

The potential of marine food fish farming for Brazil. (*Potencial da Piscicultura Marinha para o Brasil.*)

Marcell Boaventura
Molofeed AS – molofeed.no



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About

- Norwegian
- Biotechnology and innovation
- Core - new microencapsulation process
- Focused marine hatcheries



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Beliefs

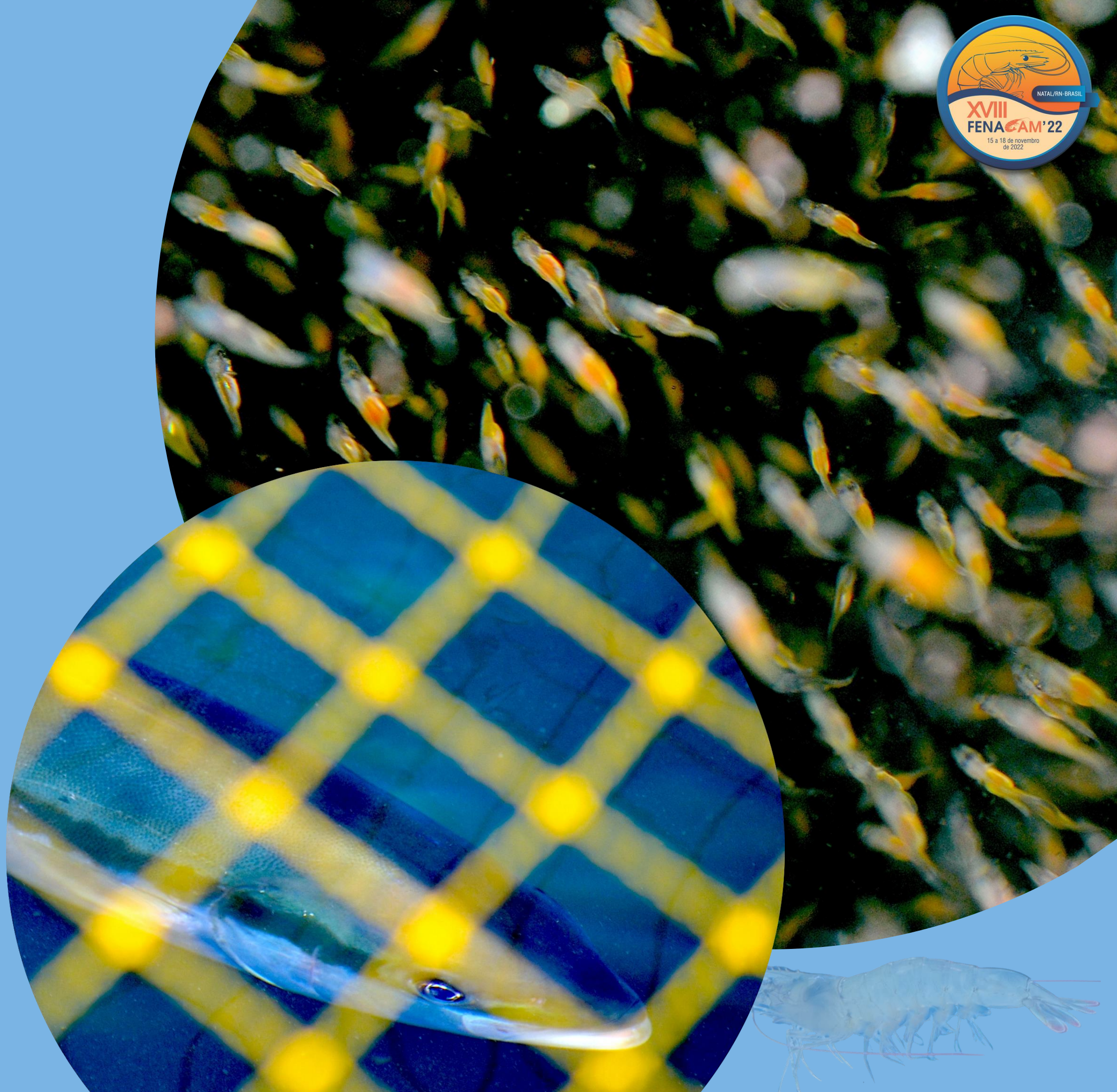
- To keep growing the sector needs:
 - Robust offspring
 - Efficient use of Artemia and Marine Ing.
 - Eliminate antibiotics
 - Sustainable Aquaculture

Commitment
Advance hatcheries to their full potential for
the best of aquaculture



Topics

- Traits of Brazil
- Current status of the sector
- Hatchery process
- Grow Out
- Nutrition
- Strategies and imperatives
- Marketing
- Final considerations



What Makes the Potential of Brazil



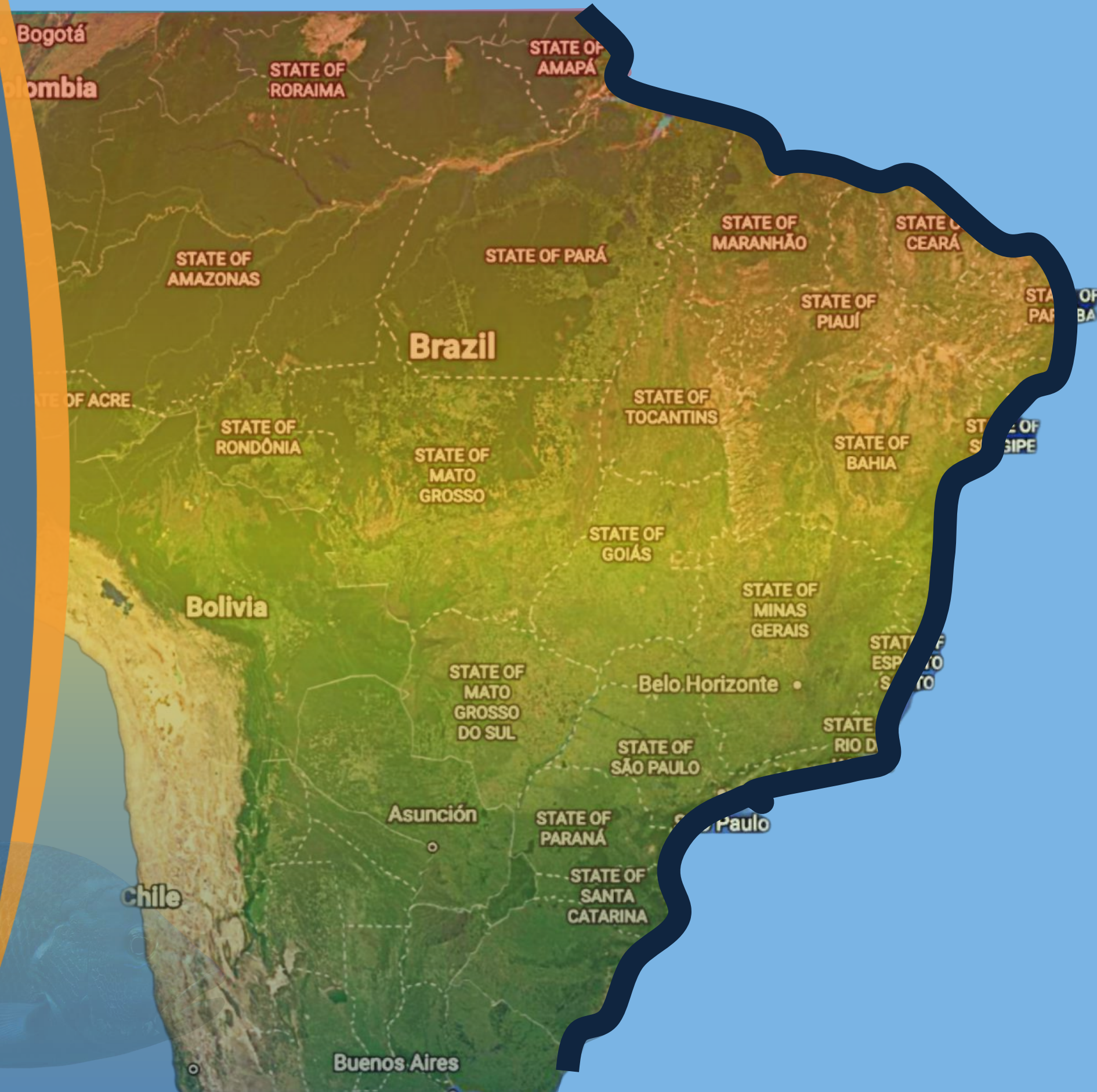
- 8000 km coast



What Makes the Potential of Brazil



- 8000 km coast
- Climate



What Makes the Potential of Brazil

- 8000 km coast
- Climate
- Tradition in several spp.



What Makes the Potential of Brazil



- 8000 km coast
- Climate
- Tradition in several spp.
- Available ingredients



What Makes the Potential of Brazil

- 8000 km coast
- Climate
- Tradition in several spp.
- Available ingredients
- Feed Infrastructure



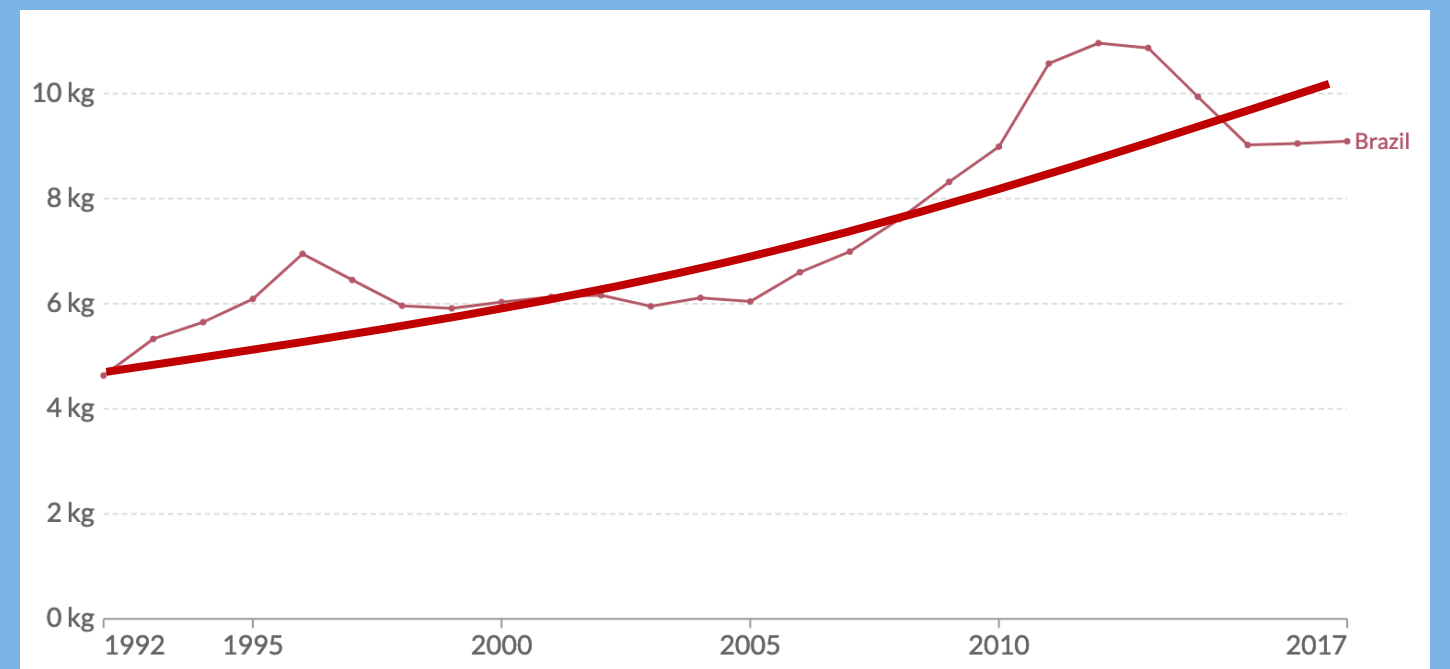
1580 feed mills



What Makes the Potential of Brazil



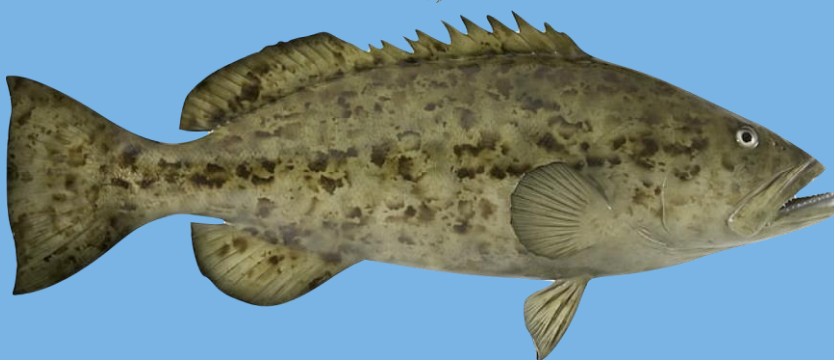
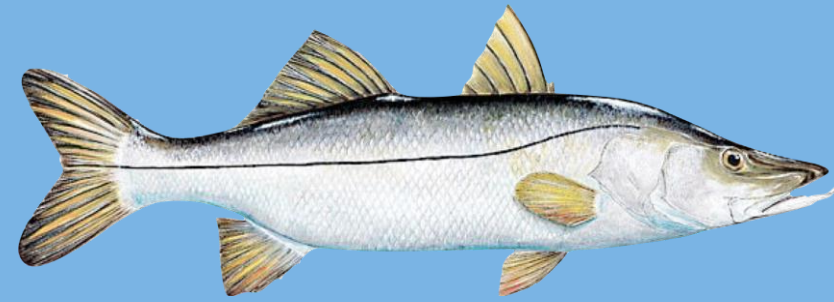
- 8000 km coast
- Climate
- Tradition in several spp.
- Available ingredients
- Feed Infrastructure
- Responsive seafood market



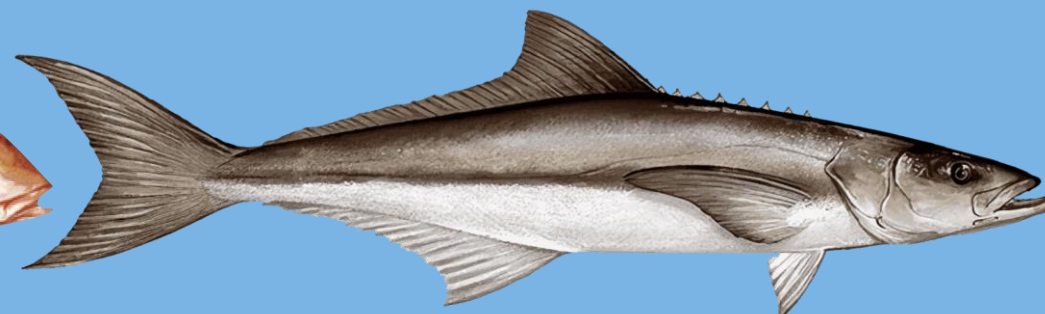
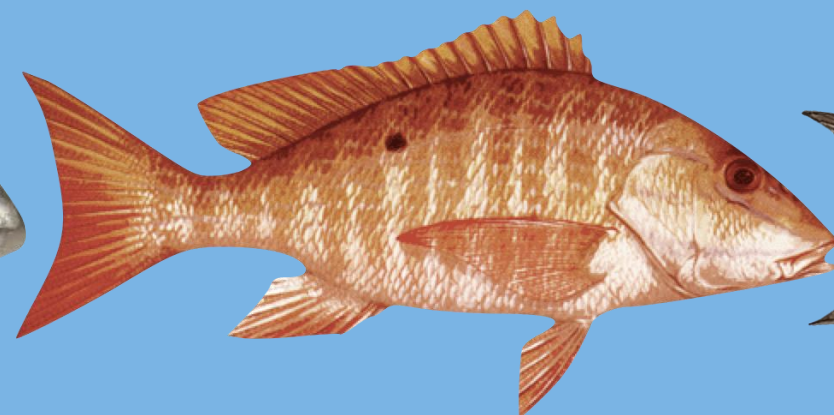
Graph Source: UN Food and Agriculture Organization (FAO)

1580 feed mills





Licence Image Source: SINAU



Images Source: google

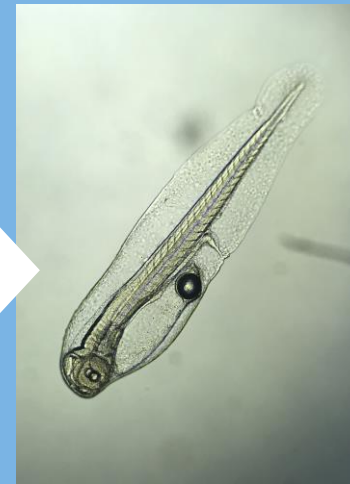
Images Source: NOAA



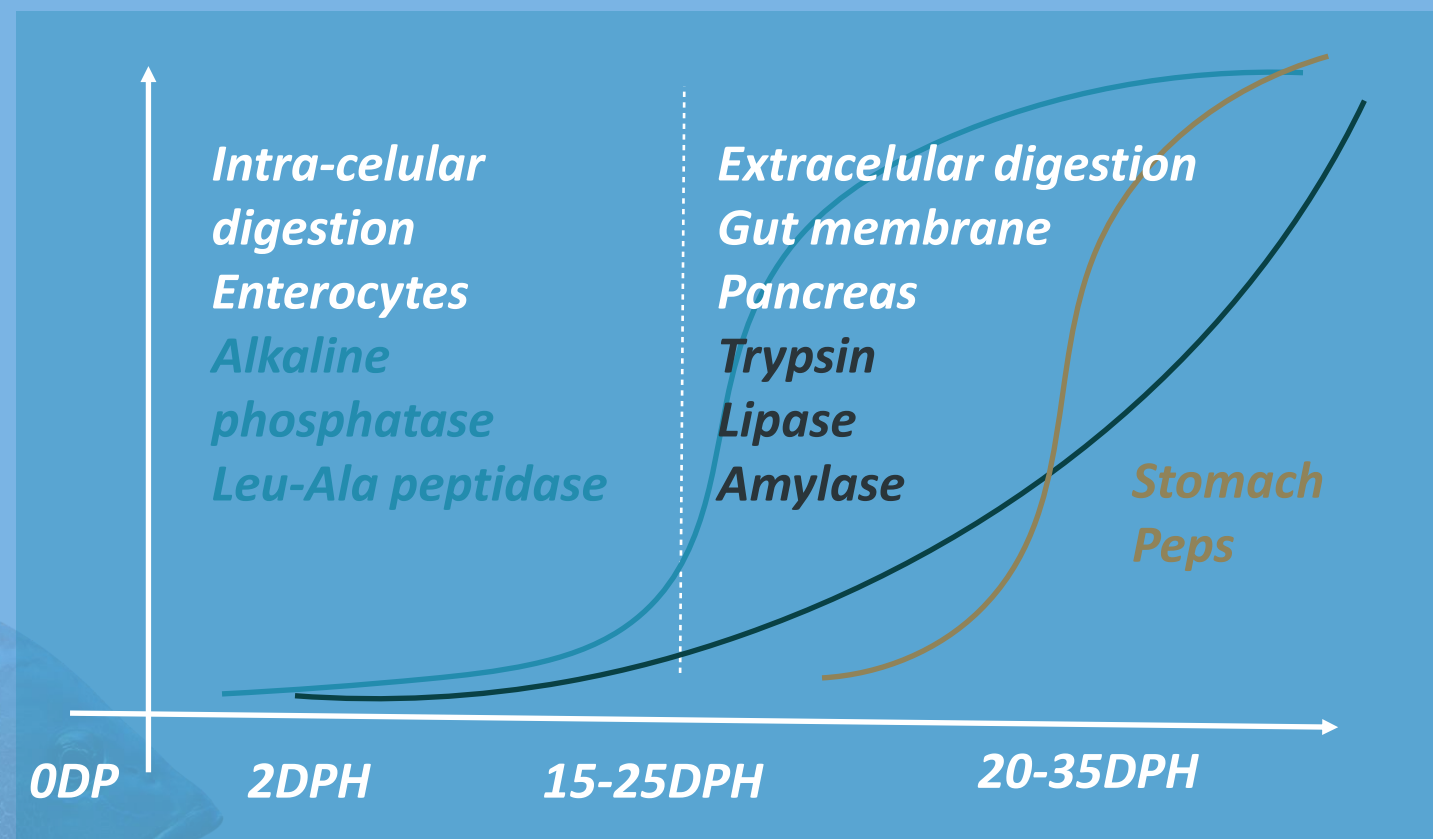
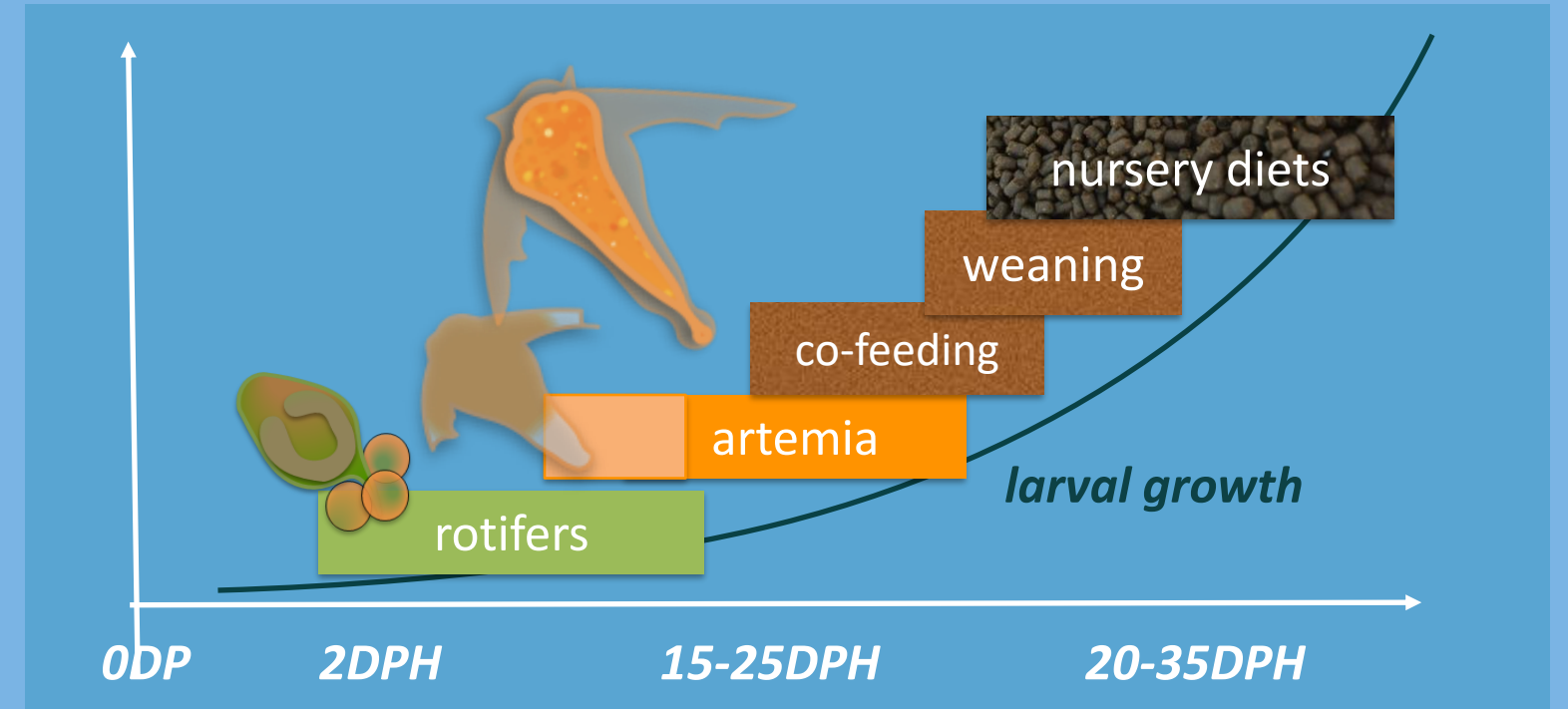
Broodstock

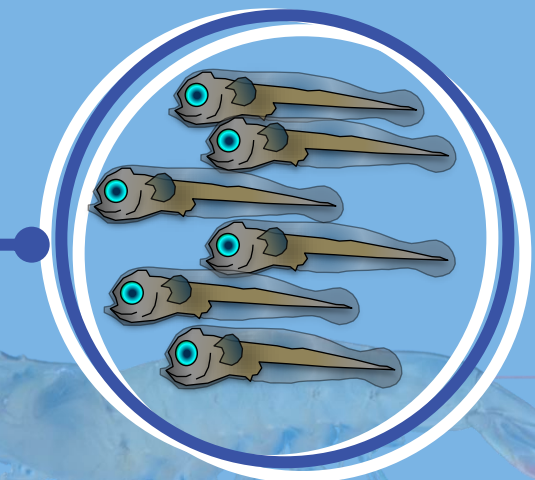
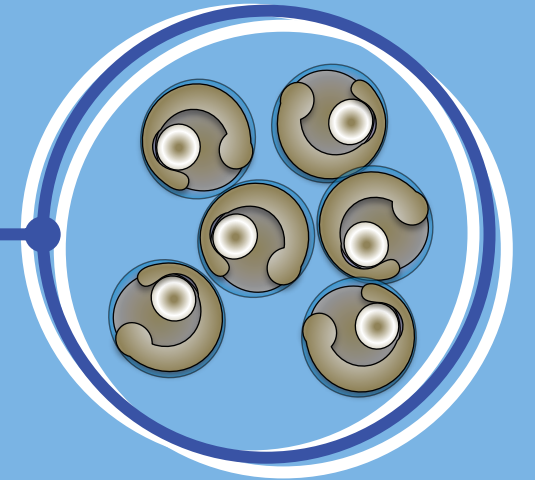
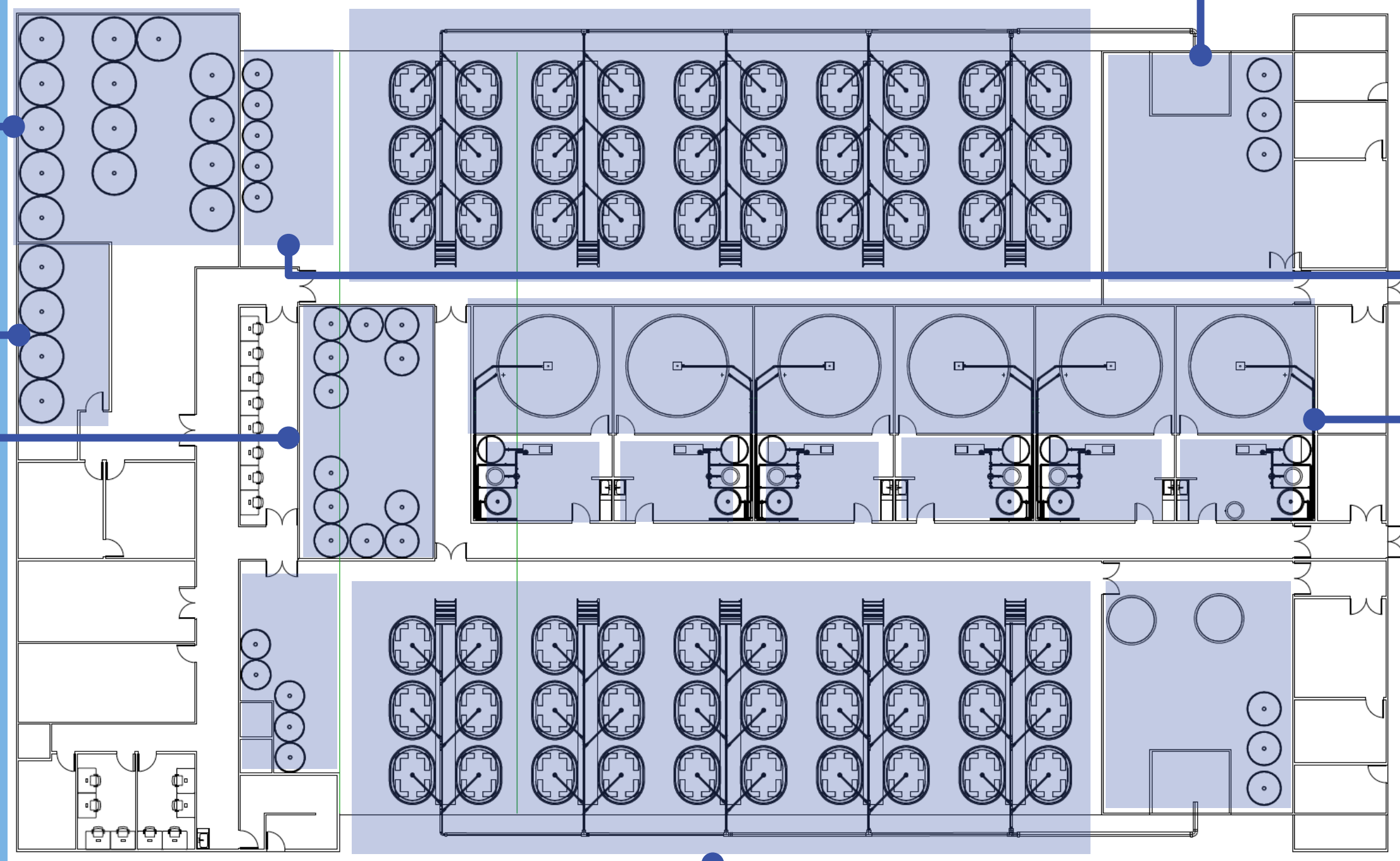
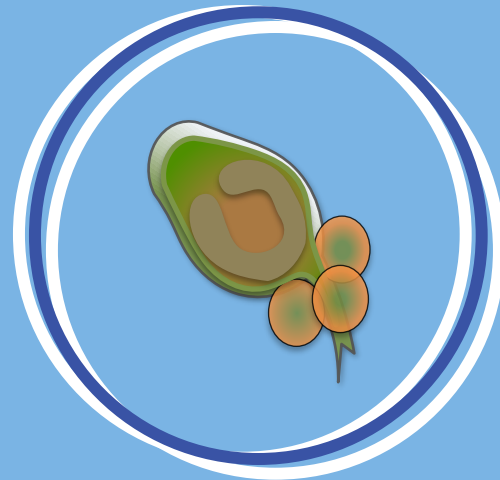
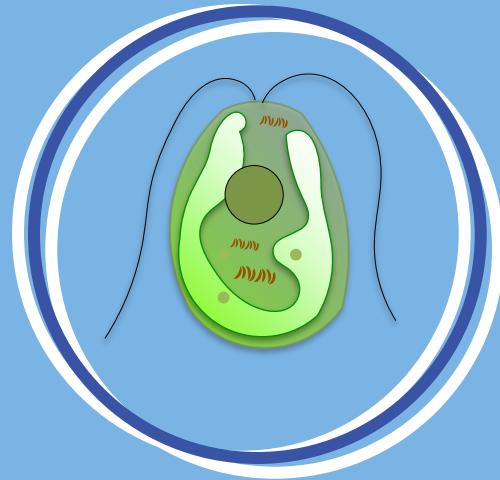
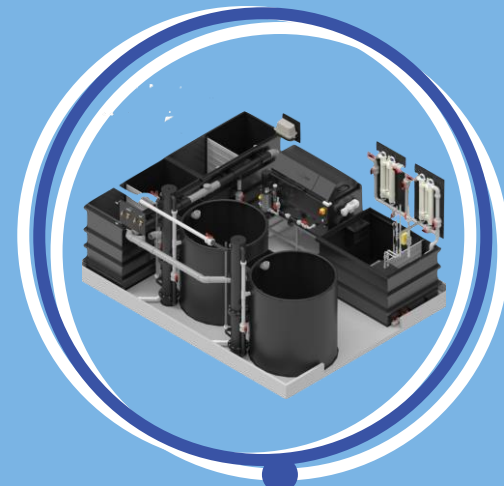


Spawning



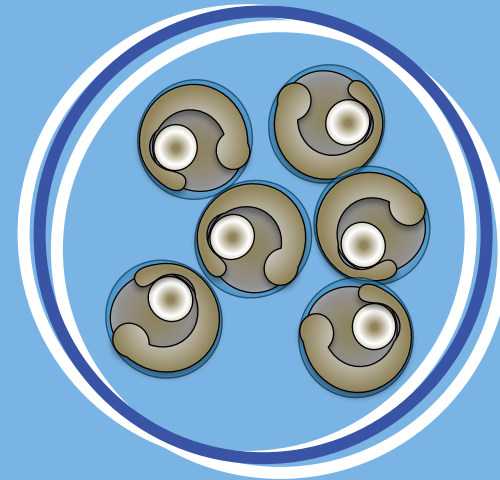
Hatch



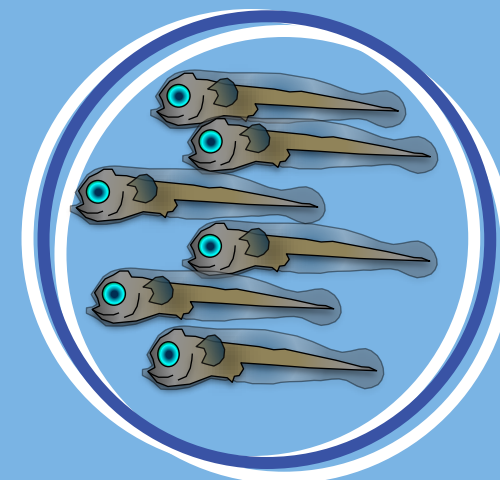




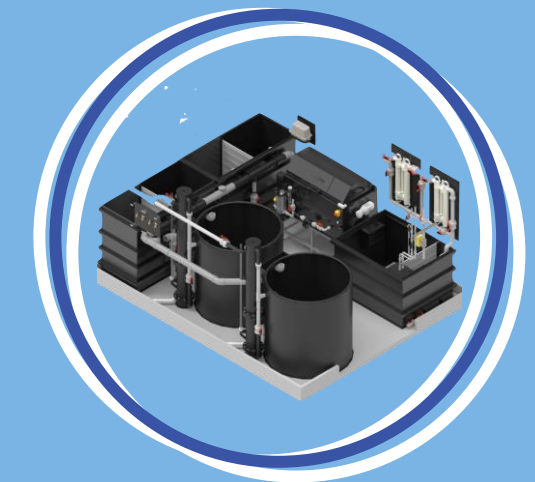
- Spp. & Size dep.
- 0.3 – 5Mi/Spawn
- Tk vol. 20-60M³



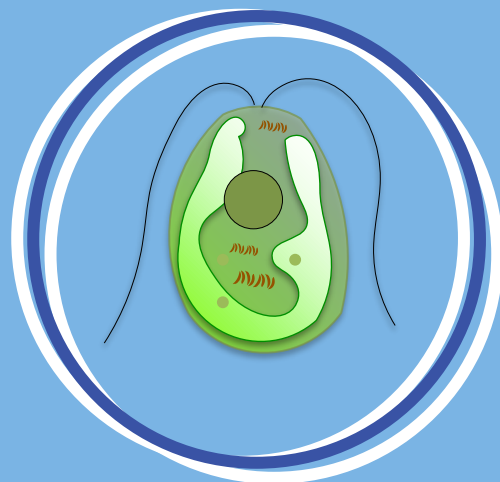
- Spp. dependent
- In. dens. ^1500/L
- Hatch Rate ^90%



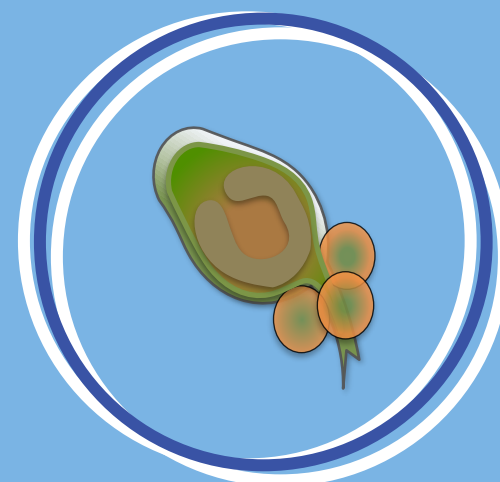
- St. density ^150/L
- Surv. Rate ^80%
- 1000kg/Mi to 1.5g



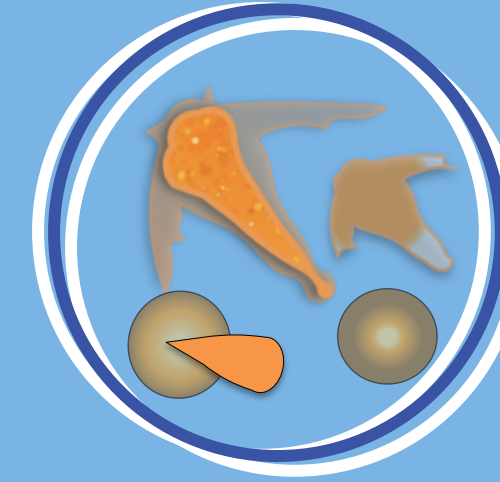
- Water source:
- borehole best!
 - W Exc. rate: ^20x/d
 - Tk Vol. 5-20M³
 - 3 < O² < 5mg/L
 - RAS Capex: USD 3000/M³
 - (excl. land & building)



- Tiso / Nano
- ^200k/ml/d



- L-type or S-type
- 20Bi./Mi. fry



- Instar-I & Enrich
- 10-300kg/Mi fry



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Grow out Process



Ponds, Oceania

Stocking, 2-3kg/m³



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Grow out Process



Recirculated Ponds, Oceania

Stocking, 6-8kg/m³



Sea Cages, Mediterranean
Stocking, 10-12kg/m³



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Grow out Process



Sea Cages, Asia

Stocking, 15-20kg/m³



Coral Coast Barramundi

Raceways, Oceania
Stocking, 20-25kg/m³



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Grow out Process



molo®

Grow out Process



RAS, Oceania

Stocking, 20-25kg/m³

Source: <https://www.werribeerotary.org.au/PhotoAlbums/mainstream-aquaculture>



Cycle & harvest size
Spp. dependent
6-36 months / 250g – 6kg
Survival 90%



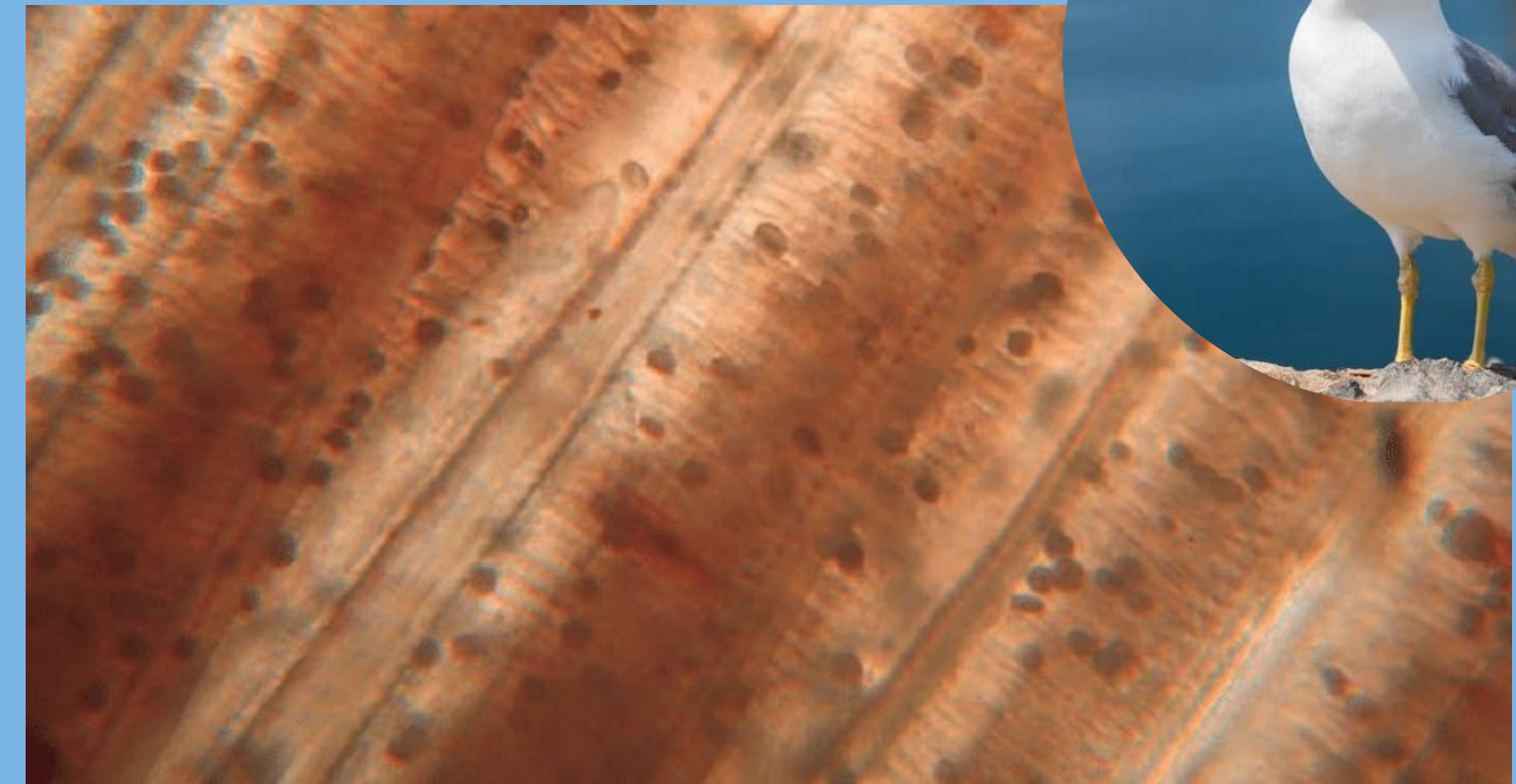
Spp & harvest size dependent
FCR 1.2 – 1.8
Feed Specs 45:14 - 50:20



Active health management
Gill & blood sampling
Parasite control



Predator exclusion
Birds
Feed optimization



Amyloodinium ocellatum throphont's in gills of infected fish. Source: Soares, F., et al. (2011) Occurrence of Amyloodinium ocellatum in aquaculture fish production: a serious problem in semi-intensive earthen ponds. Aquaculture Europe VOL. 36 (4).

Veg. & Alternative Proteins
Soy, SPC, Lupins, Insect, Single Cell Proteins

Fish Meal
Prime and co-product

Fat
Vegetable, Land animal co-product

Attractants
Krill, Hydrolysates & Peptides

Meat Protein
Land animal co-product

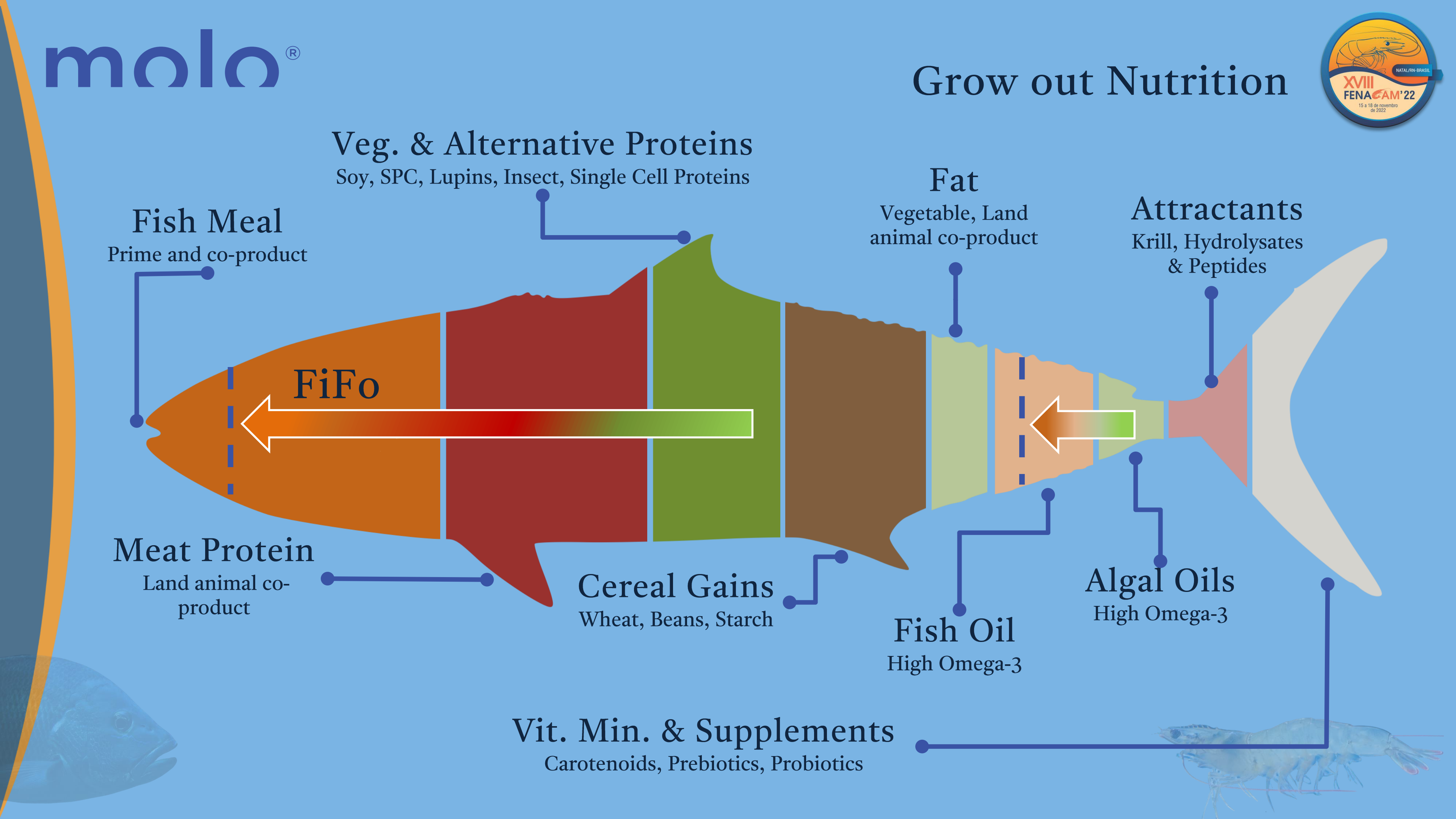
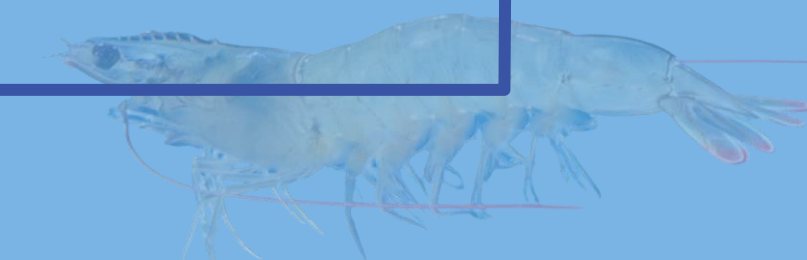
Cereal Gains
Wheat, Beans, Starch

Fish Oil
High Omega-3

Algal Oils
High Omega-3

Vit. Min. & Supplements
Carotenoids, Prebiotics, Probiotics

FiFo



- Selecting the right species
 - Commercial viability– demand and value
 - Tech. viability

Species	R\$/KG	CV(%)	Volatility(%)	Production
Snook	33.4	10.9	9.9	Fishery/Domestic
FlatFish	12.34	15.5	10.8	Fishery/Domestic
Mullet	6.85	22.2	16	Fishery/Domestic
AmberJack	21.52	13.3	15.1	Fishery/Domestic
Yellowtail	14.6	22	22.2	Fishery/Domestic
Salmon	28.59	23.6	7.8	Aquaculture/Import
Tilapia	5.9	21.4	6.2	Aquaculture/Domestic
Chicken	4.23	23.4	6.7	
Beef	11.03	31.8	3.7	
Pork	4.49	30	10.1	

USD 8/kg

USD 5/kg

USD 3000/kg

Ruth Beatriz Mezzalira Pincinato, Atle Oglend, Renata Melon Barroso Bertolini & Andrea Elena Pizarro Muñoz (2022): The São Paulo wholesale seafood market: A study of fish prices in Brazil, Aquaculture Economics & Management, DOI: 10.1080/13657305.2022.2079762



- Selecting the right species
 - Commercial viability– demand and value
 - Tech. viability



- Suitable for pond culture

Head on Gutted

- R\$ 45/kg

Fillet yields:

- 47% (skin-on)
- 39% (skin-off)

Source: Jeffrey Guy & Stephen Nottingham (2014) Fillet Yield, Biochemical Composition, and Consumer Acceptance of Farmed and Wild Mulloway, *Journal of Aquatic Food Product Technology*, 23:6, 608-620, DOI: 10.1080/10498850.2012.750636

Source: NOAA



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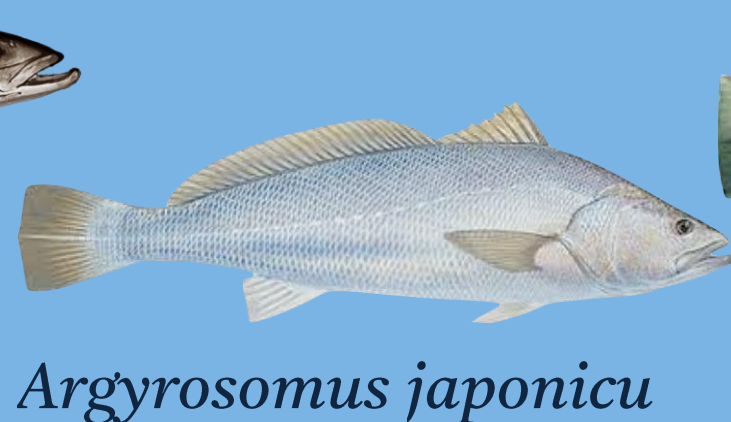
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Cynoscion acoupa

- Suitable for pond culture
- Good technical reference for the species with *Sciaenidae*



Argyrosomus japonicu



Totoaba macdonaldi



Sciaenops ocellatus



Larimichthys polyactis

Source: NOAA



- Selecting the right species
 - Commercial viability– demand and value
 - Tech. viability
 - Integral product and co-product recovery

Totoaba swimming bladder is the “cocaine of the sea”, with prices of up to \$46,000 per kg on the Chinese black market

Source: <https://porpoise.org/knowledge-base/totoaba-connected-vaquita/>



- Suitable for pond culture
- Excellent product and co-product recovery alternatives
- Swimming Bladder / Liver / Skin / Gut and Carcasse

Source: NOAA



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Source: <https://summeryule.com/smoked-oyster-and-cod-liver-pate-recipe/>

Source: NOAA



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 - Commercial viability– demand and value
 - Tech. viability
 - Integral product and co-product recovery



- Suitable for pond culture
- Excellent product and co-product recovery alternatives
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Source: NOAA



- Selecting the right species
 - Commercial viability– demand and value
 - Tech. viability
 - Integral product and co-product recovery
 - Processing and value adding



Source: NOAA

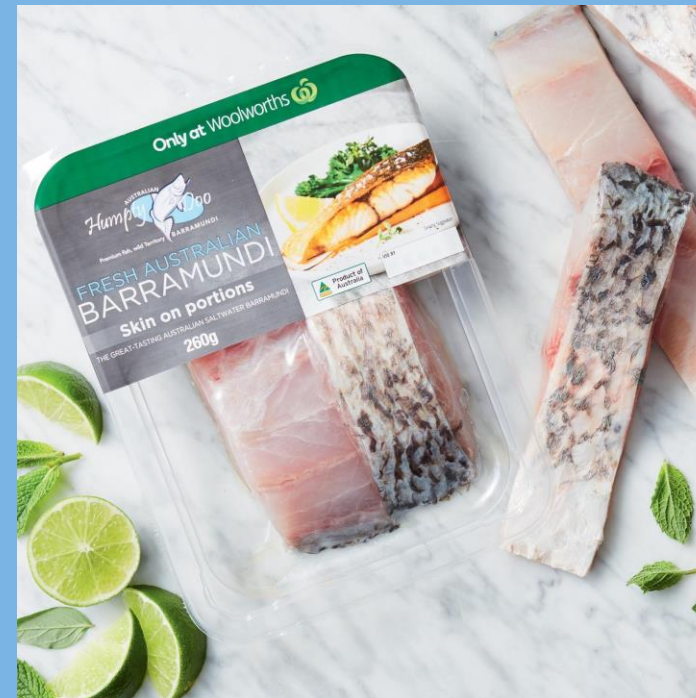


Image Source: Dan Richards



Image Source: Dan Benetti

- Selecting the right species
 - Commercial viability – demand and value
 - Tech. viability
 - Integral product and co-product recovery
 - Processing and value adding
 - Marketing – influencing consumer choice

Source: NOAA



Image Source: Dan Benetti

Seafood OR Terrestrial



veja ASSINE

RADAR RADAR ECONÔMICO POLÍTICA ECONOMIA SAÚDE MUNDO CULTURA PLACAR AGENDA VERDE

Saúde

A força-tarefa para melhorar a saúde e a economia com o consumo de peixes

Em parceria com a iniciativa privada e órgãos governamentais, cientistas da USP pretendem fomentar a produção de alimentos de origem aquática

Por Karina Toledo, da Agência Fapesp 19 out 2022, 13h06



1º FESTIVAL TERRITORIAL DA PESCA ARTESANAL E AQUICULTURA

"Nosso rio, nossa riqueza"

30 DE JULHO
SOBRADINHO - BA

Realização:

COOPES SOB RADINHO PESCADOS

Apoio:

PREFEITURA DE SOB RADINHO, CASSA DO COATINGO, COLÔNIA DE PESCADORES Z-026 DE SOB RADINHO, FIDA, CAR, Estado da Bahia, SECRETARIA DE DESENVOLVIMENTO RURAL



Fisheries OR Aquaculture



?



Global Seafood Alliance
GOAL Events | Advocate Magazine | Aquademia Podcast
ABOUT | MEMBERSHIP

Global Seafood ALLIANCE™ | Best Aquaculture Practices | Best Seafood Practices

Tuesday, 19 April 2022

Global Seafood Alliance Aims to Increase Seafood Consumption with First Consumer Marketing Campaign

Source: Global Seafood Alliance
<https://www.globalseafood.org/blog/first-gsa-consumer-marketing-campaign/>

BAP - News | GSA - News

Best Aquaculture Practices

Announcing Our First-Ever BAP Consumer Campaign:

Healthy Fish, Healthy Planet, Healthy You!

Download the BAP Campaign Deck



Source: BAP - <https://info.globalseafood.org/healthy-you-campaign-lp#form>

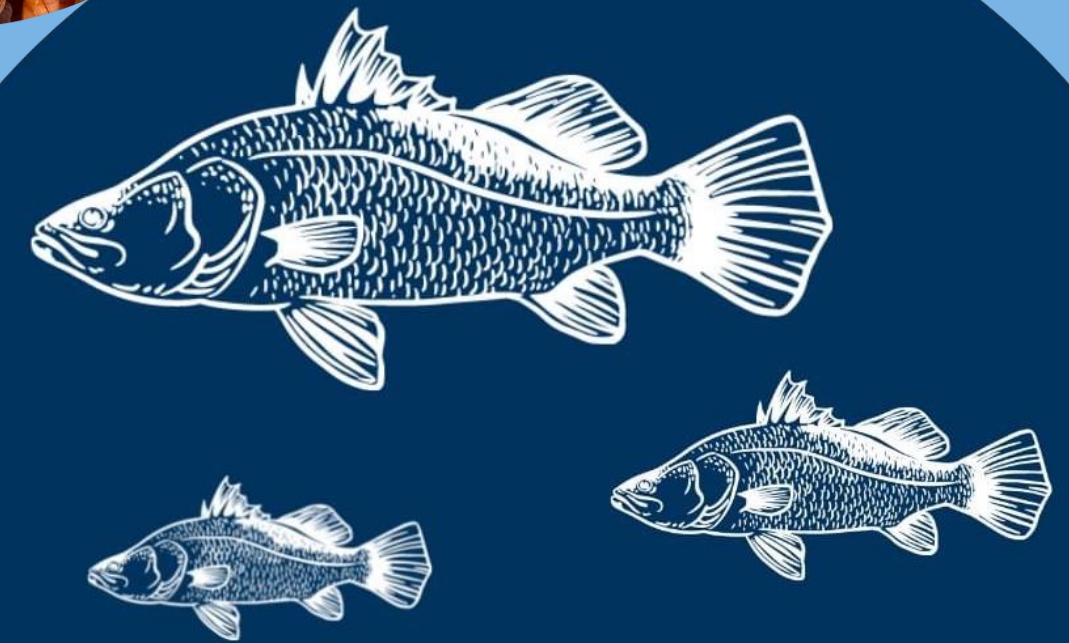
Shrimp, Prawn, Salmon, Oyster...



?



Farmers Associations

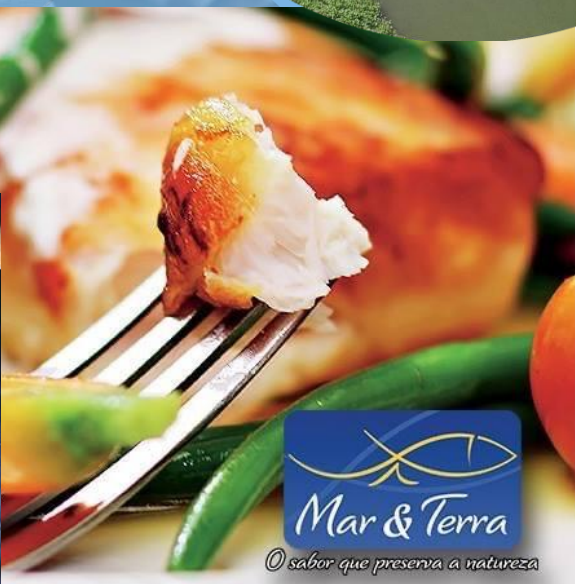


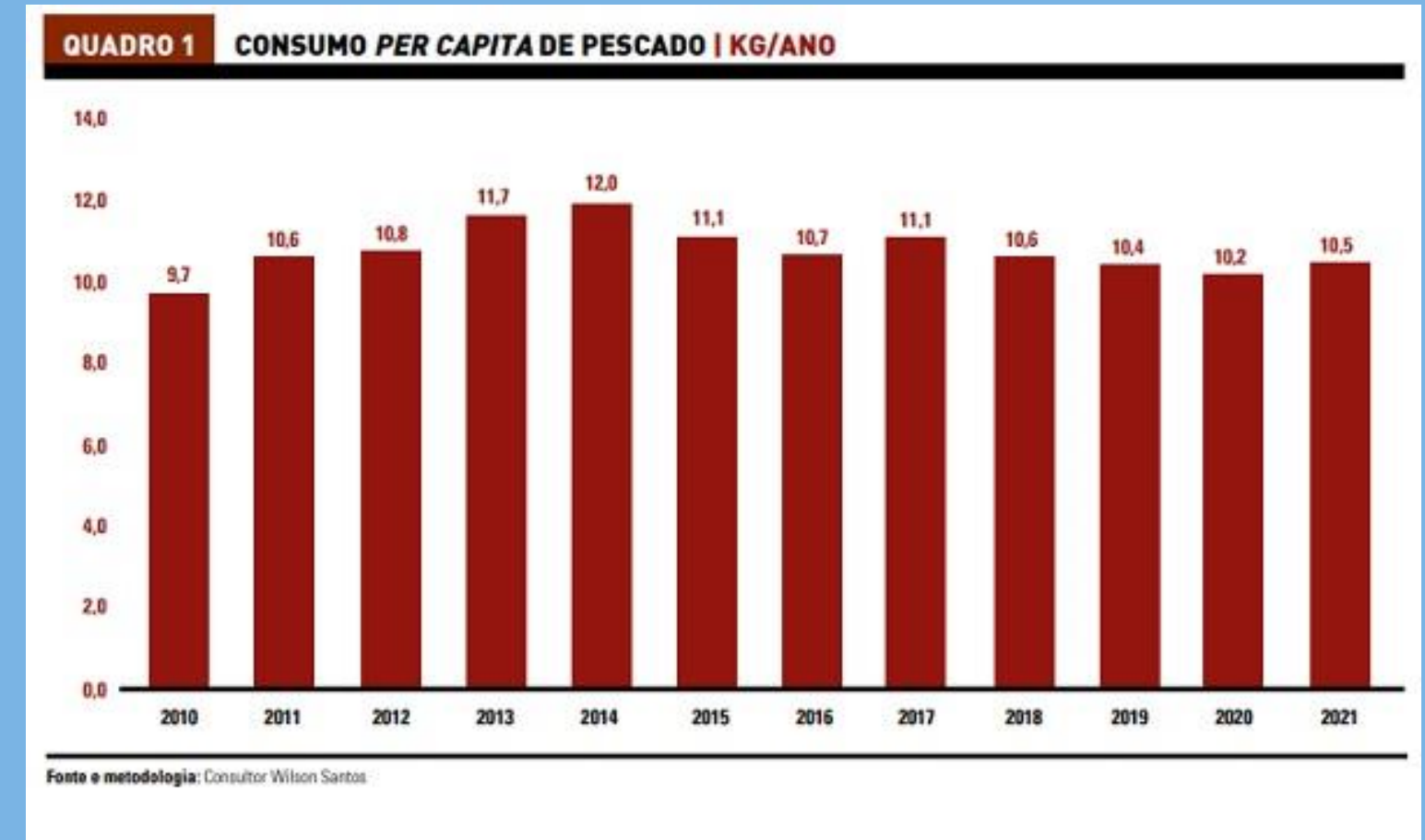
BARRA 101:
SNAG THE FRESHEST BARRA CATCH

#ASKFORAUSSIEBARRA



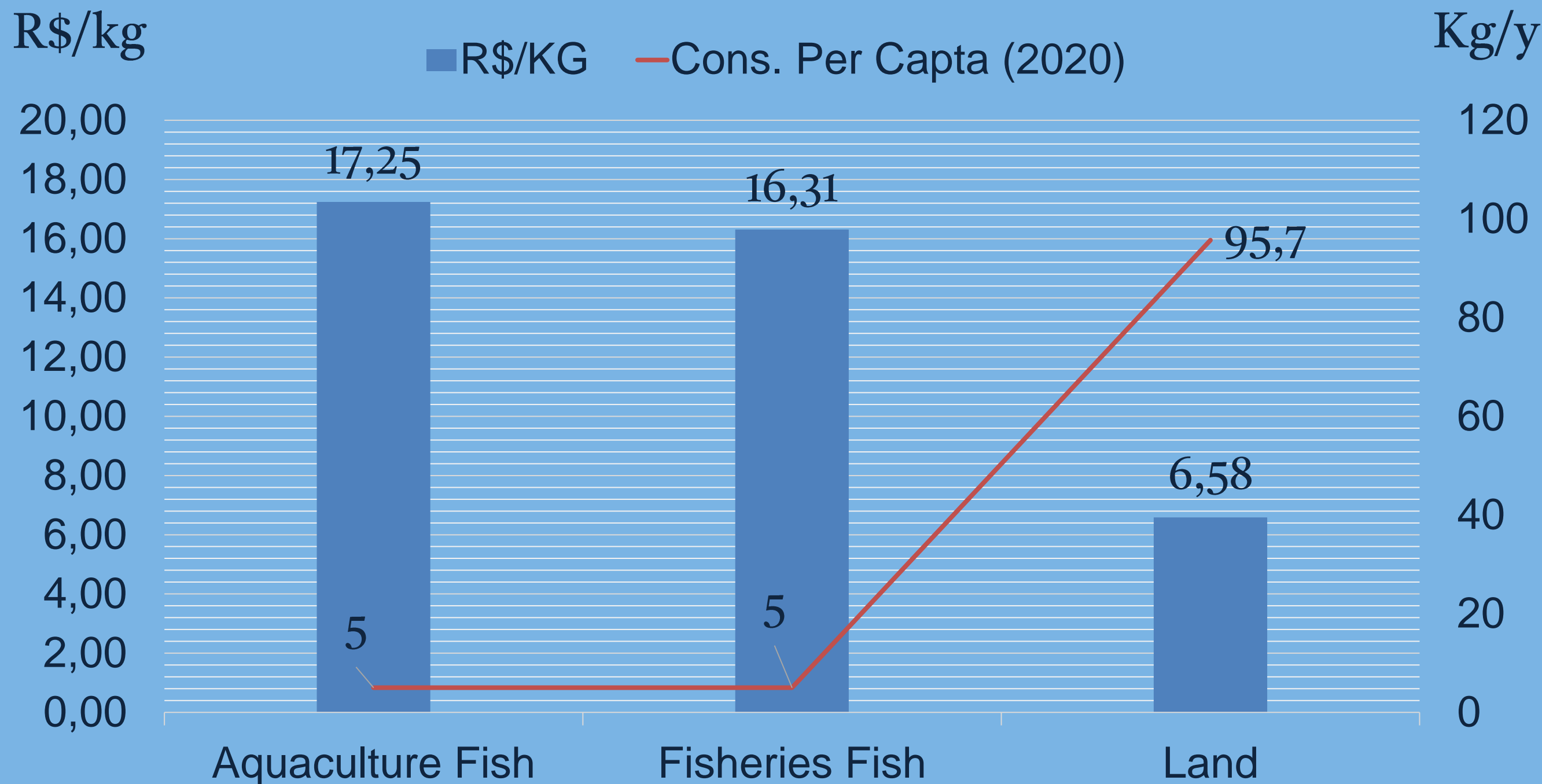
Product Branding works!





- Above the line seafood marketing works!
- But cabalistic policies are also required.
- But is long term, as it requires a cultural adaptation
- Seafood price, may not be the the bottle net





Animal Protein Consumption	Aquaculture	Fisheries	Land Prot.	Budget
105 kg	5kg	5kg	96kg	
	R\$ 86/y	R\$ 82/y	R\$ 631/y	R\$ 799
105 kg	10kg	5kg	91kg	
	R\$ 172/y	R\$ 82/y	R\$ 598/y	R\$ 852

**50% Increase in Seafood Consumption
1,07 Mi Ton Increase in Demand**

**6% budget Increase
R\$ 0,14 / day**

Source: NOAA

Source: google



- Hatchery processes in most species are similar
- Adequate larval nutrition is an imperative
- Reducing or elimination Artemia and antipatriotic adds quality
- Health control and welfare management is an imperative in grow out
- Reduce FiFo is an imperative for the industry to grow
- Business plan must start on economics
- Think about the Sciaenidae, specially “Pescada Amarela”
- Seafood branding, must follow the consumer decision making





molo®

Advancing hatcheries
to their full potential for
the best of aquaculture

Get in touch

marcell.boaventura@molofeed.no

+61 475 817 108