The sustainability of forage fisheries:
the bond with the ShAD, status, problems, options

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Sustainable Fisheries Partnership

Presented remotely to the Guayaquil Shrimp Aquaculture Dialogue
October 9, 2008

Overview:

1. The Sustainable Fisheries Partnership
2. What is fisheries' sustainability?
3. The sustainability of forage fisheries
4. Fisheries' sustainability vs. the Shrimp Aquaculture Dialogue
5. FishSource
6. Status of forage fisheries: global overview
7. Current status of some of the major forage fisheries

1. The Sustainable Fisheries Partnership

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Sustainable Fisheries Partnership – Who we are:

- SFP is a Non-Government Organisation (NGO) founded in late 2006; currently 30 staff and consultants; growing rapidly
- Mission: “maintain healthy ocean and aquatic ecosystems, enhance fishing and fish-farming livelihoods and secure food supplies”
- The Partnership improves access to information to guide responsible seafood sourcing, and enhances the ability of seafood companies and partners to improve fish-farming and capture fisheries

SFP – what we do:

- SFP provides strategic and technical guidance to seafood suppliers and producers; helps convene them together with other like-minded companies in Fishery Improvement Partnerships
- Builds consensus around specific improvements in policies, marine conservation measures, and fishing and fish-farming practices
- Driven initially by providing advice / working close to the seafood supply chain on the status of global whitefish stocks but rapidly expanding to other work fields, including the sustainability of farmed organisms - SFP engaged on WWF dialogues: tilapia (TAD) and pangasius (PAD) – Jack Morales (SFP Aquaculture Director)

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Goal of this presentation:

SFP to provide input to the Shrimp Aquaculture Dialogue / technical working groups as external stakeholders; introduce / consolidate FishSource as a useful tool to assess the sustainability of wild fisheries and thus contribute actively to the development of standards for responsible fish farming.

2. What is fisheries' sustainability?

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What fisheries' sustainability is – Management

The integrated process of information gathering, analysis, planning, consultation, decision making, allocation of resources and formulation and implementation, with enforcement as necessary, of regulations or rules which govern fisheries activities in order to ensure the continued productivity of the resources and the accomplishment of other fisheries objectives.

(UN FAO, 2002)

Fisheries' sustainability – "3" Essentials:

Management / decision-making

Management plans; adequacy of set measures in light of scientific advice; Enforcement / Compliance; Illegal, Unregulated, and Unreported fishing (IUU); etc.

Stock Status

Stocks levels against biological reference points; harvest levels / fishing mortality rates; natural mortality rates; etc.

Ecological Impacts

PETS = protected, endangered, threatened species; requirement marine habitat mapping and impact assessment; requirement of comprehensive ecological risk assessments; effects of gears on the environment, etc.

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3. The sustainability of forage fisheries

Forage fisheries' sustainability:
background, current problems and uncertainty

- Production of forage fisheries heavily increased over the past 50 years in response to demands of fish and oil for animal feeds
- In the past 20 years more than ¼ of overall fish catch has been used for reduction purposes
- Emerging fisheries (e.g., krill) as the result of growing demand for farmed fish

Forage fisheries' sustainability:
background, **current problems** and uncertainty

- Species typically used for reduction purposes depart from food-chain top predators for which "stock healthy" standards historically developed
- In the food web, forage species act instead as a link / energy pathway between producers (zooplankton, on which they feed upon) and secondary consumers to which they are prey;
- Impact (harvesting) upon forage fisheries, i.e., the "middle" of the food chain, is repercussive on both below and above energetic levels

Forage fisheries' sustainability:
background, current problems and **uncertainty**

- *The "single species" assessment / management model might not be sufficiently precautionary for forage fisheries* – this is a reckoning by ultimate scientific developments;
- ENGO's currently strongly engaged on advocating a rather ecosystem-based approach to define *more adequate* (lower) harvest levels (pressure over MSC, ICES…);
- The traditional biological reference points used to define the "healthiness" of fish stocks might not be adequate for forage fisheries

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Forage fisheries' sustainability
background, current problems and uncertainty; **however:**

- Scientists not yet advised formally on how much the healthiness barrier should be raised; key assessment institutes (e.g., ICES, NMFS) and sustainability certifiers (MSC) have not dealt explicitly with this issue yet
- Pressure over all stakeholders to foment an overall, broad discussion still on-going; several organizations currently engaged on different aspects of forage fisheries: IFFO, FIN, ICES, Monterey Bay Aquarium, New England Aquarium, WWF, EDF, Seafood Choices Alliance, SFP, Seafish, among others…

Forage fisheries' sustainability

background, current problems and uncertainty; **however:**

- The MSC has certified Bering Sea / Aleutian Islands pollock; mid-water living species / mid-water fishing gears and acting like a keystone prey species in the ecosystem – quite close to lower food-chain pelagics commonly used for reduction purposes
- MSC set the threshold higher for pollock though: B_{MSY} was used as the limit lower level rather as target level, as traditionally used

Forage fisheries' sustainability

background, current problems and uncertainty; **therefore:**

- Currently, the sustainability status of forage fisheries is measured against the formal biological reference points and despite there is overall notion that those might not be precautionary enough for forage species, they shall be used as reference until overall agreement (ENGO's, managers, scientists) is reached;
- The above applies to FishSource (as we shall soon see), as FishSource follows the MSC / ICES assessment standards; thus all statements provided hereafter should be framed accordingly.

4. Fisheries' sustainability and the Shrimp Aquaculture Dialogue

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How does the wild fisheries' sustainability issue fit in the on-going ShAD?

Principles for responsible shrimp farming (FAO, WWF, et al.) / **ShAD working version**:

1. Farm sitting
2. Farm design / construction
3. Water use
4. Broodstock and postlarvae

5. Feed management

Criteria: Feed ingredients and sources;

Fishmeal, fish oil, and fisheries by-products must be sourced from sustainable, well managed fisheries or as defined by.

6. Health management
7. Food safety

Principle 5: Feed management

Criteria: Feed ingredients and sources;
Fishmeal, fish oil, and fisheries by-products must be sourced from sustainable, well managed fisheries or as defined by.

yet, "How to define a responsible source if no MSC certification exists?"

FishSource™
Status and environmental performance of fisheries worldwide

www.fishsource.org

Why? Because FishSource provides our view on how MSC would rate any fishery, in light of MSC standards and of past assessments of certified fisheries.

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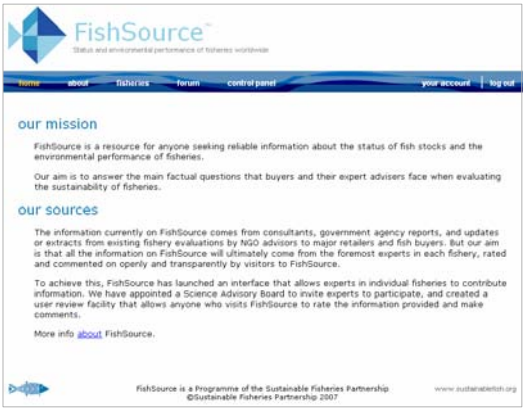
5. FishSource

FishSource

www.fishsource.org

FishSource is an online information resource about the status of fish stocks and the environmental performance of fisheries world wide



FishSource purpose

- Collate and summarize source materials needed as inputs for sustainability analyses
- Focus to date on information on the sustainability of individual fisheries, and general improvement needs
- Now developing structure and content for information on the specific improvements needed, milestones, and the progress being made in improving fisheries

www.fishsource.org

FishSource assessment criteria

- Based on the Marine Stewardship Council (MSC) standards and / or international organisms' criteria (e.g. International Council for the Exploration of the Sea – ICES)
- FishSource does not have its "own" sustainability rating system, rather providing the user with a straight forward, clear, information on how international, accredited systems *would* rate / have rated the fisheries

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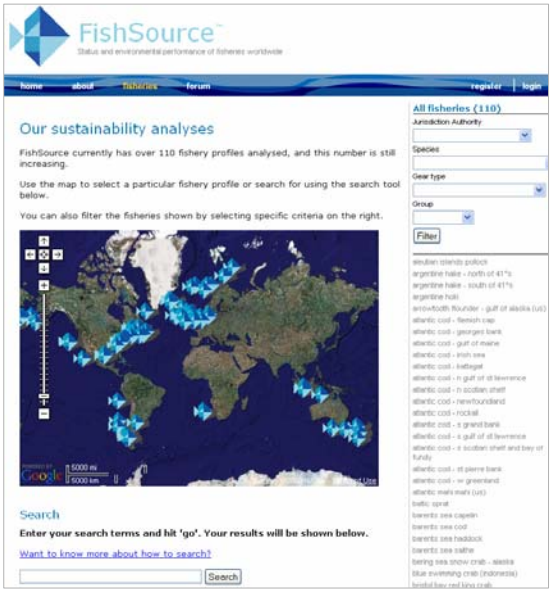
FishSource search page



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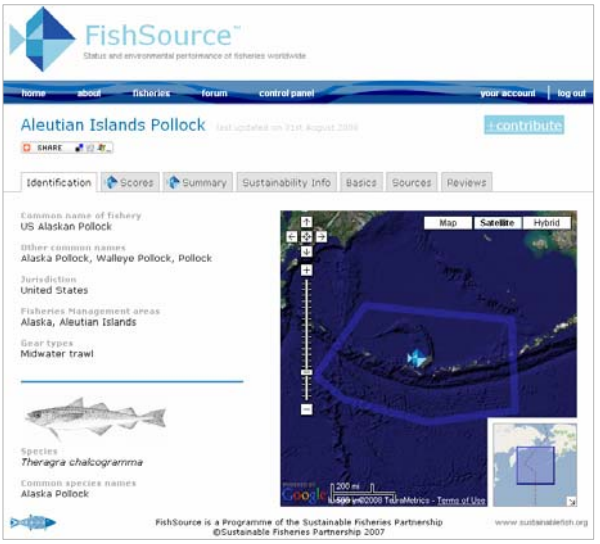
FishSource ID page

Example:
Aleutian islands pollock

- MSC Certified;
- Most seen as whitefish, yet, somewhat lower in the food web, pelagic behaviour (swims in open-water)

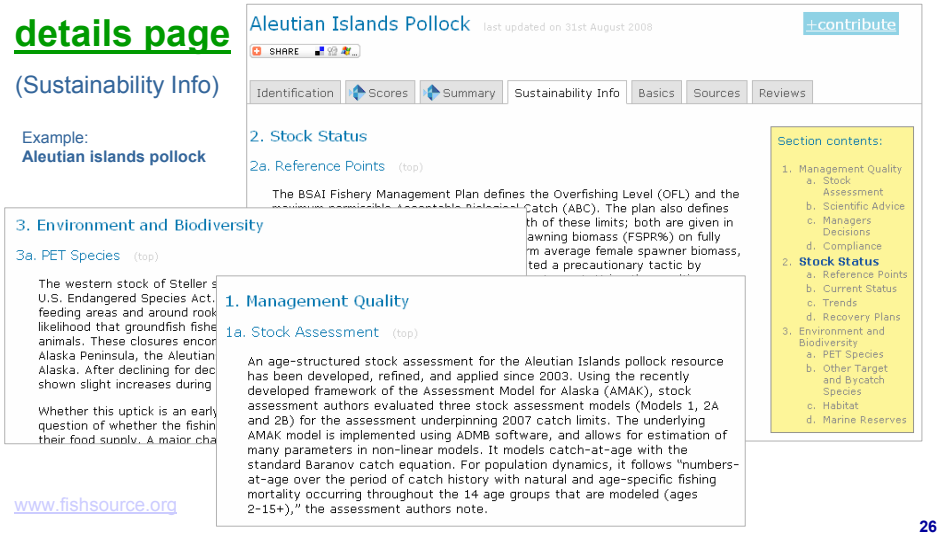
Current speculation on whether or not it could be used for reduction purposes



FishSource details page

(Sustainability Info)

Example:
Aleutian islands pollock



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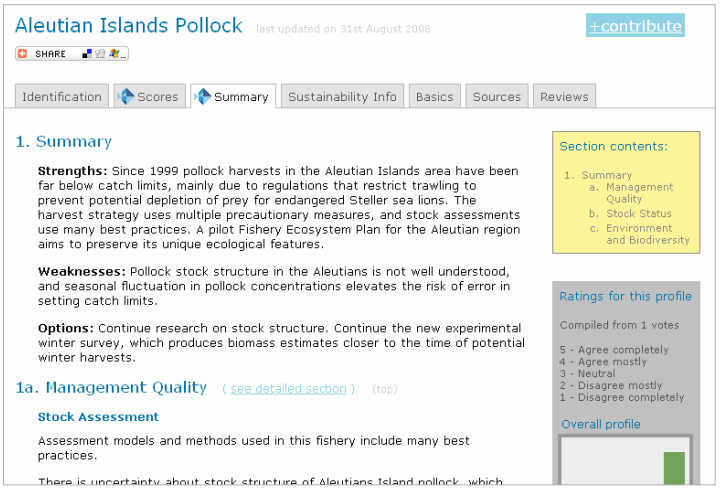
FishSource summary page

Example:
Aleutian islands pollock



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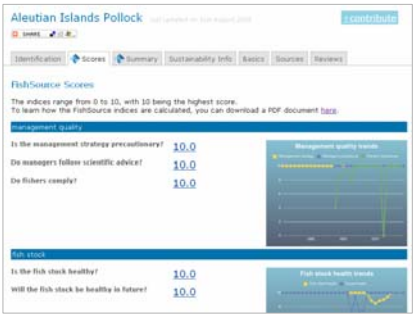
FishSource scores

- **0-10** (10 = best performance)
- **Rough thresholds* based on MSC standards**:

Below 6: needs improvement on that standard AND is currently unsustainable

Between 6 and 8: needs improvement, but not unsustainable

Between 8 and 10 = currently sustainable.



*Check FishSource for further info on how scores are devised:
http://www.fishsource.org/indices_overview.pdf

FishSource scores page

Example: **Aleutian Islands pollock**

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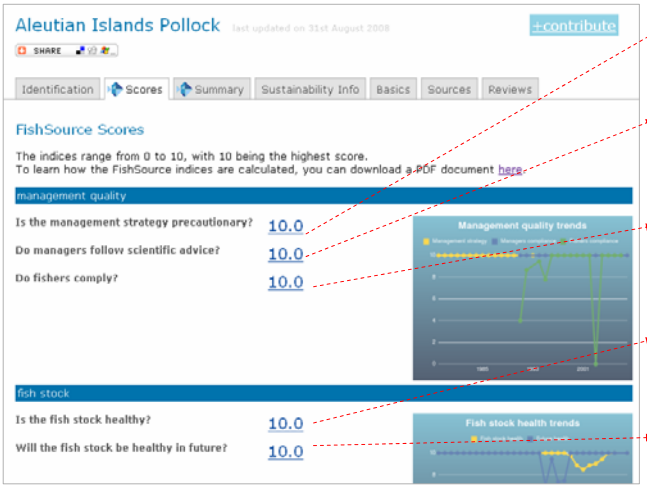
Scores are thus our view of how MSC would rate the respective fishery:



$F_{at\ low\ biomass}$ = 0 (no fishing)

Advised TAC_{08} = 28,000t
Set TAC_{08} = 19,000t

$Catch_{07}$ = 2,500t
Set TAC_{07} = 19,000t

SSB_{08} = 82,210t
$B_{40\%}$ = 40,378t

F_{07} = 0.196
F_{trp} = 0.56

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Current content of FishSource

- September 2008: 113 live fisheries (~200 more fisheries pending for internal review and / or awaiting formal contribution from authors)
- Profiles mostly focused on whitefish fisheries but forage fisheries and crustacean fisheries' profiles now growing rapidly in number

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6. Status of forage fisheries: global overview

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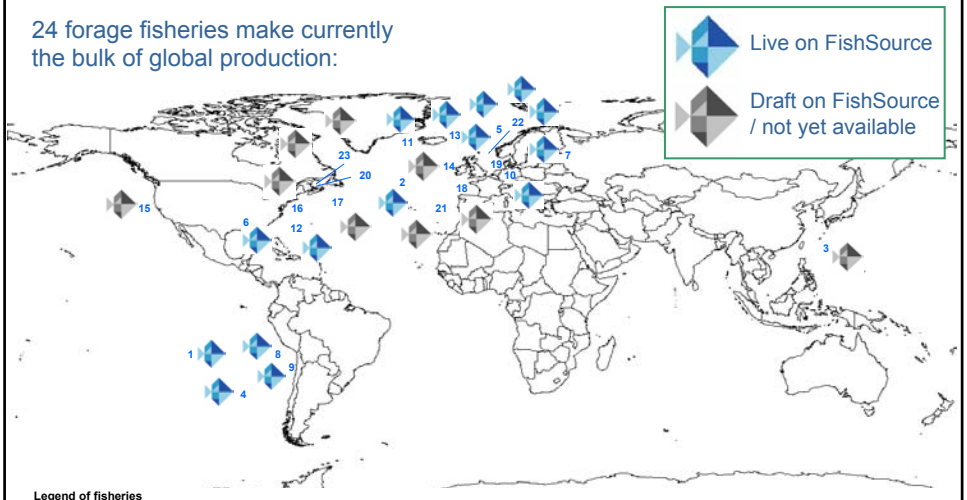
24 forage fisheries make currently the bulk of global production:



Legend of fisheries

1	Peruvian anchovy	7	Sprat (E Baltic Sea)	13	Atlantic herring (Icelandic summer-spawning)	19	Sprat (North Sea)
2	NE Atlantic blue whiting	8	Chilean chub mackerel	14	Atlantic horse mackerel (Western)	20	Atlantic herring (Canada - 4TVn - autumn spawner)
3	Japanese anchovy	9	Chilean pilchard	15	Californian pilchard (US, Mexico, Canada)	21	Atlantic horse mackerel (Southern)
4	Chilean jack mackerel	10	North Sea sandeels	16	Atlantic herring (US)	22	Norway pout
5	Atlantic herring (Norwegian spring-spawning)	11	Capelin (Icelandic)	17	Atlantic herring (Canada - 4VWX)	23	Atlantic herring (Canada - 4TVn - spring spawner)
6	Gulf menhaden	12	Atlantic menhaden	18	Iberian pilchard	24	Capelin (Barents Sea) [in moratorium]

Current snapshot on forage fisheries' sustainability: **stock status**

(circles are proportional to latest annual official catch)

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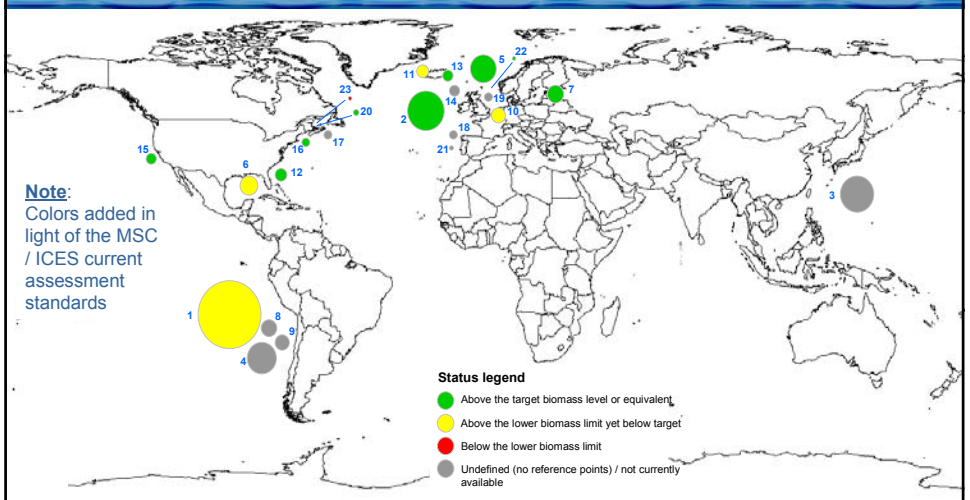

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Current snapshot on forage fisheries' sustainability: **harvest levels**

(circles are proportional to latest annual official catch)

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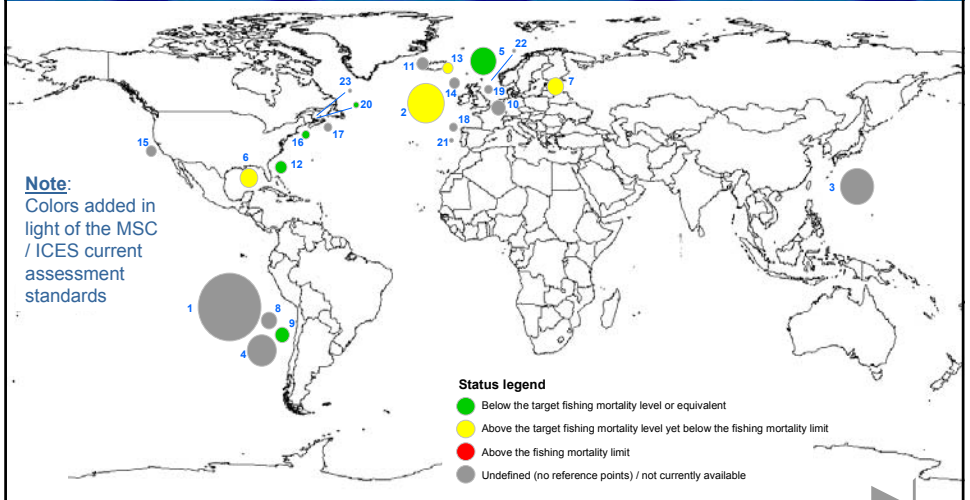

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Forage fisheries: **individual catch trends along the 2000's**

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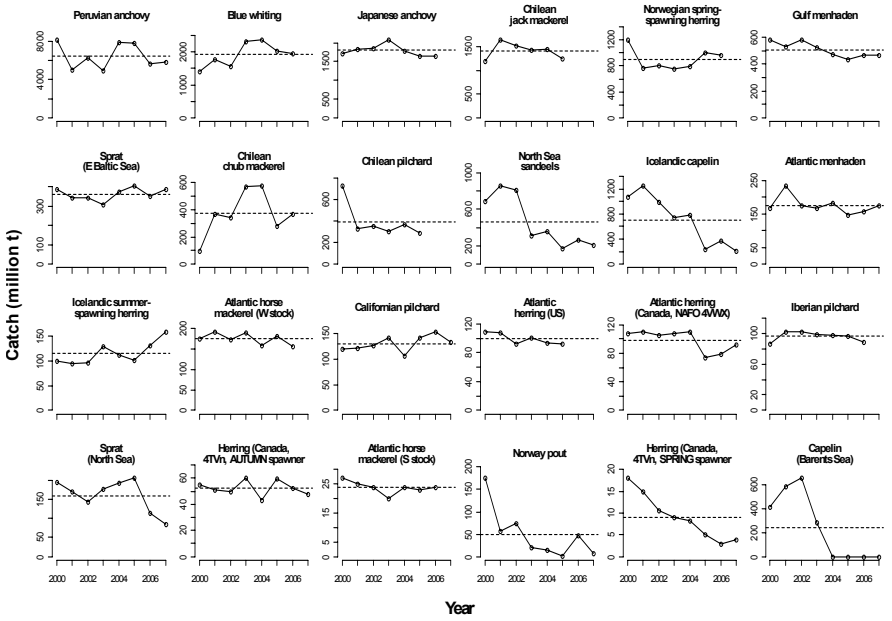

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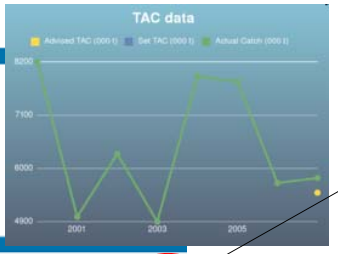
7. Current status of some of the major forage fisheries

Peruvian anchovy

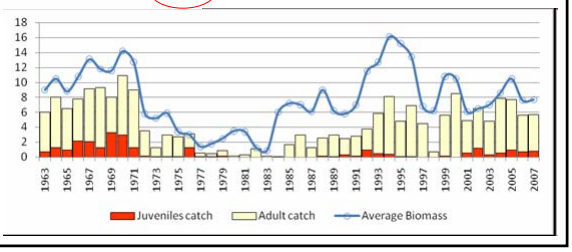
management quality	
Is the management strategy precautionary?	6.0
Do managers follow scientific advice?	10.0
Do fishers comply?	9.1



Ftrp = 0.8; yet, no data on current F is available

fish stock			
Is the fish stock healthy?	na	Will the fish stock be healthy in future?	na

No “healthiness” threshold has been defined for the stock; yet, above Blimit (5 million t).

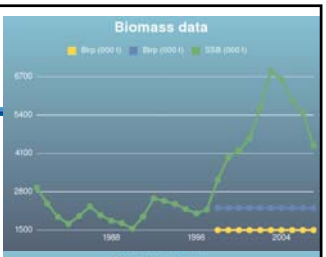


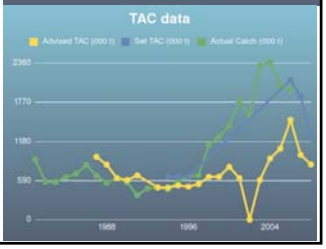
Blue whiting

Scores:

management quality	
Is the management strategy precautionary?	6.0
Do managers follow scientific advice?	1.7
Do fishers comply?	10.0

fish stock	
Is the fish stock healthy?	10.0
Will the fish stock be healthy in future?	6.4



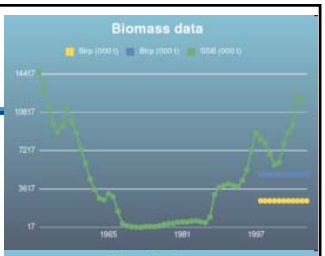


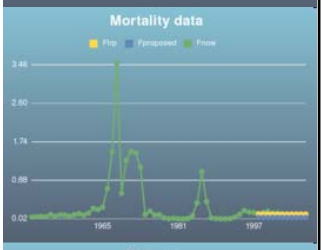
Norwegian spring-Spawning herring

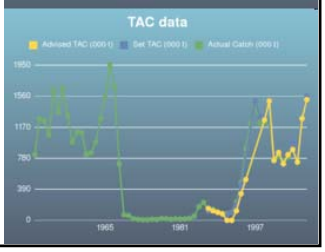
Scores:

management quality	
Is the management strategy precautionary?	8.4
Do managers follow scientific advice?	9.5
Do fishers comply?	10.0

fish stock	
Is the fish stock healthy?	10.0
Will the fish stock be healthy in future?	8.7







Example: scores for 3 fisheries in FishSource

Note: other MSC standards cannot be translated into a quantifiable score (rather "quality"-related)

	Peruvian anchovy	Blue whiting	Norwegian herring
Score 1 (Precautionary management?)	6.0	6.0	8.4
Score 2 (Managers in line with advice?)	10.0	1.7	9.5
Score 3 (Fishers in line with management?)	9.1	10.0	10.0
Score 4 (Current stock health)	NA	10.0	10.0
Score 5 (Future stock health)	NA	6.4	8.7

*Status as by Oct 2008

www.fishsource.org

Acknowledgements

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- Jack Morales (SFP Aquaculture Director)
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Thank you!

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