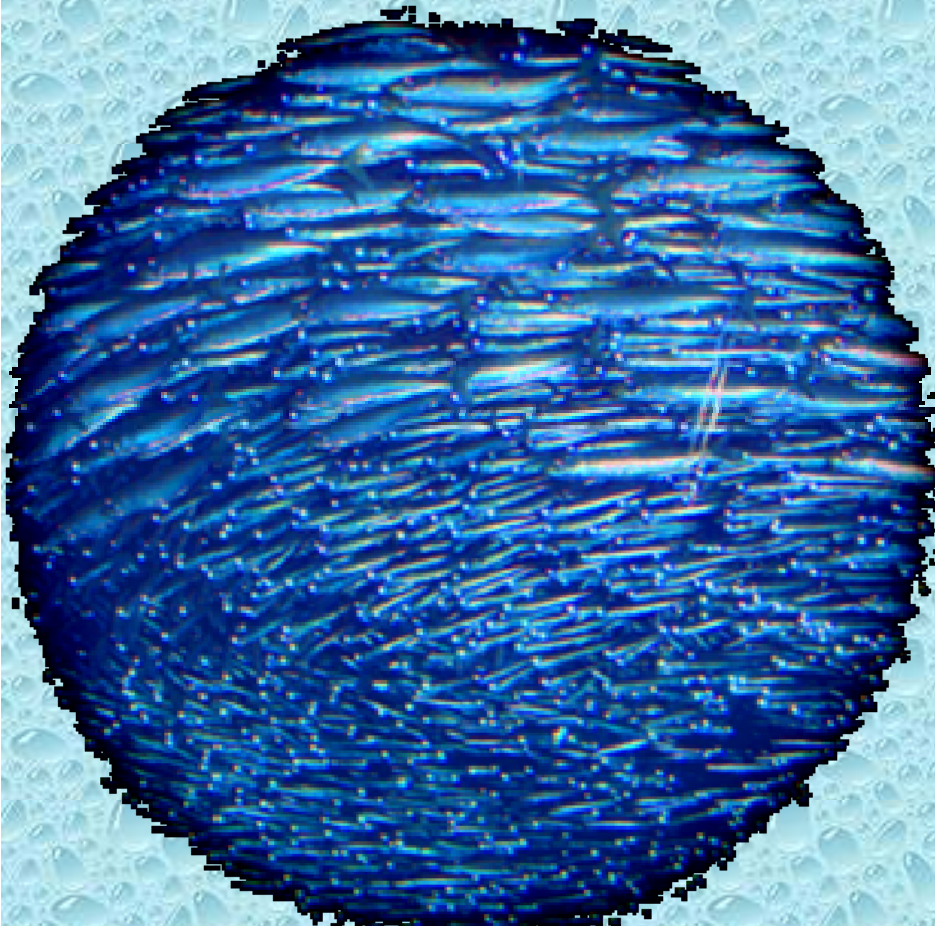




Schooling behavior of juvenile yellowfin tuna around a FAD in the Philippines



Ya**sushi**
MIT**SUNAGA**
Chikayuki ENDO
Ricardo BABARAN



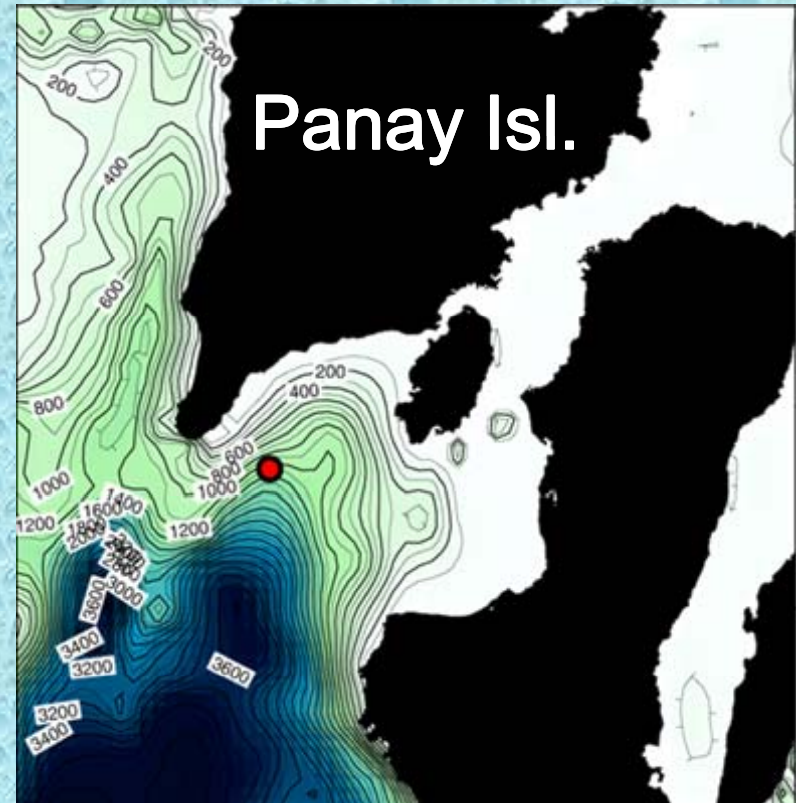
Yellowfin Tuna *Thunnus albacares*

Philippines

Panay Island

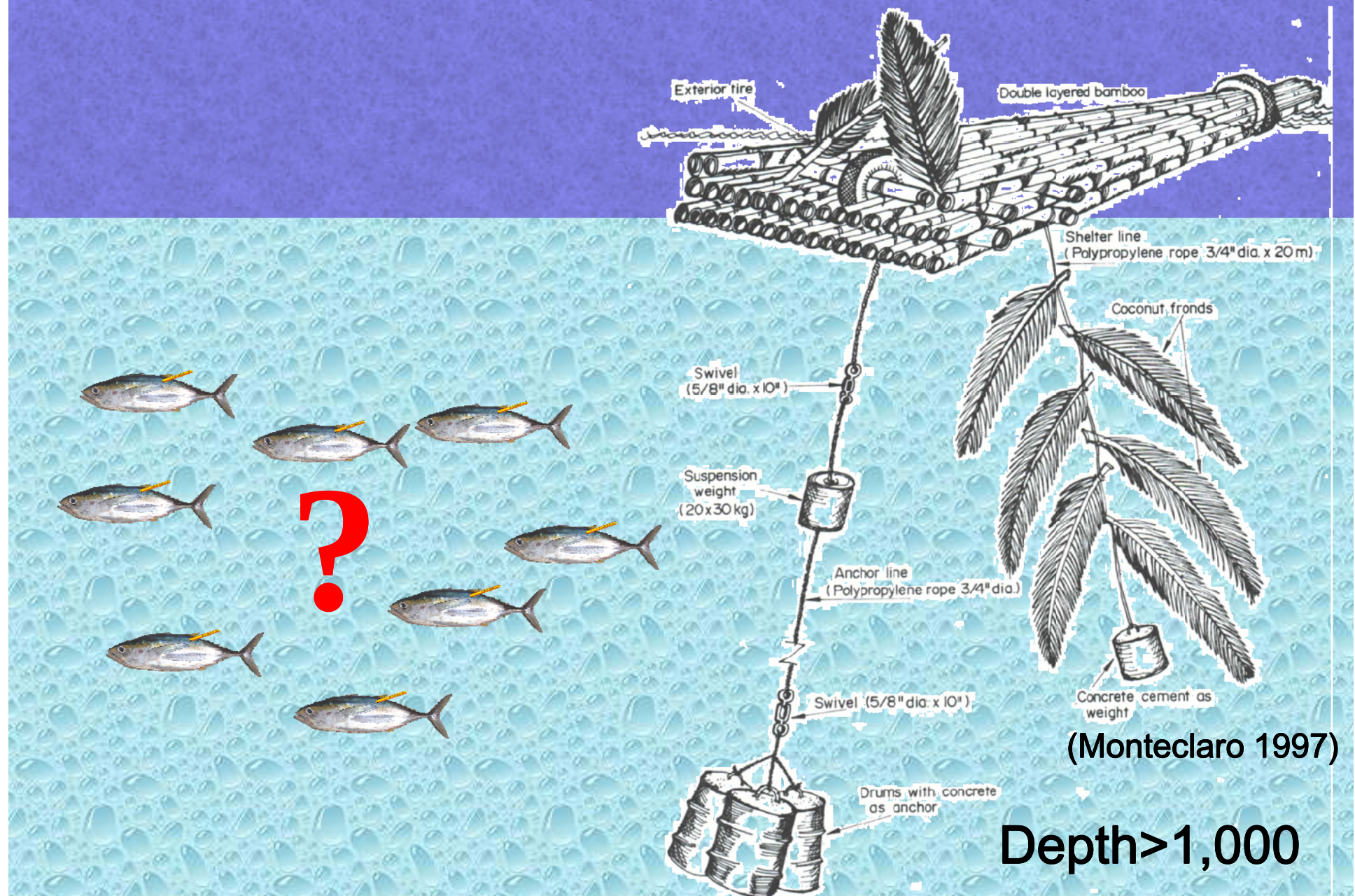
Juvenile

Spawning ground



Little is known about
the behavior of juvenile
< 40cm FL

Payao: Fish Aggregative Device (FAD)



Fish Telemetry Logging

Information

- When?
- Where?
- Who?
- How Depth?



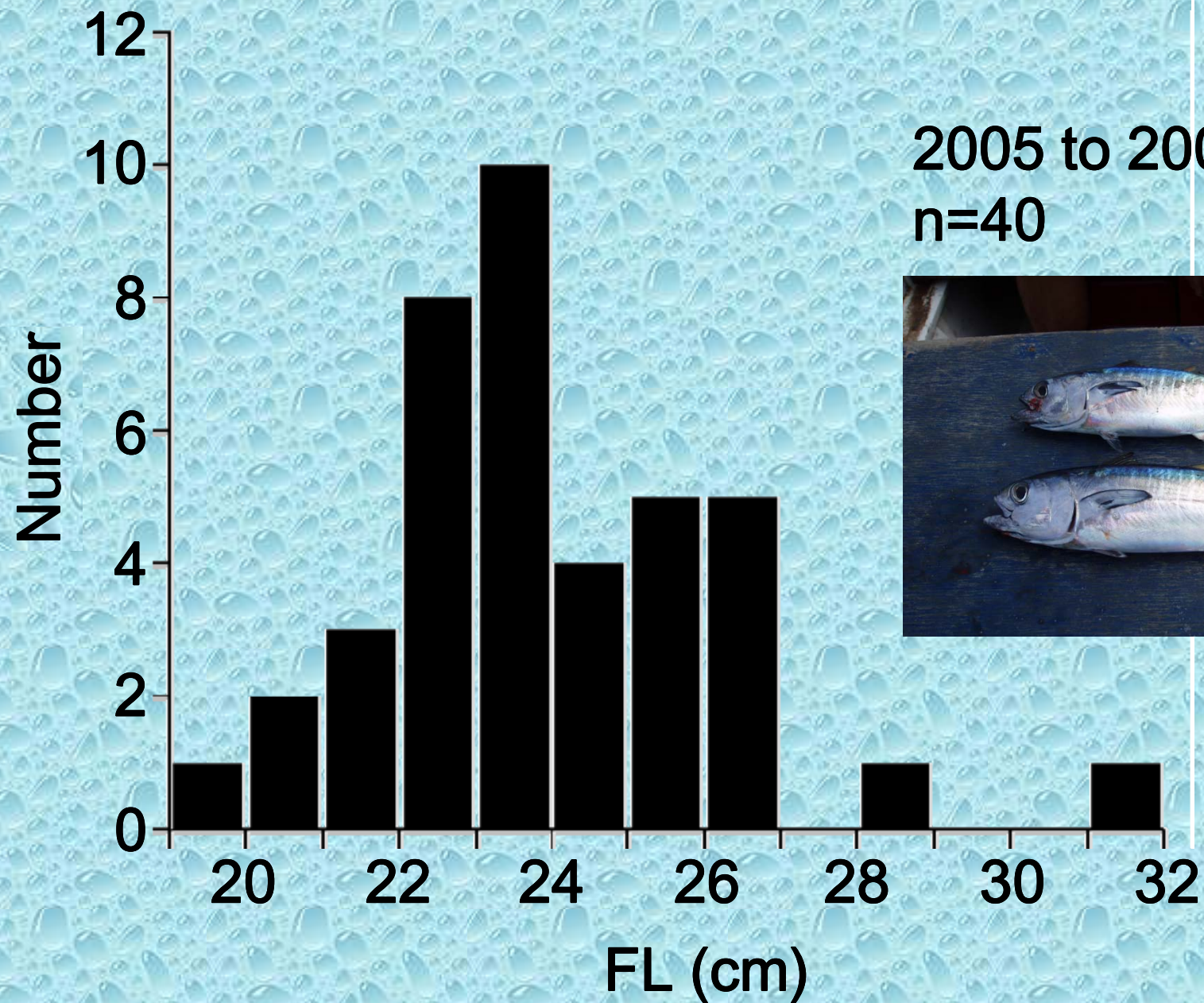
Data Logger

Set Receiver

Ultrasonic
Transmitter

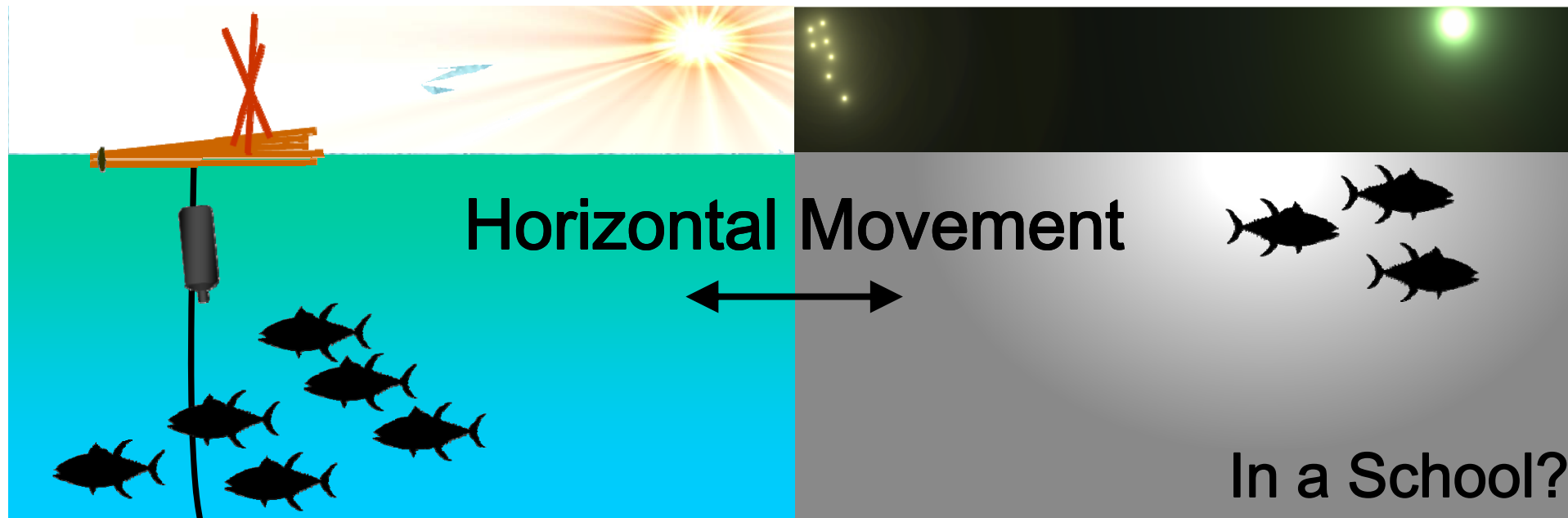


Tagged Juveniles

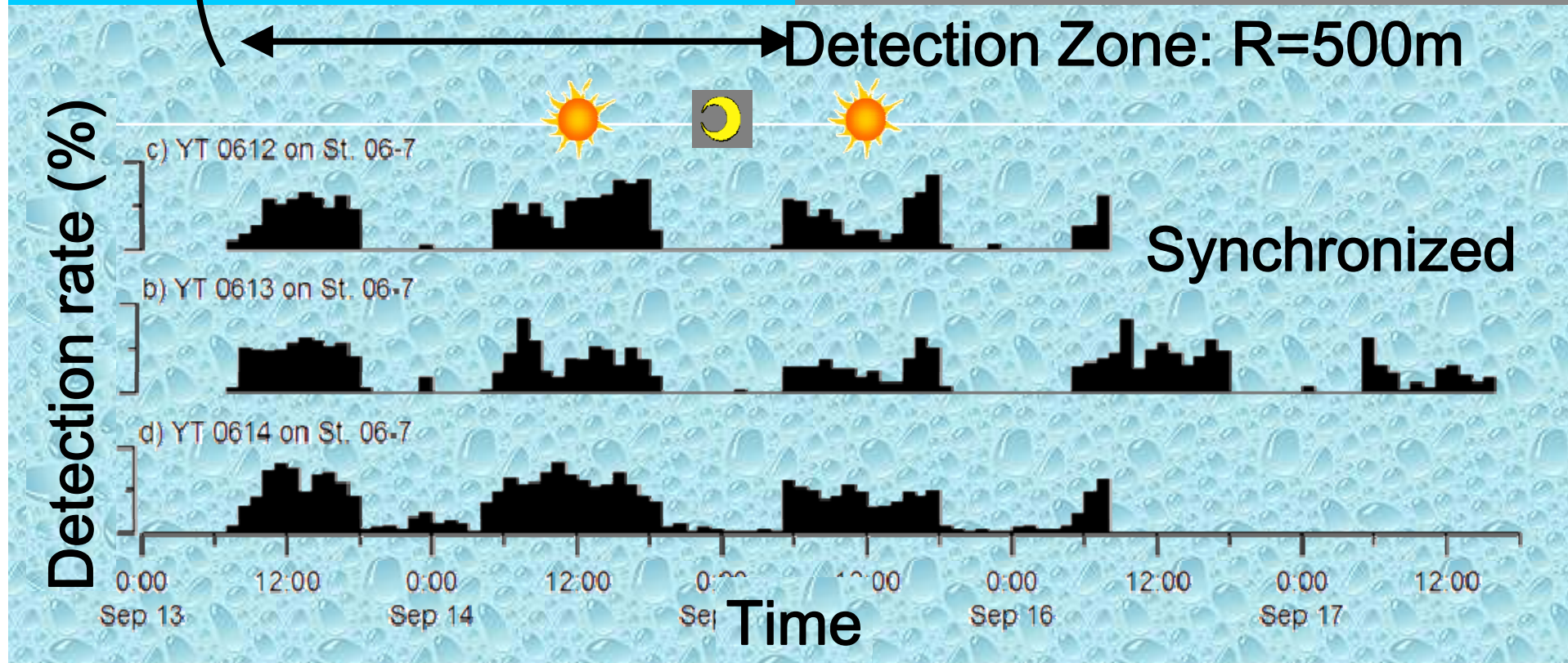


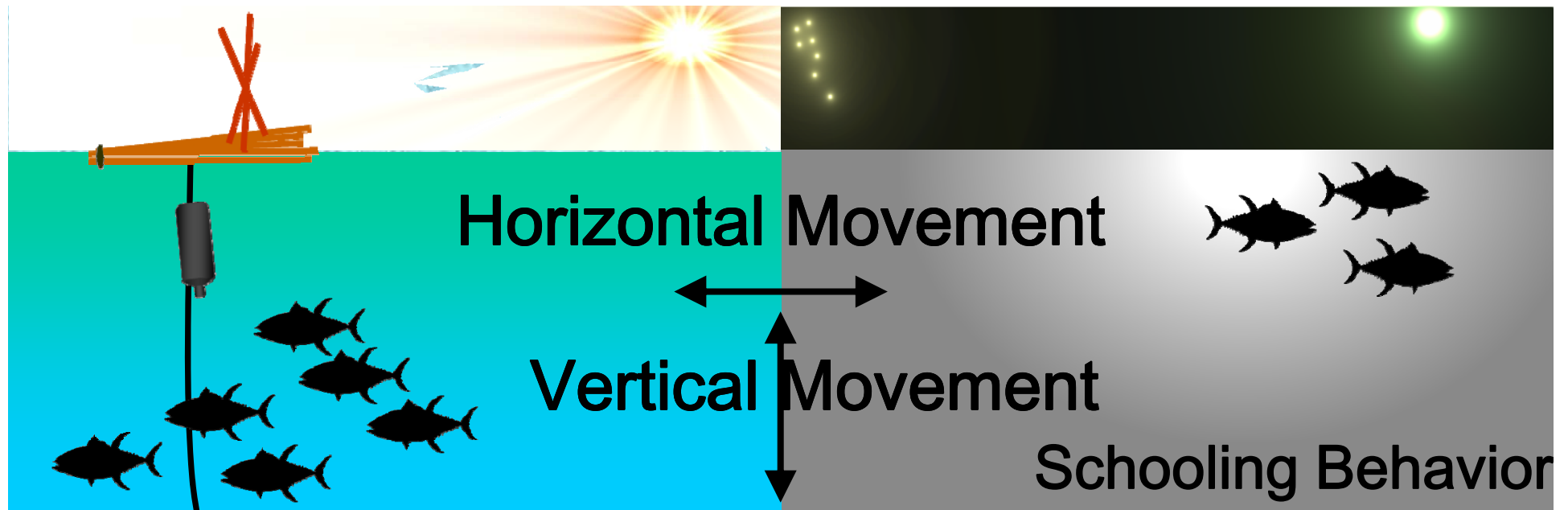
2005 to 2007
n=40





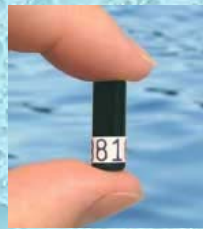
In a School?





Ultrasonic Transmitter & Data Logger

VEMCO Ltd. Canada
Coded V7-1L
 $\Phi 7.0 \times 17.5 \text{mm}$
1.4/0.7g in air/water
69kHz, 136dB
30-90sec, 48days



Star Oddi Ltd. Iceland
DST micro
 $\Phi 8.3 \times 25.4 \text{mm}$
3.3/1.9g in air/water
43,000 measurements
Sampling interval: 1min
Sampling period: 15 days

Research Boat



Small
Narrow



Tagging

The image shows a fish, likely a salmon, lying on a white plastic-covered surface. A person wearing white gloves is performing a surgical procedure on the fish's abdomen. The fish is held steady by another gloved hand. The background shows the side of a boat with blue and white railings and some equipment.

Incision: ca. 20 mm

Insert into abdominal cavity

Suture with one stitch

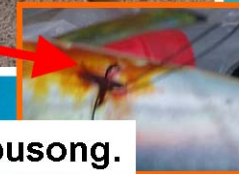
PAHIBALO



May nakasulat nga “UPV-KINDAI sa Tag”.



Marka sang operasyon sa busong.

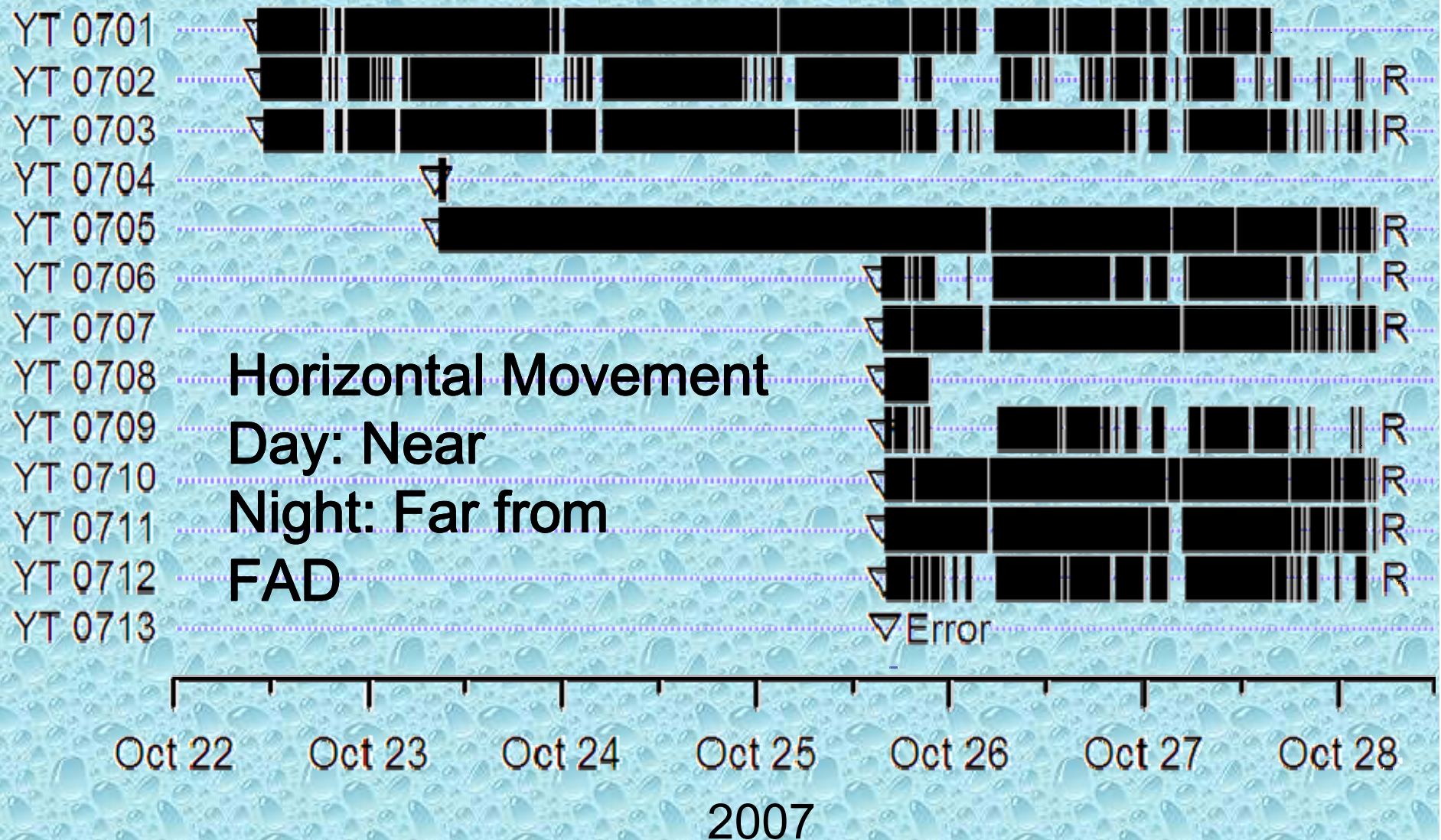


Mechanical tag sa sulud sang busong .

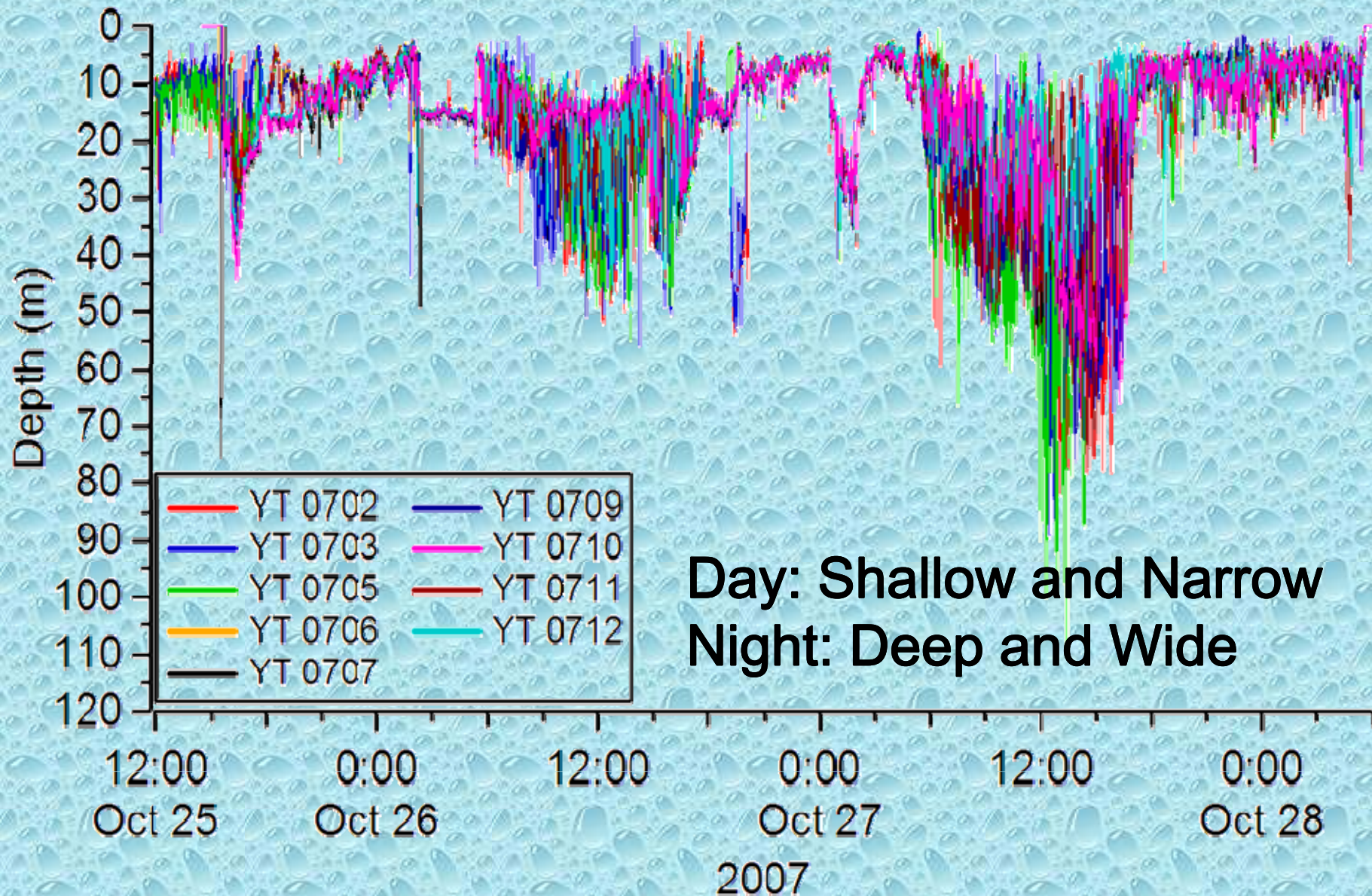
Ang gin- taggan nga isda gin buy-an sa payao.
Ang mechanical tag makita sa sulud sang busong.
Kun madakop ang isda nga dya palihog kontak sa amon.
Kung possible, palihog tago
sang isda (naka ice or freeze)nga may tag.
Pagahatagan namon sang padya (P1000.00) ang magabalik sang
mechanical tag kag (UPV-KINDAI) ukon sang isda
nga may mechanical tag UPV-KINDAI.

University of the Philippines in the Visayas
(+63)(33) 3381534, 5084164, 3159631, or 3159632.
R. Babaran (UPV)
C. Selorio (UPV)
C. Endo (Kinki Univ. Japan)

▽: Release 13 Juveniles (20.5 – 24.0 cm FL)
R: Recapture 9 Juveniles at the same Payao
by a Ring Net



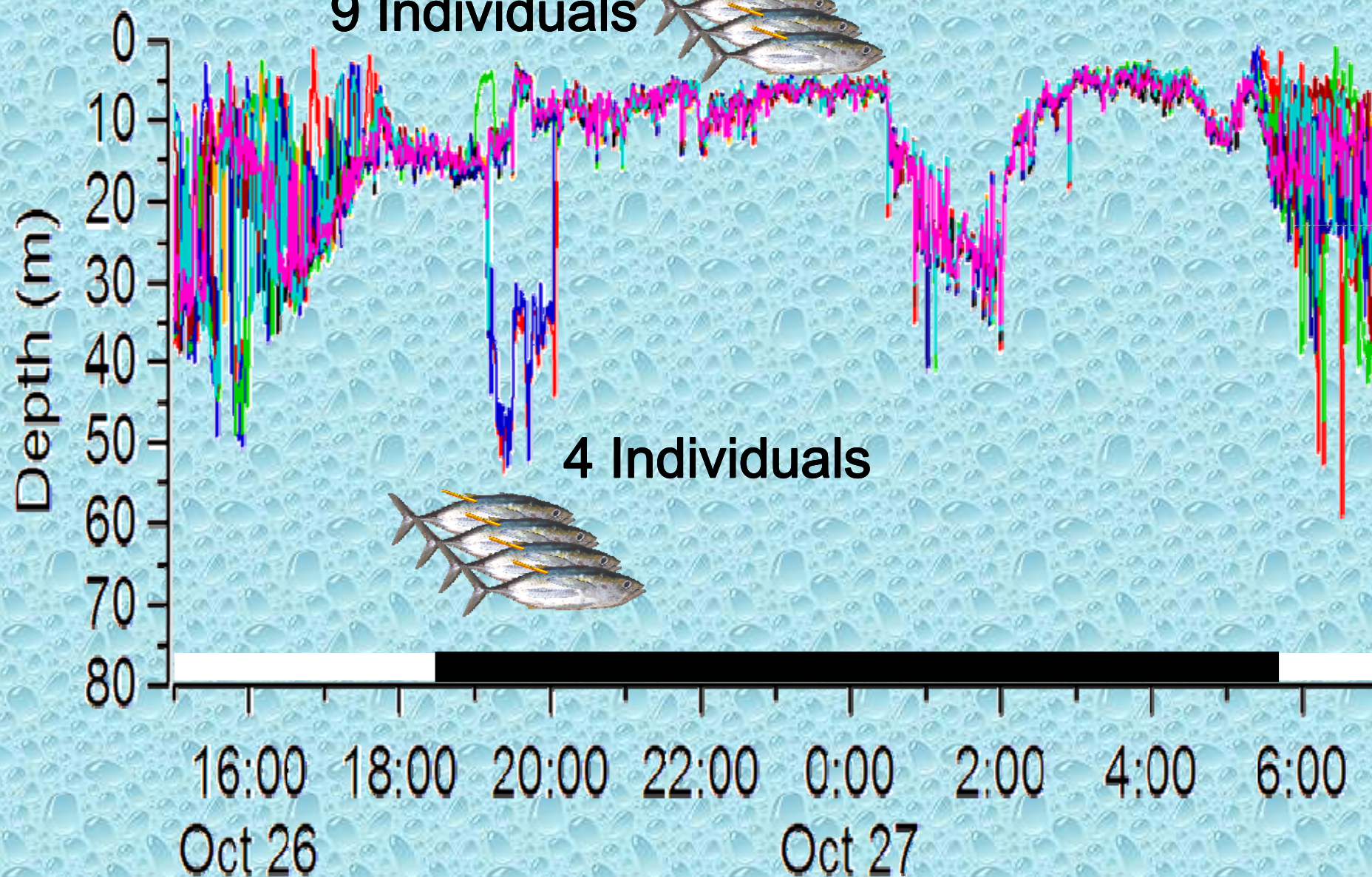
Vertical Movement Synchronized at Night



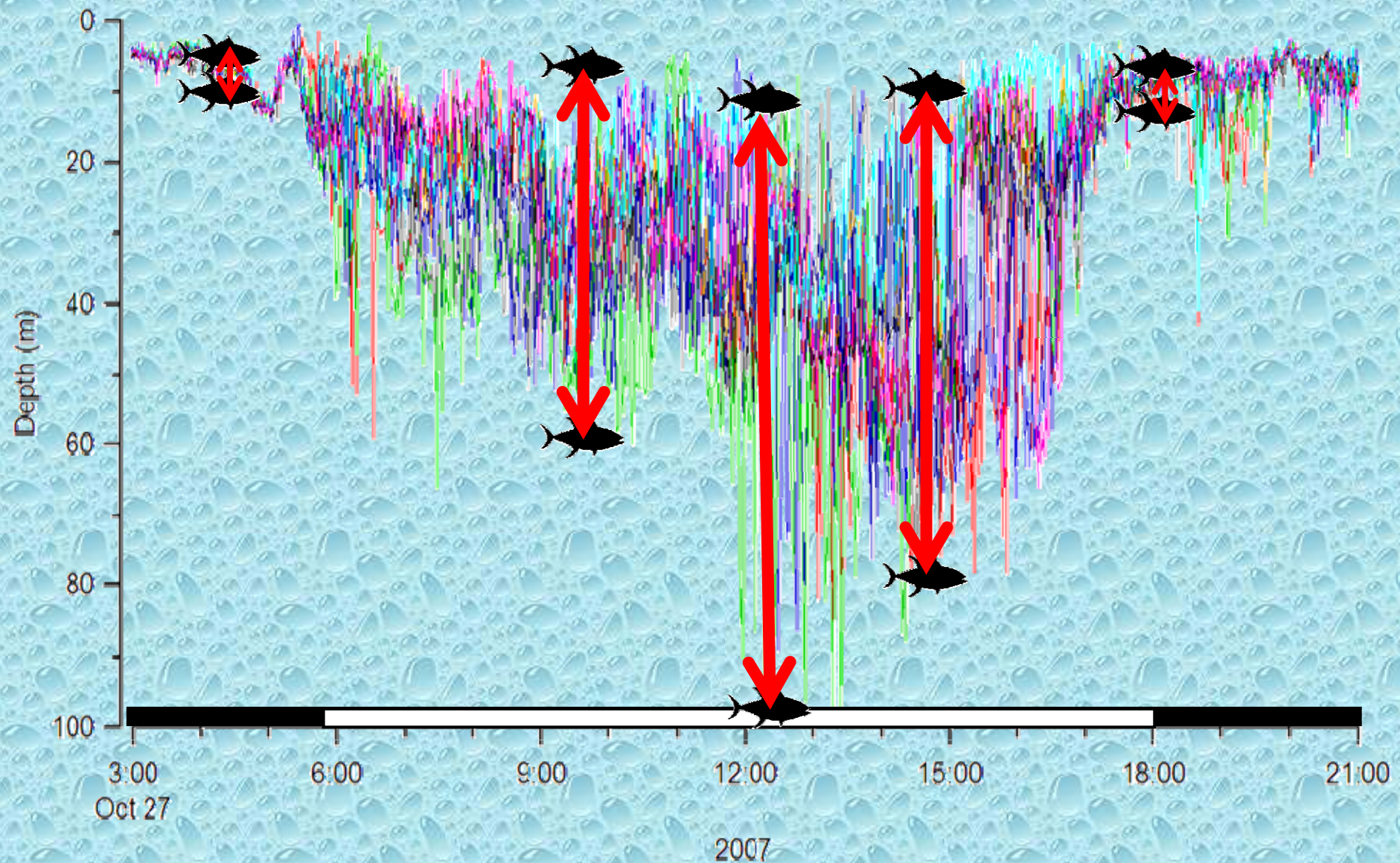
Full Moon



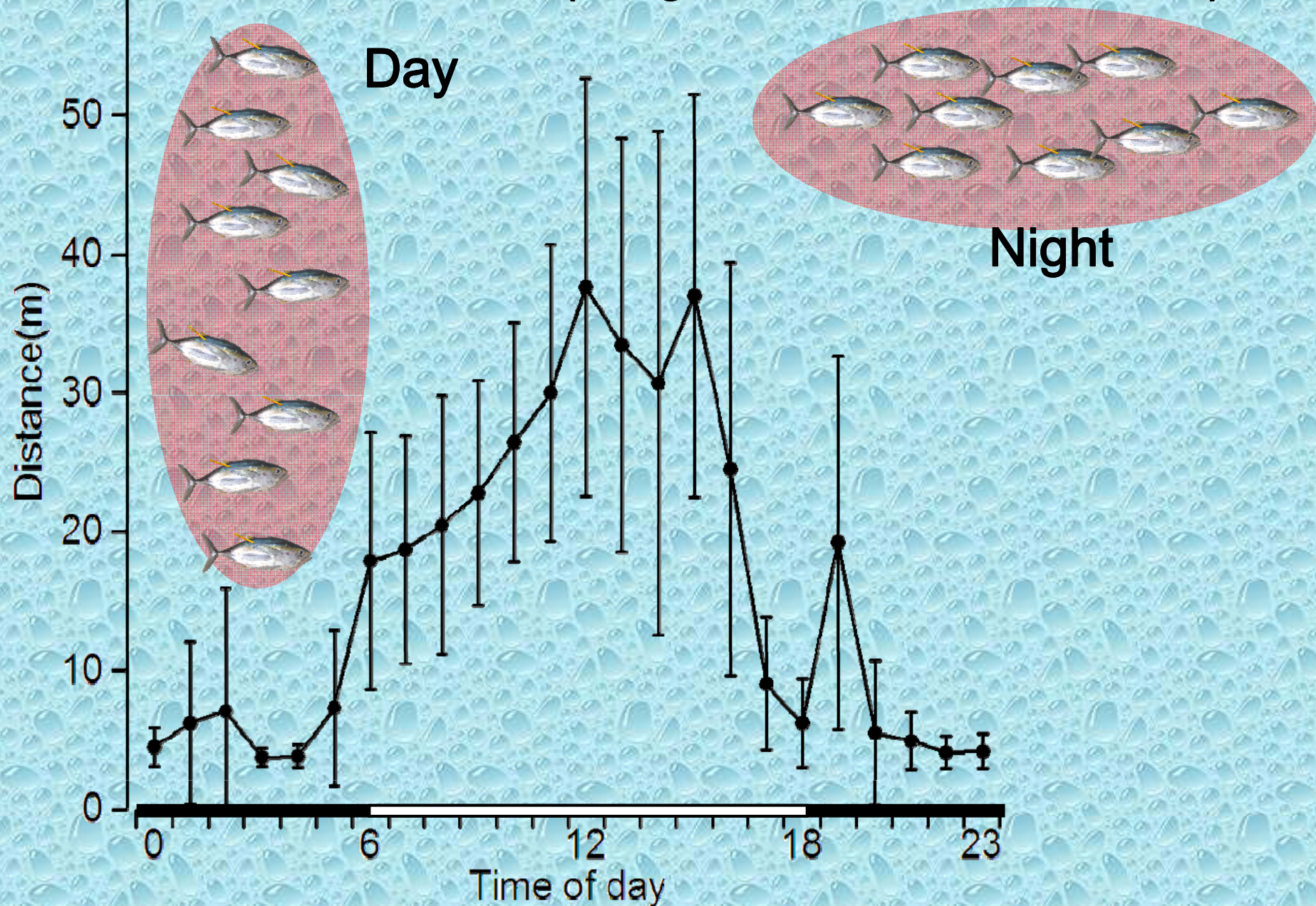
9 Individuals

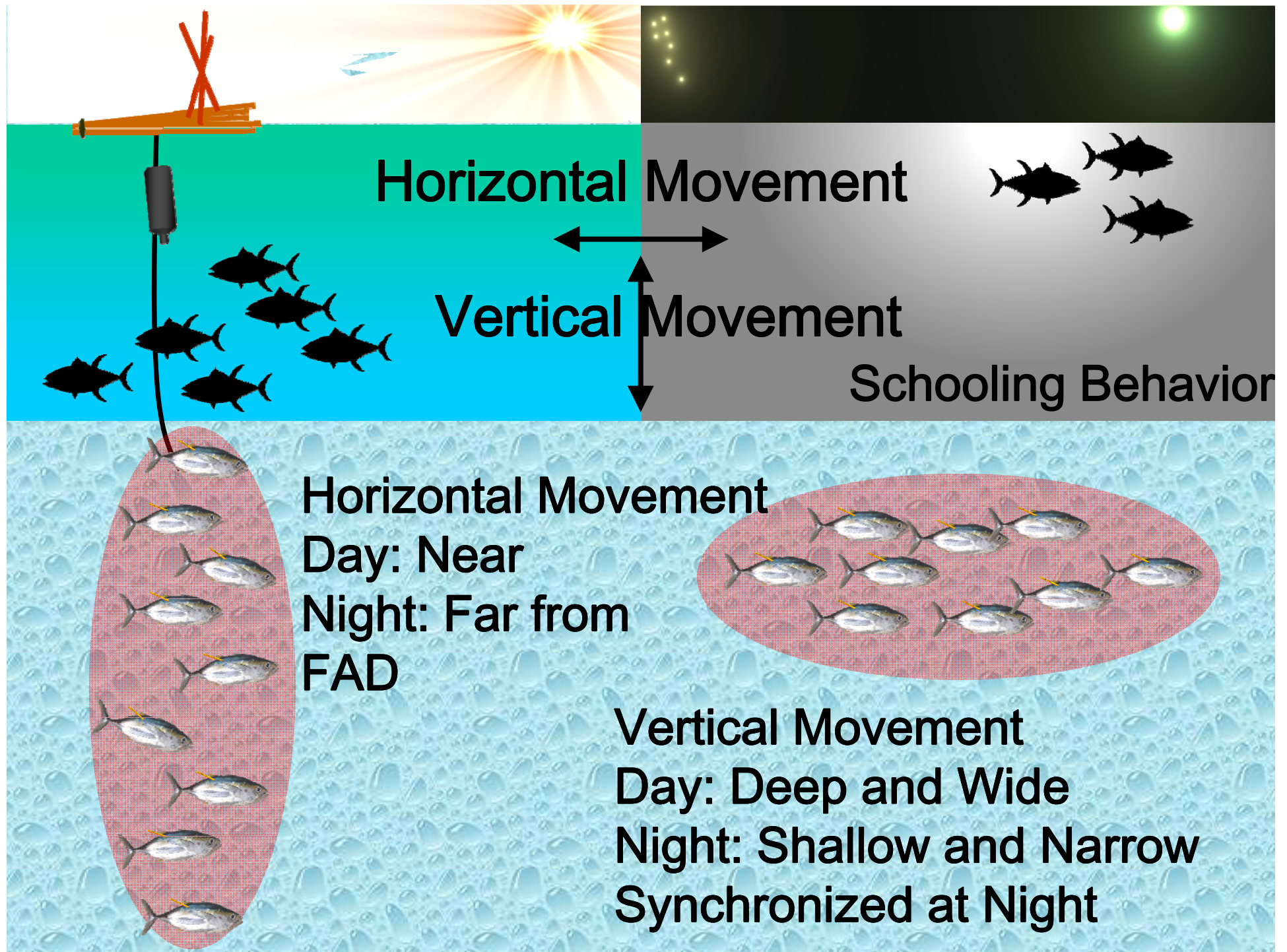


Maximum NVD (Neighbor Vertical Distance)



Maximum NVD (Neighbor Vertical Distance)



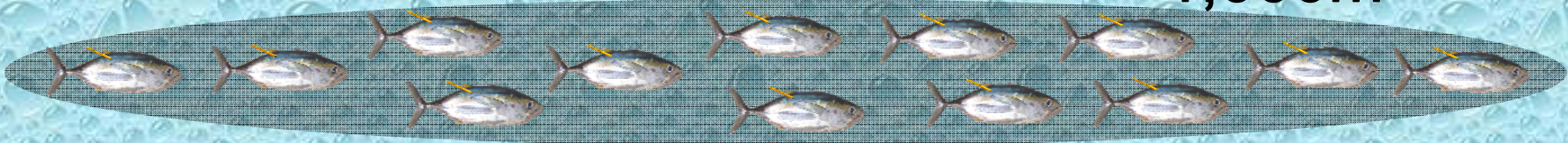


Foraging Strategy



FAD (Payao)

← 1,000m →



Night: Horizontal

Stomach Contents



Lantern Fish



SSL ↑↓

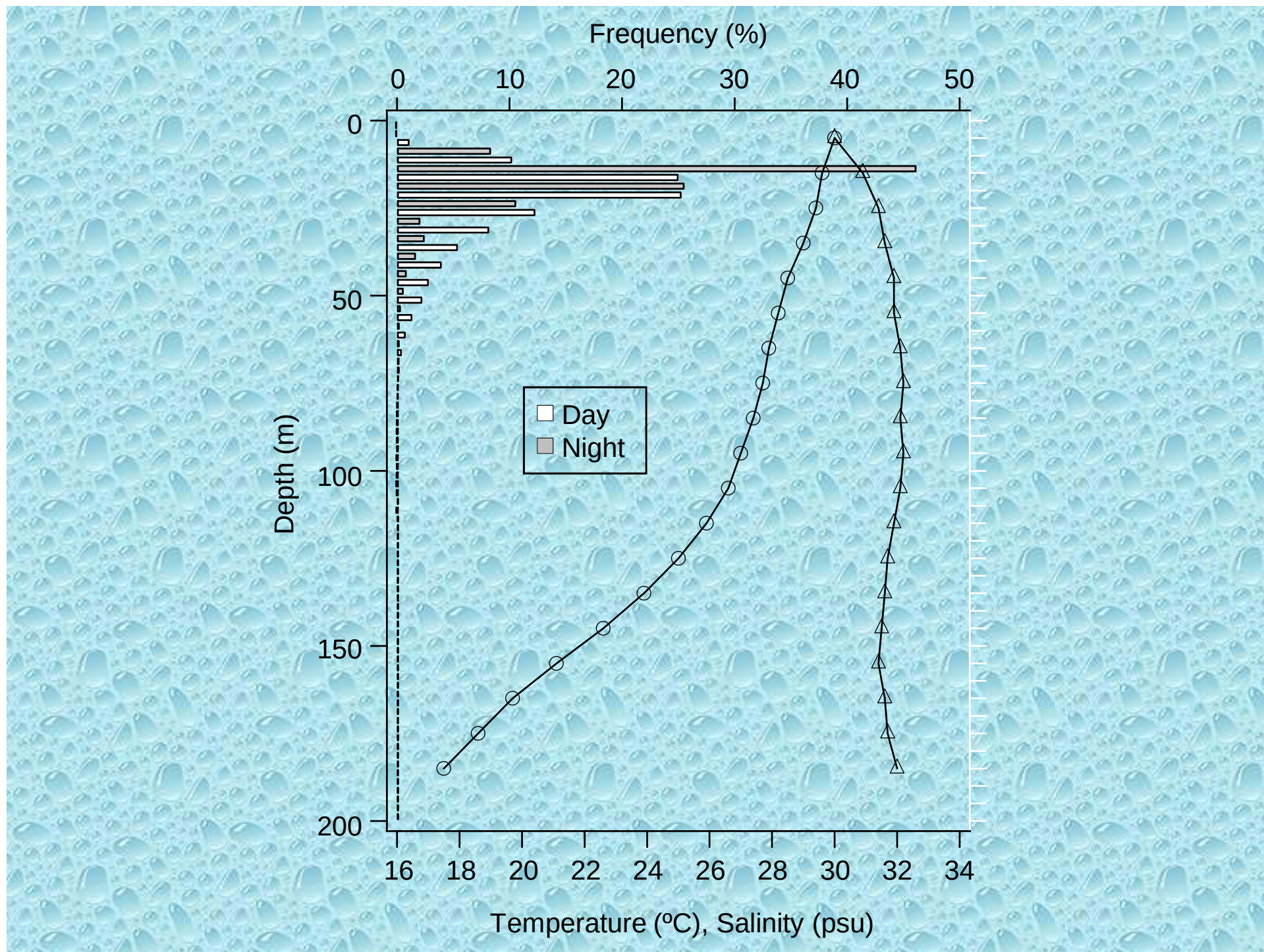


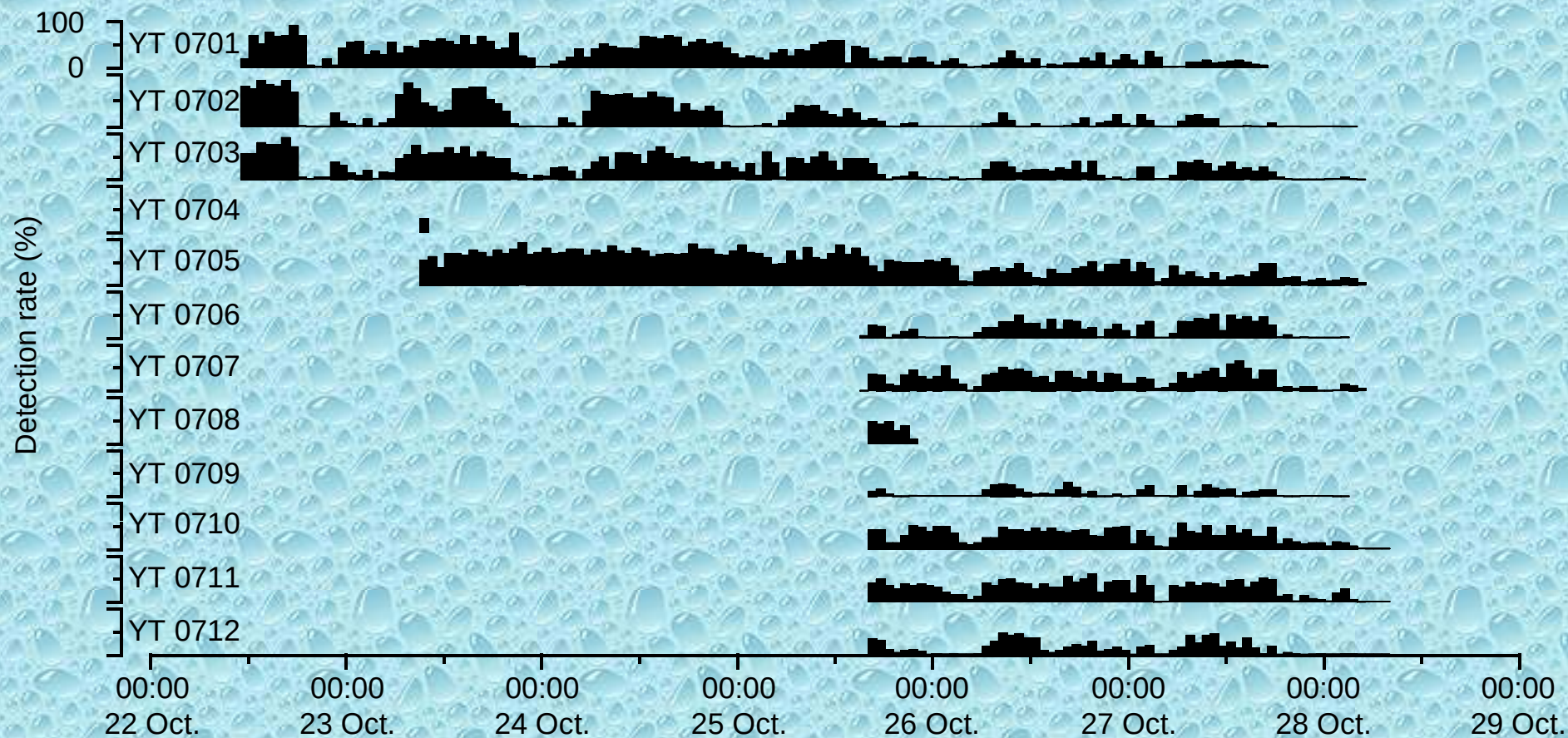
Squid

Day: Vertical

~~Fishing~~ CTD Measurement

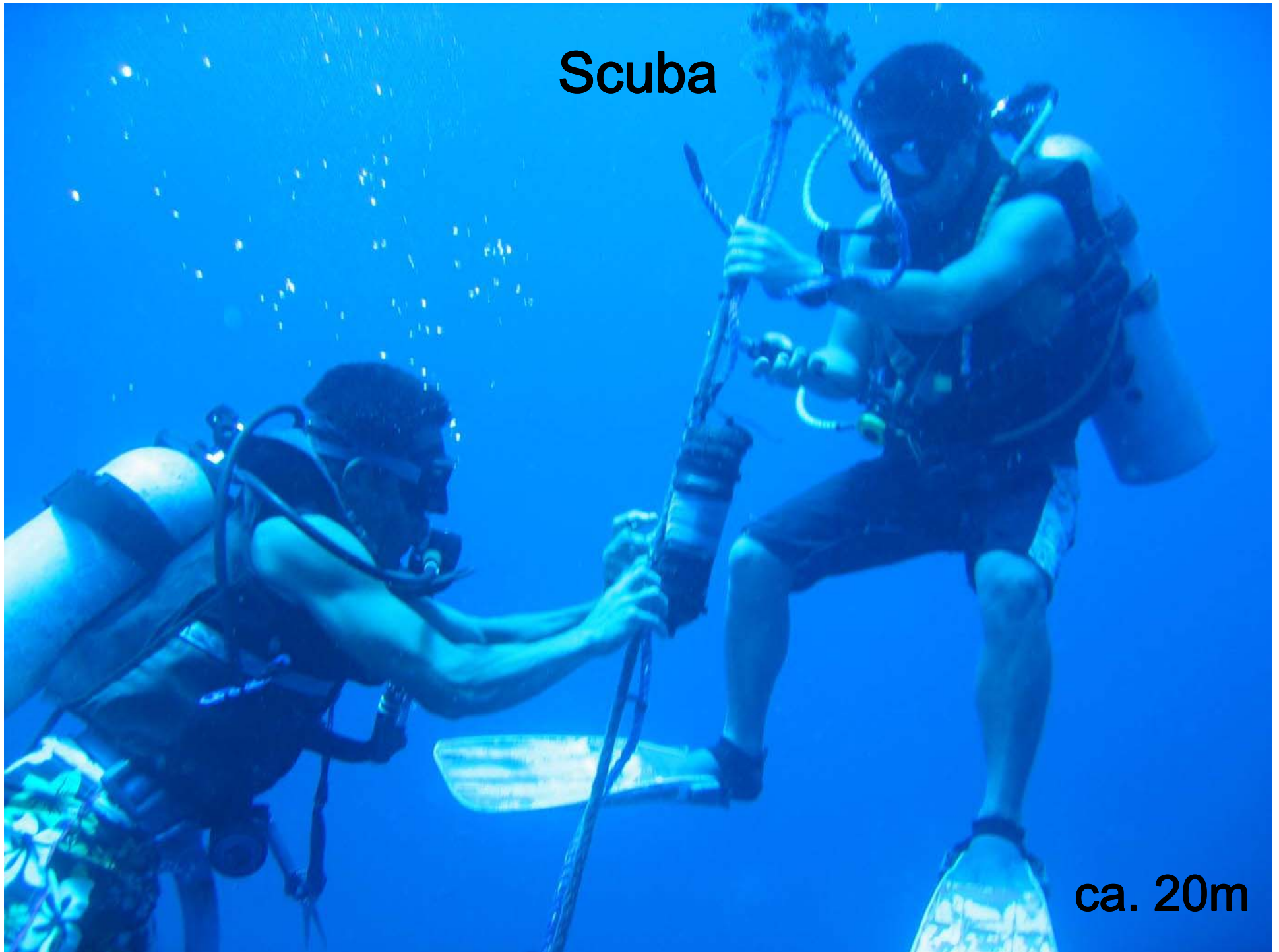






Scuba

ca. 20m



Fishing Gear Depth



Depth Logger
DST-milli, Star-Oddi

