"Seafood, as eaten in the USA, is the safest and healthiest source of muscle protein eaten in the world !"

Dr. Steve Otwell
University of Florida

Contentious Issues with Seafood Safety

- PATHOGENS (*Salmonella, Vibrios, Listeria, Staph and C. bot*)
- PARASITES (*raw consumption*)
- TOXINS (*Scombroid, Natural types/ sources*)
- ENVIRONMENTAL CONTAMINANTS (*heavy metals, certain chemicals*)
- ANTIBIOTICS/ DRUGS *used with farmed production*
- ALLERGENS

Etc ….

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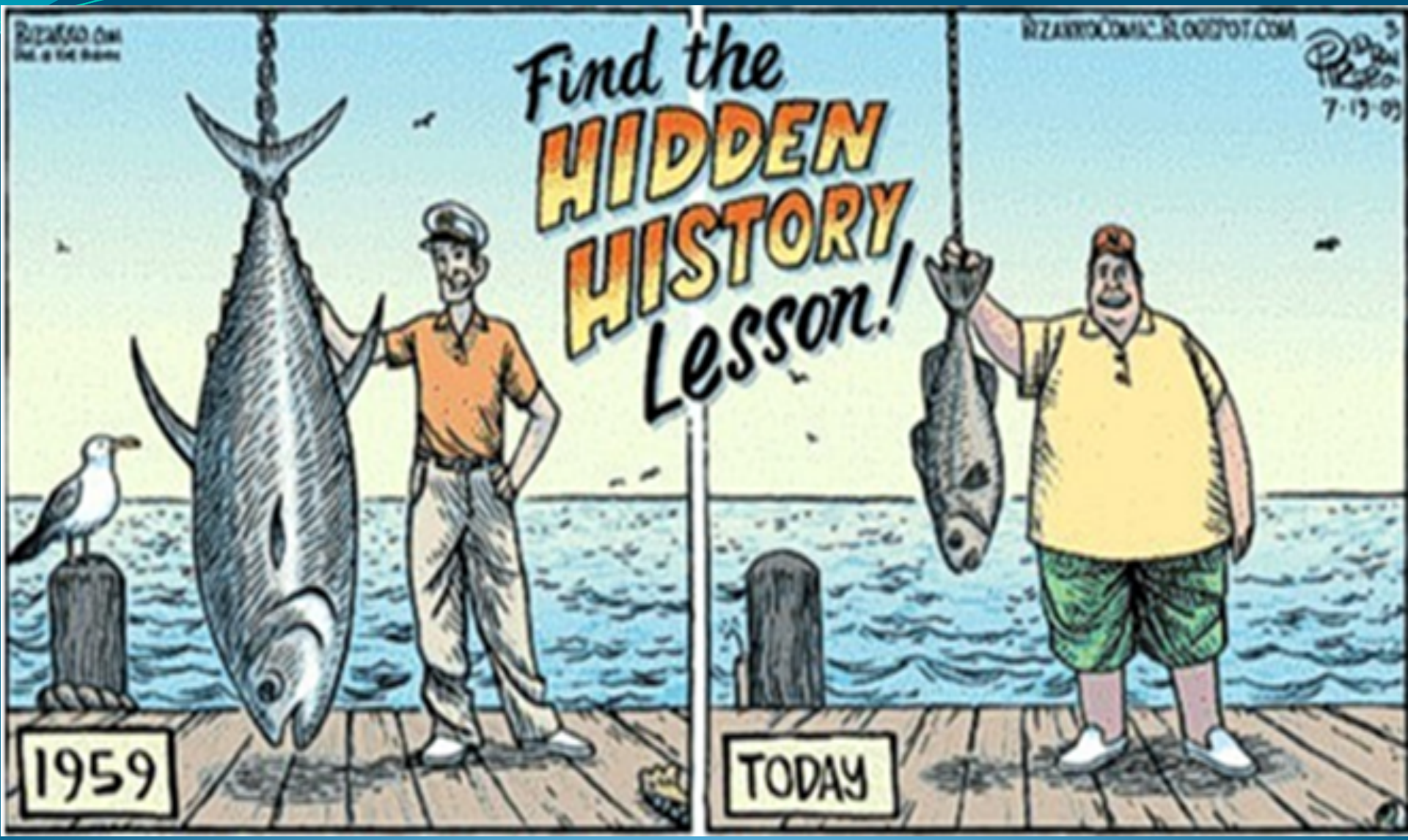
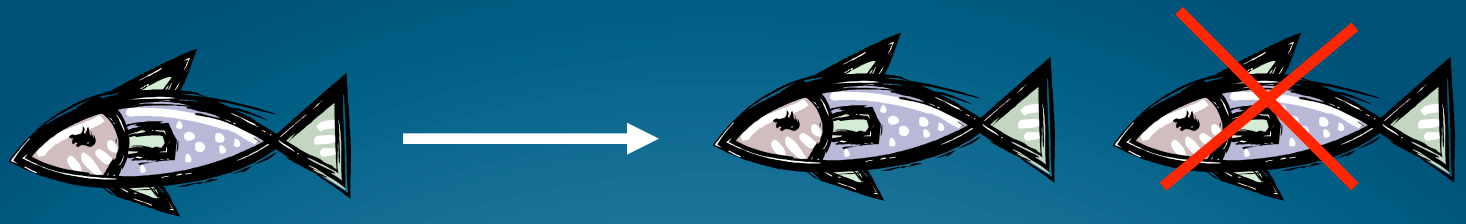
But is there enough ?


Find the HIDDEN HISTORY Lesson!
1959
TODAY

Historical changes in supply may not be readily evident, but they will henceforth influence your seafood choices (and health)

Otwell May 3, 2014

Henceforth …. Demand >> Supply



5.0 billion lbs. annual

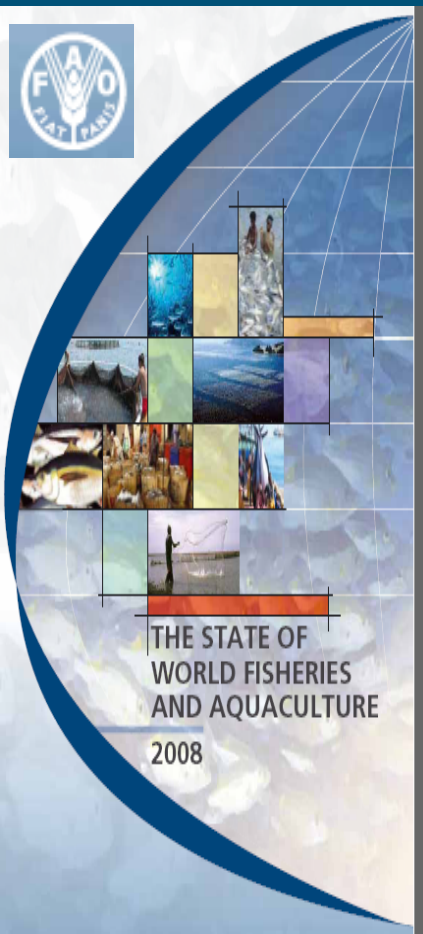
10.0 billion lbs. annual

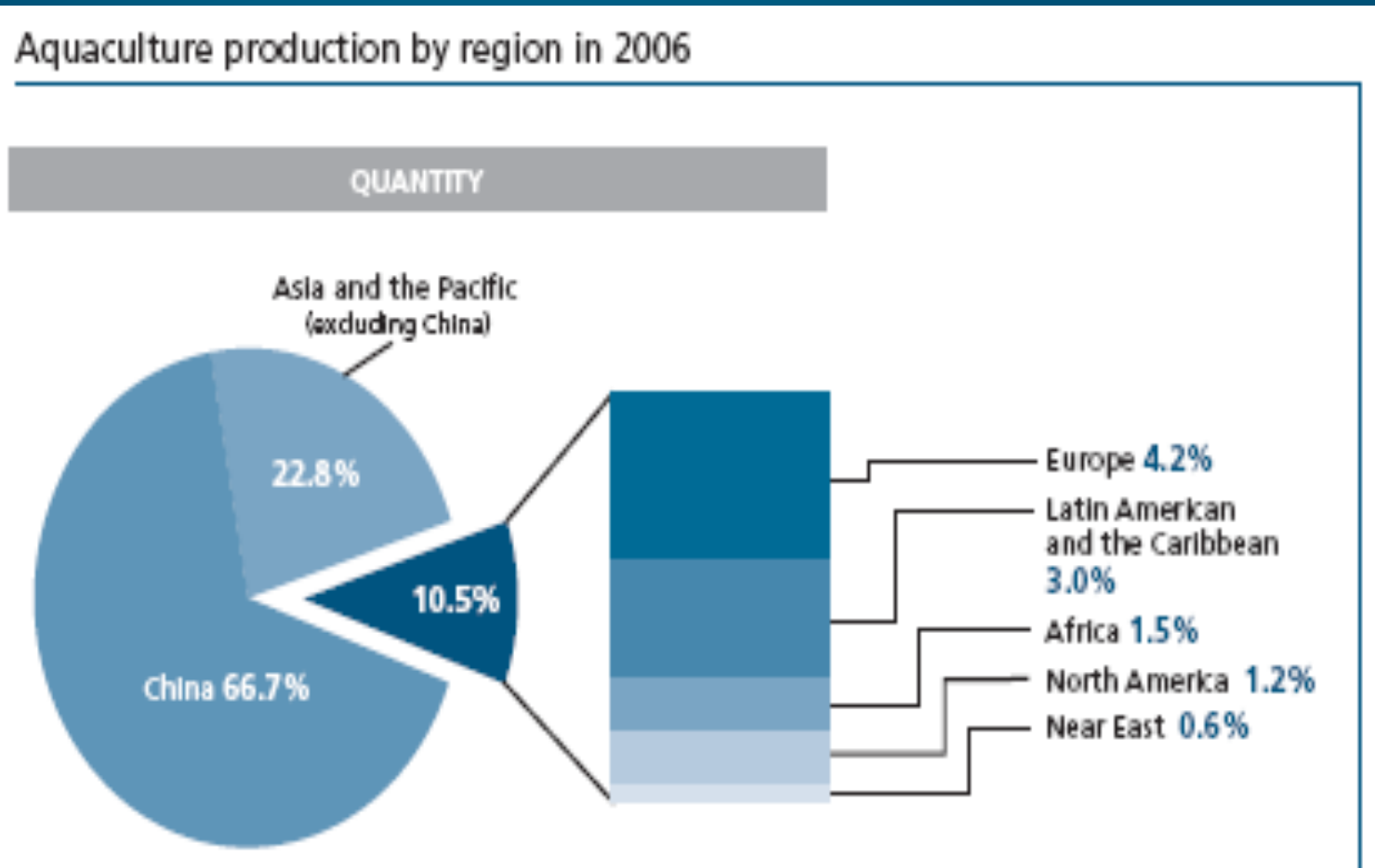
Concern…… NEW RISK

Too little seafood consumed !

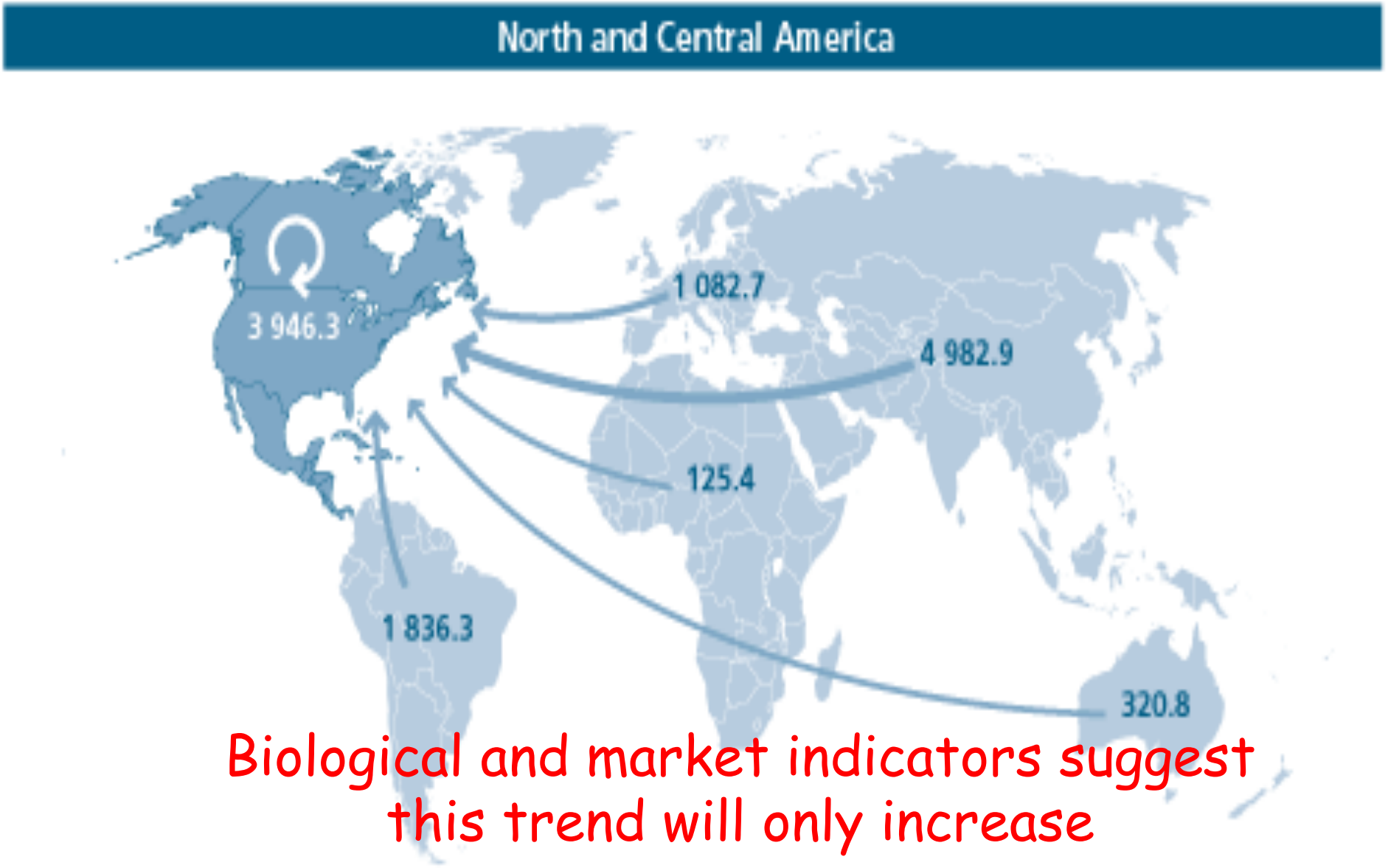
Where will we find seafood ?

Future aquaculture production occurring in regions favorable for aquatic farming, both in terms of environments and labor





Over 80% USA Seafood Consumption is Imported



Biological and market indicators suggest this trend will only increase

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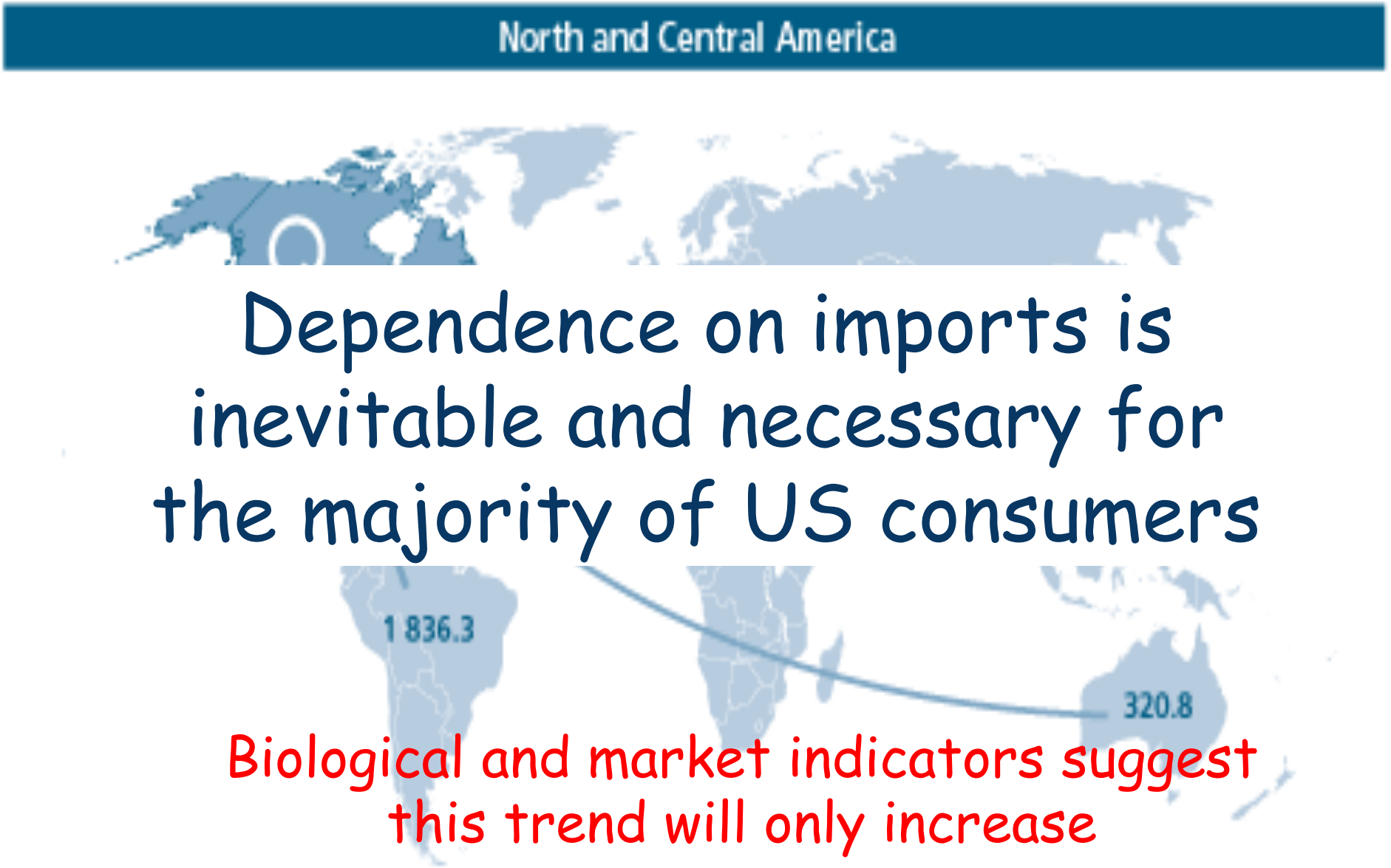

Dependence on imports is inevitable and necessary for the majority of US consumers

Biological and market indicators suggest this trend will only increase

USA Traditional Preferences

Rank	1990		2000		2010	
1	Tuna, C	3.7	Tuna, C	3.5	Shrimp	4.0
2	Shrimp	2.2	Shrimp	3.2	Tuna, C	2.7
3	Cod	1.4	Pollock	1.6	Salmon	2.0
4	Pollock	1.3	Salmon	1.6	Tilapia	1.5
5	Salmon	0.7	Catfish	1.1	Pollock	1.2
6	Catfish	0.7	Cod	0.8	Catfish	0.8
7	Clams	0.6	Clams	0.5	Crab	0.6
8	Flatfish	0.6	Crabs	0.4	Cod	0.4
9	Crabs	0.3	Flatfish	0.4	Pangasius	0.4
10	Scallops	0.3	Scallops	0.3	Clams	0.3

15.8 lbs.

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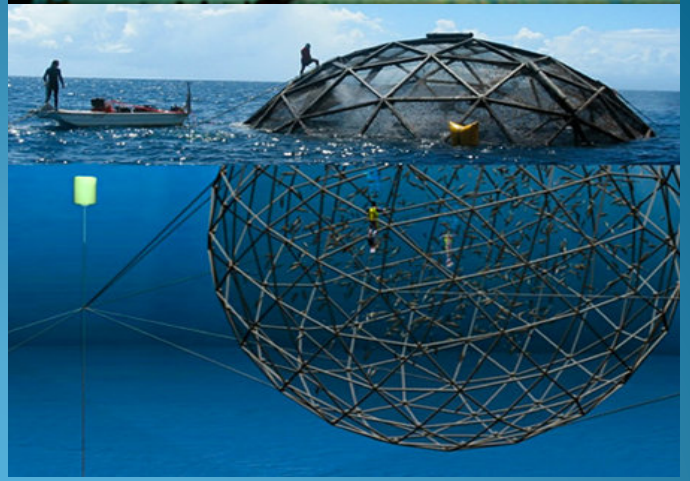
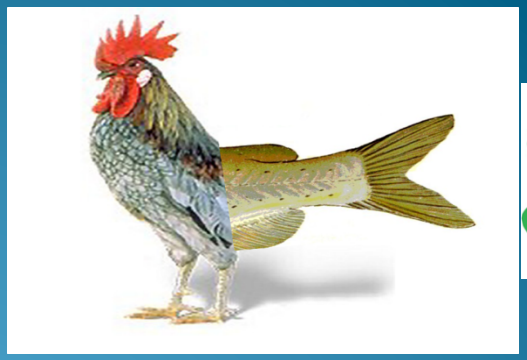
15.8 lbs.

Trends are favoring the supplier and aquaculture production !

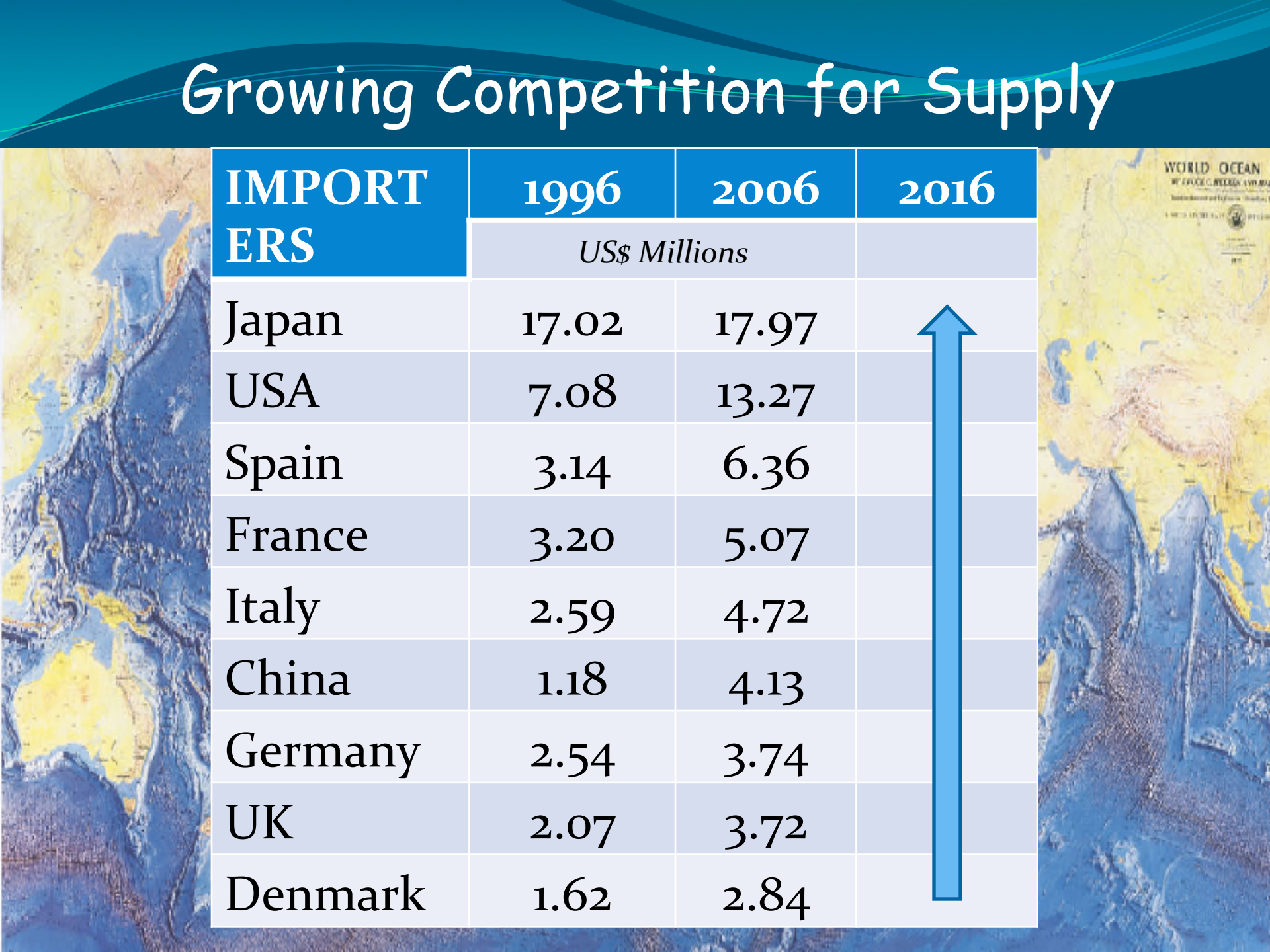


Era of the Aquatic Chicken



Growing Competition for Supply

IMPORTERS	1996	2006	2016
	US$ Millions		
Japan	17.02	17.97	
USA	7.08	13.27	
Spain	3.14	6.36	
France	3.20	5.07	
Italy	2.59	4.72	
China	1.18	4.13	
Germany	2.54	3.74	
UK	2.07	3.72	
Denmark	1.62	2.84	



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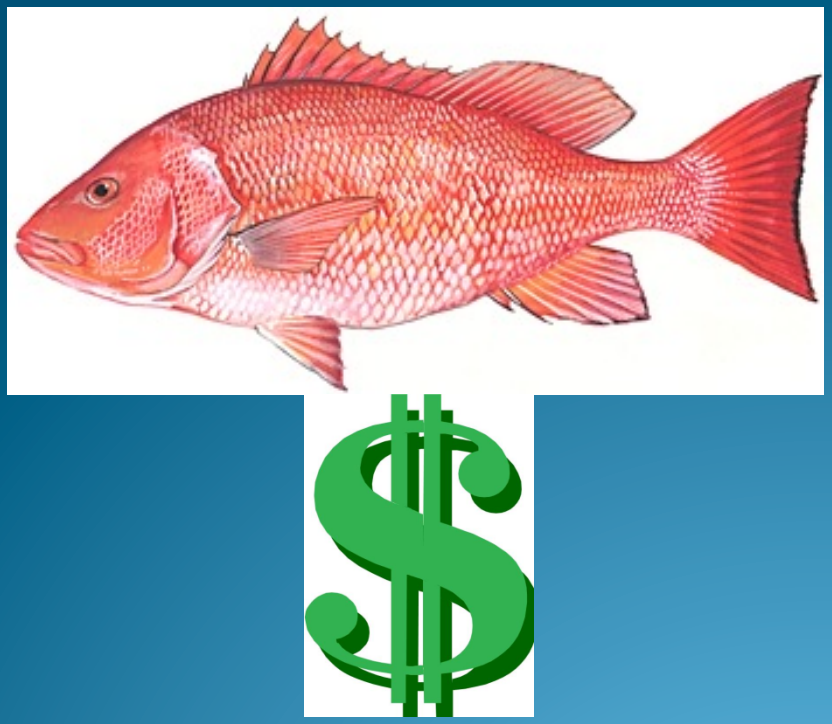
In 2012 China became a net importer of seafood

Who Gets What Fish ?



Traditional & Popular

New & Acceptable

Henceforth ….

- Demand >> Supply
- New choices depending on aquaculture (farming) and imports
- Traditional costs will increase
- Loss of buyer influence *

… implications for food safety ?

Contentious Issues with Seafood Safety

- PATHOGENS (*Salmonella, Vibrios, Listeria, Staph and C. bot*)
- PARAS
- TOXIN
- ENVIR *certain micals*)
- ANTIBIOTICS/ DRUGS *used with farmed production*
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Potentially safer through increasing awareness and ability to apply controls in farmed production!

Etc ….

Transition

Ocean Trout

New Choices

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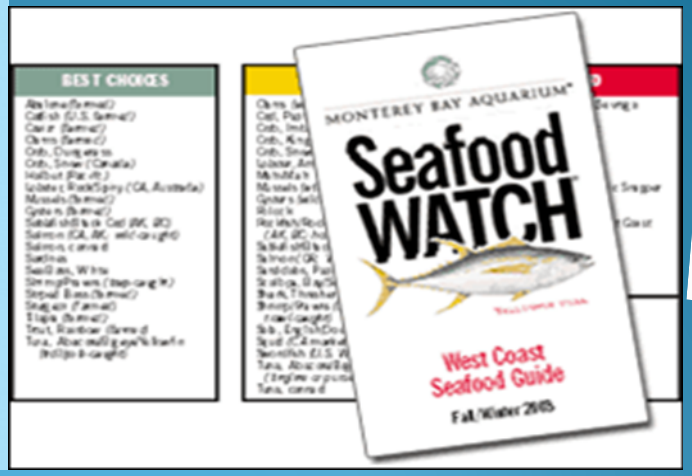
www.msc.org
TM

NAVIGATING SUSTAINABILITY
HOW TO MAKE THE BEST
SEAFOOD CHOICES
AT WHOLE FOODS MARKET®

GULF

Seafood Choices:

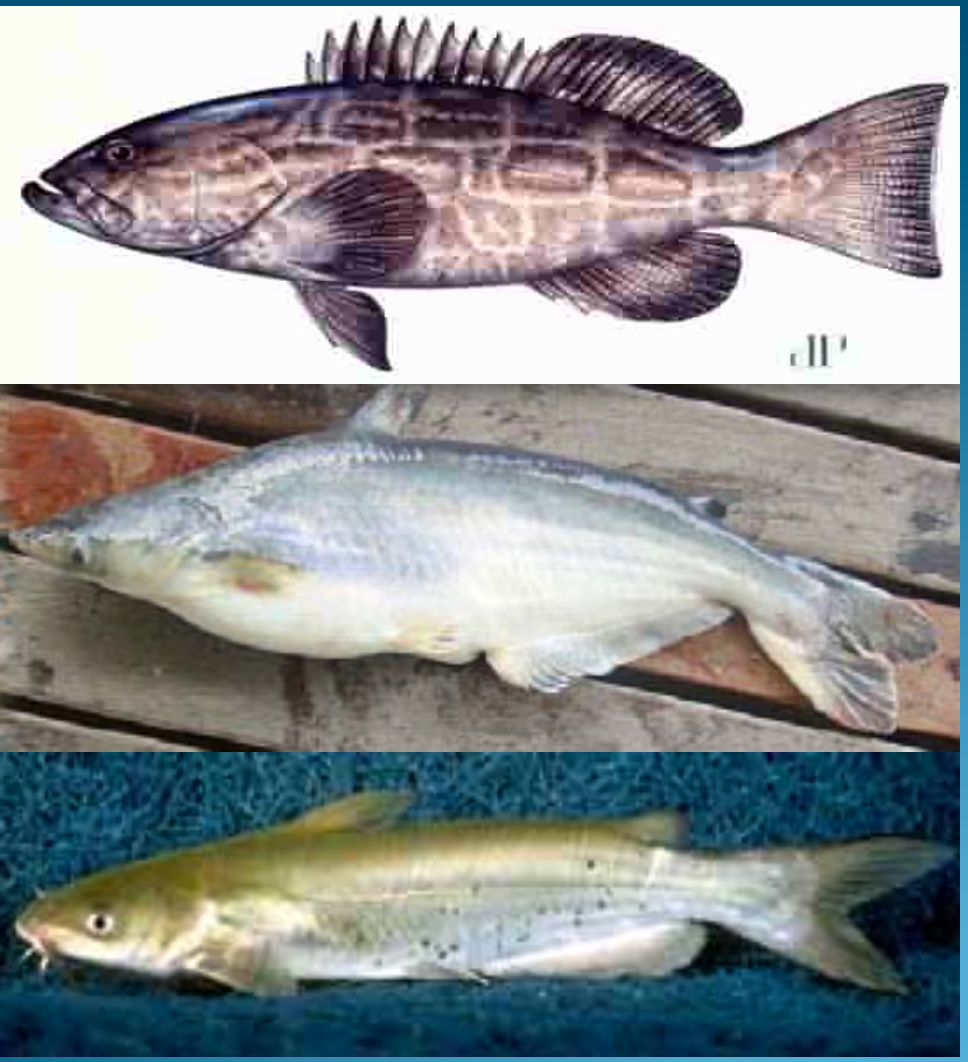
Are You Confused?



seafood choices ALLIANCE

'Perfect Storm' for Apprehension'

Product Substitution



It is inevitable and necessary !

But responsibly……Name the fish ?

New Choice create Apprehension

- Product Safety will be questioned
- Consumer confidence will be an issue
- Education can be an effective approach, but price will remain the driver

Adjust the comprehension …

- Sustainability …
- Traceability …
- Organic …
- GMO's …

Need to adjust governing use and public understand for popular issues relative to seafood safety

Sustainable … vs … "Full Utilization"

If controlled to sustain the resource, then don't waste the harvested portion !

Estimates indicate US consumers waste 30-40% of their food supply

Focus thoughtful governance …

- *Reasonably Likely to Occur* (RLO) vs. proper risk assessments and measures for severity
- Reduce reliance on commercial defamation to drive compliance or influence price
- Question and qualify use of food safety to 'cloak' attempts to impose trade barriers

More emphasis on education and science …

… to compliment ‘reasonable’ and responsible …

- Regulations
- Certifications
- Restrictions
- Commercial practice

Henceforth, our seafood supply will not be the same as in prior decades. The transition will be initially confusing, but seafood consumption remains the choice that assures continuing healthful benefits.

Your children will not be eating the catch of today !

We must assure healthful choices for the next generation!

Including my grandson