

# Alternative and Emerging Species for Aquaculture Workshop



Halibut PEI Inc  
Victoria PEI

Potential use of Mussels as feed supplements

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Halibut PEI Inc

# Halibut PEI Inc



- History

- 2008 experimental growth of 700 g halibut in low salinity water with help of AIMAP assistance from DFO
- 2009 Incorporated, increased production toward 35 tonnes
- 2010 received a grant from Innovation PEI, Discovery and Development fund to look at means of optimizing halibut production costs
- Using cull mussels as a protein source was part of that initiative
- 2012 obtained funding support from PEI Atlantic Shrimp Corp to develop “Mussel Meal”
- Worked with BioFood Tech with the help of NRC Product Development Fund
- 2013 added RAS to increase production to halibut production 75 tonnes

# Why “Mussel Meal”



- Mussel meal is the refinement of a high value waste protein stream
  - Cull mussels were a cost to processors for disposal
  - Meats and shells were easily separated
  - Meats were a known commodity with good protein balance and fatty acid composition
- HPEI wanted to reduce dependence on fish meal for halibut, a carnivorous fish
  - Halibut is land based production
  - Reducing the fish meal content by even a small percentage avoided environmental concerns

# Characteristics of “Mussel Meal”

- Extraction procedure 2013 by BioFood Tech
  - Simple, fast, and high quality for experimental lots
  - Put through an extruder & determined good milling characteristics
- Larger scale production 2014 by BioFood Tech
  - 200 kg of high quality meal
  - With help of a commercial partner tested the product in 2 other species
  - Sent to Norway and Italy to determine suitable dietary incorporation rates into a high protein pellet
- Extraction shrinkage: ~15% of wet volume remains as meal
  - Varies with cooking procedures

# What is different with this technique?

## **Mussel meal**

- Mussels are fresh, batch consistent, high quality
  - This process treats it the same as human food
  - All tests show no bacteria of concern
  - Good shelf life when packaged

## **Fish meal**

- Fish meal varies in freshness, waste offal, inconsistent
  - The rendering process involves high temperatures and variable cook times
  - Product is graded for value
  - Usually sold in bulk

# Chemical Analysis Mussel Meal

# Feed trials

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- Experimental feed included mussel meal at 20% and 40% of the protein requirement
- Tests were carried out in salmon at 12 C in seawater and Rainbow trout at 14 C in Fresh water
- Apparent Digestibility coefficients were 92% and 86.4% indicating good digestion
- Feed acceptance was excellent.
- Fatty acid balance is very good.
- Recommendation: leave the fatty acids/oil in the meal.



# Conclusions

- Mussel meal makes a quality replacement for fish meal in fish diets
- Mussel meal can be easily prepared
- There are insufficient waste mussels in PEI to generate a business



# Why did HPEI stop pursuing mussel meal?

- Registration process for experimental use requires all fish used are destroyed and do not enter the human food chain
- Registration as a feed stuff in Canada is laborious, complicated and prolonged (minimum 2 years)
- Successful approval means anyone can buy and use the meal in any species
- HPEI would not see any benefit and would incur substantial expense

- Any Questions?
  - Some may have answers