

Great Salt Lake Brine Shrimp Industry



How many of you have eaten seafood during the past month?



Was it wild catch or farm-raised?



U.N. Food and Agriculture Organization

Biennial Reports: “The State of the World Aquaculture”

- In 1980, the aquaculture industry provided **9%** of fish consumed worldwide.
- In 1997, fish produced from farming activity accounted for over **25%** of consumption.
- “This year for the first time, humans will eat **more** farmed fish than wild fish.”

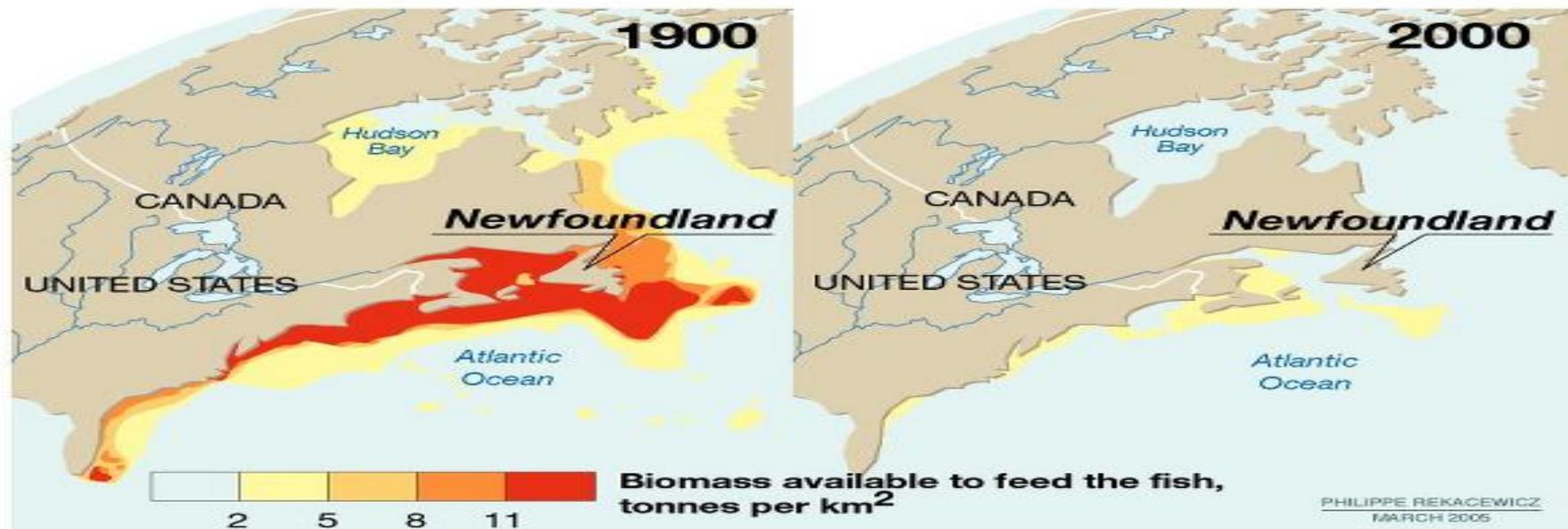
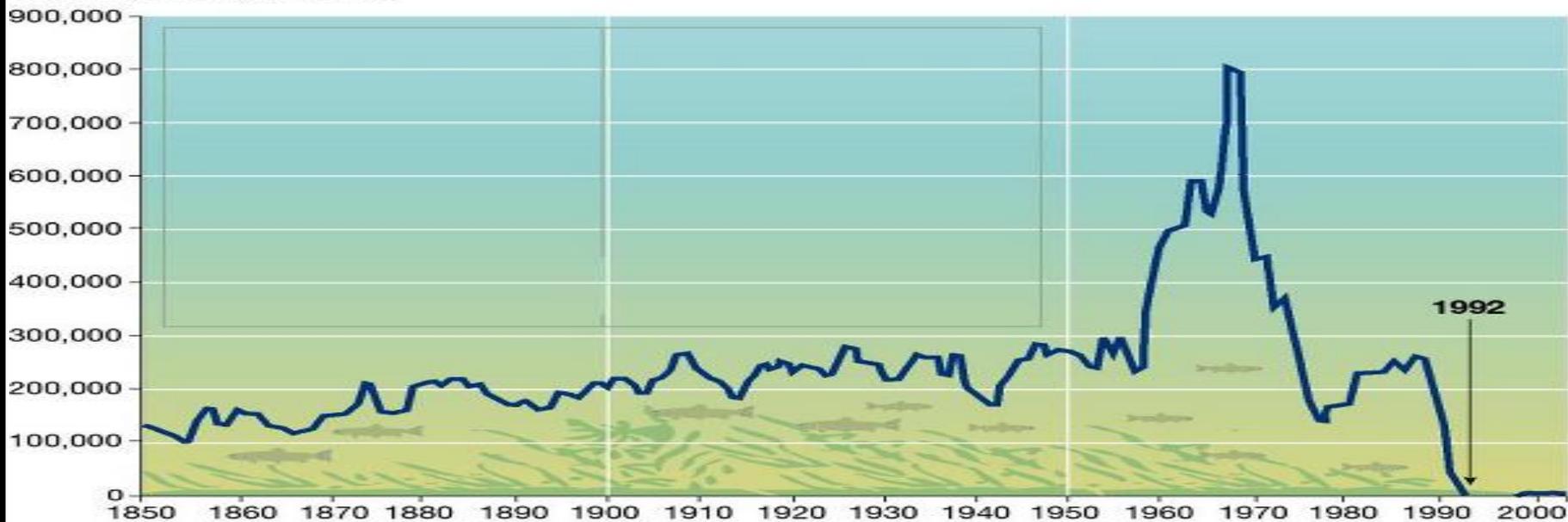
What has caused this rapid growth in consumption of farm-raised fish?

What has caused this rapid growth in consumption of farm-raised fish?

- 1 - *“The worldwide **decline of ocean fisheries** stocks has provided impetus for rapid growth in fish and shellfish farming, or aquaculture.”*

(Nature.com)

Catches landed, in tonnes



Sources: *Ecosystems and Human Well-Being, Synthesis*, Millennium Ecosystem Assessment, Washington DC, 2005; *Global Database on Marine Fisheries and Ecosystems*, Sea Around Us Project, Fisheries Centre, University of British Columbia, Vancouver, Canada (<http://www.seararoundus.org>).

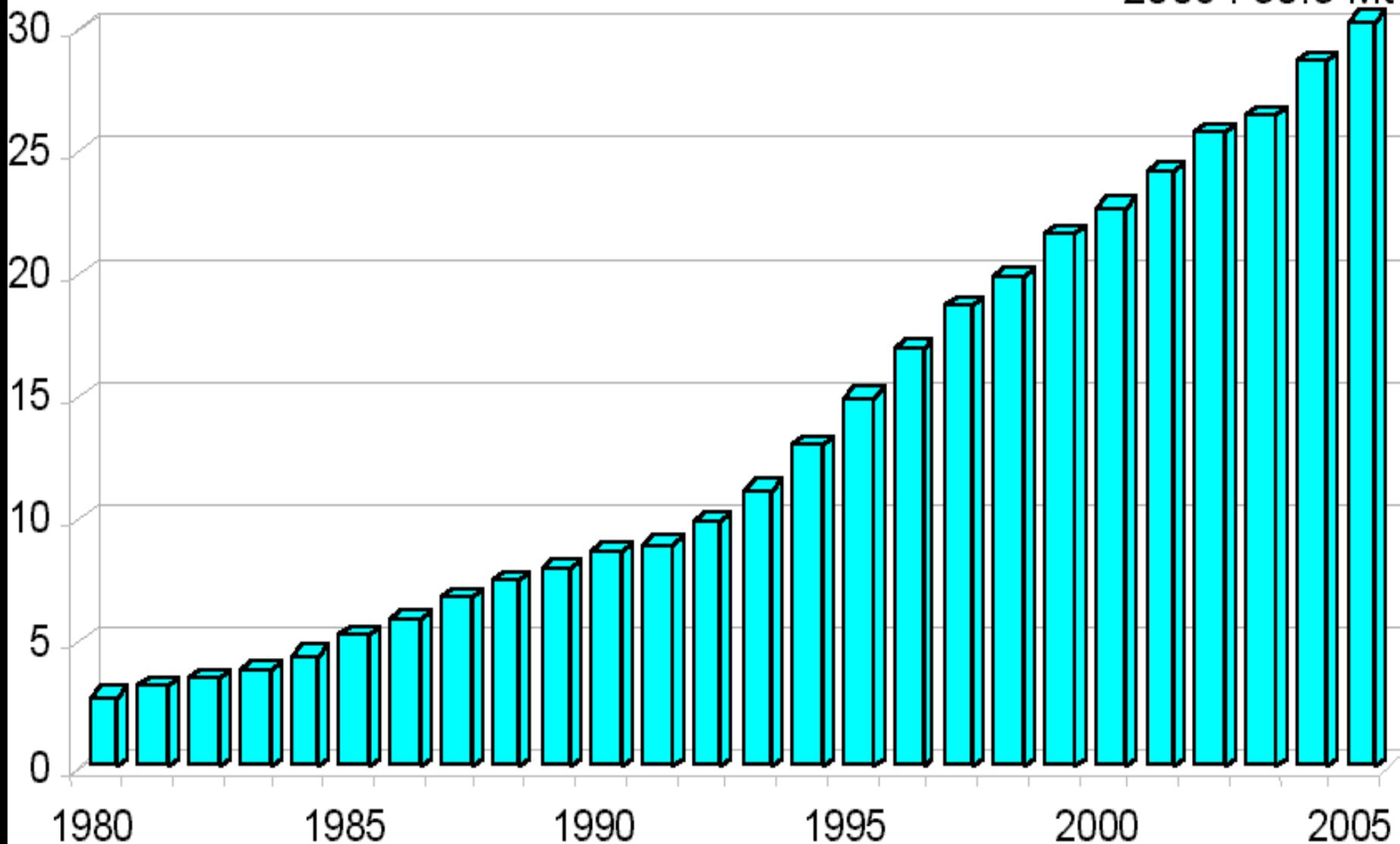
What has caused this rapid growth in consumption of farm-raised fish?

- 2 - “Worldwide **per capita fish consumption nearly doubled** from about 8 kilograms in the early 1950s to about 15.8 kilograms in 1999.”

(World Fish Center)

millions de tonnes

2005 : 30.3 Mt



How does this impact the Great Salt Lake brine shrimp industry?

How does this impact the Great Salt Lake brine shrimp industry?

- “The fact that dormant **Artemia cysts (brine shrimp eggs)** can be stored for long periods, then can be used as an off-the-shelf food requiring less than 24 hours incubation period, makes them the most convenient, least labor-intensive, **live food** available for aquaculture.”

(Artemia Biology, by Browne, Sorgeloos & Trotman)

Great Salt Lake Brine Shrimp Industry

- We supply **highly nutritional**, **on-demand**, **live feed** at the hatchery level to commercial shrimp and fish farms.
- It is a product that contributes to the proper development of young shrimp and fish.
- Simply stated, our product is **baby food** for **baby shrimp and fish**.

GSL Industry's "Nauplii" Consumers

-- commercial fish hatcheries in 62 countries --

Marine fish (ocean, cold water):

= sea bass, sea bream, turbot, halibut, cod, etc.

Tropical fish (warm water):

= grouper, sea bass, red snapper, orange roughy, etc.

Crustaceans:

= shrimp, crabs, etc.



Great Salt Lake Artemia

- Finished Product

- Packaged Product

About the Industry



How are brine shrimp cysts collected?







Raytheon

585

447

66

YAMAHA
Saltwatercraft









OCT 12 2000





Shore Harvest



Processing

- As **manufacturers**, we develop and apply **technical expertise** to process these eggs in a way that keeps them viable (**alive**) for the long trip to our overseas customers.

Developing a product that can remain viable (**alive**) while being exported around the world, then **hatched out on demand** when needed, has transformed this from a cottage industry for the fish hobbyist market in the U.S. to a world leader in supplying **on-demand, live feed** to commercial shrimp and fish hatcheries.

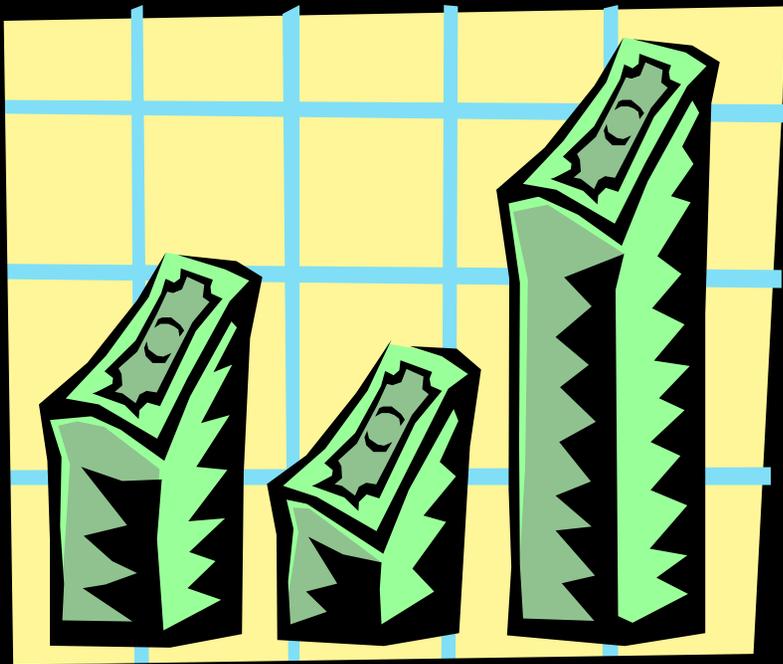
Challenges facing the Great Salt Lake brine shrimp industry?



15+ Years Ago: Wild, Wild West!

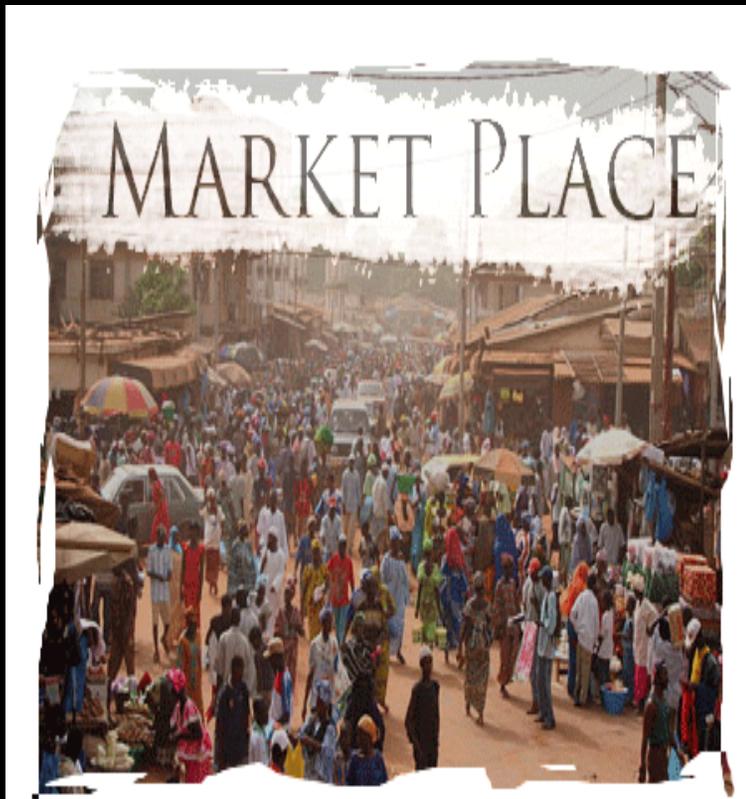


1. Escalating Costs to Compete



- *Increased* fuel and transportation costs
- *Increased* COR fees to the State
- *Increased* cost of lake access due to low lake elevation
- *Increased* equipment costs

2. Competition in the Marketplace



- Significant **cost advantage for foreign competition** and products:
 - Much lower labor costs
 - Much lower transportation costs
 - Much lower import fees and value added taxes
 - Much lower harvest fees
 - Much lower regulatory costs
- **GSL market share has declined** from 90+% to 30-35%
- **Protectionism** (tariffs, restraints)

3. Maintaining a Quality Product



- Our product is “**alive**”
- Our product is part of the human **food chain**
- Our product has a market due to its “**quality**”
- Our product cannot be **contaminated**
- Our product is dependent upon a **healthy resource** and **ecosystem**



Ecological Issues

Pollutants & Contaminants

Salinity

Cyst Quality

Nutrients

Buoyancy

Lake Elevation

Etc.

Solutions to keep Utah-based GSL Artemia Industry Viable

1. Cost savings through **cooperation**, economies of scale, shared resources (Great Salt Lake Brine Shrimp Cooperative, Inc.), government restraint, etc.
2. Continue to produce the world's highest **quality** brine shrimp eggs
3. Maintain a **healthy** Great Salt Lake ... and a **healthy** and **productive** brine shrimp population and resource

Great Salt Lake Brine Shrimp Resource Protection & Management:

*You'll never believe how it came
together!*



Initial Meetings with State Officials

1. No formal state program to manage the brine shrimp resource.
2. No significant state research program for the brine shrimp resource.
3. No state mandate to regulate the brine shrimp resource.

WHY???

“Inexhaustible”

Passenger Pigeon (*Ectopistes migratorius*)

”Some estimate that there were as many as five billion in the U.S. when Europeans arrived in North America.” *Wikipedia*



Industry Objective for the Great Salt Lake:

“Preserve and Protect the
Great Salt Lake Ecosystem
and its Brine Shrimp Resource”

Industry Motto :

“If in doubt ...

... err on the side of
conservation”

Brine Shrimp Industry Actions:

- Support COR **fee increase** from \$3,000 to \$10,000
- Allocate increased funds to **research** & to enforcement
- Recommend creation of peer review **scientific** committee
- Agreed to reductions in length of harvest **season**
- Recommend imposition of **moratorium** on issuance of CORs
- Support state **management plan** to limit harvest to “**excess**” cysts
- Support early emergency season **closures**
- Recommend regulatory revisions to allow season delay and **suspension**
- Voluntarily restricting harvest on the South arm of the GSL in 1999
- Support COR **fee increase** from \$10,000 to \$15,000
- Advocate **WQS** to prevent contamination (Selenium, Mercury, etc.)



Partnership between brine shrimp industry and Utah Division of Wildlife Resources may be a model for management of resources in the GSL ecosystem.

Great Salt Lake Brine Shrimp Industry



QUESTIONS?

A wide-angle photograph of a sunset over a large body of water. The sun is low on the horizon, partially obscured by a layer of clouds, creating a bright glow and long, shimmering reflections on the water's surface. The sky transitions from a pale yellow near the horizon to a deep, dark blue at the top. In the distance, a range of dark, silhouetted mountains or hills stretches across the horizon. The water in the foreground is dark with numerous small, light-colored ripples.

The End

