Performance Metrics for Net Pen Production of Organic Fish: A Discussion Paper

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NOSB: November 27, 2007

Introduction

- Organic net pen carnivores is controversial
- Is there a third path?
- Developed performance metrics for key issues
- Intersection of sustainability and spirit of organic production
- A thought experiment as a starting point for discussion

Organic Principles

- Sir Albert Howard – 1940 “An Agricultural Testament”
- Principles of ecology, recycling wastes and natural defenses
- OFPA 1990 – Ecological management system: biodiversity, biological cycles and soil biological activity

Sustainability Challenges of Open Net Pens

- Five major issues
  1. Risk of escaped fish
  2. Risk of pollution and habitat impacts
  3. Impact on predators
  4. Risk of disease/parasite transfer
  5. Use of marine resources for feed

  – Well-documented in the scientific literature

Our Approach

- Goal: Performance (rather than production) metrics to reduce risks
- Goal: Each metric must be consistent with organic principles
- Strive to achieve goals regardless of current kinds of production
- Hosted workshop in July 2007
- Constructive engagement but responsibility for product lies with us

1. Risk of Escaped Fish

- AWG: Designed and implemented to eliminate escapes
- Only native species of local genotype
- Non-natives or natives with substantial genetic divergence from wild stocks ≠ organic
- Native = endemic to local area of culture
- Local genotype = no fish beyond F1 generation with yearly addition from wild fish

1. Escapes Discussion

- Escapes are inevitable: Native species requirement maximally reduces those impacts that will occur
- On par with stock enhancement programs – which do have risks (Araki et al. 2007)
- Only fully closed systems reduce risks further
- Consequence: Atlantic salmon would be excluded
- Farming natives is better than status quo of allowing farming non-natives to be organic

2. Risk of Pollution

- Polyculture with 50% of dissolved nutrients and organic material recycled within farm tenure
- Cumulative impacts from all farms shall not exceed assimilative capacity
- Benthic habitats show no measurable impact on chemistry or biodiversity
- Transition period: 8 years
  - incremental 10% to 50%

2. Pollution Discussion

- Polyculture/Integrated aquaculture meets spirit of organics
- 50% value is feasible (Chopin et al. 2001) and transition period provides incentive
- Nearshore producers likely excluded unless stocking densities reduced
- Lee et al (2006): Offshore benthic impacts can't be dismissed
- Polyculture may be difficult but not impossible in those environments

3. Impact on Predators

- AWG: Integrated predator management plan
- Non-lethal deterrents always first
- No underwater acoustic deterrent devices
- No intentional killing of predators except for immediate human safety
- More than a rare mortality (1 mortality event per certification period) shall lose certification

3. Predator Discussion

- Predator impacts must be addressed to meet organic expectations of consumers
- Site selection, low densities and vigilance *may* keep predator impacts at bay
- 3 year compliance supports goal
- Because production practices can't guarantee success, swift revocation is necessary if performance metric fails

4. Risk of Disease and Parasite Transfer

- No clinical signs of disease
- No treatment with synthetic drugs except Section 205.603
- However, must treat sick fish for animal welfare reasons
- But can’t sell them as organic

4. Disease Discussion

- Most daunting performance metric
- Disease transfer and chemical residues negatively impact environment
- Can’t have either to be organic: financial incentive to maintain disease - free production
- Salmon likely excluded; other species may meet metric – at least while still small - scale
- Note: Petitioning National List for parasiticide inclusion not acceptable to organic consumers

5. Use of Marine Resources

- 100% of feed ingredients shall be organic
- FCE transition from 1:1 to 0:1 over 8 years
- Fish meal and oil sourced preferentially:
  - Byproducts of sustainable food grade fisheries
  - Sustainably managed forage fish fisheries
  - Sustainable = B_{msy} and ecosystem protections OR eco-certified by FAO compliant program
- Slaughter byproducts from poultry but not mammals shall be permitted

5. Feeds Discussion

- Poultry byproducts supports recycling and reduced reliance on marine protein – but may be currently unacceptable to customers and NOSB
- 1:1 FCE limits entry but supports sustainability and provides incentive for alternative feeds
- Transition period allows wild fish use but only with strong ecosystem protections
- Takes strong AWG position and moves the sustainability bar further while creating incremental incentives

Qualifying Period

- Given standards are performance - based, we require 3 years of compliance data before being certifiable as organic

- Also require typical 3 years of no prohibited substance use

A Way Forward?

- Yes Camp: Open net pen carnivores are consistent with organics and sustainable
- No Camp: They are fundamentally inconsistent and not certifiable
- Third Path: Use performance metrics to ensure sustainability and be true to organic principles
- Big Implication: Only small fraction may be certifiable
- May grow over time if performance data permit it

Thank You