LIVE, DISEASE-FREE, *ARTEMIA* NAUPLII IN PASTE FORM, AND *ARTEMIA* BIOMASS PRODUCTION IN A NATURAL RECIRCULATING AQUACULTURE SYSTEM (NRAS), TWO EXAMPLES OF INNOVATIVE *ARTEMIA* TECHNOLOGIES.

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THE ARTEMIA YOU CAN TRUST

AGENDA

- **Introduction** – Live feeds in marine aquaculture

- **Video:** *"Artemia* biomass production in a natural recirculating aquaculture system (NRAS)"
- Conclusions on *Artemia* biomass production in an NRAS system

- **Video:** "Live *Artemia* nauplii in paste form, GSL SYNERGY a case study"
- Conclusion on the production of live *Artemia* nauplii paste in dedicated *Artemia* hatcheries

- **Final thoughts**

WHY LIVE FEEDS?

WHY *ARTEMIA*?

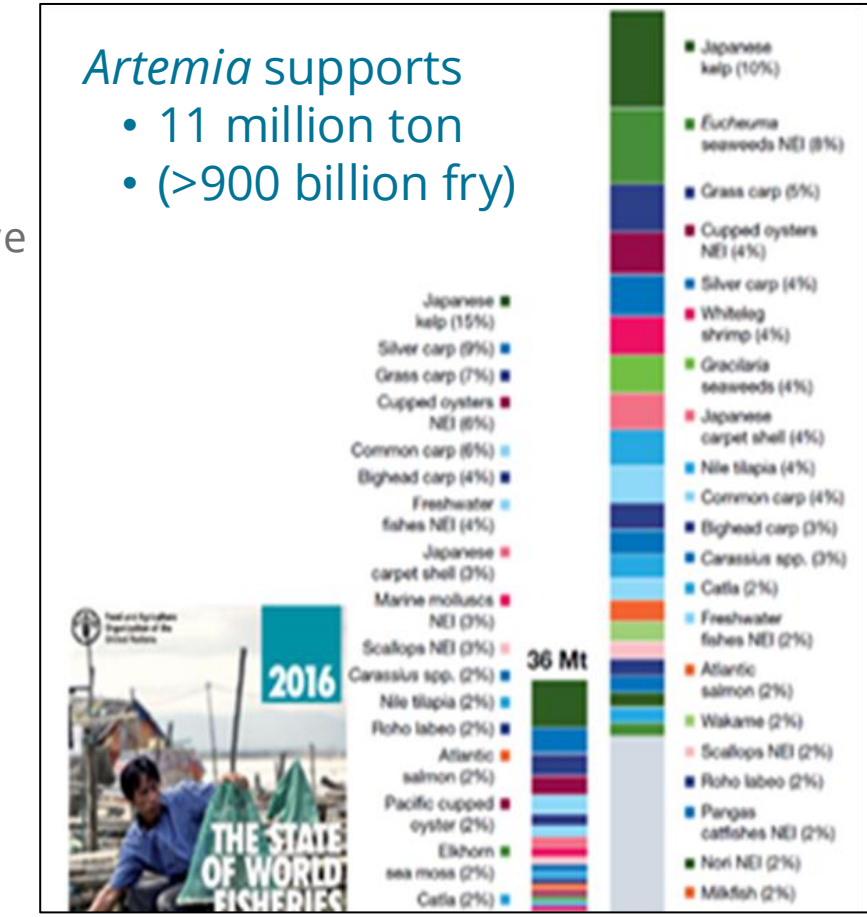
Larvae of commercial marine species are small carnivores with an underdeveloped digestive system benefit significantly from live feeds

***Artemia* is** small, highly digestible, can be enriched to tailor the nutritional composition, can be hatched on demand (convenient)

Beyond nutrition, the **"*ARTEMIA*** (live feed) **factor"** benefits hatchery production

Legacy effect in grow out when feeding optimal levels of Artemia in hatchery/nursery culture

Artemia supports
- 11 million ton
- (>900 billion fry)



NRAS

NATURAL RECIRCULATING AQUACULTURE SYSTEM

A case study in live *Artemia* biomass production in support of marine aquaculture

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LIVE BIOMASS PRODUCTION IN A “NATURAL RECIRCULATING AQUACULTURE SYSTEM”

NRAS *ARTEMIA* BIOMASS PRODUCTION

Production of a valuable live feed for marine aquaculture

- **Improves maturation** of *M. rosenbergii* and *P. monodon* broodstock in the farm
- **Excess is sold** to local shrimp hatcheries
- **Complements *Artemia* nauplii usage** in later stages of hatchery and nursery production
- **Vibrio-free** because of the production pond salinity

NOT resource-intensive

- Uses **waste products** to fertilize the pond and feed *Artemia*
- *Artemia* biomass is a **byproduct** of the *M. rosenbergii* and *P. monodon* production
- **Low maintenance**
- Provides a **supplemental source** of income to the farm

NOT a "one-size-fits-all"

- Other locations will require site-specific adaptations

Increases the availability of live feeds to the marine aquaculture industry

LIVE GSLA NAUPLII PRODUCED IN

SPECIALIZED *ARTEMIA* HATCHERIES

GSL SYNERGY, A case study in the production of live *Artemia* nauplii paste in support of marine aquaculture

LIVE *ARTEMIA* NAUPLII IN PASTE FORM –*ARTEMIA* HATCHERY

LIVE *ARTEMIA* NAUPLII IN PASTE FORM

Production of a valuable live feed to marine aquaculture

- **Easy**-to-use
- Highly nutritious **pure Instar 1** nauplii
- **Enriched Instar 2** nauplii where required
- **Pathogen-free**, resulting in improved survival, especially in early larval stages

By **maximizing the yield** of commercial cysts in **specialized *Artemia* hatcheries** we can increase the overall **availability of live feeds** to the industry

FINAL

THOUGHTS

- **Live feed *Artemia* is essential** to marine aquaculture
  - *Improve hatchery production*
  - *Improve grow out production through legacy effects*

- **Optimal usage rates** of *Artemia* are required to optimize aquaculture production – today most operations do not use optimal ratios

- NRAS ***Artemia* biomass** production and specialized **Artemia hatcheries** support marine aquaculture by **supplementing** and **optimizing** the use of the **essential live feed *Artemia*** harvested from natural habitats