



Pacific
Community
Communauté
du Pacifique

Pacific Regional Aquaculture Strategy



Pacific Regional Aquaculture Strategy



Noumea, New Caledonia, 2025

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Dedication

This *Pacific Regional Aquaculture Strategy* is dedicated to the memory of Dr Tim Pickering, Principal Aquaculture Advisor for SPC FAME, who worked tirelessly for the betterment of the lives of people across the Pacific Islands region through his ongoing contribution to aquaculture development. Tim started the process of developing this strategy and was a champion for ensuring its delivery prior to his passing in 2024. His legacy stretches far beyond the remarkable accomplishments and contributions to aquaculture, also having a profound impact on the lives of those who knew him, and an enduring influence on many across the Pacific region and beyond.



Foreword

Our Pacific Islands region is characterised by vast areas of ocean, dotted with a myriad of islands that are home to thousands of communities. These communities hold precious traditional knowledge and rights to local rivers, estuaries and the coastal marine environment. As custodians of these areas, Pacific Island communities are central to the development and management of local fisheries, including aquaculture.

Recognising that wild fisheries resources are under increasing pressure through over-fishing and climate change, Pacific Island countries and territories (PICTs) have agreed to identify common needs and objectives through a sub-regional and regional approach to aquaculture development. Sustainable aquaculture development has the capacity to reduce pressure on coastal fisheries, support and improve food security, integrate novel approaches that enhance and make more productive coastal food systems, and provide avenues for greater social equity and livelihoods; all of which aid in ensuring resilient island communities. Pacific aquaculture faces multiple challenges but many can be addressed if a cooperative approach is taken, ultimately enabling PICTs to be better equipped to achieve their own domestic aquaculture aspirations.

This strategy responds to member requests made at the Pacific Community (SPC) Heads of Fisheries Meetings and later endorsed at the Regional Fisheries Ministers Meetings. Members tasked SPC to undertake a process of identifying the region's medium-to-long-term aquaculture needs (5–10 years) in the post-COVID era, and this Pacific Regional Aquaculture Strategy provides this.

It intentionally focuses on regional needs for sustainable aquaculture development. It is an important planning and assessment resource that is intended to provide strategic guidance for developing, prioritising, and implementing actions to achieve diversification and up-scaling of aquaculture production throughout the region.

The Pacific Community is pleased to deliver this *Pacific Regional Aquaculture Strategy* to its members and partners, hoping that it will assist in empowering communities and PICTs to meet their aquaculture goals. We thank all those who participated in the consultation process and we look forward to engaging with agencies and staff of PICT governments, NGOs, international organisations and funding providers to support implementation. The Pacific Community remains committed to promoting the use of this strategy by other regional agencies, NGOs, CSOs, donors and development partners as a common reference point for effective coordination and fruitful collaboration for the benefit of the whole of the Pacific Islands region. ▲



Neville Smith
Director FAME



Introduction

The challenge

A sustainable aquaculture sector has potential to contribute to employment, food security, better human nutrition, environmental protection and the economy. However, growth of this sector in the Pacific Islands region has occurred more slowly than predicted. It is for this reason that SPC commissioned a Regional Aquaculture Assessment (2022)¹ to inform and advise on sustainable aquaculture development.

A key recommendation of the Regional Aquaculture Assessment was that an aquaculture strategy be developed, but it also emphasised that it should be a strategy “for the whole of the Pacific Islands region” that considered common regional and sub-regional issues.

An inclusive regional consultation process was undertaken in 2024 to identify and prioritise key actions for inclusion in the aquaculture strategy. This included a series of sub-regional virtual discussion workshops organised by SPC and its partners, followed by a regional workshop in August that same year. Participants included representatives from national and sub-national fisheries agencies, local communities, local non-governmental organisations, regional and international organisations and academic institutions, all of whom contributed to the development of this document and the accompanying project report.²

The role of the *Pacific Regional Aquaculture Strategy* (the strategy) is to assist capacity building within PICTs and the private sector by harmonising aquaculture development and investment planning across the Pacific Islands region, thereby enhancing cooperation for key services and facilitating access to export markets. As such it is a strategy owned by PICT members that must be driven by them.

SPC will assist members in establishing a working group tasked with developing a workplan to operationalise the strategy and design a MEL framework to monitor progress. SPC will also liaise with donors and partners to ensure that they are aware of the priorities identified within the strategy and work with members to mobilise resources.

◀ Diversification of existing products is one option to assist aquaculture economic development. Here, oysters traditionally used for pearl production are now being trialled as a unique Pacific product for sale to restaurants.

1. Integrated Aquatic Solutions (2022). Background paper 2. HoF14 IP12: Assessment of the Aquaculture needs, priorities and future direction in the Pacific Islands Region. In: 5th SPC Regional Technical Meeting on Coastal Fisheries and Aquaculture (11-14 October 2022). <https://www.spc.int/digitallibrary/get/z39wz>

2. [spc.int/DigitalLibrary/Doc/FAME/Meetings/PRAS_2024/PRAS_workshop_report_final.pdf](https://www.spc.int/DigitalLibrary/Doc/FAME/Meetings/PRAS_2024/PRAS_workshop_report_final.pdf) and [spc.int/DigitalLibrary/Doc/FAME/Meetings/PRAS_2024/PRAS_workshop_report_Appendix_6.pdf](https://www.spc.int/DigitalLibrary/Doc/FAME/Meetings/PRAS_2024/PRAS_workshop_report_Appendix_6.pdf)

Aquaculture in Pacific Island countries and territories

Strengths and opportunities

The Pacific Islands region has many strengths that provide opportunity for aquaculture development. There are a diverse range of potential aquaculture species, and production environments that are not impacted by industry or pollution. The challenge is to develop these in an economic and environmentally sustainable manner that is consistent with community expectations.

Increased production may be achieved through innovation of new techniques, training and cooperation to help meet common goals. Although small domestic markets already exist, these can be developed further to supplement food supplies from coastal fisheries. Access to export markets has previously been challenging, but opportunities to expand these can occur through promotion of regional advantages such as the healthy, clean and “green” values, the uniqueness of products, and improvement in continuity of supply.

In addition to the established aquaculture industries, there have also been many smaller success stories. For example, the satellite hatchery programme in Papua New Guinea has developed small freshwater hatcheries and this has resulted in a more consistent supply of fingerlings to rural farmers; the culture of micro-algae species in Kiribati as larval feed has reduced reliance on imported products for sea cucumber production; and communities in Wagina and Shortland Islands of the Solomon Islands are now earning income from seaweed chips. These are small but important gains that provide value to communities located throughout the Pacific Islands region.

A snapshot of aquaculture in PICTs

Aquaculture production in the Pacific Islands region is small but diverse. Since 2010, production increased to nearly 29,967 tonnes (live weight) in 2014 before declining to a low of 11,474 tonnes in 2020. The value of aquaculture production followed a similar trend, peaking at USD 133.3 million in 2014 and declining to USD 58.2 million in 2020. However, there are signs of recovery with production and value in 2022 being 18,074 tonnes and USD 87.6 million, respectively.³

More than 40 species have been attempted in recent years, including, seaweeds, corals, sponges, molluscs, sea cucumbers, crustaceans and finfish across freshwater, brackish and marine environments. Farmed pearl oyster shells and marine shrimp represent the major species in terms of value, while *Kappaphycus* and *Euचेuma* seaweeds are produced in greatest volume.

Aquaculture production contributes to:

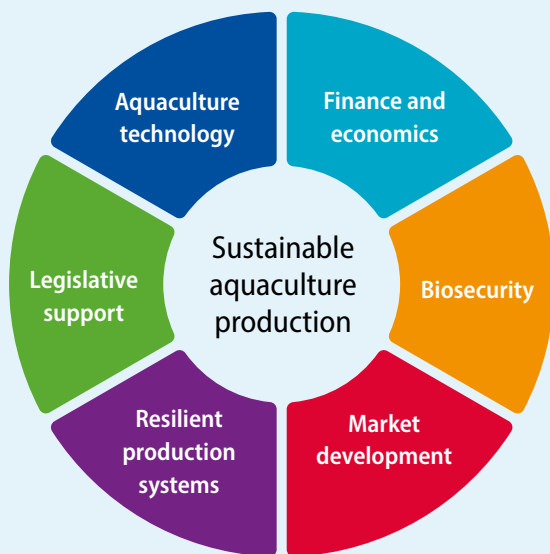
- Community food and food ingredients (e.g. finfish, crustaceans, sea cucumbers and seaweed)
- Domestic sales
- Re-stocking, conservation and restoration (e.g. clams and sea cucumbers)
- Export markets (e.g. shrimp, seaweed and pearl production)
- Value-adding (e.g. local crafts for tourism).



Shrimp production currently occurs in New Caledonia, Fiji and French Polynesia.

3. FAO 2024. FishStat: Global aquaculture production 1950-2022.

The strategy



Sustainable aquaculture production refers to production that is environmentally sustainable, economically viable and supported by community.

Consultation for the *Pacific Regional Aquaculture Strategy* identified a series of priorities required to achieve the overall objective of sustainable aquaculture development. These identified priorities have been grouped into a series of themes. The strategy aims to support aquaculture within PICTs by addressing regional issues identified within these themes.

Purpose and scope

This strategy aims to develop cooperation between PICTs, stakeholders and funding providers to address common aquaculture needs and requirements at the regional and sub-regional level.

The strategy also aims to:

- help identify options for cooperation or collective action;
- provide strategic guidance to governments, partners, donors and SPC on where and how to assist the aquaculture sector; and
- provide a framework for evaluating progress in scaling up of aquaculture.

The strategy does not replace PICT policies or plans; instead, it is intended as a planning and assessment resource that provides strategic guidance in prioritising and implementing collaborative aquaculture development.

Vision

To significantly increase the contribution of sustainable and resilient aquaculture to local, national and regional food systems supporting food security, improved nutrition and long-term economic growth. This complements the vision and values outlined within the 2050 Strategy for a Blue Pacific Continent.⁴

Medium- to long-term objective

Increased aquaculture production across the Pacific Island region that is environmentally sustainable, economically viable, has the support of local communities and is internationally competitive.

Implementation and timelines

This strategy focuses on a 10-year timeframe, with the aim that high-priority activities would begin in the first half of this period. It is acknowledged that lower priorities or more complex activities may require longer before outcomes can be realised.

A separate fully aligned workplan will be developed that identifies priorities and their expected timelines, however the strategy is not associated with any dedicated funding arrangement so timeframes and workplans will be dependent on available resources.

Review process

Updates on progress of priority actions under the strategy will be provided to PICTs through the SPC Heads of Fisheries Meeting. A review of the strategy will be conducted every five years, with a mid-term review and at the end of the 10-year cycle.

4. 2050 Strategy for the Blue Pacific Continent/Pacific Islands Forum Secretariat. Suva, Fiji : Pacific Islands Forum Secretariat, 2022.

Regional priority themes

Several priority areas for action were identified for inclusion in the strategy during the consultation process. These have been grouped into themes and sub-themes and are outlined below.



Sustainable aquaculture technology

Objective: Identify technologies and activities that can help promote and develop sustainable aquaculture.

The strategy aims to identify and facilitate development of technologies and activities that will help promote sustainable aquaculture by improving production, lowering costs, increasing access to markets and improving sustainability.

Outcome statement

Aquaculture production of new and existing species is increased through the adoption of new and innovative production systems, applying shared knowledge and developing human capacity.

Actions

1. Develop new aquaculture species including:

- a. prioritising endemic species;
- b. promotion of unfed aquaculture species to reduce the need of dedicated feed inputs; and
- c. identifying species suitable for multi-trophic aquaculture and integrated agri-aquaculture systems.

2. Foster technical capacity building in aquaculture through regional training programmes to increase skills, including:

- a. peer-to-peer knowledge sharing through staff exchange programmes that provide training and mentoring across both government and the private sector;

- b. establishment of training programmes providing students with qualifications that are recognised across the Pacific Islands region; and
- c. establishment of regional databases identifying relevant technical services and experts that may be utilised for aquaculture.

3. Research and development of regional aquaculture feed supply to:

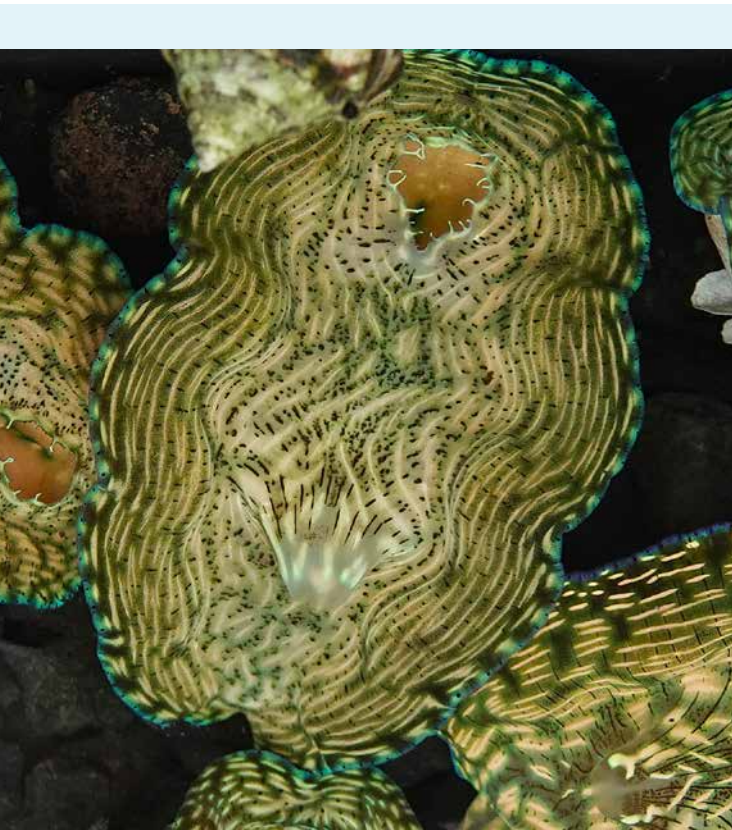
- a. produce and distribute feeds for commonly-farmed fish species using affordable ingredients and, where possible, utilising locally sourced materials;
- b. investigate viable and cost-effective options for the import of feed or feed production materials; and
- c. investigate local sources of feed manufacturing materials, including novel sources of feed ingredients.

4. Develop a network of hatcheries to:

- a. supply seedstock to multiple countries for grow-out;
- b. support technical development of in-country hatcheries and community micro-hatcheries; and
- c. investigate the viability of hatchery production of new aquaculture species that are endemic to the Pacific region.

5. Develop culture systems by:

- a. promoting multi-trophic aquaculture and integrated agri-aquaculture; and
- b. improving access to aquaculture supplies and equipment.



Aquaculture technology and development of new aquaculture species

The development of new production species that occur naturally throughout the Pacific Islands region is seen as a priority by many members. Species that can be produced without the need for manufactured feed inputs were also considered highly. Such developments must be accompanied with appropriate technologies and hatchery facilities. The development of a regional hatchery network within the Pacific Island region has been suggested as one option to developing culture techniques and training of staff.

This photo shows giant clams, *Tridacna* sp., which are widely sought by the international ornamental aquarium trade and are normally sourced from wild stocks. Some species are protected under CITES and may carry the internationally reportable disease perkinsiosis. Aquaculture produced clams are excluded from CITES restrictions and can be produced as disease-free stock that are more acceptable to international markets.

Aquatic biosecurity

Objective: To ensure that aquatic biosecurity measures keep pace with aquaculture development to protect farms and the environment from aquatic pests and diseases.

Demand for high quality food products makes the control of risks that affect aquaculture production and environments increasingly important. Introduced pest and disease incursions can cause reduction of production and profitability for aquaculture and impact the surrounding aquatic environment. Aquatic biosecurity is used to reduce the risk of pest and disease introductions, as well as mitigate their effect where they do occur.

Aquatic biosecurity is also supported through the Pacific Regional Framework on Aquatic Biosecurity (PRFAB),⁵ which focuses on aquatic animal translocation and health management. The strategy aims to enhance biosecurity across the region by helping to address areas not covered by the PRFAB.

Outcome statement

Aquaculture farms and the aquatic environment are better protected from aquatic pests and diseases.

Actions

1. Develop a regional diagnostic laboratory network to support aquatic disease diagnosis, research, and surveillance capacity, including investigating transport of diagnostic specimens to laboratories.
2. Undertake capacity building through the development of a regional aquatic biosecurity training programme.
3. Investigate common pest and disease introduction pathways, including risks associated with ballast water and biofouling.

5. <https://www.spc.int/digitalibrary/get/23nkb>



Maintenance of biosecurity standards helps contribute to efficient aquaculture production, safeguarding of the natural environment and allowing access to markets. A major component of these standards is the ability to detect pests and diseases quickly. There is currently a lack of aquatic diagnostic laboratories within the Pacific Islands region, so some PICTs are examining ways of cooperating to form a laboratory network that can better support PICTs. In this photo, shrimp are being tested to demonstrate freedom from major crustacean diseases.



Environmental protection

Restorative aquaculture is a term used to describe aquaculture production that has a net benefit to the surrounding environment. In the example shown here, juvenile marine finfish use pearl oyster baskets as a protective habitat in the same way that mangroves provide a nursery environment. In other examples, aquaculture can assist in the filtering of surrounding water and sequestering of nutrients. The development of restorative aquaculture techniques can provide benefits to coastal environments or be used to reduce impacts of other production systems.



Legislation and regulation

Objective: Identify gaps in policy, legislation and planning.

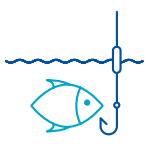
The challenge for legislation and regulation is to identify how a regional focus might assist with national or territorial policy and planning without affecting jurisdictional and community autonomy. Therefore, the strategy aims to identify gaps in policy, legislation and planning for aquaculture, and assess how these might be addressed.

Outcome statement

Policy, legislation and planning effectively supports aquaculture development.

Actions

1. Support mapping of coastal and maritime domains for potential areas suitable for aquaculture, including identification of ownership and use (e.g. community, cultural, conservation and tourism).
2. Support the update of existing, and the development of new, legislation by promoting greater understanding and consistency of aquaculture legislation across the region.
3. Develop regional templates for development of specific areas of legislation and regulation supporting aquaculture development.



Economic development, livelihoods and food security

Objective: Identify and develop options to improve income and food security from aquaculture by expanding domestic, regional and global market access.

The strategy aims to increase the contribution of aquaculture to the economy in PICTs, plus support livelihoods and food security in communities across the region. Priority actions need to include income-generation, cost-effective production of commodities, and support of job creation in rural and remote communities. While commodities for domestic markets focus primarily on food supplies, commodities for export markets may need to be value-added, economically competitive, and meet international standards in quality and food safety.

Outcome statement

Aquaculture in PICTs is sustainable in supporting livelihoods and food security in communities while access to markets is increased.

Actions

1. Investigate sources of finance and funding opportunities for development by both commercial-scale and community aquaculture operations.
2. Develop post-harvest and value-adding processing practices to improve food safety and product quality, including regional quality assurance programmes (QAPs) and Hazard Analysis Critical Control Point (HACCP) training programmes for producers and government authorities.
3. Foster closer collaboration with international organisations, including CROP agencies, on market access.



Food security

Climate change, overfishing and habitat degradation are all increasing pressures on traditional Pacific coastal fisheries. This also coincides with increases in human populations. The use of aquaculture to reduce pressure on coastal fisheries is one option being considered throughout the Pacific Islands region.

Here, local community members harvest tilapia from freshwater ponds. Tilapia is a common aquaculture species, but there are calls to import improved genetic strains and provide access to better feeds. The import of new varieties of tilapia (or other aquaculture species) must be accompanied with appropriate biosecurity standards to reduce risks of disease introduction. Similarly, production of suitable feeds for shrimp and finfish production is an ongoing challenge.

Photo credit: A. Singh



Social inclusion

Objective: To ensure social inclusion and equity issues are addressed along with aquaculture development.

Development of aquaculture in the Pacific Islands region can help address social issues affecting farming and fishing communities, such as social and community divisions, as well as gender, age and racial inequality. Consideration of social factors, as well as traditional and cultural aspects, in planning and implementing aquaculture developments will support community engagement and foster inclusive communities. The *Pacific Framework for Action on Scaling up Community-based Fisheries Management*⁶ supports and empowers local communities for the sustainable and equitable management of coastal fisheries, and it is recognised that this framework can also encompass aquaculture.

Outcome statement

Strong social and community support and engagement in rural aquaculture operations.

Actions

1. Foster inclusion of aquaculture projects in community-based fisheries developments using the *Pacific Framework for Action on Scaling up Community-based Fisheries Management*.
2. Prioritise aquaculture projects at the community level that promote inclusion across age and gender population cohorts.
3. Promote communication pathways that will allow active engagement by community members.



Gender and social inclusion

Progressing gender equity and social inclusion is an essential part of building a sustainable and resilient future for Pacific Island people. Aquaculture is one way of producing positive development outcomes for all people relying on coastal environments. Here, community members work together on oyster farms, enabling all to benefit from gains in food security, employment and livelihoods.

Farming low trophic level species such as oysters is considered a more sustainable approach due to their lower environmental impacts compared to other food production systems. Oysters have lower technical and labour requirements than other aquatic species and do not require feed inputs as they draw their nutrient requirements from the surrounding environment. Development of aquaculture production systems are strongly supported by both governments and communities across the Pacific Island region but must also be accompanied by quality assurance programmes to ensure that oysters are suitable for human consumption.

6. https://www.spc.int/DigitalLibrary/Doc/FAME/Reports/SPC_21_Framework_for_action.html



Resilience to climate change

Resilience to climate change is an increasingly important issue for food production throughout the whole of the Pacific Islands region. Seaweed culture is an emerging aquaculture industry and is considered a climate-resilient option for aquatic food systems. Although only a limited number of species are currently cultured throughout the Pacific Islands region, seaweed production has potential to increase significantly and form part of an integrated aquaculture production system.

This photo shows seagrass (*Caulerpa* sp.) production trials that have focussed on domesticating the seedstock, developing protective cages to exclude herbivores and successfully deploying this new culture design across multiple sites.



Environmental and climate change resilience

Objective: To assess the resilience of aquaculture to climate change and natural disasters and develop preparedness and mitigating measures.

Climate change and natural disasters are affecting Pacific Island communities and food production systems, including aquaculture. Increased frequency and severity of events such as storms (cyclones and typhoons), floods and droughts are causing loss of infrastructure, stock and income. Climate change effects can also include slow-onset processes such as sea level rise, ocean acidification and increased water temperature that are also known to impact coastal fisheries and aquaculture.

Outcome statement

Aquaculture operations are better prepared for natural disasters and technologies are employed to mitigate impacts of climate change.

Actions

1. Develop and promote disaster resilient aquaculture by:
 - a. infrastructure development and culture techniques that are resilient to environmental events (e.g. cyclones).
 - b. identifying farming areas less affected by disaster events.
 - c. developing disaster preparedness, response and recovery plans.
2. Investigate techniques that have the potential to provide resilience to climate change impacts (e.g. increased water temperature, increased acidification) for aquaculture, such as through species selection, farm and pond design, and the development of hatchery production systems.

Glossary

Endemic species: for the purpose of this document, endemic species refers to species that occur naturally in the Pacific region, sub-region, or island groups; or have been introduced and become established within the ecosystem.

Eucheuma: a genus of rhodophyte seaweed

FAME: Fisheries Aquaculture and Marine Environment Division of SPC.

CROP: Council of Regional Organisations in the Pacific Islands Forum established to improve cooperation, coordination and collaboration between Pacific regional organisations.

CSO: civil society organisation.

'Green' values: the market benefit gained by positive environmental attributes associated with production.

HACCP: a management system in which food safety is addressed through the analysis and control of biological, chemical and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product.

Integrated agri-aquaculture: like multi-trophic aquaculture, but instead of by-products from one type of aquaculture being used to support another form of aquaculture, it is used to support agriculture production. The most common form of this is aquaponics, where waste from freshwater aquaculture is used to support hydroponic horticulture production.

Integrated aquaculture: a type of aquaculture where by-products from one aquatic species are used as inputs for another. For example, fed aquaculture may combine production with inorganic extractive (e.g., seaweed) and organic extractive (e.g., sea cucumbers) aquaculture.

Kappaphycus: a genus of red algae seaweed.

MEL: Monitoring, evaluation and learning.

NGO: non-governmental organisation.

QAP: quality assurance programme, a framework and a set of actions that supply chain members must take to ensure the aquaculture produce is safe to eat and of a high standard. In this case, QAPs mainly refer to bivalve testing programmes for food safety.

SPC: Pacific Community.

Unfed aquaculture: production of aquaculture species that do not require artificial feed inputs, examples include filter feeders such as bivalves, detritus feeders such as sea cucumbers, and plants such as seaweed. Also referred to as extractive aquaculture, as opposed to fed aquaculture, which requires high levels of feed inputs.

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