



Comisión Interamericana del Atún Tropical Inter-American Tropical Tuna Commission

STOCK STATUS INDICATORS FOR FISHERIES OF THE EASTERN PACIFIC OCEAN

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Presentation Objectives

- Review existing data
- Spatial & temporal impacts
- Stock Status (Stability) Indicators
- General recommendations



Assessments & SSIs

Assessments



Tunas: ALB, BET, PBF, SKJ, YFT



Billfish: BUM, MLS, SFA, SWO

Why Indicators?

Ecosystem management

Data insufficient for assessment

Proposals (MSEs not completed)

Dolphinfish/Dorado

Silky shark

Skipjack





Fisheries & Data Collection

It's the "OLD Story" of economic value

(A. Fonteneau, 5/12/2014)



Port sampling,
Observers, Logbooks,
etc., etc., etc.



Harpoon, Recreational, Artisanal



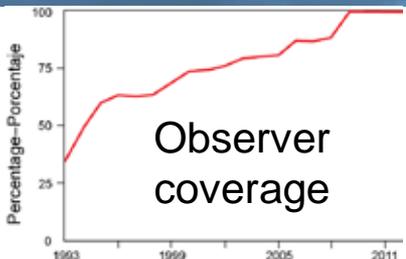
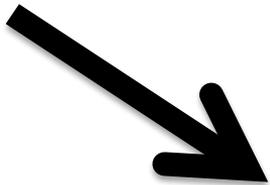
Not so much



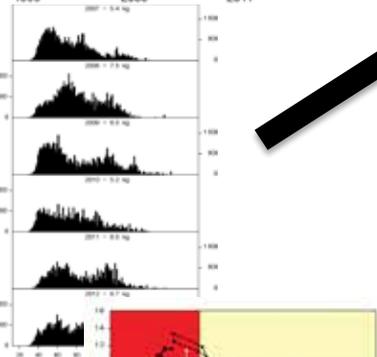
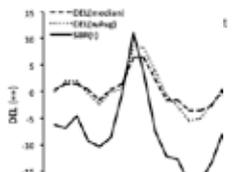
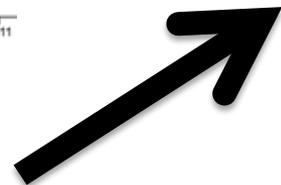


Data Available

Tunas
Turtles
Dolphins



Catch & Effort
Size frequency
Growth & Aging
Reproductive biology
More & more & more



Billfish
Sharks

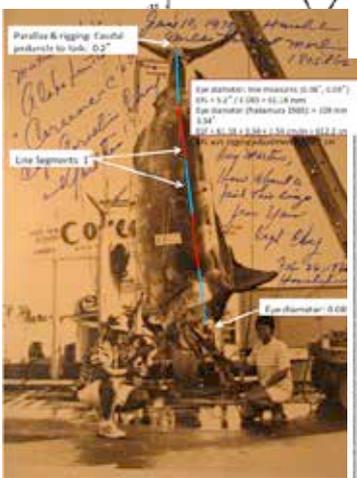


Table with columns: Year, Species, Sex, Age, Length, Weight, etc. The table contains data for various years from 1997 to 2009.

Catch (maybe)
Effort (maybe)
Size (maybe)
Growth (maybe)
Other (ad hoc)



Wahoo
Dolphinfish
Rainbow Runner
Triggerfish



Catch (Unlikely)
Effort (no)
Size (very few)
Other (ad hoc)



That was a(?)



Common or
Pompano?



Punta negra?



Rainbow runner?
Yellowtail?

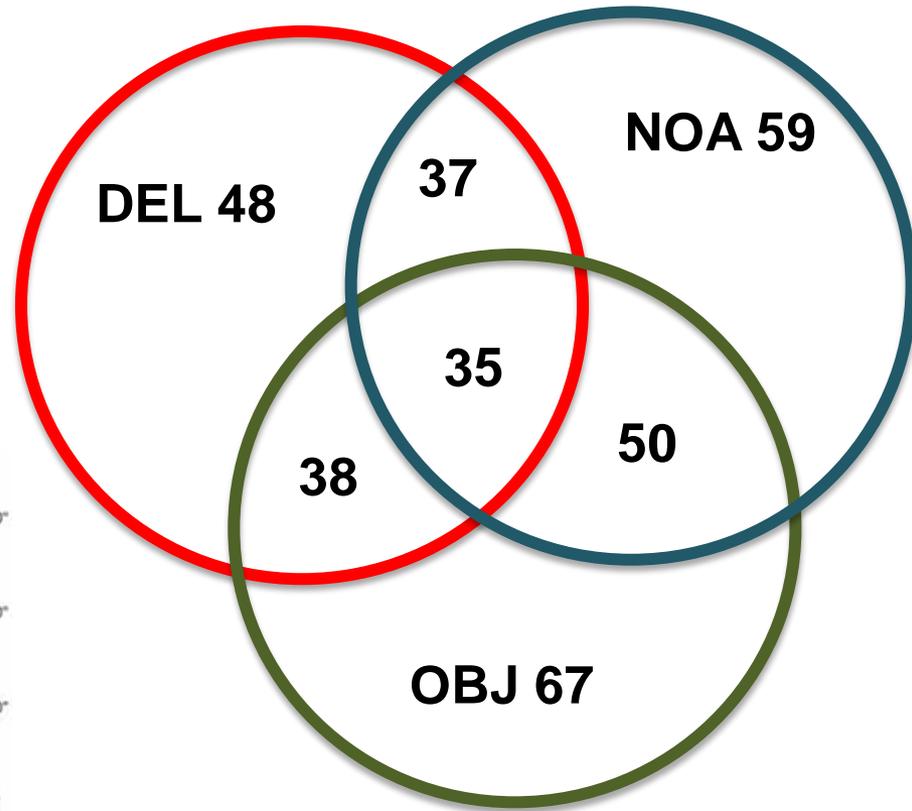
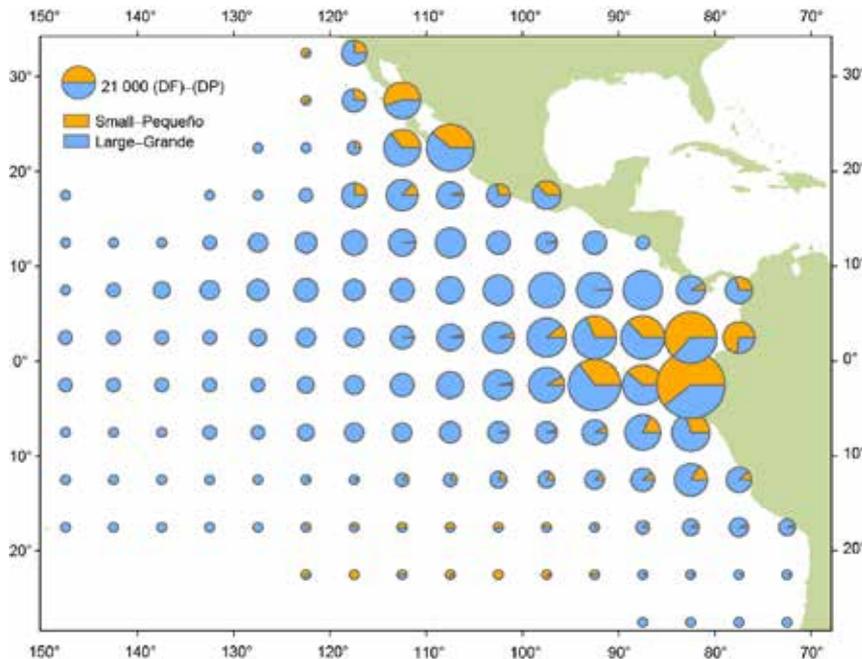


Do we know what
was caught?

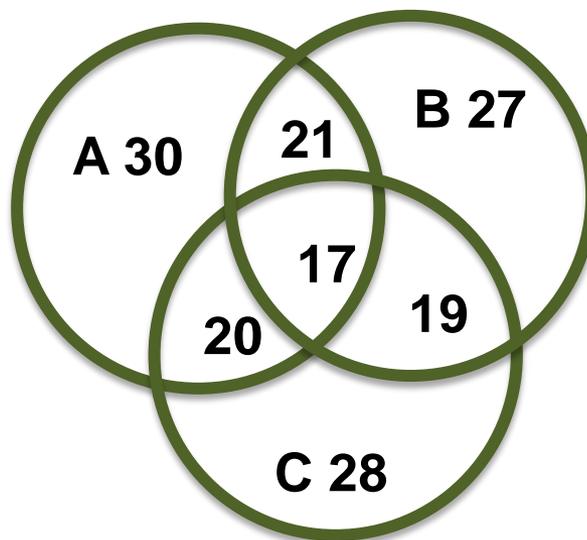
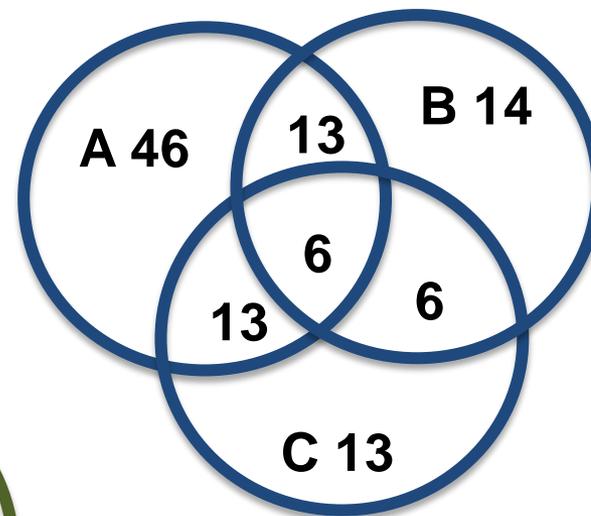
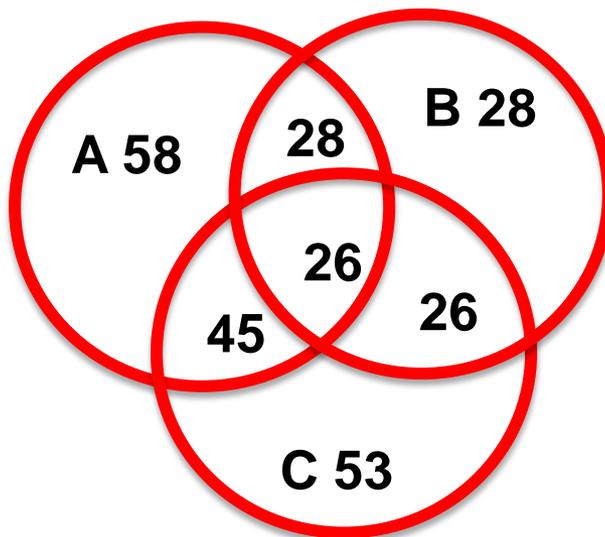
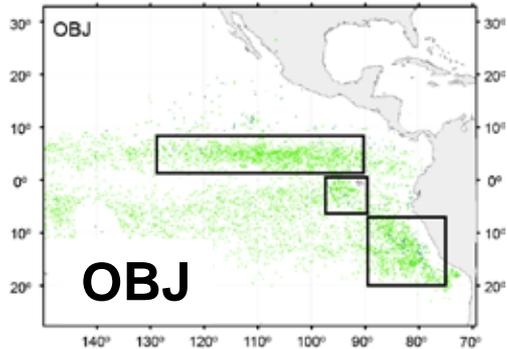
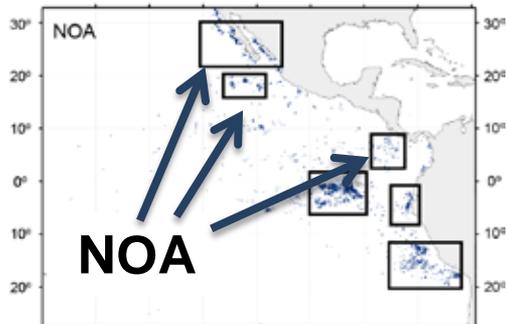
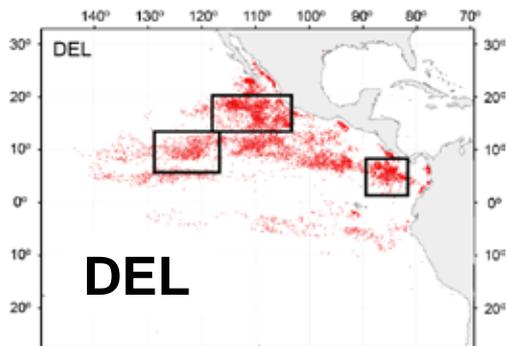
Set types are not equal

Identified species by set type (2011)

- 1) Not all species are taken in all set types
- 1) Composition varies by set type
- 2) Composition varies in space
- 3) Composition varies in time



Species by set type & area



Data year - 2011

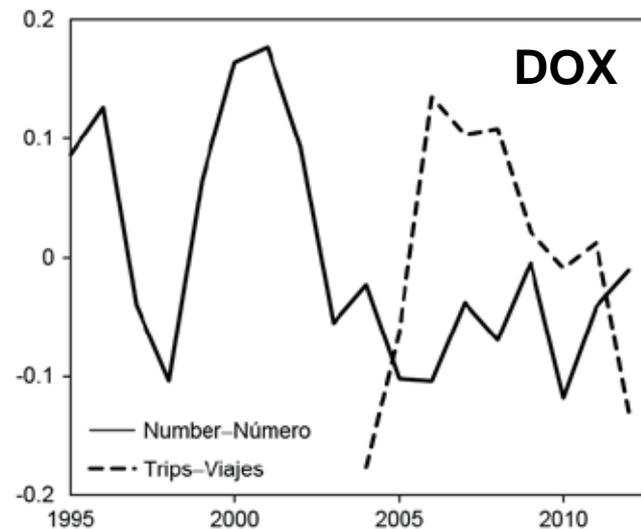
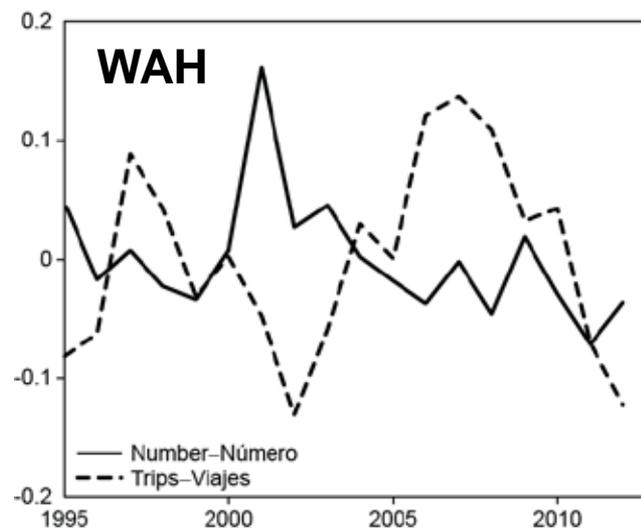
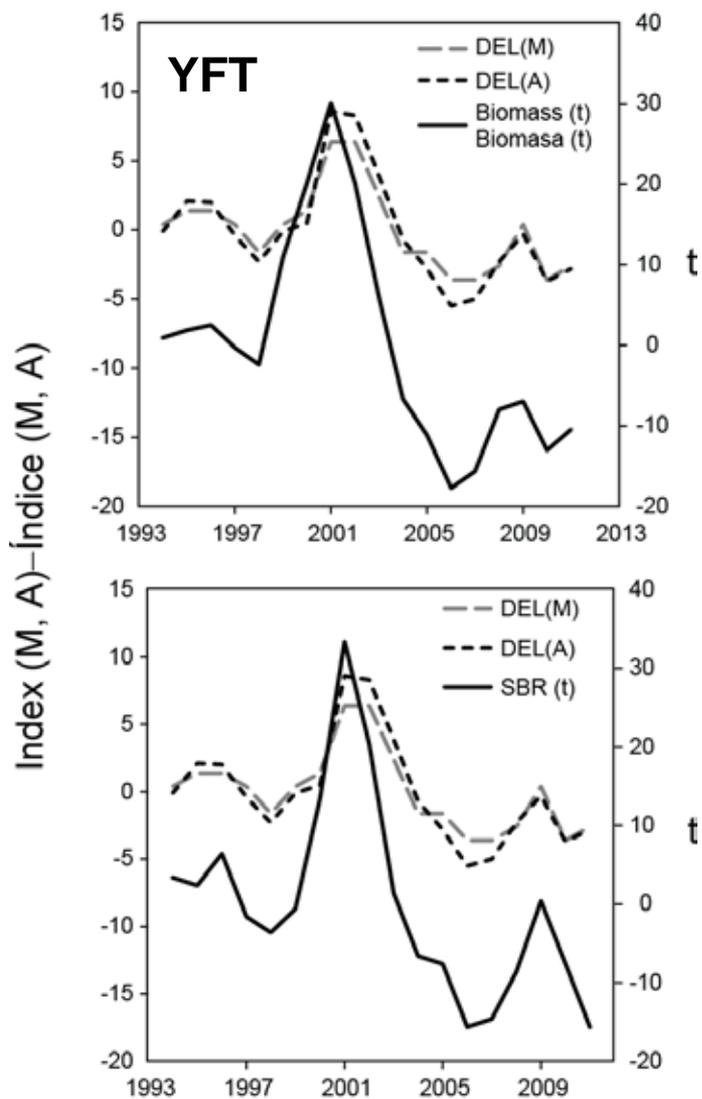


SSIs in Use

- Catch-based – Only needs catch data
 - Disadvantages
 - Total catch unknown
 - Simulations – Wrong 67% cases; Negative bias
- Presence/Absence – Only have to see one
 - Disadvantages
 - Patchiness in observations
 - Hyper-stability if range stable
 - Poor predictive performance
- CPUE-based – Proportional to abundance (special cases)
 - Disadvantages
 - Ancillary data to standardize not available
 - Hyper-stable in face of declining abundance
- Age & Length- and Mortality-rate-based – Size data in hand or easy to get
 - Imprecise but may outperform CPUE
 - Disadvantages
 - Changes in distributions \neq Change in abundance
 - Simulations – may encourage overfishing



SSI Performance





Summary Recommendations

1. Establish Standards, Develop & Evaluate SSIs
2. Include spatial/temporal structure and variability in considerations
3. Consider PSA to help identify species of concern
4. Observer Program - Give priority to changing experimental design
5. Observers – Assign tasks to obtain data for specific SSIs



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Questions