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Markets, certification and traceability: challenges for small-scale farmers

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World Wildlife Fund (WWF)

- Approximately 1.2 million members in the U.S. and another 4 million worldwide, WWF is the largest privately financed conservation organization in the world.
- Since 1985, WWF has invested over US\$1.5 billion in more than 11,000 projects in 130 countries.
- Identifying global trends, impacts and opportunities
- Interests in reducing impacts of human use of natural resources





Globally, what has WWF learned from markets?





Global Market Trends

- Seafood exports generate twice as many \$ for LDCs as coffee, tea, rubber, bananas, rice, meat combined—35% from aquaculture
- Producers pitted against producers; race to the bottom
- Declining prices force focus on efficiency, input uses, reduced costs, market access, and market share
- Supply chain management and traceability pass liability back to producers
- Proliferation of corporate purchasing standards (e.g. Eurepgap, Walmart and GAA, Environmental Defense and Wegmans, Seafood Watch and Bon Appetit, Ahold and New England Aquarium) to address health and safety, product quality, and environmental impact.
- Some seafood tested 6 times before reaching the consumer – producer pays





What do retailers want?

- High quality
- Traceability
- Low environmental impact
- Social equity
- Fair labor
- Safe for consumption

Who pays? - producers





Public Perception

- Too many labels – confusion
 - FairTrade
 - Organic
 - Soil Association, Naturland, Aquaculture Biologique, Biosuisse, USDA Organic (in process)
 - BAP
 - EurepGAP
 - Label Rouge
 - Etc.
- What does organic mean, and why do consumers desire this?
- Claims by industry and environmentalists have added to this confusion
- Results – less consumer target – more retailer targeted (exception possibly organic)





Public Perception

- Monterey Bay Aquarium Seafood Watch
- Blue Ocean Institute
- Environmental Defense
- National Aquarium

BEST CHOICES	GOOD ALTERNATIVES	AVOID
Arctic Char (farmed) Catfish (US farmed) Clams (farmed) Cod: Pacific (longline-caught from AK)* Crab: Dungeness, Snow (Canada), Stone Halibut: Pacific Herring: Atlantic/Sardines Lobster: Spiny (US) Mussels (farmed) Oysters (farmed) Pollock (wild-caught from Alaska)* Salmon (wild-caught from Alaska)* Striped Bass (farmed or wild-caught*) Sturgeon, Caviar (farmed) Tilapia (US farmed) Trout: Rainbow (farmed) Tuna: Albacore, Bigeye, Yellowfin (troll/pole-caught)	Basa/Tra (farmed) Clams (wild-caught) Cod: Pacific (trawl-caught) Crab: Blue*, King (Alaska), Snow (US) Crab: imitation/Surimi Flounders, Soles (Pacific) Lobster: American/Maine Mahi mahi/Dolphinfish/Dorado Oysters (wild-caught)* Scallops: Bay Scallops: Sea (Northeast and Canada) Shrimp (US farmed or wild-caught) Squid Swordfish (US)* Tuna: Albacore, Bigeye, Yellowfin (longline-caught)* Tuna: canned light Tuna: canned white/Albacore*	Chilean Seabass/Toothfish* Cod: Atlantic Crab: King (imported) Flounders, Soles (Atlantic) Groupers* Halibut: Atlantic Lobster: Spiny (Caribbean imported) Monkfish Orange Roughy* Rockfish (Pacific)* Salmon (farmed, including Atlantic)* Scallops: Sea (Mid-Atlantic) Sharks* Shrimp (imported farmed or wild-caught) Snapper: Red* Sturgeon*, Caviar (imported wild-caught) Swordfish (imported)* Tuna: Bluefin*

Northeast = Connecticut to Maine
Mid-Atlantic = North Carolina to New York
US = United States

* Limit consumption due to concerns about mercury or other contaminants. Visit www.oceansave.org/list.htm
* Certified as sustainable to the Marine Stewardship Council standard. Visit www.msc.org





Change in views

1997



“If you’re a seafood company, you don’t crawl under the covers with greenies.”

2004



“Market demand for sustainable, or environmentally responsible, fish is crossing over from a niche to the mainstream.”



“The sustainable seafood movement is here to stay. Make no mistake about that.”



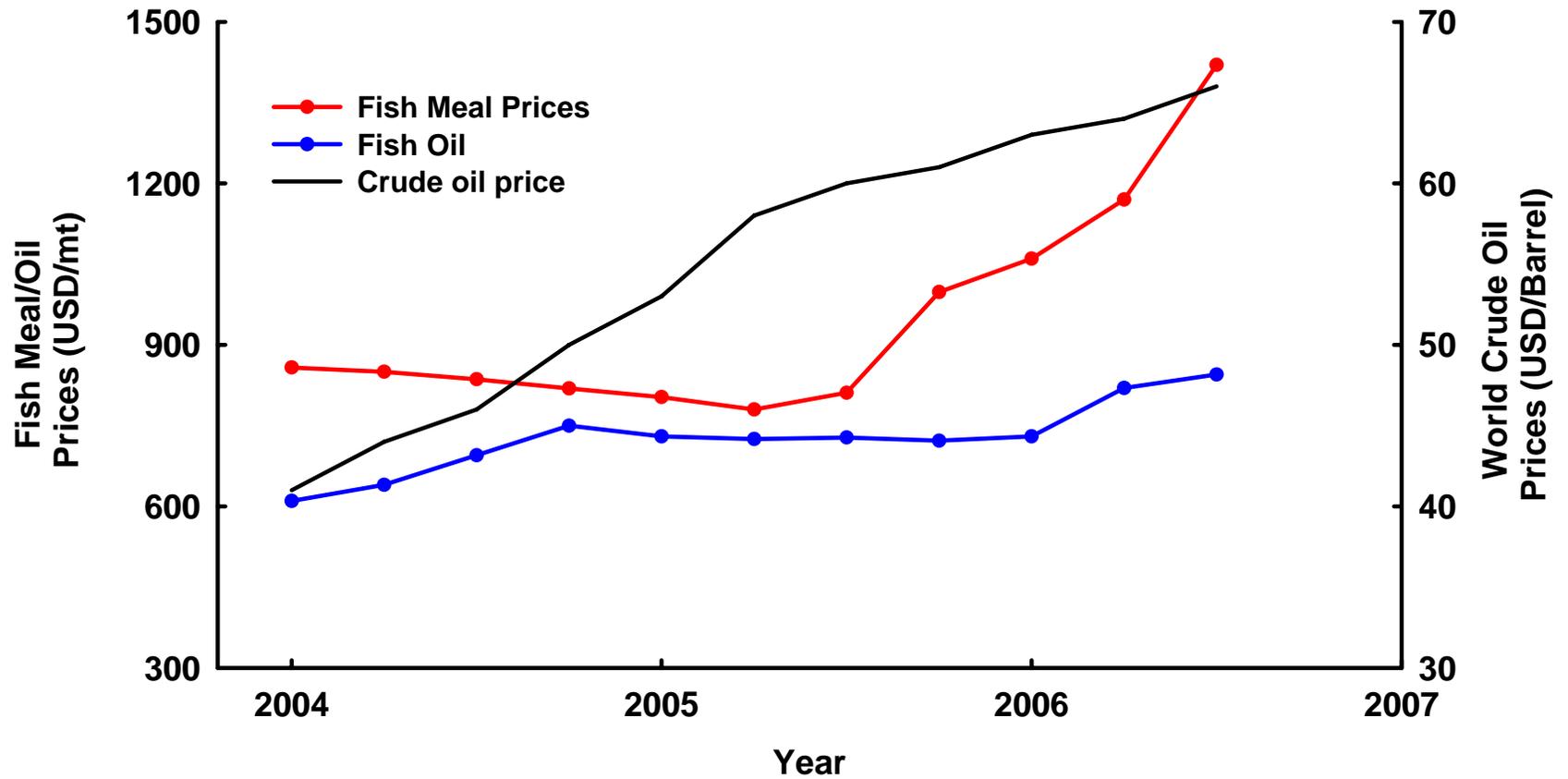


Production Trends

- More efficient, reduction of impacts, but wide variation in performance levels—better and worse producers
- Carnivores - fish oil most limiting factor followed by fishmeal
- Sustainability of reduction fisheries is key
- Old technologies are spreading to new species
 - Net pen technology is being used for cold and warm water species around the world from cod to cobia
- “Ranching” is increasing—creating issues for tuna around take of juveniles from wild and feed
- Offshore aquaculture a reality
- Aquaculture has impacts, meaningful standards are essential



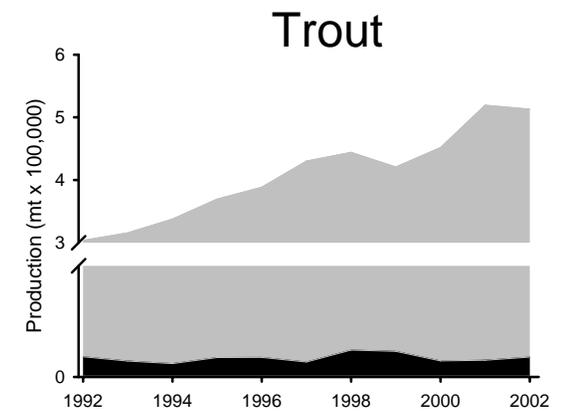
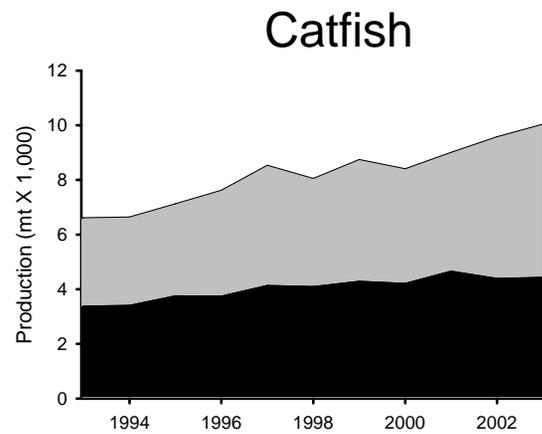
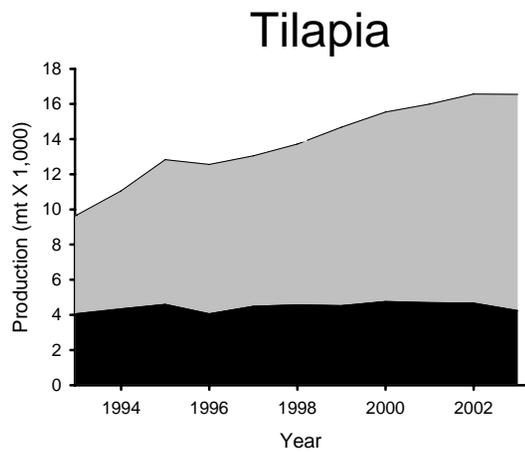
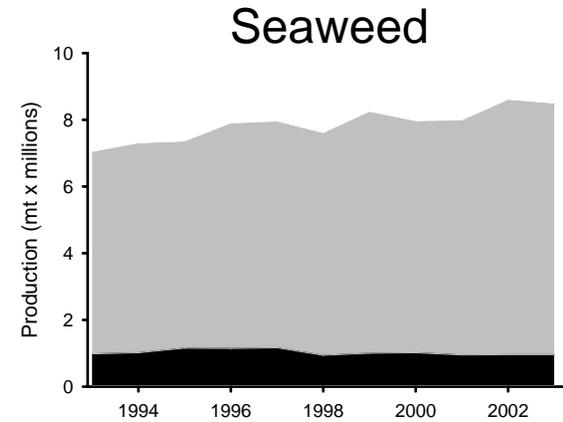
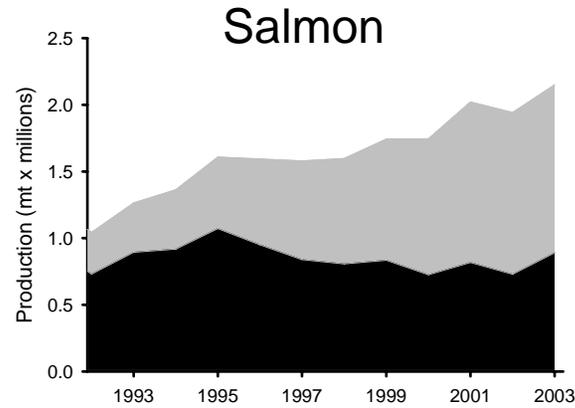
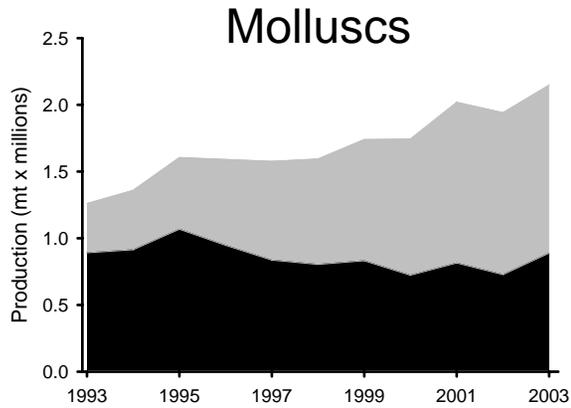
Per Capita Seafood Consumption Trend (US)				
1990		2006		
Product	Consumption (lbs)	Product	Consumption (lbs)	Change (%)
Canned Tuna	3.70	Shrimp	4.20	+90.9
Shrimp	2.20	Canned Tuna	3.30	-10.8
Cod	1.38	Salmon	2.15	+194.5
Alaskan Pollock	1.27	Alaskan Pollock	1.28	+0.8
Salmon	0.73	Catfish	1.09	+55.7
Catfish	0.70	Tilapia	0.70	na
Clams	0.61	Crab	0.63	+117.2
Flatfish	0.57	Cod	0.60	-56.5
Scallops	0.30	Clams	0.47	-23.0
Crabs	0.29	Flatfish	0.33	-42.1
Farmed Products	4.24		8.61	+102.0
Wild Products	7.51		6.14	-18.2

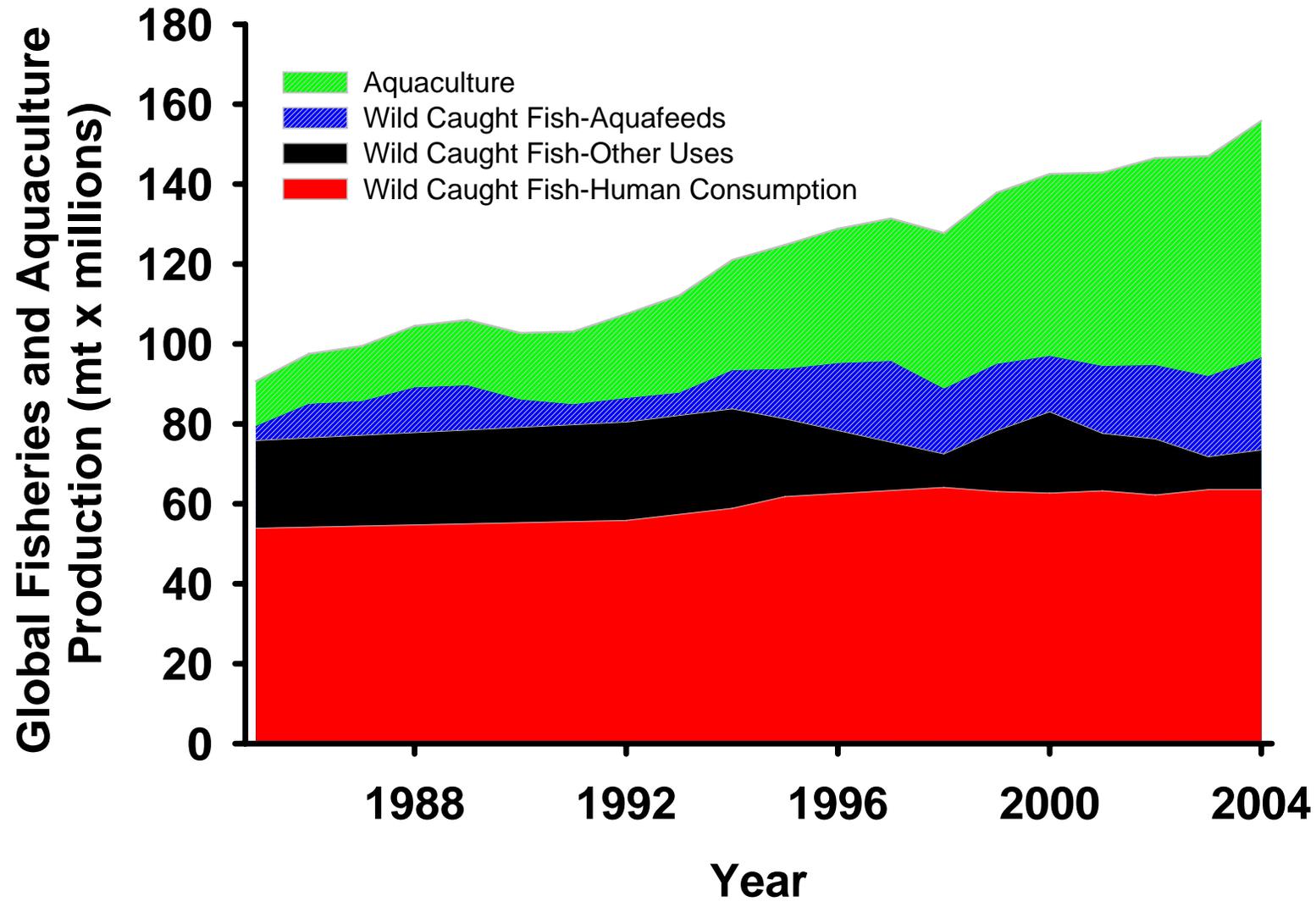




Aquaculture vs. Capture

■ Aquaculture
■ Capture







Why WWF and Aquaculture?

- Fastest growing food production system globally—due to both supply (over fishing) and demand issues
- Can either exacerbate or reduce pressure on wild fisheries
- Increasing number of new species produced by aquaculture (cod, hake, halibut, cobia, tuna)
- New industry—significant potential for innovation
- FAO forecast global increase in seafood consumption of 1.5 kg/person—all from aquaculture
- In US, a 1.5-2 billion kg increase in seafood consumption by 2020, all from aquaculture





Why Aquaculture Certification?

- Governments can only do so much, may discourage the worst but difficulty mandating better or best
- Markets are driving production—can be part of solution
- Voluntary programs are key to sustainability, innovation and future BMPs
- Health and safety issues with aquaculture products
- Sustainability of some forms of production is a key issue and need to be addressed beyond compliance
- Certification can result in fewer, reduced impacts
- Certification can provide pond to plate traceability





Credible Certification - Benefits to Producers

- May get a price premium (more likely for the first to be certified)
- Will reduce costs of production and net profits
- Will reduce transaction costs for marketing
- Will create new markets
- Will hold on to existing markets
- Will be able to forward contract prices further into future when prices are declining
- Will improve staff morale, retention and innovation
- Will enhance reputation with regulators, buyers, the public
- Will sleep better at night



Analysis of Certification Programs

Program	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp
Commodity	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp	Shrimp
Developed in a Meaningful Multi-stakeholder Process	No	No	Yes		No	No	No	No	No	No	Yes
Third Party Certification	No	Yes	Yes		Yes	No	No	No	Yes		(Yes)
Governance is open	No	No	Yes		No		NA	No			(Yes)
Provides process to resolve disputes	No	Yes			Yes	Yes		No			(Yes)
Conforms to best standards setting practices	No	No			No	No	No	No	No	No	Yes
Focused on Most Important Environmental Impacts											Yes
Focused on most Important Social Impacts											Yes
Provides Economic Benefits to Producers	No	No	Yes	Yes	Yes	Yes		No	Yes		Some
Able to Measure Progress	Some	No	No	Yes	Some	No		Some	No		(Yes)
Cost effective for producers			Yes	No	Yes	Yes		Yes	Yes		Mostly
Requires Continuous Improvement	No	No	No	No	No	Some	Yes	Yes			Yes
Improves capacity of producers	May		No	Yes	No	No		No			Yes
Can be effectively verified	No		Yes	Yes	No	No	Yes	No	Yes		(Yes)
Requires producers to obey the law (but verify?)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Product traced through value chain	Pending	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	(Yes)
Program reports aggregate results											(Yes)
Clearly stated principles	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Measurable standards?	Some	Some	Some	No	Some	Some	Some	Most	Yes		Yes
Meaningful metrics based performance stds	Some	few	few	no	some	few	often	often	some		Mostly
Proscriptive, improvement, or results oriented	Pros/Impr	Pros/Results		Improv	Pros/results	Pros	Pros/Results	Improv	Pros/Results	Imp/results	
Address all players?	No	No	Yes	No	Yes	No	No	Yes	Yes		Yes
Address chain of custody	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes		(Yes)
Broad public consultation	No	No	No	No	No	No	No	No	No	No	Yes
Address Following Impacts											
Land rights	No	Some	Yes	No	No	Some	No			Some	Yes
Impacts on communities	No	Yes	Yes	Yes	Yes	Yes	Yes	Some	Yes		Yes
Habitat conversion	Yes	Yes	Yes	No	Yes	No	No	No	Yes		Yes
Land and water use	No		Yes	No	Yes	Some		Some			Yes
Water pollution	Yes	Some	Yes	Yes	No	No	Yes	Yes	Yes		Yes
Exotic species/escapes	No		Yes	No	Yes	No		No			Yes
Require hatchery PL	Yes		Yes	No	Yes	Yes	Yes	Yes			Yes
Chemical use	Yes	Yes	Yes	No	Yes	Yes	Yes	Some			Yes
Allow antibiotics	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No		Yes
Disease transfer	No				No	No		No			Yes
Improve efficiency of resource use (base/inputs)	Some	No	No	Yes	Yes	No	Yes	Yes			Yes
Require FCR or wild fish conversion limits	No		No	No	Yes	No	Yes	No	Yes		Yes
Assess cumulative impacts	No	No	No	No	No	No	No	No	No	No	Yes
Allow GMO animals or feed	Yes		No	Yes	No	No	No	Yes	No		No animals

Program	Salmon	Salmon	Salmon	Salmon	Salmon	Fish	Tilapia	Tilapia	Tilapia
Commodity	Salmon	Salmon	Salmon	Salmon	Salmon	Fish	Tilapia	Tilapia	Tilapia
Developed in a Meaningful Multi-stakeholder Process	No	No	No	No	Yes		No	Yes	No
Third Party Certification	Yes	No	No	No	(Yes)		Yes	(Yes)	Yes
Governance is open		No	No	NA	(Yes)		No	(Yes)	
Provides process to resolve disputes	Yes	No	No	No	(Yes)		Yes	(Yes)	
Conforms to best standards setting practices	No	No	No	No	Yes		No	Yes	No
Focused on Most Important Environmental Impacts					Yes			Yes	
Focused on most Important Social Impacts					Yes			Yes	
Provides Economic Benefits to Producers				Yes	Some		No	Some	
Able to Measure Progress		No	No	Yes	(Yes)		No	(Yes)	
Cost effective for producers				Yes	Mostly			Mostly	
Requires Continuous Improvement		No		Yes	Yes		No	Yes	
Improves capacity of producers				Yes	Yes			Yes	
Can be effectively verified		No			(Yes)		No	(Yes)	
Requires producers to obey the law (but verify?)			Yes	No	Yes		Yes	Yes	Yes
Product traced through value chain		Yes	Yes		(Yes)		Yes	(Yes)	Yes
Program reports aggregate results			No		(Yes)			(Yes)	
Clearly stated principles		No	No	No	Yes		Yes	Yes	Yes
Measurable standards?		No	No	Some	Yes		Some	Yes	Some
Meaningful metrics based performance stds	some	No	some	yes	(Most)		few	(Most)	some
Proscriptive, improvement, or results oriented		Pros	Pros	Impr/Results	Imp/results		Pros/Results	Imp/results	Pros/results
Address all players?		No	No	No	Yes		No	Yes	Yes
Address chain of custody		Yes	Yes	No	(Yes)		Yes	(Yes)	Yes
Broad public consultation		No	No	No	Yes		No	Yes	No
Address Following Impacts									
Land rights		No	No	No	Yes		Some	Yes	Some
Impacts on communities		No	Yes	No	Yes			Yes	
Habitat conversion		No	No	Yes	Yes		Yes	Yes	
Land and water use		No		No	Yes		Yes	Yes	
Water pollution			Yes	Yes	Yes		Yes	Yes	
Exotic species/escapes		No	No	Yes	Yes		Yes	Yes	
Require hatchery PL					Yes			Yes	
Chemical use		No	Yes	Yes	Yes		Yes	Yes	
Allow antibiotics		Yes	Yes	No for prg	Yes		Yes	Yes	
Disease transfer		No	No	Yes	Yes		Yes	Yes	
Improve efficiency of resource use (base/inputs)		No	Yes	Yes	Yes		No	Yes	
Require FCR or wild fish conversion limits		Recommended	No	Yes	Yes		No	Yes	
Assess cumulative impacts		No	No	No	Yes		No	Yes	
Allow GMO animals or feed		No animals	Yes	Yes	No animals		No	No animals	



Comparing Certification Programs

No program collectively:

- Has broad stakeholder support
- Has entirely measurable standards, is objective
- Is sufficiently transparent
- **Could apply to most producers**
- Adequately targets social issues
- Reduces producer costs
- Could exist without subsidies
- Guarantees product quality





Lessons in Application to Small Holders

- Traceability is key
- Processors are/will play a larger role in tracing products back to farms
- Stakeholder involvement is difficult but measures have to be taken to get small holders involved
- Scale inequities
- More integration – more control – but less ownership for small farmers
- Those who have most control over certification will gain most benefits
- As a whole, more attractive for retailers to work with integrated facilities





Certification Issues of Concern

- Low level of consensus
 - means less buy-in and trust, thus leading to proliferation of more programs and confusion
 - Less successful globally and more niche markets
- Market-based development of certification takes away from the goal of certification
- Lack of quantification means no way to measure performance
- Food safety is retailer specific
- Satisfying retailers must be balanced with progress towards overarching goal of certification or it is simply a buyer screen





Elements of a Good Certification System

- Address multiple species with market relevance
- Transparent and created in a multi-stakeholder process
- Targets the key impacts (usually only 6-10)—landscape and farm level
- Measurably reduces key impacts against a baseline
- Addresses both social and environmental impacts
- Applies to different kinds of producers and what's possible
- Metric-based standards, by contrast to prescriptive standards, encourage innovation
- Certified by independent third-parties
- Addresses chain of custody/traceability





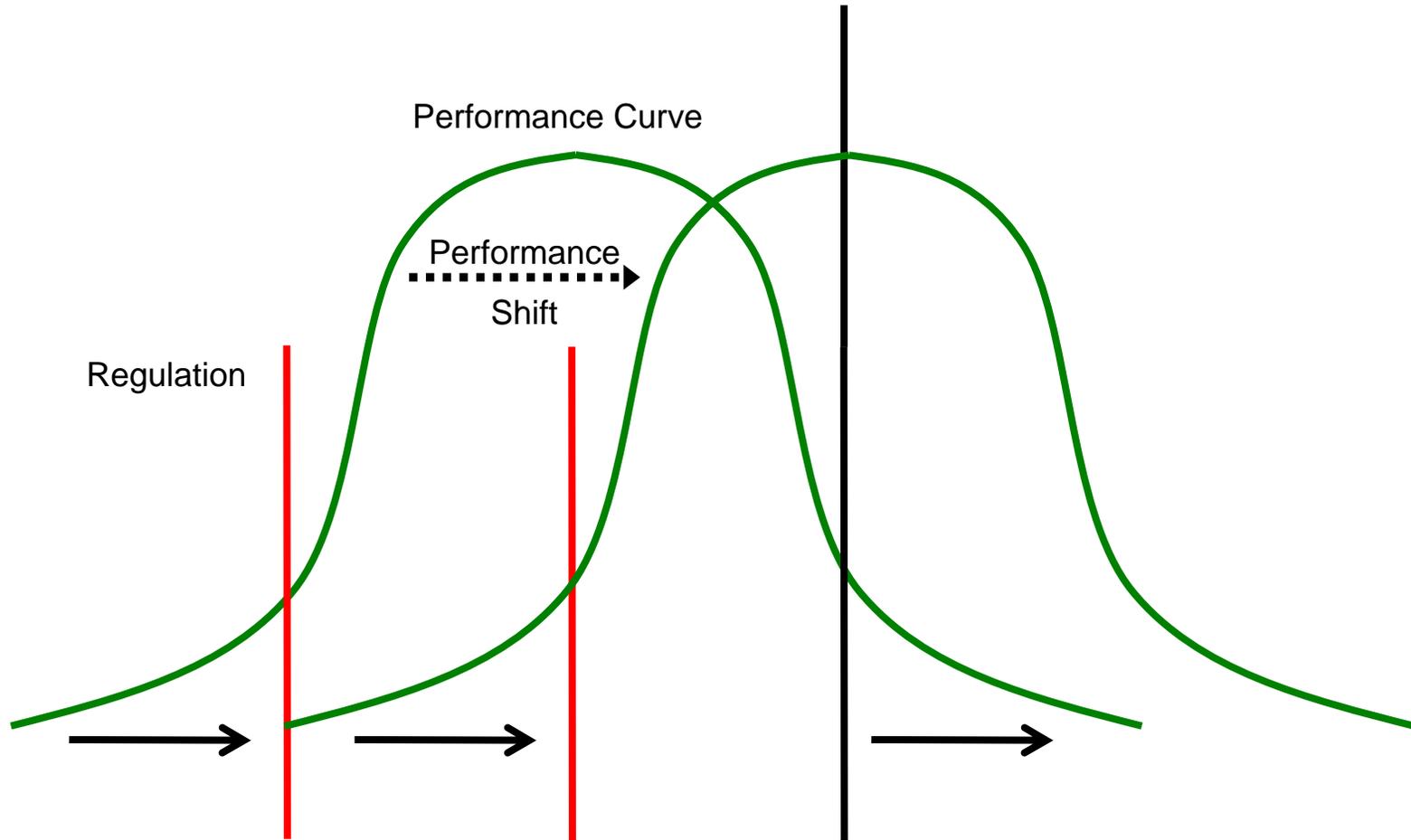
WWF and Certification

- WWF played significant roles in the creation of several certification bodies
 - Forest Stewardship Council
 - Marine Stewardship Council
 - Protected Harvest
 - Marine Aquarium Council





WWF's Goal





WWF's Dialogues – A Forum for Standard Development

- Based on multi-stakeholder shrimp work (Consortium on Shrimp Farming and the Environment
WWF/NACA/FAO/World Bank/UNEP)
- Work began in 2002 with the Salmon Aquaculture Dialogue
- Subsequent dialogues – molluscs, catfish, and tilapia
- Multi-stakeholder oriented
- Science based (consensus)
- Transparent





How do we get standards?

- Bring wide range of stakeholders together
- Consensus on goals and objectives
- Consensus on key areas of impacts
- Consensus on research gaps
- Fund or help find funding to fill research gaps
- Consensus on acceptable levels of impacts
- Consensus on principles, criteria, and standards





Status and Developments

- Status

- Salmon
- Tilapia
- Molluscs
- Catfish
- Shrimp

- Future

- Trout
- Seaweed
- Tuna?
- Basa





In the Context of Small Scale Producers

- What is necessary for small scale producers to compete in certified product markets?
 1. Organization
 2. Support throughout the market chain
 3. Knowledge transfer
 4. Small-holders at the table
 5. Not top down, not bottom up, but integrated systematic approach to certification
 6. On the ground partners – processors, universities, and extension





Thank You

http://www.worldwildlife.org/ci/aquaculture_dialogues.cfm

comments and suggestions
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Tilapia Aquaculture Dialogue – Impacts (final)

1. Effluent (nitrogen, phosphorus, recycling, downstream impacts, temperature, microflora in waste, mortality)
2. Ecological Integrity
 - Siting (where you place or build production facility)
 - Disease transmission
 - Loss of biodiversity and habitat alterations
 - Conversion of natural habitat
 - Predator control (birds, fish)
3. Inputs (Feed, chemicals, medications [MT/YY], energy)
4. Invasives (population, community, hybridization, GMO)
5. Food safety/quality (labeling, carbon monoxide [tasteless smoke], human health)
6. Socio-economic
 - Social (employees, community, good neighbors)
 - Resource-use conflicts (land, water, systems of allocation)
 - Economic (out-competition of local businesses)





Principles for Responsible Tilapia Aquaculture

The Tilapia Aquaculture Dialogue (draft)

- **Guiding Principle** - *Tilapia production facilities will be evaluated based on performance standards and will not be prejudged as environmentally or socially acceptable.*
- **Principle 1:**
 - Locate and operate tilapia farms within established legal frameworks.
- **Principle 2:**
 - Locate, design and construct tilapia farms in ways that minimize negative environmental impacts.
- **Principle 3:**
 - Employ best utilization practices to minimize the negative impacts of tilapia production on water resources.





Principles for Responsible Tilapia Aquaculture (draft)

- **Principle 4:**
- Only farm non-indigenous tilapia species, if those species are already established locally, or have been approved for aquaculture use by a process addressing transfer and introduction of non-indigenous species.
- **Principle 5:**
- Utilize feeds and feed management practices that make efficient use of available feed resources, and optimizes nutrient utilization.
- **Principle 6:**
- Implement health management plans that reduce stress, minimize the risks of disease affecting both the cultured and wild stocks, and increase food safety.
- **Principle 7:** Ensure food safety and the quality of tilapia products, whilst reducing the risks to ecosystems and human health.
- **Principle 8:** Develop and operate farms in a socially responsible way that benefits the farm, the local communities and the country, and that contributes effectively to society, and particularly poverty alleviation.

<http://groups.yahoo.com/group/tilapia>

