Change, Challenges and Opportunities for Wild Fisheries

Gunnar Knapp
Professor of Economics
University of Alaska Anchorage

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This is a slightly modified version of a presentation which I gave in Reykjavik, Iceland on September 20, 2002.

Summary

- The global seafood industry is in a period of rapid and profound change affecting every part of the seafood industry.
- The key causes of change are:
  - Globalization of the world economy
  - The growth of aquaculture
- These changes are leading to increased pressure at all levels of the global seafood industry to:
  - Increase efficiency
  - Respond to market demands
- These changes are particularly significant for wild fisheries because wild harvests are inherently variable and uncertain, and cannot be significantly increased.
- These changes represent opportunities for companies, industries and countries which increase efficiency and respond to market demands—and risks for those which do not.

Outline of Presentation

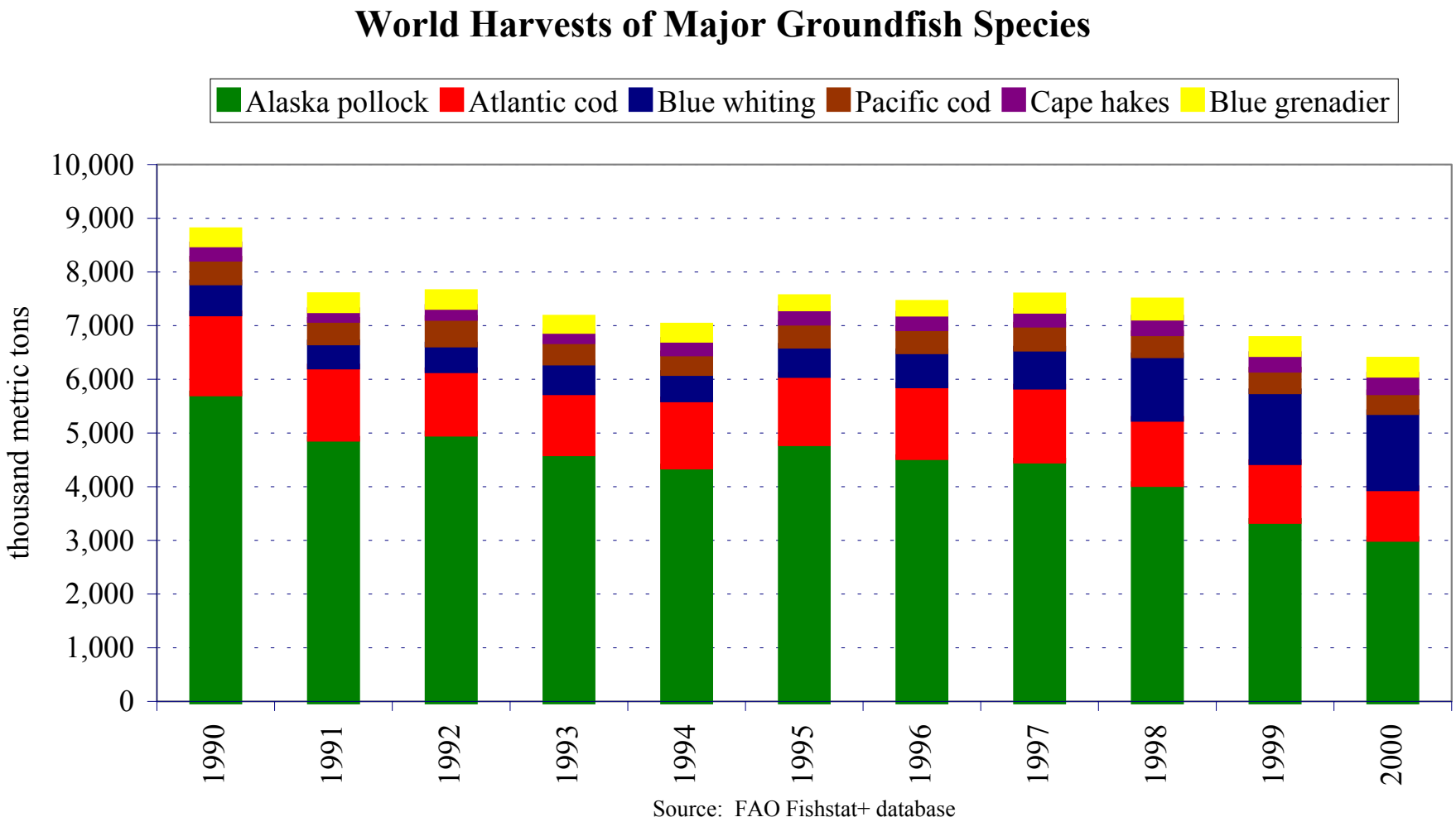
1. Fundamental Constraints of Wild Fisheries
2. The Globalization Revolution
3. The Aquaculture Revolution
4. Old and New Challenges and Opportunities for Wild Fisheries

1. Fundamental Constraints of Wild Fisheries

Wild fisheries face three fundamental constraints.

- Production is variable.
- Production is uncertain.
- Production cannot be increased.

Wild fisheries production varies over time. Harvests of some species increase while harvests of other species decrease—causing instability in markets and fishery-based economies.

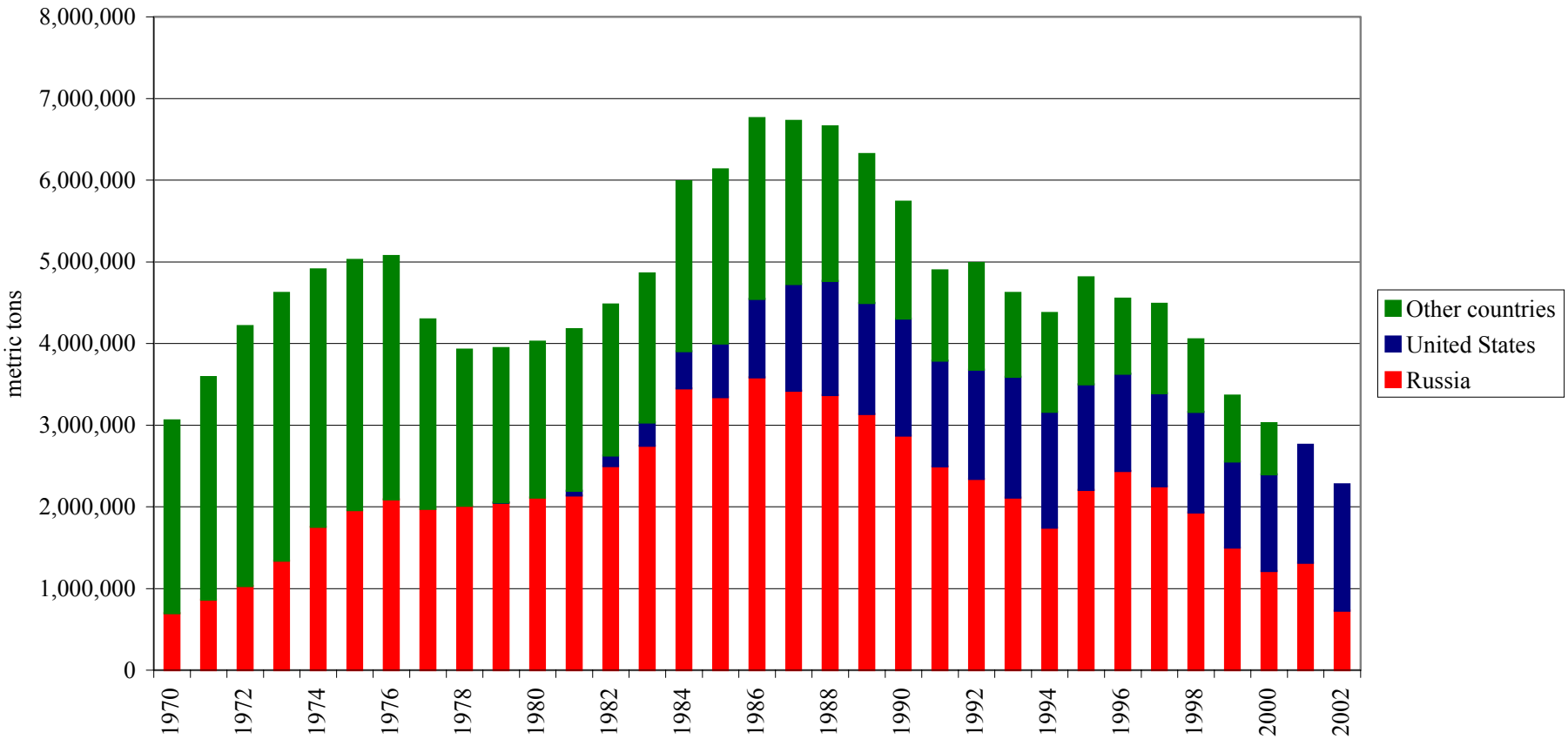


Future wild fisheries production is highly uncertain. Many different factors can affect production in different ways.

- *Factors tending to reduce supply*
  - Over-fishing
  - Harvest restrictions to allow stock recovery
  - Pollution
- *Factors tending to increase supply*
  - Recovery of stocks through better management
  - Exploitation of new stocks
- *Factors with uncertain effects*
  - "Ecosystem effects" of fishing
  - "Normal" changes in ocean conditions
  - Global climate change

Political and economic uncertainty adds to the uncertainty of wild supply—as in Russia, where political and economic change have led to inadequate management and overfishing.

World Harvests of Alaska Pollock, by Country



Source: Data through 2000 are from FAO "FAOSTAT" database; U.S. harvests in 2001 and 2002 (U.S. quota) are from NMFS ; Russian harvests 2001-2002 are estimates. Data for "other countries" after 2000 were not available.

It is unlikely that wild fish production can expand significantly. Most wild fish stocks are fully exploited.

Variable, uncertain and limited production will represent increasingly important constraints to wild fisheries.

- With globalization, markets will care more and more about consistency and predictability of production.
- In the past markets had no alternatives to wild fish. With aquaculture, they now have alternatives.
- These changes will create new challenges for wild fisheries.

Rationalization of wild fisheries management can help in responding to these challenges.

- Countries which have rationalized fishery management, such as Iceland and New Zealand, are among the most successful competitors in world markets.
- Economic pressures will gradually lead to rationalization of fisheries in other countries, increasing their competitiveness through:
  - Lower costs
  - Market-driven harvest timing
  - Higher recovery rates
  - Higher-valued products

1. The Globalization Revolution

"GLOBALIZATION"

- Increasingly reliance on markets
- Reduction in trade barriers
- Technological revolution in communications and transportation
- World economic integration in markets for resources, goods, services, labor and capital
- Movement of production to low-cost producers
- Consolidation and integration resulting in larger, more powerful firms operating in many countries

Globalization is transforming seafood retailing, distribution and processing:

- Increasing consolidation and market power in the retail and food service industry
- Rapid expansion of seafood trade
- Restructuring of seafood distribution networks
- International standards for food handling and safety
- Shift in labor-intensive seafood processing to countries with low labor costs
- Web-based Business-to-Business interaction

Globalization is expanding opportunities to market seafood products worldwide

but

Globalization is expanding competition from seafood producers worldwide.

Globalization is expanding opportunities for suppliers who can meet the needs of large retail and food service seafood buyers for:

- Appealing and convenient product forms
- Consistent and reliable supply of large volumes
- Consistent quality
- Traceability
- Consumer perceptions of quality, safety, healthfulness, and environmental and social responsibility
- Low and stable costs

It will become increasingly important for all levels of the seafood industry to focus on meeting these needs.

3. The Aquaculture Revolution

Aquaculture accounts for a significant and growing share of world seafood production.

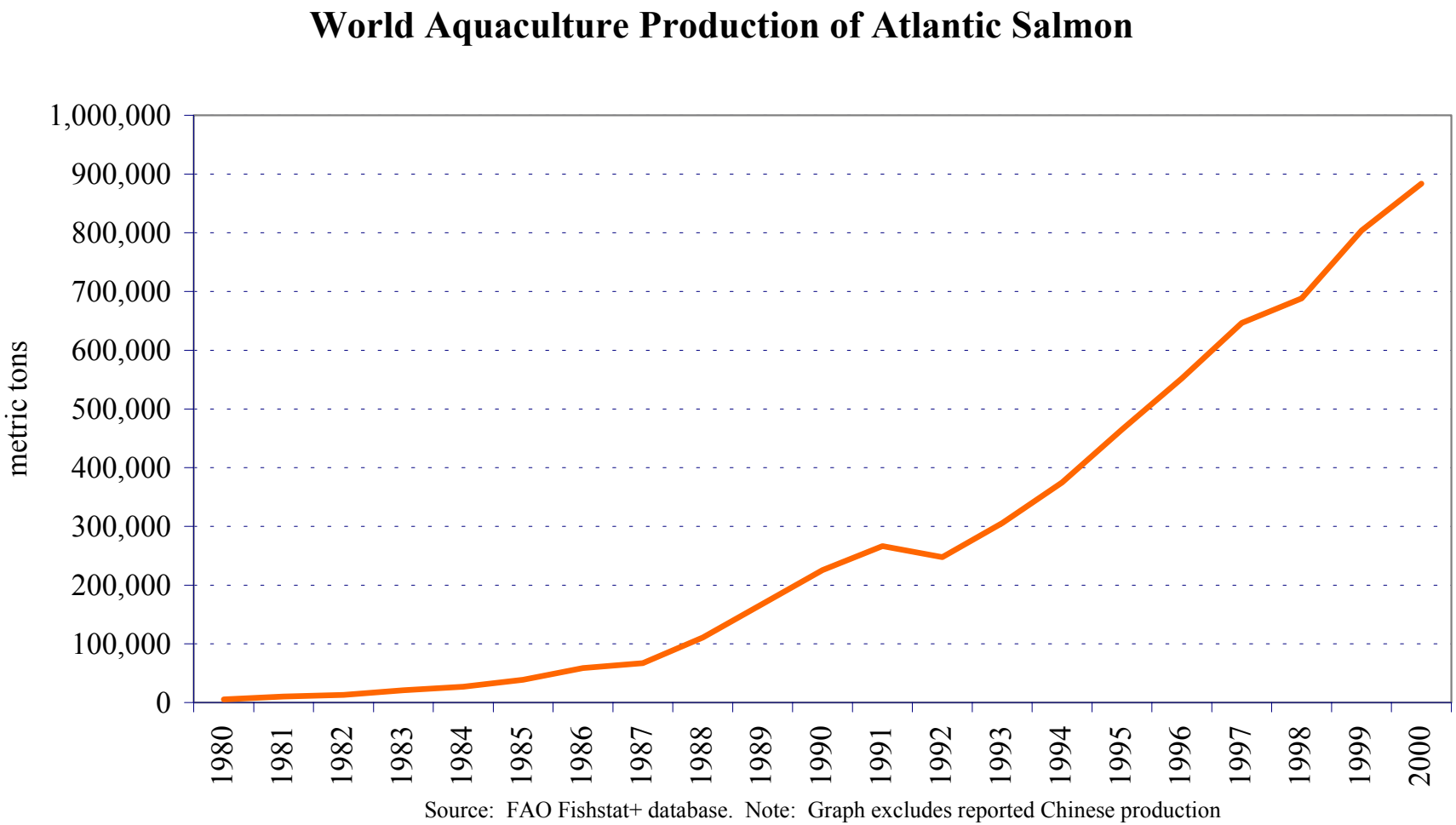
World Aquaculture and Capture Fisheries Production, as Reported by FAO (millions of metric tons)

	1990	2000	% Change
Countries other than China			
Aquaculture	8.9	13.3	49%
Capture	81.0	80.6	0%
Total	89.9	93.9	
Aquaculture share	10%	14%	
China			
Aquaculture	8.0	32.4	308%
Capture	6.7	17.2	156%
Total	14.7	49.6	
Aquaculture share	54%	65%	

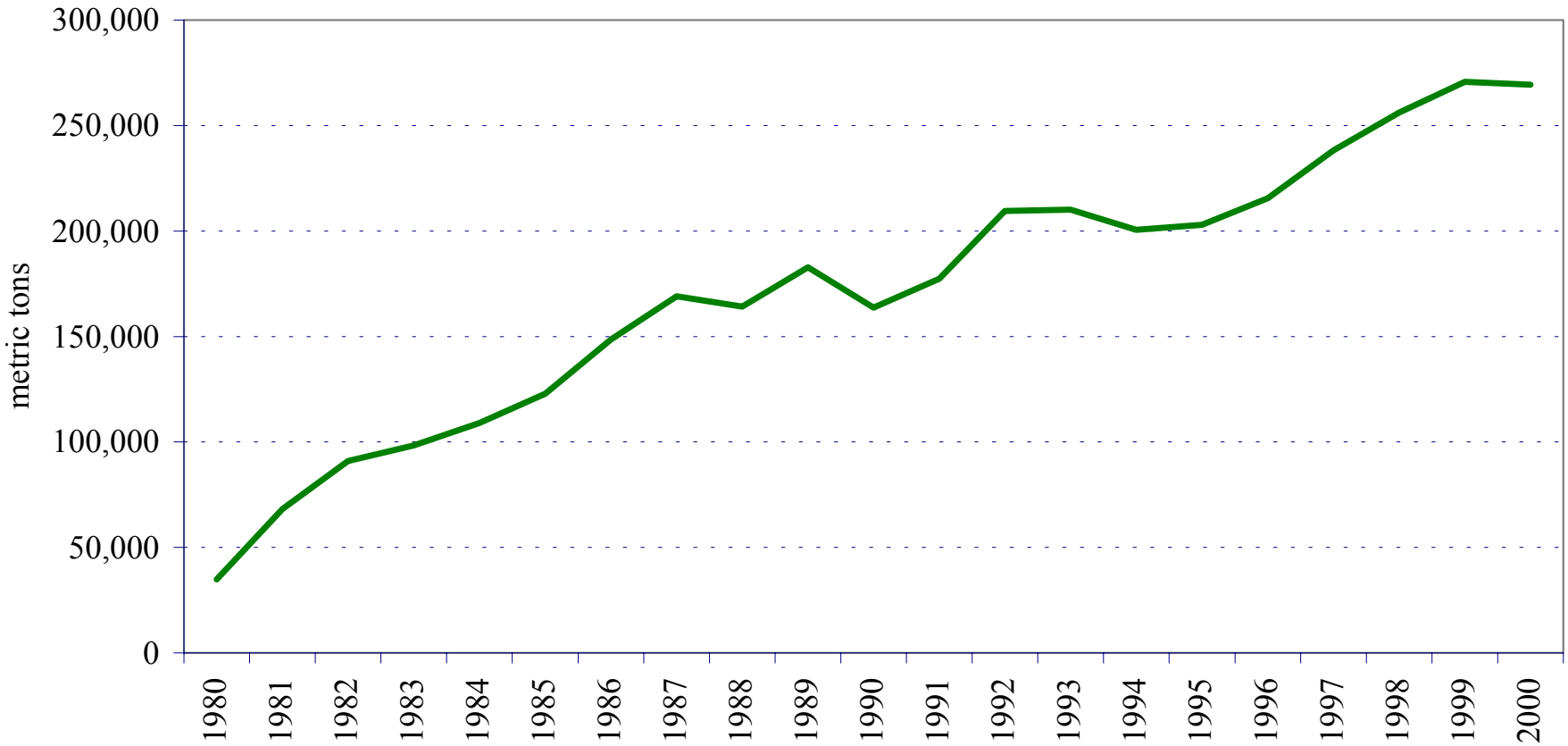
Source: FAO, Fishstat+ Database, 2002.

There is some uncertainty over the reliability of Chinese data for aquaculture and capture production.

Aquaculture production of some species has grown very rapidly.

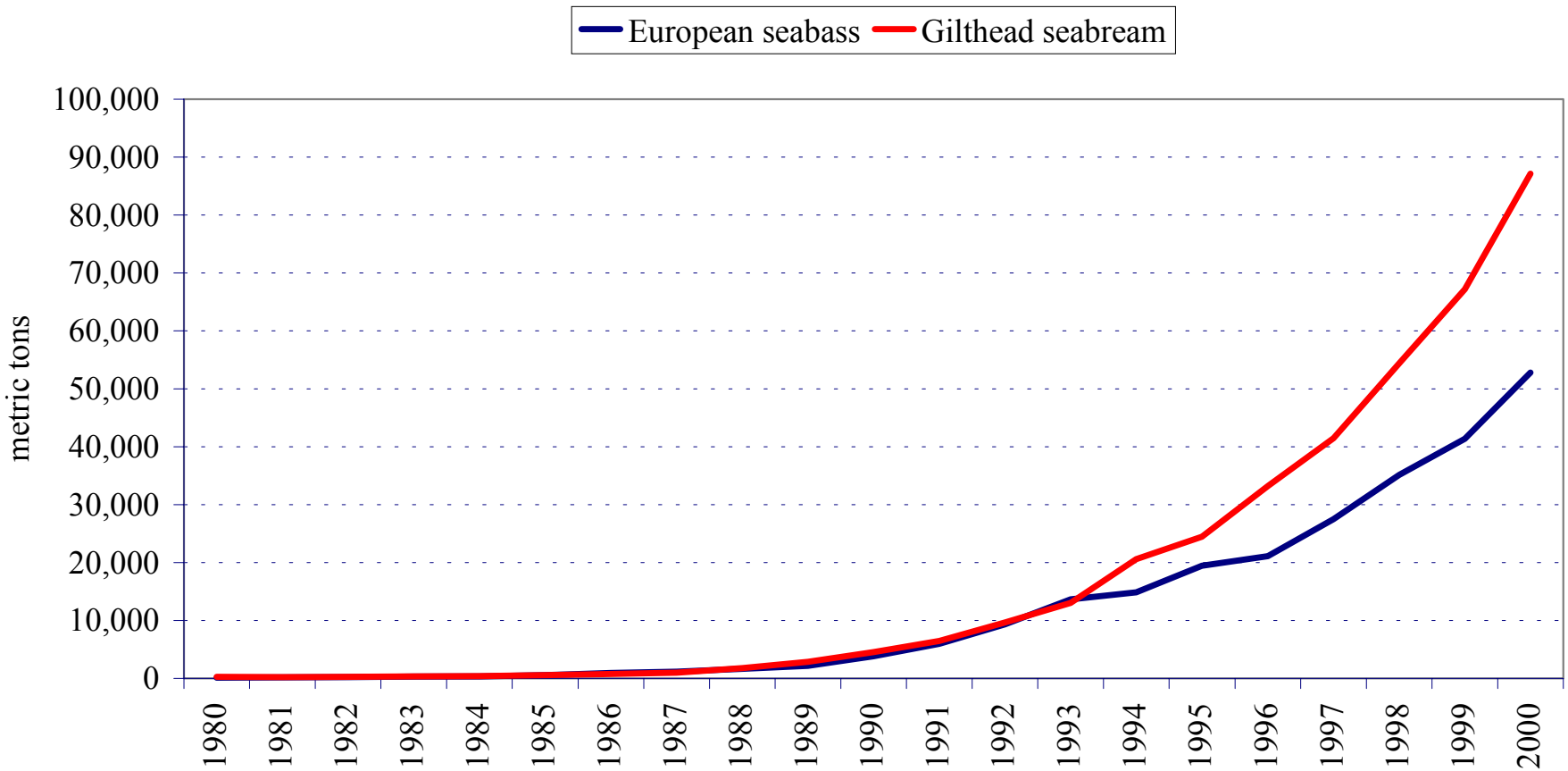


World Aquaculture Production of Channel Catfish



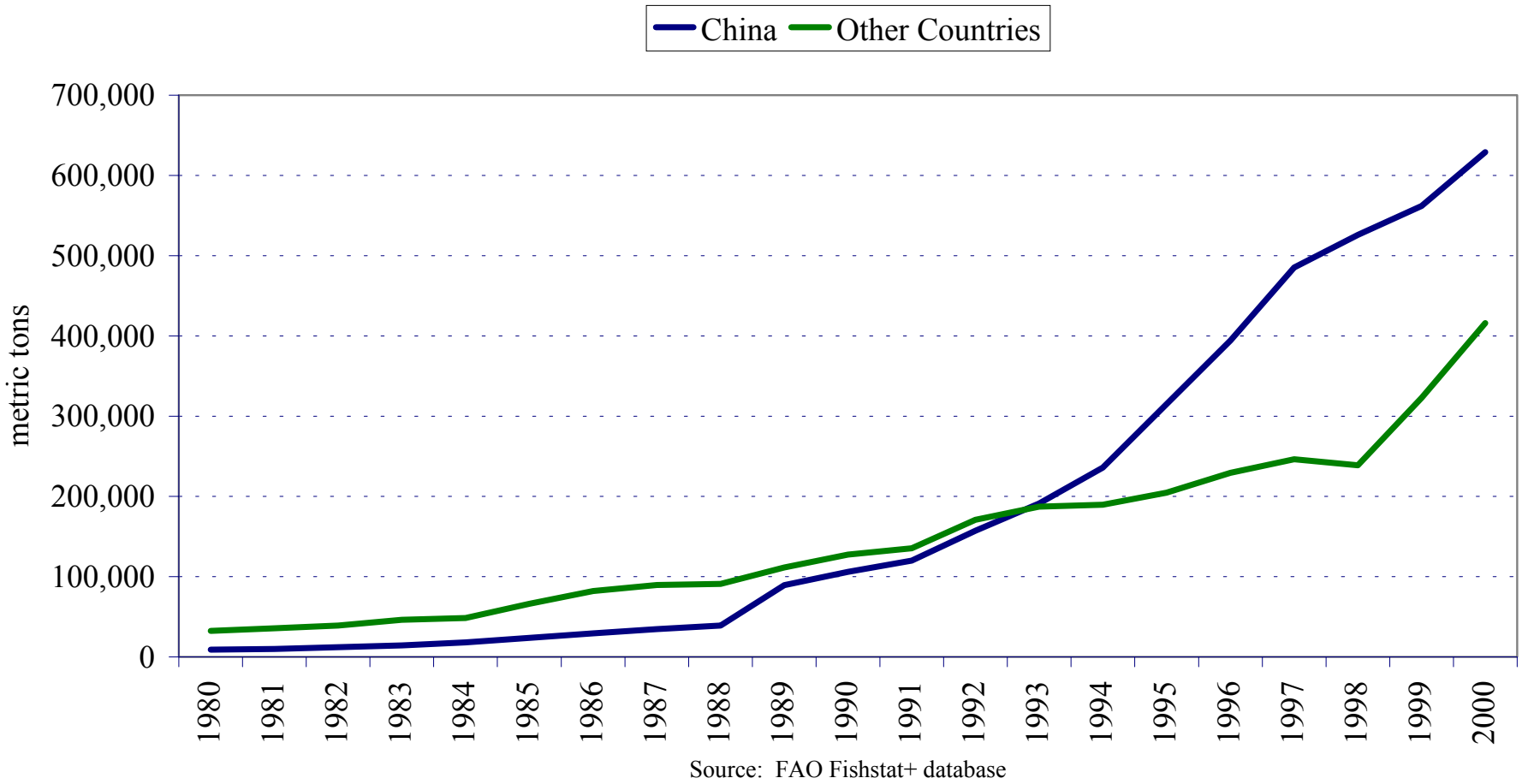
Source: FAO Fishstat+ database. Note: Graph excludes reported Chinese production

World Aquaculture Production of Seabass and Seabream



Source: FAO Fishstat+ database. Note: Graph excludes reported Chinese production

World Aquaculture Production of Nile Tilapia



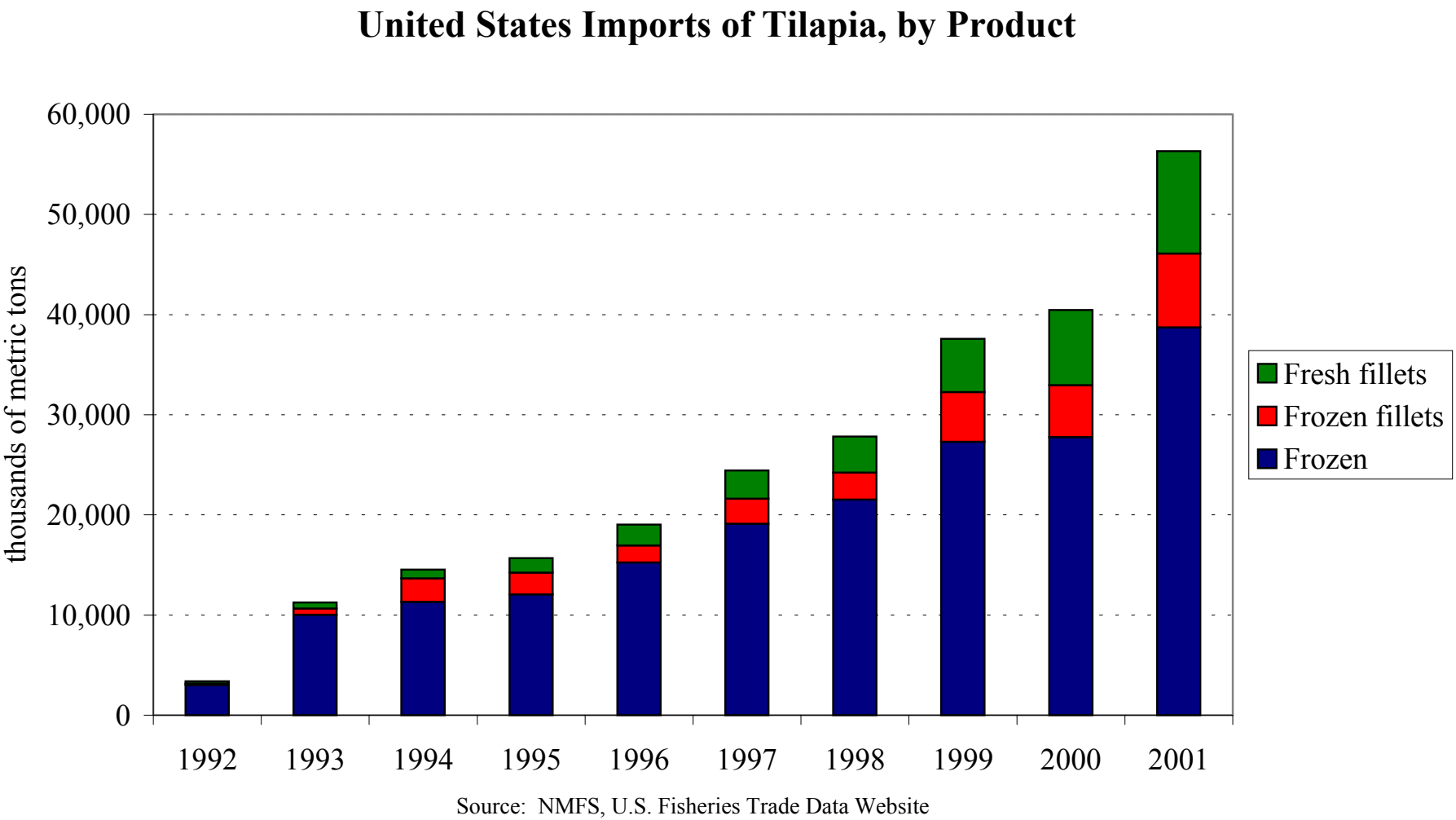
Source: FAO Fishstat+ database

Aquaculture already plays a major role in the seafood industry.

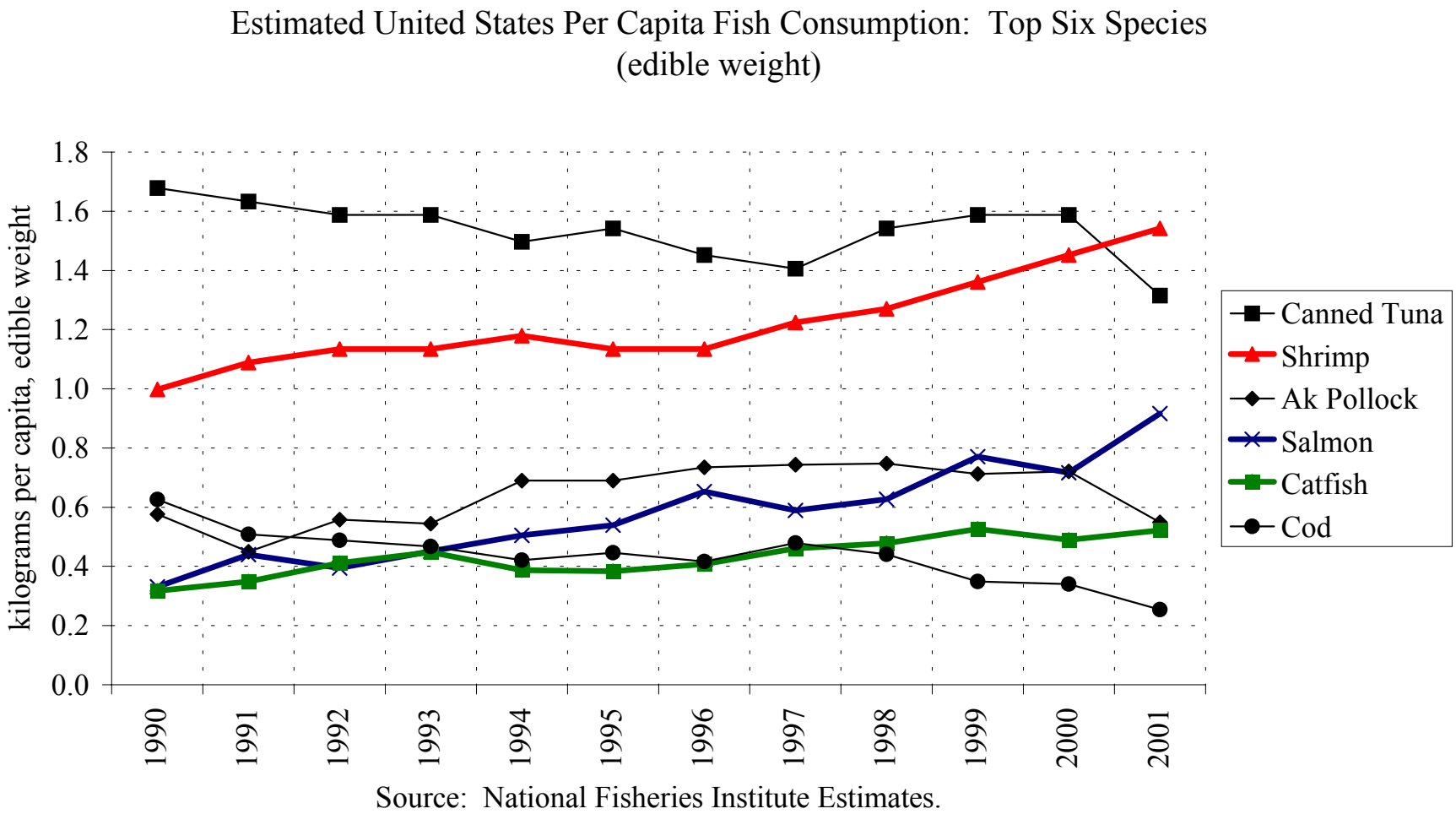
- Norway produces more farmed Atlantic salmon than wild Atlantic cod.
- Farmed salmon ranks first in the value of British Columbia fish production.
- Farmed catfish ranks fourth in United States fish production volume (after Alaska pollock, Gulf menhaden and salmon).
- Farmed shrimp ranks first in value of Thailand fish production.

Note: These examples are from a recent article by Professor James Anderson of the University of Rhode Island on "Aquaculture and the Future: Why Fisheries Economists Should Care," published. in Marine Resource Economics (2002).

Farmed tilapia is one of the fastest growing U.S. seafood imports (along with farmed salmon).



Farmed shrimp, salmon and catfish are the fastest growing components of U.S. seafood consumption and rank first, third and fifth in total consumption.



There is very significant potential for growth in aquaculture production.

- Technological innovation is occurring rapidly.
- Once technological hurdles are overcome, production of new species can expand at a very rapid rate.

There are no obvious limits to growth in aquaculture production.

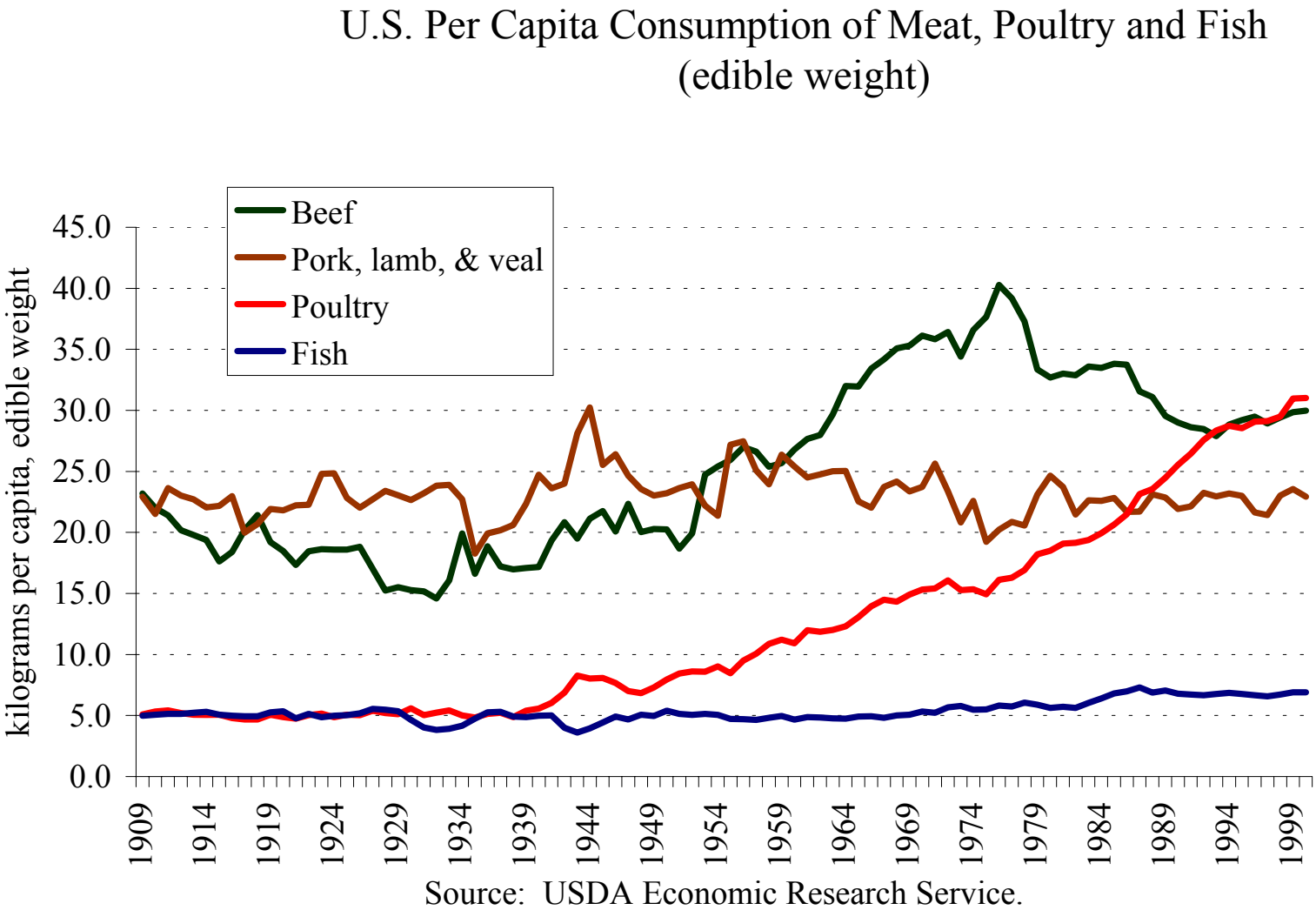
- Feed
  - Fish farmers can substitute vegetable-based feeds for fish-based feeds. This is already happening for salmon.
  - Many aquaculture species, such as catfish and tilapia, are grown almost entirely on vegetable-based feeds.
- Environmental Effects
  - Environmental effects can be reduced through regulation and changes in techniques and locations
- Market Acceptance
  - Rapid growth in consumption proves that buyers and consumers will accept farmed products

The past isn't necessarily a guide to the future.

- Just because farming of a species isn't profitable now doesn't mean it won't be in the future
- Just because production of a species isn't significant now doesn't mean it won't be in the future.
- Just because consumers don't eat a fish today doesn't mean they won't in the future.
- Tomorrow's major aquaculture species may not be the same as those of today.

The past was not a guide to the future
for farmed salmon, catfish or tilapia.

Unlike wild fisheries, there is potential for continuing demand-driven growth in aquaculture production. The historical experience of poultry may be a better indicator of the potential for aquaculture than that of wild-caught fish.



Growing farmed production tends to lower prices for wild fish by expanding total supply.

But farming also has many other important effects on markets for wild fish, both negative and positive.

Aquaculture expands demand for fish.

- Aquaculture makes fish more widely available
- Aquaculture introduces consumers to fish species
- Aquaculture creates new products
- Aquaculture invests in marketing
- As total demand expands, demand for wild fish can also expand as a “natural” alternative to farmed fish—if wild fish is marketed effectively.

Aquaculture changes seafood market dynamics.

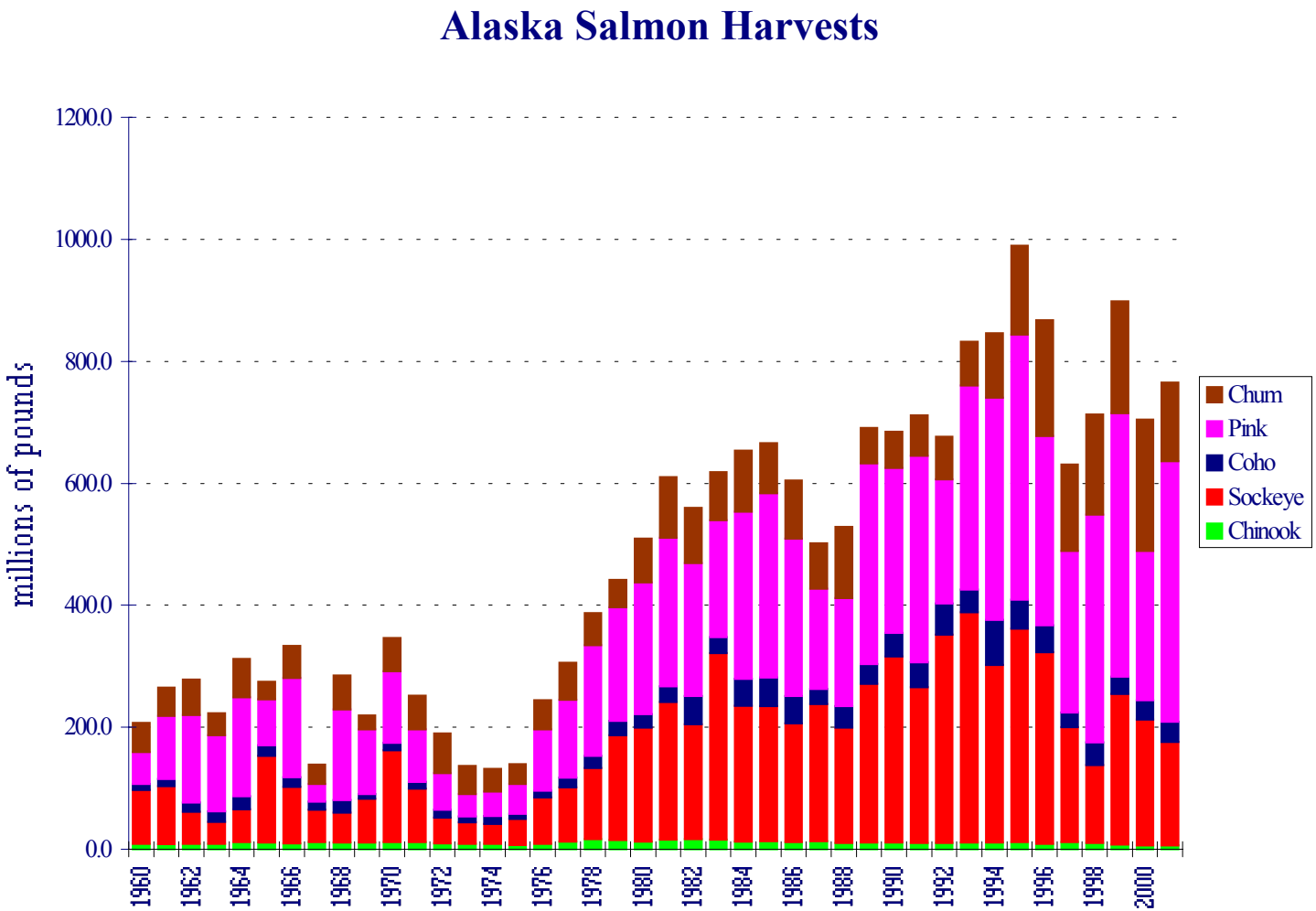
- As wild production becomes a smaller part of total supply, prices don't increase as much when wild catches fall
- Aquaculture creates price cycles similar to those for meat and poultry
- Over time, fish prices trend downwards as farming costs fall allowing farmed production to expand.
- Large scale aquaculture production creates new distribution channels for seafood
- Aquaculture changes the balance of economic and political power in the seafood industry

The experience of Alaska wild salmon provides an example of how aquaculture can affect markets for wild fisheries.

Alaska wild salmon resources are healthy.

Harvests of all species set records in the early 1990s.

The MSC certified wild Alaska salmon as "sustainable."

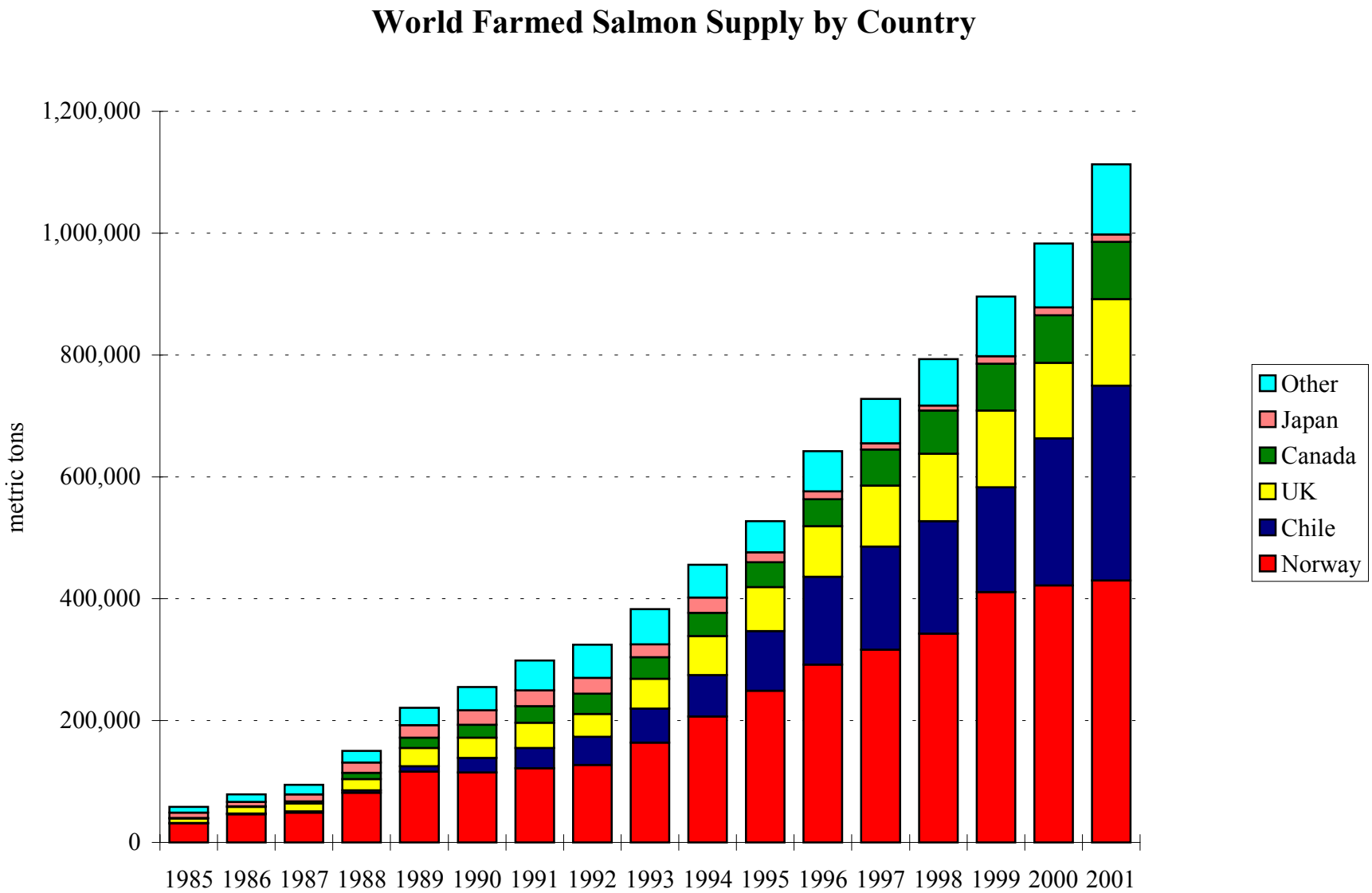


Alaska has no salmon farming.

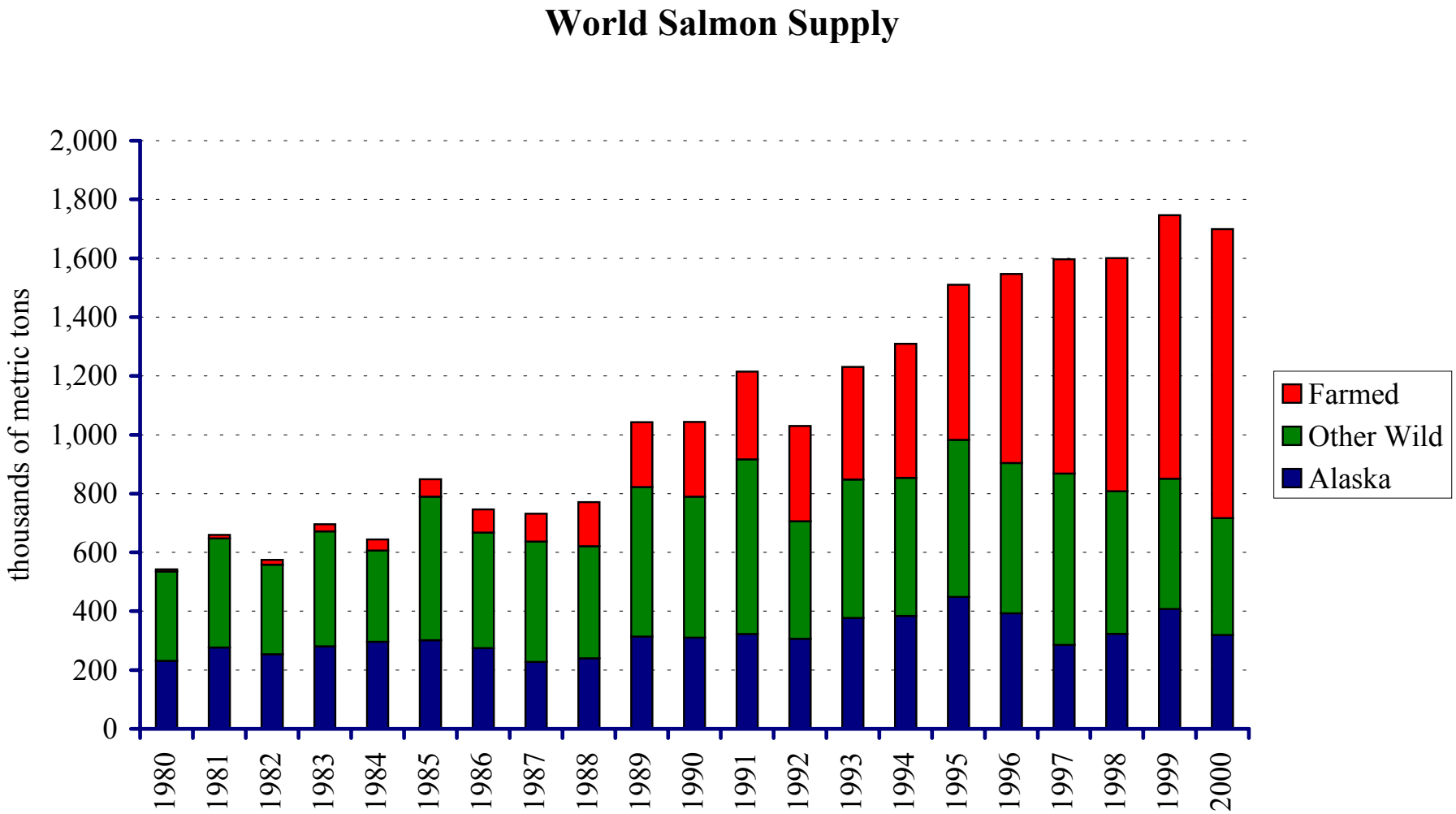
Alaska banned all finfish farming in 1990
to protect wild salmon stocks
(and because fishermen didn't want competition):

"A person may not grow or cultivate finfish in captivity or under positive control for commercial purposes."

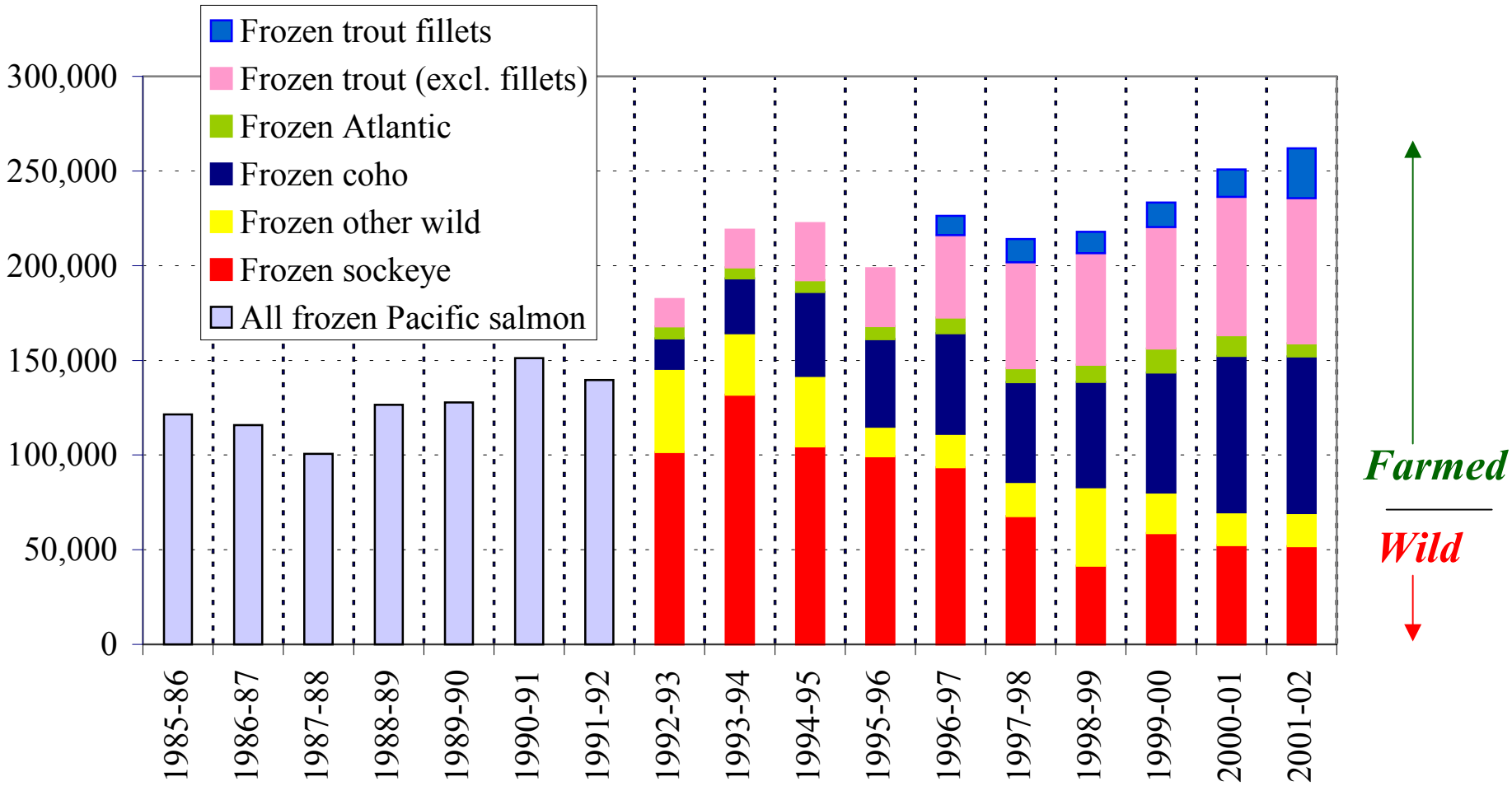
World farmed salmon production has grown dramatically since the early 1980s.



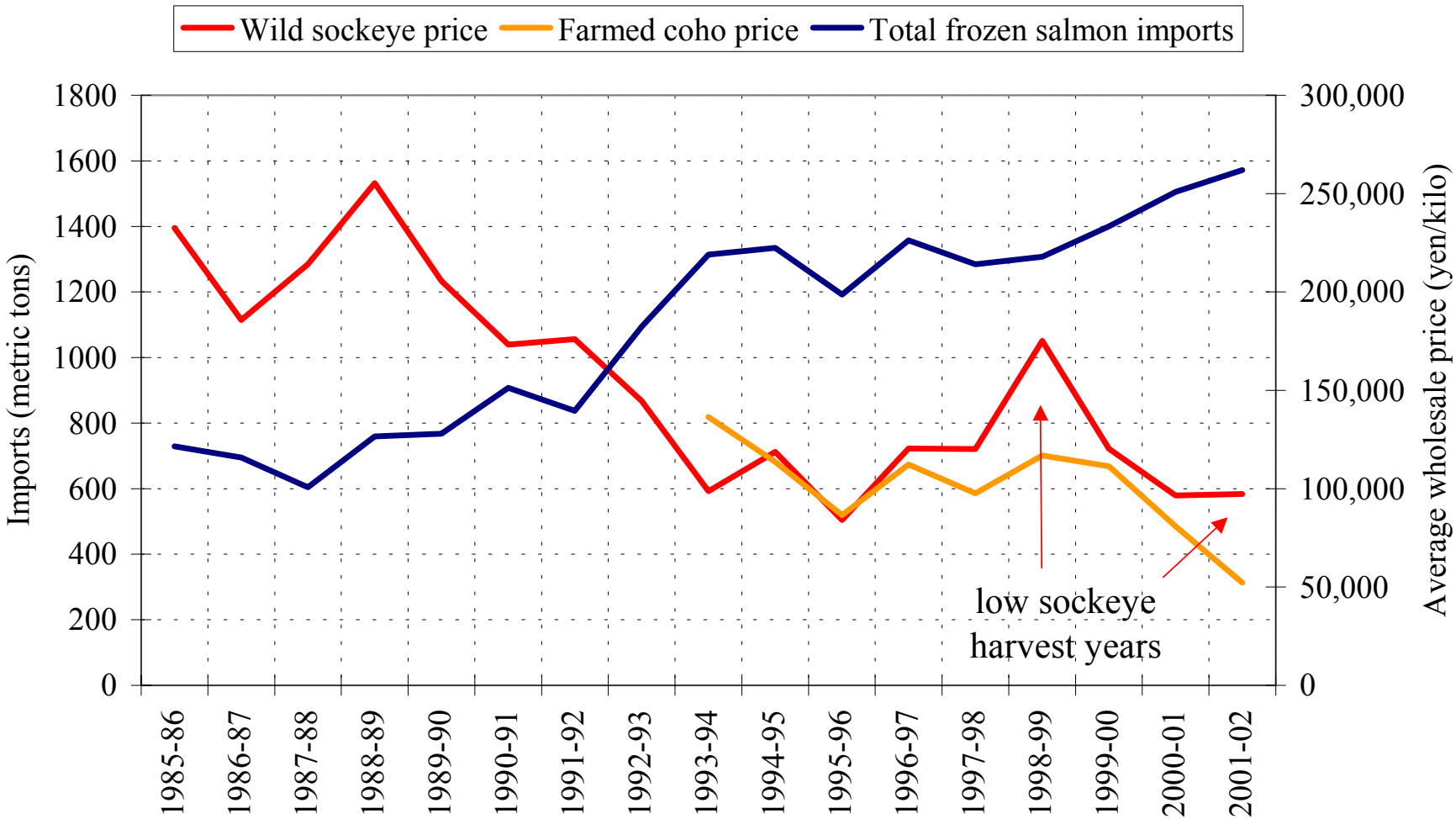
In less than 20 years, Alaska's share of world salmon production fell from more than 40% to less than 20%.



In ten years farmed salmon captured most of the Japanese frozen market formerly dominated by wild Alaska sockeye.

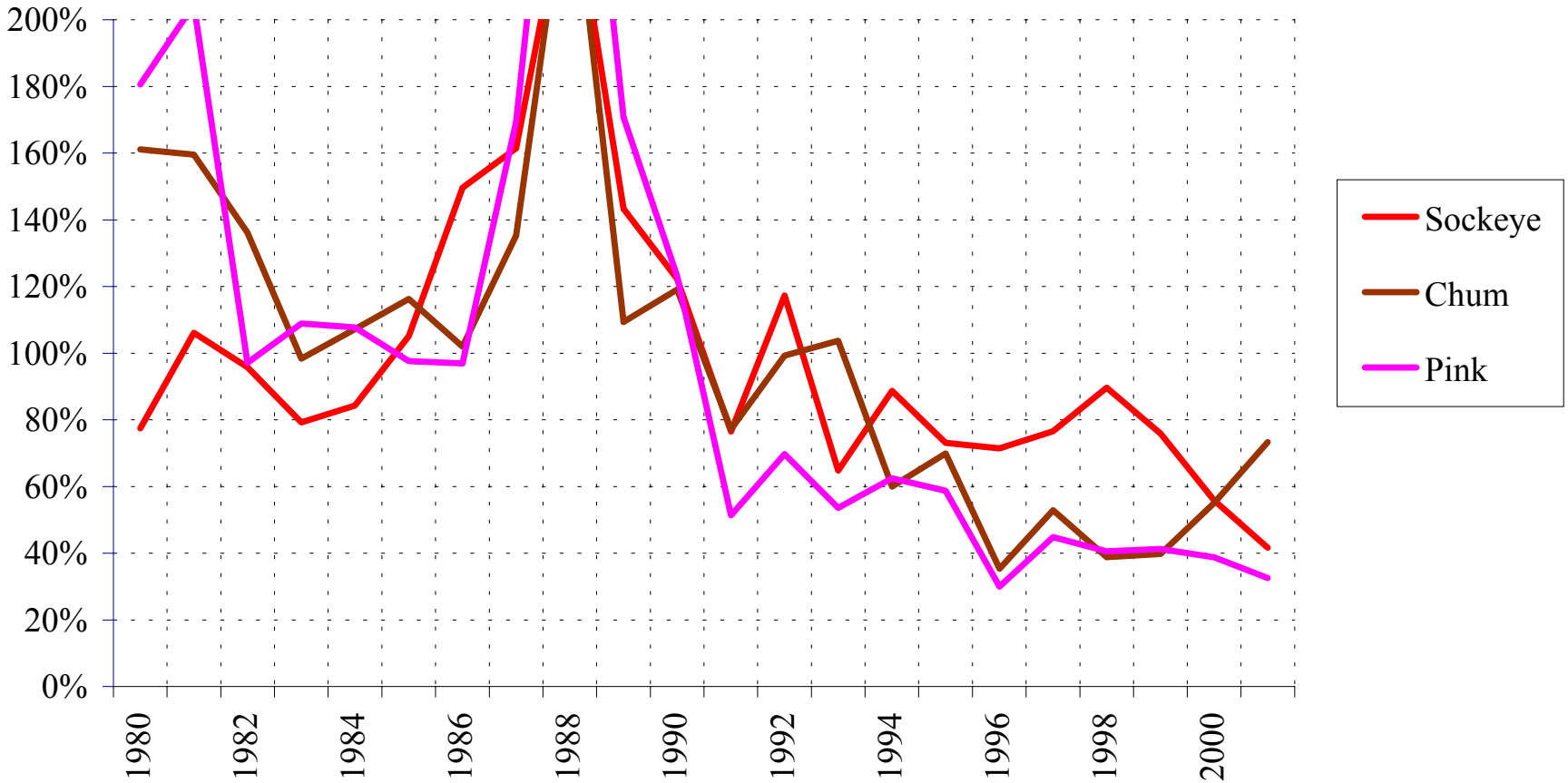


Japanese wholesale prices for both farmed salmon and sockeye salmon declined dramatically.

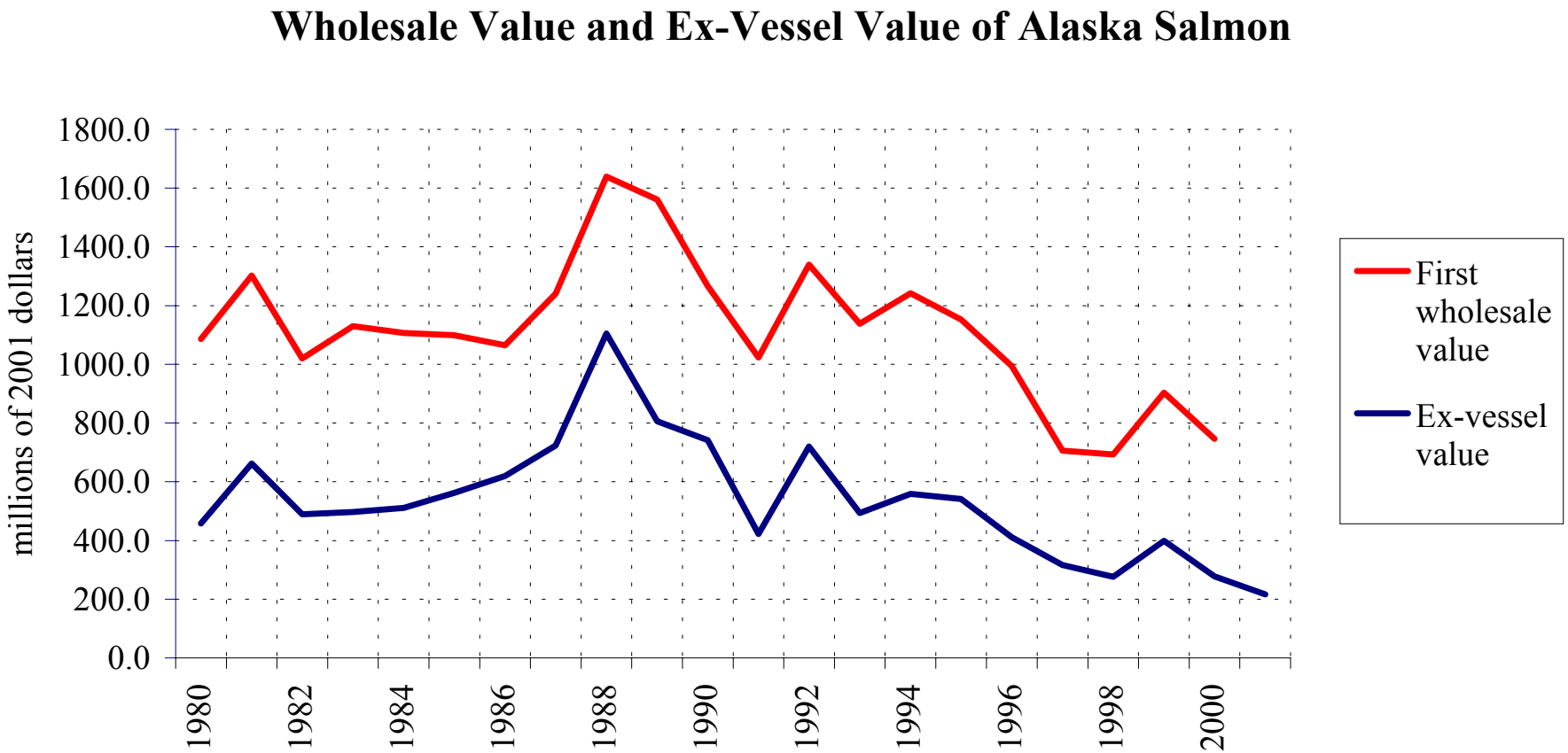


Mostly because of competition from farmed salmon, ex-vessel prices have fallen by more than half since 1990 for most Alaska salmon species.

Real Ex-Vessel Prices as % of Average for 1980-2001



There has been a tremendous erosion in the value of Alaska salmon since the late 1980s—which has led to an economic crisis in the Alaska salmon industry.



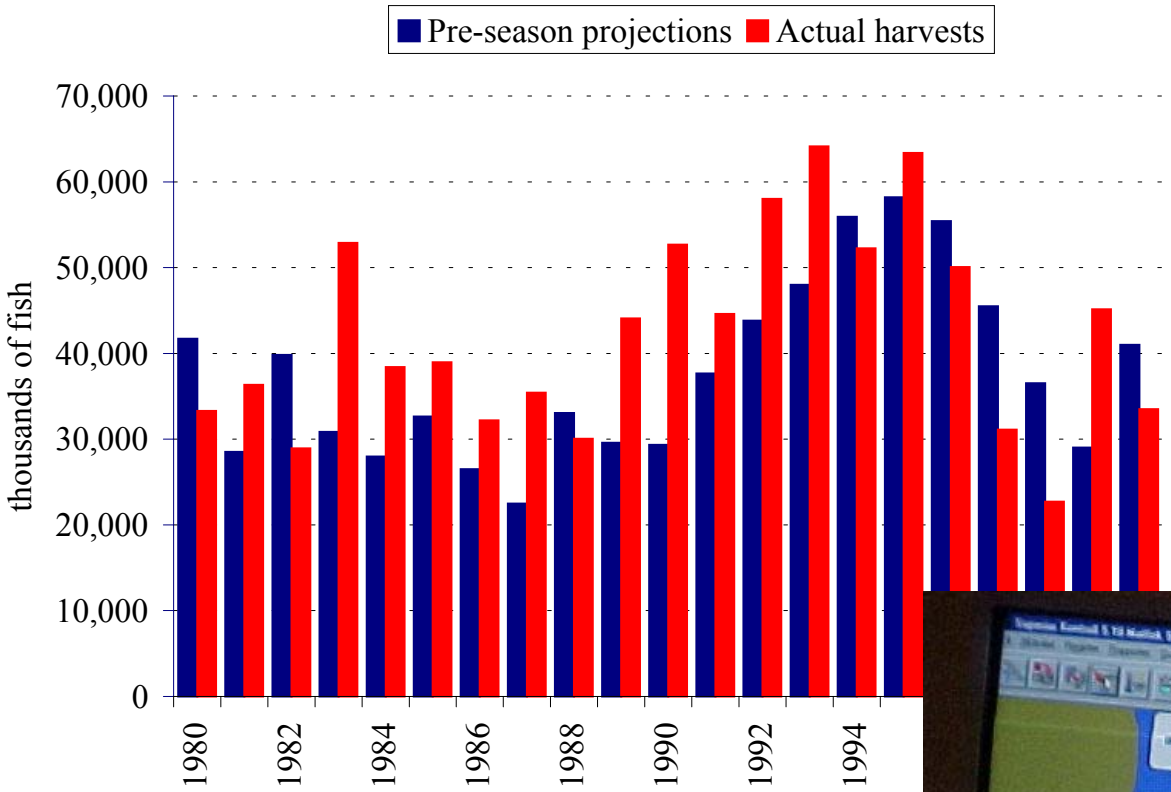
The fall in prices was not just caused by higher total salmon supply, but also because farmed salmon meets most buyers' needs for consistent high quality and year-round dependable supply better than wild salmon.

Markets willing to pay a premium for natural wild salmon, such as Copper River salmon, are the exception, not the rule.

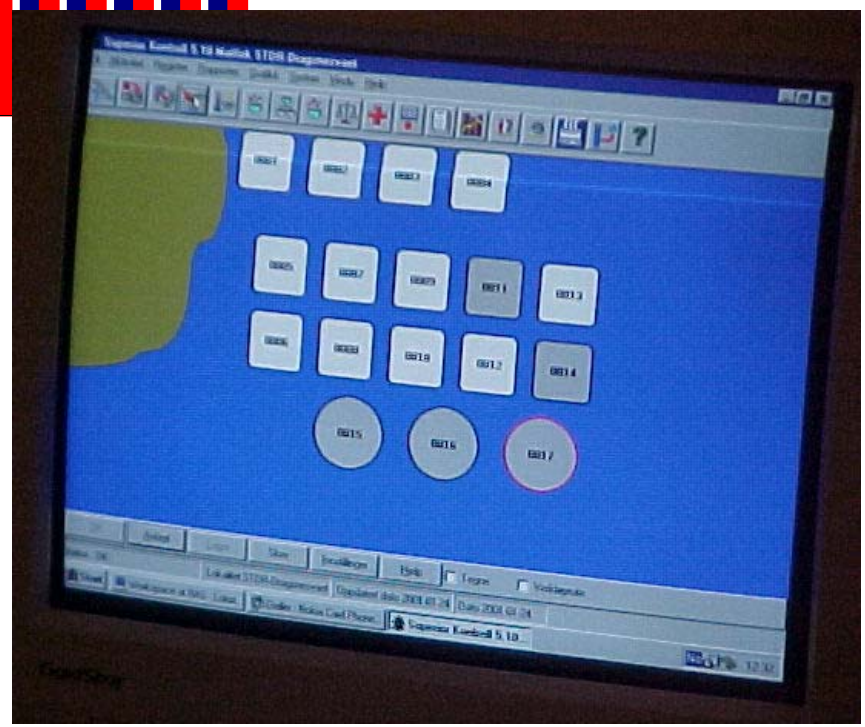
- Environmentalists, Chefs, and TV documentaries may say "wild salmon is better."
- But most buyers and consumers choose farmed salmon.
  - It tastes good to them.
  - They can get it fresh year round
  - The quality is consistent
  - Supply is reliable
  - It is available in an ever-wider variety of product forms.

Farmed salmon has significant competitive advantages over wild salmon in producing to meet market demands . . .

	Wild Salmon	Farmed Salmon
Production Volume	Wild salmon production is inconsistent from year to year, difficult to predict, and cannot expand.	Salmon farmers can accurately forecast production and guarantee supply commitments. Farmers can expand production to meet growing demand.



Actual Alaska sockeye salmon harvests typically differ from pre-season projections by 30%.



This computer at a Norwegian salmon farm can tell the producer exactly how many fish of what size are in each pen (and in the pens of all the farms owned by this company on three continents)

	Wild Salmon	Farmed Salmon
Production timing	Wild salmon can only be harvested during a short summer run.	Farmed salmon production can occur year-round.

Many Alaska fishing boats and processing plants are idle for much of the year—a huge cost disadvantage.

Very large harvests in short time periods makes canning the only practical option in some wild salmon fisheries.

Steady production volumes and low-cost labor allows Chilean salmon farmers to produce fresh pinbone-out fillets

	Wild Salmon	Farmed Salmon
Product consistency	There is wide variation in the size and quality of individual wild salmon	Farmed salmon is consistent in size and quality.

	Wild Salmon	Farmed Salmon
Fish characteristics	Wild salmon producers have no control over their fish.	Through breeding and choice of feeds, salmon farmers can alter fish characteristics such as size, color and taste to meet market demands.

	Wild Salmon	Farmed Salmon
Property rights	Wild salmon producers do not have secure access to fish resources and face constant political risk.	Salmon farmers own their fish.

	Wild Salmon	Farmed Salmon
Tradition	The wild salmon industry is constrained by tradition and political and social considerations	The farmed salmon industry is freer to evolve and respond to changing markets and opportunities

Salmon harvesting in Alaska is labor intensive. Traditional fishing methods and the race to catch fish as quickly as possible do not result in careful handling.

Catching salmon at a Norwegian farm

Alaskans were slow to recognize how farmed salmon would affect their markets.

- Most Alaskans have never seen a salmon farm.
- Alaskans are used to wild fish. They are not good judges of what consumers will like or buy.
- Alaskans had always focused on catching fish. Until recently, there had always been a market eager to buy their fish.
- Alaskans thought that catching fish is what matters. They didn't realize that catching fish is not the same as meeting market demand.

Alaskans are now beginning to recognize the world has changed:

"Everyone . . . now realizes that the dramatic growth and over-capacity in worldwide farm production of salmon and other fish species has marginalized Alaska's wild fish production."

"The threats facing us today . . . creep into our lives slowly through changes created by globalization of national economies, rapid transportation changes . . . and rapid advances in fish farm technology."

"We have fished, packaged, and marketed our salmon . . . almost the same way for decades now. . .Fishermen in the past have not had to look beyond the dock to the world at large. . . It was a good way of life . . and times were good. But we've got to realize for each and every one of us that way of life is disappearing."

(From a speech by Alaska Senator Ted Stevens, April 4, 2002)

Is Alaska's experience relevant to other wild fisheries facing competition from aquaculture?

- Alaska has traditional, production-driven, over-capitalized competitive fisheries managed for political and social goals.
- Rationalized wild fisheries are in a much-better position to compete with aquaculture.
- But all wild fisheries face fundamental competitive disadvantages compared with aquaculture:
  - Lack of control over volume of production
  - Inability to expand production
  - Lack of control over fish characteristics such as size and coloring

Lessons of the Alaska experience

- Pay close attention to what is happening in aquaculture
- Carefully consider whether you should be involved in aquaculture
- Don’t underestimate the potential for aquaculture to affect markets
- Don’t take your markets for granted
- Aquaculture means that it will become even more important for wild fish producers to focus continually on efficiency and producing to meet market demands

4. Old and New Challenges and Opportunities for Wild Fisheries

Old Challenges and Opportunities

- Gain control over management
- Control total catches
- Rationalize fish harvesting for efficiency and value

New Challenges and Opportunities

- Market-driven focus at all levels of value chain
- Increase efficiency and expand markets through consolidation, integration and internationalization of the seafood industry