Make the Switch to Seafood

Alec Ritter, Cassandra Sullivan, Beck Lundeen, Katie Skudlarek

Overview

- As the global population grows, providing proper nutrition to everyone becomes more challenging.
- Currently Americans consume far more beef, pork and poultry than seafood, leading to over 30% of the world's total land surface area being dedicated to agriculture.
- Seafood protein is more nutritious than protein from terrestrial organisms and far more sustainable.
- Evidence suggests that it is time to switch our diets to seafood.

Evidence

- Fish are ectotherms; don't regulate their body temperature
- Dedicate more of their assimilated energy into producing more biomass compared to endotherms.
- More efficient at creating biomass.
- Producing 1 lb of beef uses 1,800 gallons of water (Minghui - 2017)
- Average aquatic organism has a protein content of 17.3%, while the average terrestrial content has only 13.8% (Figure 2).

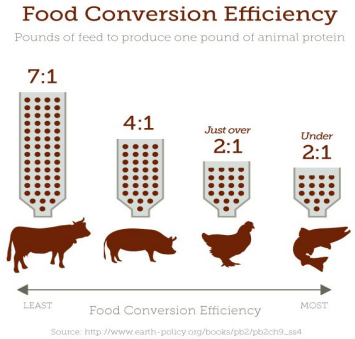

Figure 1. Production efficiency of different animals. Figure indicates that fish have the highest production efficiency. (Minghui 2017)

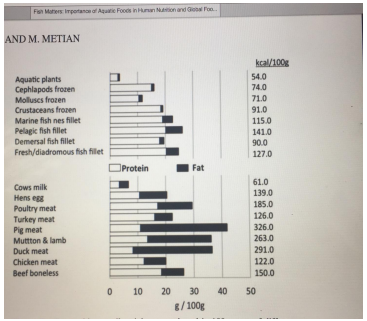

Figure 2. Protein and calorie per 100g of mass comparison (Tacon 2013).

This seems a little fishy . . .

- Some argue that aquaculture is detrimental for ecosystems because it results in surplus inorganic nitrogen and phosphorous, leading to eutrophication and ultimately the collapse of marine ecosystems (Andreotti 2017).
- Eutrophication: dramatic increase in primary production decreases oxygen available to larger organisms
- Experiments show that some organisms can remove up to 90% of excess nitrogen/phosphorous content, preventing eutrophication (Andreotti 2017).
- Sustainable fisheries target plentiful species, including those smaller and lower on the food chain and trophic levels, because they can reproduce quickly to sustain their populations. Therefore, ecosystems are not strongly affected (National Geographic 2015).

Conclusion

Seafood is a far more sustainable protein source than terrestrial protein for social, health, and environmental reasons. Socially, it allows human populations to continue growth; healthwise it is a more nutritious protein, and ecologically it creates less of a dependence on agriculture and more space for more diverse ecosystems. All of this can be seen when observing the evidence given by many sources.

Sources

Andreotti V, Chindris A, Brundu G, Vallainc D, Francavilla M, García J. Bioremediation of aquaculture wastewater from Mugil cephalus (Linnaeus, 1758) with different microalgae species. Chemistry and Ecology. 2017;33(8):750–761.

Minghui B. One kind of beef cattle farming method [Machine Translation]. Faming Zhuanli Shenqing Patent . 2017 Jul 12 [accessed 2017 Nov 1].

National Geographic. Why Stories Matter. National Geographic. 2015 [accessed 2017 Oct 31]. https://www.nationalgeographic.com/foodfeatures/seafood-decision-guide/

Tacon Albert, Metian M. Fish Matters: Importance of Aquatic Foods in Human Nutrition and Global Food Supply. Reviews in Fisheries Science. 2013;21(1):22–38.