



URCHINOMICS

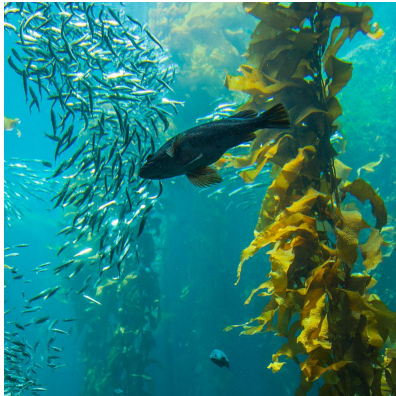
Restoring kelp forests through responsible urchin ranching



Feb 2023

The Problem

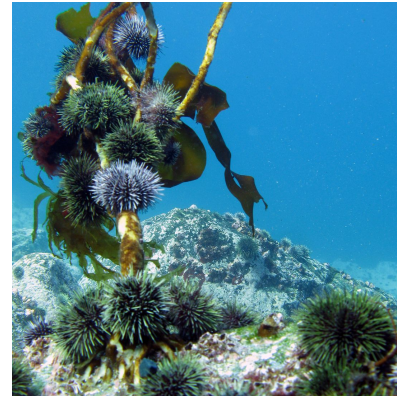
The sliver of coastline where sea and land meet houses over 90% of marine life and provides as many ecosystem services as **ALL** terrestrial ecosystems.



A healthy kelp forest promotes biodiversity and sequesters carbon.



Overfishing and climate change are wiping out natural predators of urchins, allowing them to explode in population.



Overgrazing urchins can collapse kelp forests and turn them into desert-like barren. These can persist for 50+ years as an alternative stable state of the kelp forest ecosystem.



Barren urchins go into a restive state and become empty. They aren't hunted because they lack the roe that is of commercial and caloric value to fishers and predators, respectively.



The Solution

When urchins are removed from a barren, marine biomass improvements increase biodiversity, sequester carbon, and protect against ocean acidification and coastal erosion.



Remove and re-home destructive urchins.



Ranch them in our proprietary aquaculture systems.



Convert them from an ecological pest to delicious “uni” in 6 to 12 weeks.

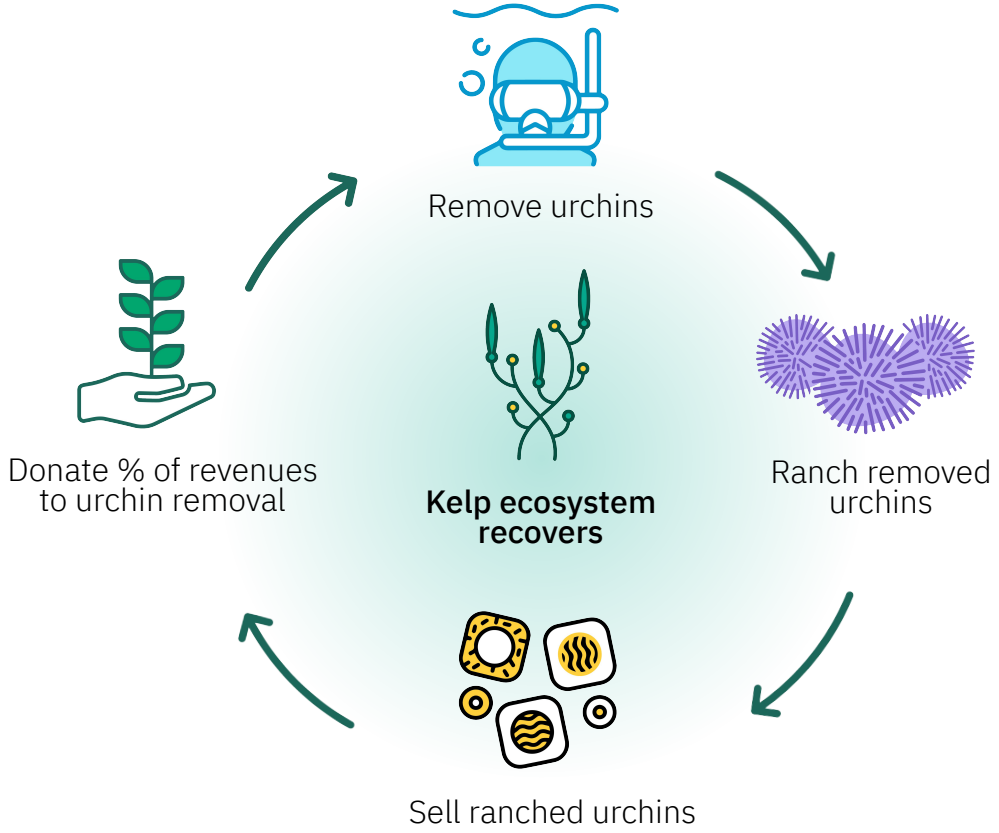


Once the urchins are removed, the kelp forest returns.

See our early restorations [here](#).



Business Model

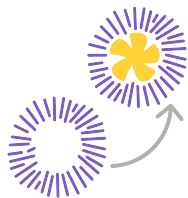


2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development



#restorativeseafood

What Sets Urchinomics Apart



Feed Conversion Ratio *

Urchinomics' process is not hatchery based, so we don't have to spend time and money on growing the animal itself, just the gonads, which results in a favorable feed conversion ratio of 0.4:1.



Grow Cycle

Ranching a mature animal means no operational variability and a growth cycle 10% the time of salmon and 25% of oysters. The alternative - conventional aquaculture - requires hatchery operations and variable treatment depending on stage of life of the animal.



Retail Price and Popularity

Uni commands a premium price point by weight compared to virtually any major animal protein - bluefin tuna sells for €73-375/kg while uni averages over €300/kg.

Uni is considered one of Japan's top 3 delicacies and was the trending seafood at the 2019 Boston Seafood Show.



Consistency and Predictability

Wild caught uni is highly seasonal and only available for ¼ of the year. Urchinomics is able to produce consistent, high-quality uni year-round.

Because of our predictable output, Urchinomics' initial plan is to bring shell-on urchin (which is virtually unattainable today) to high-end chefs globally for higher margins.

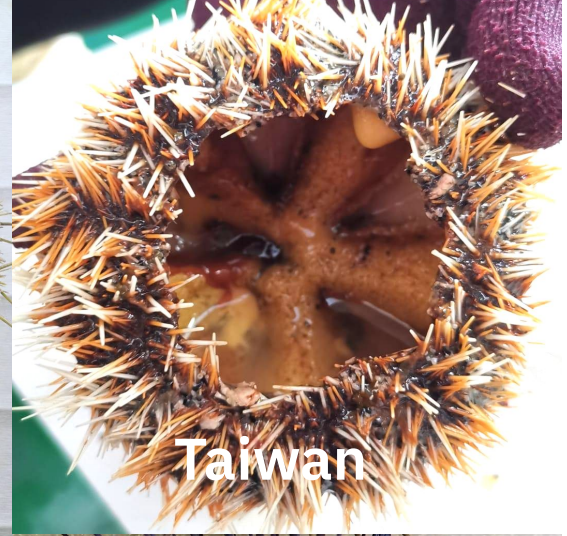




Japan



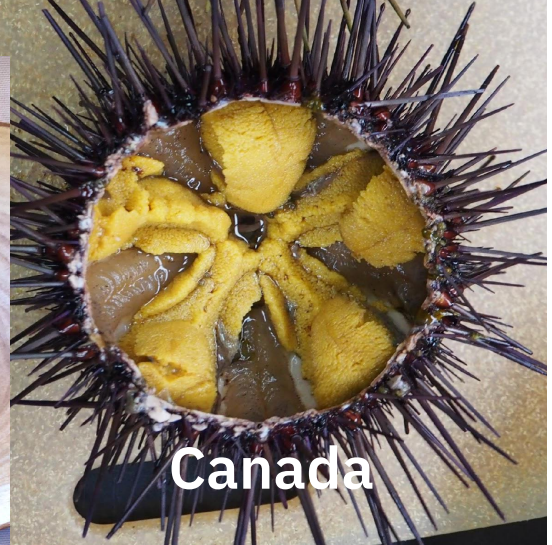
Norway



Taiwan



USA



Canada

Product Validation



What Our Customers Are Saying

“Shucked urchins shell-on is a rarity at kaiten sushi, so it was incredibly popular among our customers. We plan to continue to carry this item going forward.”

Nemuro Hanamaru
Ginza, Tokyo

“They are competitive with wild urchins. The quality is such that a specialty retailer like us can sell it with confidence. Until now, we have been able to sell shucked urchins in the shell during the limited season. Going forward, we are excited to sell shucked urchins in the shell all year long.”

Nakajima Suisan
Takashimaya, Tokyo

“These urchins are as good as our wild caught urchins... maybe even sweeter.”

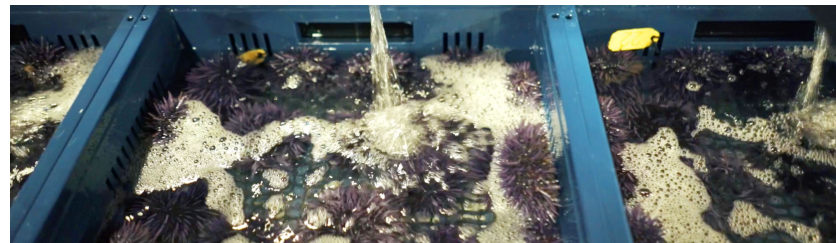
Urchin fisher on Yamaguchi TV
Yamaguchi Prefecture, Japan

“A fantastic product that is both luxurious and tastes like magic from the sea. And the feed they feed it is so sustainable. They take urchins that are destroying the ocean floor and makes a raw material that the best chefs in the world would want to use.”

2 star Michelin chef Sven Erik Renaa
Stavanger, Norway



Technology Traction



Feed Technology

- Acquired global exclusive license to feed technology developed over 25 years from the Norwegian state food science institute **Nofima**
- Global exclusive feed production partnership with **Nosan**, a 100% subsidiary of Mitsubishi Corporation, who has specialized equipment and small batch production capability for our feed
- **Feed contains all natural inputs** and no hormones, antibiotics, animal protein, GMO, or rainforest-depleting ingredients. FCR using our feed is as low as 0,4
- Feed technology validated on longspine urchins at **UTAS** and **UNSW**

Ranching Technology

- Land based RAS and flow through systems do not cause any abnormal mortalities nor flavor issues according to our **20 completed pilot/lab trials over the past 3 years**
- Shallow raceways require little water, which **cuts CapEx and OpEx** related to treating water and maintaining optimal temperatures
- Our **5th generation system** is under development and being tested in operations in Norway,
- Successfully **produced and sold** premium sea urchin roe in Japan, Norway and California, achieving over USD 600/kg to high end restaurants



Blue Carbon Accreditation



Urchinomics secures world first kelp restoration blue carbon credits

Urchinomics, 21.11.2022

Tokyo, Japan: On November 21, 2022, Urchinomics, the pioneering kelp restoration and sea urchin aquaculture venture and endorsed UN Ocean Decade project, secured the world's first voluntary blue carbon credit from their ecologically restorative operations in Japan.



[link](#)

Global Operations



● Commercially permitted sites

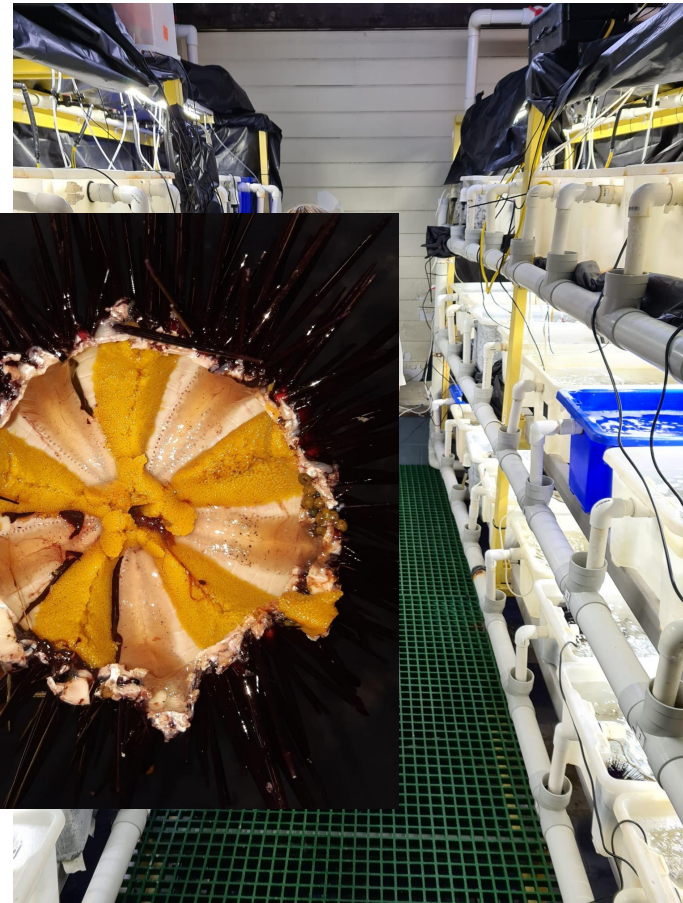
● Active investigation



[#restorativeseafood](https://www.instagram.com/restorativeseafood)

Ocean One - reforesting kelp in Australia

- Local partners to Urchinomics
- Established to bring Urchinomics to Australia, and begin to contribute to the restoration of kelp forests
- Led by experienced entrepreneurs, investors and industry professionals
- Building upon successful trials at University of Tasmania and University (2021) of New South Wales (2022)
- Establishing semi-commercial trials in Tasmania to prove scalability and market potential
- Ratched samples to be sold into East Asian markets via Urchinomics sales and distribution network
- Complementary relationship with existing industry. Good urchins go to established processors, empty ones come to Ocean One for ranching
- Closely monitoring impact on kelp forest reforestation
- Building the foundations for establishing a market for blue carbon in Australia
- Contributing to circular economy research and markets with crushed shells
- Building a sustainable and responsible aquaculture industry
-



Why Australia is Special

Major markets and massive barrens

- Warm water from the East Australian Current has allowed the population of *C. rodgersii* to explode along the **east coast of Tasmania and New South Wales**, with recent reports of the barrens spreading as far as Port Phillip Bay in Melbourne
- Urchin removal is a **well established methodology** to restore kelp ecosystems in Australian coastal waters
- In addition to a growing domestic market, Australia is **proximate to the world's most lucrative export markets** including Hong Kong, Singapore, Taiwan, Bangkok, and Kuala Lumpur
- The Australian government is a global leader in the recognition of **Blue Carbon and Ecosystem credit** compensation for restoration projects
- World class institutes like **UTAS/IMAS** and **UNSW** publishing valuable research papers on effective utilization of urchin waste

Australian urchin barrens are expanding as warming waters are carried further by the EAC



Australian Market Dynamics

Proximity to Lucrative Export Markets



- A supply-constrained Asian market creates a natural monopoly for Urchinomics' year-round Australian ranching operations
 - Japan consumed the lion's share of global supply, leaving significant **unmet demand** in some of the wealthiest countries in the world
 - The small amount of urchin roe that does come into these countries is **sold at premium prices**, well above those in Japan
 - Urchinomics' Japanese operations can only fulfill local demand, leaving **Australia as the workhorse** to supply other high-end Asian markets

Established Uni Markets



- Major Asian markets with growing fine dining segments pay continually record high prices for premium grade uni
 - Hong Kong continues to be the port-of-entry for Mainland China
 - Taiwan has double the willingness to pay compared to Japan
 - Singapore is the highest paying market for urchins in the world
 - Bangkok pays double Toyosu urchin market prices
 - Australia has a significant East Asian population, and will be receiving East Asian tourists again



Thank You

“You must unite behind the science. You must take action.
You must do the impossible. Because giving up can never ever be an option.”
–Greta Thunberg

Brian Tsuyoshi Takeda
Founder and CEO

Alvaro Maz
Co-founder and CEO



urchinomics.com