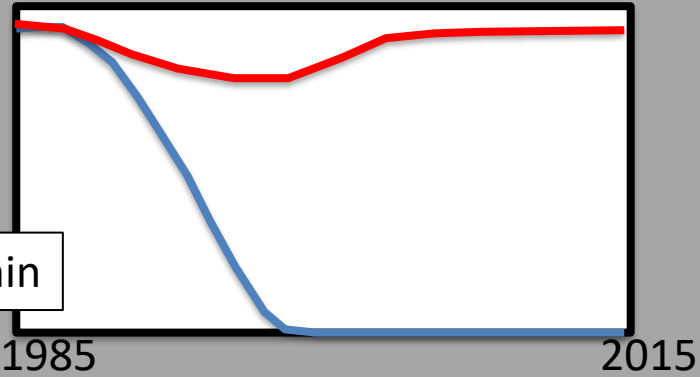
Laura Blamey

Modelling the
lobster 'invasion':

Would original levels
of fish have halted
the invasion?



Urchin



Abalone

