Progress on the Fishery Performance Indicators (FPI)

James L. Anderson & Jingjie Chu

World Bank

February 4, 2011- Rome, Italy

ALLFISH Partnership/ICFA

Some Guiding Principles

Commercial fishing is a **business** and should create sustainable positive net income and create wealth.

Ecological sustainability is **necessary**, but **not sufficient**, for commercial fisheries to generate sustainable income and create wealth.

Community sustainability is necessary for **economic sustainability.**

- **The Fishery Performance Indicators (FPIs) are designed to evaluate and compare the world's fisheries management systems based on their ability to generate sustainable income and create wealth in an *ecologically sustainable and socially acceptable* manner.**

Purpose

Note on Sustainable Fishing Certification & Ecolabels

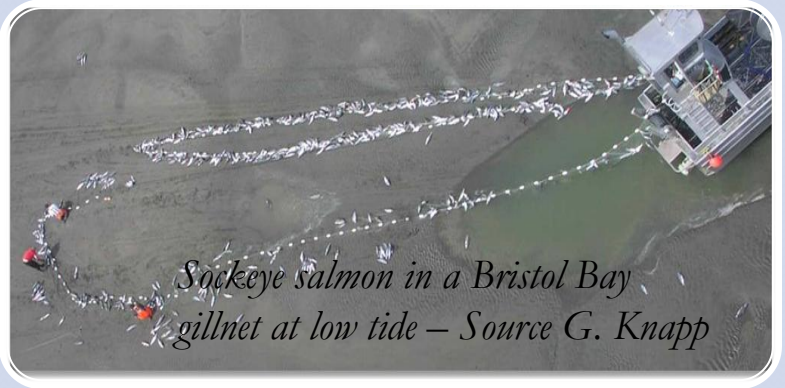
- Given the substantial cost of many certification programs they are inherently **biased toward rich nations**.
- Yet much of **seafood trade flows** from the poor and underdeveloped to the rich
- The emphasis is on biological and ecosystem indicators and regulatory compliance **does not address** the essential objective of managing commercial fisheries—to create sustainable income and wealth

An Example:

The management of the MSC Certified Alaska salmon fishery imposes significant costs and hampers innovation, quality, and marketing.

Alaska's Bristol Bay drift gillnet salmon fishery -2005.
(Photograph by Bart Eaton, Source: Gunnar Knapp)

Alaska Sockeye salmon 2006 – Photo: M. Gleason



Sockeye salmon in a Bristol Bay gillnet at low tide – Source G. Knapp

Better and more consistent quality is essential for improving markets

Fundamental changes in management and fishing practices are needed

QUALITY

Alaska Salmon - MSC Certified

– The state mandates the use of inefficient boats and gear

– The current management system forces fishermen to race for fish

– The current management system discourages investment in processing and marketing.

Knapp, G. “Challenges and Strategies for the Alaska Salmon Industries.” 2002. ISER, University of Alaska, Anchorage

Globally the cumulative **economic loss** over the past three decades ranges around

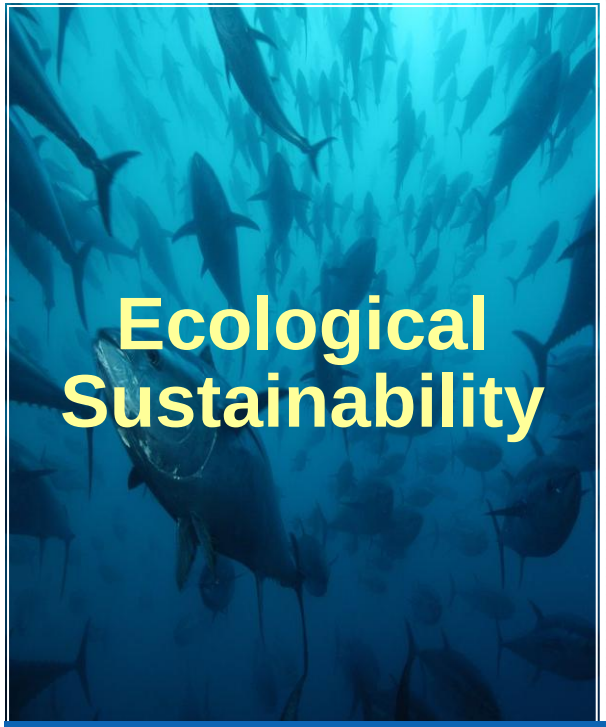
$US 2 trillion

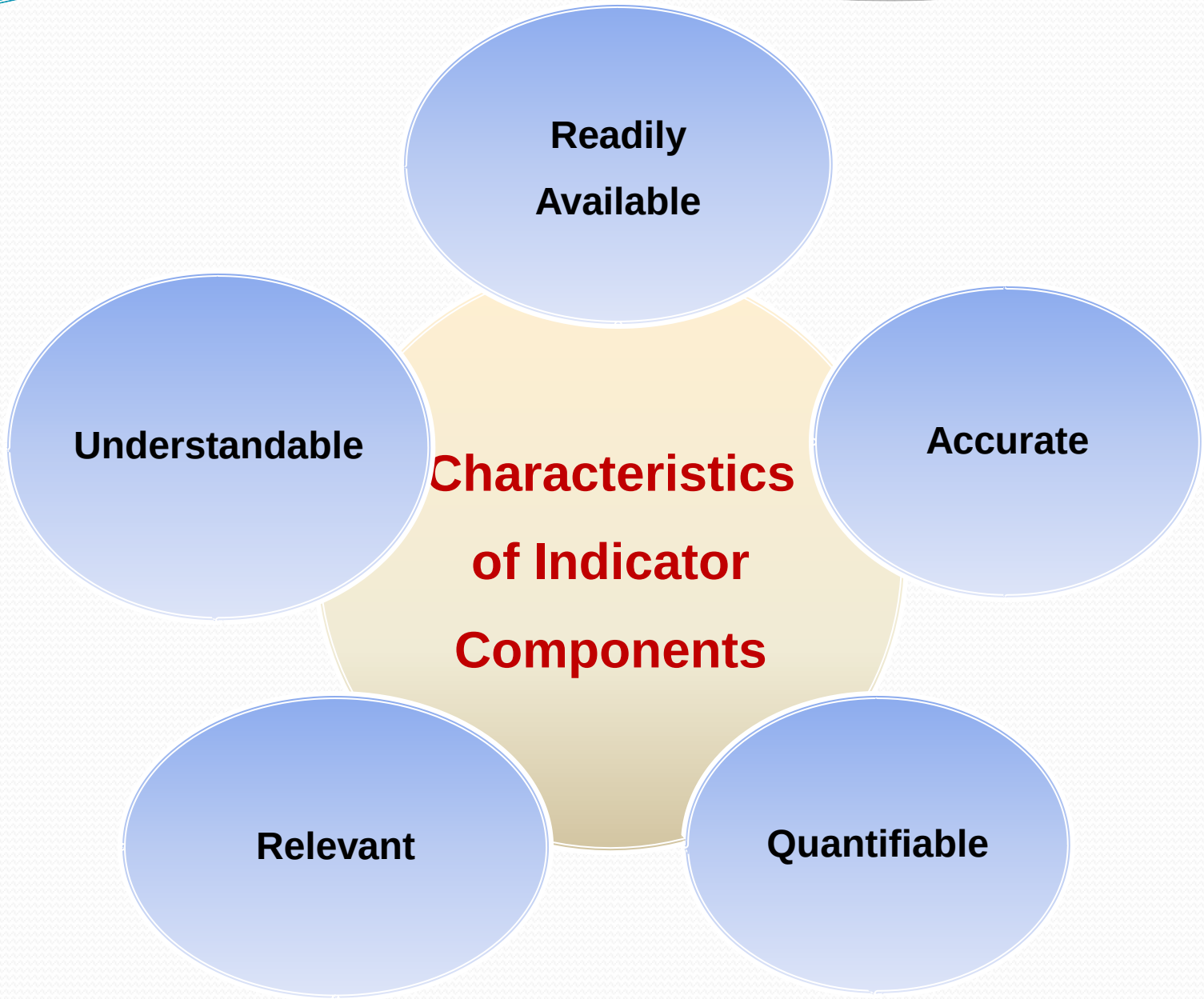
The Sunken Billions: The Economic Justification for Fisheries Reform. Agriculture and Rural Development, The World Bank, Washington, DC, 2008

Greater attention must be focused on

- **Governance systems**
- **Economic factors**

FPIs are Designed to Incorporate the Three ‘Sustainabilities’ Necessary for Wealth Creation




Readily Available
Understandable
Accurate
Characteristics of Indicator Components
Relevant
Quantifiable

Output	Input
Performance Indicators of sustainable income and the creation of wealth in an ecologically sustainable and socially acceptable manner	Performance Factors that enable success or contribute to failure

The Fishery Performance Indicators - Outputs

- **62 components covering 11 dimensions**:
  - Fish Stock Health & Environmental Performance
  - Harvest Performance
  - Harvest Asset Performance
  - Risk
  - Owners, Permit Holders & Captains
  - Crew
  - Market Performance
  - Processing & Support Industry Performance
  - Post-harvest Asset Performance
  - Processing Owners & Managers
  - Processing Workers

Fishery Performance Indicators—Outputs

COMPONENT	DIMENSION	MEASURE	DOMINANT SUSTAINABILTY CATEGORY
Ecologically Sustainable Fisheries	Fish Stock Health & Environmental Performance	Proportion of Harvest with 3rd Party Certification	Ecology
		Fish Stock Sustainability Index (NMFS)	Ecology
		Percentage of Stocks Overfished	Ecology
		Non-landings Mortality	Ecology
Harvest Sector Performance	Harvest Performance	Landings Level	Economics
		Excess Capacity	Economics
		Season Length	Economics
	Asset Performance	Ratio of Asset Value to Gross Earnings	Economics
		Total Revenue versus Historic High	Economics
		Asset (Permit, Quota) Value versus Historic High	Economics
		Borrowing Rate Relative to Risk-free Rate	Economics
		Source of Capital	Economics
		Functionality of Harvest Capital	Economics
	Risk	Annual Total Revenue Volatility	Economics
		Annual Landings Volatility	Economics
		Intra-annual Landings Volatility	Economics
		Annual Price Volatility	Economics
		Intra-annual Price Volatility	Economics
		Spatial Price Volatility	Economics
		Contestability & Legal Challenges	Community
	Owners, Permit Holders & Captains	Earnings Compared to National Average Earnings	Community
		Fishery Wages Compared to Non-fishery Wages	Community
		Social Standing of Boat Owners and Permit Holders	Community
		Proportion of Nonresident Employment	Community
	Crew	Earnings Compared to National Average Earnings	Community
		Fishery Wages Compared to Non-fishery Wages	Community
		Social Standing of Crew	Community
		Proportion of Nonresident Employment	Community
		Crew Experience	Community
		Age Structure of Harvesters	Community

Fishery Performance Indicators—Outputs Cont.

Post Harvest Performance	Market Performance	Ex-vessel Price versus Historic High	Economics
		Final Market Use	Economics
		International Trade	Economics
		Final Market Wealth	Economics
		Wholesale Price Relative to Similar Products	Economics
		Capacity of Firms to Export to the US & EU	Economics
		Ex-vessel to Wholesale Marketing Margins	Economics
	Processing & Support Industry Performance	Yield of Processed Product	Economics
		Capacity Utilization Rate	Economics
		Product Improvement	Economics
		Regional Support Businesses	Economics
		Time to Repair	Economics
	Asset Performance	Borrowing Rate Relative to Risk-free Rate	Economics
		Source of Capital	Economics
		Age of Facilities	Economics
	Processing Owners & Managers	Earnings Compared to National Average Earnings	Community
		Manager Wages Compared to Non-fishery Wages	Community
		Social Standing of Processing Managers	Community
		Nonresident Ownership of Processing Capacity	Community
	Processing Workers	Earnings Compared to National Average Earnings	Community
		Worker Wages Compared to Non-fishery Wages	Community
		Social Standing of Processing Workers	Community
		Proportion of Nonresident Employment	Community
		Worker Experience	Community

The Fishery Performance Factors: Inputs

- **45 components covering 8 dimensions**:
  - Macro Factors-Environmental, Economic & Community
  - Access Rights
  - Harvest Rights
  - Collection Action
  - Management Inputs
  - Management Participation
  - Markets and Market Institutions
  - Infrastructure

Fishery Performance Factors – Inputs (Enabling Wealth Creation)

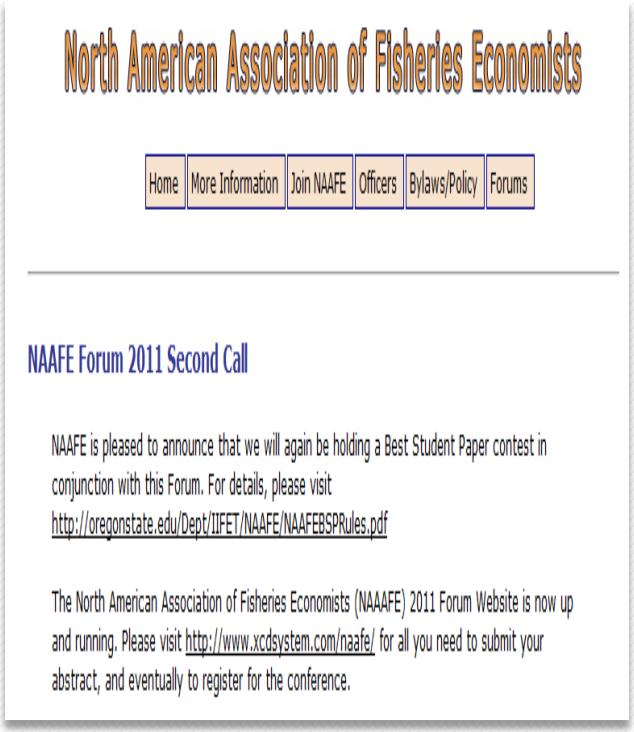
Macro Factors		Environmental Performance Index (EPI)
		Governance Indicator–Effectiveness
		Governance Indicator–Voice & Accountability
		Index of Economic Freedom
		Gross Domestic Product (GDP) Per Capita
Property Rights & Responsibility	Access	Proportion of Harvest Managed Under Limited Access
		Transferability Index
		Security Index
		Durability Index
		Flexibility Index
		Exclusivity Index
	Harvest	Proportion of Harvest Managed with Rights-based Management
		Transferability Index
		Security Index
		Durability Index
		Flexibility Index
		Exclusivity Index
	Collective Action	Participation in Harvester Organizations
		Harvester Organization Influence on Fishery Management & Access
		Harvester Organization Influence on Business & Marketing
Management	Inputs	Management Expenditure to Value of Harvest
		Management Employees to Value of Harvest
		Management Employees per Permit Holder
		Research as a Proportion of Fisheries Management Budget
		Level of Subsidies
	Participation	Days in Stakeholder Meetings
		Industry Financial Support for Management
Post-harvest	Markets & Market Institutions	Landings Pricing System
		Availability of Ex-vessel Price & Quantity Information
		Number of Buyers
		Degree of Vertical Integration
		Level of Tariffs
		Level of Non-tariff Barriers
	Infrastructure	International Shipping Service
		Road Quality Index
		Technology Adoption
		Extension Service
		Reliability of Utilities/Electricity
		Access to Ice & Refrigeration

Case Studies

Already Done	Under Review	Will Work on
Alaska Salmon	New England Lobster Iceland Lobster	Ghana Coastal Fisheries
New England Groundfish	Philippine Swimming Crab	Lake Malawi Fisheries
Guyana Fisheries	Indonesia Swimming Crab	Bangladesh Inland Fisheries

Planning a **workshop** in North American Association of Fisheries Economists (**NAAFE**) Forum

- May 11-13, 2011
- 8-15 researchers
- Review 10-15 cases studies
- Determine the usefulness, limitations, cost and time required to implement the FPI approach


North American Association of Fisheries Economists

Home | More Information | Join NAAFE | Officers | Bylaws/Policy | Forums

NAAFE Forum 2011 Second Call

NAAFE is pleased to announce that we will again be holding a Best Student Paper contest in conjunction with this Forum. For details, please visit http://oregonstate.edu/Dept/IIFET/NAAFE/NAAFEBSPRules.pdf

The North American Association of Fisheries Economists (NAAAFE) 2011 Forum Website is now up and running. Please visit http://www.xcdsystem.com/naafe/ for all you need to submit your abstract, and eventually to register for the conference.

Alaska Salmon

Management Areas: Alaska State Waters: Southeast, Prince William Sound, Cook Inlet, Bristol Bay, Kodiak, Chignik, Alaska Peninsula, Kuskokwim and Yukon.

Species: Five targeted species:

- Pink (or humpy) salmon
- Chum (or dog) salmon
- Sockeye (or red) salmon
- Coho (or silver) salmon
- Chinook (or king) salmon

2008: 34% of the Commercial Harvest originates from Hatcheries

Source: G. Knapp

Alaska Salmon

• Principle of sustained yield, for the maximum benefit of the people of the state.

• In-season openings and closures to managed for target escapement

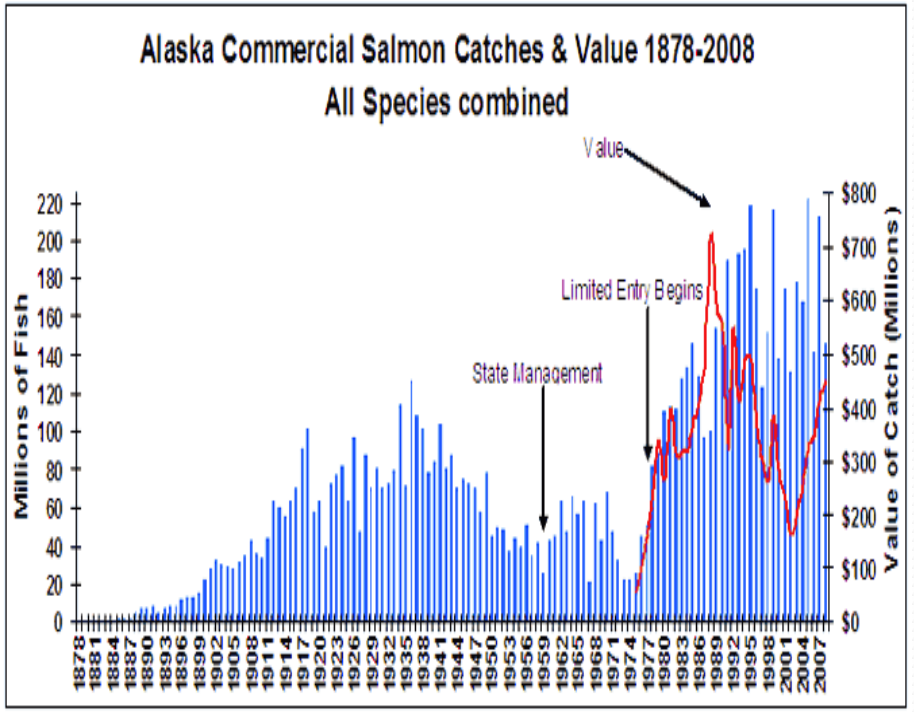
• Gear, vessel characteristics, area and time of fishing are strictly controlled

• 35 Hatcheries are used enhance the harvest

• No Alaska salmon stocks are considered overfished

• MSC Certified as Sustainable

• 7472 Permits (35 % harvest by non-resident)



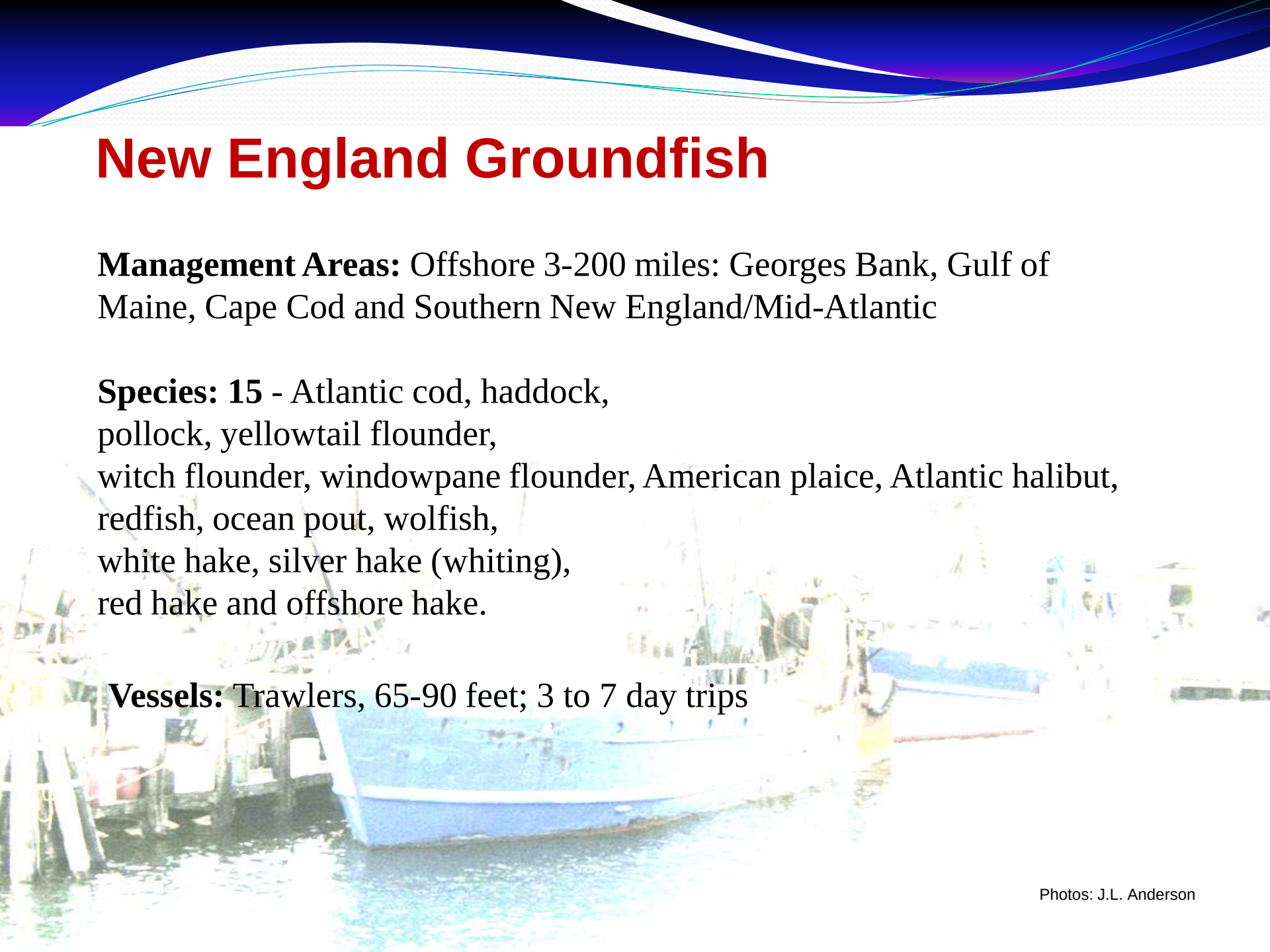
http://www.cf.adfg.state.ak.us/geninfo/finfish/salmon/catchval/history/all_1878.php

New England Groundfish

Management Areas: Offshore 3-200 miles: Georges Bank, Gulf of Maine, Cape Cod and Southern New England/Mid-Atlantic

Species: 15 - Atlantic cod, haddock,
pollock, yellowtail flounder,
witch flounder, windowpane flounder, American plaice, Atlantic halibut,
redfish, ocean pout, wolfish,
white hake, silver hake (whiting),
red hake and offshore hake.

Vessels: Trawlers, 65-90 feet; 3 to 7 day trips



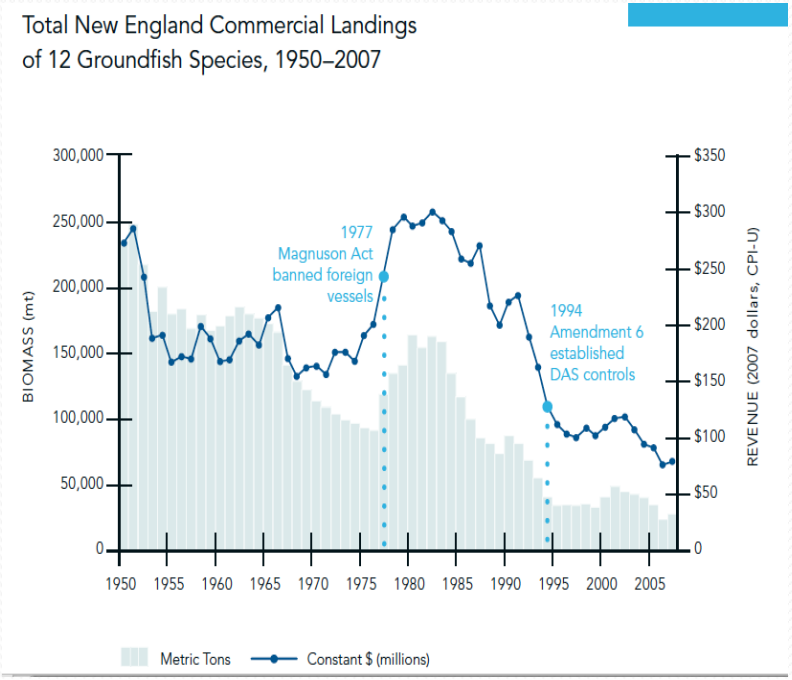
Photos: J.L. Anderson

New England Groundfish

Management:

- Seasonal and year-round area closures,
- Gear restrictions,
- Minimum fish size limits,
- Trip limits (poundage per trip)
- Limited access
- Restrictions on the number of days at sea each year <www.nefmc.org/>.

2008 Ex-vessel $92 million

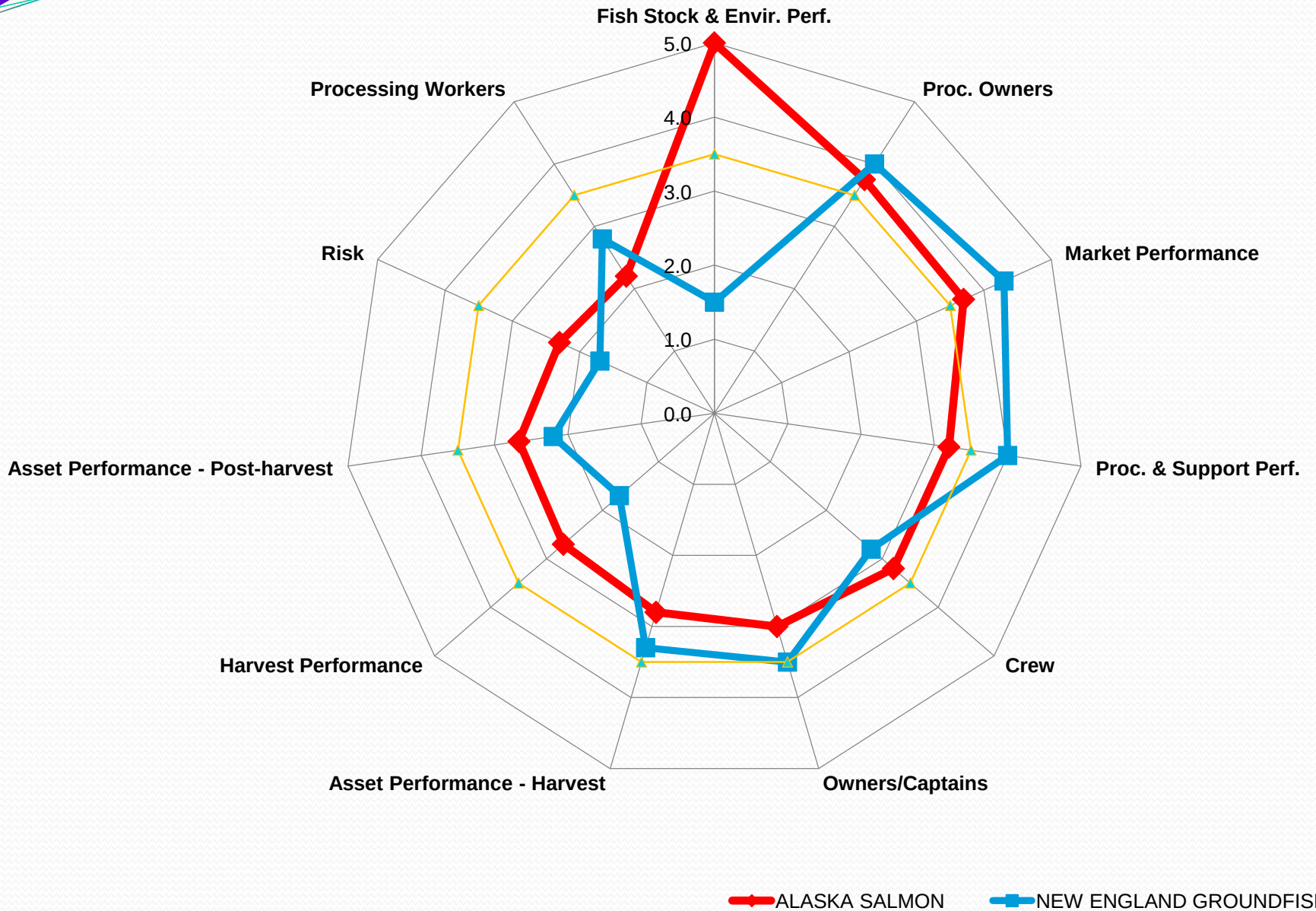


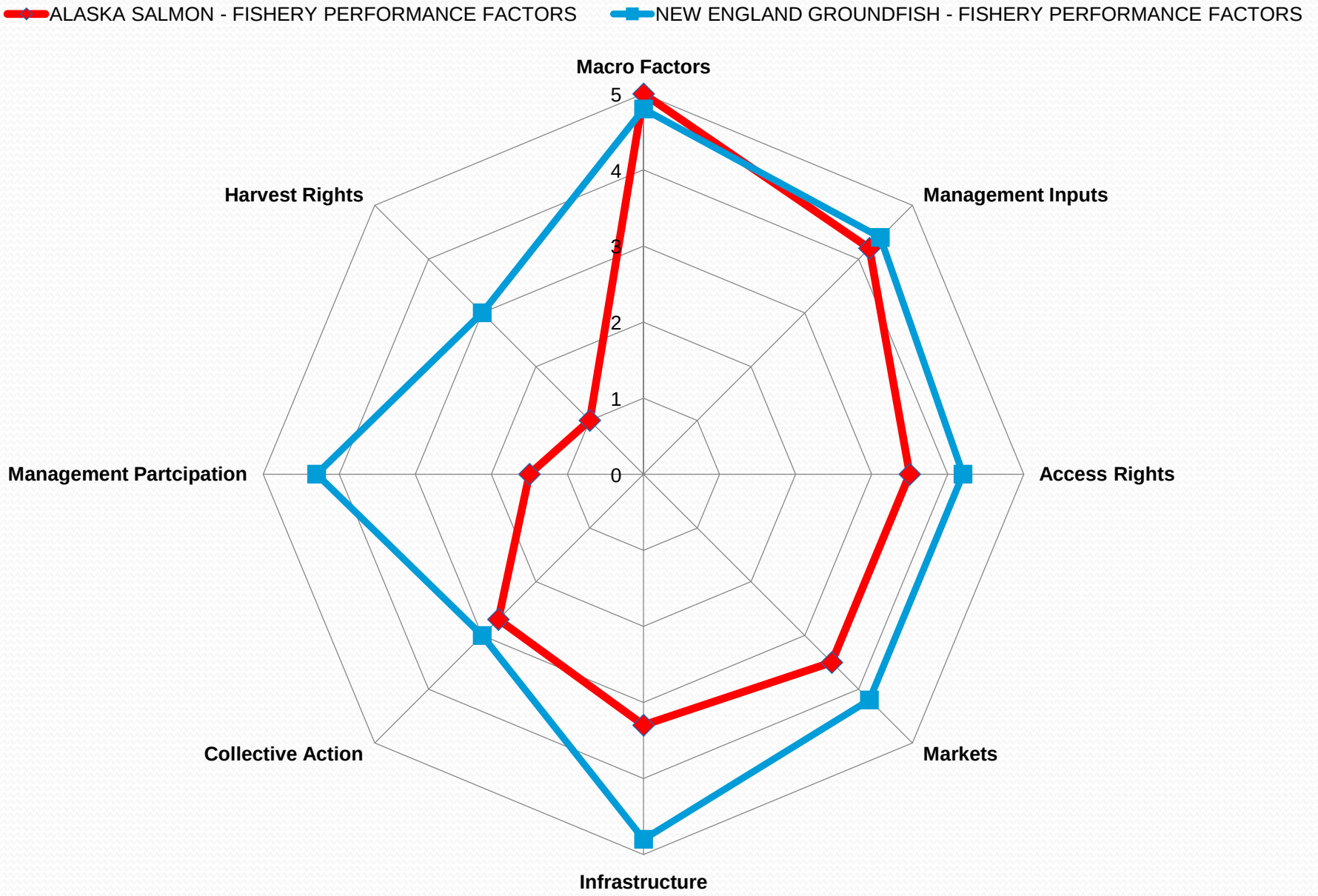
Overfishing:

- 4 Stocks not overfished or experiencing overfishing
- 2 Stocks not overfished, but experiencing overfishing
- 2 Stocks overfished but not experiencing overfishing
- **10 Stocks overfished and experiencing overfishing**

http://www.edf.org/documents/10543_CSWS%20Kellogg.pdf

Source: Johnston, R. and J.G. Sutinen. 2009. *One Last Chance: The Economic Case for a New Approach to Fisheries Management in New England*. Pew Environment Group, Washington, DC.


Fish Stock & Envir. Perf.
Proc. Owners
Market Performance
Proc. & Support Perf.
Crew
Owners/Captains
Asset Performance - Harvest
Harvest Performance
Asset Performance - Post-harvest
Risk
Processing Workers
5.0
4.0
3.0
2.0
1.0
0.0
ALASKA SALMON
NEW ENGLAND GROUNDFISH


ALASKA SALMON - FISHERY PERFORMANCE FACTORS
NEW ENGLAND GROUNDFISH - FISHERY PERFORMANCE FACTORS
Macro Factors
Management Inputs
Access Rights
Markets
Infrastructure
Collective Action
Management Partcipation
Harvest Rights
5
4
3
2
1
0

THANK YOU!

Quality

- Better and more consistent quality is essential for improving markets
- Fundamental changes in management and fishing practices are needed

Alaska Sockeye salmon 2006 – Photo: M. Gleason

Sockeye salmon in a Bristol Bay gillnet at low tide – Source G. Knapp

Some Guiding Principles

- **Commercial fishing** is a **business** and should create sustainable positive net income and create wealth.

- Ecological sustainability is **necessary**, but **not sufficient**, for commercial fisheries to generate sustainable income and create wealth.

- Community sustainability is necessary for **economic sustainability.**

(1995)

Over twenty (20) species including:

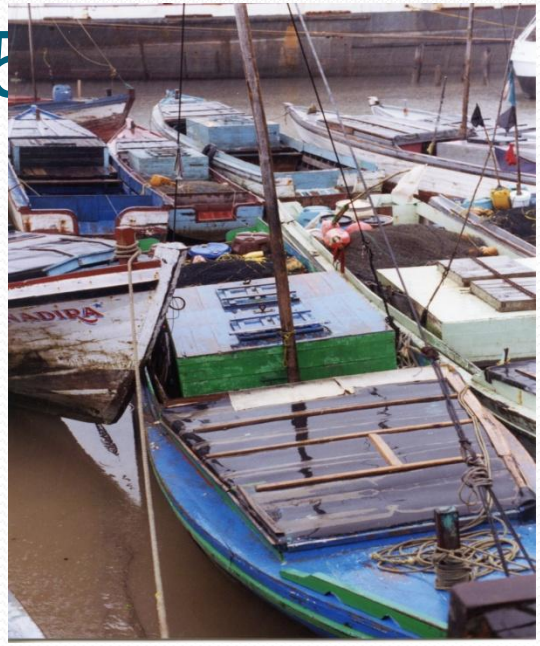
- Gillbacker
- Bangamary
- Grey Snapper
- Sea Trout
- Sharks
- Penaeid shrimps
- Seabob
- Whitebelly shrimp

Photos: J.L. Anderson

Guyana Fisheries (1995

- Artisanal fishery 70-80% of Harvest
- Eight inshore fisheries complexes
- Artisanal fleet: 1,300 boats
- 5,000 Artisanal fishermen
- 75 % Coop members

- Considerable subsistence inland fishery.



Photos: J.L. Anderson

Guyana Fisheries (1995)

•Industrial fleet:
• 114 trawlers (21 meters in length, on average)
•Target Penaeid shrimps, seabob and limited finfish.
•Most of this industrial harvest was exported.

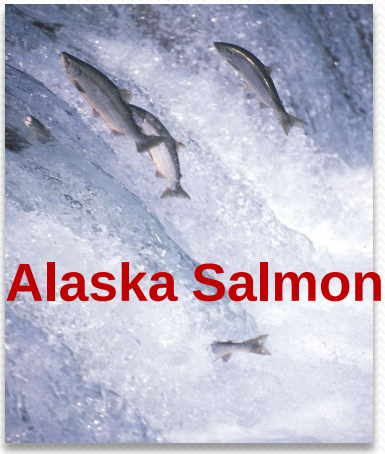
Peeled Shrimp for Export
Photo: J.L. Anderson

Guyana Shrimp Trawler 1995
Photo: J.L. Anderson

Test Cases

- Alaska Salmon
- New England Groundfish
- New England Lobster
- Iceland Lobster
- Philippine Swimming Crab
- Indonesia Swimming Crab
- Ghana Coastal Fisheries
- Lake Malawi Fisheries
- Bangladesh Inland Fisheries

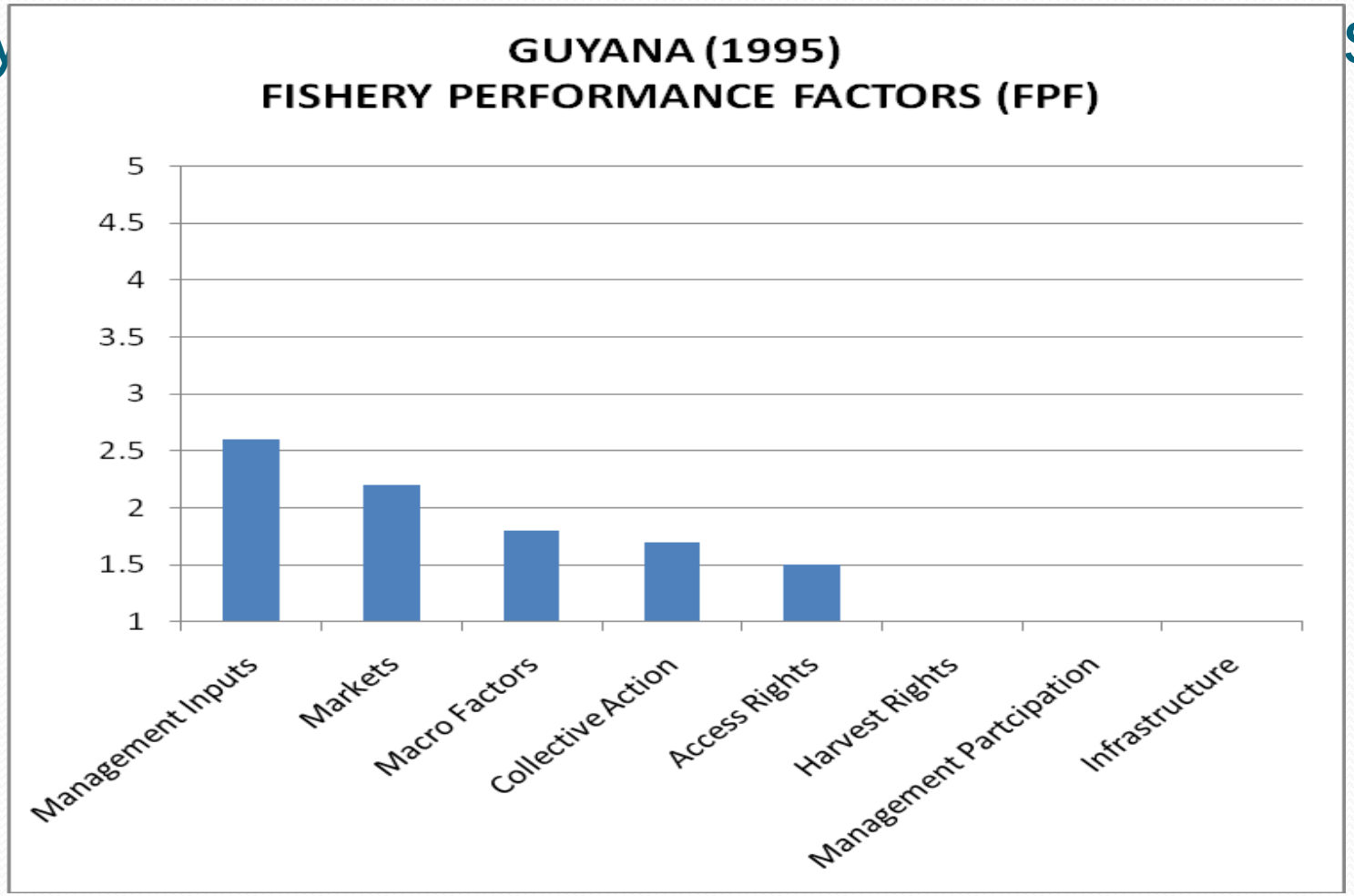
Already done



Alaska Salmon

New England Groundfish

Guy


GUYANA (1995)
FISHERY PERFORMANCE FACTORS (FPF)
5
4.5
4
3.5
3
2.5
2
1.5
1
Management Inputs
Markets
Macro Factors
Collective Action
Access Rights
Harvest Rights
Management Partcipation
Infrastructure

S