Targeting bigger schools can reduce ecosystem impacts of fishing

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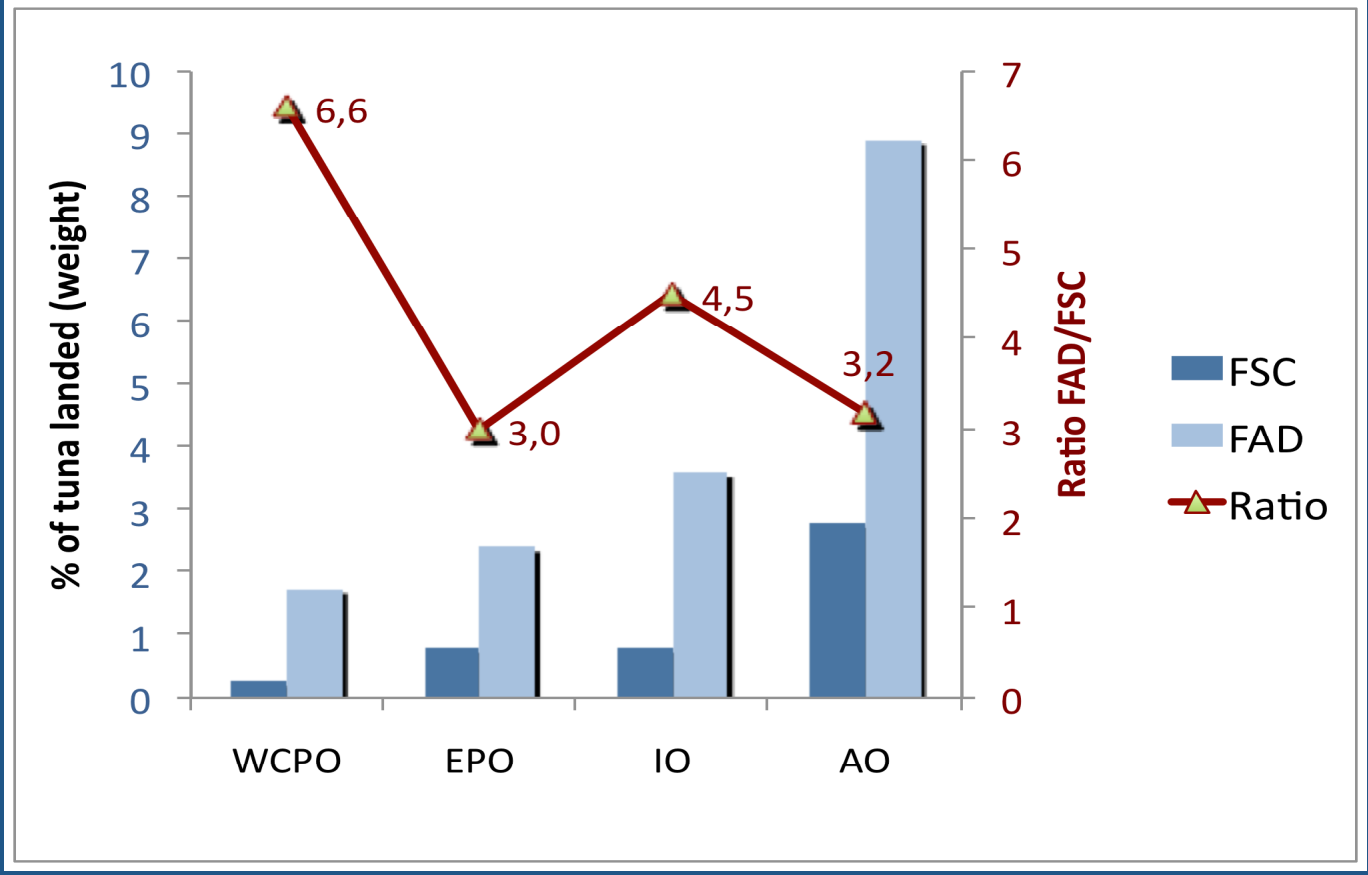
Ecosystem impacts of fishing

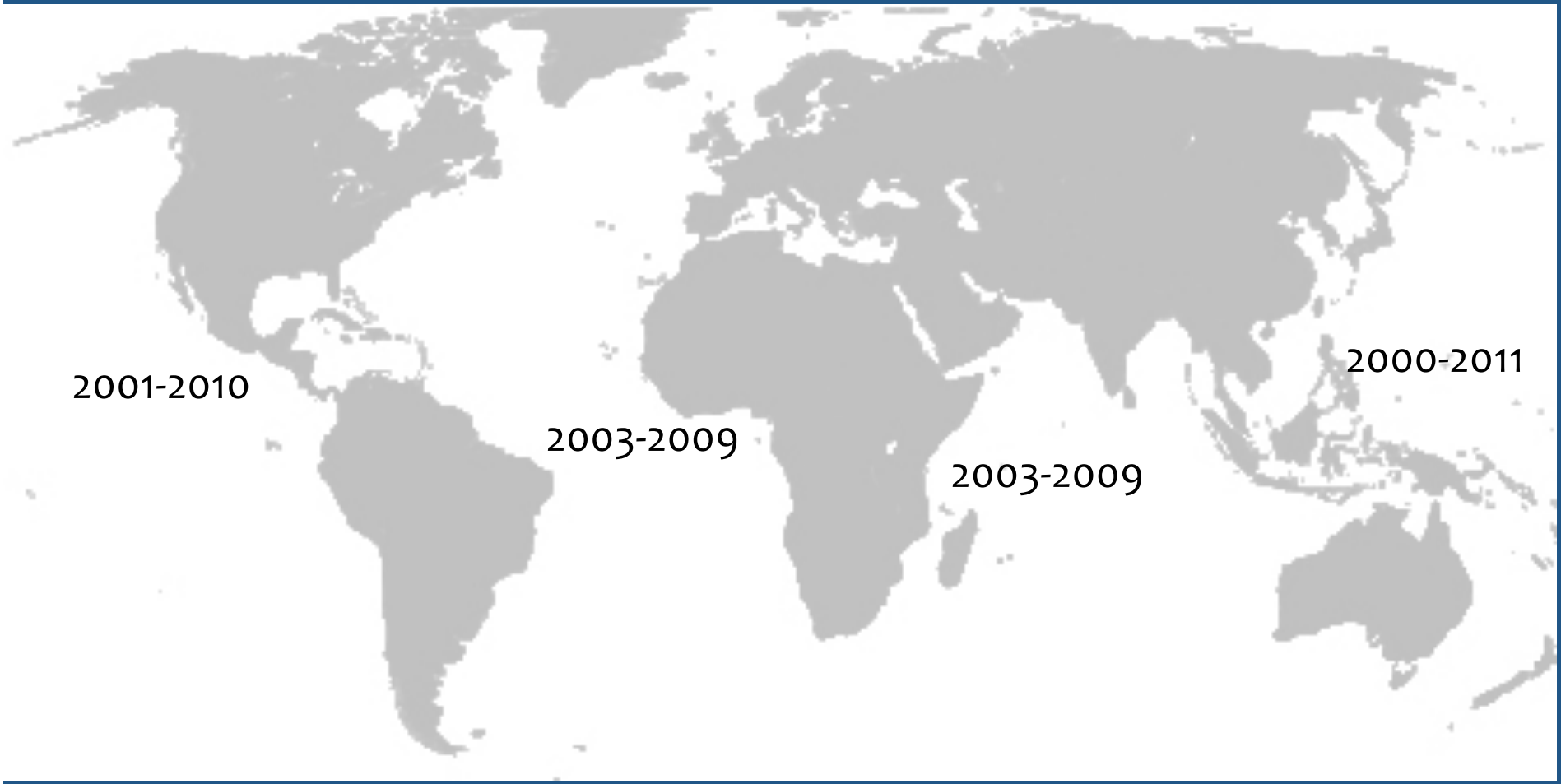
* Fishing on FADs generate approximately 5 times more total bycatch (in weight) than fishing on free-swimming schools



Ecosystem impacts of fishing

* This ratio has been used by some environmental groups to justify a ban on FAD fishing
* A more realistic approach could be to explore the possibility of significantly reducing this ratio for the FAD component of this fishery.
* **The lower the bycatch to catch ratio, the lower the ecological impacts of the fisheries**

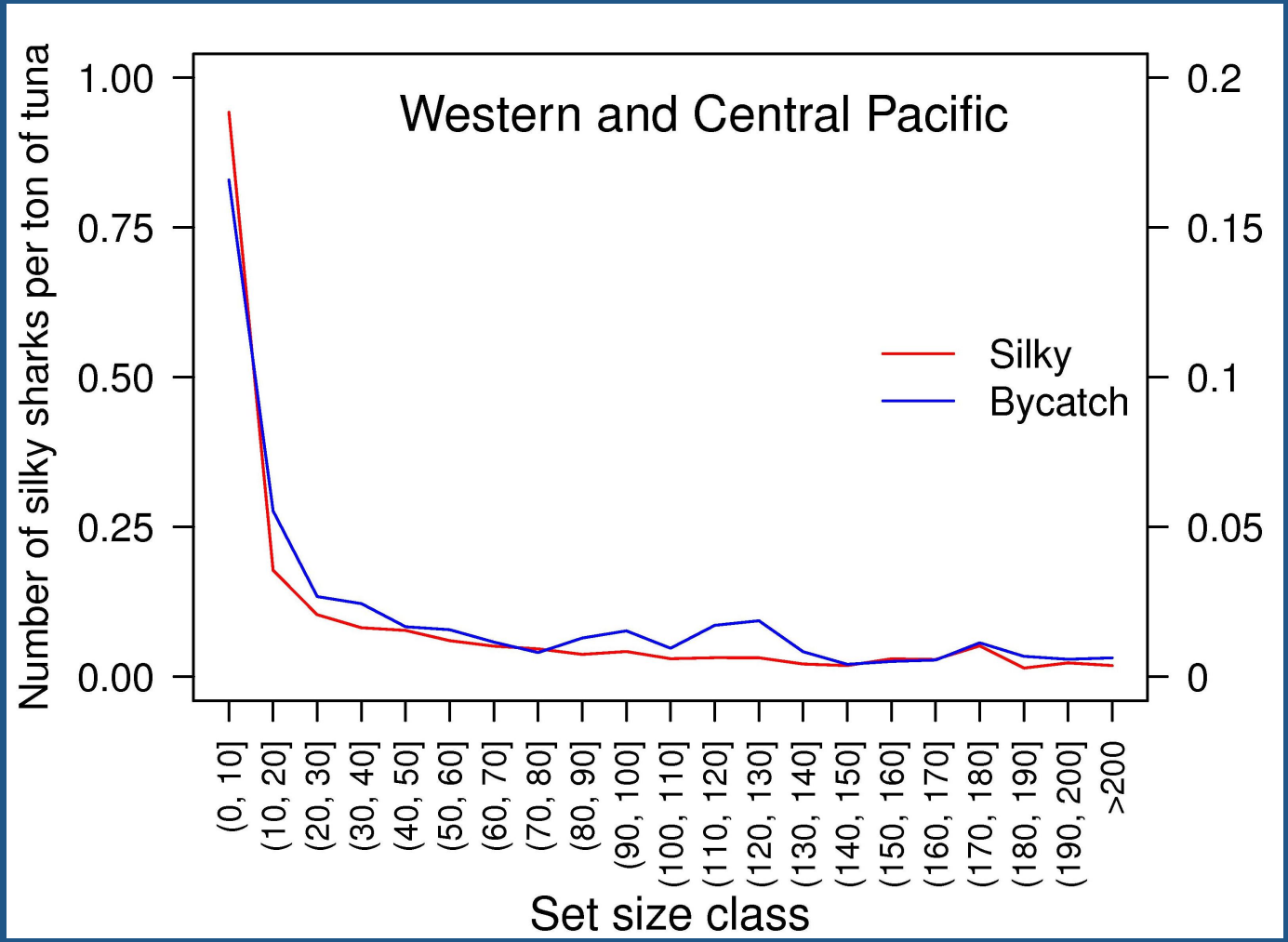
Observers onboard purse seiners

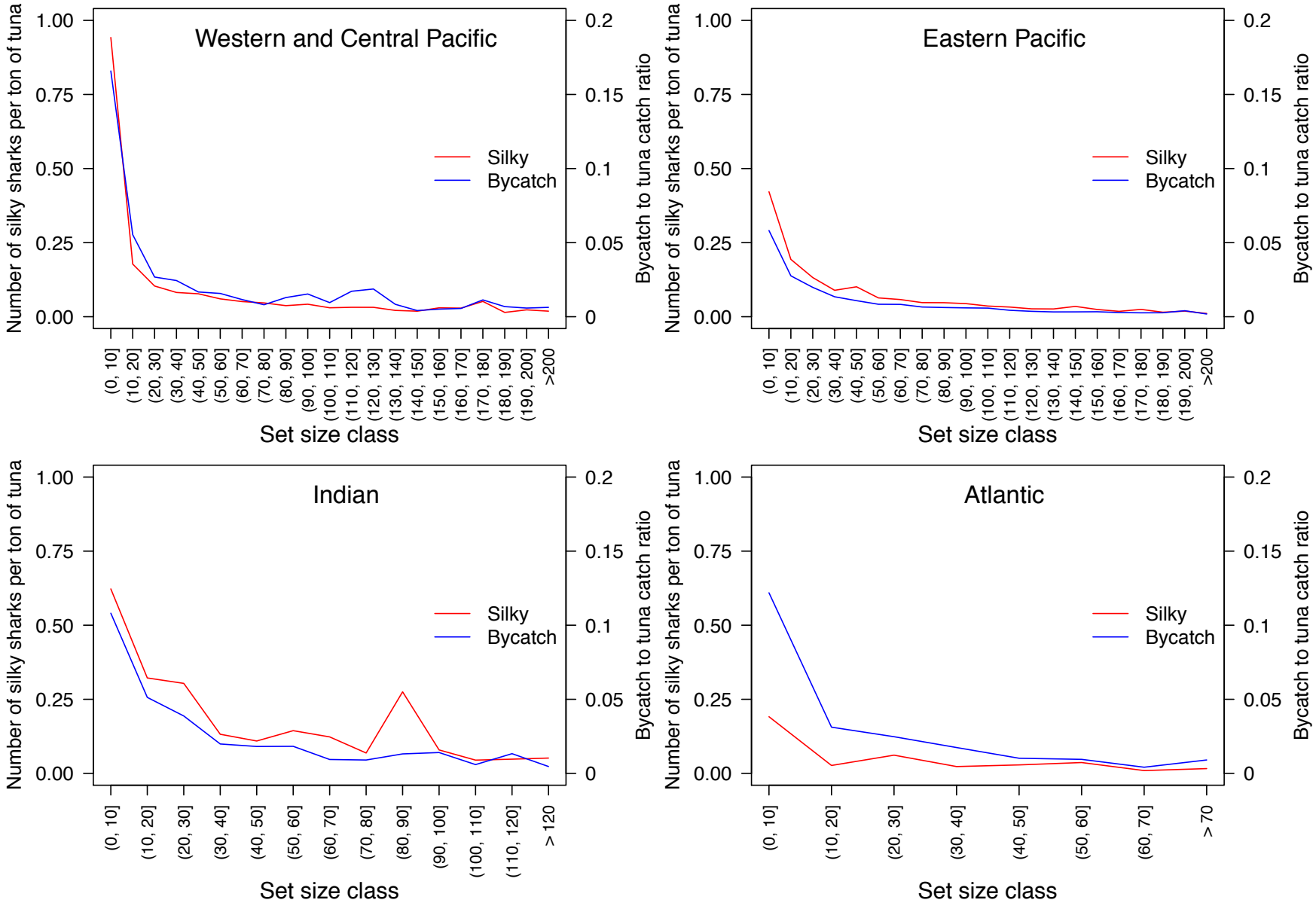


Information to the set level

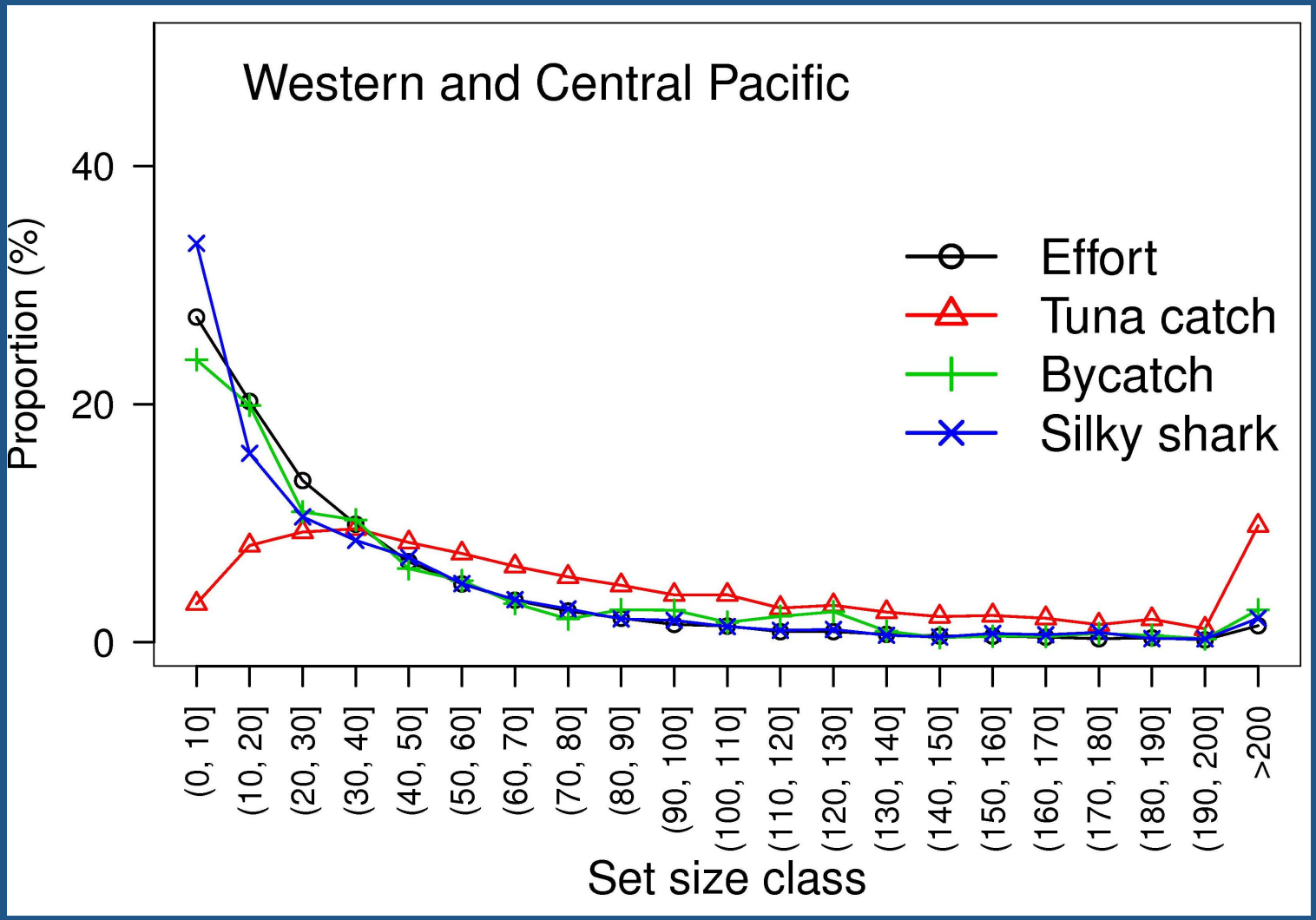
- landed catch (in mass) of target species (skipjack, yellowfin, bigeye tuna)
- total bycatch – non target species (in mass)
- catch of silky sharks (in numbers)
- removal of skunk sets (0 tuna catch)

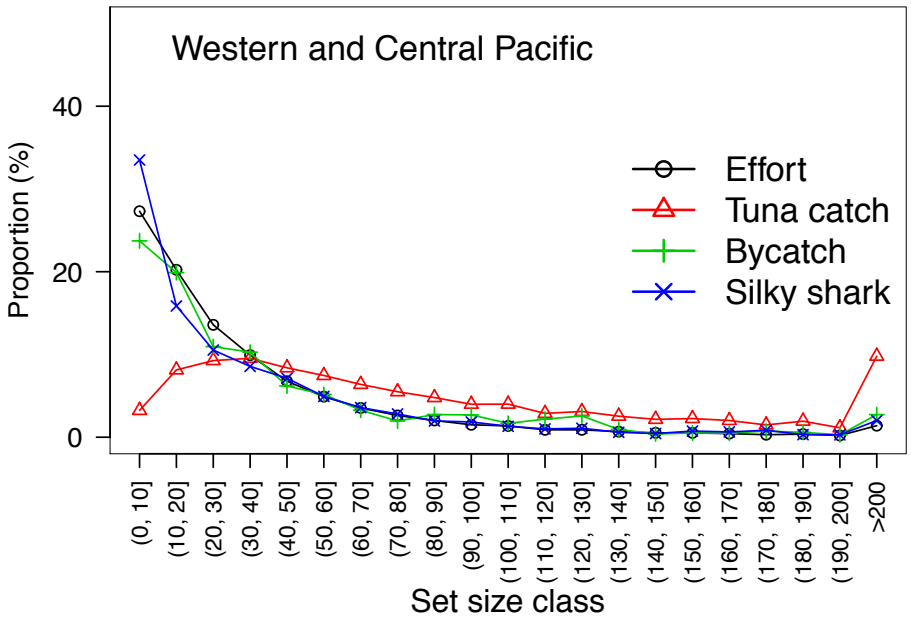
Case example: WCPO Bycatch/Tuna catch ratio

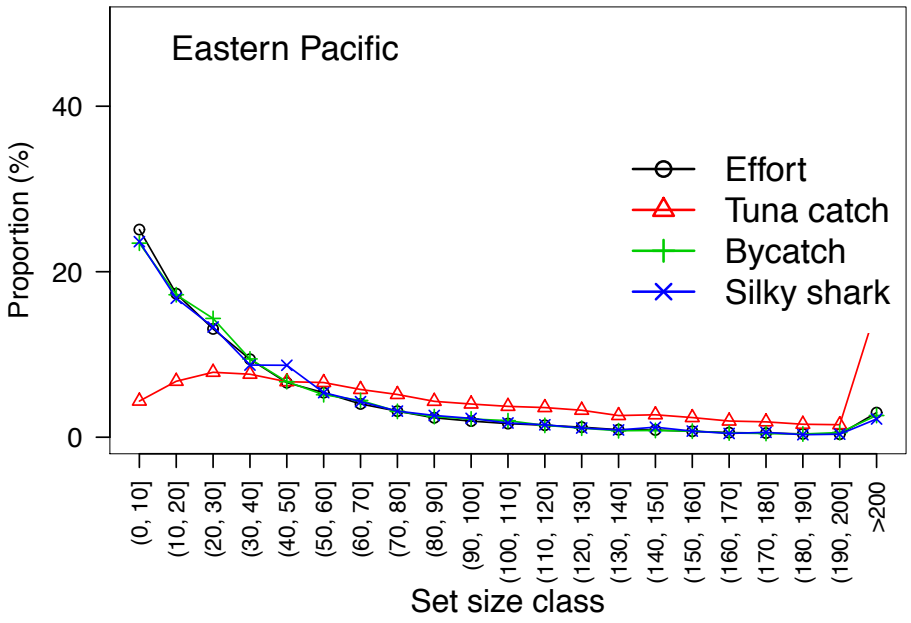


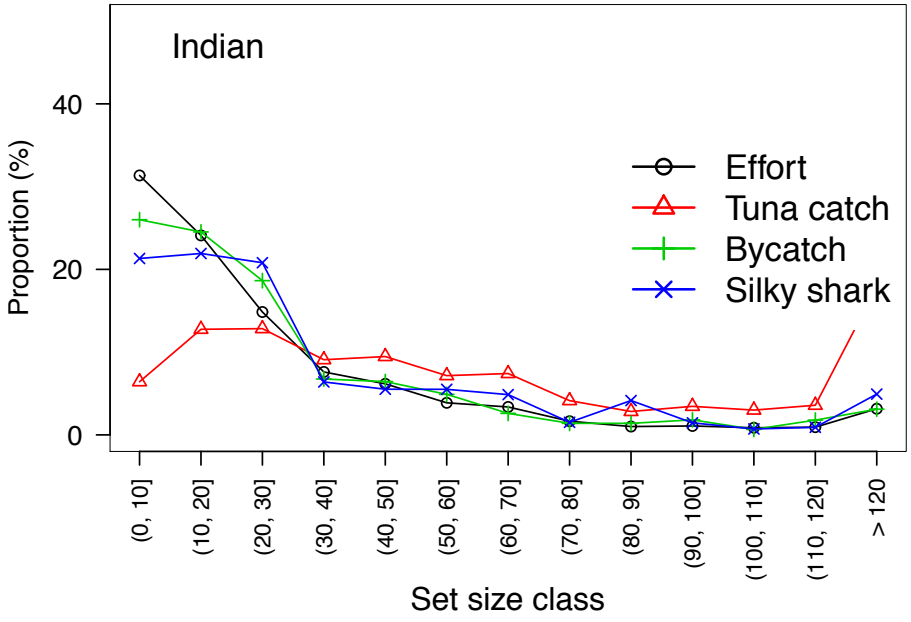

Western and Central Pacific
Number of silky sharks per ton of tuna
Bycatch to tuna catch ratio
Silky
Bycatch
Set size class
(0, 10]
(10, 20]
(20, 30]
(30, 40]
(40, 50]
(50, 60]
(60, 70]
(70, 80]
(80, 90]
(90, 100]
(100, 110]
(110, 120]
(120, 130]
(130, 140]
(140, 150]
(150, 160]
(160, 170]
(170, 180]
(180, 190]
(190, 200]
>200
Eastern Pacific
Indian
> 120
Atlantic
> 70

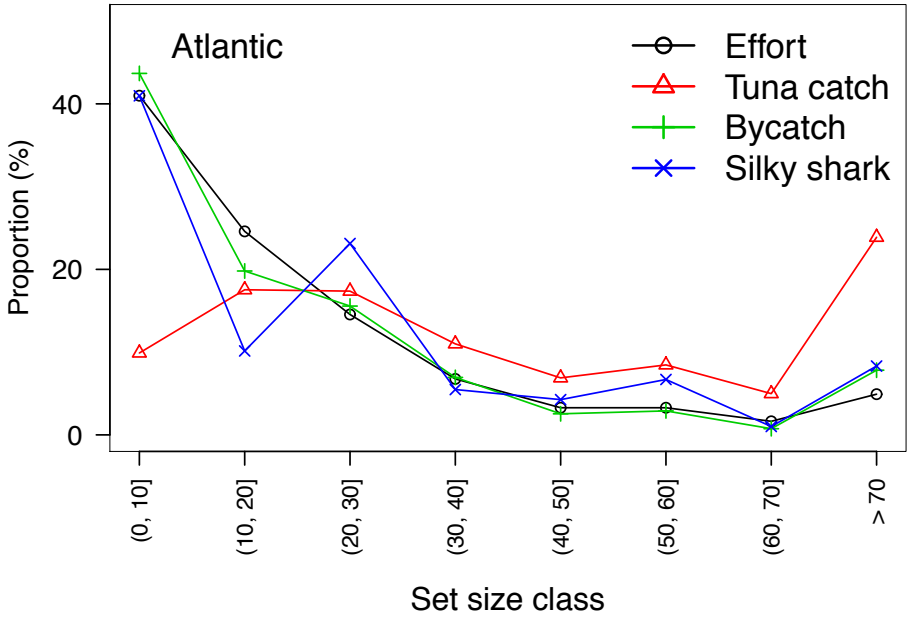
Case example: WCPO Contribution of each set class



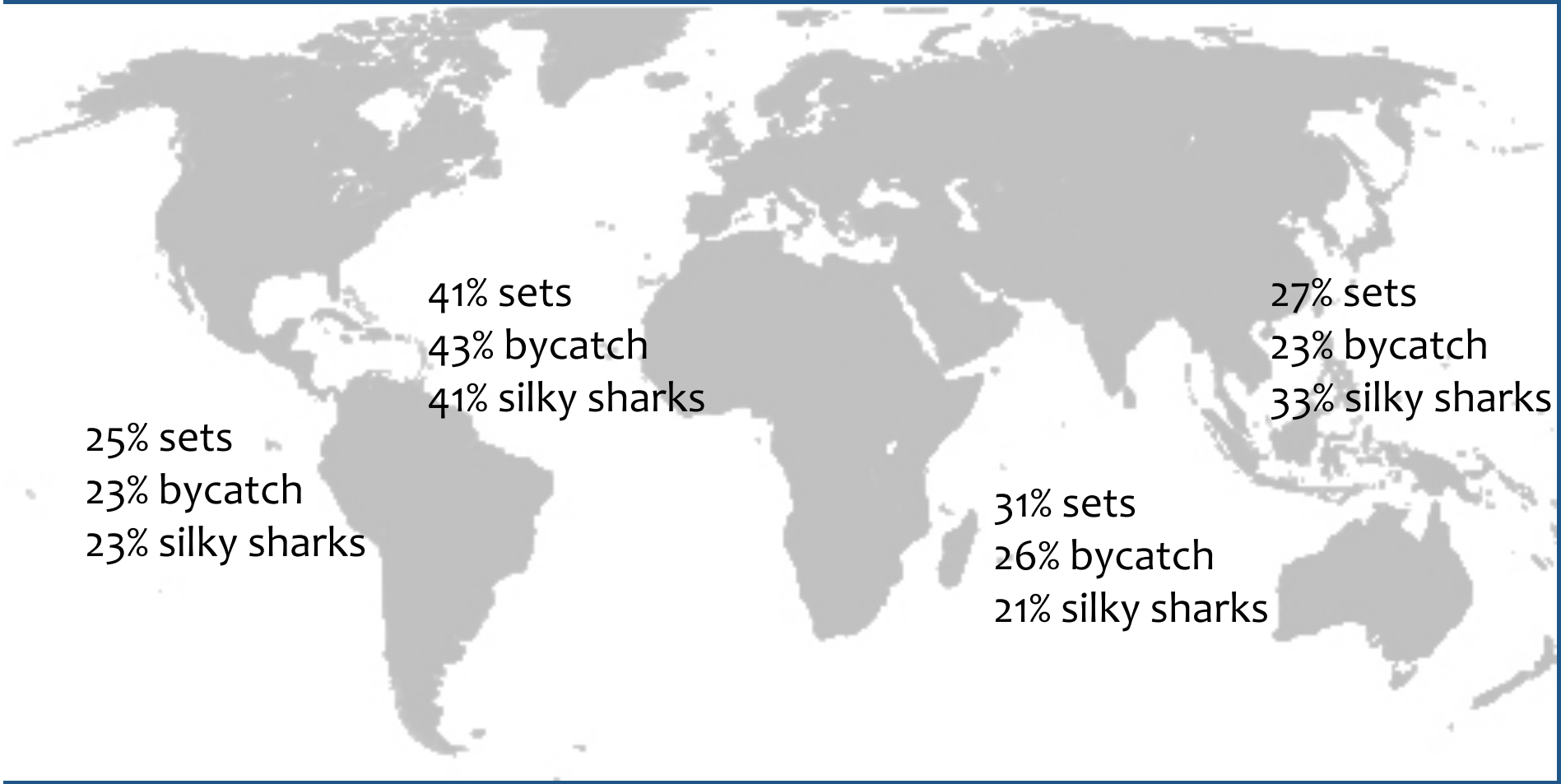

Western and Central Pacific
Proportion (%)
0
20
40
Effort
Tuna catch
Bycatch
Silky shark
(0, 10]
(10, 20]
(20, 30]
(30, 40]
(40, 50]
(50, 60]
(60, 70]
(70, 80]
(80, 90]
(90, 100]
(100, 110]
(110, 120]
(120, 130]
(130, 140]
(140, 150]
(150, 160]
(160, 170]
(170, 180]
(180, 190]
(190, 200]
>200
Set size class


Eastern Pacific
Proportion (%)
0
20
40
Effort
Tuna catch
Bycatch
Silky shark
(0, 10]
(10, 20]
(20, 30]
(30, 40]
(40, 50]
(50, 60]
(60, 70]
(70, 80]
(80, 90]
(90, 100]
(100, 110]
(110, 120]
(120, 130]
(130, 140]
(140, 150]
(150, 160]
(160, 170]
(170, 180]
(180, 190]
(190, 200]
>200
Set size class


Indian
Proportion (%)
0
20
40
Effort
Tuna catch
Bycatch
Silky shark
(0, 10]
(10, 20]
(20, 30]
(30, 40]
(40, 50]
(50, 60]
(60, 70]
(70, 80]
(80, 90]
(90, 100]
(100, 110]
(110, 120]
> 120
Set size class


Atlantic
Proportion (%)
0
20
40
Effort
Tuna catch
Bycatch
Silky shark
(0, 10]
(10, 20]
(20, 30]
(30, 40]
(40, 50]
(50, 60]
(60, 70]
> 70
Set size class

Contribution of sets of less than 10 t



Pre-set estimates

* IO & AO (Observers): 320 pre-set estimates of schools less than 10 tons, 73% resulted in catches less than 10 tons (unpublished data).
* Additionally, of the 673 pre-set estimates superior to 10 tons, 25% led to catches inferior to this threshold

What to do?

* No strict regulation (e.g. ban sets < 10 t)
* Incentives or disincentives
* A simple method that skippers can use to reduce their total bycatch without impacting too much their total tuna tonnage