

# **Aquaculture and marine resources: Can there be a salmon in every pot?**

Rebecca Goldburg  
Director, Marine Science  
Pew Environment Group  
Pew Charitable Trusts

# Lenfest Ocean Program



Protecting ocean life through  
marine science



# Aquaculture is an increasingly important source of seafood

Almost 50% of all fish directly consumed by people worldwide are farmed, up from 9% in 1980.





# Is aquaculture a solution to declining fisheries?

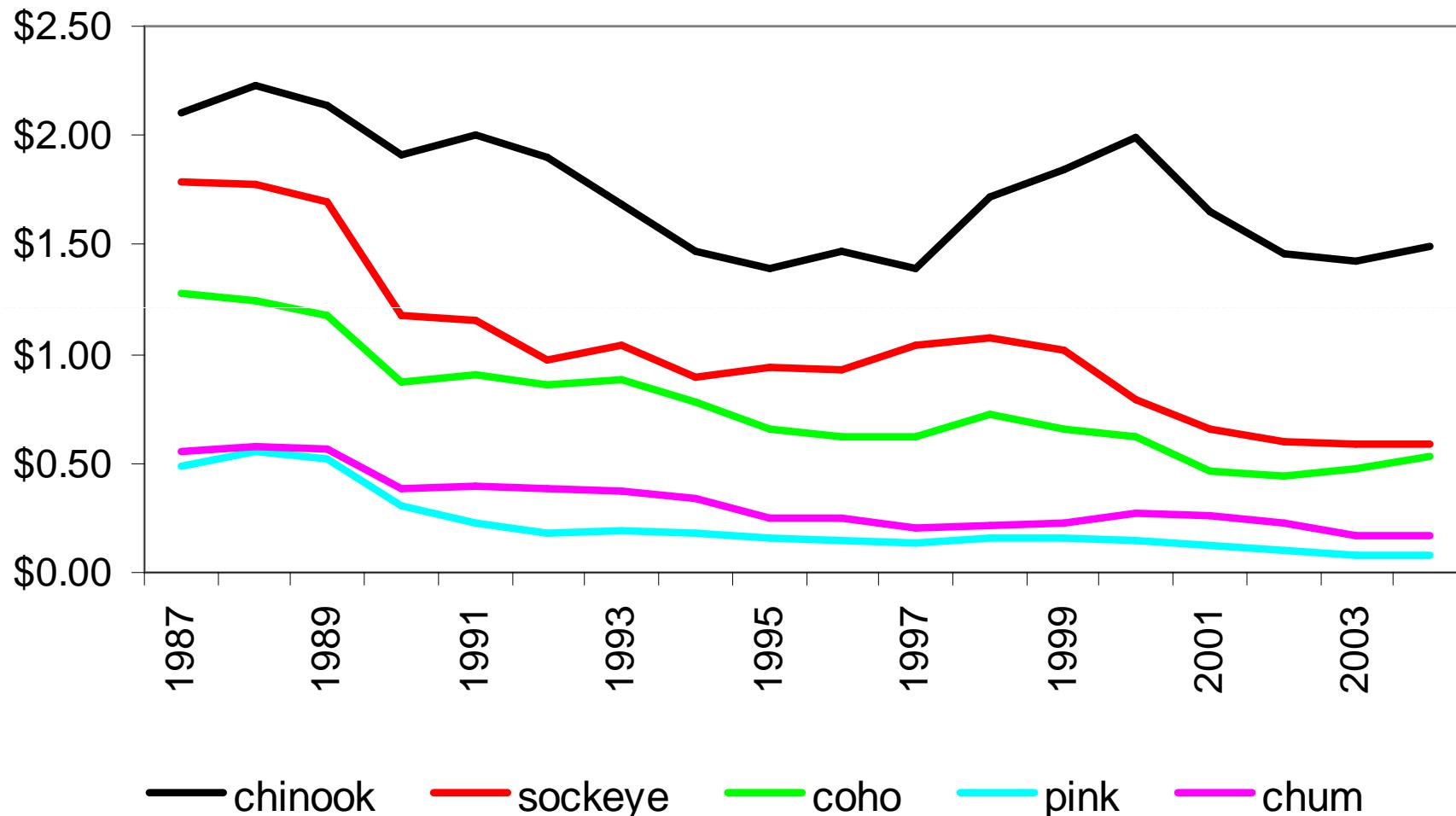


# Economic argument why aquaculture may reduce fishing pressure

- Aquaculture increases the fish supply
- Price decreases for the fish
- Fishermen's profits decrease and they reduce capture of the fish
- Examine for salmon and shrimp (Goldburg and Naylor 2005; Goldburg 2008)

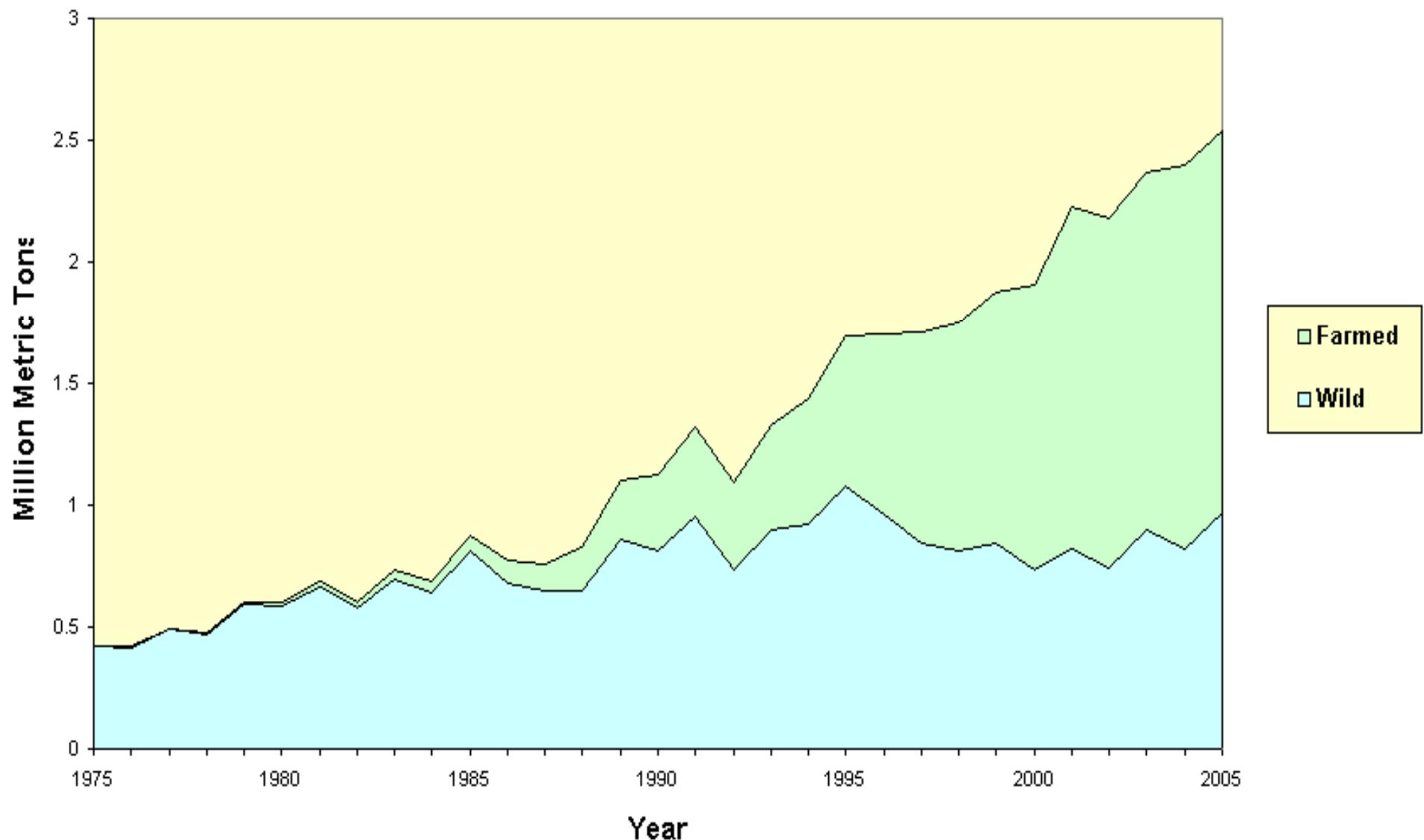
# Impacts of salmon farming

Average ex-vessel price, Alaskan wild salmon (three yr moving avg.)



Source: ADFG 2005

## Global Production Farmed and Wild Salmon



# Upshot

- For salmon and shrimp, no evidence that aquaculture ‘takes pressure off’ of wild fisheries, although fish farming does result in lower prices
  - Increasing population and affluence is increasing global demand for seafood
  - Fishing is relatively inelastic
- Most effective way to recover and protect wild fisheries is via better fisheries management
- Are other reasons to pursue aquaculture

# Does aquaculture supplement wild fisheries?



Yes, but . . .

# FISH FEED



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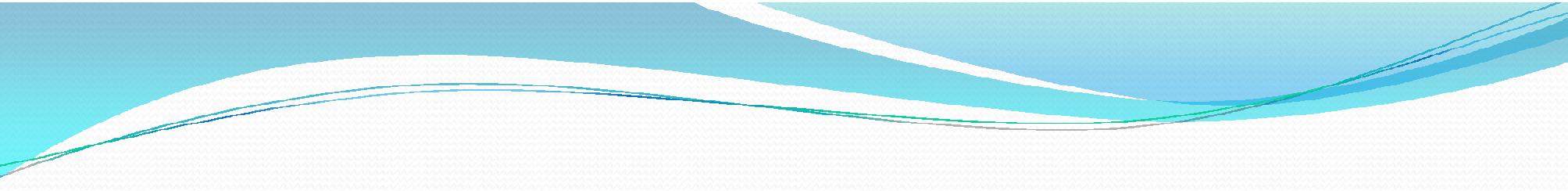


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# Proportion global fish meal supplies used for fish farming

**1988 -- 10%**

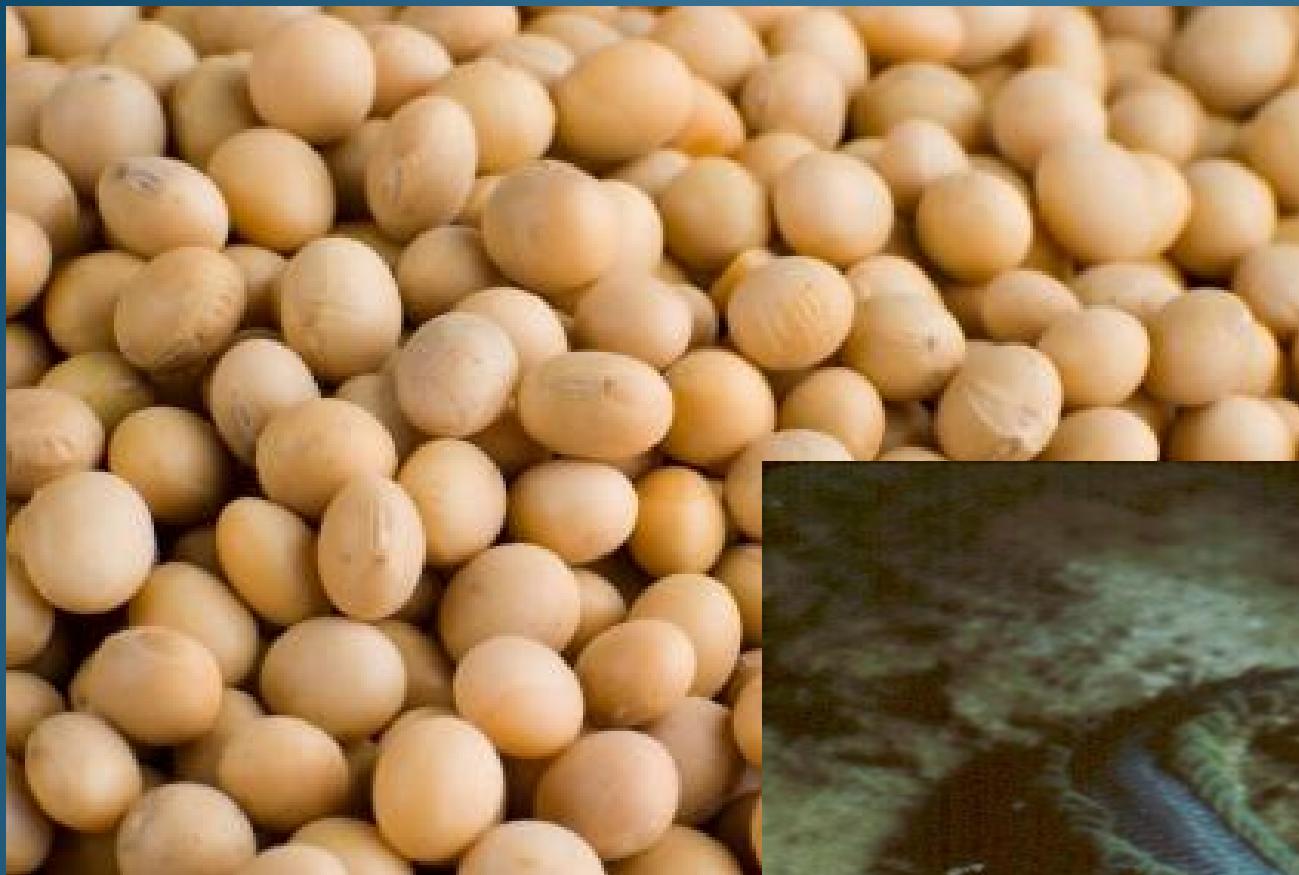
**1997 -- 33%**

**2006- 68%**

# Challenges from increasing use of wild fish in fish feeds

- Exploitation of new or marginal fisheries (e.g. Antarctic krill)
- Science suggests probably need to reduce catch of many ‘reduction’ fisheries to leave more fish in the water to support marine ecosystems
- In some cases, competition between using fish for feed and human food







# Strategies

*Government policy:*

R&D -- NOAA alternative feed initiative

Regulation – aquaculture and fisheries

Incentives – USDA organic standards

*Marketplace initiatives:*

Consumer preferences

CSR initiatives by producers and buyers

Pew-sponsored tool to compare aquaculture standards