



3rd of February 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	20 min
5	Exercise	25 min
Break (15 min)		
6	What we do with photo-id data	40 min
7	Exercise	10 min
8	Practice with matching and camera	50 min
9	How can I help?	10 min

1. Marking and capturing: a gentle introduction

a. Capture and restraint



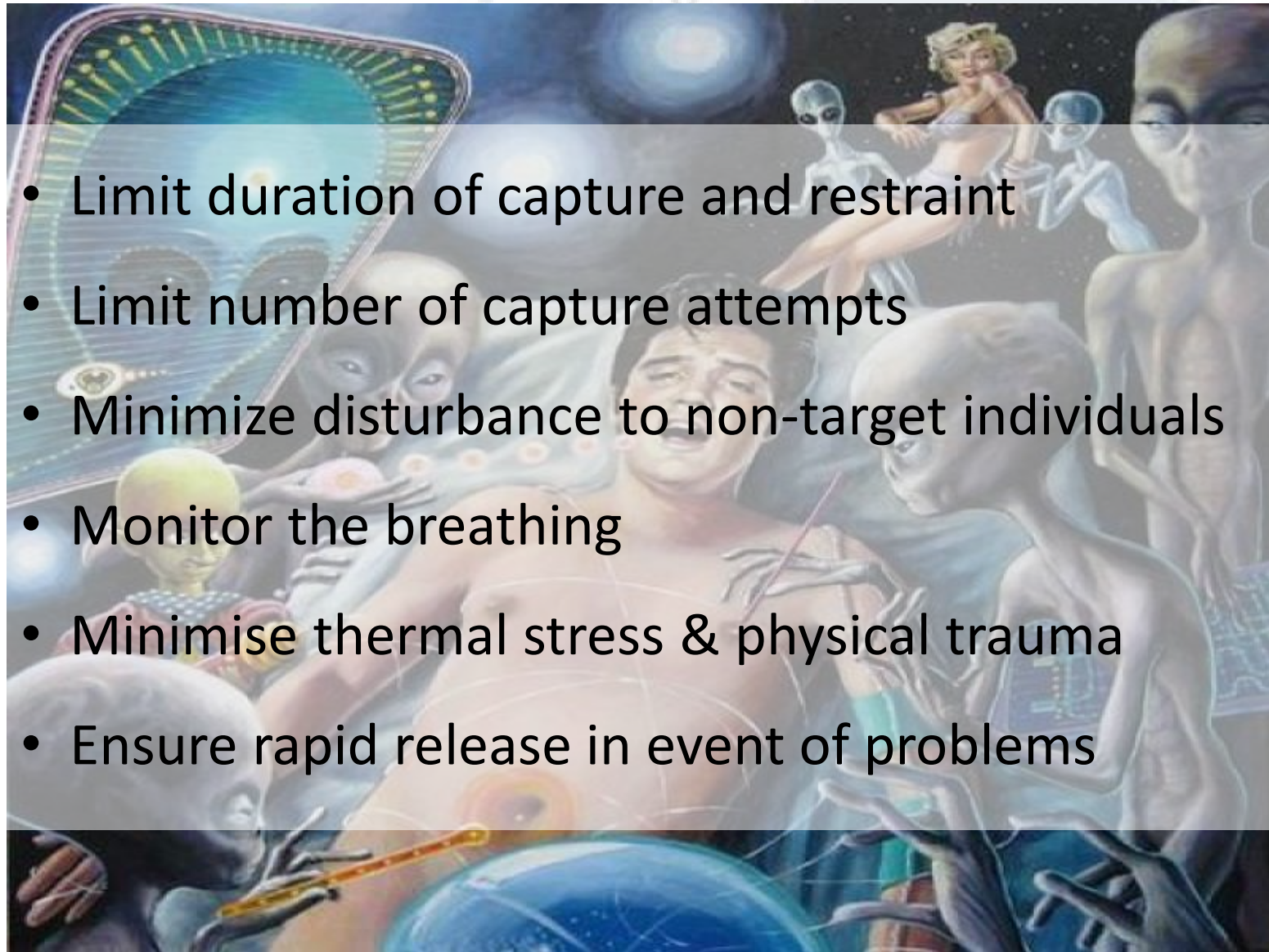
b. Applying marks



c. Photo-identification



a. Capture and restraint: Rules to follow



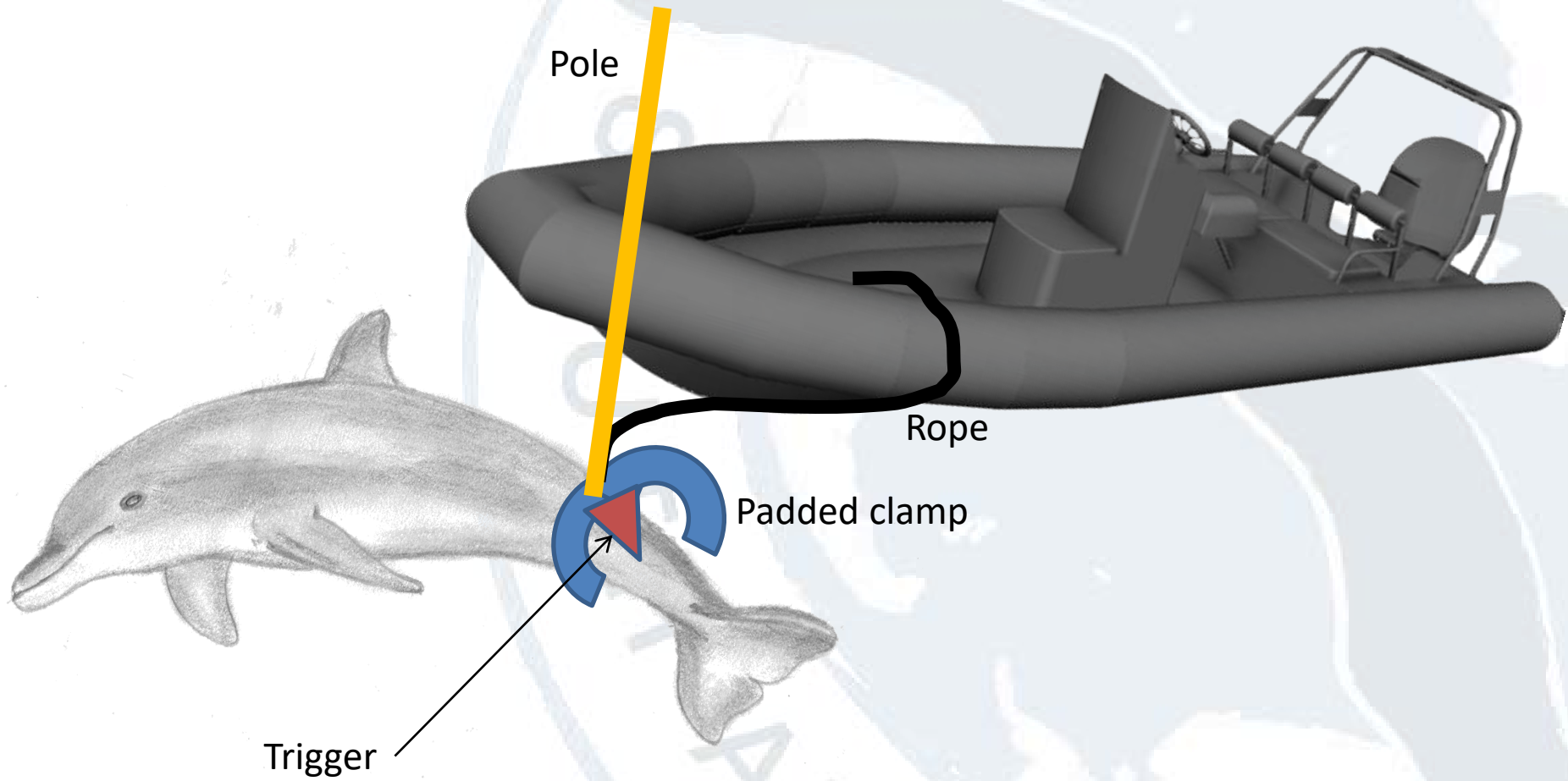
- Limit duration of capture and restraint
- Limit number of capture attempts
- Minimize disturbance to non-target individuals
- Monitor the breathing
- Minimise thermal stress & physical trauma
- Ensure rapid release in event of problems

a. Capture and restraint: Hoop catching method

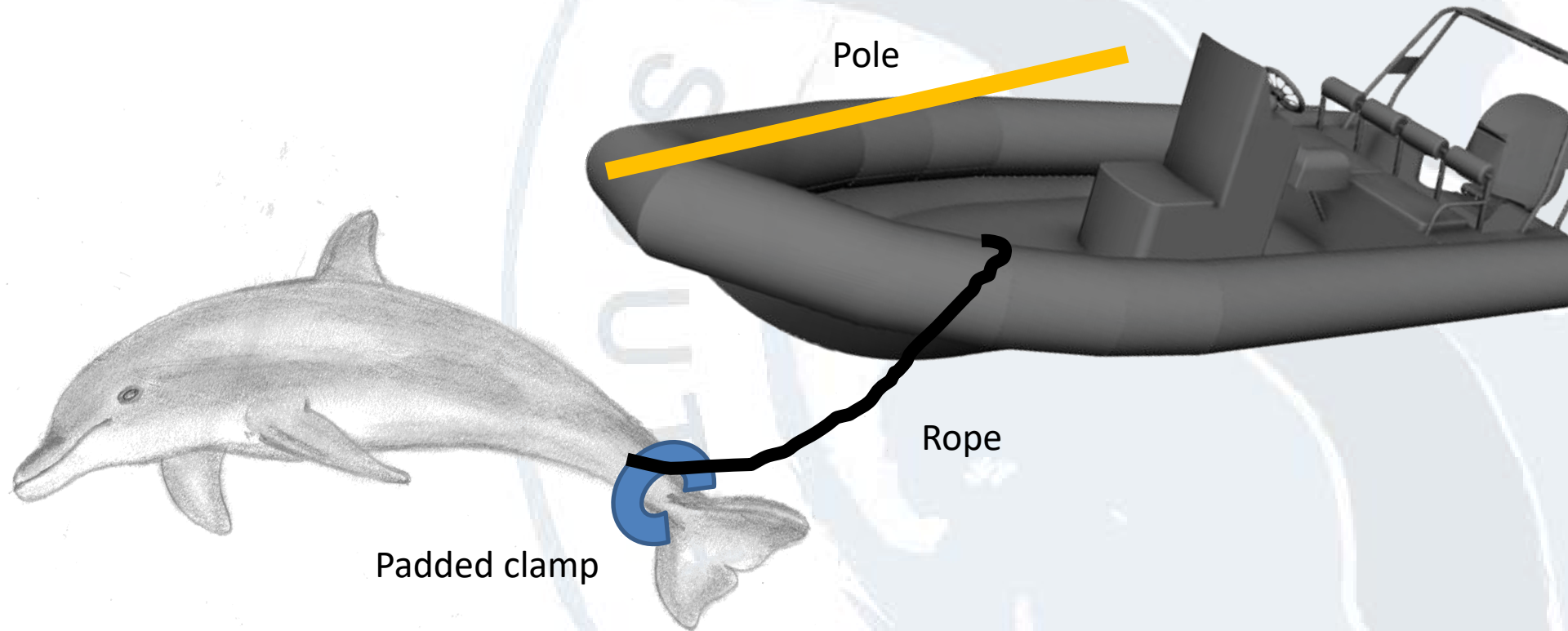


P. E. Nachtigall et al. J Exp Biol 2008;211:642-647

a. Capture and restraint: Tail grab method (Würsig 1982)

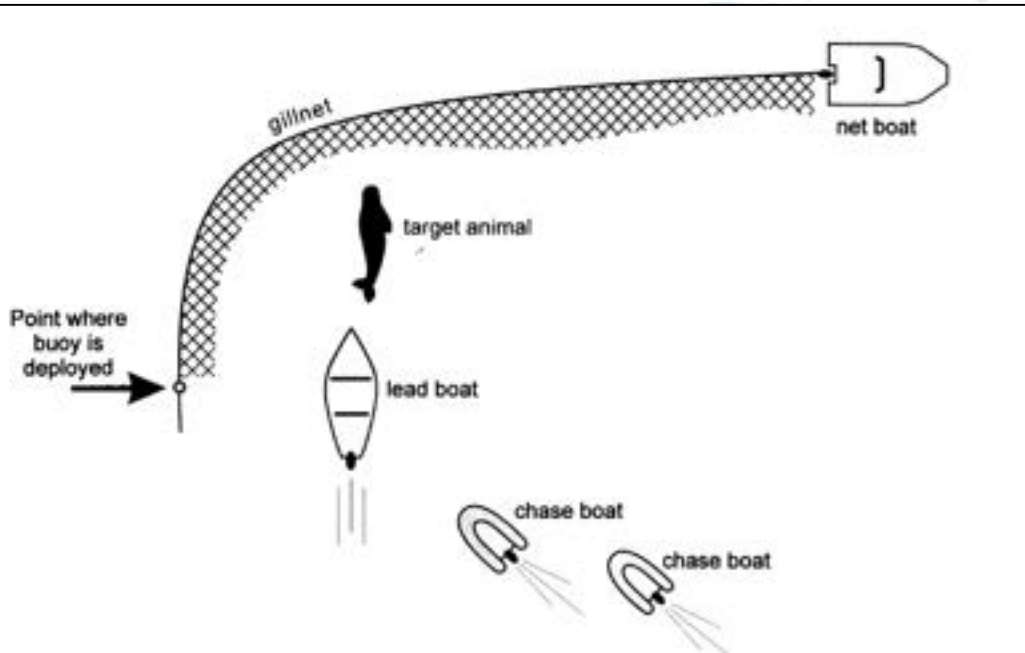


a. Capture and restraint: Tail grab method (Würsig 1982)

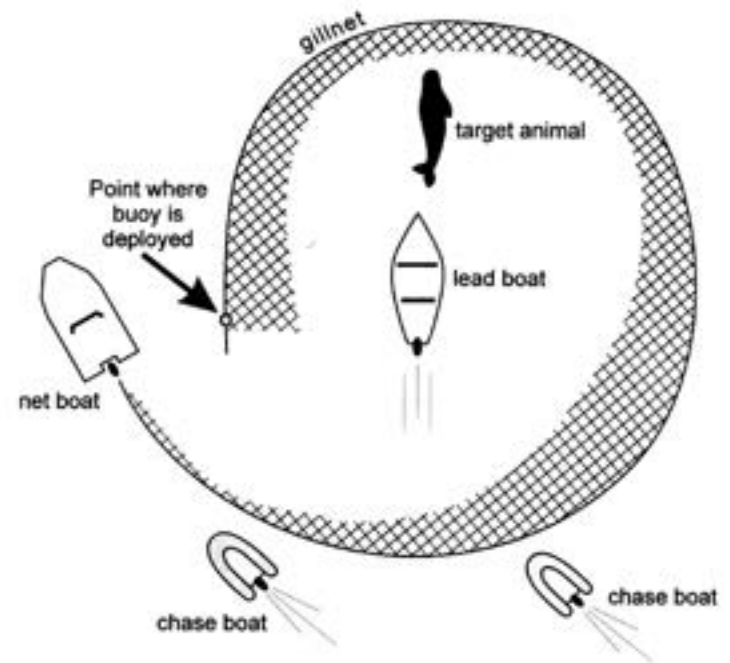


Hand & Rope (Asper 1975)

c. Capture and restraint: Large-mesh seine net



Ferrero et al. Marine Fisheries Review 2000; 62(3):122-123



Capture and restraint: Why?

- Application of some ID-tags, telemetry tags, underwater cameras
- Tissue sampling, body size, and physiological parameters



© Sarasota Dolphin Research Program, NMFS permit #522-1785





The Cove (2009)
Blackfish (2013)

- To procure animals for marine parks/*delphinaria*

Your brain is even bigger than ours.

Perhaps that's why we don't find imprisoning you & forcing you to do tricks "entertaining."



The last chance

Critically endangered

World's smallest porpoise on the verge of disappearing forever

Vaquita marina
Phocoena sinus



Population: 30
Latest data published by the International Committee for the Recovery of the Vaquita

Main threats

- **Entanglement** in fishing gear
- **Illegal fishing** for the 2 m long **totoaba** fish, also critically endangered
- **Habitat degradation**

- ▶ Reproduces once every 2 years
- ▶ On current trend likely extinct by 2022

Length: 1.5 m
Weight: up to 55 kg

An illustration of a diver in the water next to a vaquita, with a small fish nearby.

Habitat
GULF OF CALIFORNIA

UNITED STATES

MEXICO

MEXICO CITY



International Committee for the Recovery of the Vaquita (CIRVA)

b. Applying marks



b. Applying marks: Flipper/fin tagging



Cattle/sheep ear tags



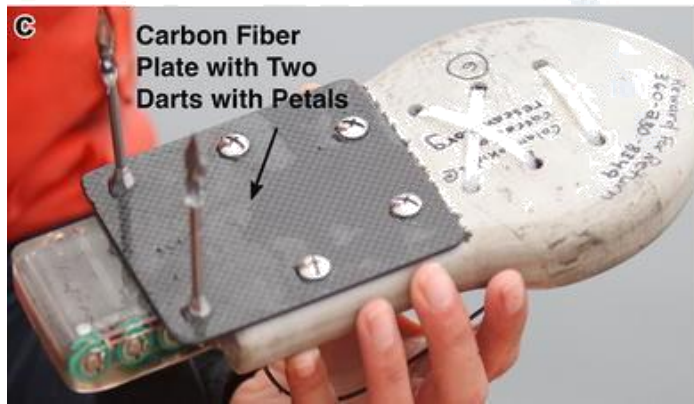
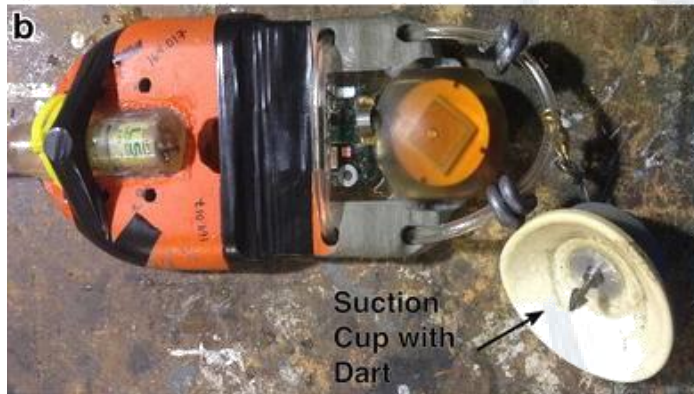
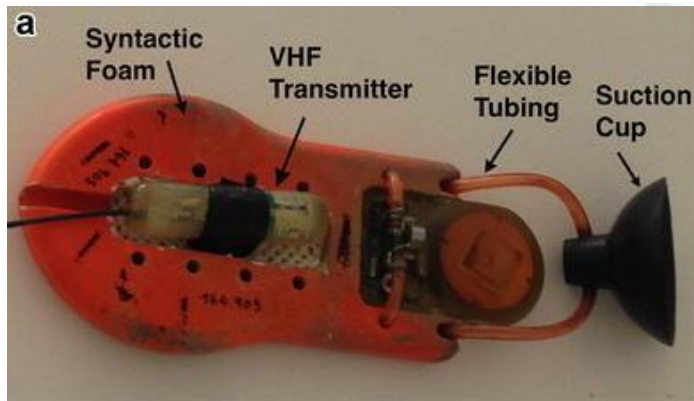
Dorsal fin tagging

b. Applying marks: Discovery tags

- 20,000 implanted in whales and sperm whale in 1931-1985
- Low rate of recovery (<15%)
- Serious injuries



b. Applying marks: Time-depth recorders (TDRs) tags







b. Applying marks: Dye, paint and bleach tagging

Fur clipping



b. Applying marks: Hot-iron branding and...



... Freeze branding

- alcohol and dry ice ($-67/77\text{ }^{\circ}\text{C}$)
- Liquid nitrogen ($-190\text{ }^{\circ}\text{C}$)

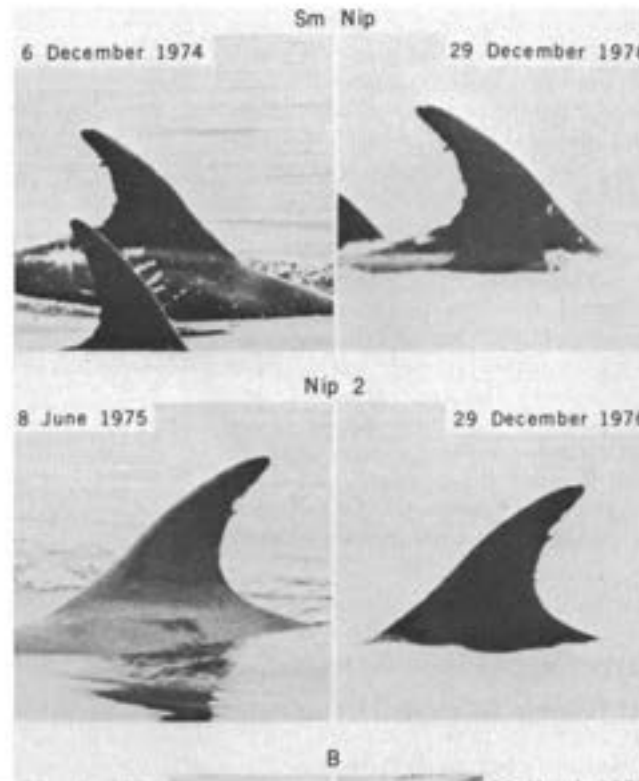
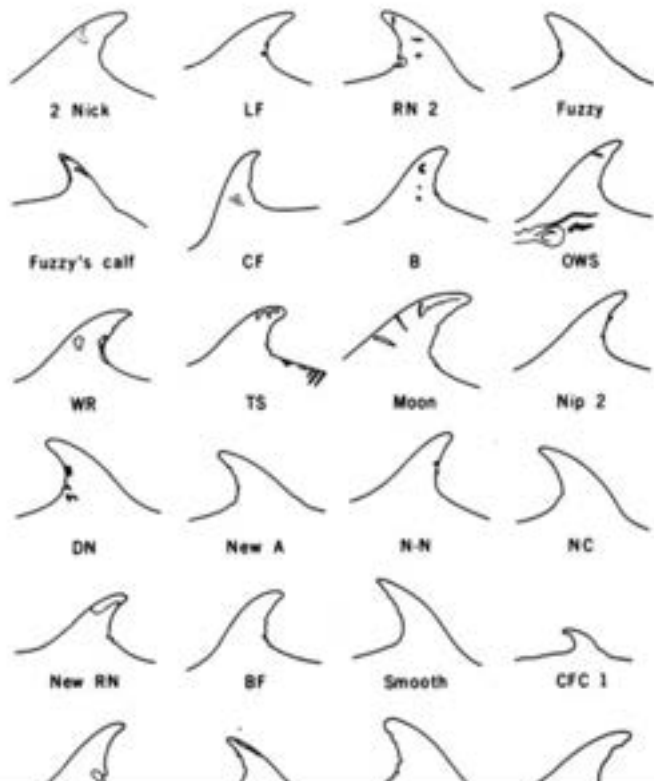
The Photographic Determination of Group Size, Composition, and Stability of Coastal Porpoises (*Tursiops truncatus*)

Abstract. During a 21-month study, 53 individual bottle-nosed porpoises were recognized by photographs of their dorsal fins. They traveled in small subgroups (mean size = 15) composed of a stable core of five animals plus other individuals that varied greatly from sighting to sighting.

Little research has been done on the group composition and dynamics of wild porpoises (*T.*). This lack results in part from the difficulty of sighting and resighting porpoise groups in the open ocean, and in part from the difficulty of identifying individuals within a group. While studying South Atlantic bottle-nosed porpoises (*Tursiops truncatus*), which periodically came within sighting distance of

pigment spots and bite marks made by conspecifics are often found on the dorsal fin and elsewhere, but these usually last for only about 6 months to 1 year.

From August 1974 through March 1976, *T. truncatus* passed by our land observation point on 191 of 433 days on which observations were made. On approximately 150 days, we took 35-mm still camera photographs (with lenses ranging from 50 mm to 1000 mm in size) of individual porpoises from land, from a small rubber boat (3.5-meter Zodiac), or both. We took more than 15,000 photographs, from which we identified 53 ani-



Würsig & Würsig,
1977
Science
198(4318):
755-756

b. Applying marks: Passive Integrated Transponder (PIT) tags



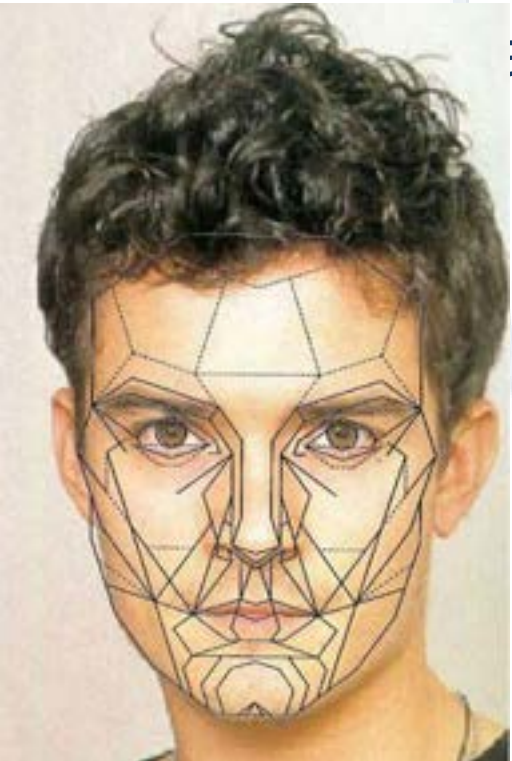
- Not used for cetaceans but successful used for pinnipeds (and fish, reptiles, etc.)

c. Photo-identification

air barrier
abaa
association of america

Installer Name
Company Name
Certification # 123456
Effective: January 1, 2009
Expires: December 31, 2009

The above individual is certified by the Building Professionals Quality Institute Inc. (BPQI) and licensed under the Air Barrier Association of America as a:
Level 3 Certified Air Barrier Installer



atu



Photo-identification of cetaceans one of the most useful approaches



Sperm whales - Pattern of nicks and notches on fluke



1042



1071



1496



1871



1055



52



1691



587



1567

Humpback whales - Colour pattern on ventral surface flukes



Bonnet



Digit



Horseshoe/Humpy



Skinny Minnie



Patch's Mum

Right whales – Head callosities



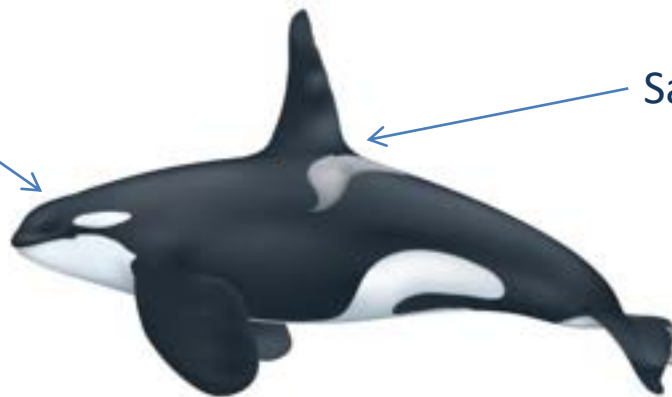
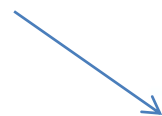
Blue whales – Distinctive lateral body marking and dorsal fin



Orcas

Distinctive dorsal fin shapes and notch patterns in addition to light-coloured eye and saddle patches

Eye patch



Saddle patch

Baby Hook



Carpeta



Mariano



Dientes



Edu



Fernando



Franzfin



Gonzo



Popi 1



Nr 117



Pepa



Curro



Sierra



Zackzack



Gorro



Popi 2



Pilot whales – Pattern of nicks and notches on the dorsal fin



<http://azoreswhales.blogspot.com/2013/11/bottlenose-dolphins-lots-of-photo-ids.html>

Delphinids – Pattern of nicks and notches on the dorsal fin



Computer-aided matching system

(FlipperMatch, Darwin, Finbase, I3S, Discovery, IBEIS, Extract Compare, etc.)

2. Code of conduct, status of conservation ,and ethics in marine mammal science

DRAFT 3 - 20 November 2017

Cetacean **code of conduct** for the Falkland Islands

Draft 3, November 2017

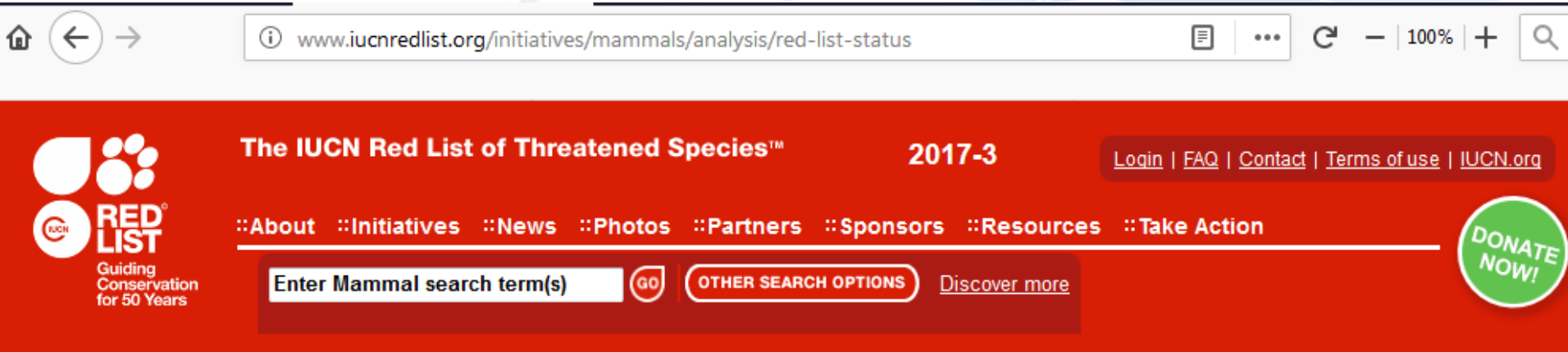
Introduction

The Falkland Islands support a diverse array of cetaceans (whales, dolphins and porpoises), with at least 25 species recorded in the islands to date (Table 1). While many of those species typically inhabit pelagic waters, several species occur regularly in coastal areas where they may come into contact with marine traffic. Peale's and Commerson's dolphins are encountered year-round in nearshore waters throughout the islands, with killer whales being seen regularly in some areas on a seasonal basis (e.g. Sea Lion Island). Baleen whales including the sei whale, southern right whale and minke whale also occur seasonally in coastal water, sometimes close to shore

Cetacean-watching ecotourism in the Falkland Islands is currently small-scale compared to many other locations worldwide, consisting of occasional commercial whale-watching boat trips in Berkeley Sound during the sei whale season (primarily January to May). Additionally, during the

Status of conservation

indicator of how likely a species is to remain alive at present or in the near future



The screenshot shows the IUCN Red List website interface. At the top, the browser address bar displays the URL: www.iucnredlist.org/initiatives/mammals/analysis/red-list-status. Below the address bar, the website header features the IUCN Red List logo on the left, which includes the text "RED LIST" and "Guiding Conservation for 50 Years". To the right of the logo, the main title reads "The IUCN Red List of Threatened Species™" followed by the version "2017-3". Further right, there are links for "Login", "FAQ", "Contact", "Terms of use", and "IUCN.org". A navigation menu below the title lists various sections: "About", "Initiatives", "News", "Photos", "Partners", "Sponsors", "Resources", and "Take Action". A search bar is prominently displayed, containing the placeholder text "Enter Mammal search term(s)" and a "GO" button. To the right of the search bar are "OTHER SEARCH OPTIONS" and a link to "Discover more". In the bottom right corner of the header area, there is a green circular button that says "DONATE NOW!".

International Union for the Conservation of Nature

IUCN
(1948)





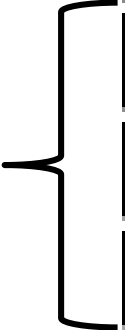






[Discover more](#)



The IUCN maintains a Red List Red List of Threatened Species



a worldwide conservation status listing and ranking system

Legend Key	Red List Category
	Extinct (EX)
	Extinct in the Wild (EW)
 threatened	 Critically Endangered (CR)
	 Endangered (EN)
	 Vulnerable (VU)
	Near Threatened (NT)
	Least Concern (LC)
	Data Deficient (DD)

Not evaluated









Legend Key	Red List Category	Number of species	Percentage in category
	Extinct (EX)	76	1.4
	Extinct in the Wild (EW)	2	0.04
	Critically Endangered (CR)	188	3.4
	Endangered (EN)	448	8.2
	Vulnerable (VU)	505	9.2
	Near Threatened (NT)	323	5.9
	Least Concern (LC)	3,109	56.7
	Data Deficient (DD)	836	15.2
	TOTAL	5,487	

Table 1. Number and percentage of species in each IUCN Red List category for all mammal species.

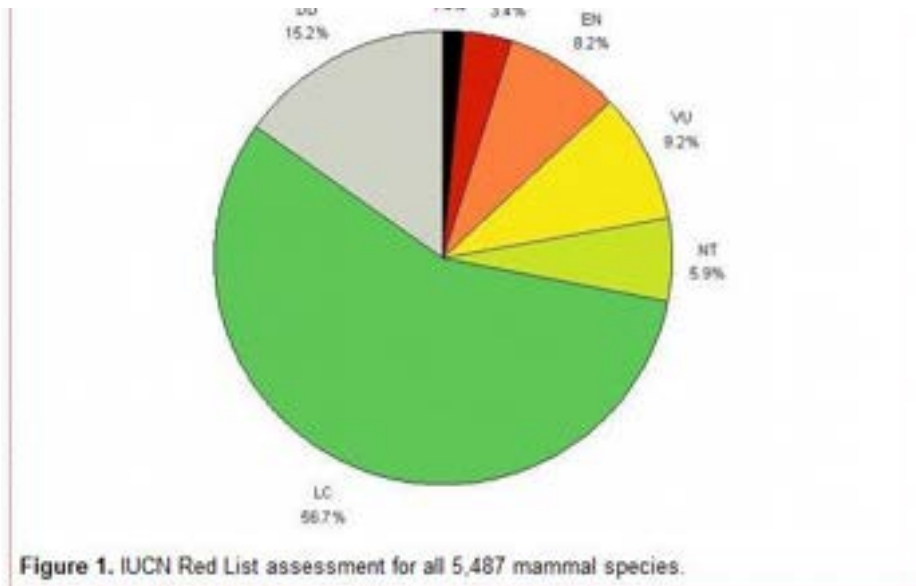
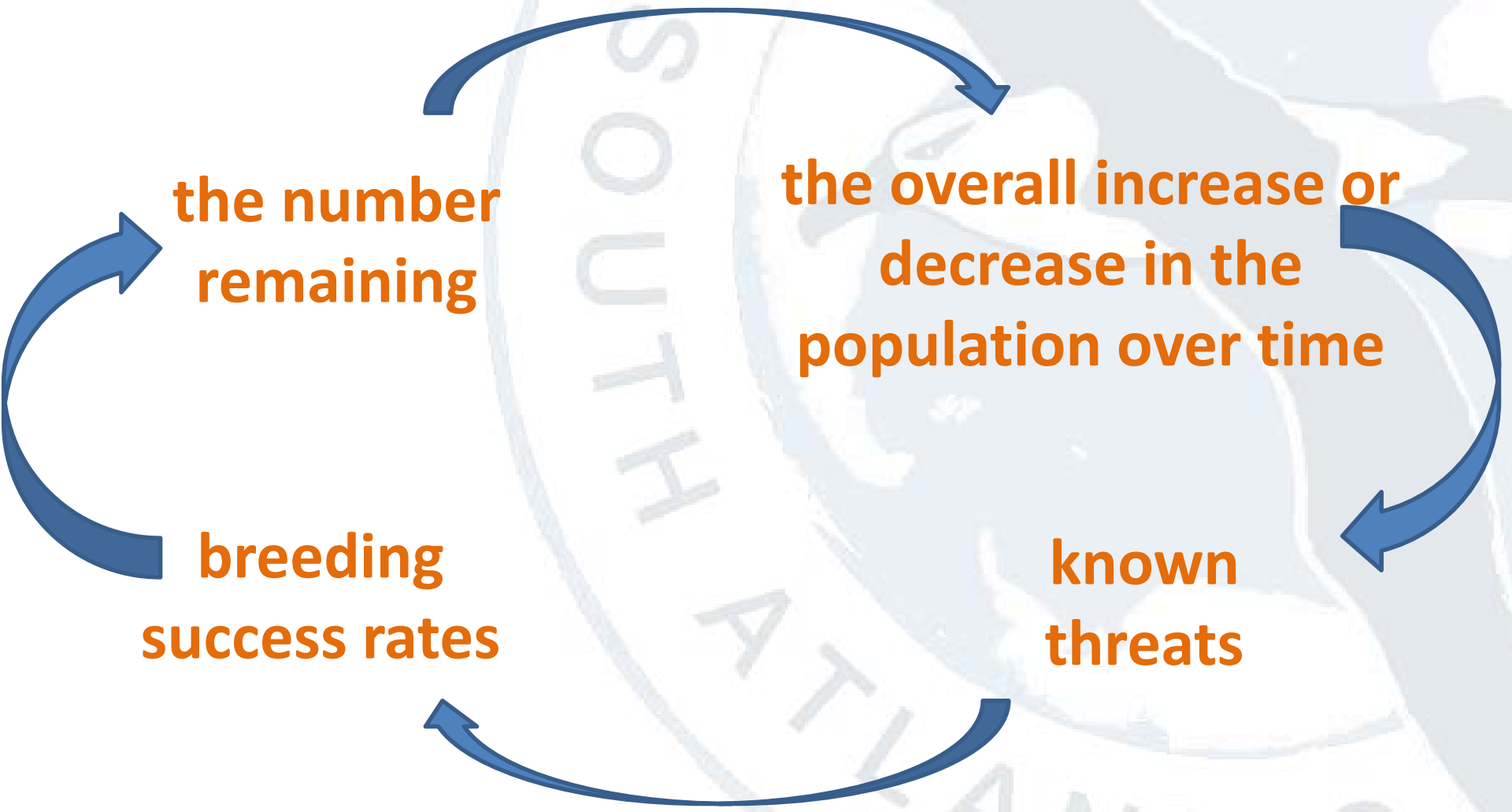


Figure 1. IUCN Red List assessment for all 5,487 mammal species.

Dusicyon australis (warrah)
1876



factors used to assess a species' conservation status



Ethics in marine mammal science

- Recent
- Not easy
- Involve responsibilities and what is right and wrong



Mass slaughter of pilot whales in the waters around the Faroe Islands, Danish

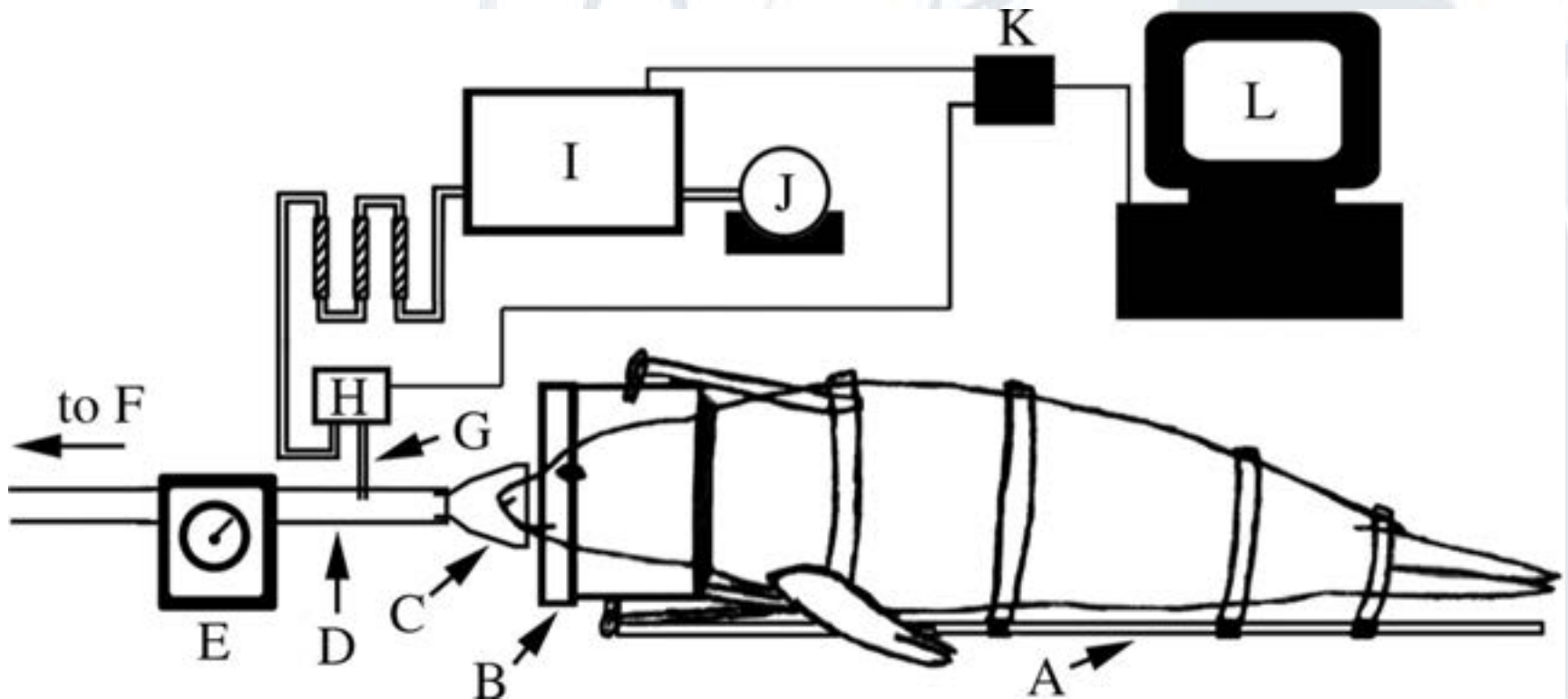
Basic principles shared by marine mammals' researches

- Do no net harm



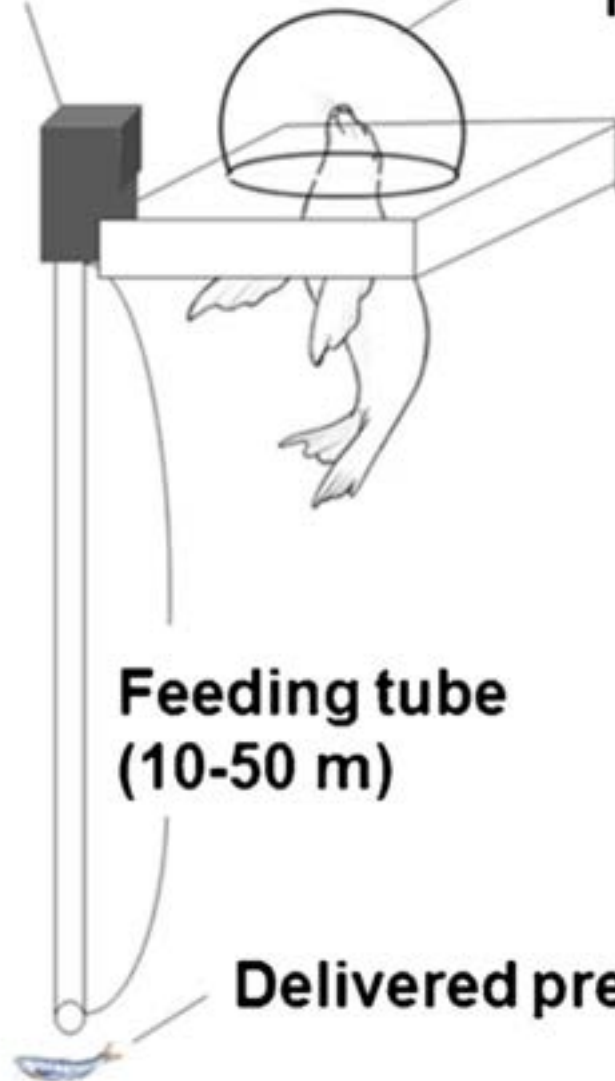
Basic principles shared by marine mammals' researches

- Do no net harm
- **Reduce/replace direct experiments with alternative approaches**



Feeding pump

**Floating
metabolic dome**



**Feeding tube
(10-50 m)**

Delivered prey

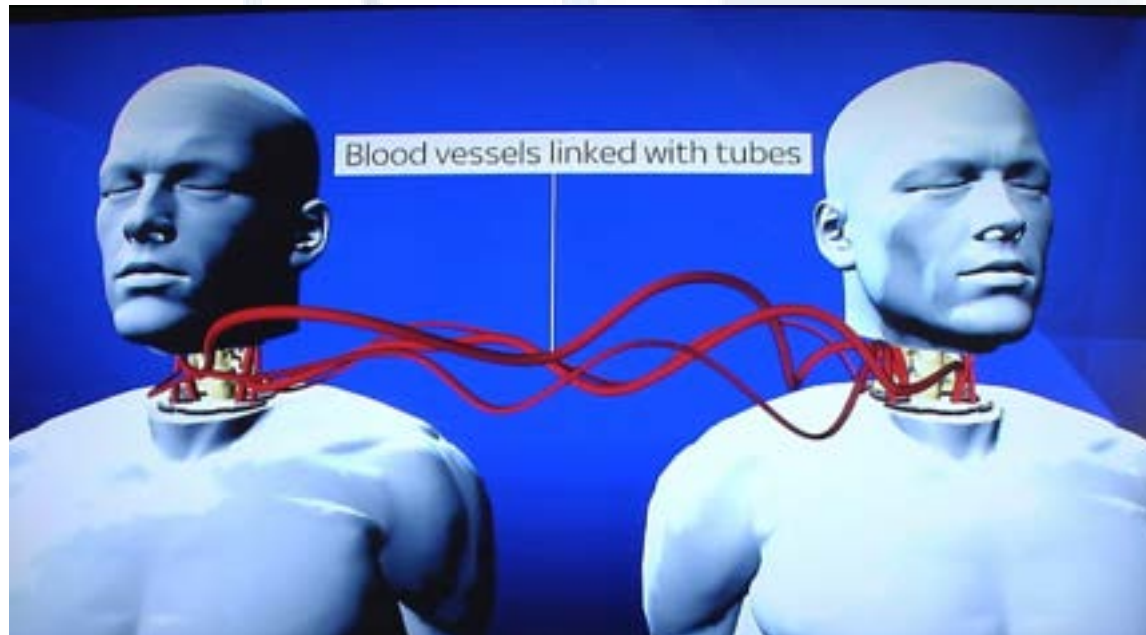
Basic principles shared by marine mammals' researches

- Do no net harm
- Reduce/replace direct experiments with alternative approaches
- **Seek to refine methods in ways that reduce harm**



Basic principles shared by marine mammals' researches

- Do no net harm
- Reduce/replace direct experiments with alternative approaches
- Seek to refine methods in ways that reduce harm
- **Ask important question**



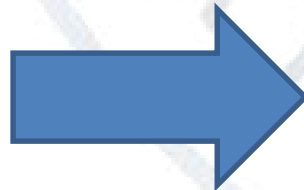
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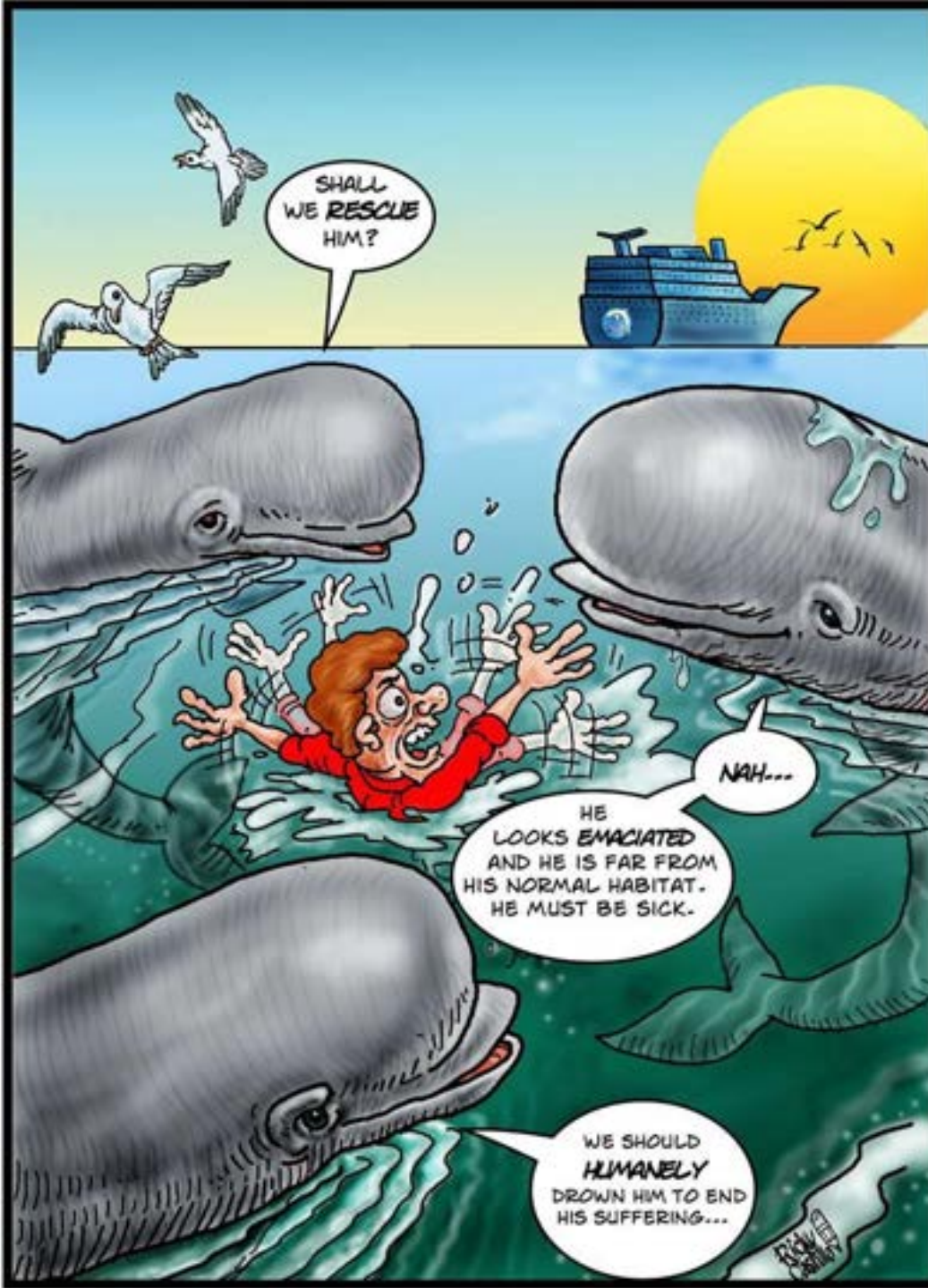
- Do no net harm
- Reduce/replace direct experiments with alternative approaches
- Seek to refine methods in ways that reduce harm
- Ask important question
- **Construct experiments that employ best practice throughout**



Best known technique producing superior results than those achieved by alternative

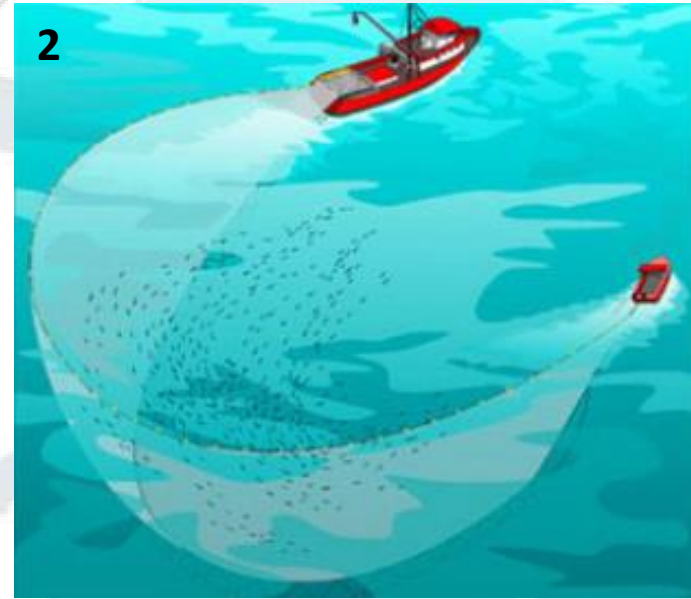
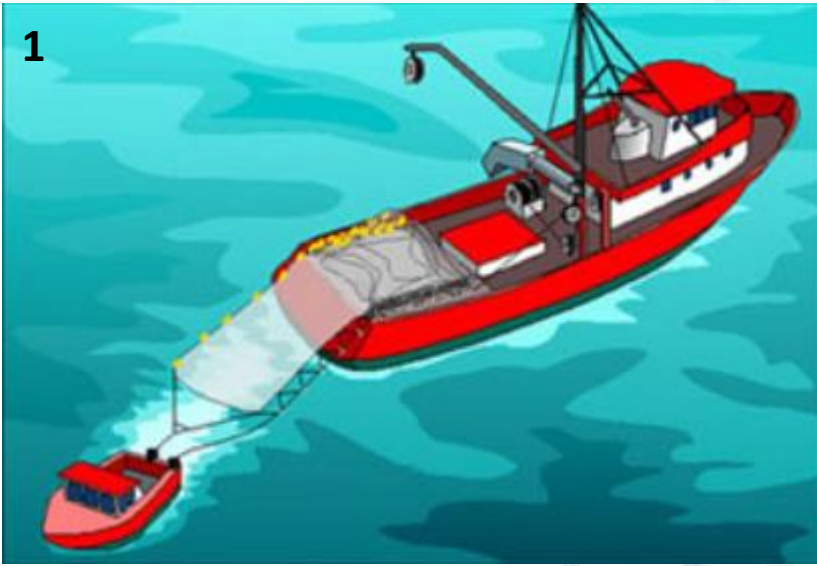
Reduce noise



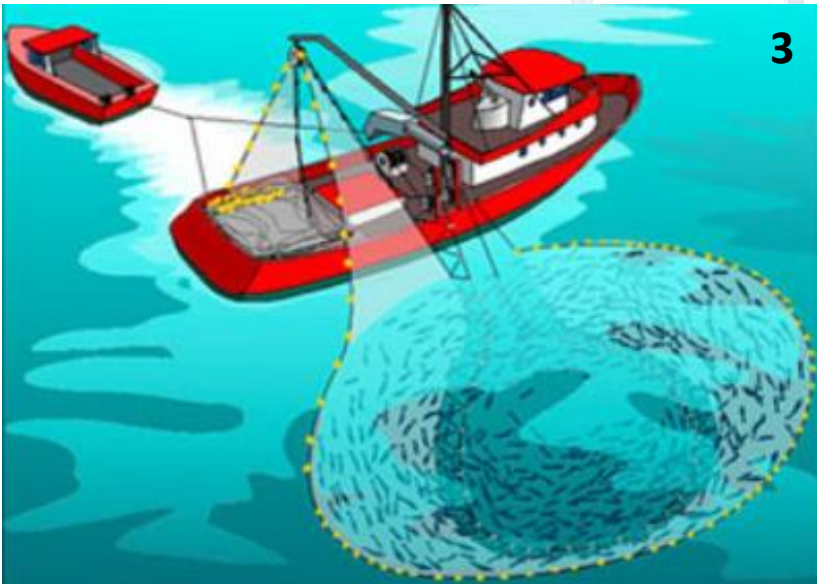


End of the first
two sessions

c. Capture and restraint: Large-mesh seine net

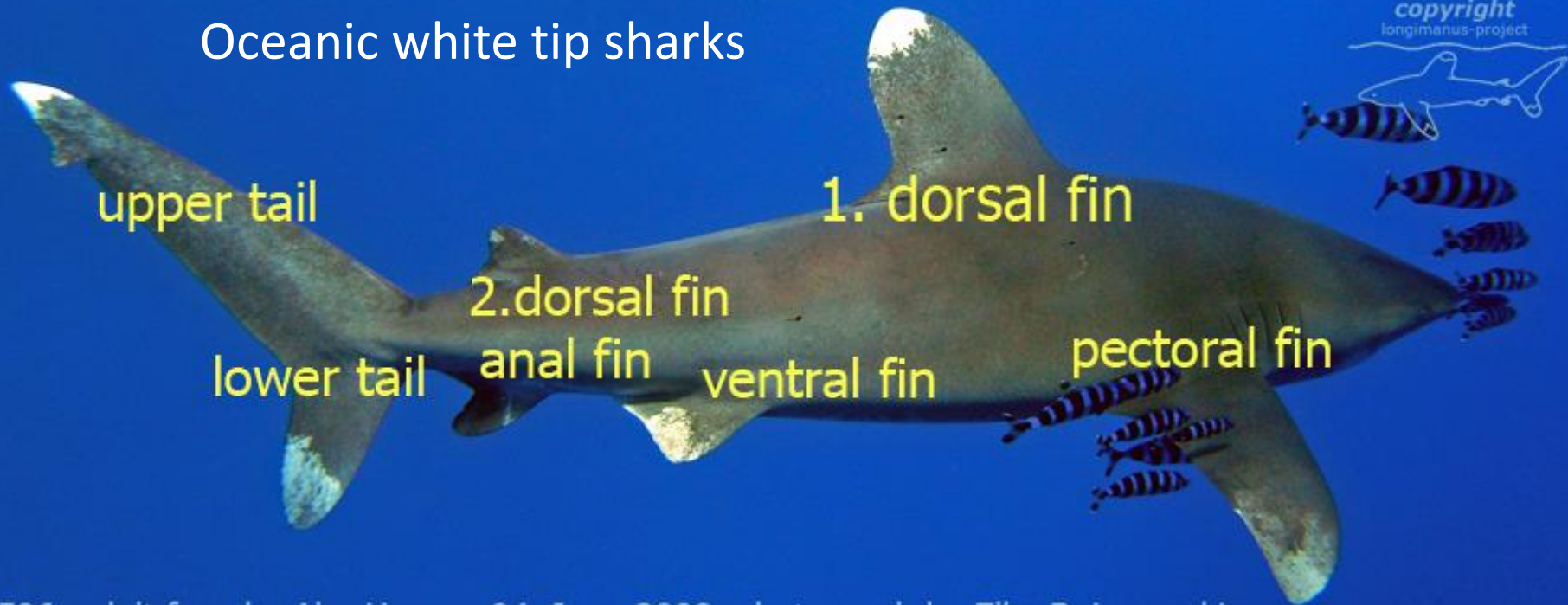


Purse seine net



Oceanic white tip sharks

copyright
longimanus-project



506, adult female, Abu Hamra, 04. June 2008, photograph by Elke Bojanowski



Great white sharks



hanan



zahraa



fatma



ahmed

Green turtles

c. Photo-identification



Whale shark s

a. Capture and restraint: Hoop catching method



P. E. Nachtigall et al. J Exp Biol 2008;211:642-647

Basic principles shared by marine mammals' researches

- Do no net harm
- Seek to reduce or replace direct experiments on marine mammals with alternative approaches
- Seek to refine methods in ways that reduce harm
- Ask important question
- Construct experiments that employ best practice throughout
- **Report and interpret results in an objective manner**

Basic principles shared by marine mammals' researches

- Do no net harm
- Seek to reduce or replace direct experiments on marine mammals with alternative approaches
- Seek to refine methods in ways that reduce harm
- Ask important question
- Construct experiments that employ best practice throughout
- Report and interpret results in an objective manner
- **Distribute results and data openly using the peer-reviewed literature**

Basic principles shared by marine mammals' researches

- Do no net harm
- Seek to reduce or replace direct experiments on marine mammals with alternative approaches
- Seek to refine methods in ways that reduce harm
- Ask important question
- Construct experiments that employ best practice throughout
- Report and interpret results in an objective manner
- Distribute results and data openly using the peer-reviewed literature
- **Display professionalism while working with colleagues and the public**

b. Applying marks: summary

- Flipper/fin tagging (**C&R!** or not)
- Discovery tags
- Time-depth recorders (TDRs) tags (**C&R!** or not)
- Dye, paint and bleach tagging
- Fur clipping (**C&R!** or not)
- Hot-iron branding (**C&R!**)
- Freeze branding (**C&R!**)
- Passive Integrated Transponder (PIT) tags (**C&R!**)





b. Applying marks: Freeze branding

1. alcohol and dry ice (-67/77 °C)
2. Liquid nitrogen (-190 °C)

