

# BIOTA INC.

AN IMPACT STRATEGY



# EXECUTIVE SUMMARY

## BIOTA INC.

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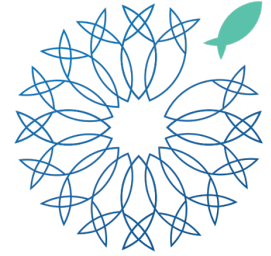
Biota, Inc. is an independent, privately owned multi-species hatchery located at the Airai Rabbitfish Hatchery in Palau, operating since October 2012. We are proud to be one of the very few sustainable exporters in the Pacific, actively seeking to make a difference by producing cultured fish and invertebrates for ornamental and food security purposes.

Underlying everything we do commercially at Biota Inc is a desire to make the world better through research, conservation and community education and awareness. We use sustainable practices to achieve commercial success and believe that profit can be generated in a way that creates positive environmental and measurable social impact.

Investing in Biota Inc's commercial business by definition, enables positive environmental and lasting social change.



**We aim to measure the philanthropic return on investment through a comprehensive impact analysis .**



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# THE IMPACT

## BIOTA IMPACT

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Biota Inc. has drawn on advanced marine biology to sustainably develop its own farming technique in order to rear cultured fish and invertebrates in the least harmful way possible.

The primary goal of Biota's proprietary technique is to undo the decades of damage that has been inflicted on the world's reefs and oceans and regenerate them for future generations.

Each of Biota Inc's core for-profit activities can be evaluated in terms of their non-profit impact.

The core for-profit activities are:

- The production of cultured fish and invertebrates - The Bumphead Parrot Fish Project
- The supply of Biota Aquariums
- Research and commercialisation of other marine species in partnership with Oceanic Institute in Hawaii

The positive environmental and social impact generated can be defined in terms of:

- Ocean Health
- Community Livelihoods
- Awareness and Education in Marine Conversation

# SUCCESS MEASUREMENT

## BIOTA IMPACT

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Positive environmental and social impact can be measured in terms of:

### **Ocean Health**

- Increase in population of bumphead parrot fish, healthier coral reefs and an increase in ocean biodiversity

### **Community Livelihoods**

- Employment opportunities for fish farmers
- Training for pacific fishing communities in business and ocean conservation
- Improvement in economic welfare as a result of potential revenue from the sale of high value, cultured fish

### **Awareness & Education**

- Increase in knowledge and awareness of alternate fishing strategies and sustainable fishing techniques
- Exposure to marine life and its conservation

# BIOTA IMPACT CORE COMMERCIAL ACTIVITIES

## 1. AQUACULTURE | BUMPHEAD PARROT FISH PROJECT

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# BUMPHEAD PARROT FISH PROGRAM HIGHLIGHTS

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## The Problem

- The Bumphead Parrot Fish (BHP Fish ) is a designated vulnerable species\* yet integral to the marine ecosystem. Adult sized fish keep down bacterial and algal blooms which preserves coral reef health. Parrot Fish are the only fish group capable of consuming reef carbonate.
- Few regions in the world have a significant enough population to supply constant spawning.
- Extremely low survival rates for the eggs of spawning aggregations means BHP Fish are not reproducing fast enough to keep their population stable.
- Their size, longevity and sleeping patterns make them vulnerable to over fishing and culturally, command a high market price as a source of food.

## The Biota Solution

1. **Harvest** - Using their proprietary, non invasive harvesting technique, marine biologists at Biota Inc. collect the eggs from wild spawning aggregations of Bumphead Parrot Fish. A collection of 100,000 eggs has minimal impact as over 1 billion eggs are produced monthly.
2. **Survival** - The average survival rate through to larval stage is 0.3% or 600 animals after 2 months. This growth process is done in Biota aquaculture cages, where animals are fed algae and bacterial slime *not* wild fish.
3. **Training** - Biota's long term plan is to provide training and equipment (e.g. sea cages) for 'grow out' stage (YR 2-3) to local citizens in Palau, with a view to encouraging a coral and Bumphead Parrot Fish farming based economy with focus on the culture of algae beds for coral farming; making the Palauans pioneers in conservation. If successful, Biota plans to extend this type of program to others parts of the Pacific (e.g. fishing communities in the Philippines and Indonesia).

\* as designated by the International Union for Nature Conservancy in 2001

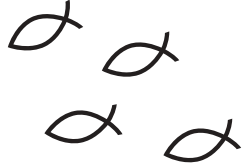
# BUMPHEAD PARROT FISH

## ENVIRONMENTAL IMPACT SNAP SHOT

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### STAGE 1

Biota's harvesting technique used to collect eggs from wild spawning BHP Fish is totally non invasive. Eggs are more than 100 x more likely to reach adulthood as part of the Biota process than in the wild.



### STAGE 2

Biota aquaculture Fish are fed on algae and bacterial slime *not* wild fish.



### STAGE 4

A wild fish is "saved" to the extent that it is not caught for food-fish or for aquariums and can continue to breed, produce sand and regenerate reefs.



### STAGE 3

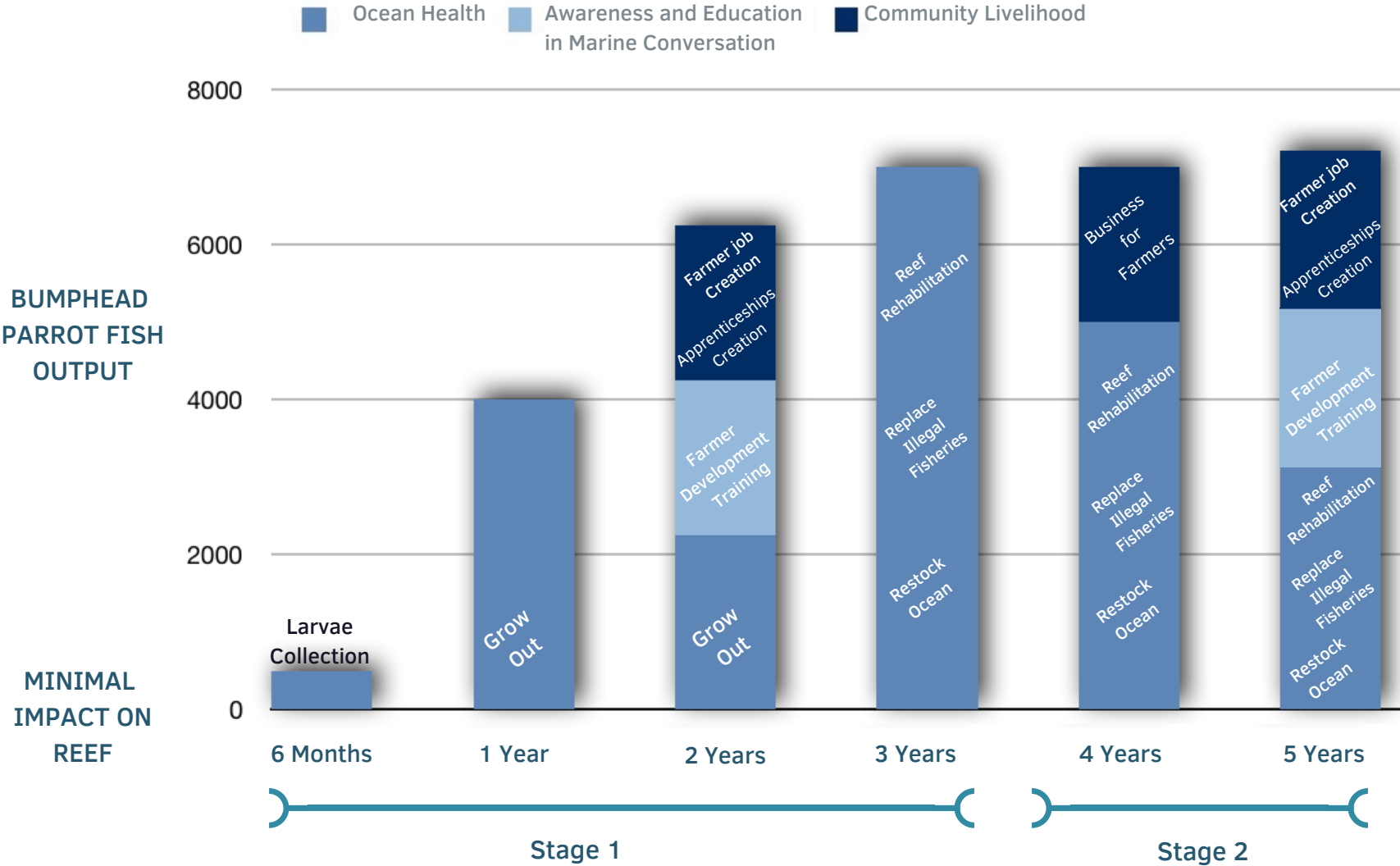
Biota-farmed Bumphead Parrot Fish are either sustainably:

- sold as food fish (rather than illegally caught fish)
- sold as ornamental fish to Biota Aquariums
- introduced into a Marine Protected Areas (MPA) to restock the ocean and assist in coral reef rehabilitation.



# BUMPHEAD PARROT FISH

## GRAPHIC REPRESENTATION OF IMPACT





# BUMPHEAD PARROT FISH IMPACT GENERATION

*An analysis of the social, economic, environment  
impact of Biota's BHP Fish project*

## AWARENESS

- Reports on progress
- Educating local communities in marine conservation
- Promoting farmed fish vs fish from wild
- 50% restocking
- Guam Fish & Wildlife will trial restocking programme

## ENVIRONMENT

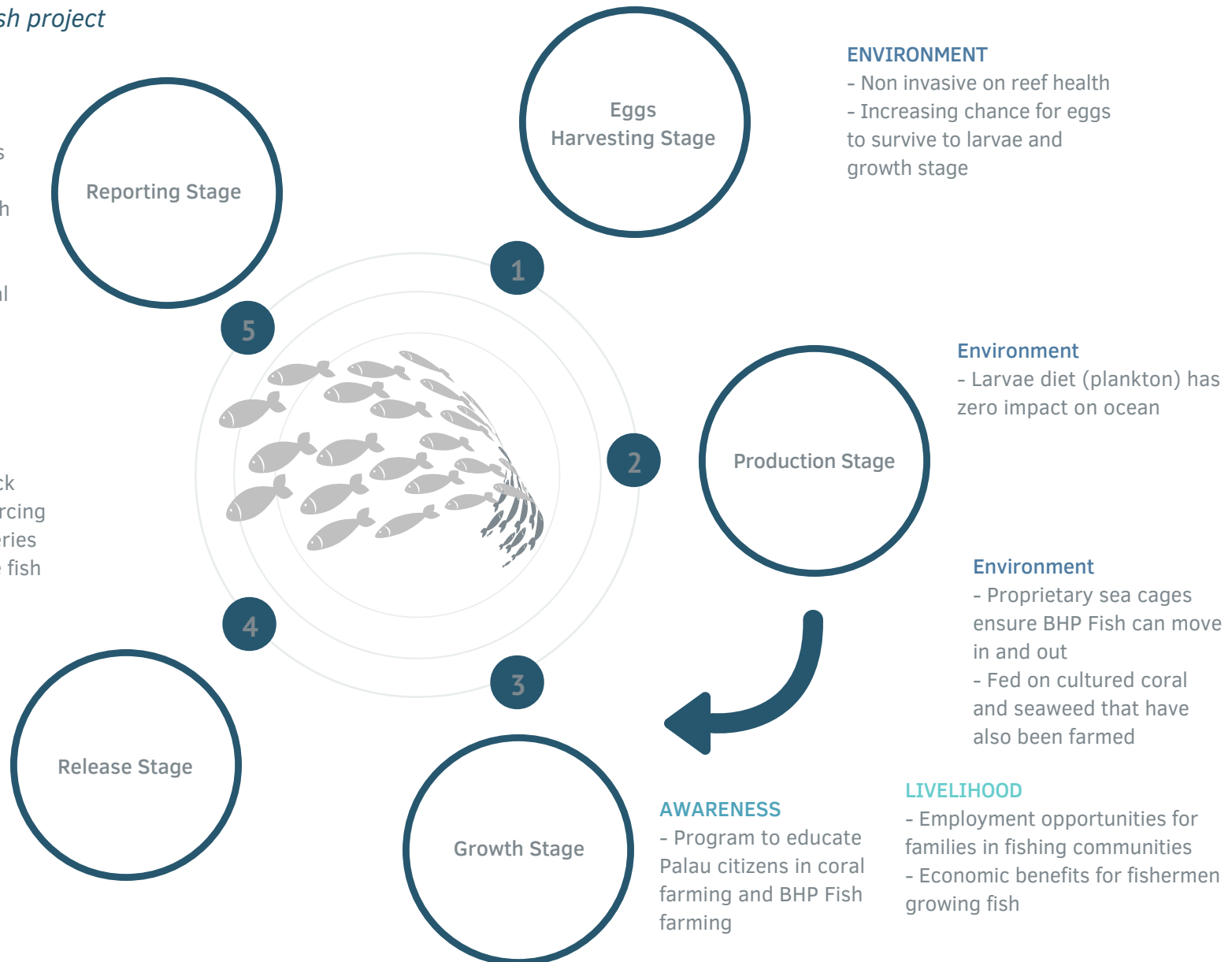
- Regenerates reef health
- Keeps natural BHP fish stock high through alternative sourcing
- Replacement of illegal fisheries with sustainable aquaculture fish for food fish

## AWARENESS

- 25% of food fish sold to open market, creating a demand for sustainable fishing

## LIVELIHOOD

- 25% of stock to supply local fisherman to sell for profit



## 2. BIOTA AQUARIUMS

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# BIOTA AQUARIUMS PROGRAM HIGHLIGHTS

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## The Problem

- 90% of ornamental fish and rock to stock *salt water aquariums* is currently taken from the wild massively depleting the ocean's stock of endangered species. This is compared to only 5% of stock taken from the wild in fresh water aquariums.
- Modern aquaculture projects tend to focus on high value carnivorous species, which require high protein in order to grow. This leads to wild fish populations being harvested in order to feed the cultured fish that supply aquariums.
- Approximately 60% of aquarium hobbyists set their aquariums up incorrectly at the outset resulting in the death of animals and their aquariums being given up within 24 months.

## The Biota Solution

- All living items in a Biota Aquarium are sustainably aquacultured, or farmed and not extracted from the wild. Furthermore, the aquaculture fish are fed a diet which has little or no effect on wild resources.
- Biota continues its research into fish species that require low protein, have both good market value and an efficient life cycle.
- All Biota Aquariums are equipped with a staged implementation and set up guidelines to ensure that the animals are healthy and live longer.

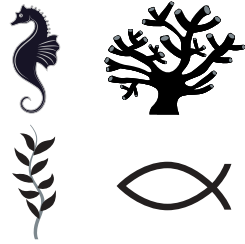
# BIOTA AQUARIUMS

## ENVIRONMENTAL IMPACT SNAP SHOT

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### STAGE 1

Biota Aquariums are stocked with farmed aquaculture animals and rocks so there is no impact on coral reef or ocean.



### STAGE 2

Aquariums are delivered with a 3-staged implementation process and set-up instructions:

1. Water must be settled and of a certain quality
2. Pre-acclimatised live rock added
3. Only then are sustainably bred corals and animals added to the tank



### STAGE 4

With every Biota Aquarium sold, Biota releases a fish into the wild. Generally Palauan Rabbit fish - a local food fish.

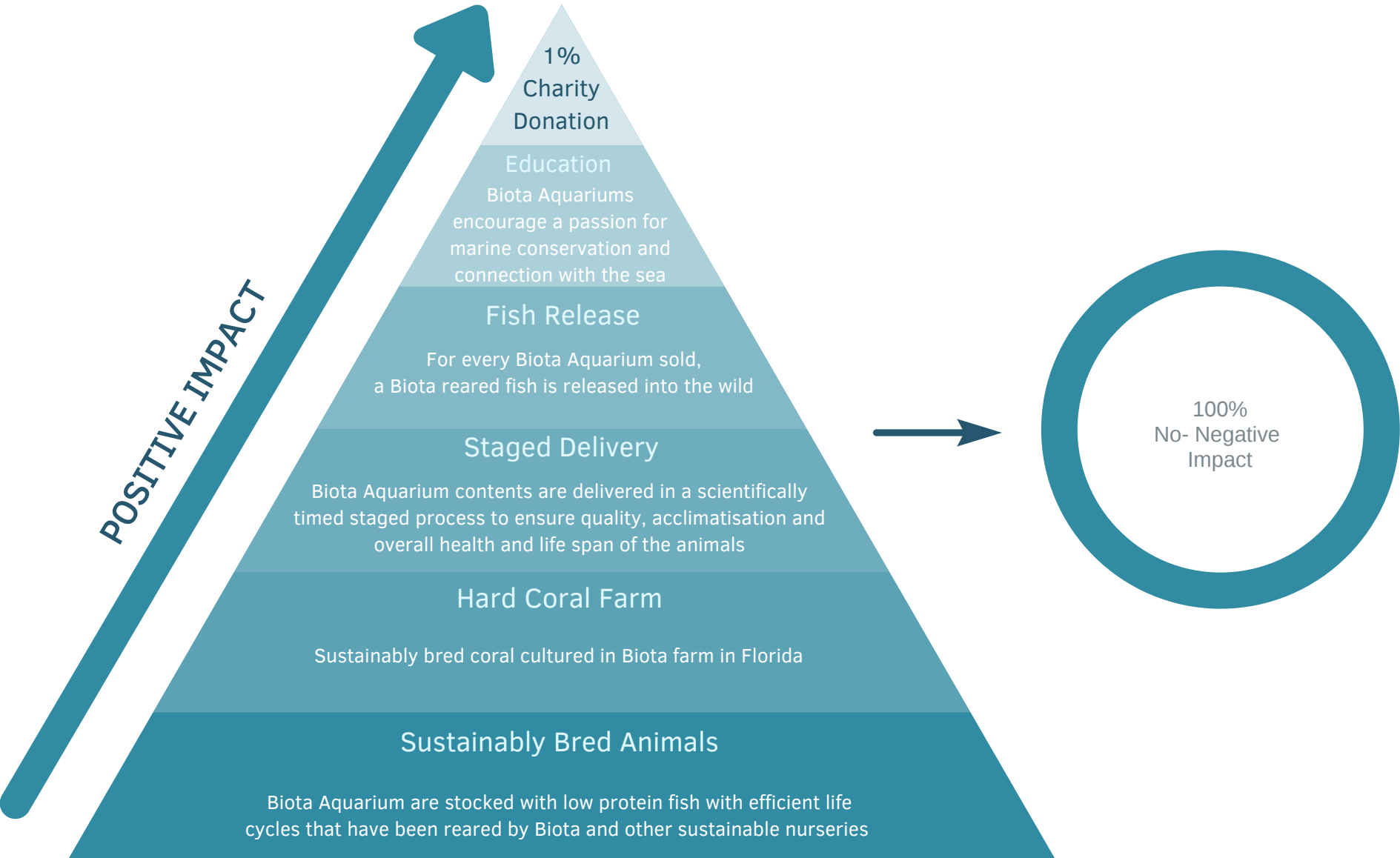


### STAGE 3

Biota Aquariums support the healthy and sustainable growth of the animals, corals and rocks. Staged, set-up ensures the animals health and longevity.



# BIOTA AQUARIUMS IMPACT MEASUREMENT



# SUSTAINABLE AQUARIUMS IMPACT GENERATION

*Biota aims to strengthen ocean literacy through communication and outreach in order to catalyse action by a range of stake holder groups*

## AWARENESS

- Collaborations with Steve Hathaway's Young Ocean Explorers provides a platform to reinforce ocean protection sharing video content, by making it unacceptable to take ornamental fish from the wild for purpose of an aquarium/food.
- Change in industry mind-set as more sustainably bred animals are sold

## AWARENESS

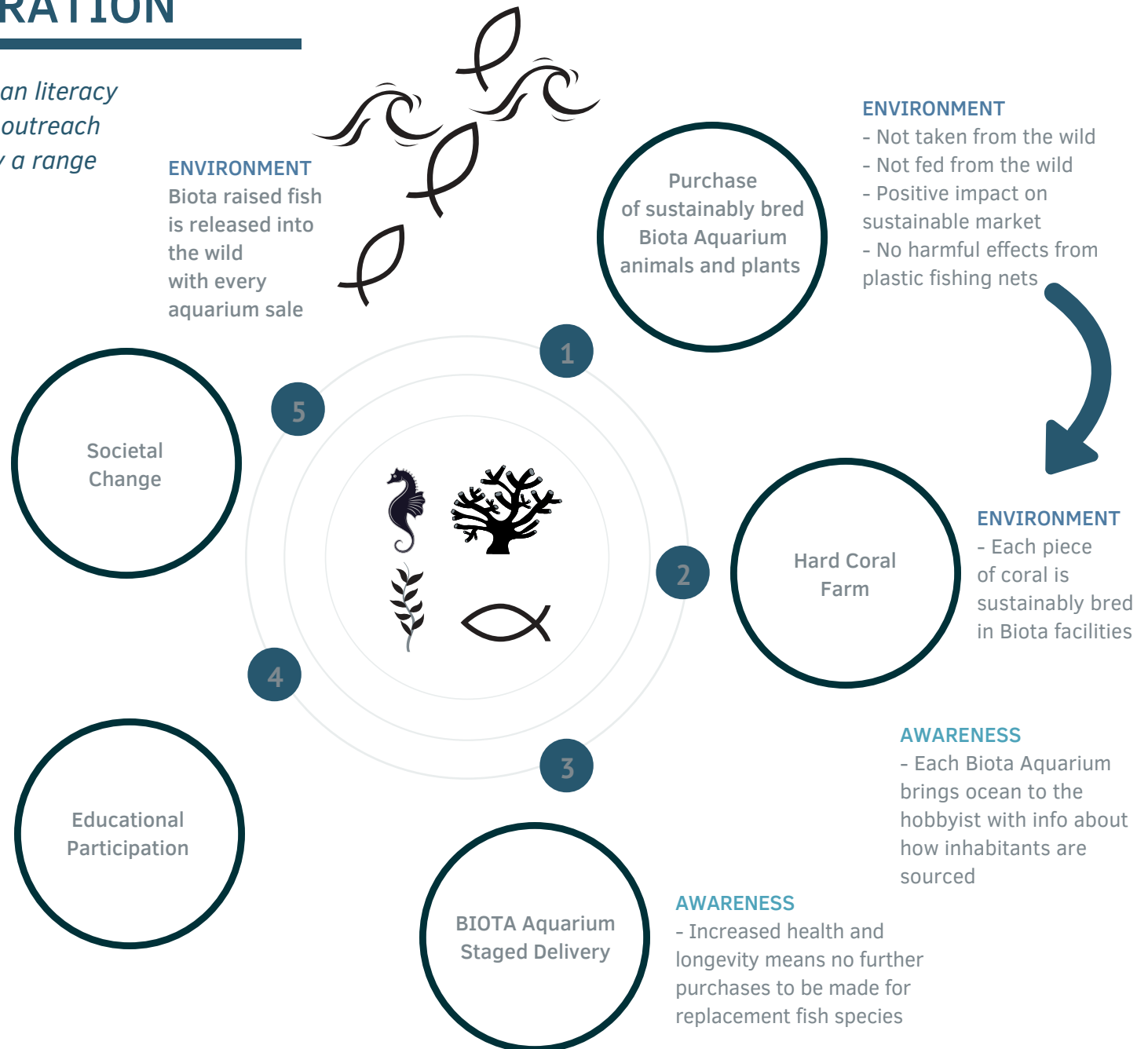
- Educates school children on sea creatures, their life cycles, their habitat, their diet and how to care for them.
- Promotes the sustainable supply of fish and aquariums

## LIVELIHOOD

- Overall purchase of sustainable animals will lead to greater need for local partners to be a part of the cycle

## ENVIRONMENT

Biota raised fish is released into the wild with every aquarium sale



### 3. PARTNERSHIP WITH THE OCEANIC INSTITUTE, UNIVERSITY OF HAWAII | FARMING OF YELLOW TANG FISH

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# OCEANIC INSTITUTE PROGRAM HIGHLIGHTS

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## The Problem

- An increasing world-wide demand for seafood and ornamentals, combined with the threatened nature of marine ecosystems and natural fish stocks is more rapidly depleting the oceans resources. This problem has led to a recognised importance of developing alternatives to wild-animal collection, mainly the need to learn the wide scale rearing of marine species rather than taking from the wild.
- The trade of aquatic organism for home and public aquariums is a multi-billion dollar industry with 30 million fish currently taken from the wild.

## The Biota Solution

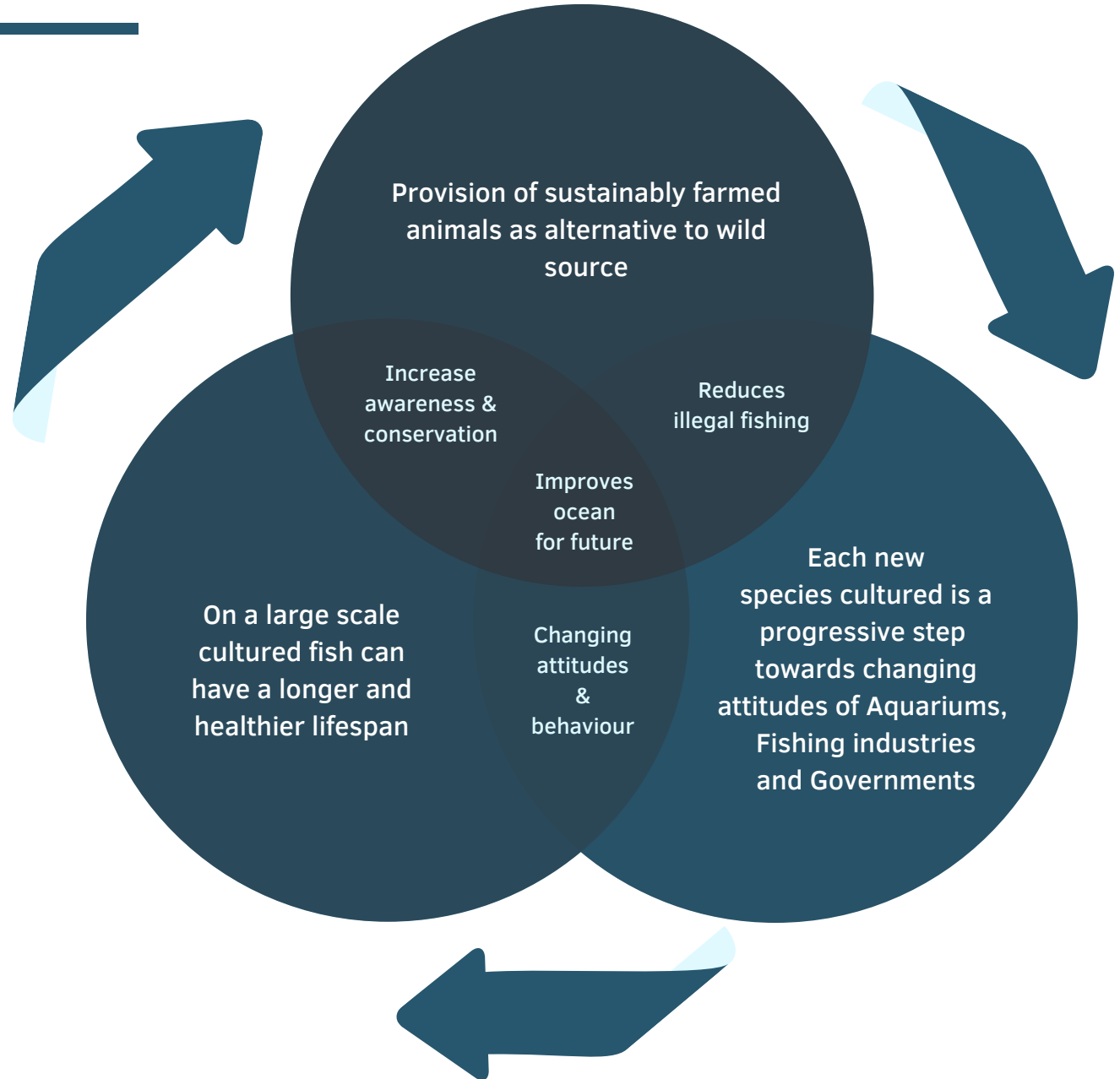
- **Together with The Oceanic Institute [OI] at the University of Hawaii, Biota is funding the development of a critical and ongoing conservation strategy in coral reef ecosystem protection to find alternatives to the wild collection of yellow tang, a popular coral reef species in Hawaii (and 81% of all aquarium catch by species).** The goal is to develop “green” technologies using native species to reduce pressure on wild populations, while increasing marine resources. The program has successfully established hatchery- based technologies for a number of new species and in 2017 had its first major breakthrough in reliably breeding the species.
- In 2017/18 a commercial scale production was established. Since then the OI has established species in aquarium trade and is currently No. 4 importer of ornamental fish to the continental USA. 80% of these species are sourced from Hawaii.
- In October 2017 Hawaii banned all wild-caught ornamental animals. Following this ban the only legally available global source is through OI-Biota (excluding China).
- Biota's aim is to change the entire salt water aquarium industry to only the supply of sustainably reared animals only with no impact at all to wild reefs and ocean stock.



# OCEANIC INSTITUTE IMPACT MEASUREMENT

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*The successful development of this technology will it is hoped, provide opportunities to diversify aquaculture production in Hawaii and assist in the protection of threatened fish, including the coral reef ecosystem in Hawaii and the Pacific Islands.*



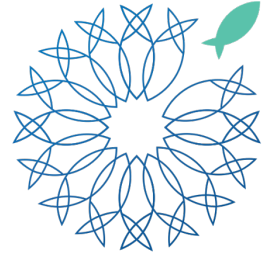
# BIOTA IMPACT SUMMARY

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Thank you.

Please contact Tom Bowling CEO with any questions about the impact created by Biota Inc.

Email: [botting@me.com](mailto:botting@me.com)



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