

Science-Policy Interface for Aquaculture Development in the Caribbean

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to Promote Sustainable Aquaculture

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**Caribbean
Aquaculture
Education &
Innovation Hub**

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Science- Policy Interface

How scientific knowledge and research inform and influence policy decisions and in turn, how the needs of policy shape scientific research agendas.

Aquaculture in the Caribbean

Globally aquaculture is increasing at an average APR of 5.59% per year, compared to 0.15%/ yr for capture fisheries (FAO, 2020)

The Caribbean SIDS < 1% of the global growth

FOOD SECURITY

- Seafood consumption is high
- Importation is 20x the volume of exports
- Captured fisheries contribute <2% GDP
- Captured fisheries provide employment & food security
- Seafood is highly nutritious, protein, minerals, omega 3

MARINE CONSERVATION & SUSTAINABILITY

- Caribbean sea overfished > 70% loss in biodiversity
- Increase in warm waters, hurricanes, storms
- Conch, coral reef, lobster, marine fish

LIVELIHOOD

- Ornamental species

Challenges to Growth

FRESHWATER

- Cultural Perception
- Large inland ponds
- Tilapia & Shrimp
- Access to fingerlings & broodstock
- Freshwater
- High feed costs
- Energy costs
- High investment costs
- Predeal larceny



Crude Protein	17.20%
Crude Fat	2.79%
Crude Fiber	3.55%
Calcium	4.21%
Phosphorus	0.52%
Ash	2.66%
INGREDIENTS: soybean meal, wheat middlings, amino acids, crude oil, limestone, vitamin and mineral supplements	
To be distributed at 100g from week 19 onwards containing necessary elements for high quality eggs	



VALUE-ADDED PRODUCTS

- Processing centres
- Biosecurity
- HACCAP
- Best Management Practices



REGULATIONS & POLICY

Marine Spatial Planning



Lack of Skilled Technicians, Extension Agents and Research Scientists

Challenges to Caribbean Aquaculture Development

94.6% literacy rate

Brain drain

Void in secondary & tertiary aquaculture science education

Aquatic animal health

Nutritionists

Geneticists

Phycologists

Engineers

Mariculture specialists



The Role of Scientists in Aquaculture Development

"Necessity is the mother of Invention"

Innovation & Technology Development

- Breeding Techniques
- Disease management
- Sustainable feed alternatives
- Sargassum invasion
- Restorative aquaculture
- Aquaponics
- Indoor aquaculture
- **Climate resilient structures**
- ITMA systems
- AI, apps, Digitize

Improving Productivity & Resource Efficiency

- Sustainable aquaculture practices
- Informs BPM
- Optimization of resources- water, feed & energy
- Improve growth rates
- Feed conversion ratios
- HACCAP
- Quality Control
- Biosecurity measures

Environmental Impact Assessment

- Mitigates environmental impacts-water pollution, habitat disruption, & biodiversity loss
- Ensures sustainable & eco-friendly practices
- Marine spatial planning
- Policy makers

Opportunities for R&D and Innovation

RESEARCH | MARINE PARK | ECO-TOURISM



Sea vegetable pellets

ANIMAL & HUMAN FEEDS



algae production



Fish & shrimp feed



Shrimp meal powder

SEAWEED VALUE-ADDED PRODUCTS



Cosmetics industry \$\$
Sargassum for fertilizer
& fashion industry



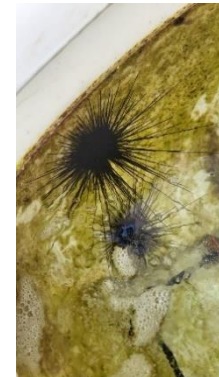
Sea cucumber



oysters



conch



Sea urchins



Sea weed

AQUATIC FOODS MARKET

Missed Opportunities for Growth & Innovation

- Emerging trends in aquaculture technology & science
- Public-private partnerships
- Regional cooperation and capacity building
- Role of international funding and development agencies
- Regional & Global Aquaculture Research Institutions
- Eco-tourism
- Marine Research Parks

Science – Policy Interface

- Involves communication & collaboration between global & Caribbean scientists, policymakers and stakeholders to ensure that policies are grounded in evidence while addressing societal challenges
- Helps to bridge the gap between complex scientific data and actionable, practical decisions in governance



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The Island School
CAPE ELEUTHERA INSTITUTE



FLORIDA ATLANTIC UNIVERSITY

Harbor Branch
Oceanographic Institute



Policy Recommendations to Promote Sustainable Aquaculture

Incentives for
Innovation

Better regulatory
frameworks

Prioritize Research
Funding

Strengthening
stakeholder
involvement

Regional and Global
Research
collaboration

Introduction of an
Aquatic Science
curriculum starting
from 6th grade

Strategies to Improve Science-Policy Collaboration

Establish Multi-Stakeholder platforms

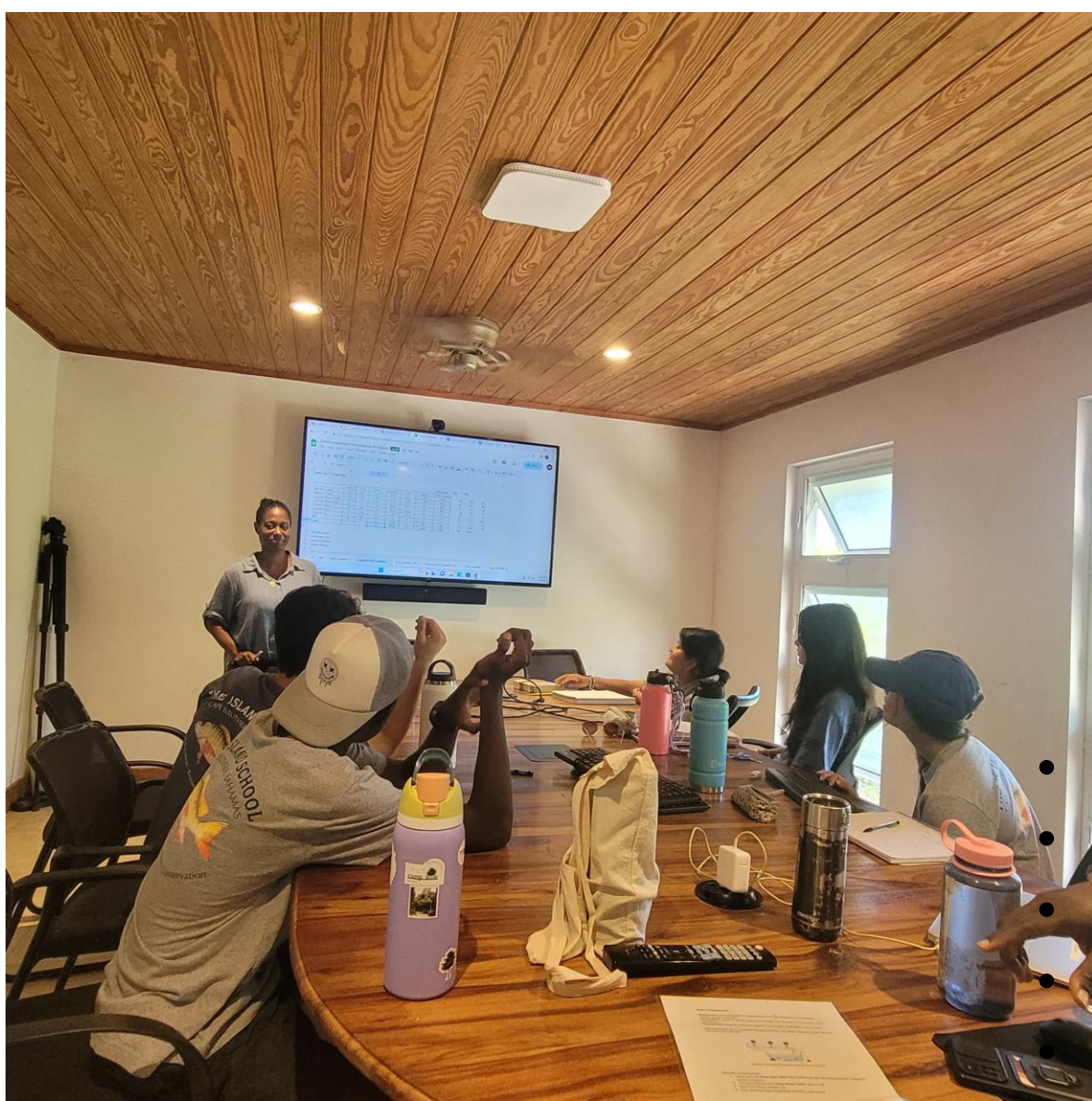
- Networking platforms that bring together scientists, policymakers, industry stakeholders & local communities to share ideas
([Caribbean Aquaculture Network/CAEIH](#))

Enhance Knowledge Translation & Communication

- Develop mechanisms for translating complex scientific finding into clear actionable insights for policymakers
- Policy briefs, simplified reports, engaging visuals
- Scientists & Entrepreneurs attend conferences and Trade shows

Strengthen Capacity Building and Training

- Joint training and capacity-building workshops for both scientists and policymakers



10th graders from the Island School, The Bahamas learning Aquatic animal nutrition

Invest

- Aquatic Sciences as STEM
- Aquatic Sciences Curriculum from 6th grade
- Tertiary Institutions – UWI, Utech, CASE
- Caribbean Research Institutions
- Aquaculture Science Research Park
- Training of Skilled Technicians
- Entrepreneurship-The business of aquaculture