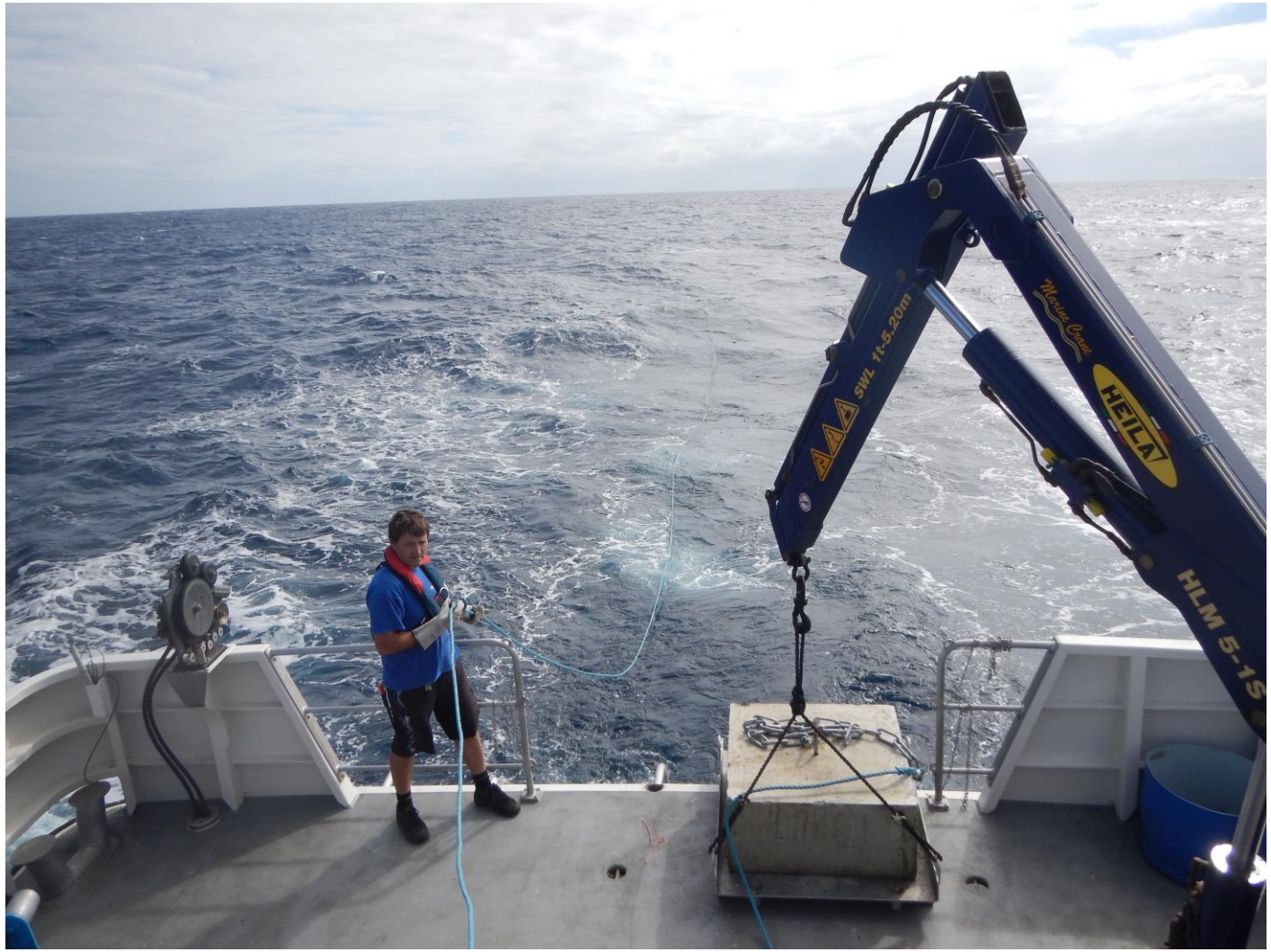
Coastal fisheries livelihoods – Anchored FADs supporting Nearshore small-scale fisheries.

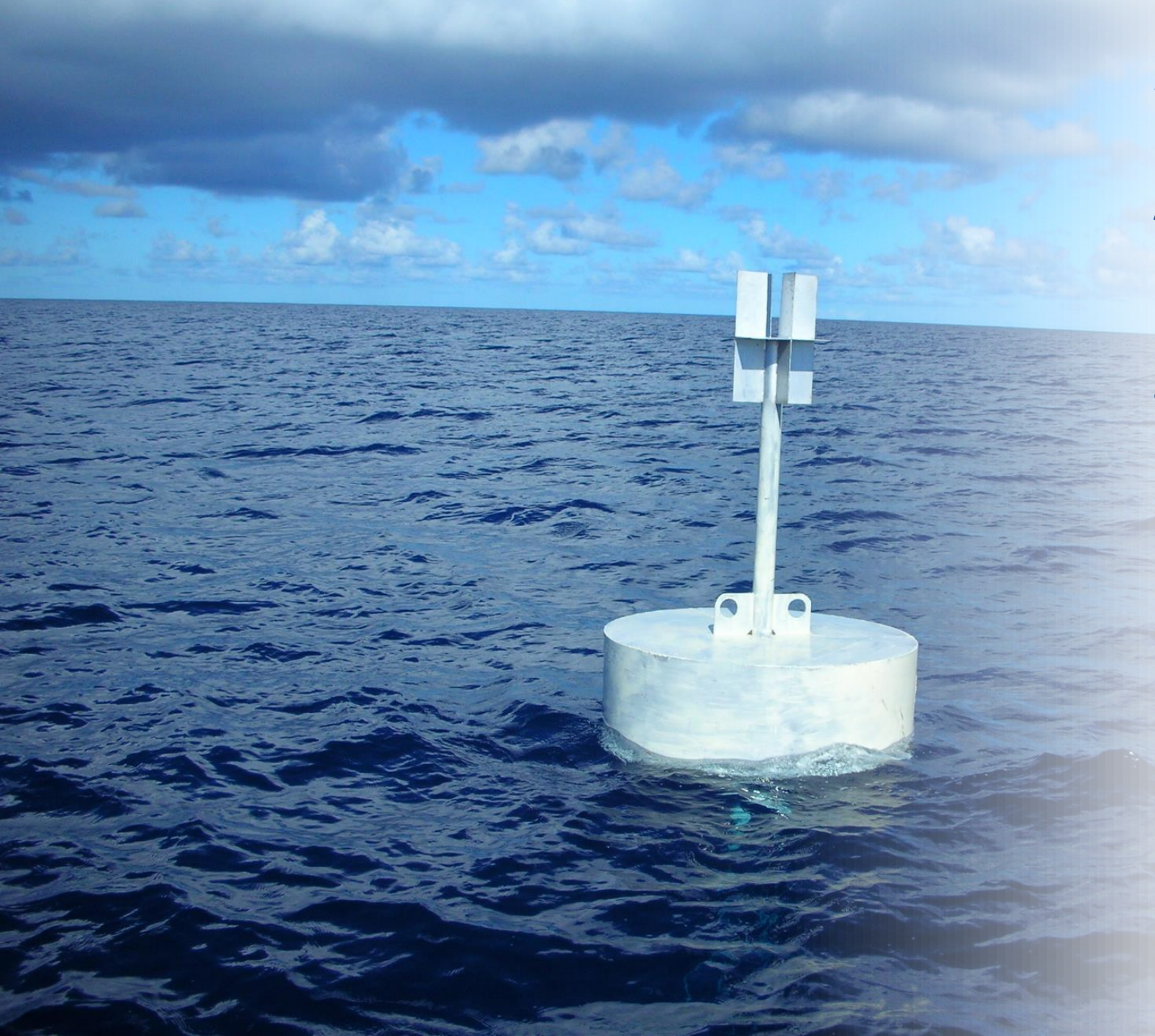
Fish Aggregation Device [FAD] Development

- What are Fish Aggregating Devices (FADs).
- History.
- Designs.
- Issues
- Benefits.
- Where we are now.
- Where to from here.



BACKGROUND - HISTORY

- Dates as far back as 200AD in the Mediterranean.
- Japanese pole and line fishermen adopted the concept from Indonesia / Philippines to boost tuna catches.
- Introduced to the Pacific Island region in the late ‘1970’s with the Japanese expansion of commercial pole and line fishing to the region.



What are Fish Aggregating Devices (FADs)

- Fish Aggregating Device
  - As we know it:
  - **Moored / anchored** flotation device as in industrial anchored FAD, offshore FAD, nearshore FAD, subsurface FAD or lagoon FAD.
  - **Drifting** flotation device as in industrial drifting FAD.


Nearshore Bamboo FADs


Spar buoy

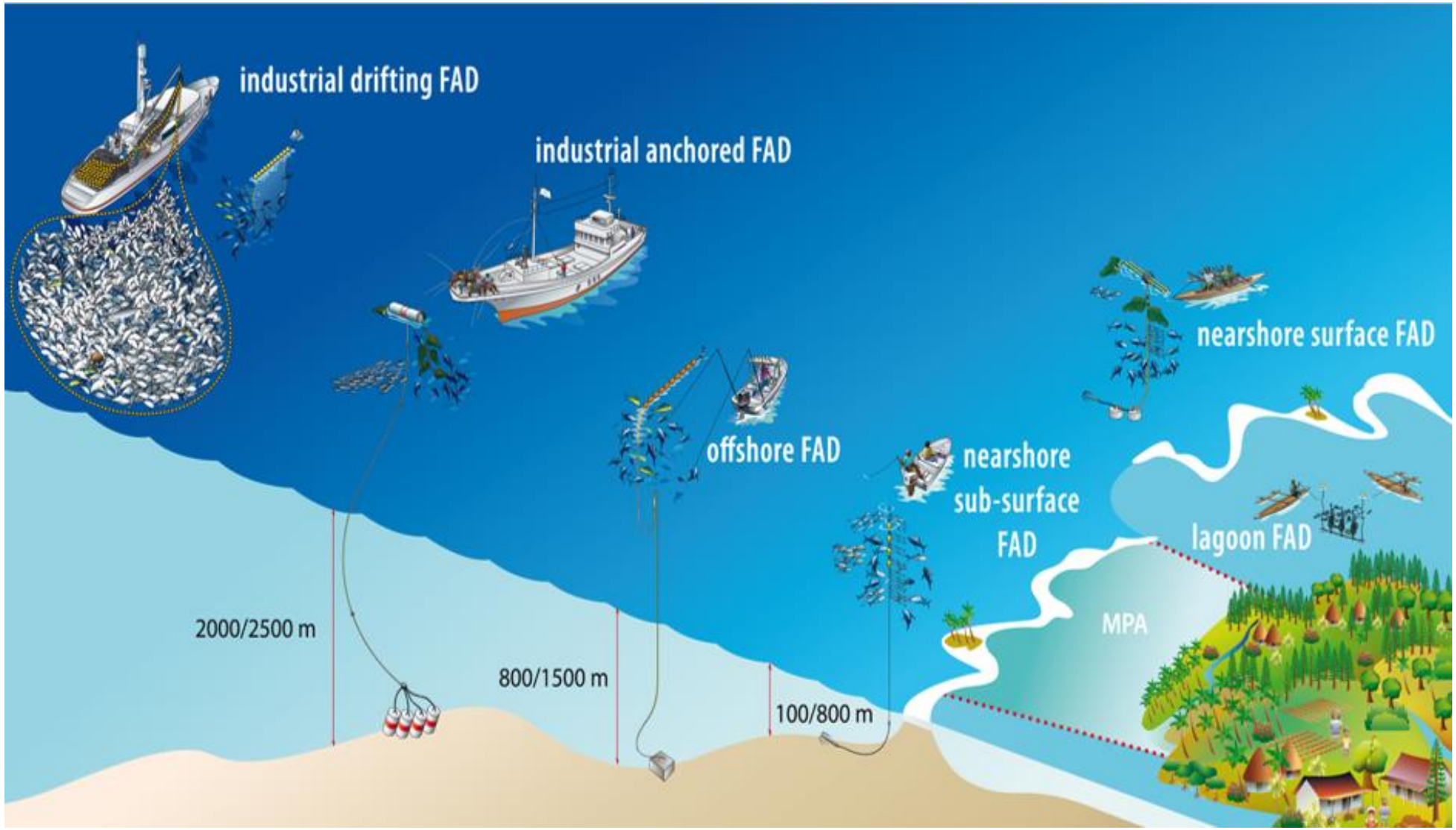
6th RTMCFA

Pacific Community
Communauté du Pacifique


Indian Ocean FAD


Indo-Pacific FAD

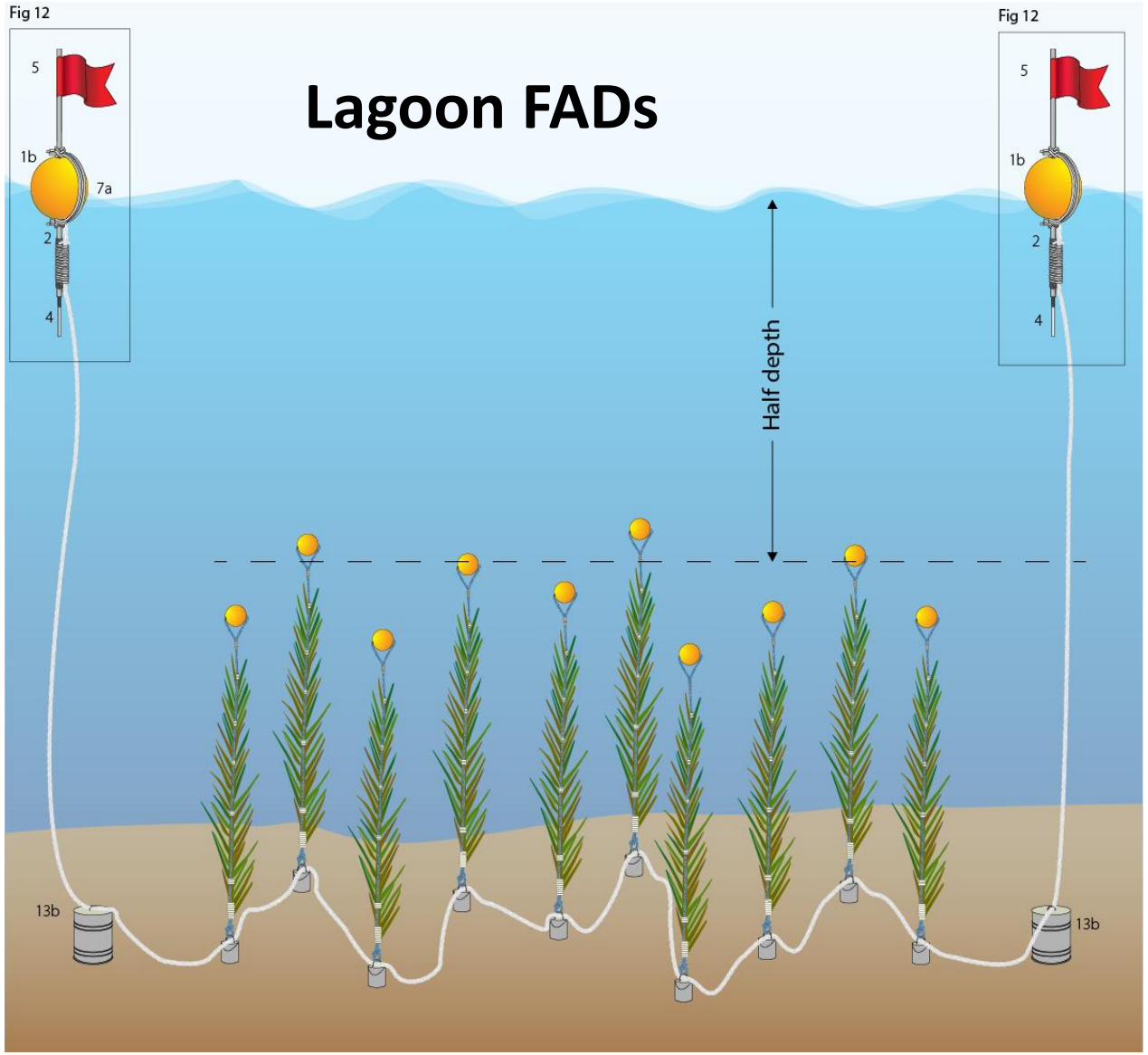
Terminology of FAD types



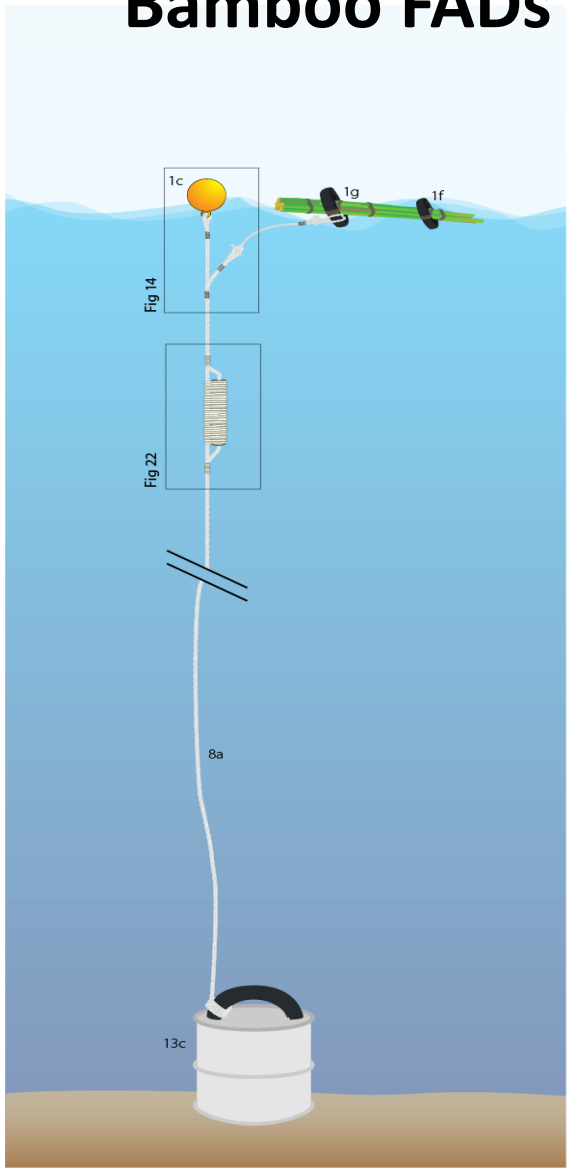
FAD DESIGNS

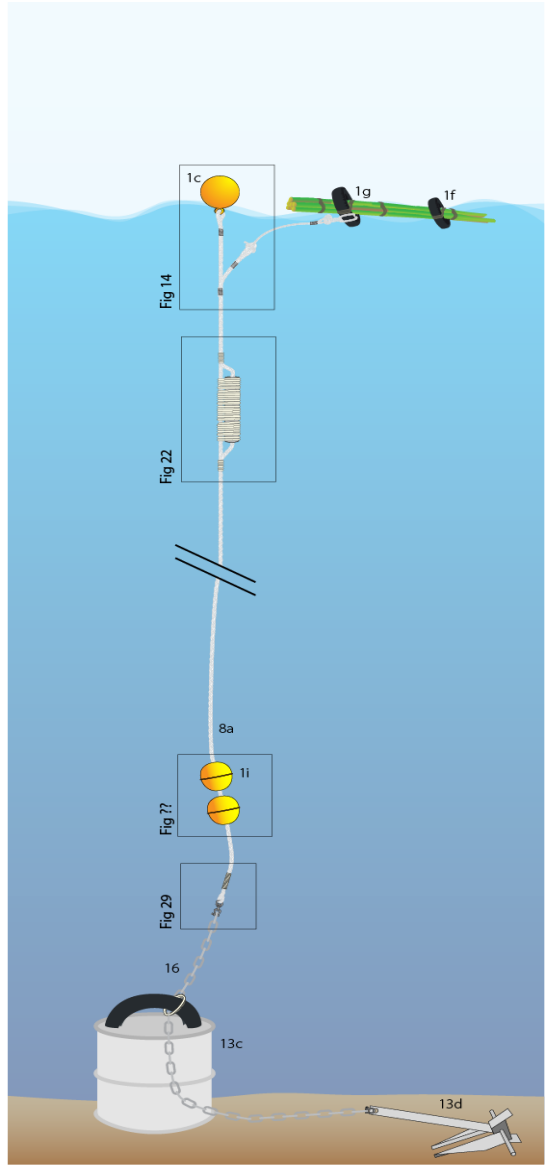
Pacific Community
Communauté du Pacifique

Lagoon FADs

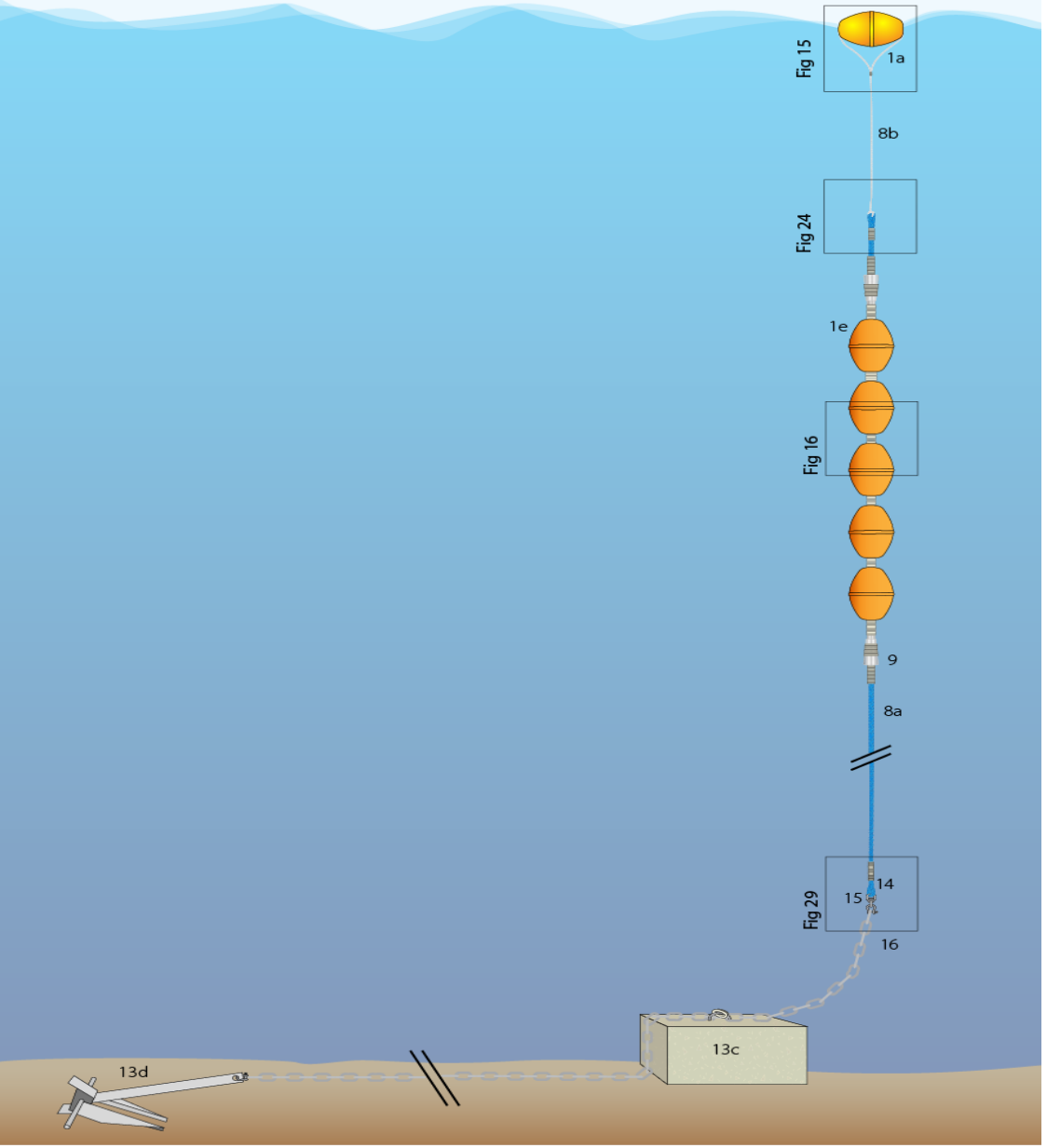


Bamboo FADs

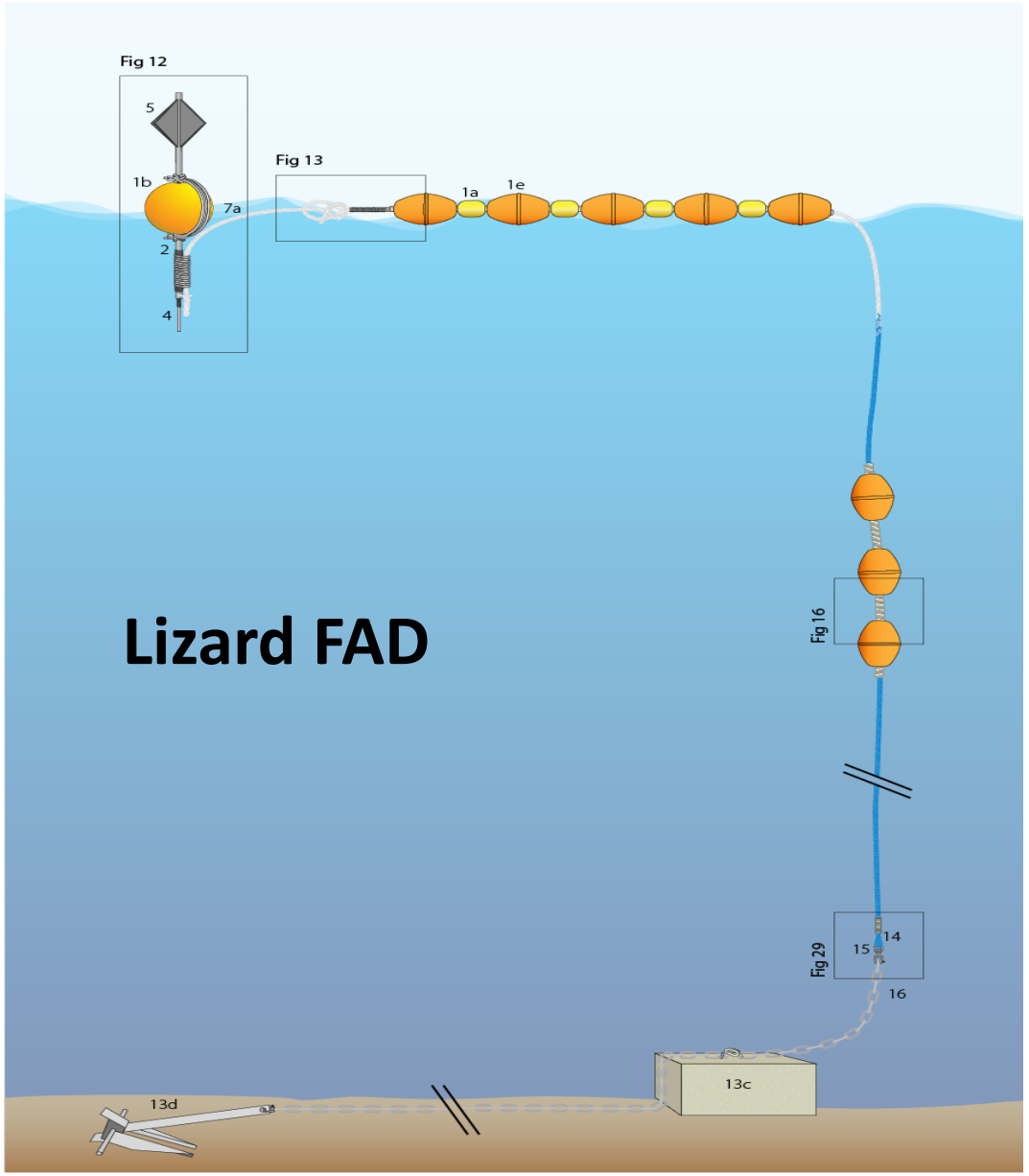




Subsurface FAD

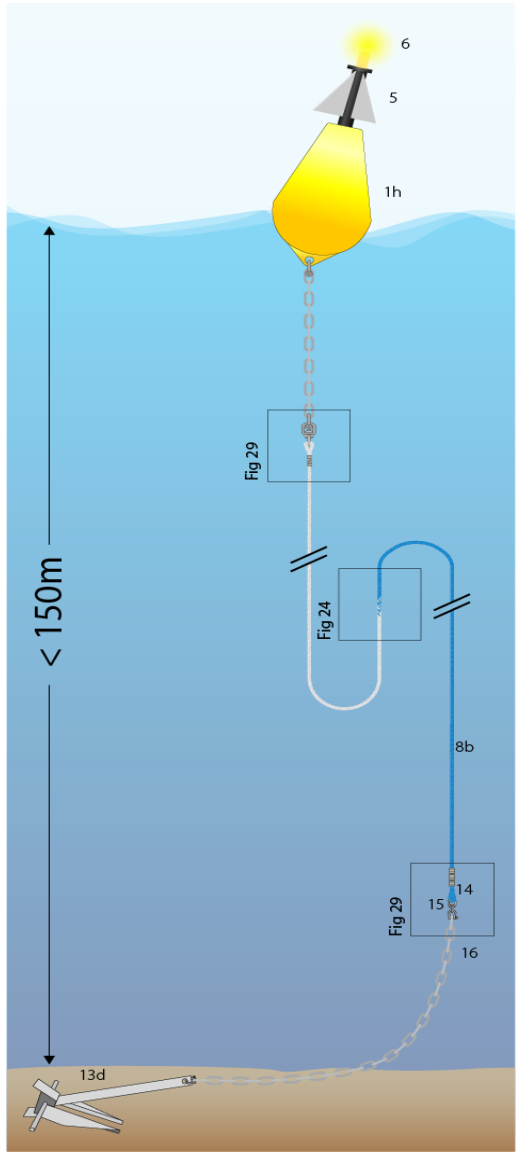


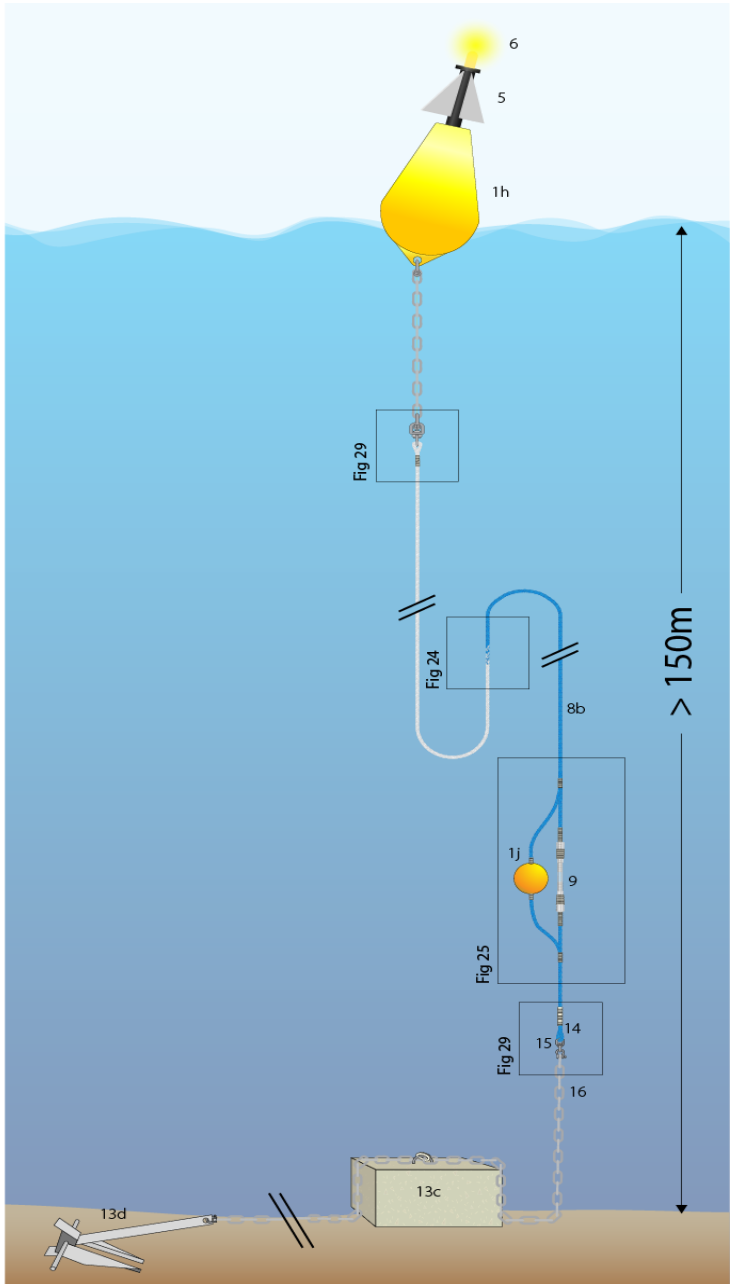
Lizard FAD



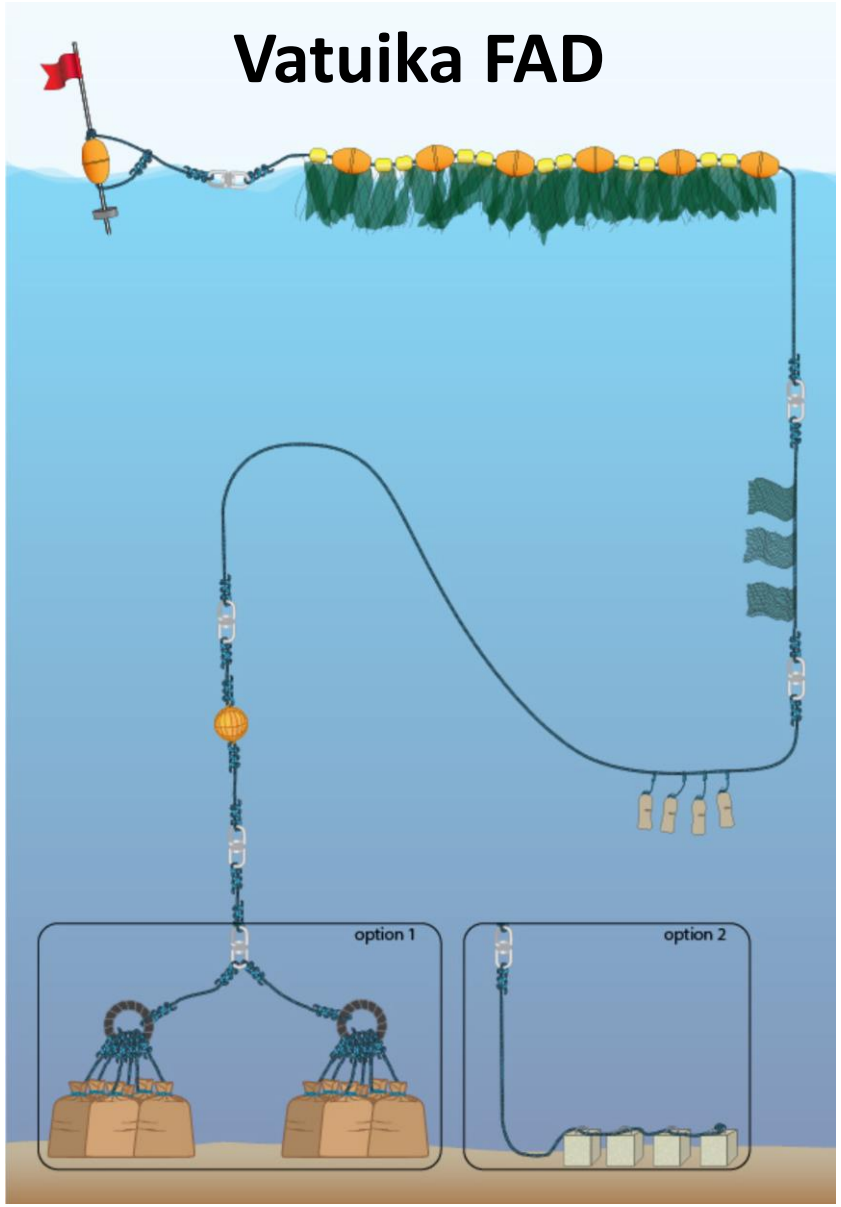
New Caledonia and French Polynesia FAD design

NSW Spar buoy FAD

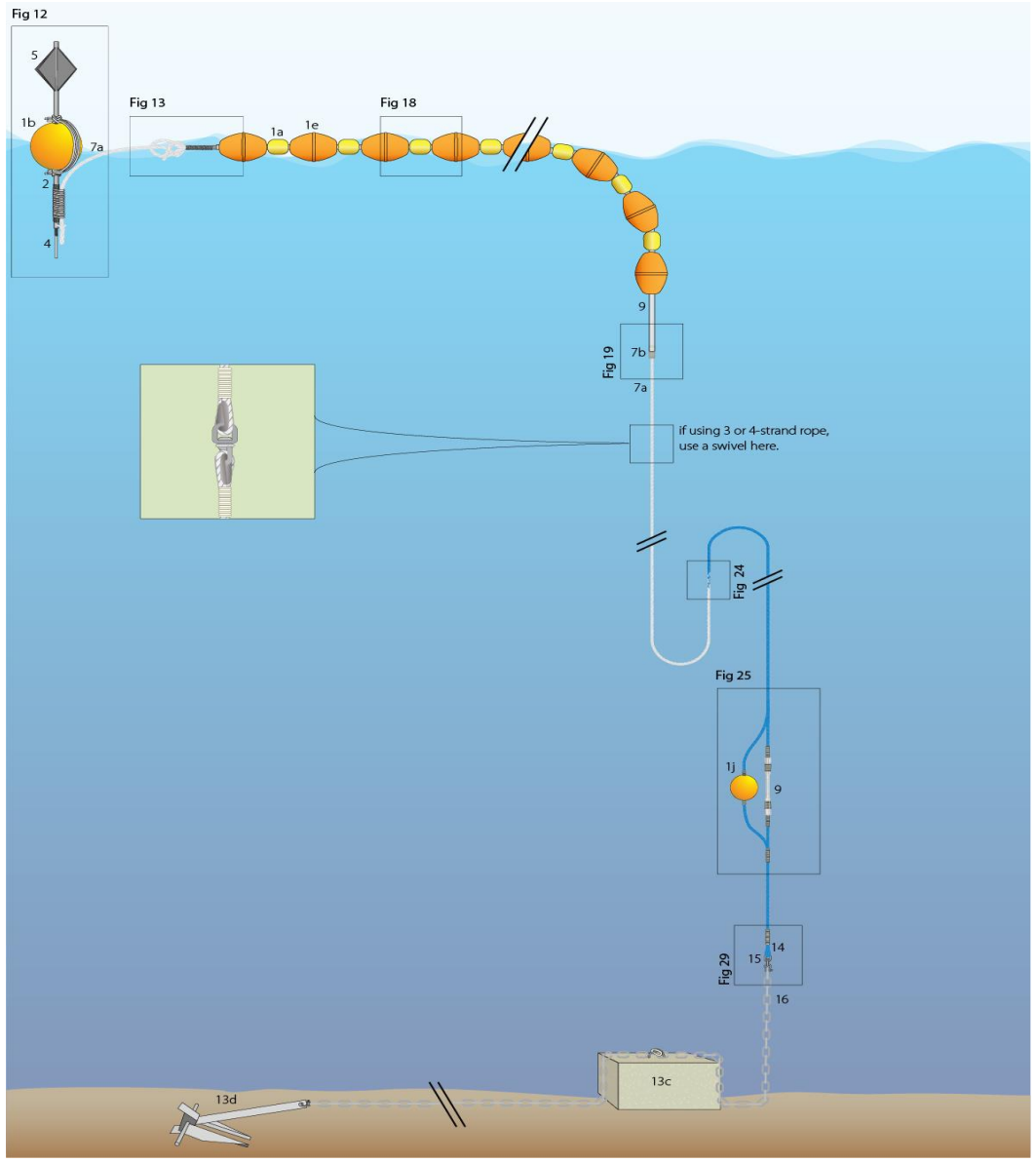


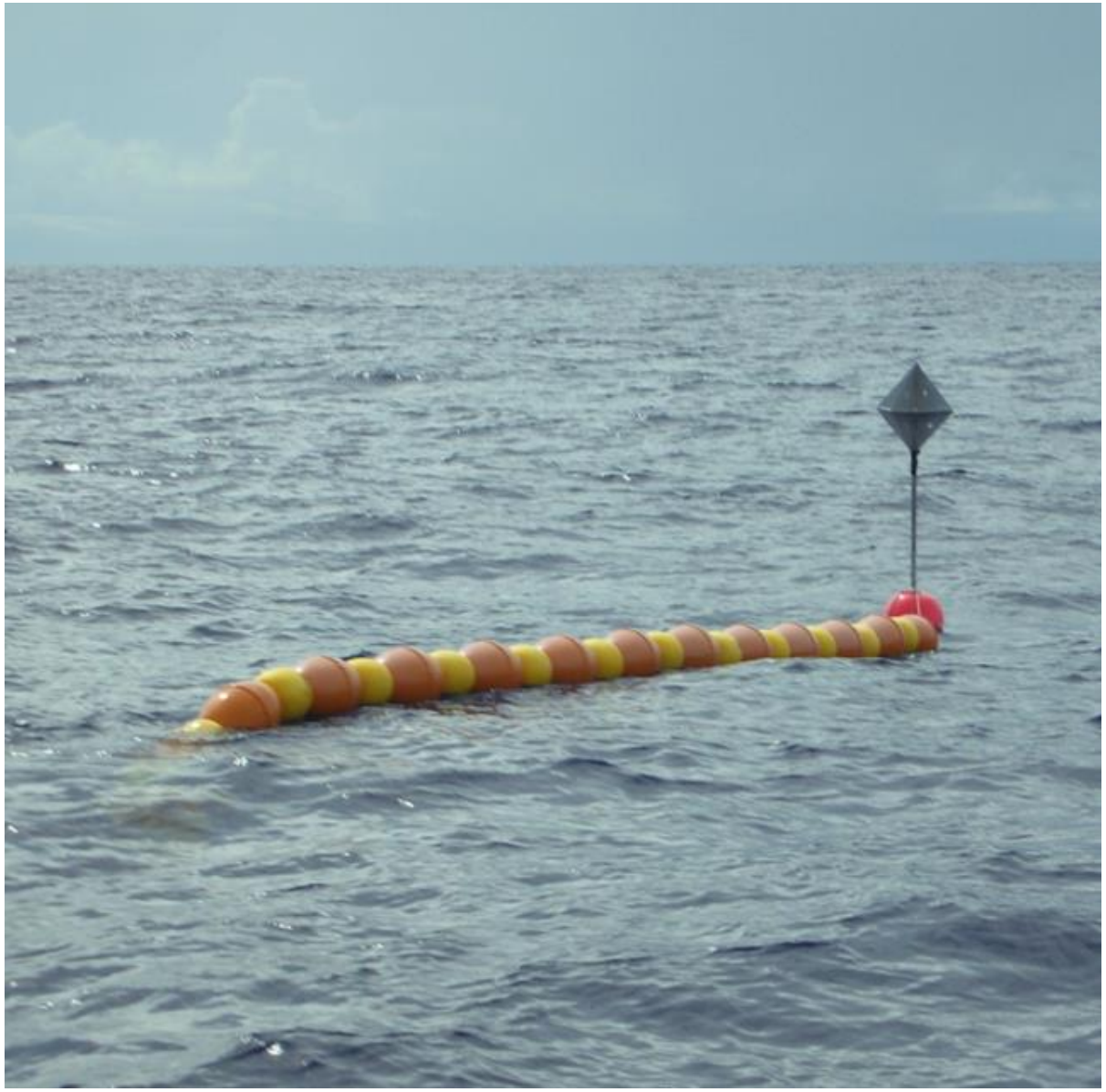


Vatuika FAD



Indo Pacific Ocean FAD



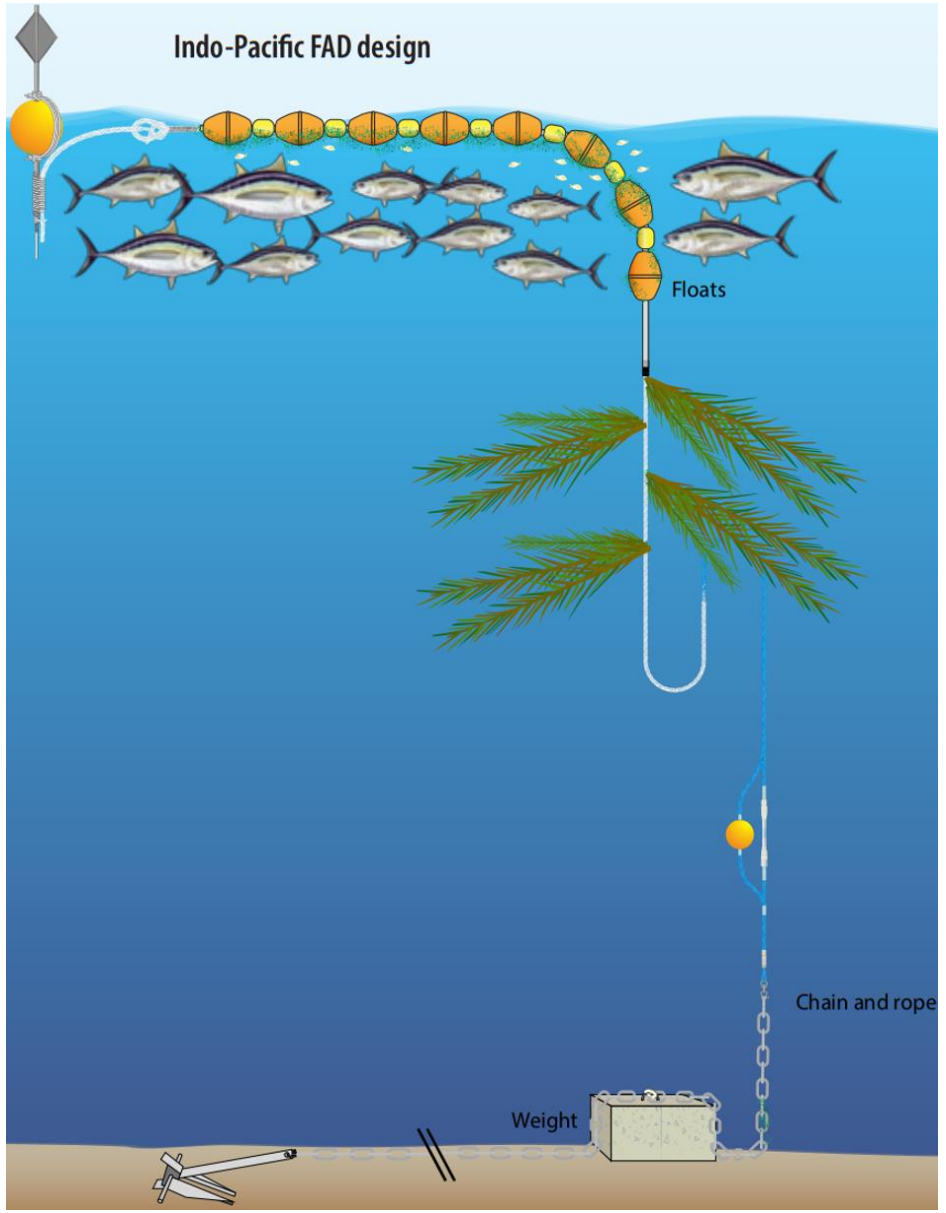


Spar buoy and Indo-Pacific FAD

HOW / WHY DO FADS AGGREGATE FISH ?

This phenomenon is not well understood, but here are several theories:

- Food chain?
- Acts as a reference point?
- Meeting place, then migrate?
- Travelling with other fish of the same or similar size, cohort?



Potential benefits of FADs

- Increase fishing efficiency and catch rates.
- Reduce cost of fishing (search time).
- Create specific fishing ground.
- Improve safety.
- Support tourism.
- Fish for food or income.

To validate or demonstrate the above, **a good monitoring program** is needed

ISSUES

- Vandalism
- Costly to engage in / budget constraints
- Short life span
- Ownership / User conflicts

Lessons learnt – FAD rigging

- Previous floatation systems used:

- 32 mm pvc coated wire rope with bulldog clamps.
- replaced with 28 mm nylon rope and nylite connectors.
- replaced with hose sheathing and 16 mm nylon rope.

- Flotation system used to be connected with surface hardware:

- thimble, shackle, swivel, shackle, thimble: susceptible to wear and tear and corrosion.
- replaced with multistrand rope, or, if 3 strand rope is used, then a swivel connecting the flotation string to the mainline.
- ropes spliced directly to the swivels.
- hose sheaths used instead of metal thimbles.

- Use of combination wire rope with zinc anodes

Lessons learnt – anchors and deployments

- Heavy anchors require costly heavy lift equipment and large vessels for deployment.
- Multiple small anchor blocks and more practical to use for deployments of several FADs.
- Deployments on slopes aided by grapnel or danforth anchors.
- 125 kg Halls anchors ideal for our FAD systems provided 16 mm x 15 m or more chain is used with it.
- Buoyancy to anchor holding power ratio is crucial.

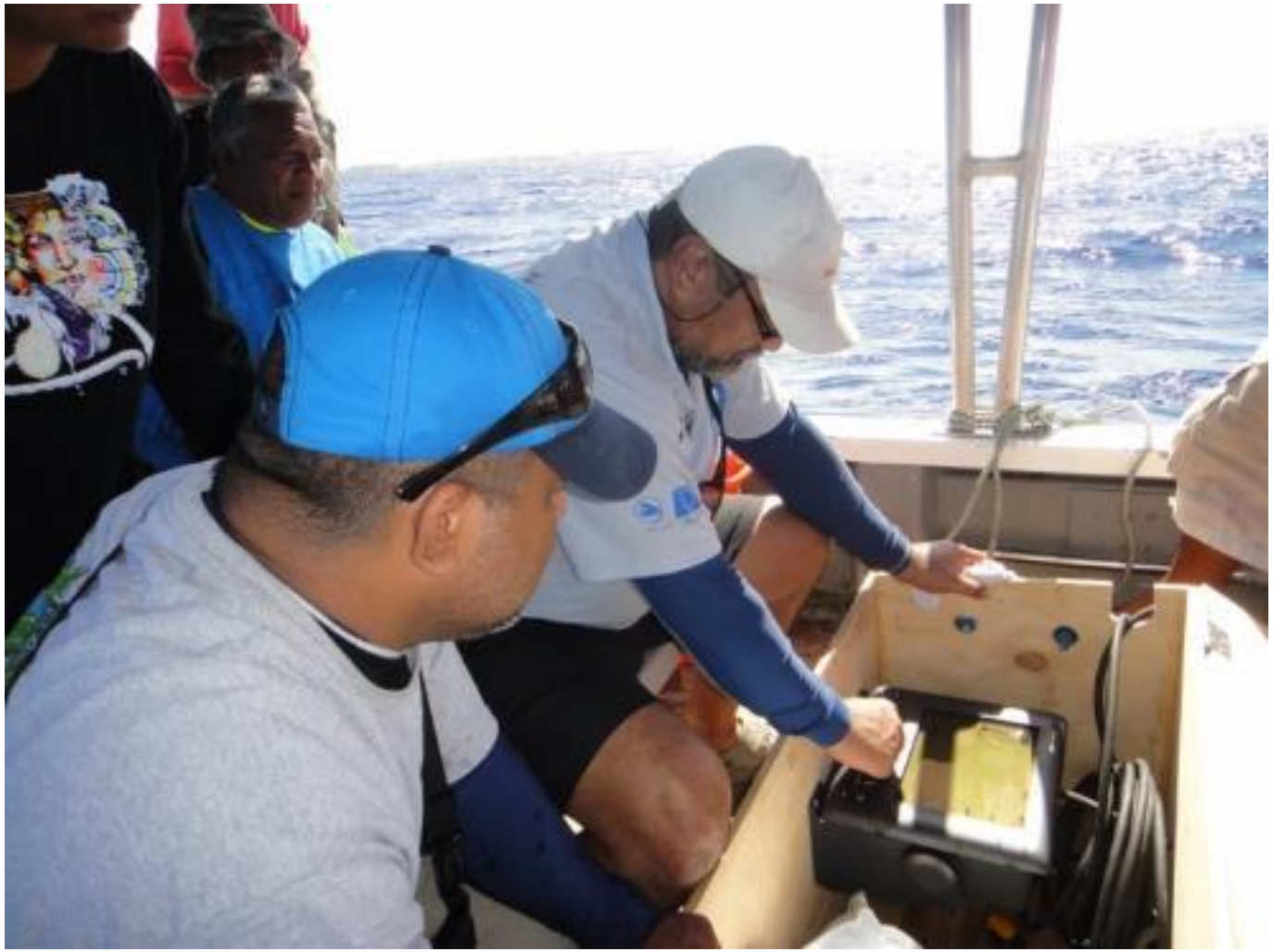
Lessons learnt Anchors and deployments

SCOPE OF FAD WORK

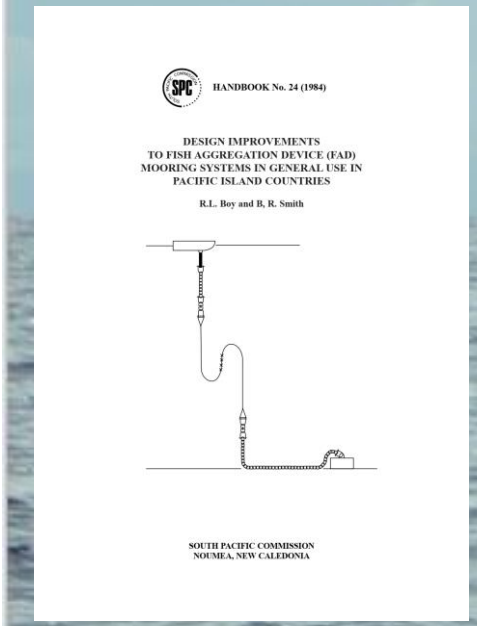
- Stakeholder consultation.
- FAD site survey.
- FAD material procurement.
- Rigging FADs.
- FAD deployment.
- FAD maintenance.
- Standard Operating Procedures.
- Monitoring, data collection.

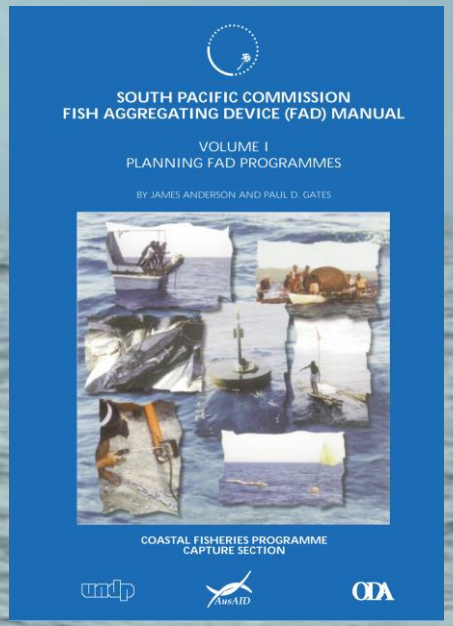
SPC'S ASSISTANCE

- FAD programme planning and evaluation.
- FAD materials pricing and ordering.
- Technical assistance:
- FAD site survey.
- FAD rigging and deployment.
- Training:
- On-site and virtual training.
- Counterpart training (local FAD technicians).
- Fishermen's training (FAD/Mid-water fishing skills, small boat safety).
- Data collectors training and database management.

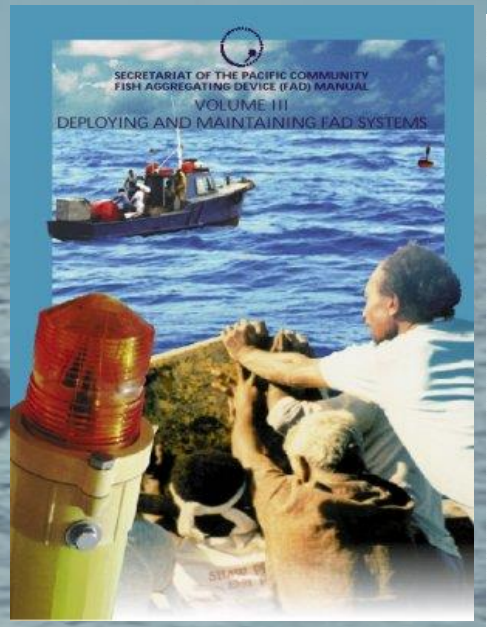


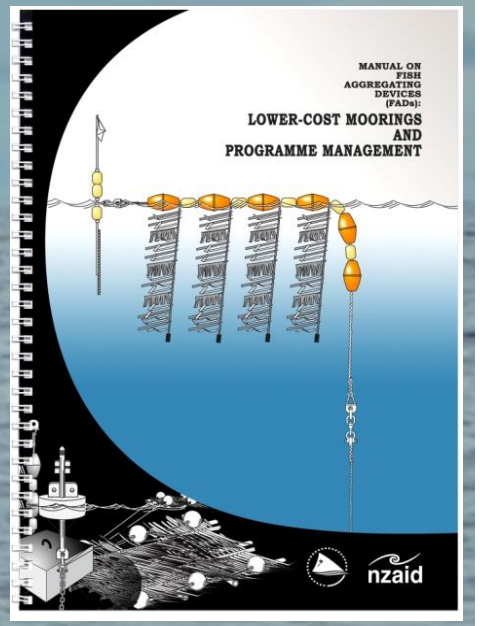
FAD Manuals

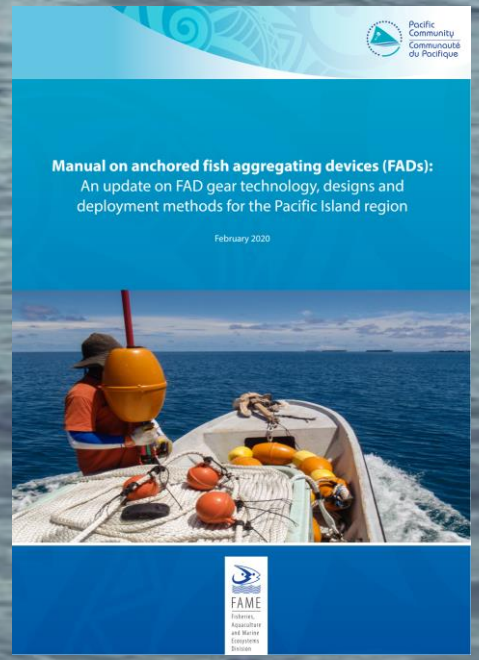

HANDBOOK No. 24 (1984)
DESIGN IMPROVEMENTS TO FISH AGGREGATION DEVICE (FAD) MOORING SYSTEMS IN GENERAL USE IN PACIFIC ISLAND COUNTRIES
R.L. Boy and B. R. Smith
SOUTH PACIFIC COMMISSION
NOUMEA, NEW CALEDONIA


SOUTH PACIFIC COMMISSION
FISH AGGREGATING DEVICE (FAD) MANUAL
VOLUME I
PLANNING FAD PROGRAMMES
BY JAMES ANDERSON AND PAUL D. GATES
COASTAL FISHERIES PROGRAMME
CAPTURE SECTION
undp
AusAID
ODA


SOUTH PACIFIC COMMISSION
FISH AGGREGATING DEVICE (FAD) MANUAL
VOLUME II
RIGGING DEEP-WATER FAD MOORINGS
undp
AusAID


SECRETARIAT OF THE PACIFIC COMMUNITY
FISH AGGREGATING DEVICE (FAD) MANUAL
VOLUME III
DEPLOYING AND MAINTAINING FAD SYSTEMS


MANUAL ON FISH AGGREGATING DEVICES (FADs):
LOWER-COST MOORINGS AND PROGRAMME MANAGEMENT
nzaid


Pacific Community
Communauté du Pacifique
Manual on anchored fish aggregating devices (FADs):
An update on FAD gear technology, designs and deployment methods for the Pacific Island region
February 2020
FAME

Home | Home

https://www.spc.int/CoastalFisheries/FAD/FadHome/RopeLengthCalculator

Favourites Bar | Bing | Pacific Community... | Other favourites

Pacific Community Communauté du Pacifique

Fisheries, Aquaculture and Marine Ecosystems

Fish Aggregating Devices

Log in

CFP Home | FAD Home

Rope length calculator for anchored surface FADs using mixed ropes (nylon/polypropylene)

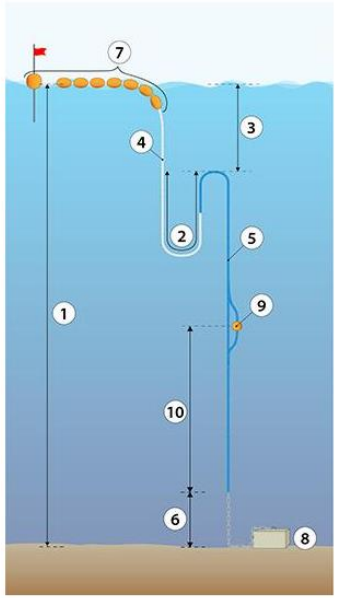
This tool allows you to determine the length of polypropylene and nylon ropes, as well as the buoyancy of floats and the weight of the cement block needed for your FAD deployment. It must be used in conjunction with SPC latest Manual on anchored fish aggregating devices (FADs)

Required input fields for FAD construction calculation

1. **Deployment depth:** 350 **m**
2. **Percentage of excess rope (scope):** 25 **(20-33%)**
3. **Depth above catenary:** 150 **m** (applied when depth is >= 450m)

Rope diameters:

4. **nylon (sinking rope):** 12 mm
5. **polypropylene (floating rope):** 12 mm
6. **Weight to be lifted:** 24.6 kg



Calculated values for construction and deployment

Rope lengths:

4. **Length of nylon (sinking rope):** 138 **m**
5. **Length of polypropylene (floating rope):** 300 **m**

7. **Recommended surface buoyancy needed:** 104 **litres**
8. **Weight of cement anchor block required:** 557 **kg**
9. **Supplementary buoyancy required:** 19 **litres**
10. **Distance of supplementary floats from bottom:** 188 **m**

Contact Us | Careers | Procurement | Staff Email | Intranet OneSPC | Subscribe to SPC Newsletter

22°C 09:26 13/11/2023

Where to from here?
FAD workshop - outcomes

- Continue to improve:
  - Safe FAD deployments.
  - Unit, deployment, and operations costs.
  - Longevity.
- *Acknowledge the* importance of anchored FAD initiatives as a successful strategy in the development of nearshore small-scale tuna fisheries in the region.
- Continue to address challenges such as inadequate data collection and lack of concrete documentation on FAD longevity, impacts, catches, performance, and overall usefulness.

- *Recognise and acknowledge* the continued support of regional organisations, non-governmental organisations (NGOs), and donor partners that has led to significant programmes and substantial funding being allocated to support FAD development in the region.
- FAD management plans are crucial for sustainable FAD programmes. *Establish* and secure consistent national funding sources to complement external support for long-term sustainability of national FAD programmes and their benefits to fishers and coastal communities.

- Hold a workshop every 18 months, over a five-day period. This could be programmed into the forthcoming GCF project and provide an excellent opportunity to share lessons and experiences amongst PICs and ensure that best practice prevails with their FAD programmes and to ensure that livelihood benefits continue.
- Use of GPS and GPS/echo sounder buoys to track FAD movement and ascertain biomass at the FADs.
- Develop online tool for bathymetry mapping.

THE FAD SQUAD MOTTO: FAD LONGEVITY EQUALS SUSTAINED PRODUCTIVITY.