



FADs construction

Basic rules

Par

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FADs WG - Saint Vincent & Grenadines
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Conception and construction of FADs

Depend of:

•The fishing activity around FADs

- Dolphin fish: numerous small FADs with aggregators on the surface
- Black fin tunas: near the coast, light for fishing at night
- Yellow fin tuna: far from the coast

•The management system of the FADs

- Public FADs vs private = funds availability

•The zone where the FADs are deployed

- Local hydro dynamism: buoyancy different according to the current
- Sea traffic: beacons, visibility of the buoy

•etc.

FAD's improvement objectives

- Avoid collisions with ships
- Reduce debris
- Reduce the risk of damage to submarine facilities (submarine cables, ...)
- Maintain the FADs on the surface all year round
- Find the best compromise between cost and longevity of FADs
- Provide a choice between multiple devices and in particular seek inexpensive devices accessible to a greater number
- Establish maintenance/replacement plans based on the lifespan of the various FADs components (to be assessed by the observation of a sufficient number of devices)
- Estimate the maintenance/replacement costs to develop more rational practices

Review of FADs construction

- **FAD general shape**
- **Anchor**
- **Metallic links**
- **Ropes**
- **Aggregators**
- **Buoys**
- **Beacons (night and day)**
- **How to estimate the average duration of the FADs?**

General shape of the FADs

Sensitive part:
first 200 – 400 m

Sunking rope
Avoid propellers and fishing gears
During slack

Floating rope
Avoid rubbing on the bottom

FADs Anchor

- **Total Weight:**
- Weight in the water at least **20 % more than the buoyancy of the FAD**
- $$WW = WA * (1 - (DW/DM))$$
 - [WW = Weight in the water, WA = weight in the air, DW = density in sea water=1.026, DM = density of the material]
- **Nature :** concrete (WW # WA/2), metal (WW # WA) – different densities
- **Number of bloc(s), one or two or: ...**
- Anchor with limited height,
- important contact on loose ground



Metallic link ... or not

Without terminal



Inox



Galva



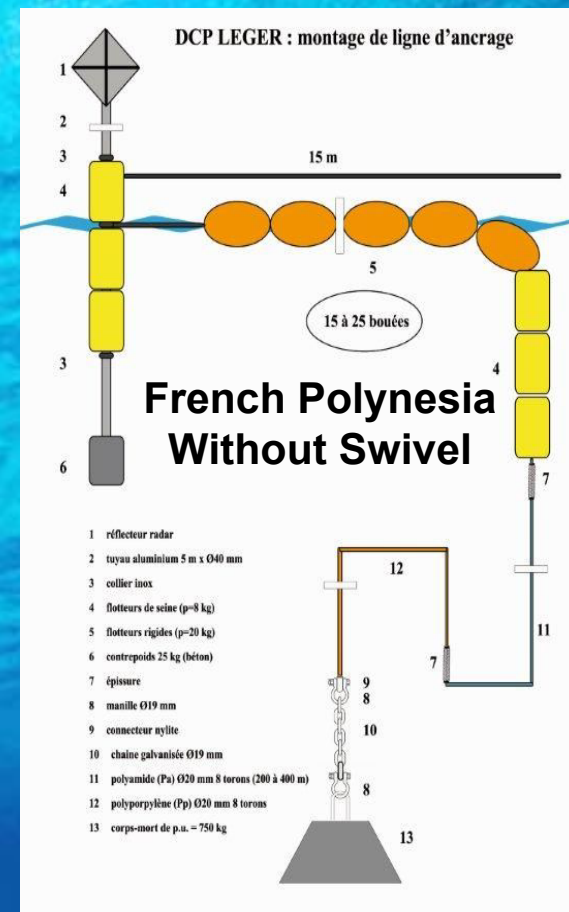
Galva at 300m



Link rope - mix / principal rope (415 d)



Anode



Swivel or not, the discussion is running ...

Avoid turns:

- **Deploy the FADs without turn in the rope**

« Coque »



Utilisation de touret



Lovage en faux plis



Locking by:

- Oxidation
- Tension



Mise à l'eau orin
Sans la tête du DCP

Roll-on Swivel



The head of
the FAD is free
and able to
spin around

Ropes

- **Maximum of current in the zone ?**

- **Different parts of the rope:**

Nature	Diam.	braided/stranded
High part : PA, PES, Mix ?	12,14, 16 ?	No strands?
Low part: PP, PE ?		

- **Total length according to:**

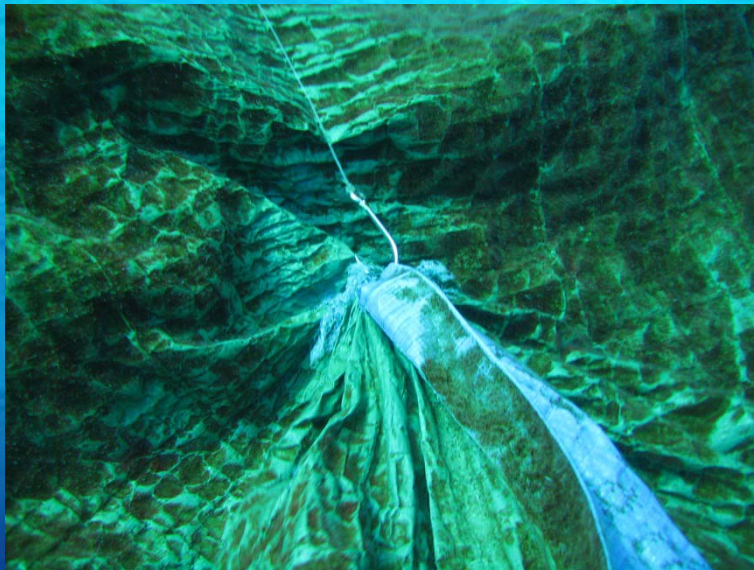
- Depth
- Maximum of current
- Diameter of the rope
- Buoys volume

- **Protect the first 200-400 m of the rope** against fishing lines and beats of fishes (mix, ...)
- **Don't use a weight** moored alongside the rope risk of rubbing and then breaking-off the rope

Aggregators

Take care to

- Catch the hooks
- Marks: clean-up or not?
- Depth
- Number
- Life span / maintenance (take the buoy on board or use of a “kit”)



Tarpaulin

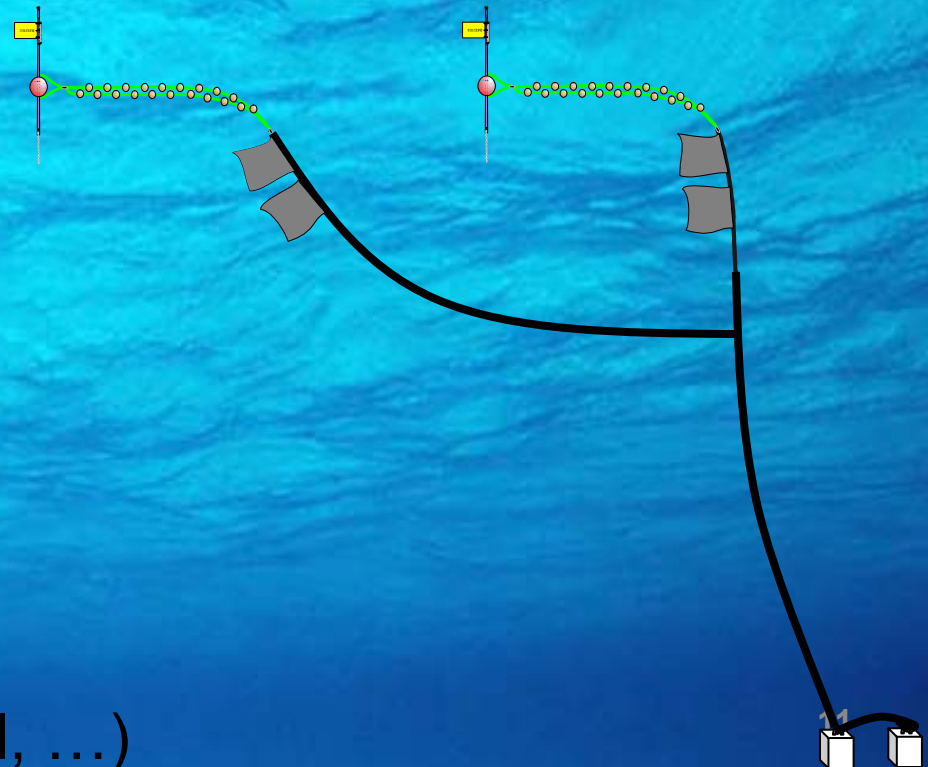


Strap

Buoys



- Nature (can, openig buoys,...)
- One or two heads
- Buoy(s) splited or not
- Single buoy interest:
 - Visibility
 - Hydrodynamism
 - Cost / availability
- Resistance to the pressure
- Volume
- Shape (cylindrical, spherical, ...)



Le balisage



- Flagpole
- Solar light
- Flag (black)
- Radar reflector
- St Andrew's cross

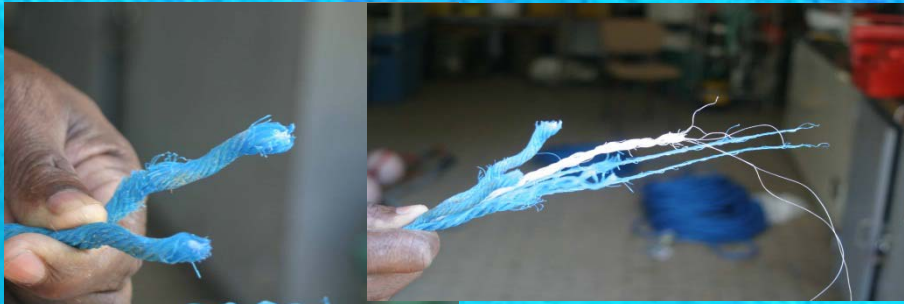


Proposed beacons



Statistics of lost of light FADs

4 FADs with 2 heads (3.5 years - 167 moths/FAD)



Average :

1 heads/6 months



•Fishing lines

15 (58 %°)

Mix (cable and synthetic)

•Cargo

4 (15 %)



One big buoy more visible

•Metallic part, ...

4 (15 %)

Limited use of metal+ anode

•Others

3 (12 %)

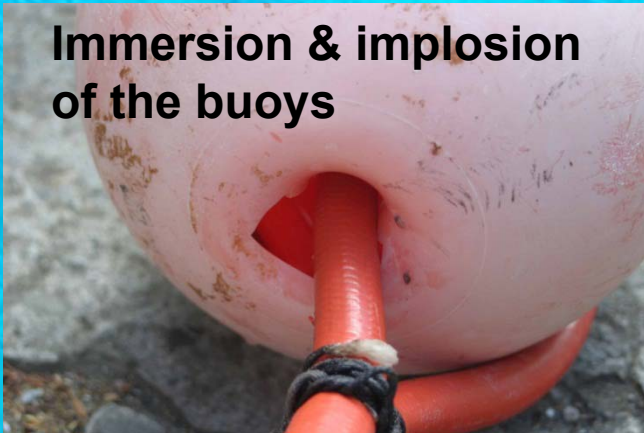
To be identified



Impacts of currents

Due to lack of buoyancy according to the local currents

**Immersion & implosion
of the buoys**



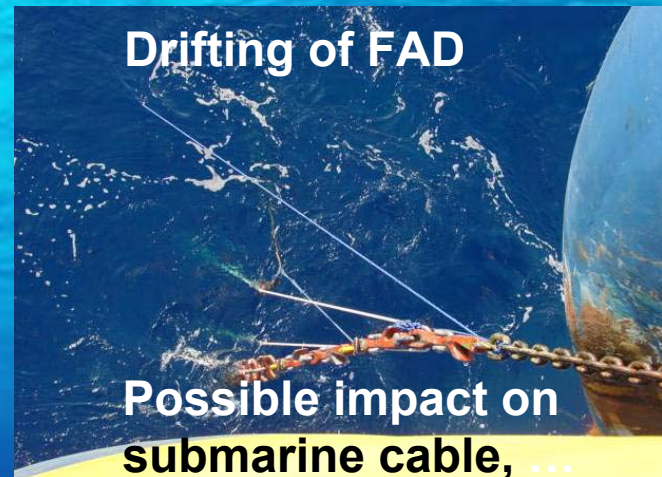
**Two seasons of strong currents:
2nd quarter of the year
in the lesser Antilles**

**Trangle
of FADs**

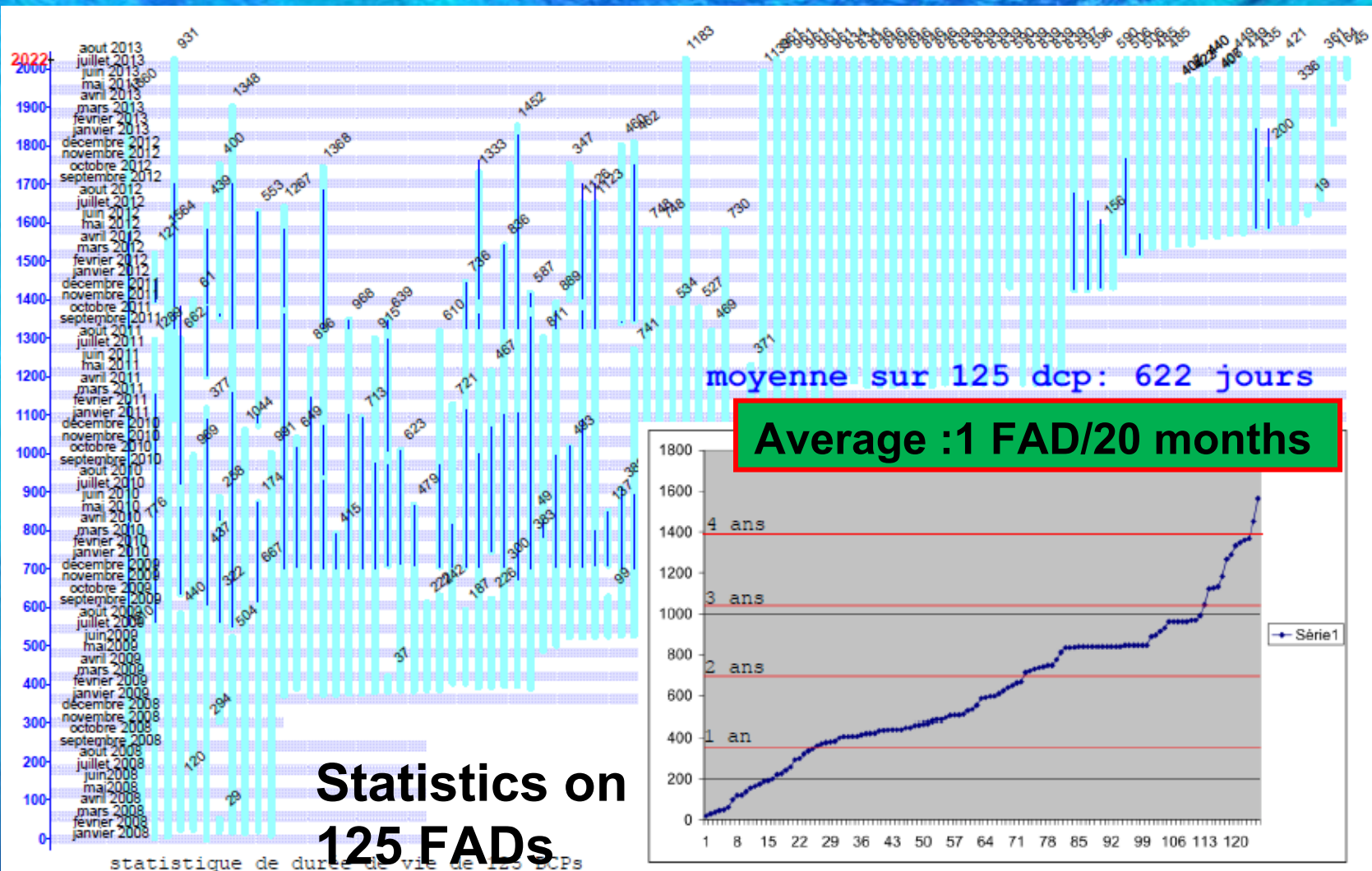


Drifting of FAD

**Possible impact on
submarine cable, ...**



Statistics of lost of heavy FADs



Maintenance limits

Next step



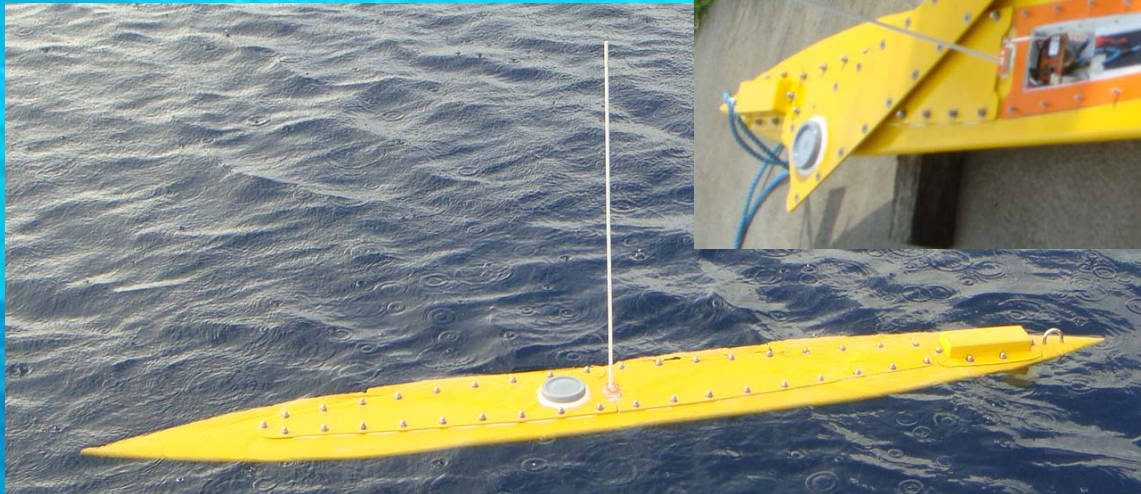
- **Improve FADs conception**
 - Good day & night visibility for the cargos with reliable beacons
 - One buoy more visible
 - Solar panel, Battery, Light, transponder,...
 - More buoyancy to avoid submersion
- **Is this heavy FAD better ?**
 - Maintenance schedule
 - Maintenance by specific boat
 - Cost (15 000 € vs 5 000 €)
- **Share the cost with other users !**

How to limit the debris ?

FADs without rope ?

<http://plkmarine.com/>

- Electric engine
- GPS + Transmission device
- Solar panel & Battery



- Reduce the debris
 - No trip for maintenance or deployment
- Species composition around this FAD ?



*Thanks a lot for your
attention.*

*Questions in basic
English please I am
French!*