

Great Salt Lake Water Quality Science Panel Meeting



March 15, 2005

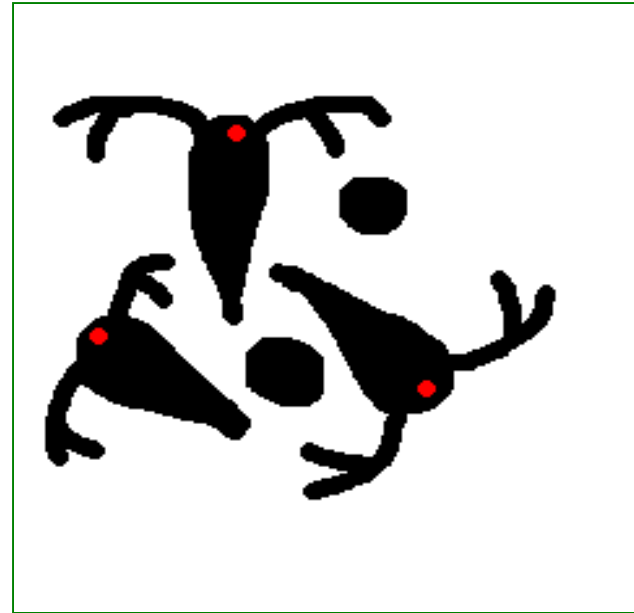
The Brine Shrimp Industry:

- *Brief Introduction to the Industry*
- *Current Operations*
- *Economics: Costs, Revenues, Markets*
- *Industry Challenges & Optimism*
- *Questions ???*

Utah Artemia Association

- An association of the entities that have Certificates of Registration (CORs or harvest permits) to harvest brine shrimp eggs from the Great Salt Lake.
- Currently, 22 entities hold 79 CORs—ranging from 1 to 10 per company.

Association Mission Statement:



“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 & enforcement
- Recommend creation of scientific peer review committee
- Support reduction 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

Industry Profile

- # of Harvest Companies:
 - 1950s-1988: 1-4
 - 1989-1995: 12-14
 - 1996-2002: 32
 - 2002-2003: 23
 - 2003-2005: 22

Industry Profile

- # of Employees:
 - Full time: 100-250
 - Part time: 50-1,000
- # of Boats: 235
- # of Planes: 5-21
- # of Processing Plants: 5-15

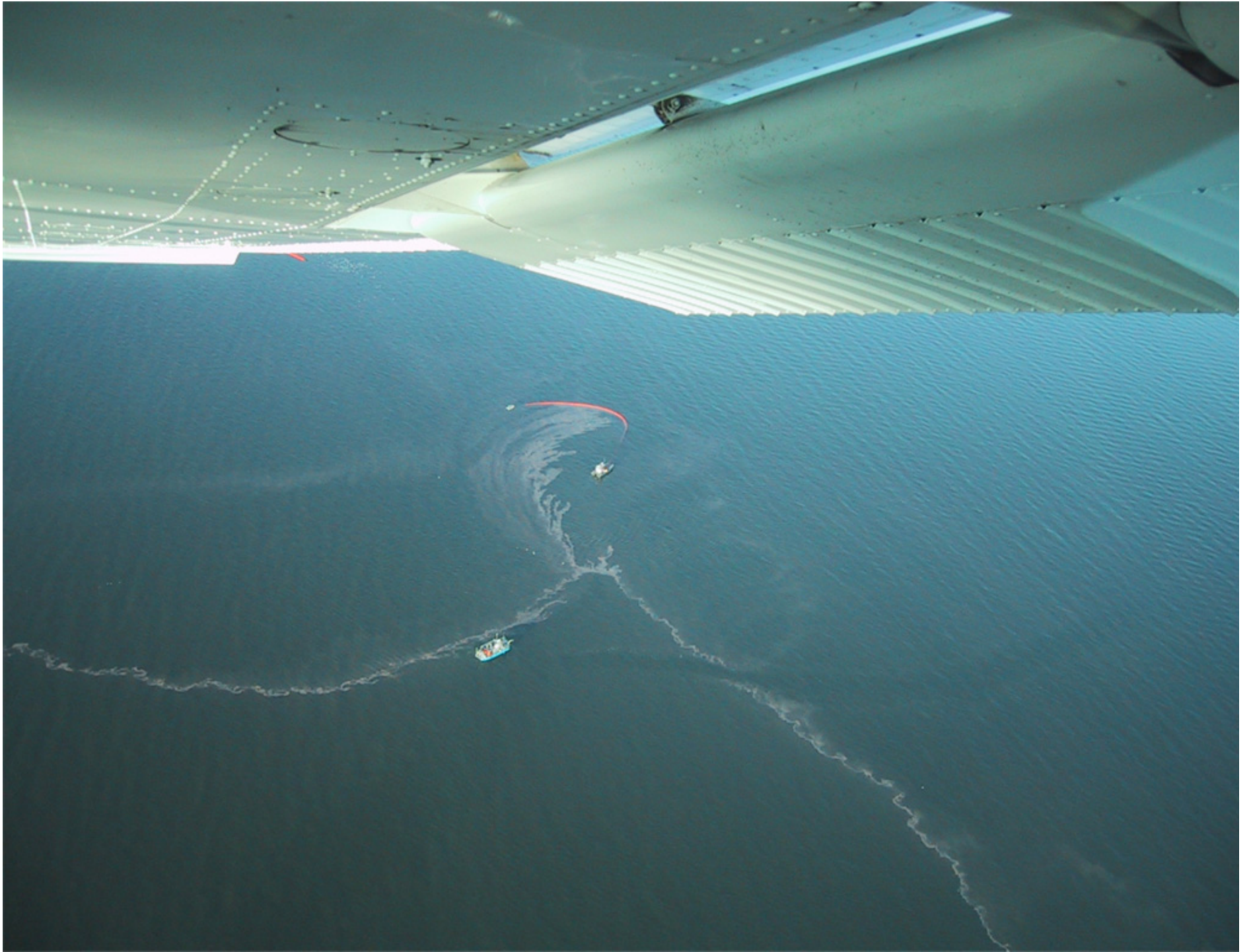
Industry Profile

- Revenues: \$8 to \$65 million per year
- COR Fees: \$790,000 per year
- Royalties: 1998-2004 -- \$2,562,065.67
- State Marina Fees: \$30,000 to \$250,000
- Other Taxes: Fuel, Sales, Property, Income
- Significant Costs: Equipment, Supplies, Contracts



How are brine shrimp cysts collected?















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Historical Harvest Data

Year	# of Co.	# CORs	Pounds
1994-1995	14	29	6,485,954
1995-1996	21	63	14,749,596
1996-1997	32	79	14,679,498
1997-1998	32	79	6,113,695
1998-1999	32	79	4,606,352
1999-2000	32	79	2,631,853
2000-2001	32	79	19,963,087
2001-2002	32	79	18,287,569
2002-2003	23	79	25,729,490
2003-2004	22	79	5,007,709
2004-2005	22	79	6,728,615

How much finished product do we really get out of a pound of raw harvest?



YIELD

- Actual “yield” or “recovery” of processed/finished cysts from the raw harvest varies from 10-25% of total weight collected.

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- Therefore, the percentage of the harvest that is sold as premium product can range from 7-17%.

YIELD

For example, the 18 million-pound harvest of the 2001-2002 season yielded about 2 million pounds of finished product.

What do brine shrimp cysts cost?



Factors affecting the price of brine shrimp cysts?

- Quality
- Consistency
- Size
- Nutritional profile
- Supply
- Demand

Where are brine shrimp cysts used?



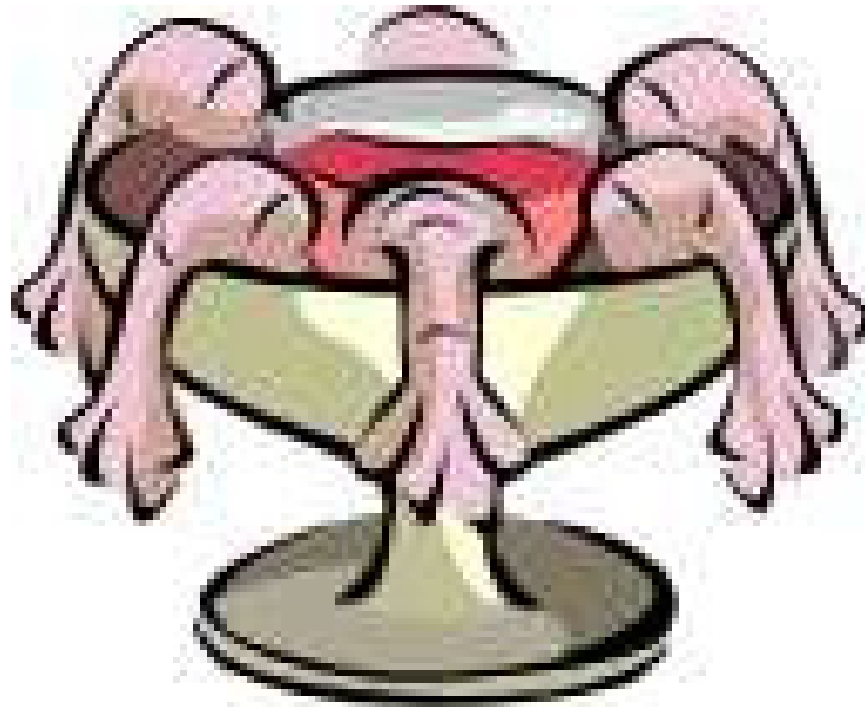
World Markets



•58% to Asia – Thailand, Vietnam, Indonesia, China, India, South Korea

•23% to South America – Ecuador, Mexico, Brazil

•17% to Europe – Norway, France, Spain, Greece, Italy, Turkey, ...



The nauplii of more than 80% of GSL
cysts are used to feed baby shrimp.

A wide-angle photograph of a sunset over a large body of water. The sun is low on the horizon, partially obscured by dark, heavy clouds. The sky is a mix of dark blues and greys, with a bright glow from the sun. The water in the foreground is dark with many small, shimmering ripples that catch the light from the setting sun. In the distance, a range of mountains or hills is visible against the horizon line.

Brine Shrimp Industry Challenges

Industry Challenges

- Escalating Costs
- Declining Markets & Revenues
 - Shifting shrimp species
 - Foreign competition
 - Disease
 - European import bans
 - Import tariffs
- Cyst Quality

GSL Cyst Quality

Hatching Percentage

- Hatching Synchrony
- Hatching Rate
- Separation
- Essential Fatty Acid Patterns
- Size
- Contaminants



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Brine Shrimp Industry Challenges

Industry Optimism

- Cost Containment / Operational Efficiencies
- Industry Focus on Harvesting/Producing Quality
- Market Expansion:
 - Aquaculture continues to grow internationally
 - New & emerging markets (e.g. Brazil)
 - New & emerging customers (hatcheries)
 - GSL remain the top quality cysts in the market
- Increasing Interest in GSL Protection



QUESTIONS ???