

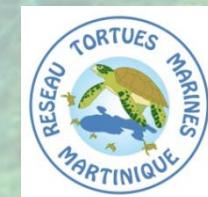
Marine Turtle Bycatch in FWI Net Fisheries

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WIDECAST Annual Meeting 10-11 April 2011 San Diego, USA



Context

Objectives

Results

Perspectives



**WIDECAST
31st ISTS**



**Guadeloupe
&
Martinique
FWI**

THE FWI FISHERIES

- 2100 boats
- Small scale
- Coastal (> 60%)



THE FWI FISHERIES

- 2100 boats
- Small scale
- Coastal (> 60%)



- Main fishing gears :

- *Antillean traps*
- *Line*
- *Nets (gill & trammel)*



BOTTOM NETS

Fish



Lobster



Queen conch

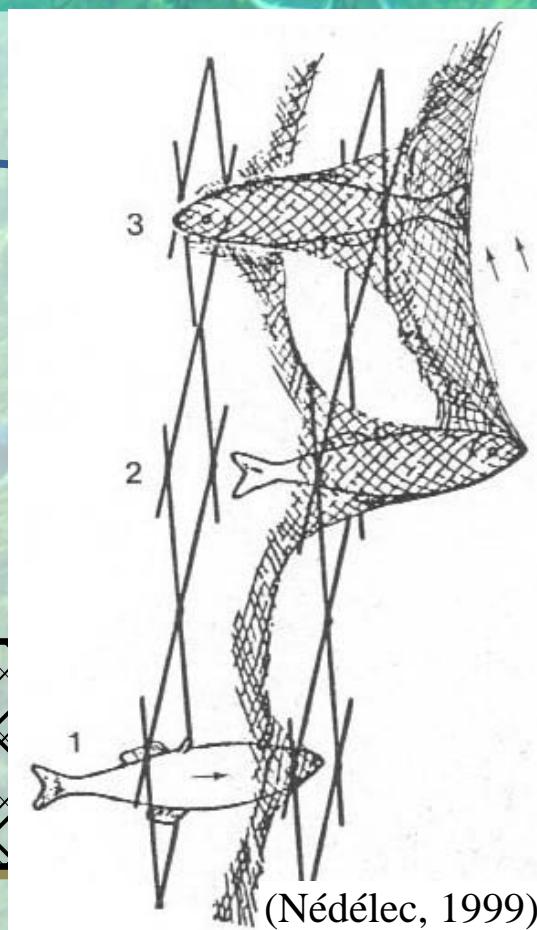
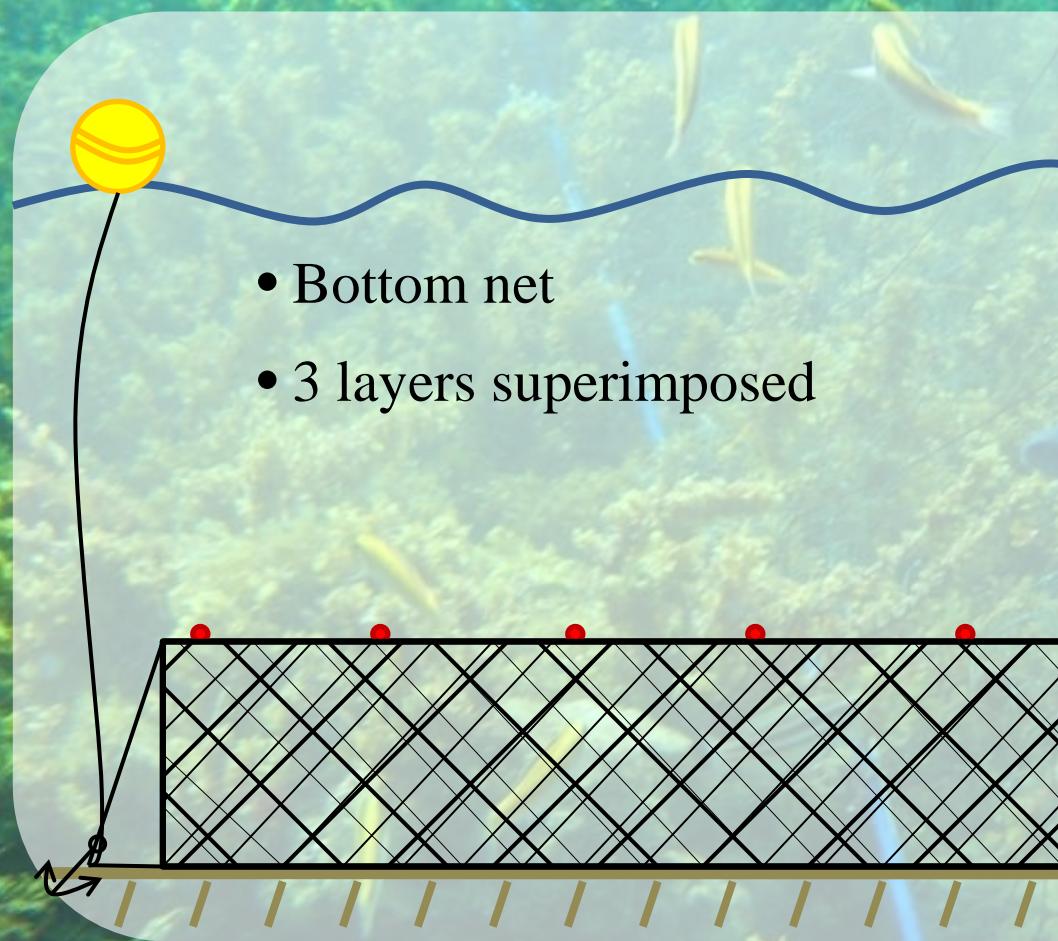


Gill net
(tight meshes)

Trammel net
(tight/loose meshes)

Folle net
(loose meshes)

THE TRAMMEL NET



THE TRAMMEL NET

Discards



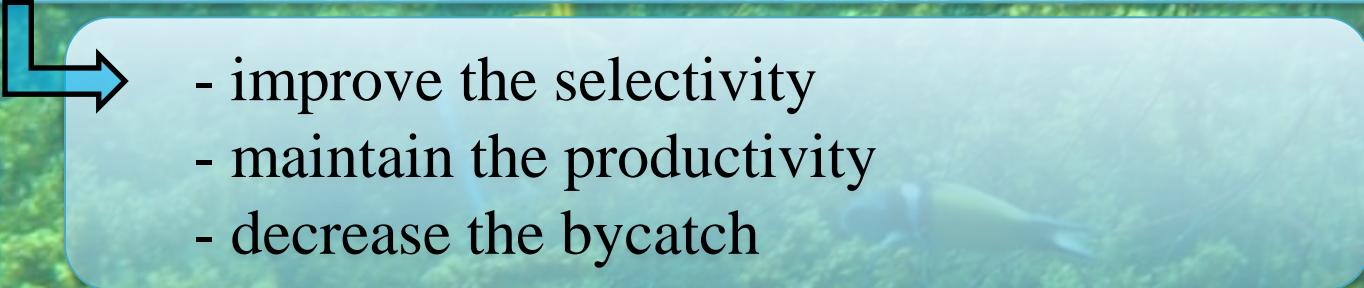
Bycatch



Problems of sustainability

OBJECTIVES

- ① Determine the bottom net techniques
- ② Test and compare professionnal and modified nets

- 
- improve the selectivity
 - maintain the productivity
 - decrease the bycatch

METHOD

Technique
gill / trammel / folle

Height
low / high

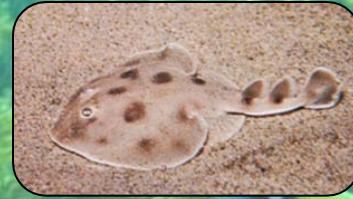
Incline
floats / no floats

FISH NETS

72 experimental trials

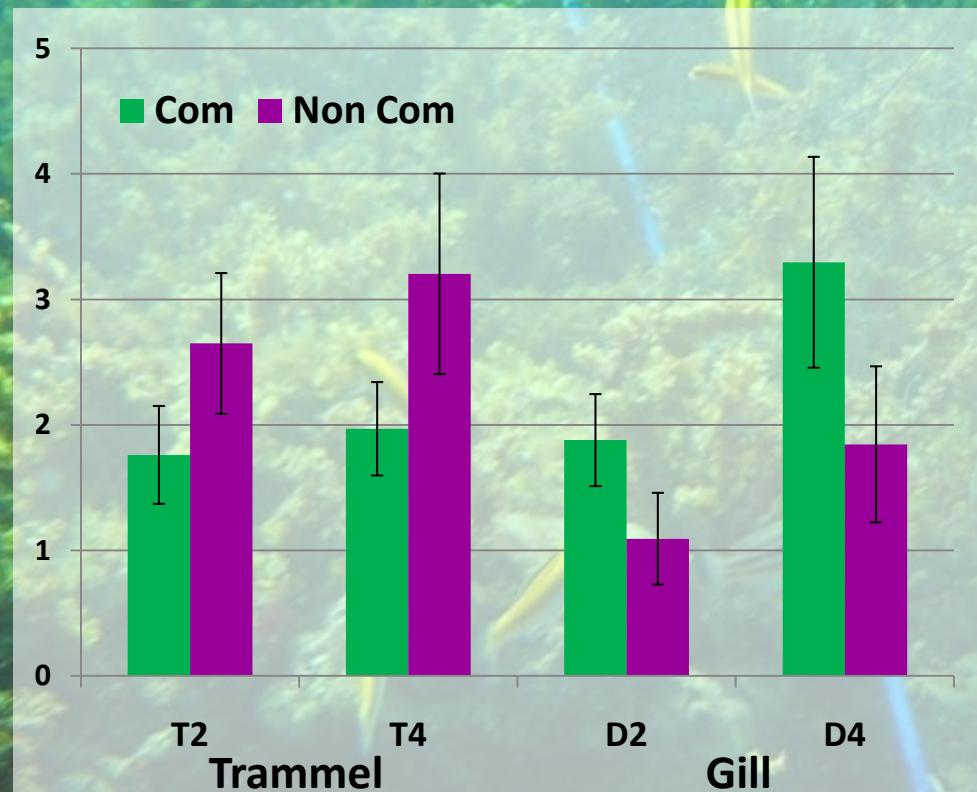
2769 individual captured

64 species



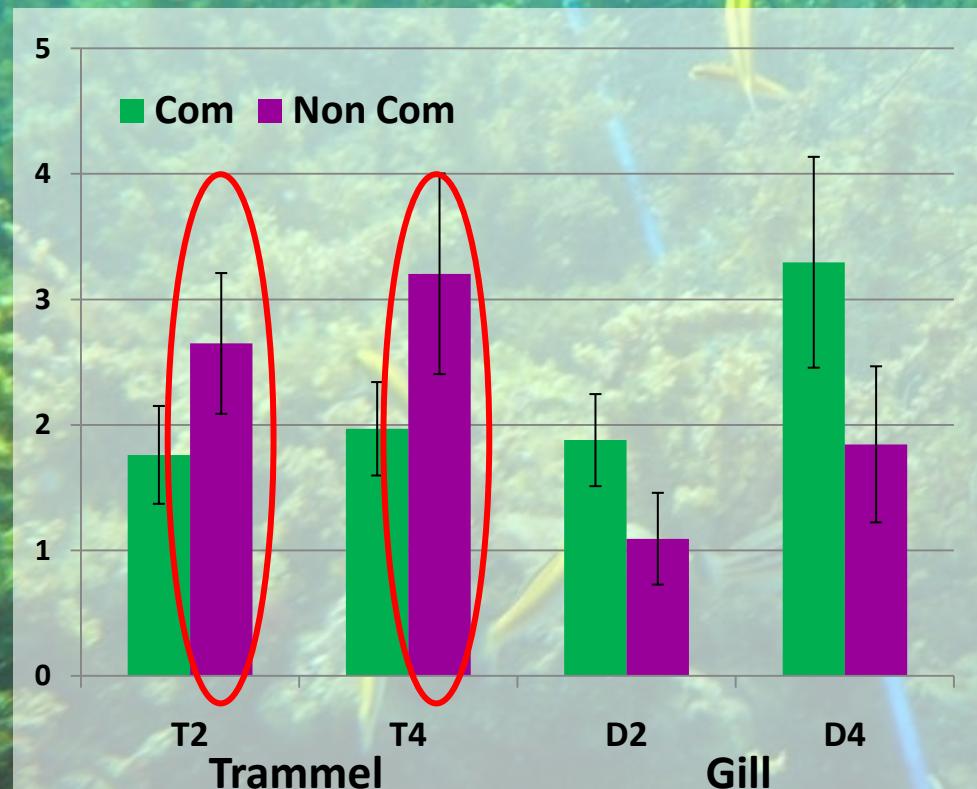
FISH NETS

Marketable sp vs non marketable



FISH NETS

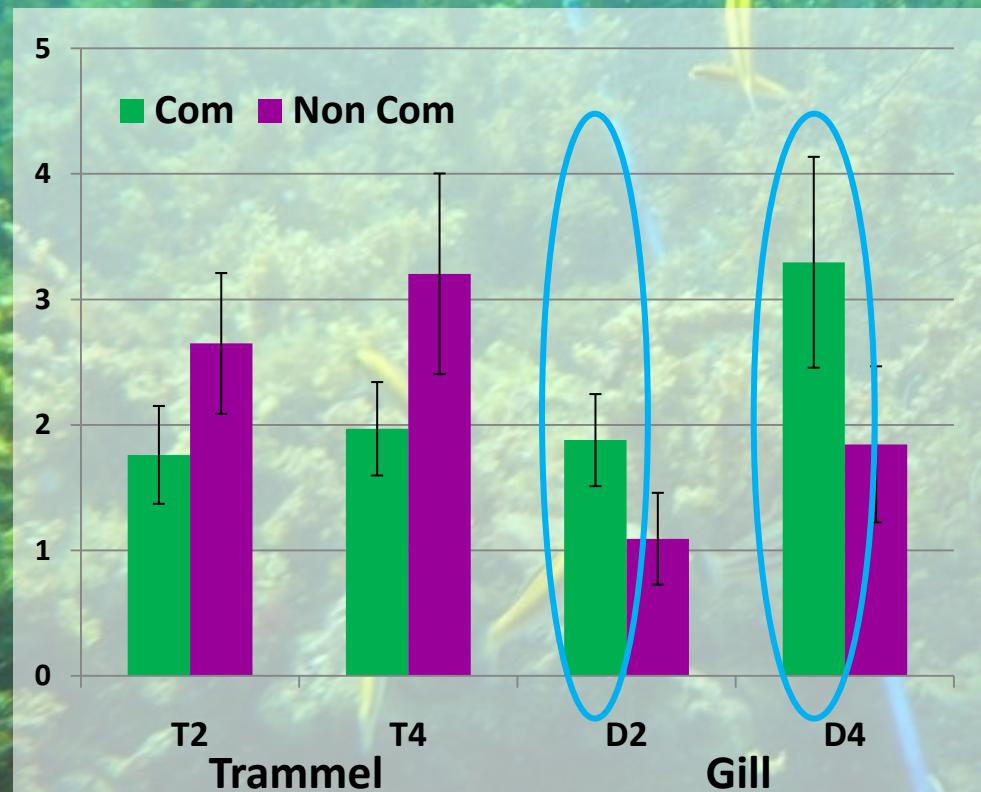
Marketable sp vs non marketable



Selectivity
More discards in trammel nets

FISH NETS

Marketable sp vs non marketable

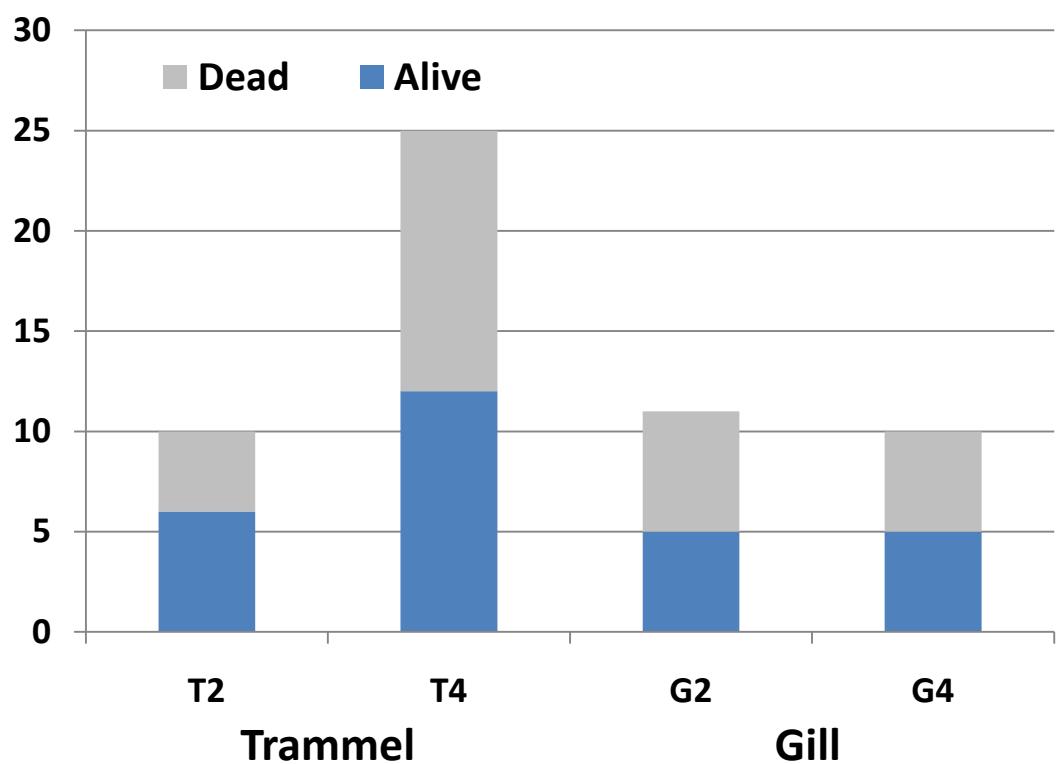


Selectivity
More discards in trammel nets

Productivity
Gill net more productive

FISH NETS

Marine Turtle Bycatch



**50% of mortality
(mean soak time: 5h)**

FISH NETS

Marine Turtle Bycatch



**50% of mortality
(mean soak time: 5h)**

**High profile trammel
net**

LOBSTER NETS

78 experimental trials

4962 individual captured

↳ 2832 lobsters

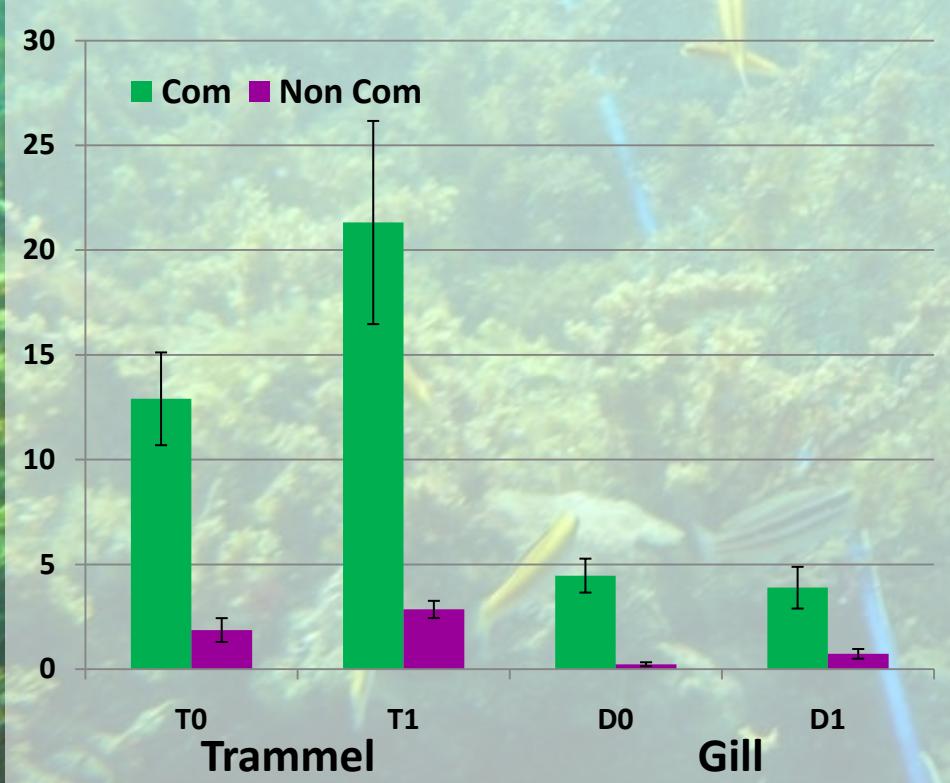
59 species

3 species



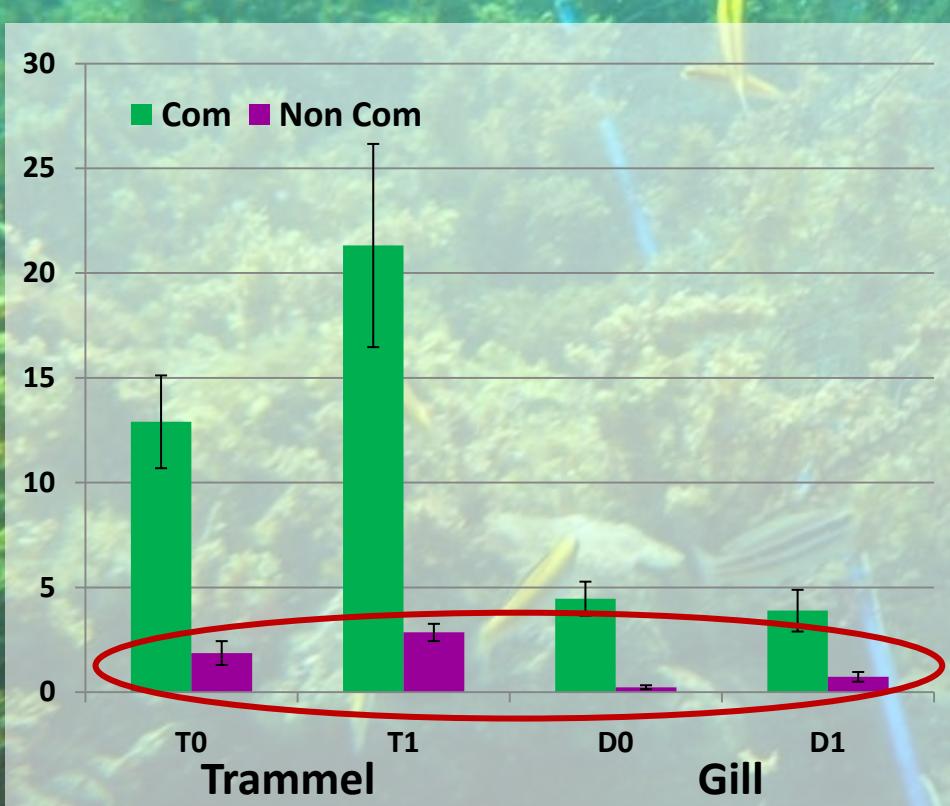
LOBSTER NETS

Marketable sp vs non marketable



LOBSTER NETS

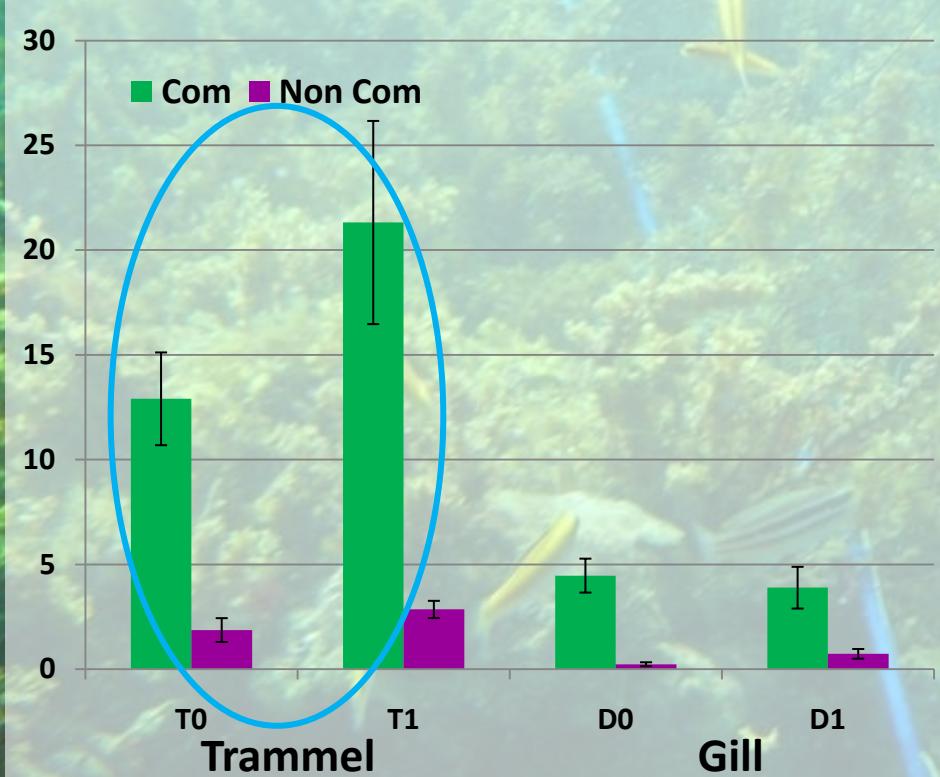
Marketable sp vs non marketable



Selectivity
Few discards

LOBSTER NETS

Marketable sp vs non marketable

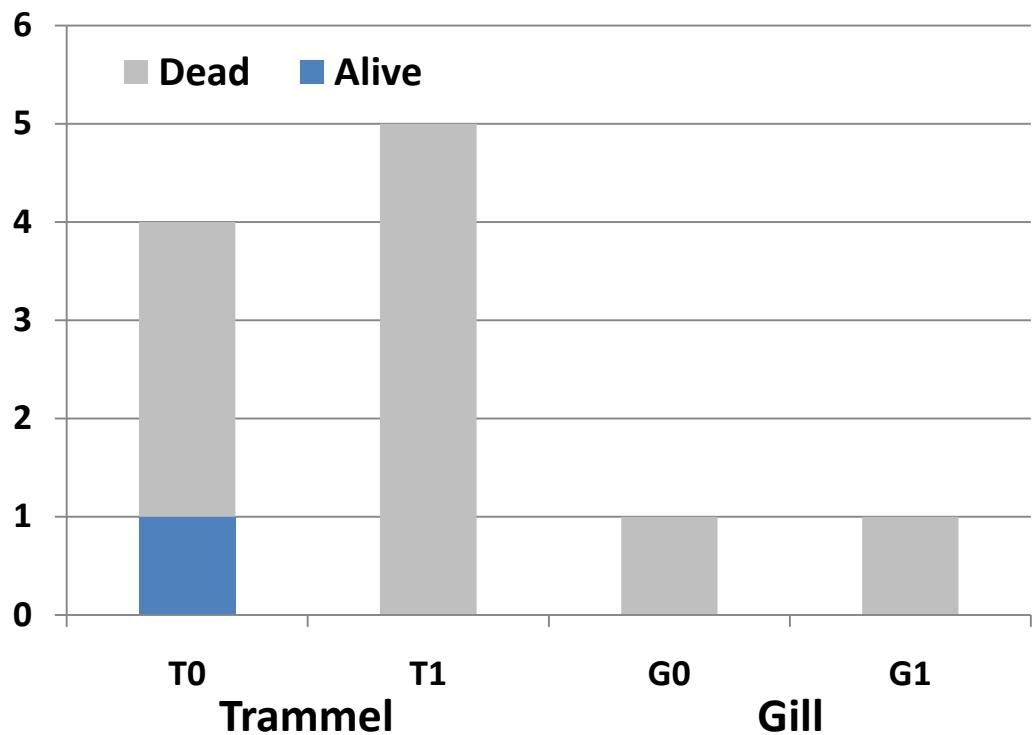


Selectivity
Few discards

Productivity
Trammel net more productive

LOBSTER NETS

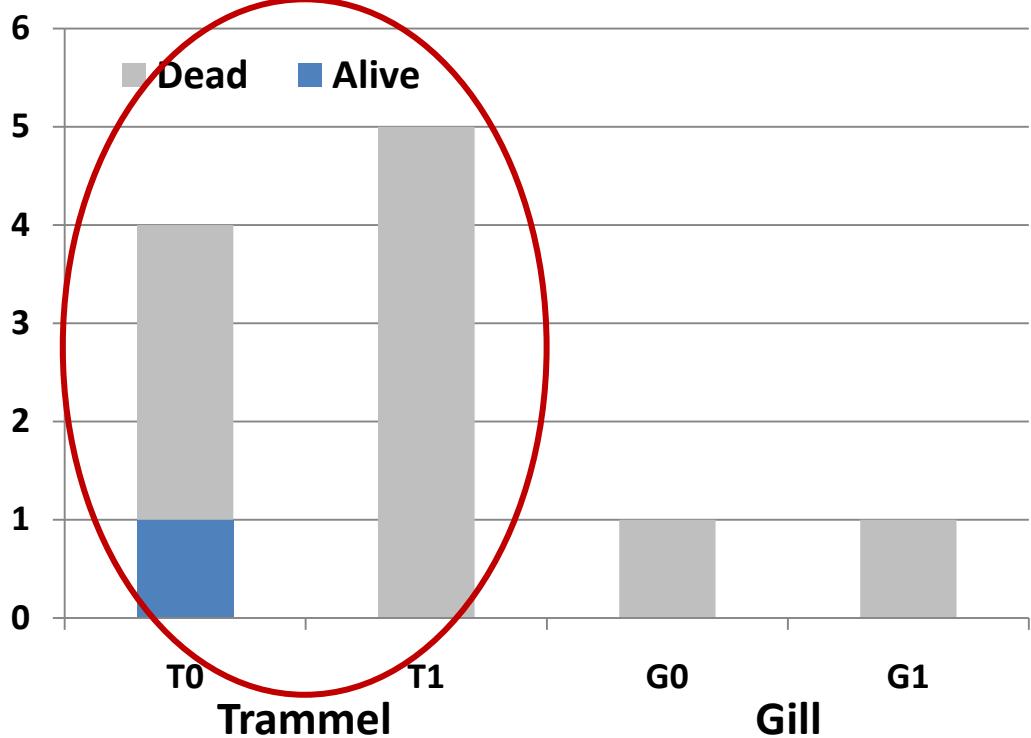
Marine Turtle Bycatch



**90% of mortality
(mean soak time: 13h)**

LOBSTER NETS

Marine Turtle Bycatch



**90% of mortality
(mean soak time: 13h)**

**More bycatch in
trammel nets**

CONCH NETS

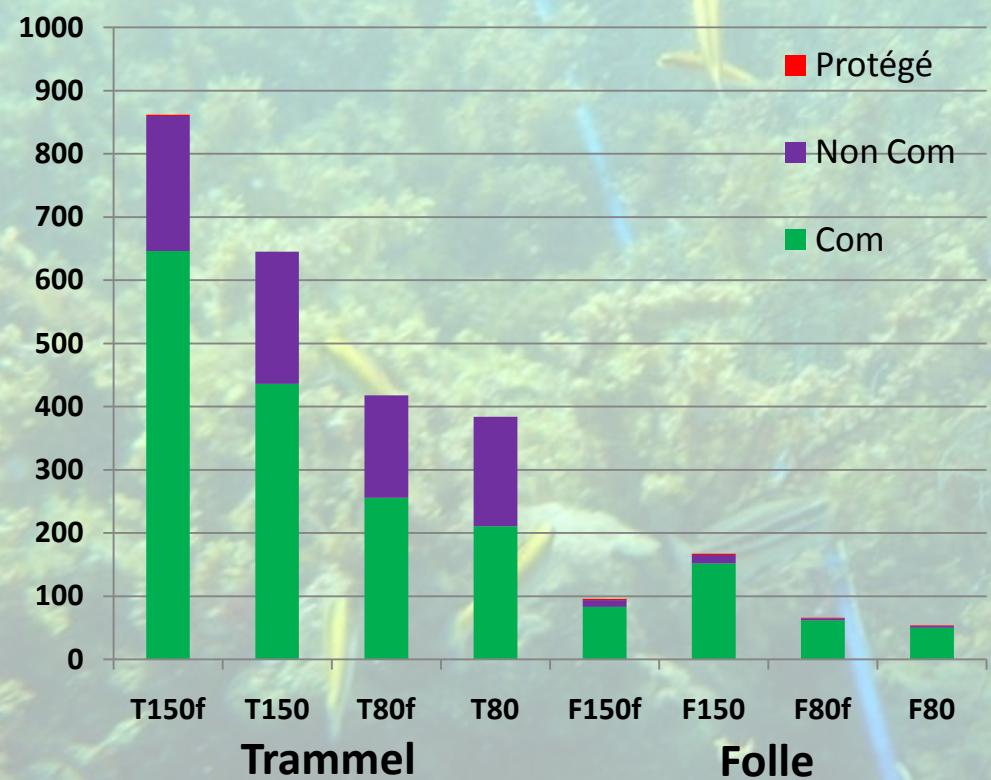
76 experimental trials

2738 individual captured



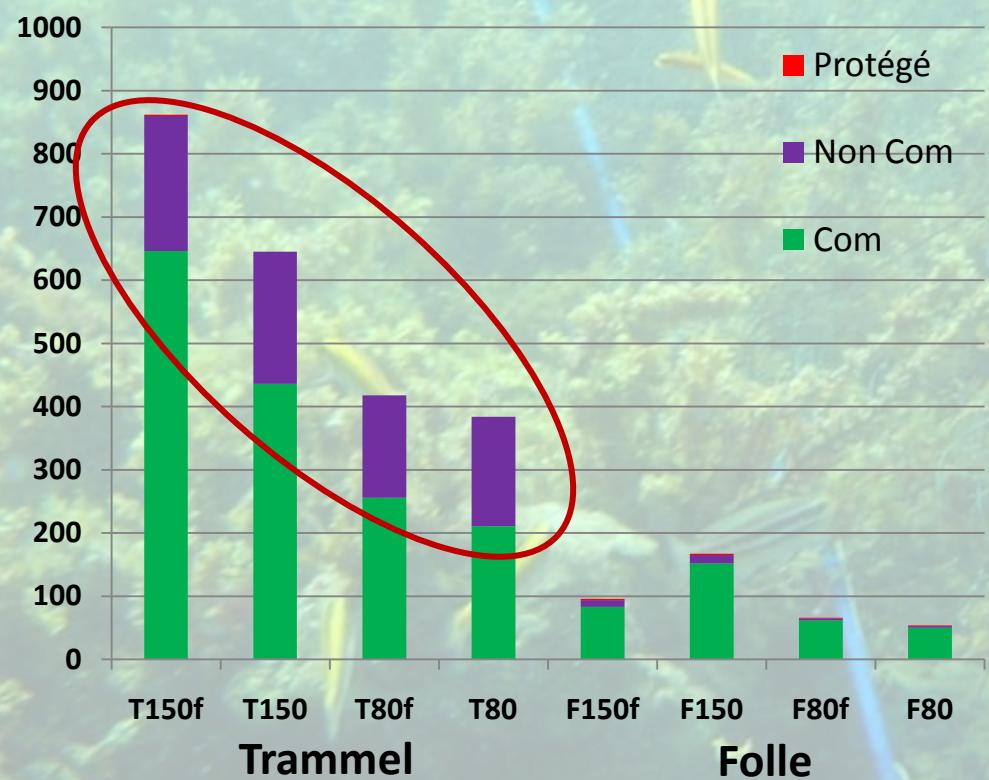
CONCH NETS

Marketable sp vs non marketable



CONCH NETS

Marketable sp vs non marketable

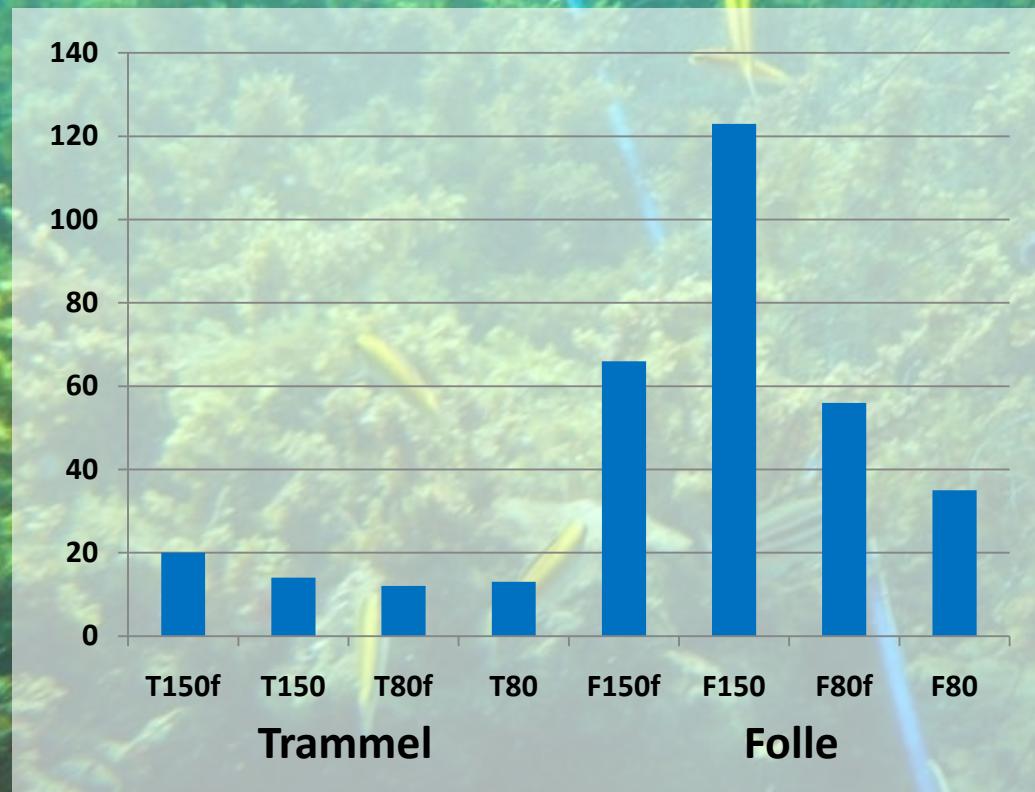


Selectivity

Trammel net non selective

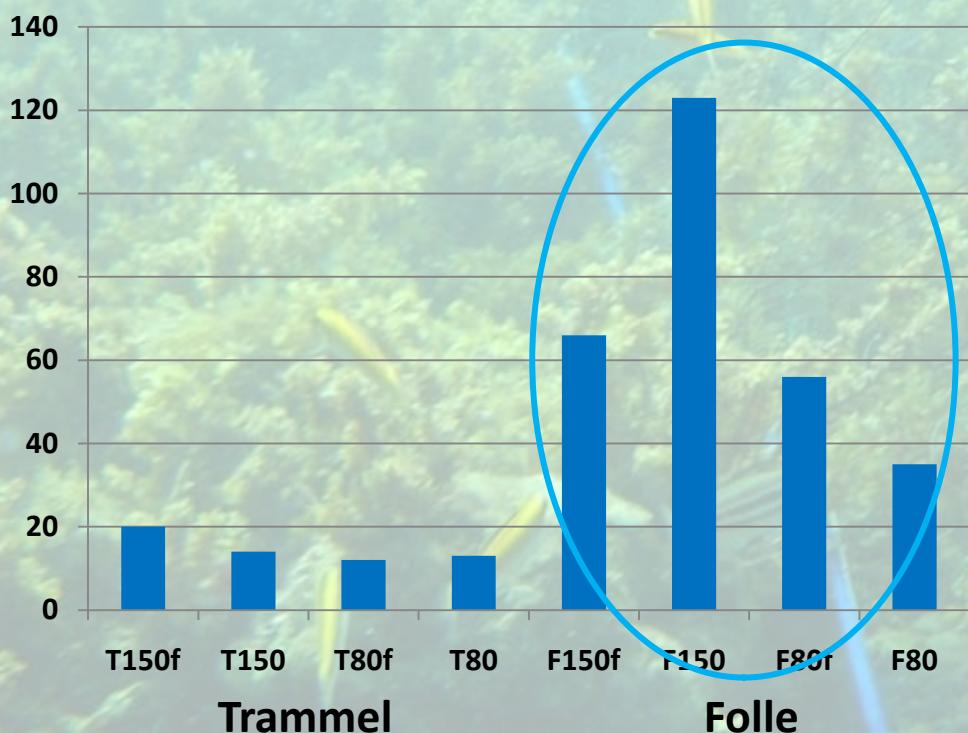
CONCH NETS

Queen Conch catches



CONCH NETS

Queen Conch catches

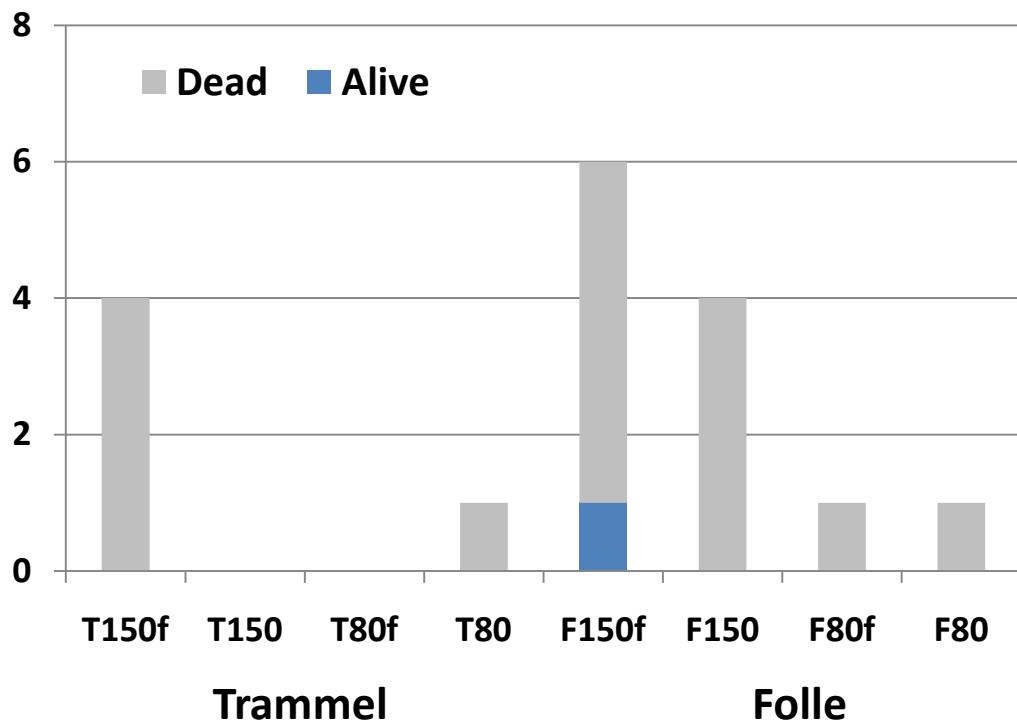


Productivity

Folle more selective

CONCH NETS

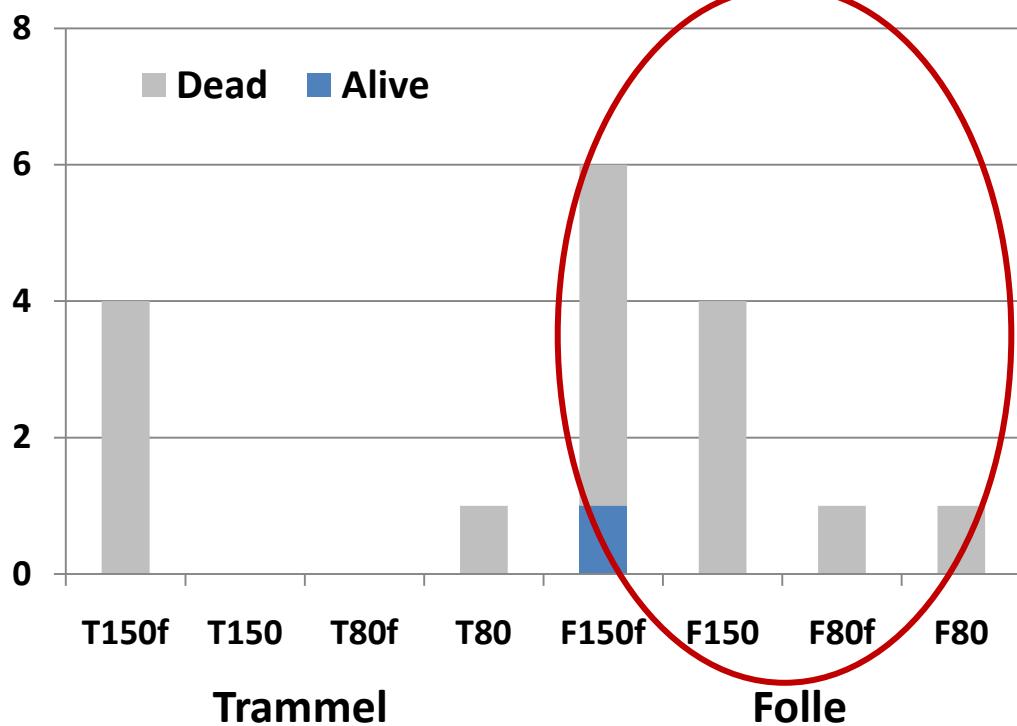
Marine Turtle Bycatch



**94% of mortality
(mean soak time: 24h)**

CONCH NETS

Marine Turtle Bycatch

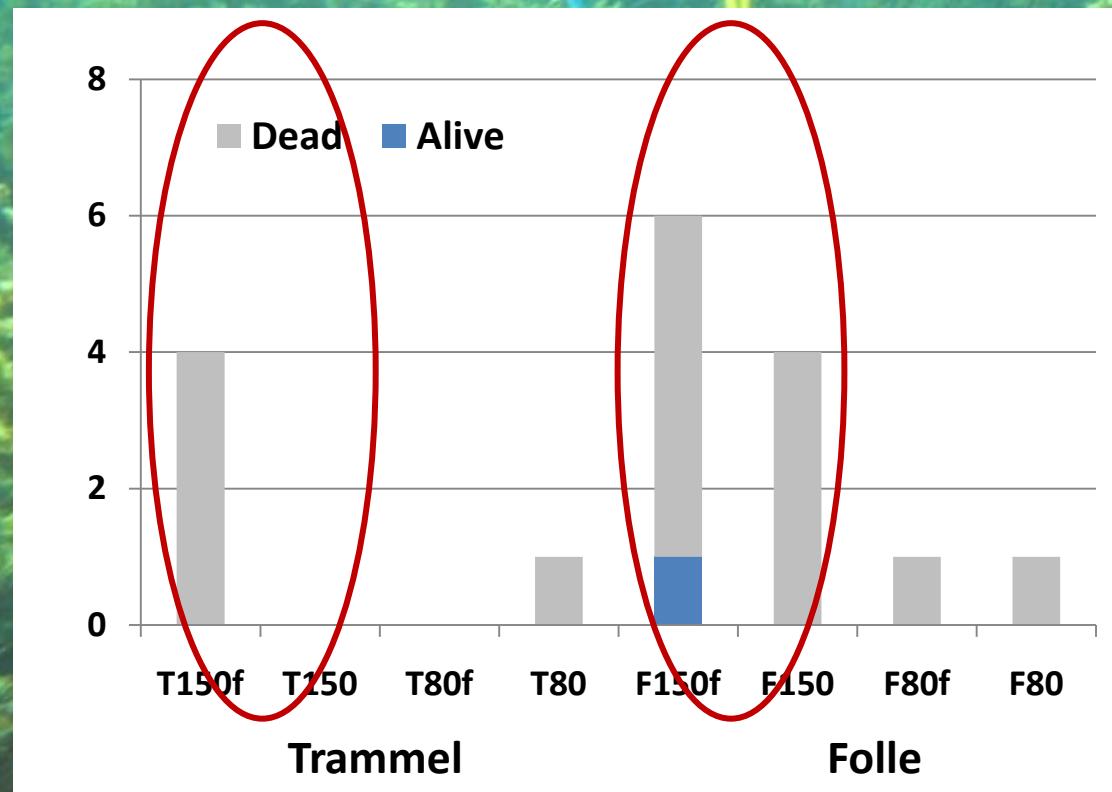


**94% of mortality
(mean soak time: 24h)**

Folle nets

CONCH NETS

Marine Turtle Bycatch



**94% of mortality
(mean soak time: 24h)**

Folle nets

High profile nets

MARINE TURTLE BYCATCH

Total Bycatch

84 marine turtles (Ei & Cm) for 226 trials → 2000 turtles in FWI

Mortality

54 dead turtles (64%)

Beaching

2 stranded turtles (4%)

CONCLUSIONS

Trammel net non selective

Folle nets murderous

Low profile nets interesting

Soak time < 4h

Lot of mortality but few stranding



FISHING REGULATION

Alternatives

MPAs - Soak times

Trammel net (ban?)

Low profile

Folle net

Ban ?

SUSTAINABLE FISHERY



ACKNOWLEDGMENTS

Observatoire du Milieu Marin Martiniquais (OMMM)



Financial support : DIREN, Région Martinique, Fonds Européens



Fishermen



ACKNOWLEDGEMENTS



WIDECAST
2009 – 2010 - 2011

ACKNOWLEDGMENTS



Bycatches of Marine Turtles in the Small Scale Net Fisheries in the French West Indies

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Since 2006, Marine turtles benefit from the first FWI Recovery Plan. These marine reptiles are fully protected in Guadeloupe (1993) and Martinique (1993). The coastal small scale fisheries have been identified as the main threat. Trawl nets could catch thousands of turtles every year.

The experimental fishing programs aimed at testing and comparing the gill, trammel and tulle⁶ nets selectivity according to the target species: lobster, fish and queen conch.

Catches Per Unit Effort of the experimental nets⁷ were compared to those of professional ones based on three parameters: height (high or low profile), meshing (mesh length, number of layers) and incline (with or without float).

* Trawmell: 2 layers superimposed (bottom/light/trawl meshes)
• Gill: 1 layer (light meshes 45-50mm)
• Tulle: 1 layer (sober meshes 100mm)

Fish Nets (Martinique)
A non selective... trammel net!

73 experimental trials [mean soak time: 5h]
Nets Characteristics:
** 1: Trawmell = 1; Gill= 2; Low (2.8m) = 4; High (3.8m) = 5
Cone (Non Cone) = Many Commercial individuals

Mean biomass (Kg)

2709 individuals captured
Trawmell nets non-selective

Productivity (CPUE = g.m⁻².h⁻¹)

Marine Turtles bycatch

50% of mortality

Lobster Nets (Martinique)
An interesting... low profile !

78 experimental trials [mean soak time: 13h]
Nets Characteristics:
** 1: Trawmell = 1; Gill = 2; Low (3m) = 4; High (3.8m) = 5
Cone (Non Cone) = Many Commercial individuals

Mean biomass (Kg)

57% of lobster among 8962 individuals
Highest biomass with trammel nets

Productivity (CPUE = g.m⁻².h⁻¹)

Marine Turtles bycatch

Long soak times induce mortality

Conch Nets (Guadeloupe)
Murderous... folles!

76 experimental trials [mean soak Time: 24h]
Nets Characteristics:
** 1: Trawmell = 1; Tulle = 2; Low (80cm) = 3; High (1.5m) = 4; Floats

Number of Individuals caught

More catches with trammel nets

Conch catches (Strombus gigas)

Efficient and selective tulle nets

Marine Turtles bycatch

A murderous tulle net

94% of mortality

Encouraging trends...

With more than 50% of discards in some cases, the trammel net is definitely not selective. The gill net is the most selective gear. The long soak times practiced for the lobster and conch techniques increase turtle bycatches and mortality. Discards are also very important. The low profile nets capture less marine turtles in average.

The fish fishing would be more productive with trammel nets, but the high profile trammel would be as effective as the high one.

The lobster fishing would be more selective with trammel nets. The low profile trammel would be as effective as the high one.

The conch fishing is much more selective with the tulle, but this latter meshing net is responsible for highest marine turtle's bycatches.

The beaching: the tip of the iceberg!

The dead turtles caught during these trials were tagged in order to study their beaching.

During the 54 dead turtles, 2 were reported on a beach in Martinique and one in Guadeloupe, which accounts for 4%.

The beaching rate of dead marine turtle, despite the fact that turtles are caught non-selective, does not reflect the mortality rate from bycatch.

About 64% of captured turtle died by drowning and entanglement. The death is correlated with the soak time.

Perspectives: Our objective is to identify the most selective nets, causing less bycatch of marine turtles, and maintaining a good fishing productivity. Changes in regulation and adaptation of the fishing techniques are the two main challenges targeted to decrease the impact on marine turtles' populations in the FWI. New policies and regulations on trammel nets and tulle nets are required to reduce bycatch. Regulations could be applied to soak times, fishing periods and fishing areas as well as the ban of the above non-selective gears.

The background image shows an underwater environment with a dense green seagrass bed. A blue fishing net is suspended in the water, with several yellow fish swimming around it. A blue pipe or tube runs horizontally across the upper part of the frame.

Thank you for your attention

