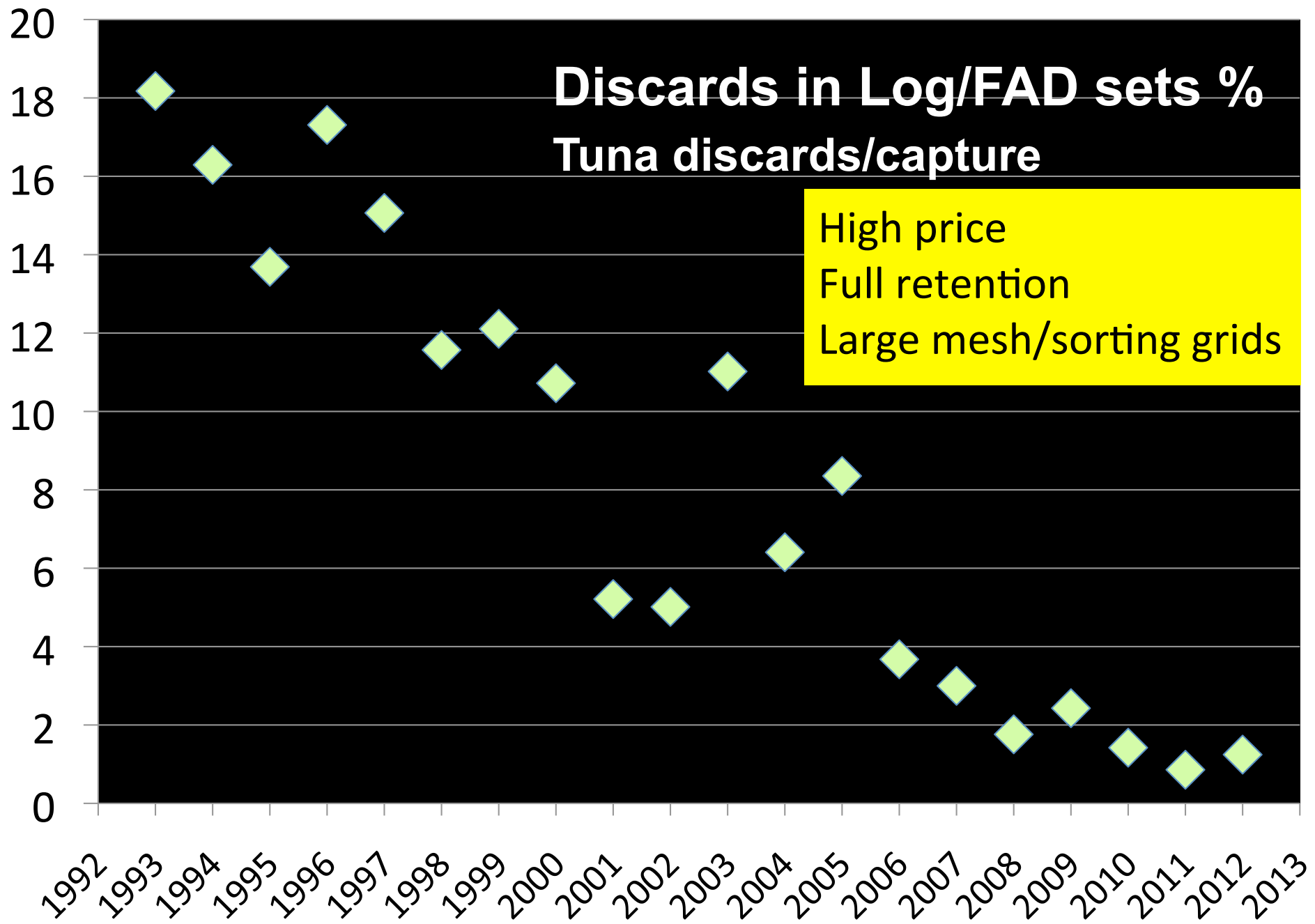
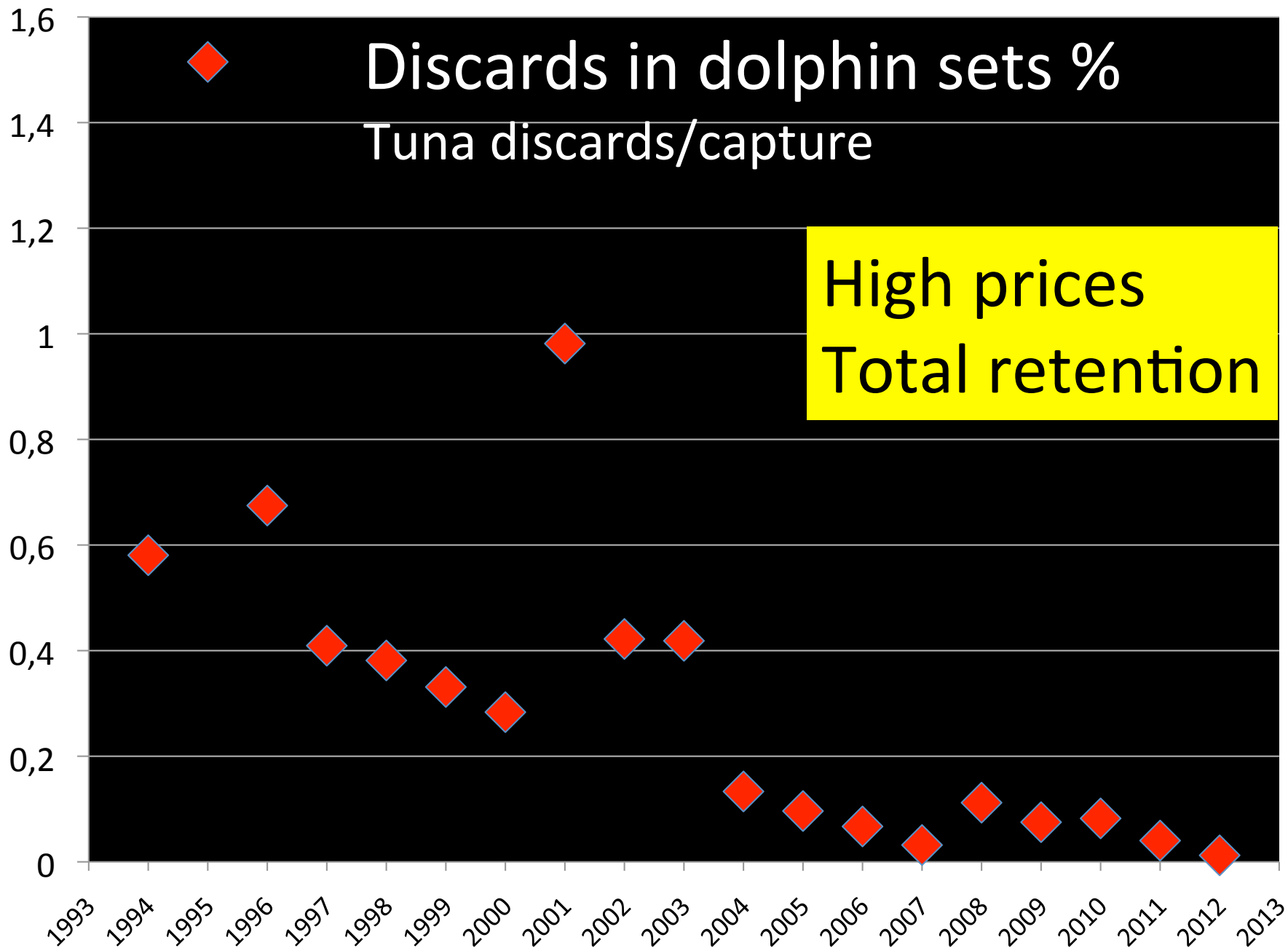


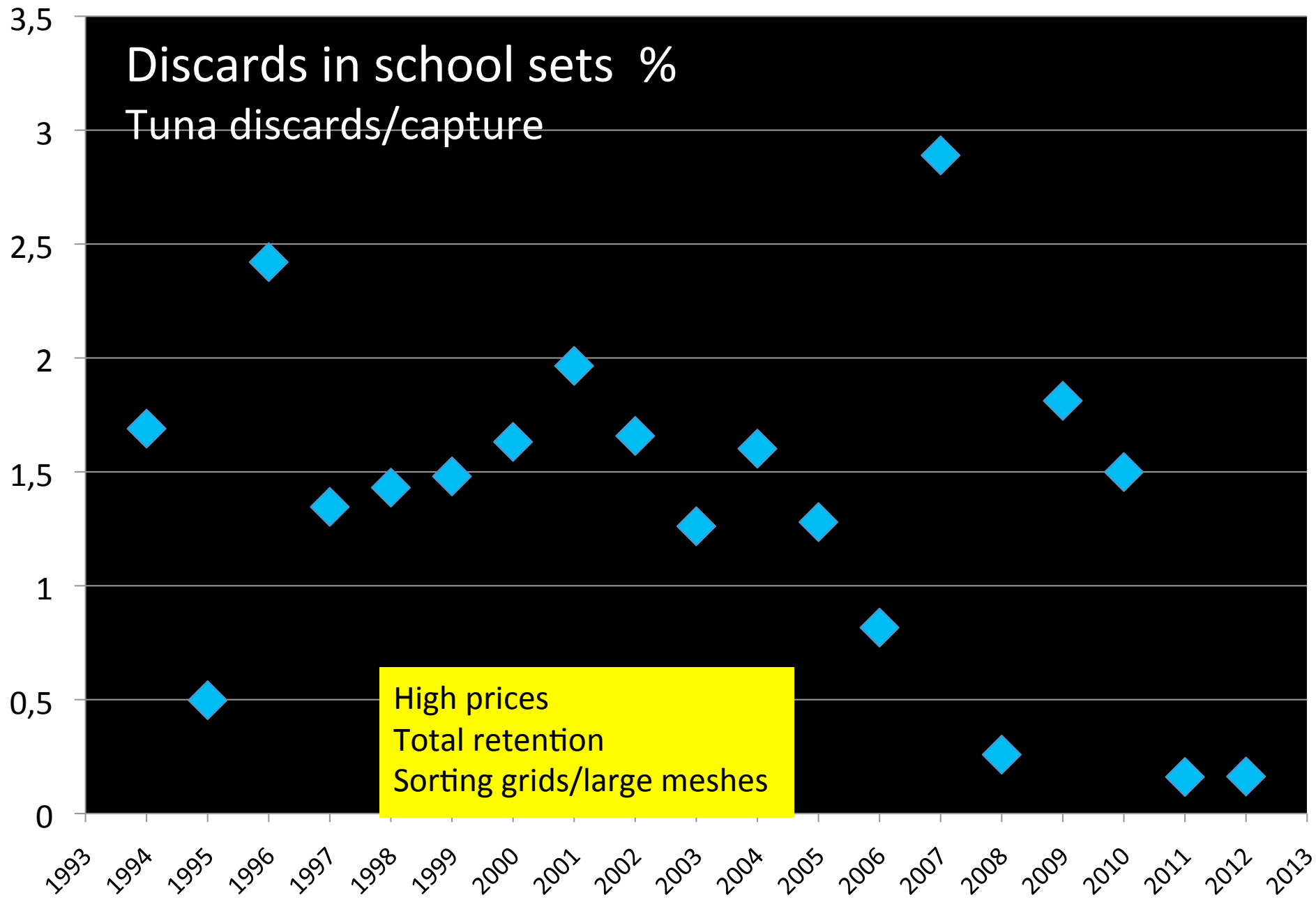
All years(1993-2009) (Except dolphins)	Declines in RED					
	Bycatch in MT per 1,000 MT tons tuna					
	Dolphin Sets		School Sets		Log Sets	
Species	(1993-2009)	2012	(1993-2009)	2012	(1993-2009)	2012
Sailfish	1.78	0.21	3.9	0.1	0.18	0.02
Black Marlin	0.11	0.00	0.25	0.00	0.76	0.13
Striped Marlin	0.06	0.00	0.17	0.02	0.18	0.00
Blue Marlin	0.04	0.01	0.15	0.13	0.78	0.49
Swordfish	0.1				0.27	0.00
Other large Fish	0.1				30.78	3.4
Mahi mahi	0.8				1,365.66	437.59
Wahoo	0.5				622.55	73.71
Rainbow Runner	0.0				476.21	39.4
Yellowtail	1.25	0.01	106.24	16.83	116.59	70.85
Silky Sharks	7.55	0.06	33.72	0.92	96.59	19.52
Oceanic whitetip shark	0.5	0.00	2.02	0.03	14.1	0.08
Hammerhead	0.33	0.04	2.49	0.41	5.71	1.17
Manta	4.36	1.26	30.36	32.3	0.54	0.43
Pelagic Stingray	1.19	0.66	5.48	0.31	0.59	0.5
Other/Unid Shark	4.25	0.2	81.94	0.34	12.77	2.84
Olive ridley turtle	0.04	0.00	0.13	0.00	0.17	0.02
Green Turtle	0.00	0.00	0.03	0.00	0.02	0.00

High price
Full retention
Large mesh/sorting grids





Discards in school sets % Tuna discards/capture



Bycatches in MT per 1000 MT all tunas

Dolphin sets

0.14 MT

Main non-tuna
components

0.11 MT mantas

0 MT tunas

0.14 MT/1000 MT

0.01 %

School sets

1.34 MT

Main non-tuna
components

1.07 MT mantas

7 MT tunas

8.34 MT/1000 MT

0.83 %

Floating objects/FADs

2.64 MT

Main non-tuna
components

1.66 MT mahi

0.43 MT silky

0.14 MT wahoo

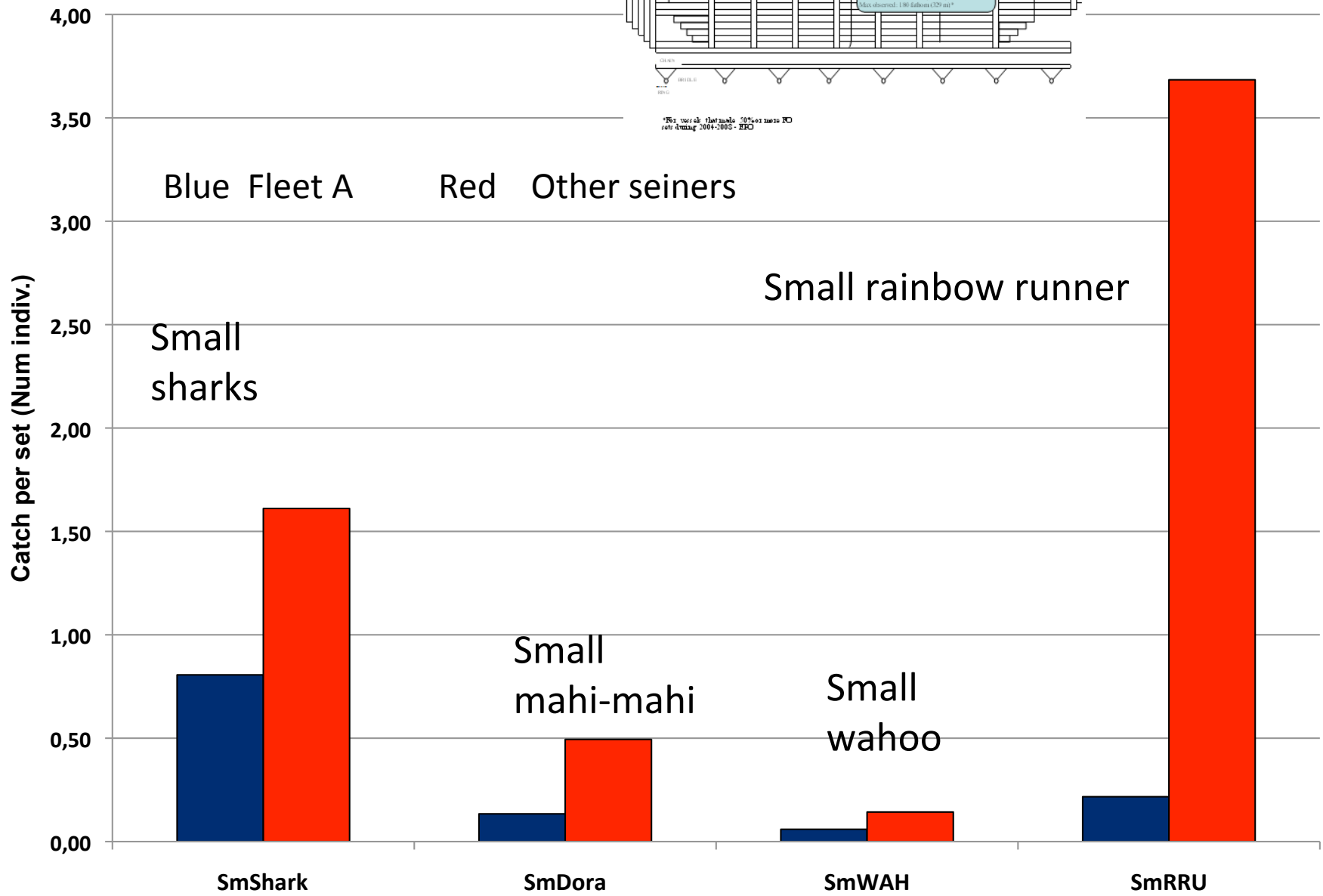
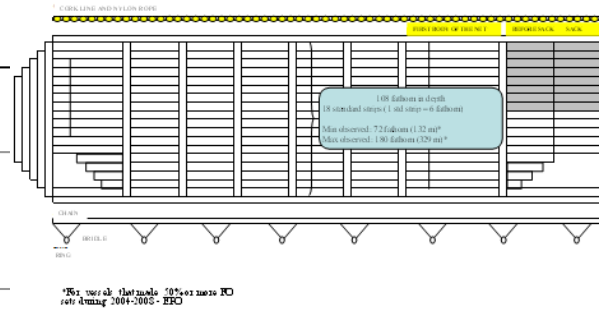
0.03 MT mantas

16 MT tunas

18.6 MT/1000 MT

1.86 %

Large mesh panels in lower part of seine



Blue Fleet A

Red Other seiners

Small rainbow runner

Small sharks

Small mahi-mahi

Small wahoo

SmShark

SmDora

SmWAH

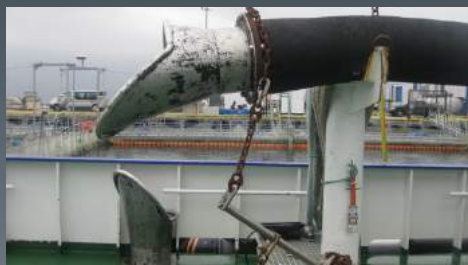
SmRRU

TYPES OF PUMPS

- Impeller pumps



- Vacuum pumps



	Reduce effort		Reduce BPUE		To DO				
Billfishes			Utilize	V	Stock assessments				V
Mahi-mahi			Utilize	V	Stock assessments, Stock ID				
Wahoo			Utilize	V	Stock assessments, Stock ID				
Rainbow runner			Develop use						
Yellowtail amberj.			Develop use						
Manta rays			Release		Release techniques, survival experiments, stock ID				
Silky sharks	Avoid		Release		Release techniques, survival experiments, stock ID				
Whale sharks	BAN		Release	V ?	Survival experiments				
Olive ridleys			Release	V	Avoid entanglement (new FAD design)				
Black/green			Release	V	Avoid entanglement (new FAD design)				
Small fishes all spp.			Develop release		Large meshes, sorting grids, PUMPS				
Small bigeye tuna	Avoid				Acoustics, closures				

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Catch Concepts: Diagrammatic presentation

