

FISH AND FISHERIES RESEARCH CARIBBEAN NETHERLANDS

"SUPPORTING LOCAL MANAGEMENT"



SABA BANK FISHERIES:

LOBSTER, REEF FISH, REDFISH, GHOST FISHING, SHARK,
CONCH

M DE GRAAF, LAJ NAGELKERKE, E BOMAN, T BRUNEL

SABA BANK FISHERIES

- 10 licenses

WHY FISHERIES?

ONLY ECONOMIC ACTIVITY

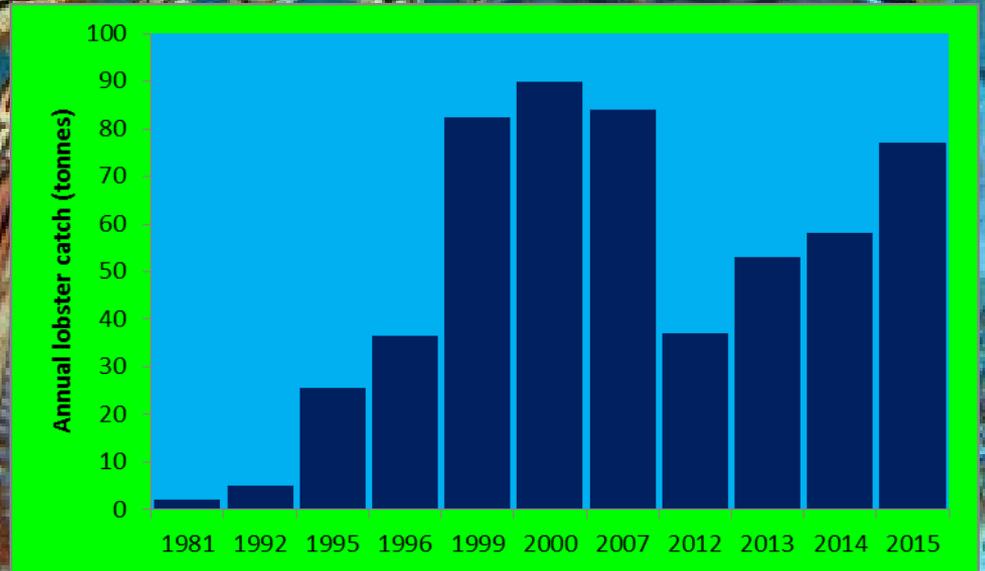
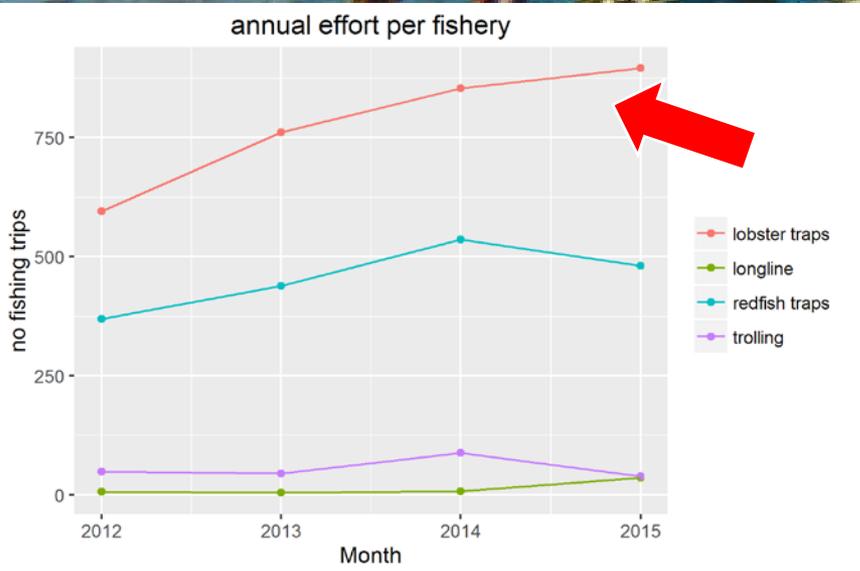
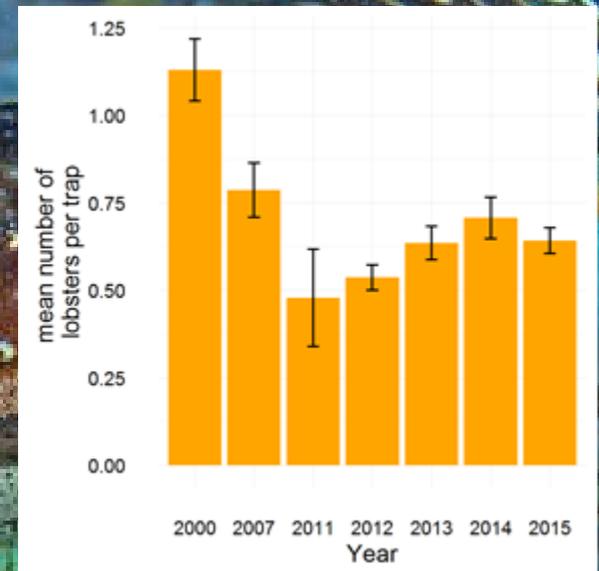
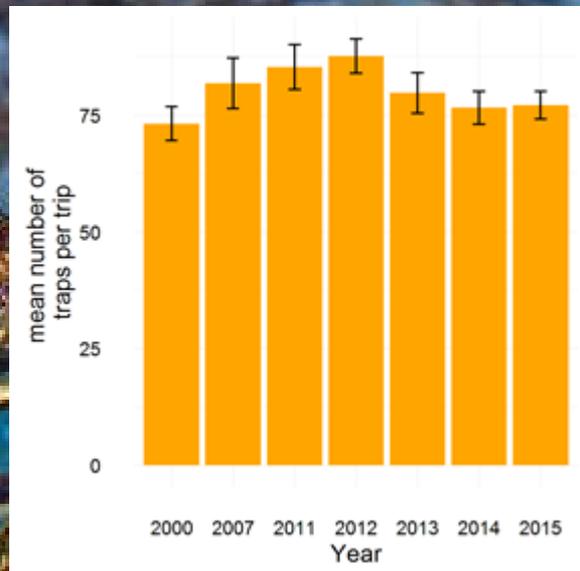
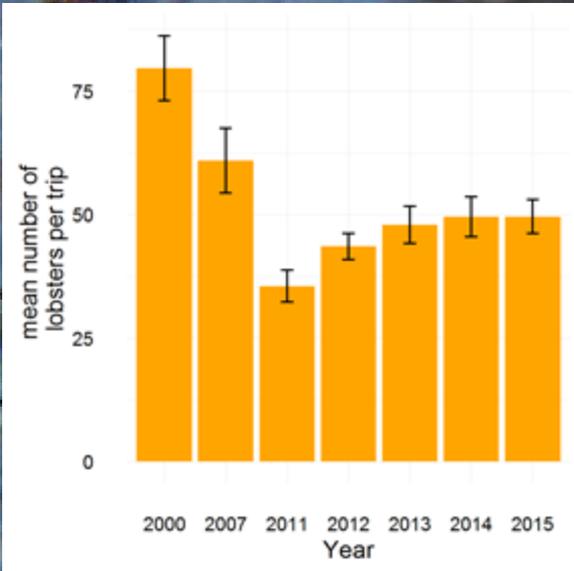
ONLY MANAGEABLE ACTIVITY

IMPACT STOCKS & INTERACTION ECOSYSTEM

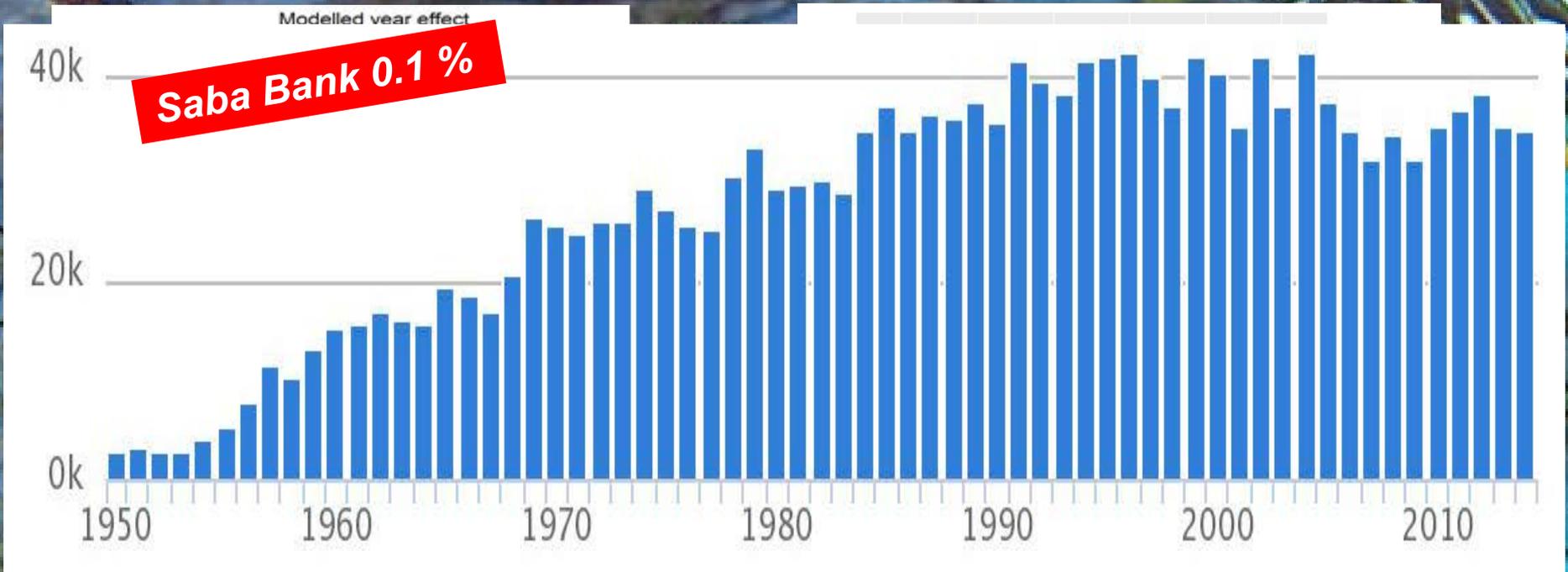
(2007) JUL-DEC



SPINY LOBSTER...FISHERY



SPINY LOBSTER...STOCK STATUS



- Declaration Caribbean Regional Fisheries Mechanism 2015:
 - one genetic stock, international co-operation & management
 - harmonise min size, closed season etc
 - regulate effort, no. gear per license
 - recommendation -> follow CRFM

REEF FISH... FISHERIES



landed (#)

discarded (#)



Haemulon melanurum
8%

Haemulon plumierii
27%



Lactophrys triqueter
3%

Epinephelus guttatus
11%

Chilomycterus antillarum
4%

Cephalopholis fulva
3%

Haemulon melanurum
21%

Haemulon plumierii
14%

Balistes vetula
6%

other fish
24%

Cheatodon striatus
6%

Acanthurus coeruleus
3%

Acanthurus coeruleus
3%

Acanthurus chirurgus
3%

other fish
20%

Acanthurus chirurgus
6%

Acanthurus bahianus
3%

Acanthurus bahianus
6%

Acanthostracion polygonia
6%

Pseudopeneus maculatus
3%

Acanthostracion quadricornis
6%

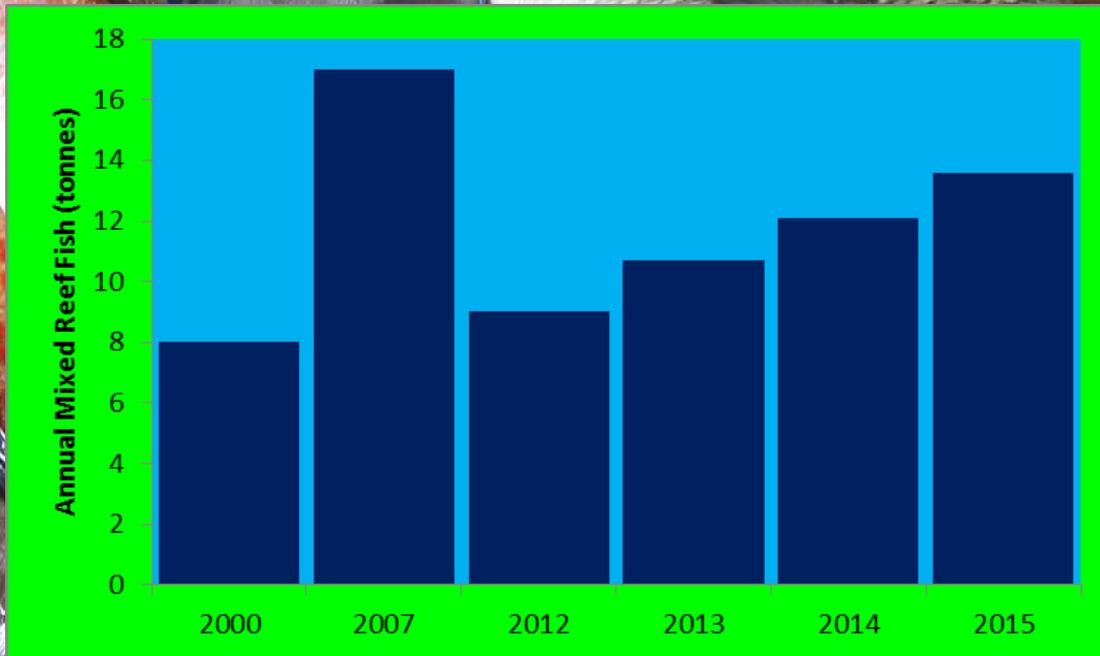
Acanthostracion polygonia
14%



2012: Landings ~8 t, Discard ~12 t
van Gerwen (2013)



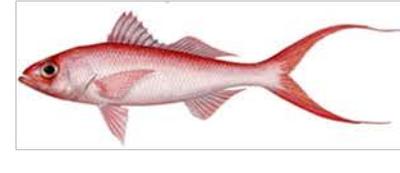
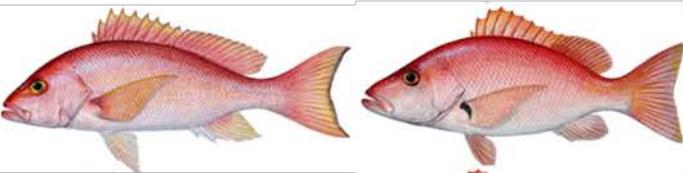
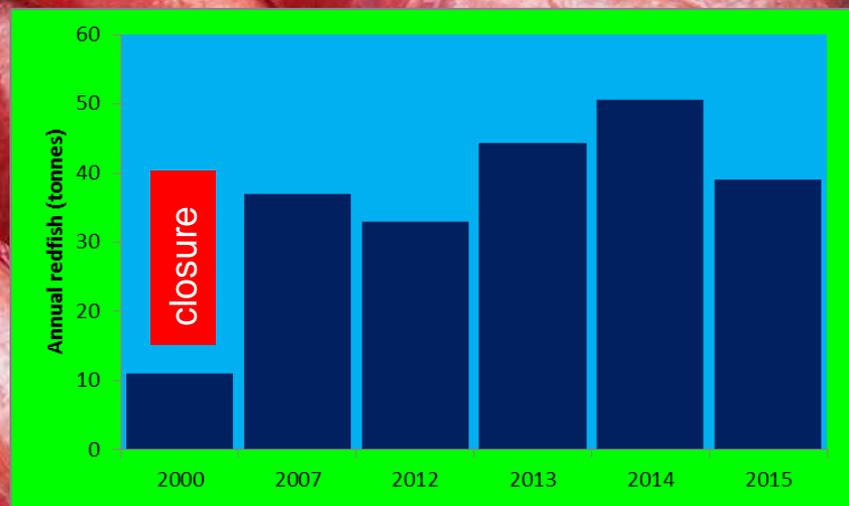
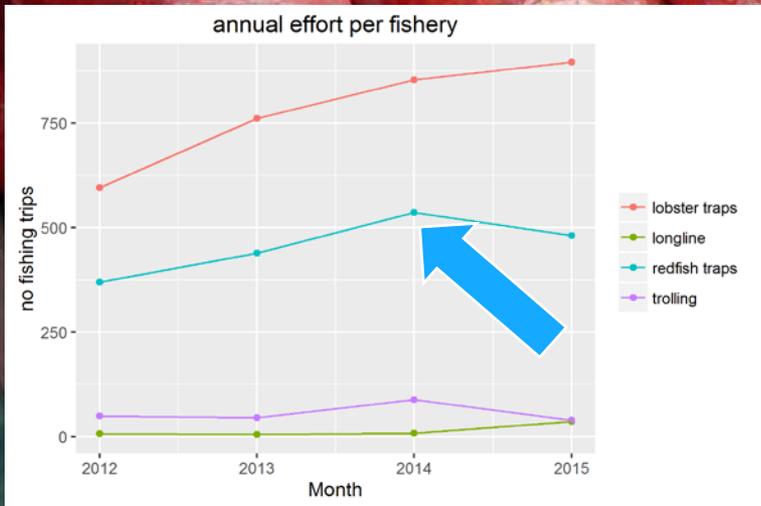
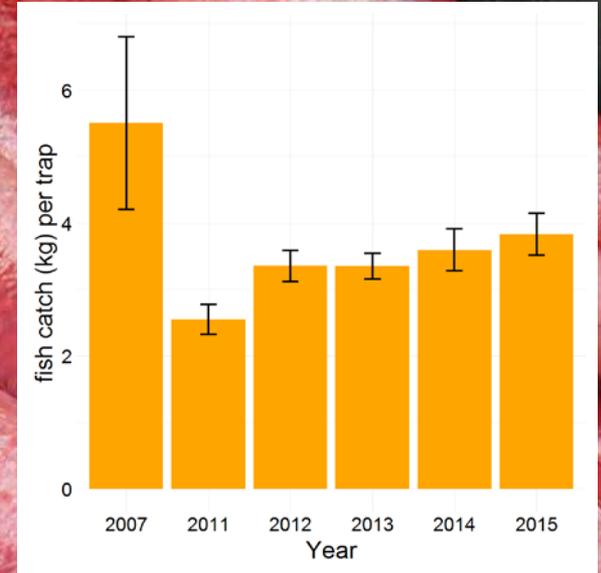
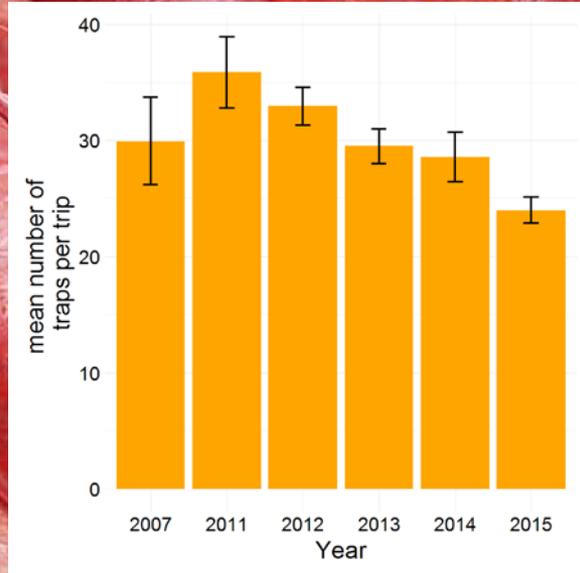
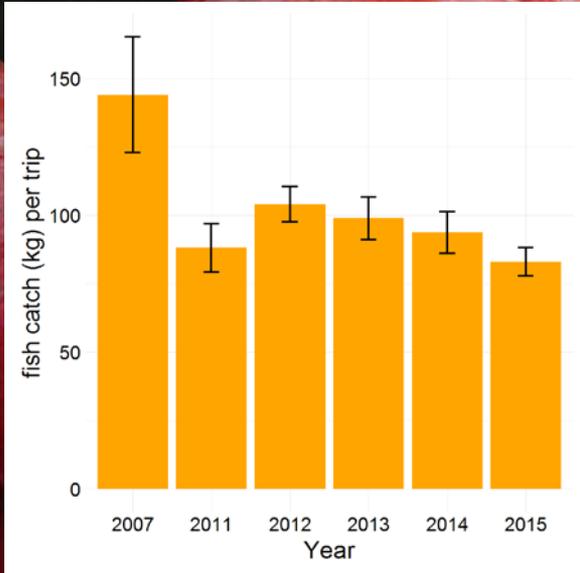
REEF FISH...FISHERIES



■ Reef fish fisheries:

- low annual catch ~12 t
- 100-400 km² -> 0.12 -0.03 t km² -> VERY LOW (Bonaire 2 t km²)
- “Overfished”?
- Low natural biomass (van Beek et al 2014); deep reef & low complexity?
- Lobster, not reef fish, target species?

DEEP WATER SNAPPER....FISHERY



DEEP WATER SNAPPER.... FISHERY

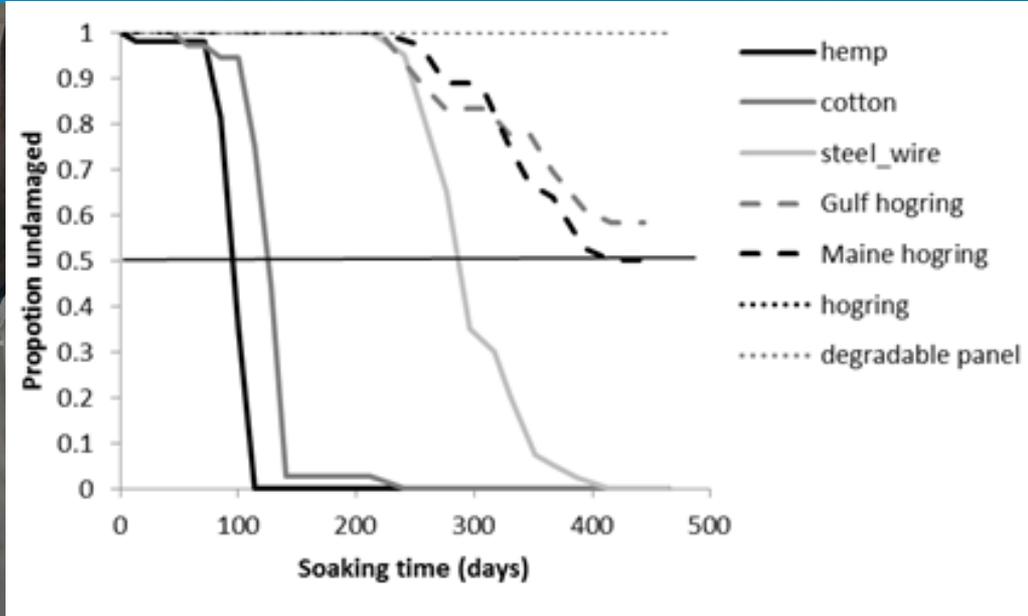


■ Declaration Fishers (2016):

- closed season 6 months; 25 traps per license (?)
- develop management framework and tools



Sustainable traps: biodegradable panel



Current regulation

Biodegradable panel (20 d) obligatory

No enforcement & no compliance (20d)

Ghost fishing a problem?

Sustainable traps: ghost fishing

	This study	Butler & Matthews (2015)	Renchen et al. (2014)
Duration	3 months	32 months	6 months
<i>Reef fish</i>			
Avg no live fish per trap	2.3	2.9	1.8
Mortality (%)	2%	1.7%	2%
Kg dead / trap / year	2.7		3.9
<i>Lobster</i>			
Avg no live lobster per trap	3.5	3.9-4.8	
Mortality (%)	0.8%	1.8%	
No. dead / trap / year	2.7	3-7	



SABA BANK:

0.6 lost traps per trip, 400-600 annually

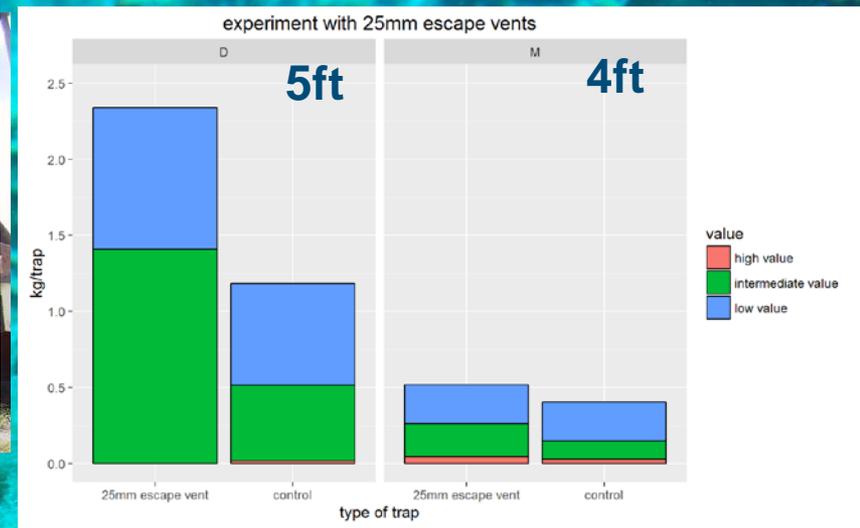
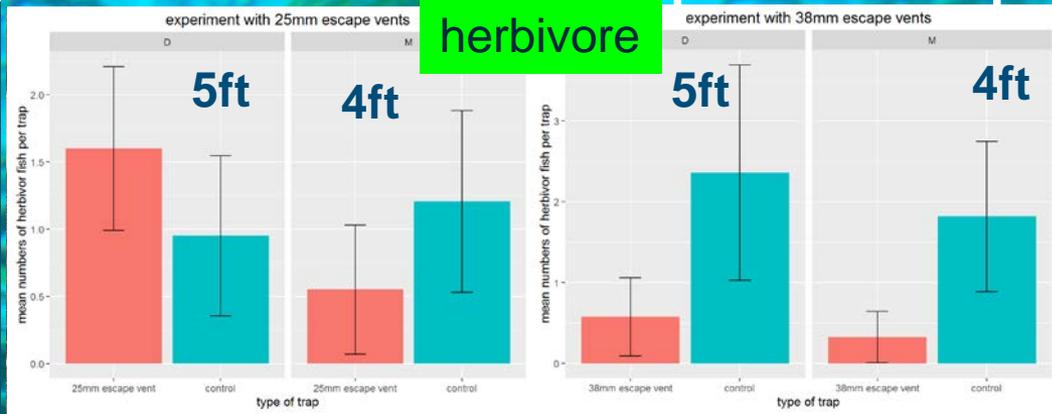
FISH: 2160-4680 kg or \$23000 - \$51000

LOBSTER: 2600-10000 kg or \$46000-\$176000

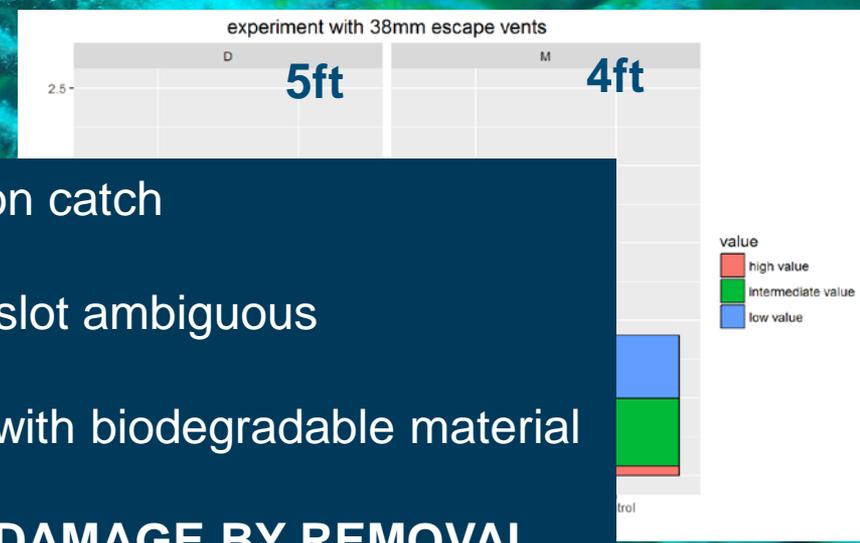
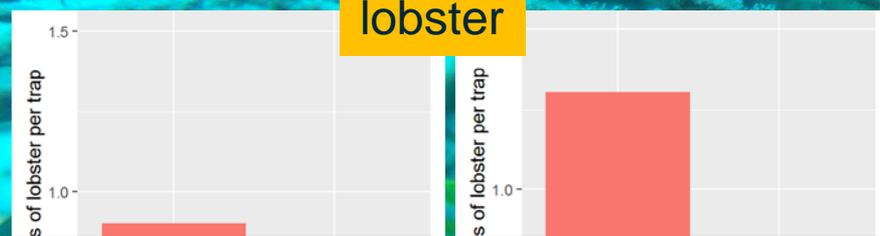
Ghost fishing a problem?

Sustainable traps: escape slot

herbivore



lobster



Lobster: no effect trap type or escape slot on catch

Fish: effect trap size and 38mm slot, 25mm slot ambiguous

If **lobster**, not **fish** maintarget -> 38mm slot with biodegradable material

DO NOT REMOVE TRAPS: HABITAT & DAMAGE BY REMOVAL

shark catch & discards

■ LANDINGS

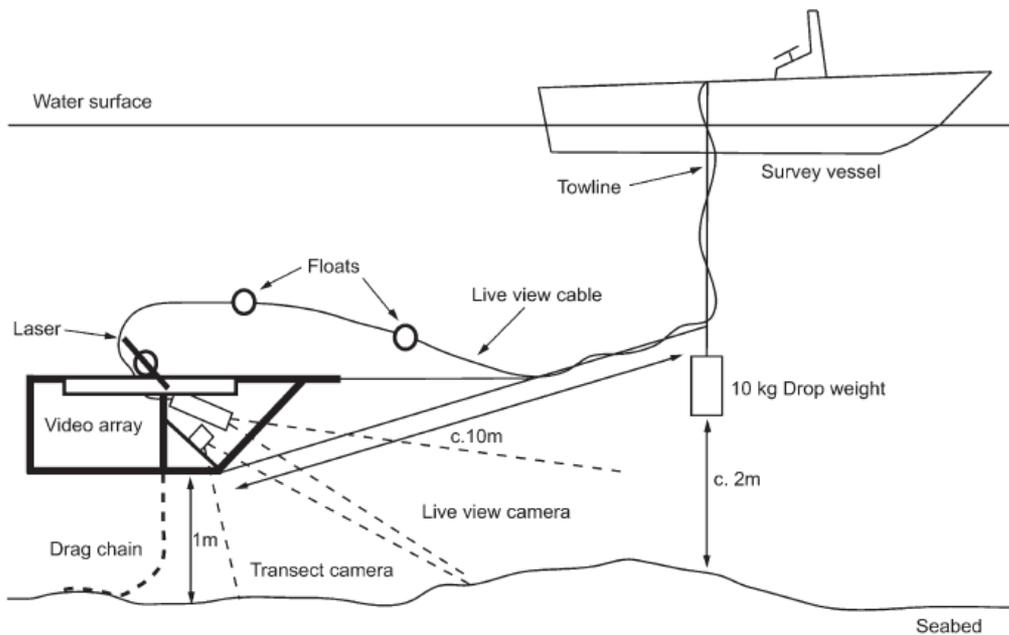
- 0.5% in weight = ~50-100 kg shark -> negligible

■ DISCARD

- 0.01 (sampling) – 0.013 (interviews) nurse sharks per trap lift
- 50 000 – 75 000 trap lifts -> 500 – 950 nurse sharks
- problem for shark population or predominantly nuisance fishery?



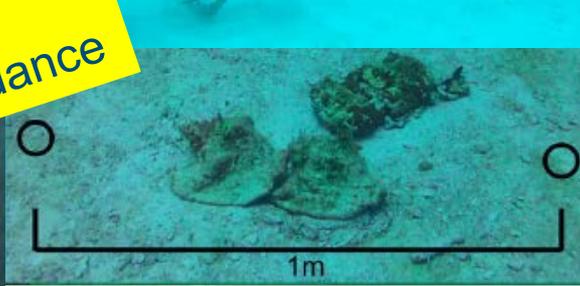
QUEEN CONCH



Distribution & Abundance

Size At Maturity

Spawning Season



Journal of Shellfish Research, Vol. 35, No. 2, 493-498, 2016.

UNDERWATER TOWED VIDEO: A NOVEL METHOD TO ESTIMATE DENSITIES OF QUEEN CONCH (*LOBATUS GIGAS*; STROMBIDAE) ACROSS ITS DEPTH RANGE

ERIK MAITZ BOMAN,^{1,2*} MARTIN DE GRAAF,¹ LEO A. J. NAGELKERKE,² JIMMY VAN RIJN,² MELANIE MELJER ZU SCHLOCHTERN² AND AAD SMAAL^{1,2}

QUEEN CONCH

Spawning season:

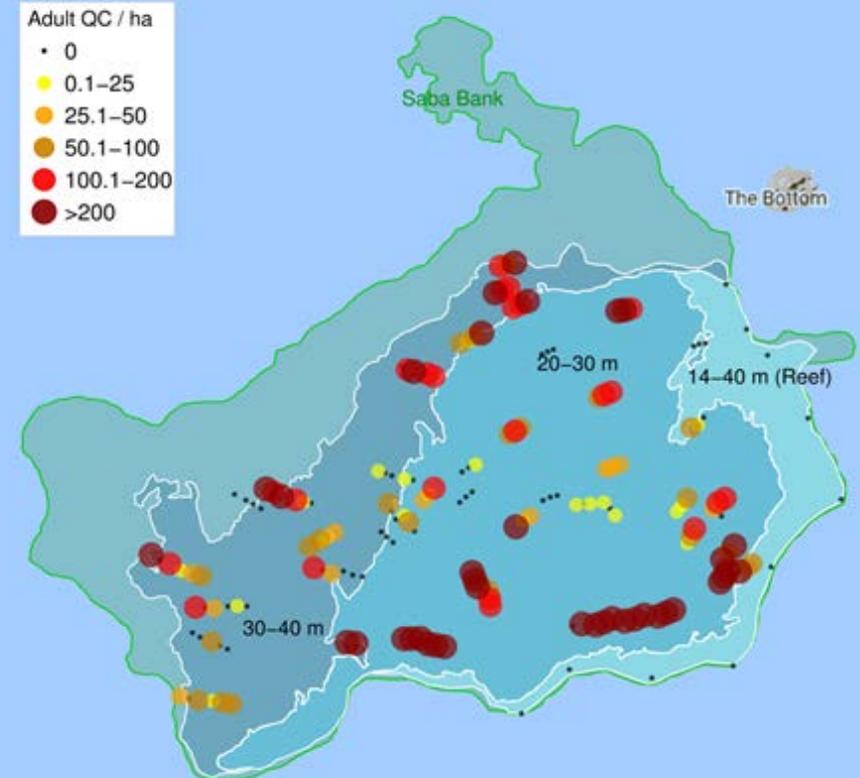
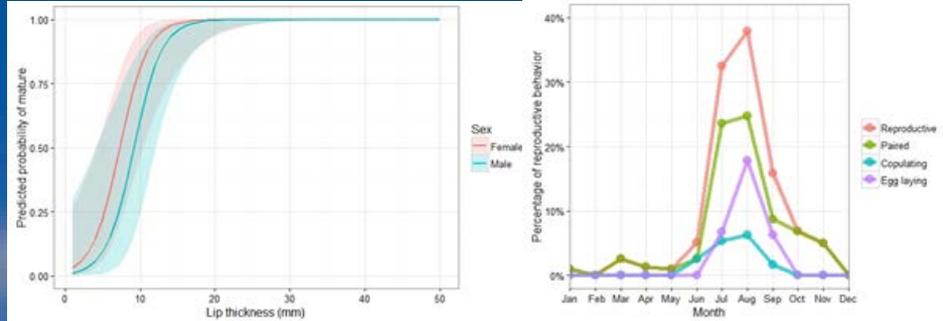
- JUN-SEP

Size-at-maturity:

- LT50% = 10mm

Stock:

- 14 million



	Area ha	Density no./ha (95% CI)	Population estimate (million)		
			Mean	High	Low
20-30m	45196	164 (116.6-212.8)	7.4	9.6	5.3
30-40m	88962	80.9 (54.5-107.2)	7.2	9.5	4.8
Total	134158		14.6	19.2	10.1

QUEEN CONCH

■ Spawning season:

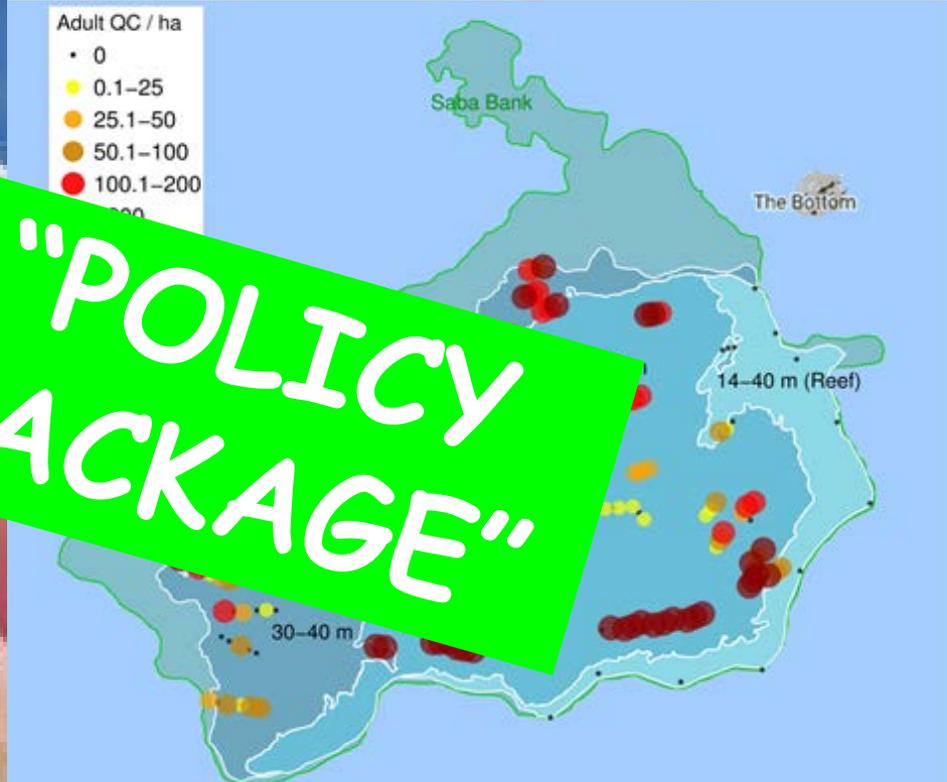
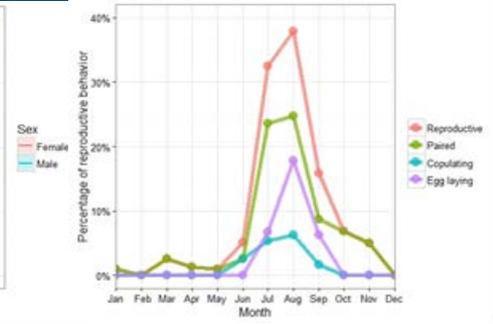
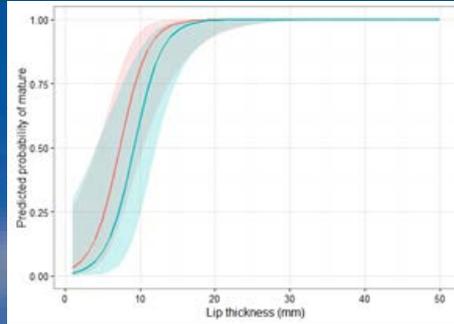
- JUN-SEP
- **POLICY: SEASON**

■ Size-at-maturity:

- LT50% = 10mm
- **POLICY: MIN SIZE**

■ Stock:

- 14 million
- **POLICY: QUOTA**



"POLICY PACKAGE"

	Area ha	Density no./ha (95% CI)	Population estimate (million)		
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ACKNOWLEDGEMENTS

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