

A seafood consumption initiative at Stirling: *interdisciplinary research towards societal impact*

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- **Aquaculture Common Issues Group,**
- **Friends House, Euston**
- **18th September 2019**



A domestic and international issue



Scottish Seafood: The official view

- Internationally recognised as a quality product, whether it is caught or farmed, and demand around the world is high
- Health, provenance and premium products are the hallmarks of Scottish produce
- Salmon farming is a key sector underpinning sustainable economic growth that supports the employment and the economy of many fragile coastal and rural communities across Scotland
- Scottish Government 2017

Out...and in....

- Scotland exported 80% of the seafood it produces, valued at GBP 613 million (USD 964.5 million) in 2014
 - up 6.6% from 2013.
- Conversely, Scotland imports 80% of the seafood it consumes.

Source: the Scottish Seafood Association.

The challenge...

- “Farmed salmon, mackerel and shellfish such as langoustines and brown crab are highly sought after and exported to the likes of the USA, France, Spain, Italy and Portugal, with growing interest in Southeast Asia,”
- “U.K. consumer tastes mean there isn’t huge local demand for these products, preferring white fish such as cod and haddock or smaller warm water prawns and tuna.”
- Denise Fraser, Seafish U.K.

“We are also looking to more of the foodservice and retail buyers to not just consider the price, but the fact that there is demand for Scottish seafood, very much in line with demand for Scottish whisky, oat bread and other products.”

John Cox, chairman, chairman of the Scottish Seafood Association

Crisis??? What crisis?



WHIT
SIGN UP

WORLD FISHING
& AQUACULTURE

Food fads
Fish

Struggling to eat two portions of oily fish a week? Time for a rethink

From pilchards to trout and crab, there are plenty of oily fish options, while research suggests that eating it can improve heart, brain and eye health and help prevent cancer. So, what's putting us off?



Felicity Cloake

Thu 9 Nov 2017 05:59 GMT



- Increasing value but declining volume
- Aging customer base
- Strong demand for other 'protein' categories'
- Average seafood less than 1 portion/week (2016)

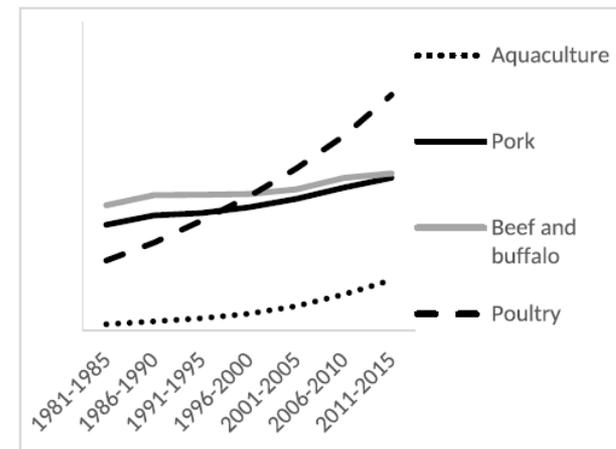
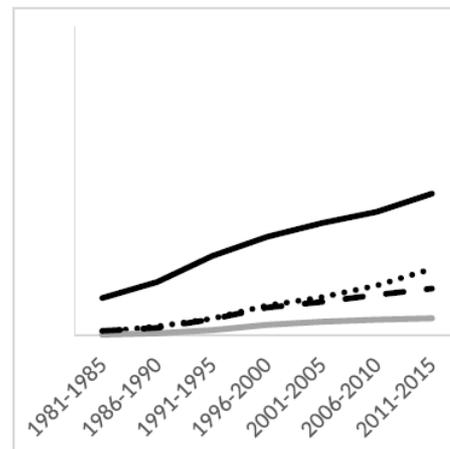
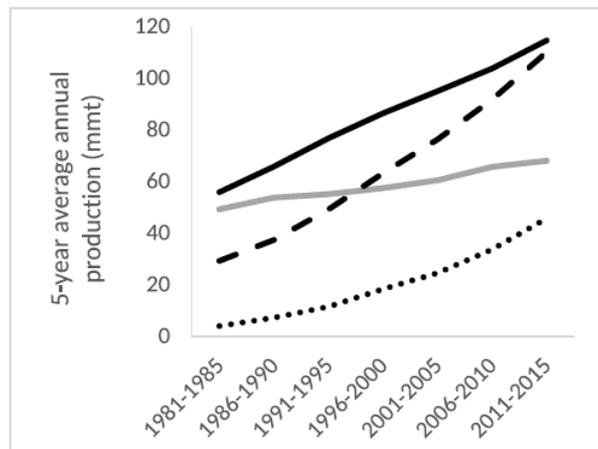
Comparing edible animal source foods

Total annual production (mmt) of edible animal-source food from aquaculture, poultry, pigs, and beef, for the world (a), China (b), and world excluding China (c) (5-year averages).

(a)

(b)

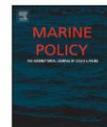
(c)



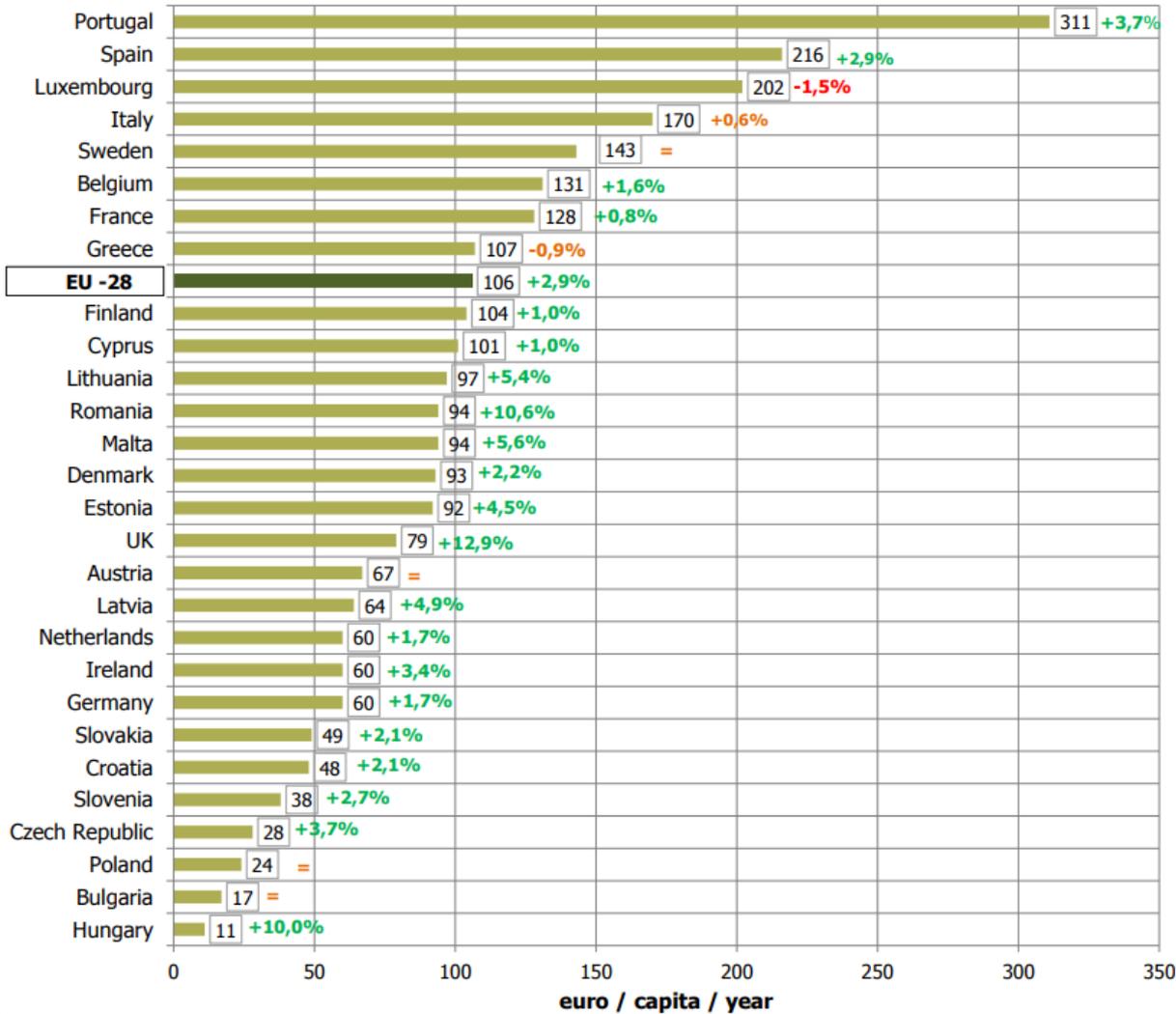
Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol



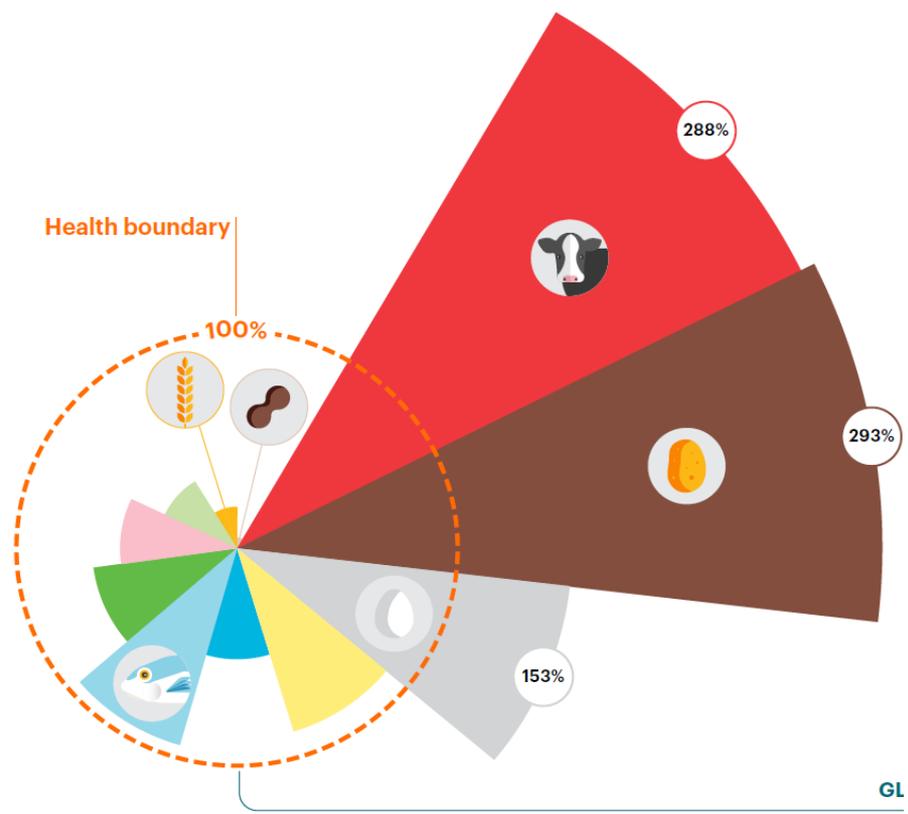
UK seafood consumption relatively low



Per capita household expenditure for fishery and aquaculture products in the EU in 2015

(and % variation 2015/2014)

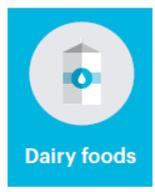
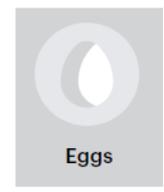
Global –below nutritional and environmental limits



Limited intake



Optional foods



Emphasized foods



South Asia- all food groups except starchy vegetables, including fish, way below desirable levels

Limited intake

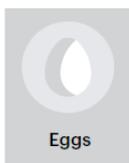


Red meat



Starchy vegetables

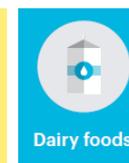
Optional foods



Eggs



Poultry



Dairy foods

Emphasized foods



Fish



Vegetables



Fruit



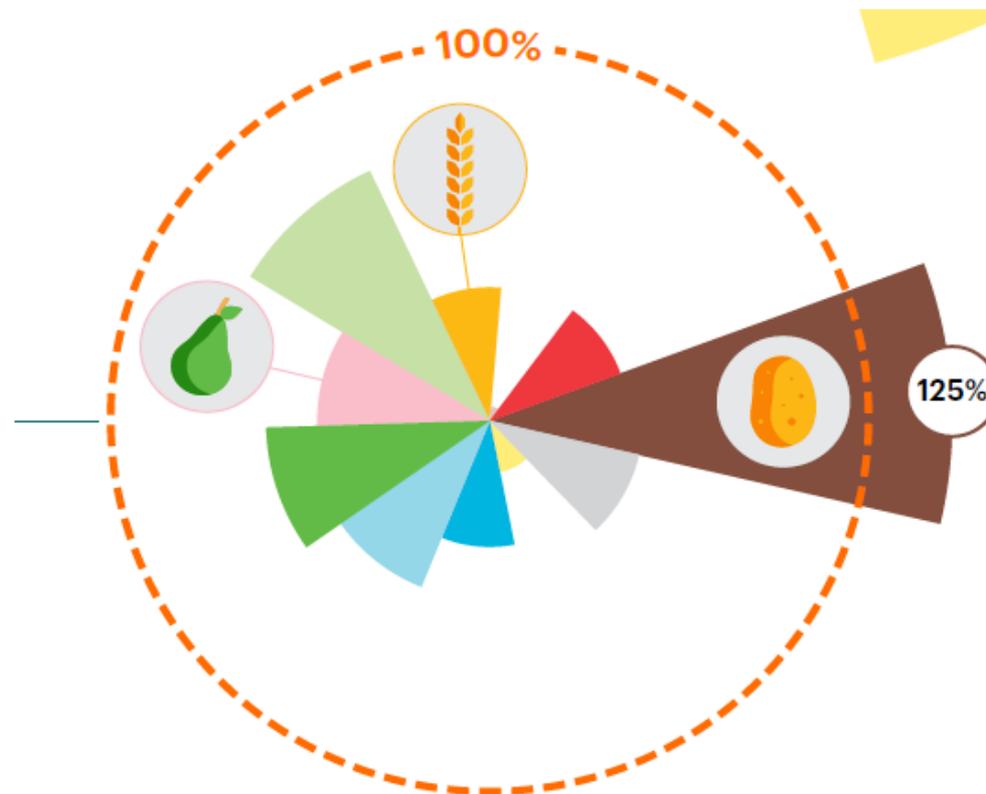
Legumes



Whole grains

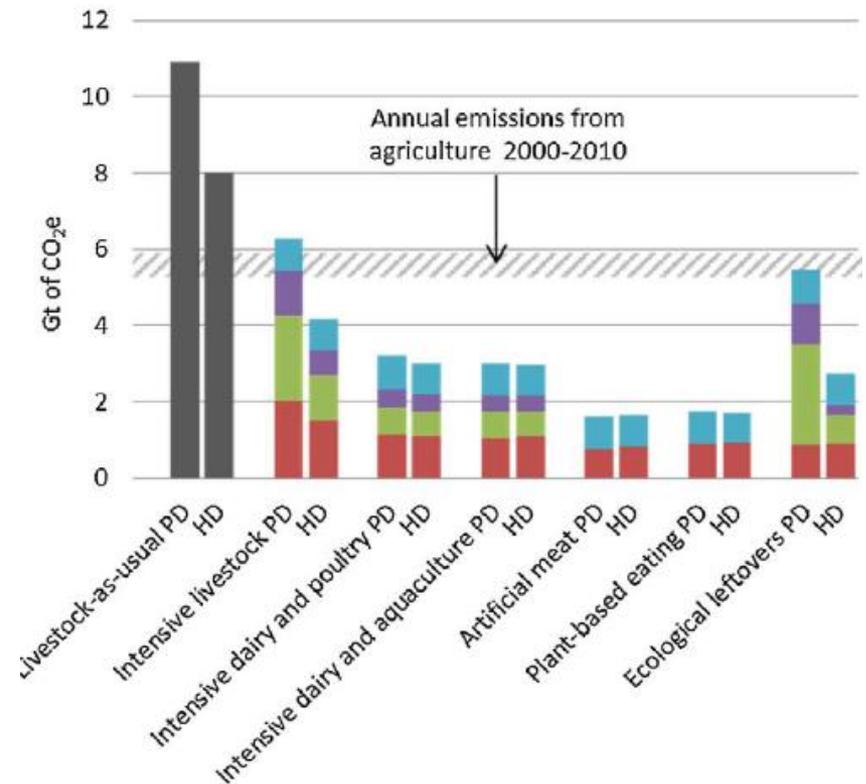


Nuts



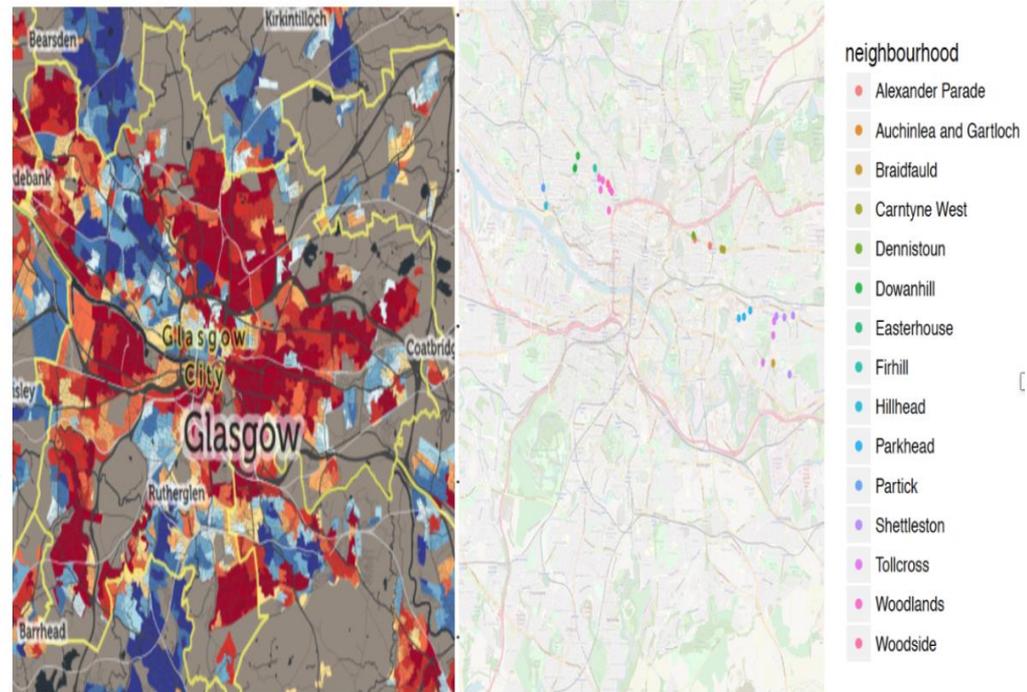
Linking nutrition to the environment

- Better diets-conserving the planet
- EAT Lancet Commission about to report
- Seafood can contribute to sustainable diets



Glasgow-access to seafood by postal code

- Glasgow city :varied socio-economic composition
- 40% of neighbourhoods, in 15% most deprived in Scotland;
- Rated by Scottish Index of Multiple Deprivation (SIMD)
 - 15 neighbourhoods
 - 35 shops within those neighbourhoods



Results – Product Range

Superstore freezer



Superstore tins

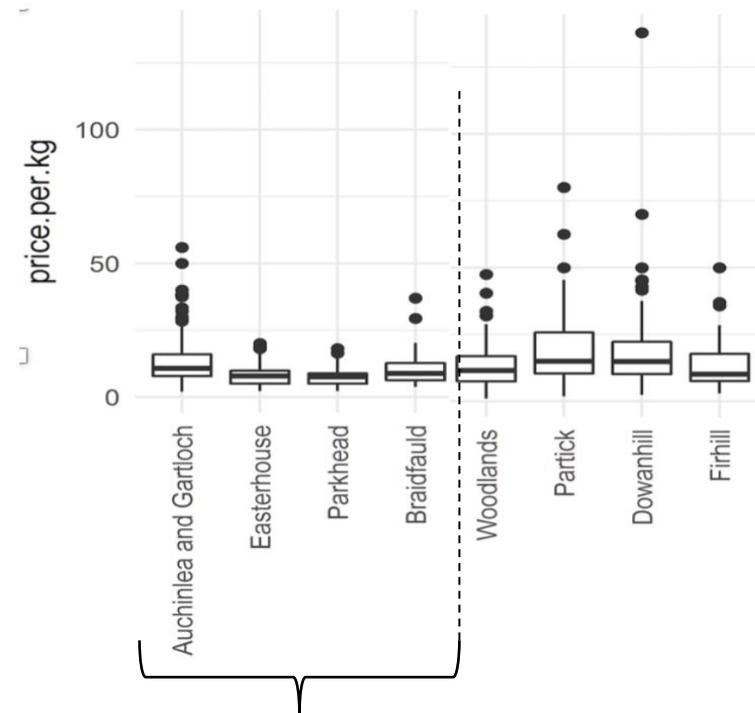
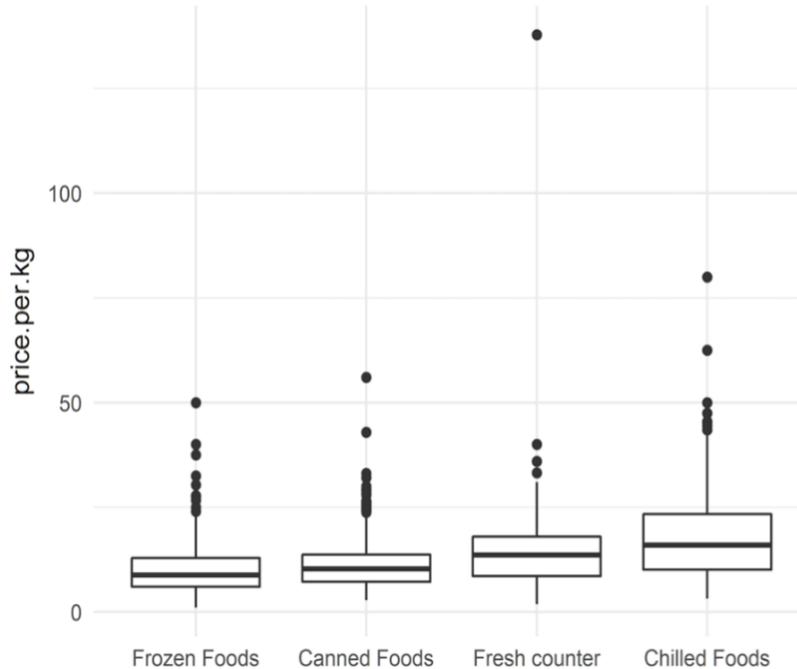


small supermarket freezer



convenience store tins

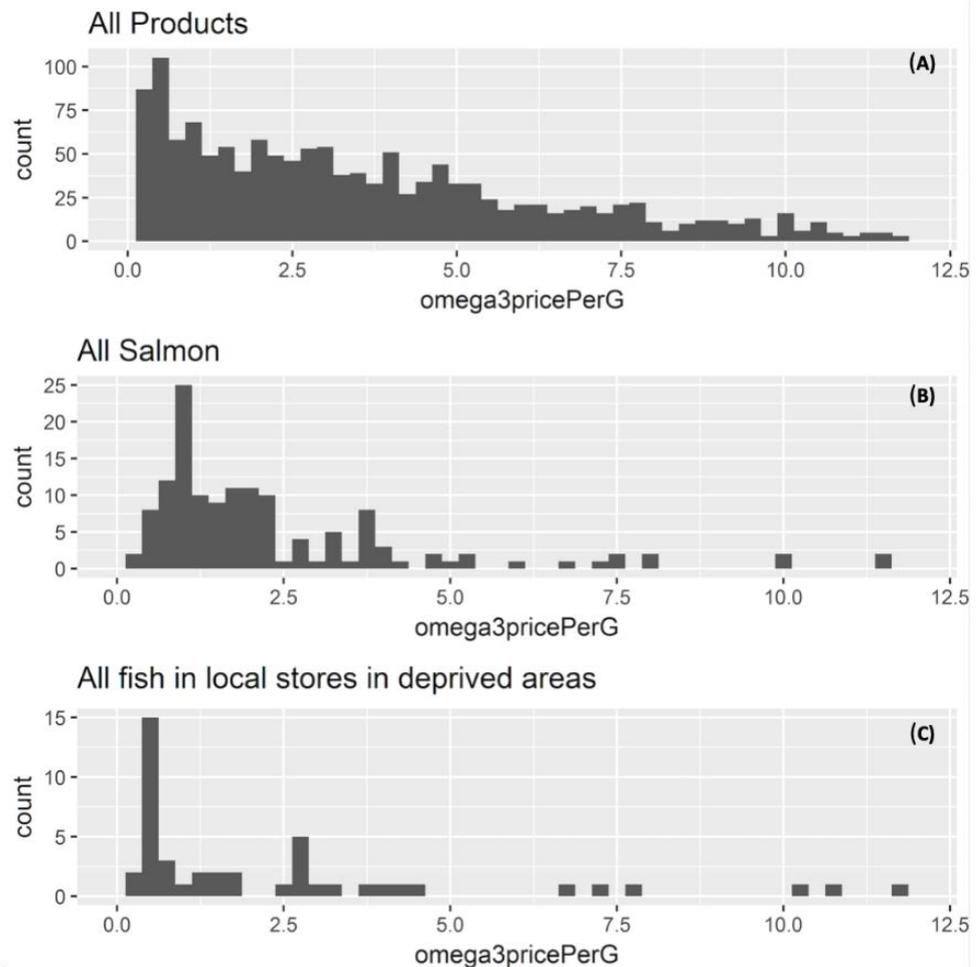
Result – Price



Deprived neighbourhoods

Result– Price of Omega -3

- Identified two key product categories
 - salmon (*Salmo salar*) represents Scottish aquaculture source
 - products available in local supply for deprived communities
- Calculated price per g of omega-3 for all products
- Deprived neighbourhoods have access to affordable omega-3 in the form of tinned fish
- Salmon out of price range for these communities



Changing behaviour.....

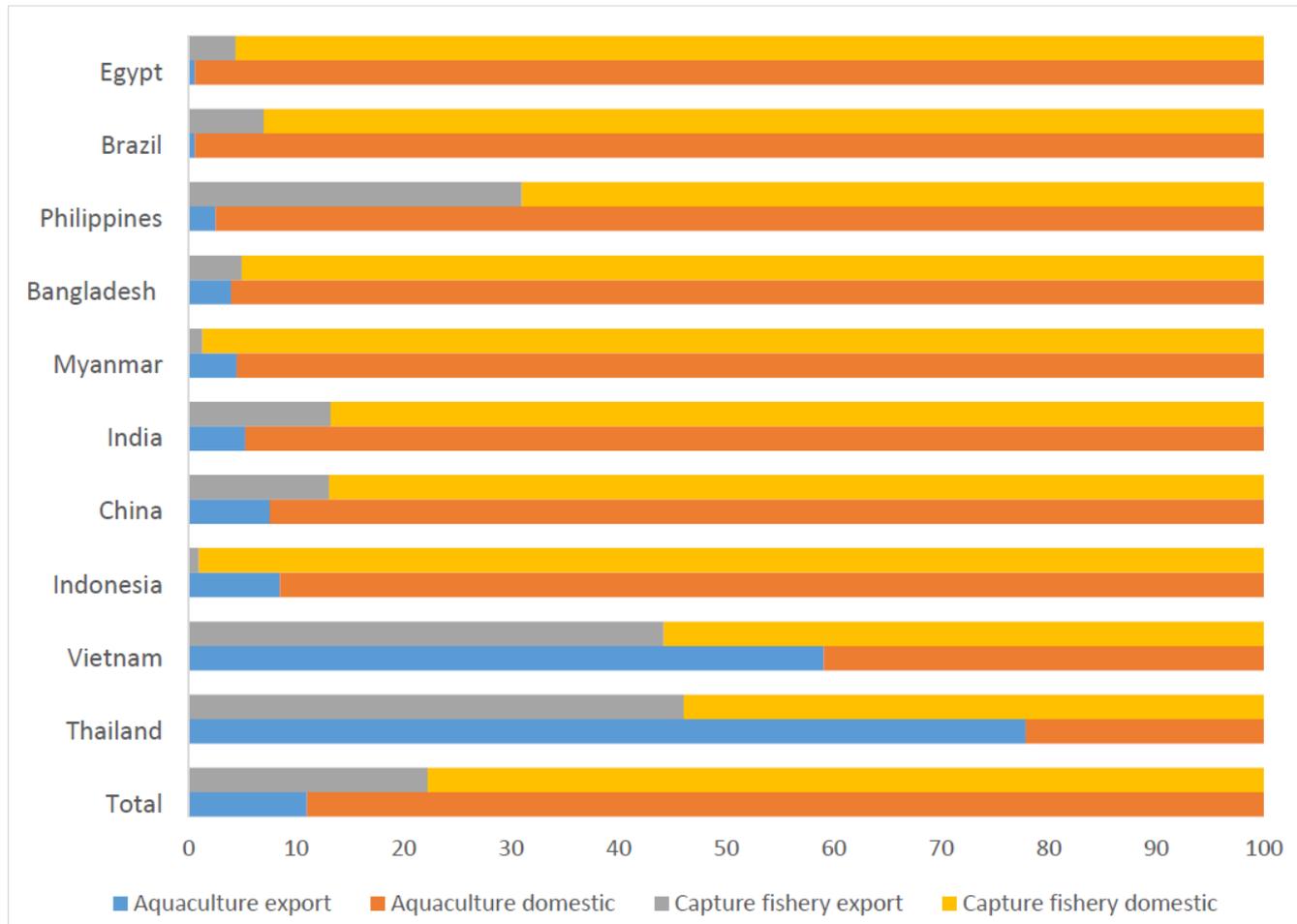
JOURNAL OF INTERNATIONAL FOOD & AGRIBUSINESS MARKETING
2018, VOL. 30, NO. 1, 61–69
<https://doi.org/10.1080/08974438.2017.1382423>



Stimulating UK Adolescents' Seafood Consumption

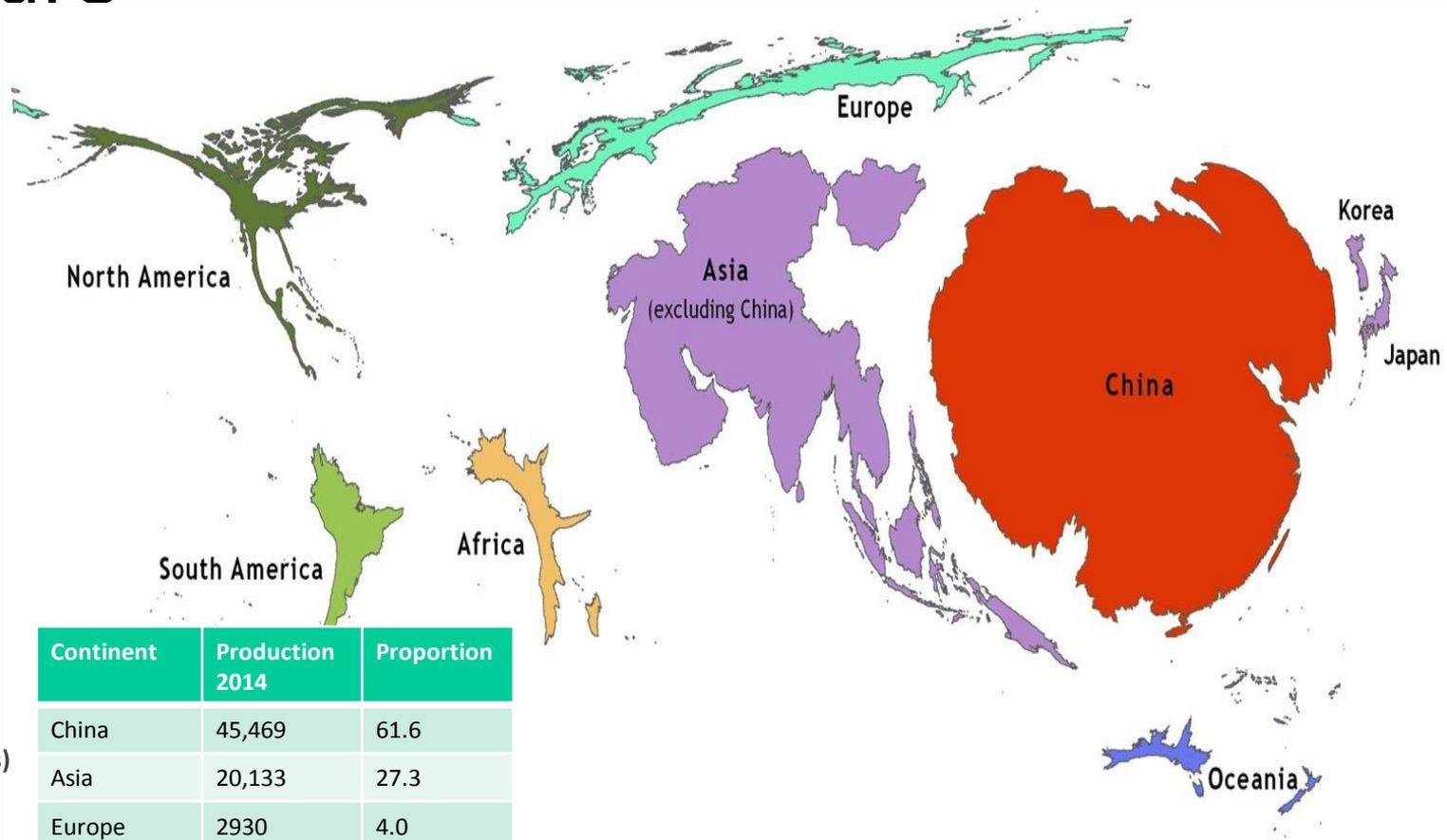
Dawn Birch^a, Juliet Memery^b, Nick Johns^b, and Maria Musarskaya^b

Not just for the wealthy....Aquaculture and capture fisheries exports and apparent domestic consumption in selected countries



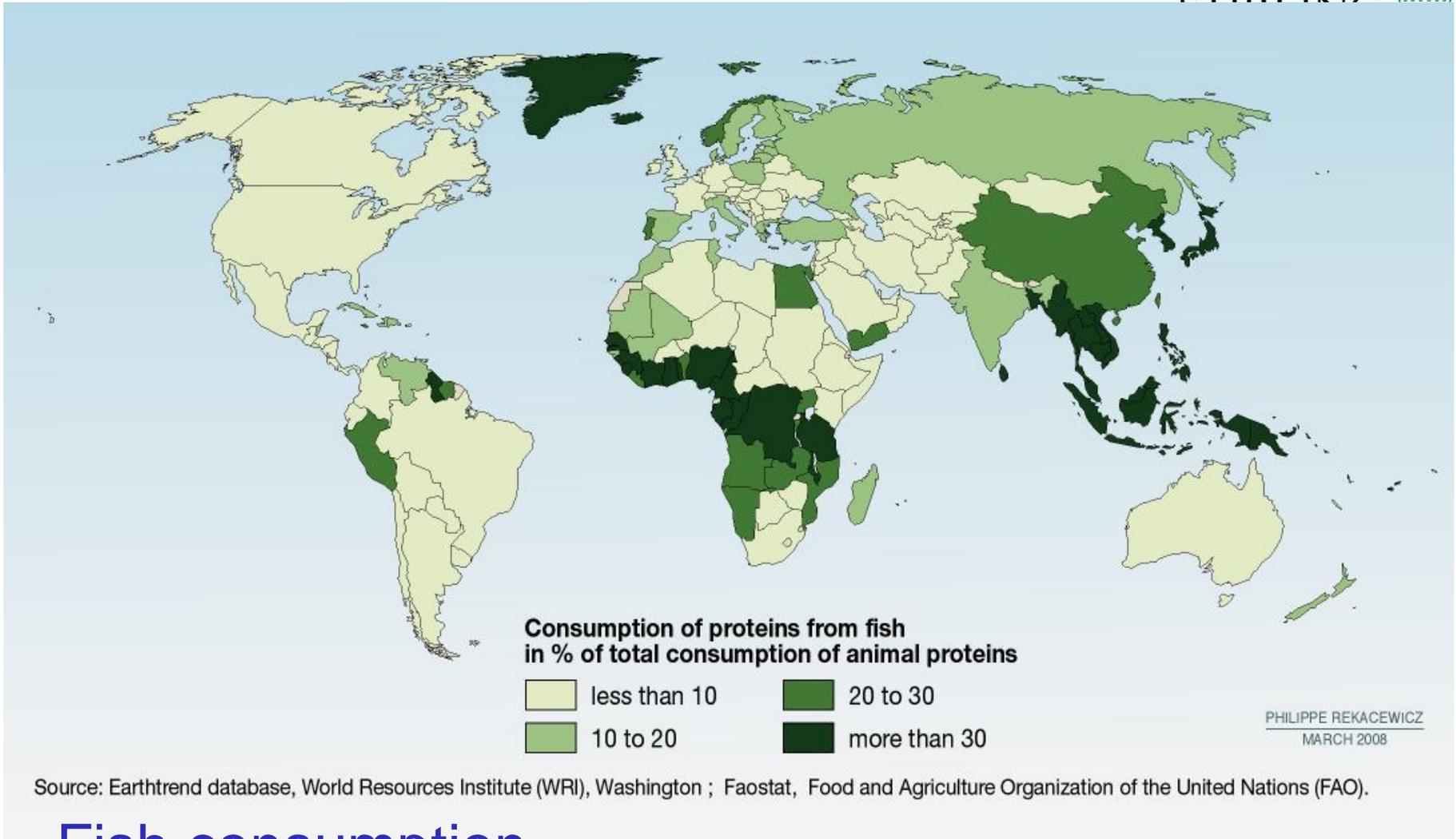
Belton, Bush and Little; 2018

The world of aquaculture ...an uneven picture



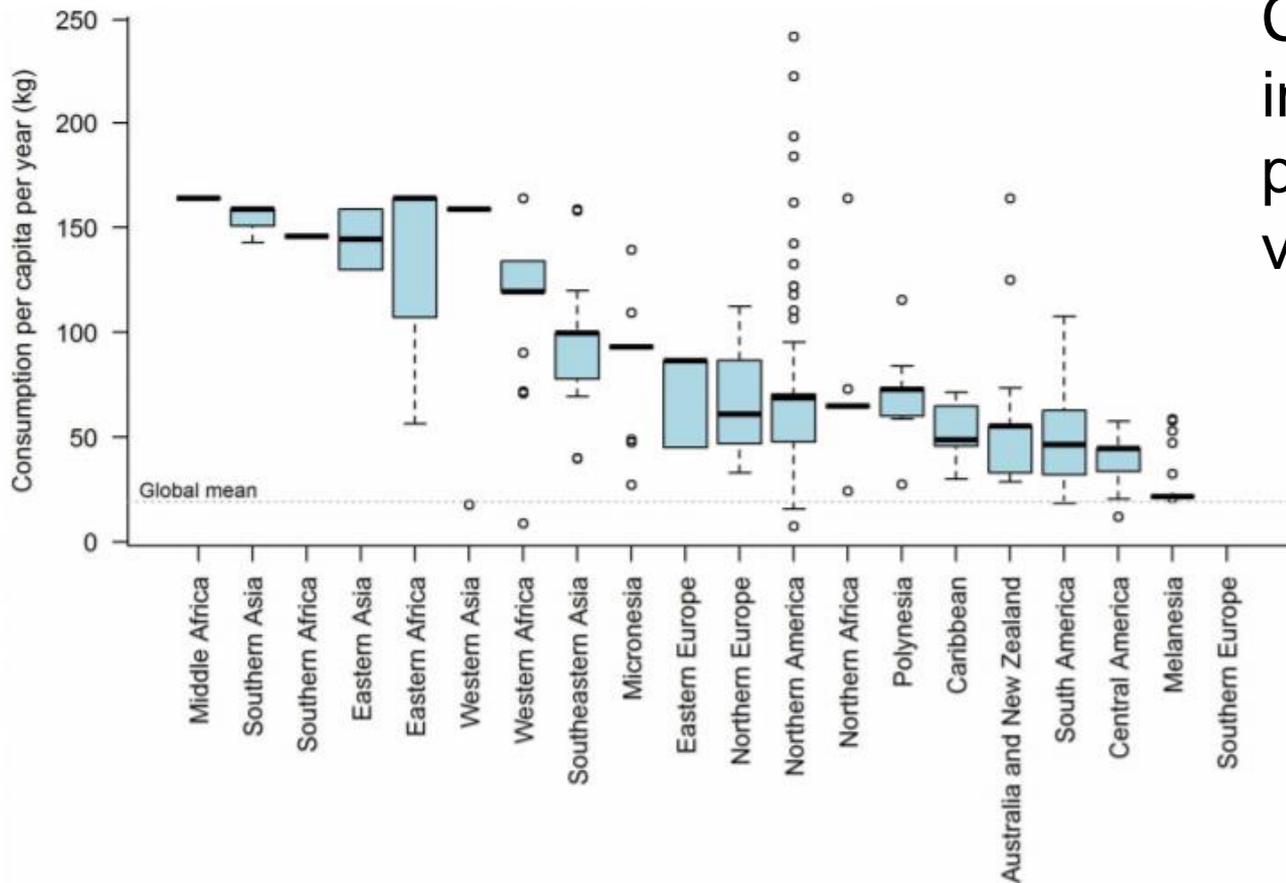
Aquaculture production 2014 (thousand tonnes)

Continent	Production 2014	Proportion
China	45,469	61.6
Asia	20,133	27.3
Europe	2,930	4.0
South America	2,759	3.7
Africa	1,711	2.3
North America	560	0.8
Oceania	189	0.3



Fish consumption in terms of protein

Some more dependent on seafood than others than others



Coastal indigenous people highly vulnerable

Why 'an initiative'??

- Building on Stirling's eclectic mix of disciplines and people
- Complementing a hitherto production bias to 'solving the problem'-quantity over quality
- Increasing interest by donors and researchers in sustainable diets, health and wellbeing outcomes
- Link between diet and adaptation to climate change
- Academic meetings and project development since June 2018-reaching out to researchers in OECD and Low-Medium Income countries

Exploring a seafood consumption issue

*Postharvest
technology*

Children
don't like

*Develop healthy
fast food*

Smells

Pregnant women eat
too little fish

Difficult to
prepare/cook

High level of
contaminants

Fish is too
expensive

Poor
availability/
accessibility

*Clean feed
technologies*

*Zoning of
aquaculture
and fisheries*

*Improved
market chain
development*

*More efficient
production*

Learning from elsewhere Barramundi breakthrough in Thailand?



Hidden harvests



Global Challenges Research Fund

- The Global Challenges Research Fund (GCRF) is a 5-year £1.5Bn fund and a key component in the delivery of the UK Aid Strategy: tackling global challenges in the national interest
- The fund aims to ensure that UK research takes a leading role in addressing the problems faced by developing countries through:
- challenge-led disciplinary and interdisciplinary research
- strengthening capacity for research and innovation within both the UK and developing countries
- providing an agile response to emergencies where there is an urgent research need.

GCRF proposals must

- aim to promote the welfare and economic development of a country or countries on the DAC list of ODA recipients
- be designed to address a development need, and
- focus on developing country problems.

Eating well and saving the planet

- Seafood consumption is important from both a national and global interest perspective
- There is a clear challenge –increasing the proportion of seafood consumed globally(rather than terrestrial alternatives) to
 - improve/maintain public health and
 - remain within planetary boundaries

Shrimp ponds?

HIGH

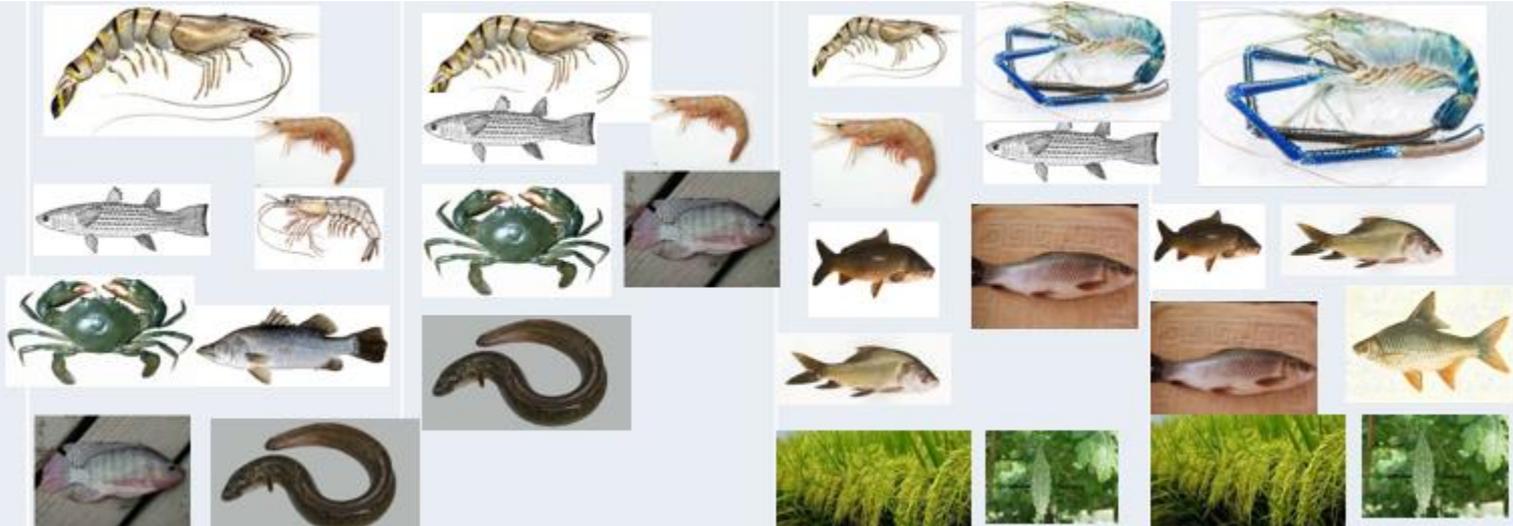
MEDIUM

LOW

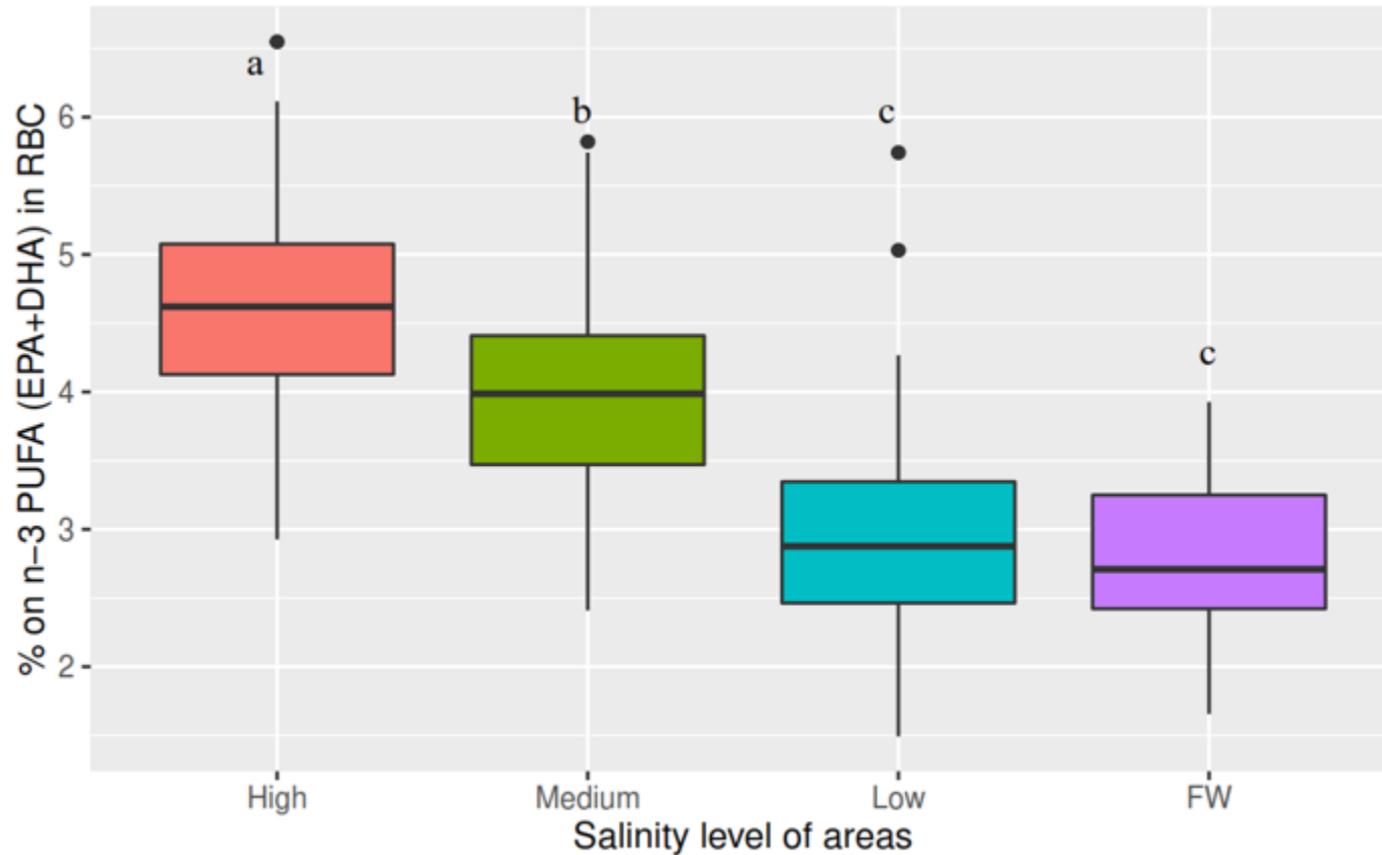
FRESH

Crop
diversification
54 species
Of aquatic
animal

22 varieties of
vegetables



Omega 3 index (RBC) adolescent girls



Nutritional vulnerability in coastal Bangladesh

A metric for assessing the impacts on nutrition and health of agroecosystems producing farmed seafood



The most vulnerable 20% of adolescent women, identified by low n-3 fat levels could be identified based on location in the saline transect, religion, female autonomy and diet diversity .

Tilapias-impacts of improved strains

- So far limited to production benefits
- New collaboration with Worldfish to characterise nutritional and environmental impacts

GROCERIES

How Tilapia is a More Unhealthy Food Than Bacon

Research has found the inflammatory potential of farmed tilapia to be greater than a burger, doughnuts—even pork bacon! It gets worse.

...“While most health experts agree we should be eating more fish (for all the reasons listed above), this Eat This, Not That! research has found the inflammatory potential of farmed tilapia to be greater than a burger, doughnuts—even pork bacon! It gets worse ...”

<https://www.eatthis.com/tilapia-is-worse-than-bacon/>

Building consortia

Apps New Tab Inbox (68) - davelitt... Evise-E



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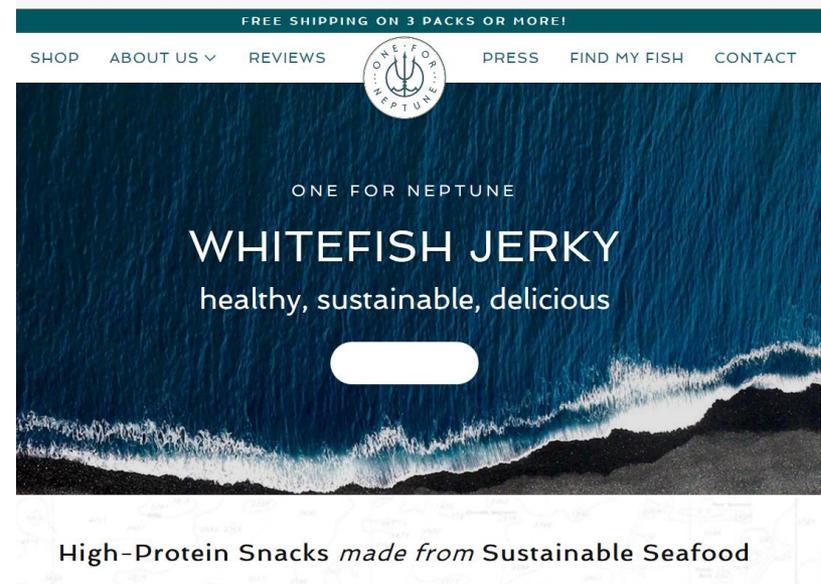
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<https://sustainableseafoodconsumption.wordpress.com/>



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