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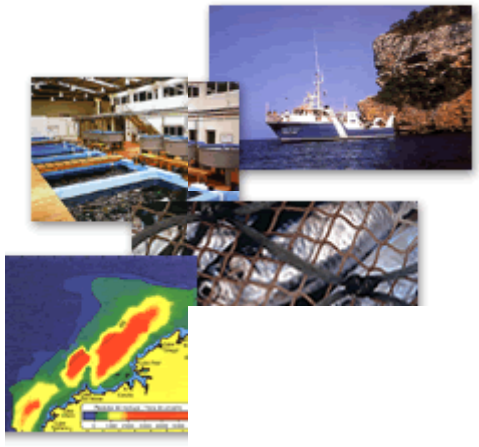

FISPATH and DLMtool: Pesquería del bocinegro de Conil

Juan Gil Herrera – C.O. de Cádiz

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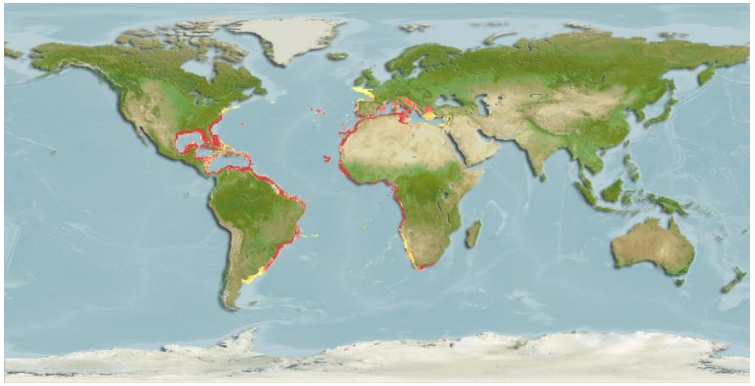
The Science behind the MSC Standard

20/Feb./2019

Bocinegro, pargo, parguete
Red porgy
Pagrus pagrus (Linnaeus, 1758)

Widely distributed (Atlantic and Mediterranean), till 250 m depth (10-80 m)



Hermaphrodite

Females L_{50} about 24 cm

80 cm maximum length

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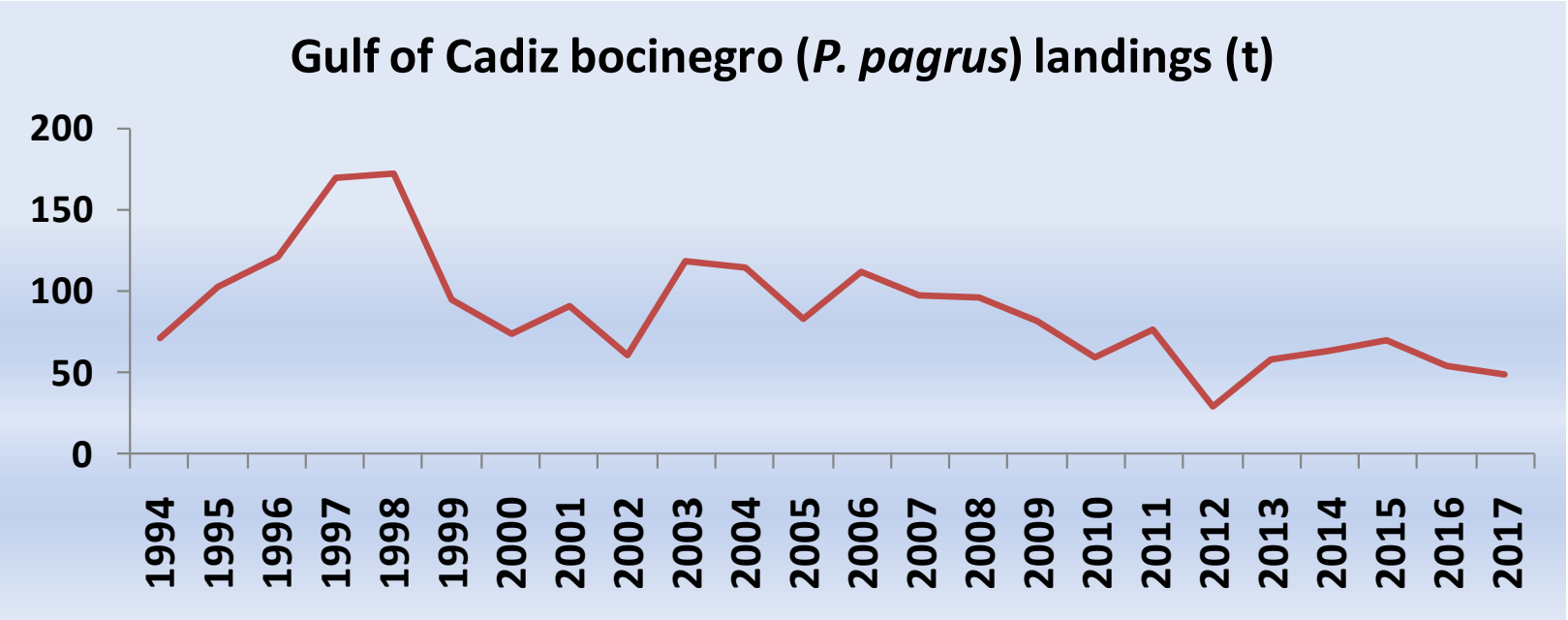

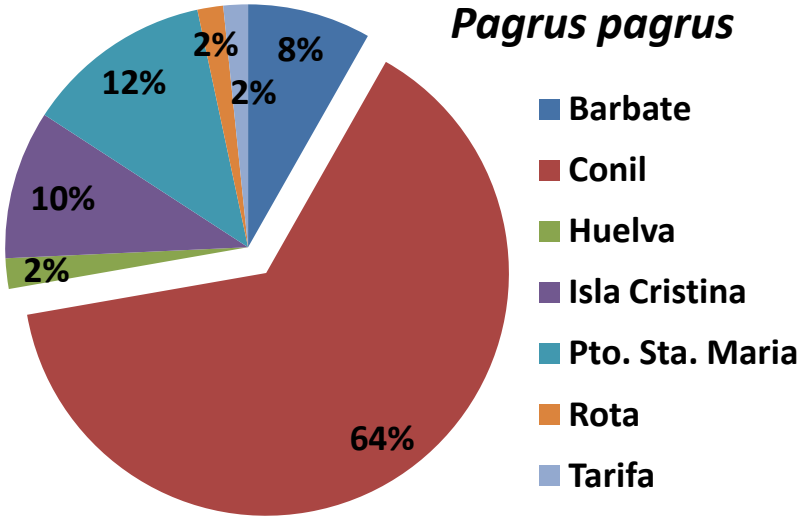

Gulf of Cadiz total landings (tons) and its relative importance (by port)

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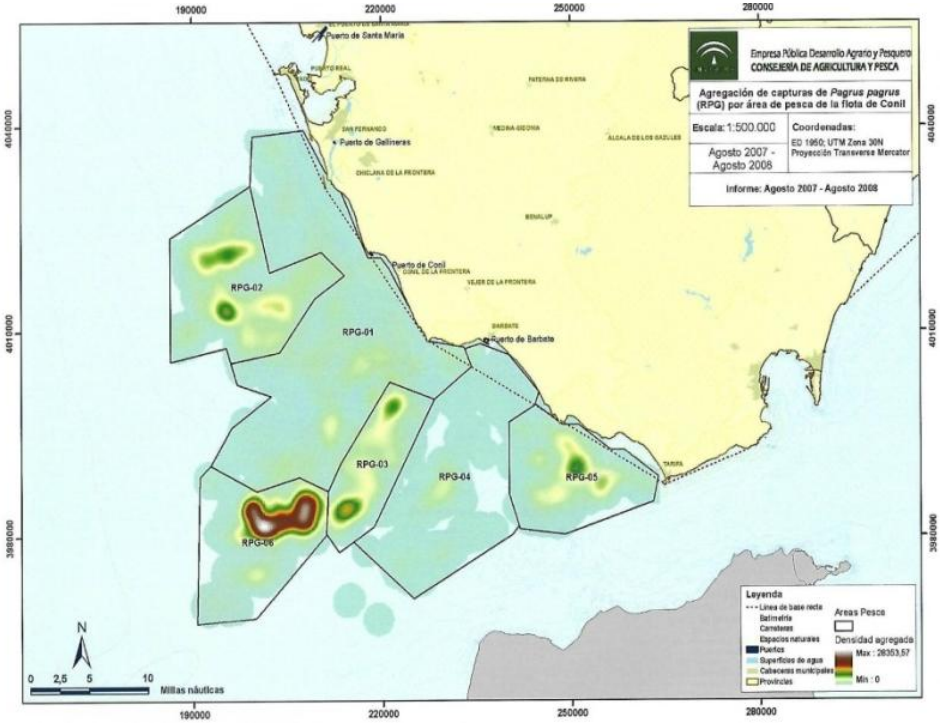
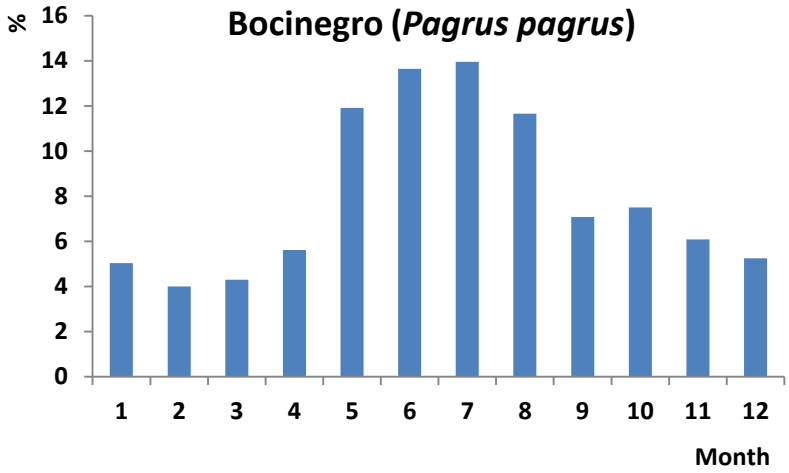
Bocinegro de Conil

Small scale fishery
Longline and gillnets
Main fishing grounds
Seasonality

www.bocinegro.com
www.pescadodeconil.com





Data **availability** (landings only)
No analytical assessment

FishPath (supportting the decision making)
DLMtool (MSE)

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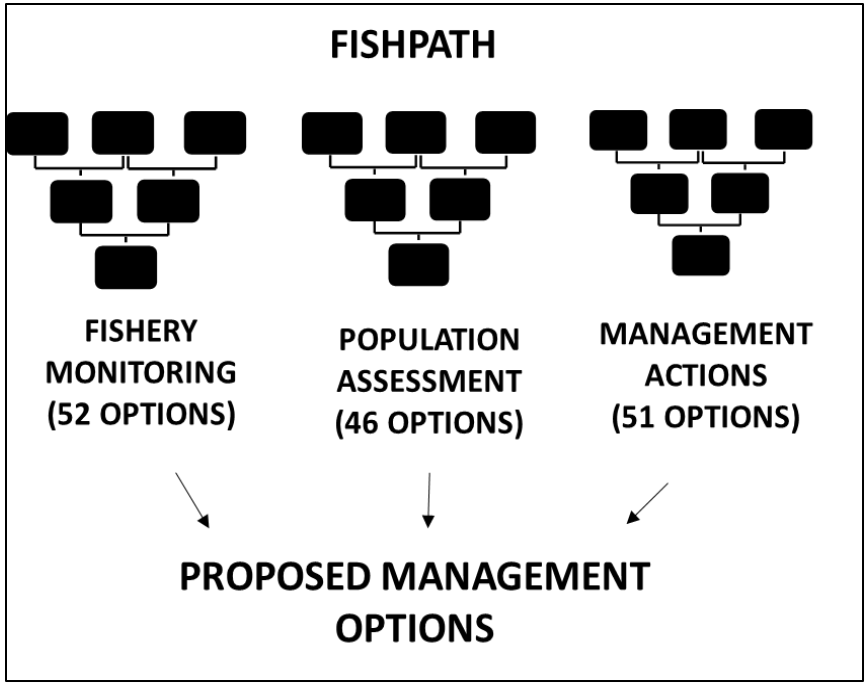
FishPath APPROACH

https://fishpath.org/

Inform and guide the selection of context-appropriate Management Strategies that will set your fishery on the path to sustainability



Conil, March 2018: scientist + stakeholders

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FishPath APPROACH

Fishery monitoring (data collection)

Options

Options have been plotted relative to how many positive or negative caveats are associated with them, based on properties of the fishery.

	Notes	Criteria	Caveats	Data Category	Option
hide		3 ✓	2 2 2 5 1	To inform stock status	Independent Surveys: By researchers, performed regularly
hide		3 ✓	2 4 5 1	Biological information	Independent Surveys: By researchers, performed regularly
hide		3 ✓	1 4 1 5 1	To inform stock status	Independent Surveys: By researchers, performed irregularly
hide		3 ✓	1 3 5 8 1	To inform stock status	Independent Surveys: By fishers, performed regularly
hide		3 ✓	2 1 2 4 1 1	To inform stock status	Catch Records
hide		3 ✓	1 2 3 5 1	Biological information	Independent Surveys: By fishers, performed irregularly
hide		3 ✓	2 1 1 5 1 1	Biological information	Catch Records
hide		3 ✓	1 8 8 1	Biological information	Independent Surveys: By fishers, performed regularly
hide		4 ✓	1 4 4 1	Temporal trend analyses	Electronic Monitoring: Shore-based cameras
hide		3 ✓	2 1 2 1 1	Temporal trend analyses	Catch Records
hide		3 ✓	2 1 2 1 1	Basic understanding of the fishery	Catch Records
hide		4 ✓	1 2 7 1	Temporal trend analyses	Electronic Monitoring: Vessel monitoring systems
hide		3 ✓	6 2 9 2	Biological information	Snapshot Data Collection

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FishPath APPROACH

Population assessment

Options

Options have been plotted relative to how many positive or negative caveats are associated with them, based on properties of the fishery.

	Notes	Criteria	Caveats	Input-Based Category	Option
hide		✓ 1	1 4 1 5	Population Dynamics Model	Depletion analysis
hide		✓ 1 1 1	1 1 4	Catch Only	Only Reliable Catch Stocks (ORCS)
hide		✓ 2 1	5 5	Size/Age-Based	Catch curve analysis
hide		✓ 1	5 1 4	Multiple Indicators	CUSUM Control Charts
hide		✓ 1 1 1	5 2 4	Multiple Indicators	Hierachical decision trees
hide		✓ 2 1 1 1	5 2 3	Risk Analysis/Vulnerability	RAPFISH (Multi-dimensional scaling)
hide		✓ 1	5 1 4	Multiple Indicators	Sequential trigger framework involving catch and/or effort, CPU…
hide		✓ 1	5 1 4	Multiple Indicators	Traffic lights
hidden		✓ 4	4 6	Size/Age-Based	Length-based Spawning Potential Ratio (LB-SPR)
hide		✓ 1	4 1 4	Abundance Indicators	Linear regression to recent time series of CPUE

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FishPath APPROACH

Management actions

Harvest Control Rule Options

Options have been plotted relative to how many positive or negative caveats are associated with them, based on properties of the fishery.

	Notes	Caveats	Category	Option
hide		2 1 4	Sex-Specific Regulations	Sex-specific size limits
hide		1 1 1 4	Sex-Specific Regulations	Prohibit take of one sex
hide		1 1 1	Other	Retain status quo
hide		1 3 6 1	Spatial Management	Invoke a closure in response to assessment outcomes
hide		1 3 6	Spatial Management	Move-on provisions
hide		1 3 8	Spatial Management	Permanent no-take zones
hide		1 1 4	Sex-Specific Regulations	Prohibit take of gravid females
hide		5 11 6	Catch Limits	Adjust based on data collected from closed areas or marine protected areas

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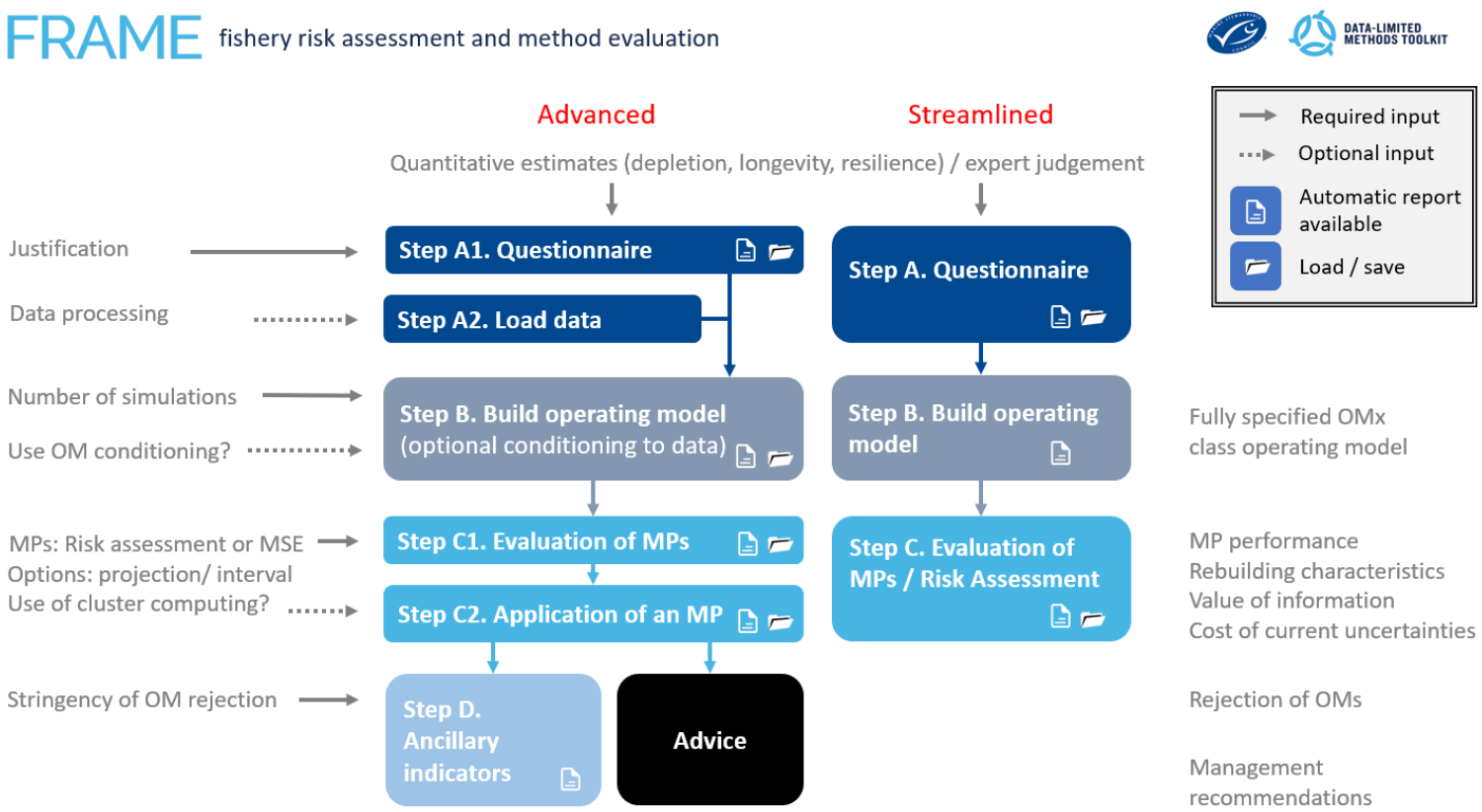
DLMtool APPROACH

http://www.datalimitedtoolkit.org/

MSE approach: evaluate numerous and varied management procedures



Cádiz, September 2018: scientists

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DLMtool APPROACH

Fishery (questions):

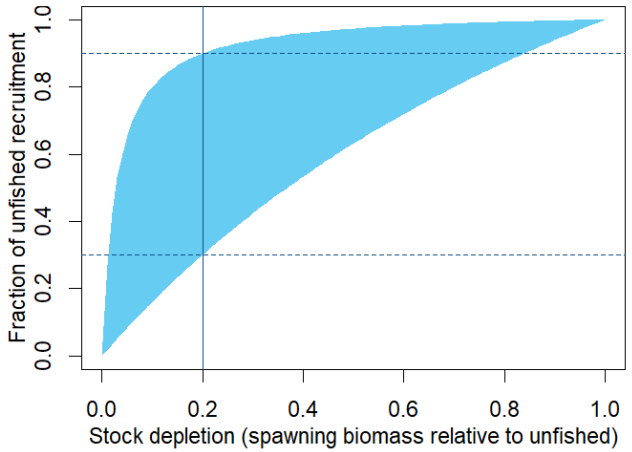
Longevity, Stock depletion, Resilience, Trend/variability in historical exploitation, Fishery length selectivity, Discarding rate/post-release mortality rate, Recruitment variability, Changing fishing efficiency, Size of potential Marine Reserve, Movement in-out of Marine Reserve

Fishery | Management | Data

4. Resilience

- [ ] Not resilient (h < 0.3)
- [x] Low resilience (0.3 < 0.5)
- [x] Moderate resilence (0.5 < h < 0.7)
- [x] Resilient (0.7 < h < 0.9)
- [ ] Very Resilient (0.9 < h)

UNKNOWN



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DLMtool APPROACH

Management (questions):

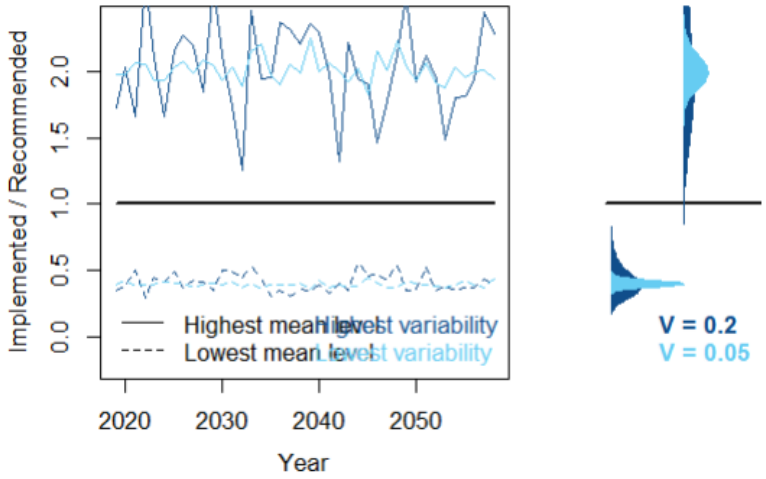
Implementation uncertainty (variability)

Fishery | Management | Data

3. Implementation uncertainty: variability

- [ ] Constant (V < 1%)
- [ ] Not variable (1% < V < 5%)
- [x] Low variability (5% < V < 10%)
- [x] Variable (10% < V < 20%)
- [ ] Highly variable (20% < V < 40%)

UNKNOWN



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DLMtool APPROACH

Data (questions):

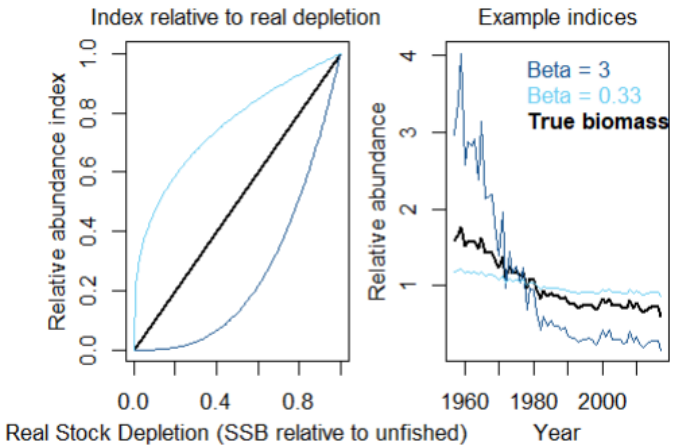
Types of data that are available, Catch reporting bias, Hyperstability in indices, Overall data quality

Fishery | Management | Data

3. Hyperstability in indices

- [x] Strong hyperdepletion (2 < Beta < 3)
- [x] Hyperdepletion (1.25 < Beta < 2)
- [x] Proportional (0.8 < Beta < 1.25)
- [x] Hyperstability (0.5 < Beta < 0.8)
- [x] Strong hyperstability (0.33 < Beta < 0.5)

UNKNOWN



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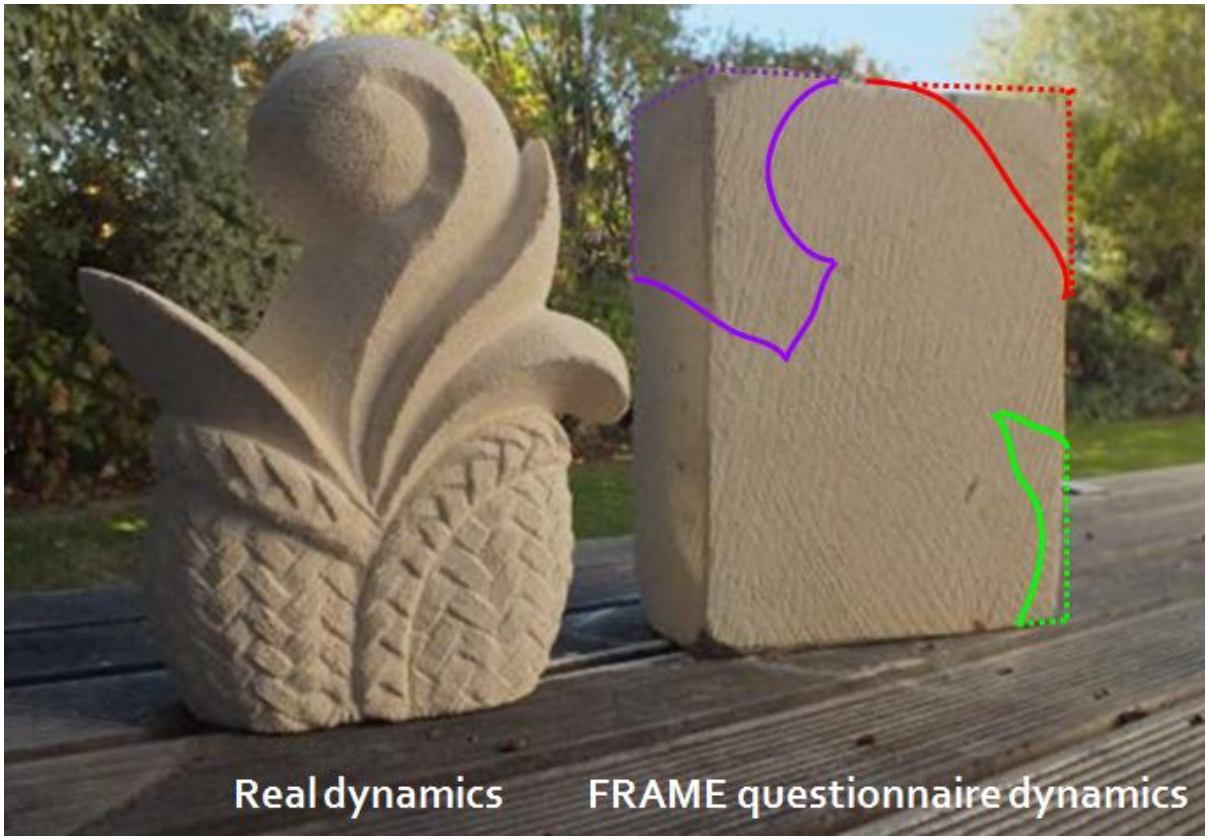
DLMtool APPROACH

Specifying an OM from a quantitative questionnaire

Fishery question about M



Fishery question about stock depletion

Fishery question about resilience

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Questions on the table:

Data collection: official landings (IDAPES) and VMS (SLSEPA)
No length distributions (market categories)
Target species biology
Fishery seasonality
Unquantified recreational fishery!!

Management procedures catch and/or effort limits,
spatial closures, gear selectivity…
Current mimimum landing size: 15 cm

Muchas Gracias

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juan.gil@ieo.es

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