The Seafood Industry: 2020

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Seafood vs Other Animal Protein

- Most Complex and Diverse (ex. Species & Technology)
- Most International
- Most Fragmented
- Most Volatile
- Most Bureaucratic Regulatory Environment
- Most Wasteful
- Most Misunderstood by Consumers including Chefs
- Least Transparent

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Seafood in the Future

- Less Complex and Diverse (ex. Species & Technology)
- More International
- Less Fragmented
- Less Volatile
- Less/More? Bureaucratic Regulatory Environment
- Less Wasteful
- Less/More? Misunderstood by Consumers and even Chefs
- More Transparent

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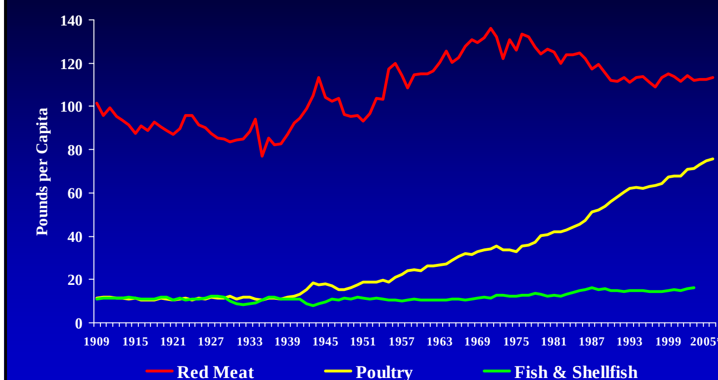
U.S. Per Capita Consumption of Red Meat, Poultry, and Fish and Shellfish, 1909-2006



Source: USDA/Economic Research Service.
*2004-2006 Red Meat and Poultry data are forecasts.

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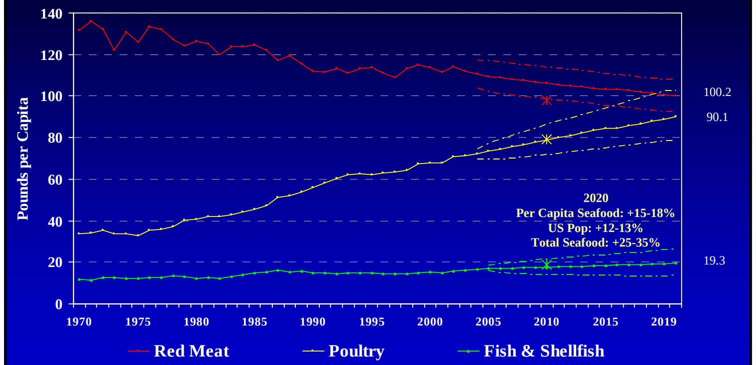
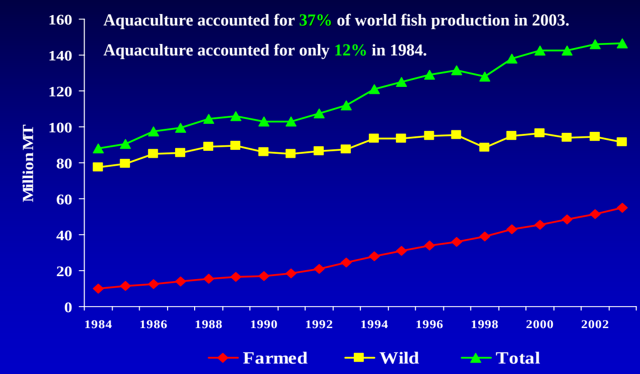
U.S. Per Capita Consumption of Red Meat, Poultry, and Fish and Shellfish Actual (1970-2004) and Forecast (2005-2020)



Source: USDA/Economic Research Service.
Upper and lower bounds represent a 95% confidence interval.
Starred dots indicate 2010 forecasts made by Anderson & Anderson (1994).

World Fisheries Production



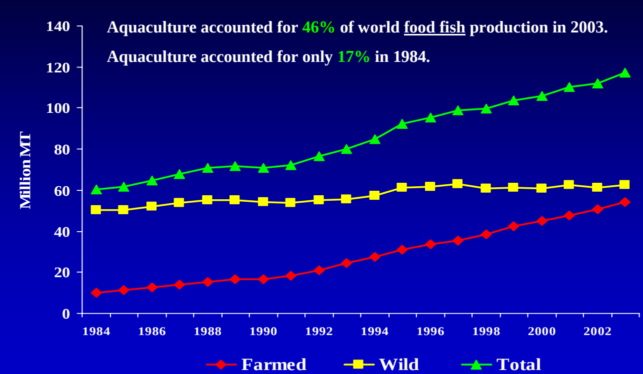
Source: FISHSTAT (2005).

What if only 'Food' fish are considered?

Exclude…

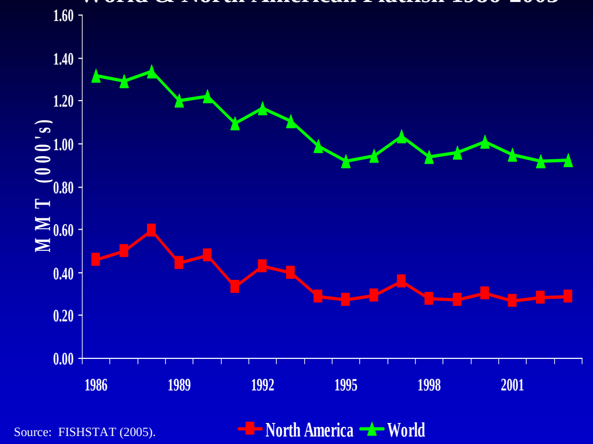
- Species targeted by reduction fisheries (menhaden, sardines, anchovies);
- Non-edible invertebrates (corals, sponges, pearls);
- Most marine mammals (whales) and reptilians (sea turtles);

World Production of "Food" Fish



Source: FISHSTAT (2005).

World & North American Flatfish 1986-2003



Source: FISHSTAT (2005).

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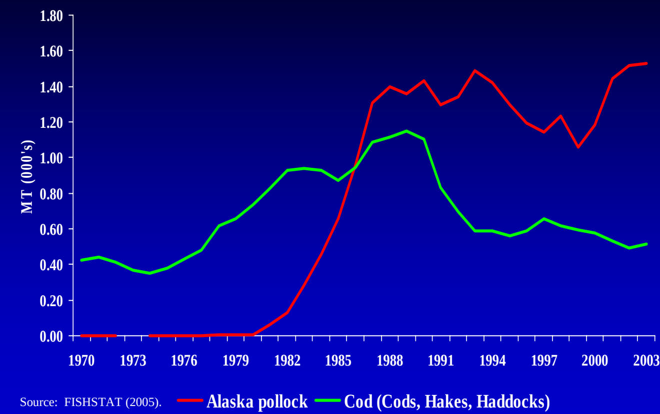
North American Alaskan Pollock and Cod 1970-2003



Source: FISHSTAT (2005).

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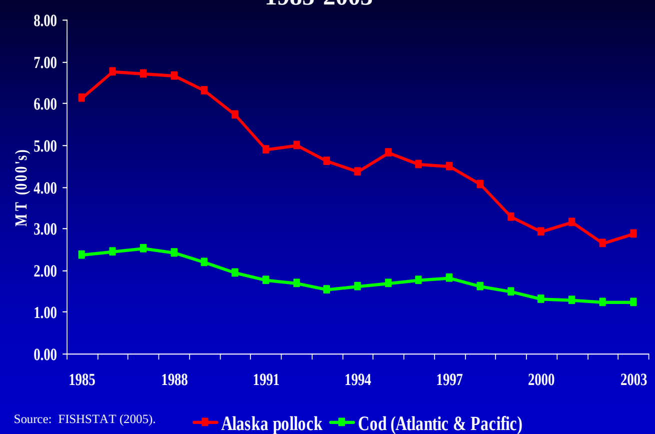
World Harvest Alaskan Pollock and Cod 1985-2003



Source: FISHSTAT (2005).

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Seafood Consumption is Concentrating on Fewer Species

Edible kg per Capita

		1987				2003			% change
	1	Tuna	1.59			Shrimp	1.81		+74
	2	Shrimp	1.04			Tuna	1.54		-3
	3	Cod	0.76	56%		Salmon	1.01	76%	+403
	4	AK Pollock	0.40			AK Pollock	0.77		+93
71%	5	Flatfish	0.33		93%	Catfish	0.52		+91
	6	Clams	0.30			Cod	0.29		-62
	7	Catfish	0.27			Crab	0.28		+84
	8	Salmon	0.20			Tilapia	0.25		N/A
	9	Crab	0.15			Clams	0.24		-21
	10	Scallops	0.15			Scallops	0.15		0
		Other	2.16			Other	0.55		-75
		Total	7.35			Total	7.40		+1

Sources: Fisheries of the United States (2003) and NFI (2005).

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Seafood Business Survey: U.S. Retail Sales, 1994 vs. 2004

Best Sellers

	1994	2004
1	Shrimp	Shrimp
2	Salmon	Salmon
3	Pollock, Cod, Haddock	Tilapia
4	Catfish	Tuna
5	Flounder	Catfish

Fastest Growing Items

	1994	2004
1	Salmon	Salmon
2	Shrimp	Tilapia
3	Tilapia	Shrimp
4	Catfish	Tuna
5	Orange Roughy	Crab

Sources: Perkins, C. (1994) and Robinson, F. (2004)

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Growing Market Share and Product Innovation

- Consistently Available
- Consistent Quality
- Stable or Declining Cost

Create Diversity - Sell the “Sauce”…
Sell the “Image”

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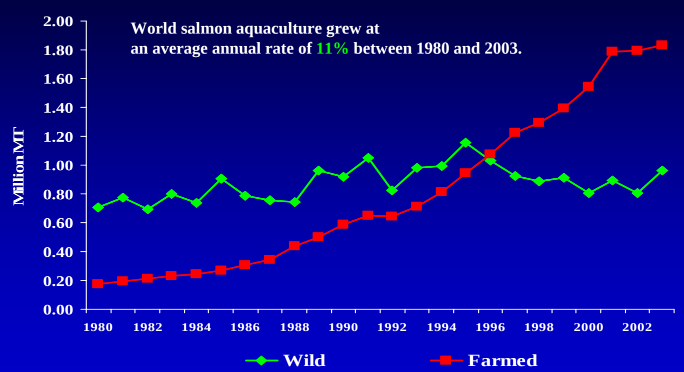
World Salmon and Trout Wild Harvest vs. Mariculture



Source: FISHSTAT (2005).

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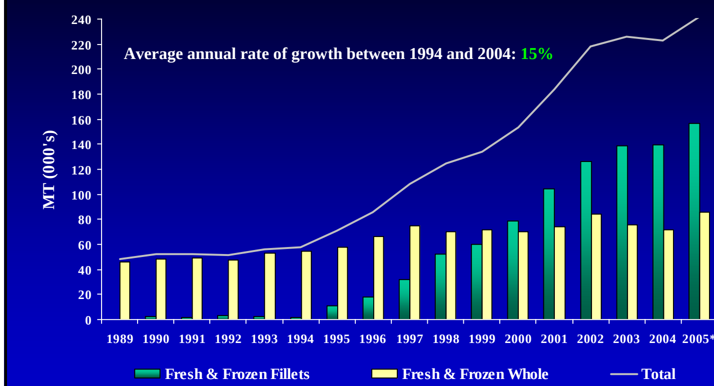
US Imports of Salmon and Trout



Source: USDC (2005); Seafood Market Analyst, SeafoodReport.com: U.S. Imports Edition, 2005.
* Estimated.

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- In Norway, both the landed value and quantity of farmed Atlantic salmon exceeds its traditional Atlantic cod harvest (FAO 2003).
- Farmed Salmon is now approximately 70% of world Harvest
- US had a Salmon trade surplus of over $650 million in 1992…it had a deficit of over $500 million in 2004

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Salmon Market

- Farmed dominates – bulk market
- PBO fillet, portion control & value added
- Negative media has had a limited negative impact on demand
- Positive media on wild is positive for the salmon market
- Wild chinook, sockeye & coho - premium
- Wild Pink and Chum - bottom -

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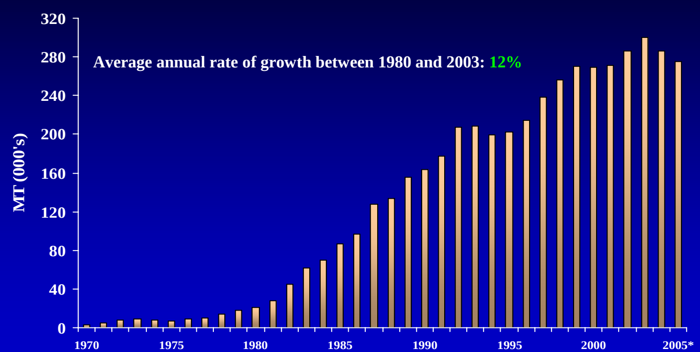
US Farmed Catfish Production



Source: USDA.
* Estimated.

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- In the US, farmed catfish is #2 (or #3) in harvest quantity (excluding menhaden) behind Alaska pollock (and salmon).
- By landed value, farmed catfish is the #1 one finfish harvested (by value) ahead of salmon and Alaska pollock.
- By landed value, Mississippi is the second largest fish producer after Alaska.

USDC 2004

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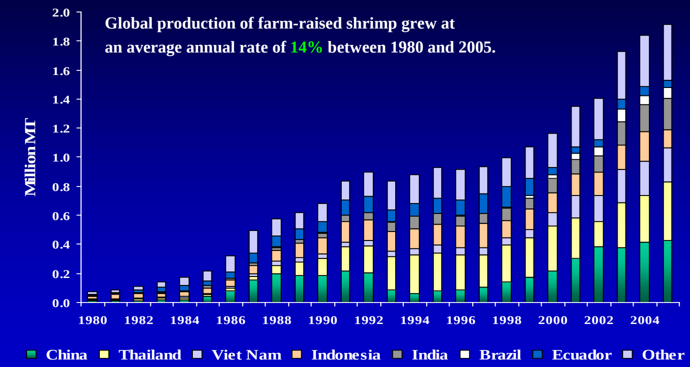
Catfish Market

- Sell the preparation, the ‘sauce’, not the fish
- Vietnam Basa & Tra
- Whitefish substitute

World Shrimp Aquaculture

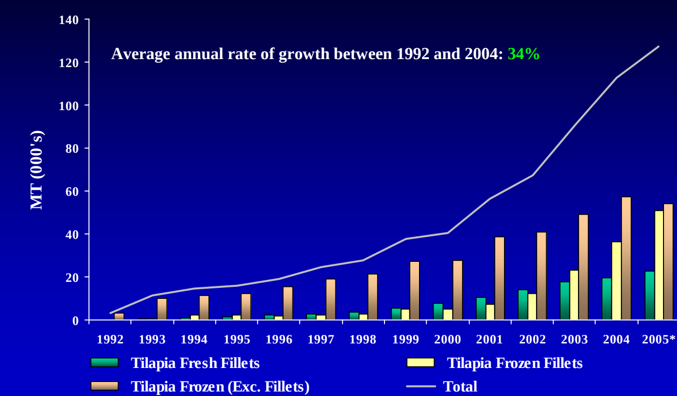


Sources: FISHSTAT (2005) and Global Shrimp Outlook (2004).

Shrimp Market

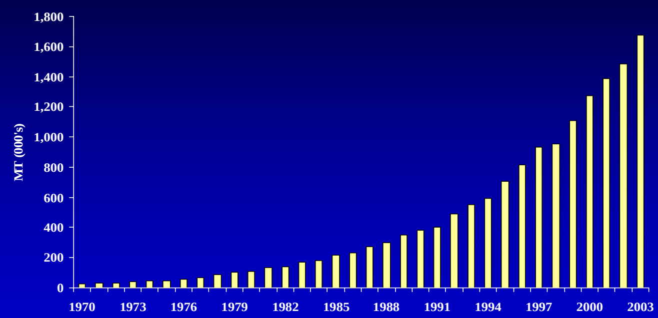
- Rapid growth
- Market development has not kept pace with supply growth
- Value added – Processing outside US
- Environmental, pollution and adulteration questions negatively influence the market
- Antidumping

US Imports of Tilapia



Source: USDC (2005); Seafood Market Analyst, SeafoodReport.com: U.S. Imports Edition, 2005
*estimated

World Tilapia Aquaculture

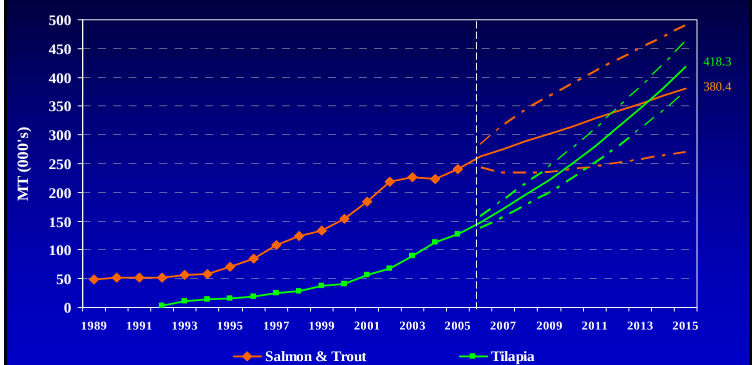


Source: FISHSTAT (2005).

Tilapia market

- Very Rapid growth
- Substitute for flatfish, snapper and other whitefish
- Many environmental NGOs are positive about tilapia

U.S. Imports of Salmon vs. Tilapia
Actual (1989-2005) and Forecast (2006-2015)

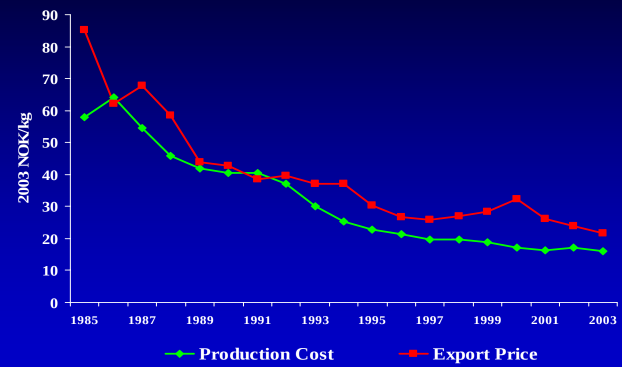


Source: USDC (2005); Seafood Market Analyst, SeafoodReport.com: U.S. Imports Edition, 2005.
Upper and lower bounds represent 95% confidence intervals.

Cost Share: Aquaculture vs. Fishery

Item	Aquaculture	Fishery
Labor	4-10%	25-45%
Maintenance	2-4%	9-23%
Fuel	1-4%	4-11%
Fingerlings	2-15%	—
Feed	40-60%	—

Export Price and Production Cost of Norwegian Atlantic Salmon



Source: Norwegian Directorate of Fisheries (2004).

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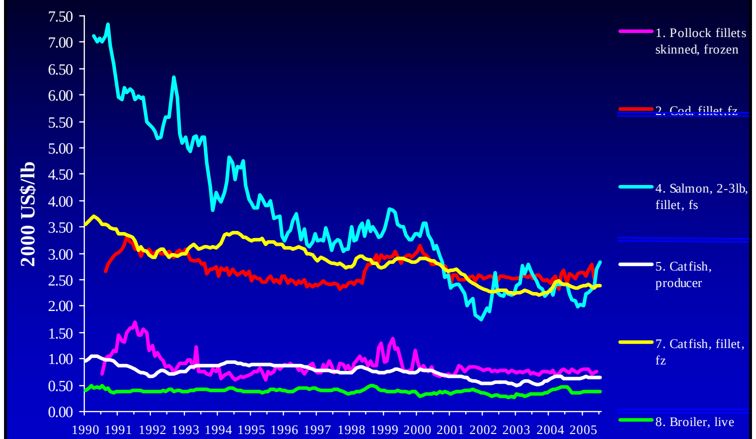
Real Price Trends of Seafood



Sources: USDA, 1990-2005; Urner-Barry Publications, 1990- 2005; *SeafoodReport.com.*

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Trends Shaping the Future of the U.S. Seafood Industry?

- There will be continued growth but most of it will be fueled by aquaculture imports. This continues an existing trend.
- Per capita seafood consumption will see increases but it will be concentrated on fewer species produced primarily in aquaculture facilities. This phenomenon also took place in agriculture. The Diversity is in the “sauce”
- Growth in aquaculture parallels a shift in the market towards value-added products that enhance consumer convenience.

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Which Trends are Shaping the Future of the U.S. Seafood Industry?

- Technological innovations, better nutrition and disease management will continue to reduce costs in aquaculture production.
- Lower production costs and increased supplies from aquaculture will hold prices down.
- The trend towards value-added creation will drive processing to countries where labor costs are lower.

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Which Trends are Shaping the Future of the U.S. Seafood Industry?

- Despite criticism from environmental organizations, aquaculture will not go away.
- Potential constraints for aquaculture development (e.g., "fishmeal trap") will be circumvented by new technology and substitution.
- Aquaculture will dominate the commodity market, but there will be increasing opportunities for wild products in the upper-end segment of the market (e.g., natural food retailers and luxury restaurants).

Which Trends are Shaping the Future of the U.S. Seafood Industry?

- Retail outlets are increasingly important for the seafood industry.
- Steady growth in supermarkets and clubs/warehouses, but specialty stores are declining.
- Chain restaurants will see higher growth than independently-owned restaurants.
- Supply stability and product standardization are foremost for large retailers and chain restaurants. Aquaculture is in a better position to satisfy these demands than capture fisheries.
- Longer-term contracts will be increasingly common.