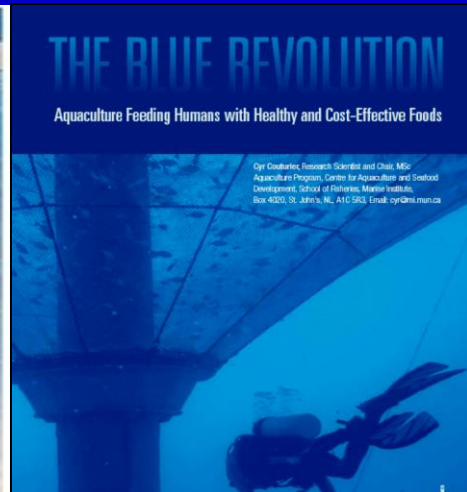
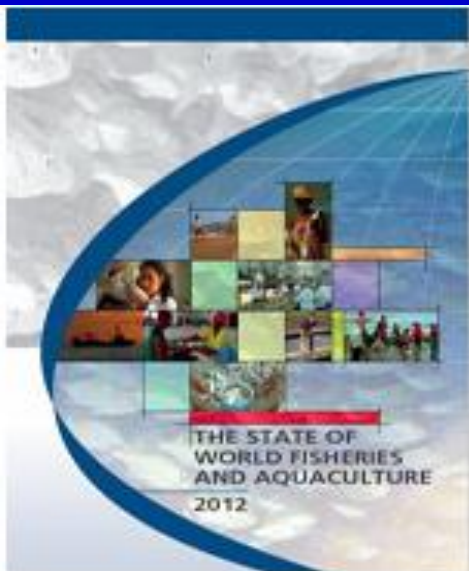


Workshop Introduction

Sacred Waters: The future of human cultures and livelihoods in a sea of change

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Documents are all hyperlinked

Workshop Introduction - Sacred Waters

Water IS the *essence* of life:

- It sustains ALL life forms on earth
- Is the medium for transporting carrying all nutrients required for life, for sustaining life functions (biological processes), for providing gases for life processes, for providing ALL foods



Workshop Introduction - Sacred Waters

Water IS the *essence* of life:

- Water is responsible for shaping our land and seas and for providing structure to physical bodies in living forms (humans, cells, plants, animals)
- Most organisms 80% + water
- Most organisms can not survive long without compared to food (e.g., humans 3 d vs 30 d)



Workshop Introduction - Sacred Waters

Water provides our food supply - fisheries & aquaculture:

- 80% of the world's 7 billion humans live within 100 km of a coast
- Aquatic food, whether hunted or farmed, is the single largest source of essential animal proteins for human development on the globe (19.2 kg/person/year, UNFAO 2014)

3. Fisheries Impacts of Climate Change

****Fish is the single largest source of animal protein consumed by human beings on earth****

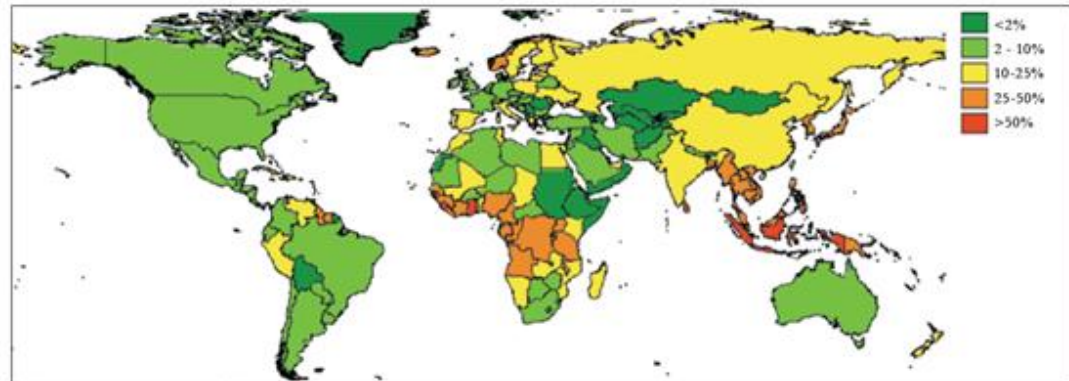


Figure 1.
National averages
of fish protein as a
percentage of total
animal protein

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Water provides our food supply - fisheries & aquaculture:

- **More than 50% of our aquatic food now comes from farmed sources**
- **Farmed seafood supply exceeds beef as a food source since 2012**
- **Over 3 billion seafood meals are consumed daily on the planet, over 1 trillion annually for a planet of 7 billion inhabitants**
- **There will be a deficit of 40 billion kgs of seafood by 2030 to feed to the world - aquaculture is critical to feeding developing nations in particular (food security, income, social integrity, and population health)(UNFAO)**

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Water provides our food supply - fisheries & aquaculture:

- **Over 90% of the “arable” land and “available” freshwater resources on the planet are utilized at present**
- **Quick fact: over 20 million aquaculture farmers, 95% of production by families, men and women**
- **Quick fact: salmon farming accounts for 1.8% of global aquaculture, occupies 0.000001% of our aquatic “space” and provided 14 billion meals in 2014**
- **Quick fact: aquaculture in total occupies less than 0.00001% of our aquatic environment, compared to 90% for arable land for agriculture, and 50%+ for fisheries**

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Water provides our food supply - fisheries & aquaculture:

- Seafood production, farmed and wild, are the least environmentally costly methods of producing food

Aquaculture vs agriculture (FAO):

Agriculture:

- Requires $> 90\text{kg}$ / ha fertilizer for continued production in developed areas
- Pesticide useage increasing
- Contribute green-house gases (methane, cattle)
- organic impoverishment
- inefficient energy conversion

Aquaculture:

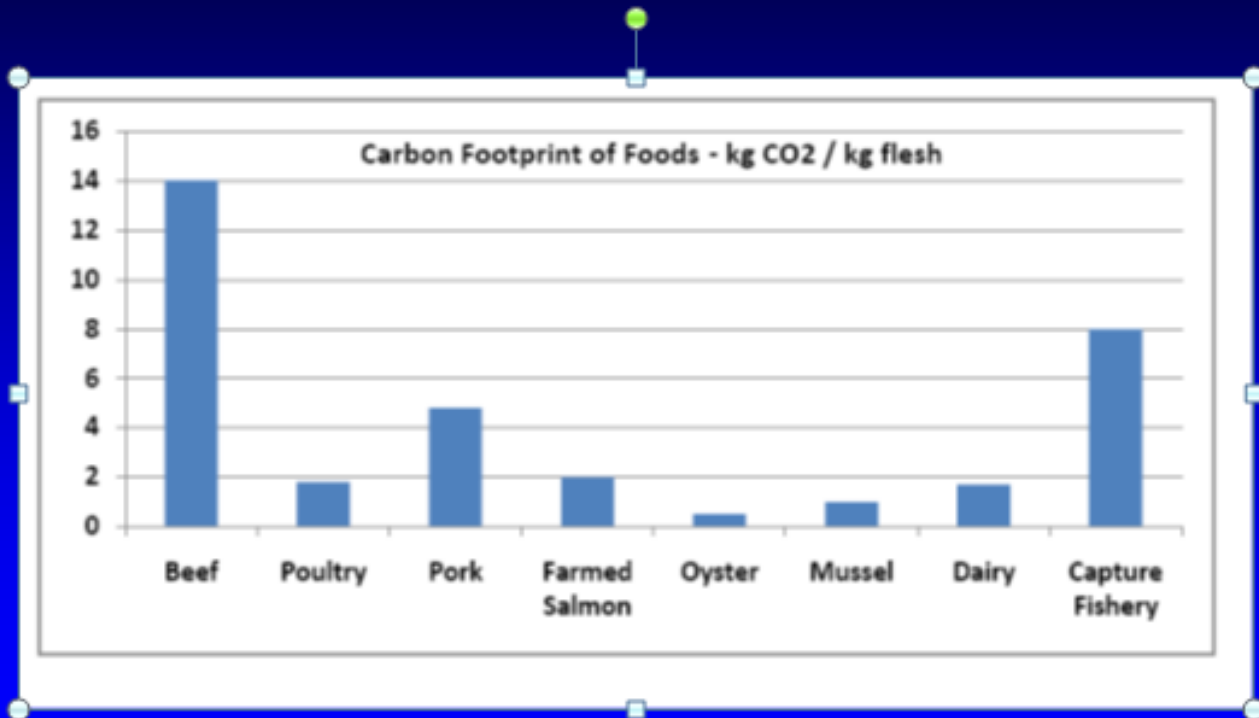
- No fertilizers; efficient converters of primary production
- very low to nil pesticides
- low organic loading ($< 1\text{ kg} / \text{m}^2$) in most intensive, but renewable environmentally with Good Practices

Workshop Introduction - Sacred Waters

Water provides our food supply - fisheries & aquaculture:

- Seafood production, farmed and wild, are the least environmentally costly methods of producing food

The "Green" imperative



Workshop Introduction - Sacred Waters

Water provides our food supply - fisheries & aquaculture:

- Workshop will focus on MI efforts in sustainable fisheries and aquaculture development around the world
- Only where the 3 pillars of sustainability intersect do we have true sustainability

