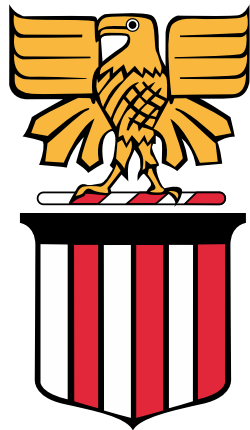


## **2. B. Research and Innovation: Maximising the value of marine bioresources in the Atlantic area**



**MARIGOT GROUP**  
LIMITED

Alice Stack, MVB PhD  
Marigot Group Ltd.  
Cork, Ireland

# Overview

- Who we are (est. 1991)
  - Celtic Sea Minerals (harvest and animal feed)
  - Marigot (food and human health)
- How we use marine biomass (*Lithothamnion spp.*)
  - Harvest; environmental impact
  - End products
  - Research and Development
- Why have we been successful to date?
- Opportunities for future development

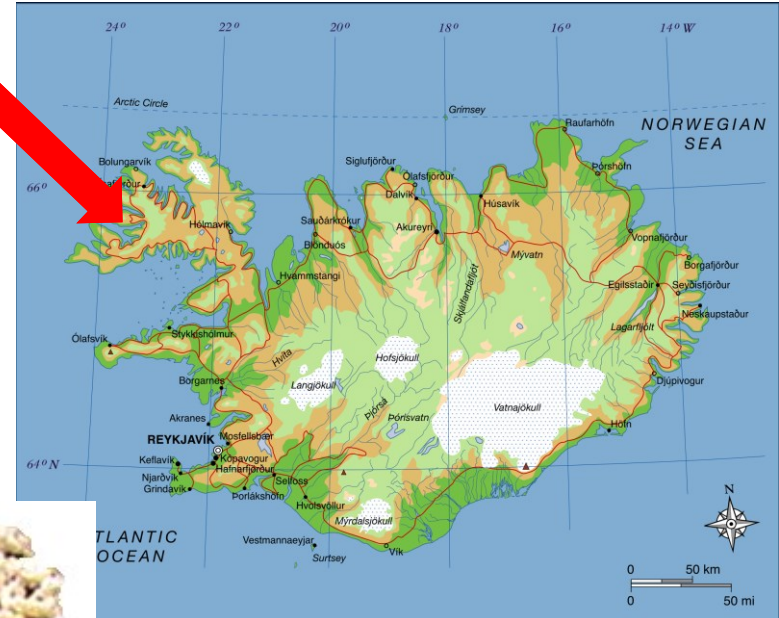
# Celtic Sea Minerals / Marigot



## Ireland



## Iceland



Calcareous algae  
*Lithothamnion* species  
Coralline algae  
Calcified seaweed  
Rhodoliths  
Maërl



# Icelandic Westfjords



## Bildudalur

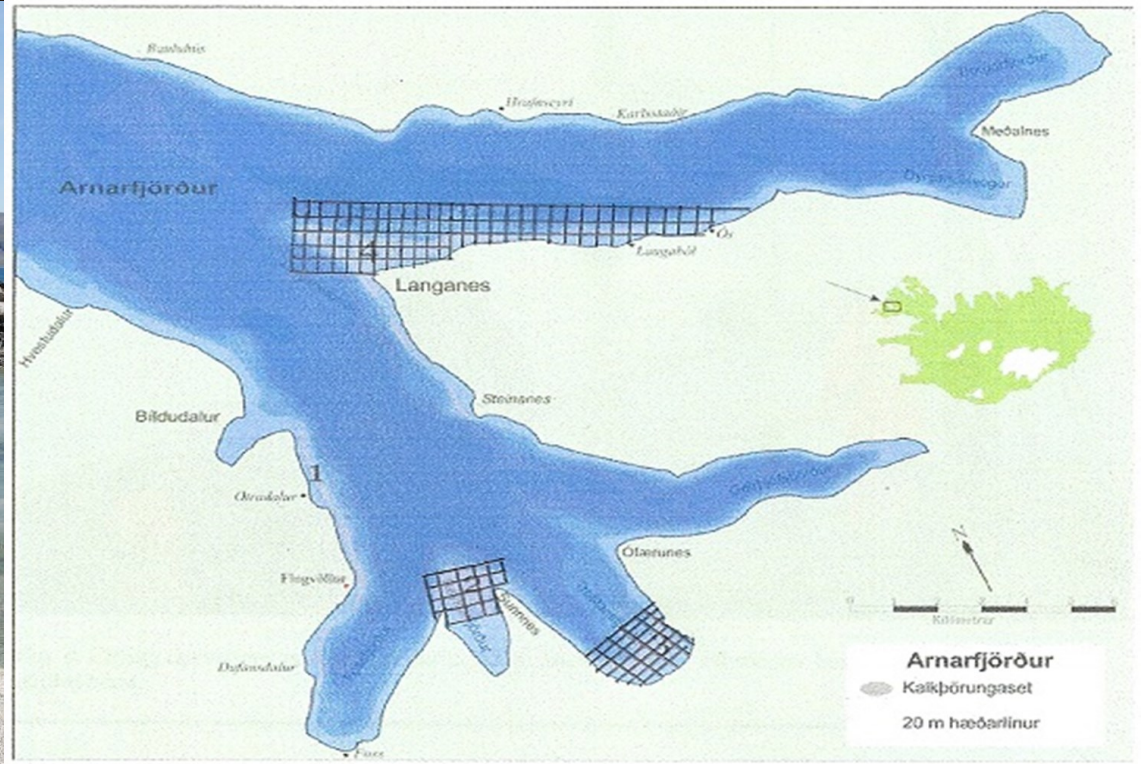
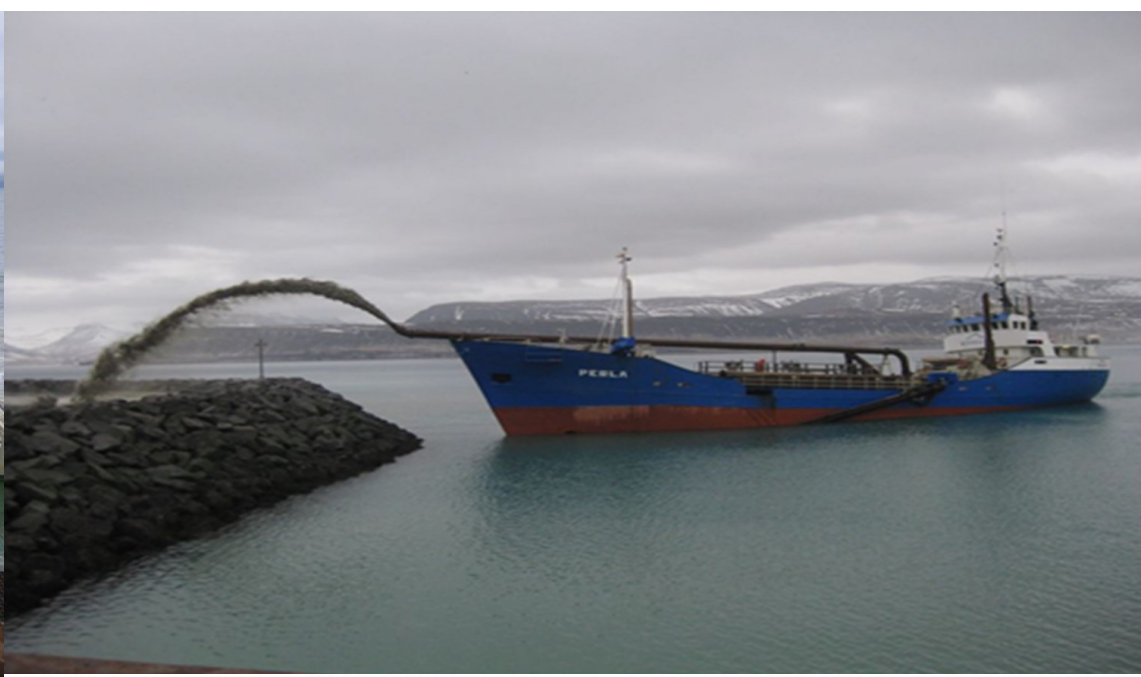


# Harvesting Activity



- 30 year extraction license granted in 2003
  - 85,000 T per annum
- Deposits covering 4 fjords in NW Iceland have been mapped
  - Total available material > 21.8M tonnes
  - Additional mapping identified 70M tonnes







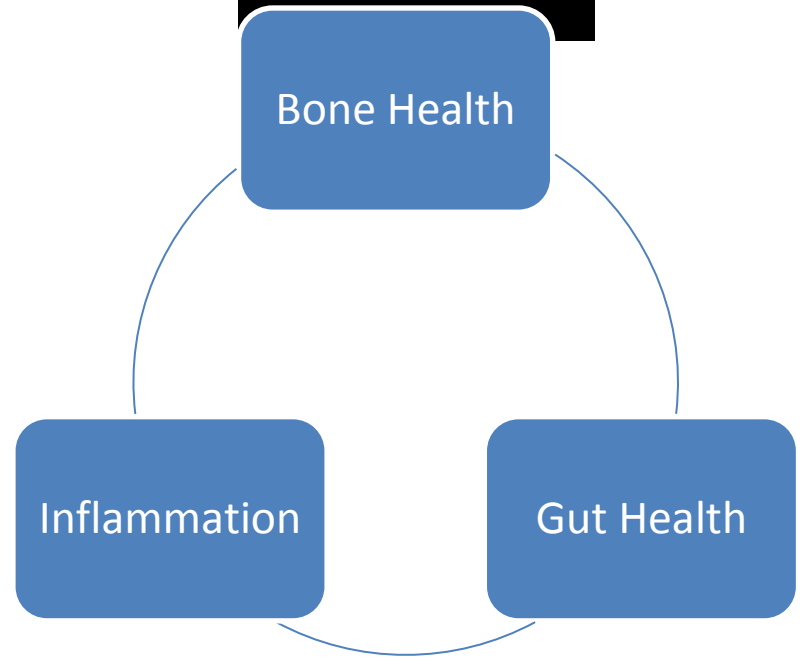
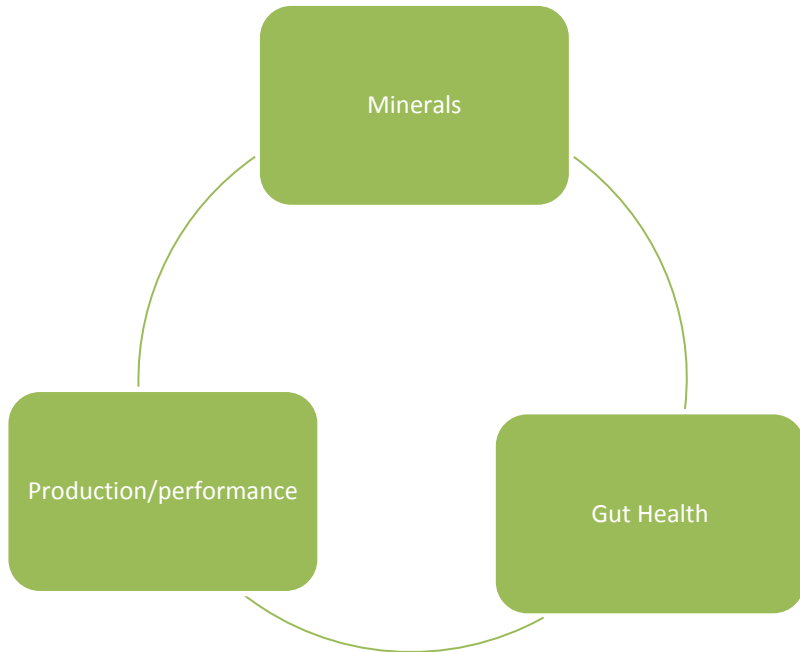




# Products

Animal Feed additive (1993)

Food / Supplement (1996)



# Marine multi-mineral

- Calcium, magnesium, 72 detectable elements
- Carbonate salts
- Sold in > 40 countries
- Applications
  - Rumen health (buffering)
  - Milk, beef, pork production
  - Non-dairy source of calcium and other minerals
  - Bone health support
  - Anti-inflammatory properties
  - Digestive health

# Research and Development

- Reputation (and sales) built on science and technical excellence
- 34 peer-reviewed publications
  - 6 human trials
  - 9 animal health / performance
- Collaborations with academic research institutes across the world
- Internal (company-generated) and external research funding sources



# Reasons for success?

- Icelandic (local) government support
- Strategy for cost efficiency
  - Accessibility of harvestable material
    - Non-culture based harvest
  - Location of plants
    - Isolated; personnel
  - Shipping / logistics
  - Energy costs (X6)

# Reasons for success?

- Extensive, ongoing sustainability program
  - Supported and audited by various stakeholders

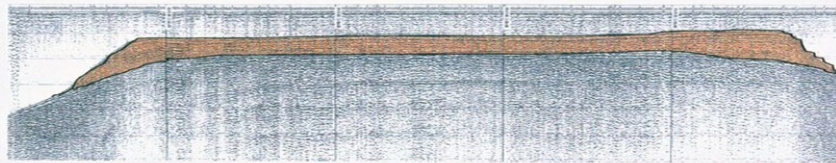


Fig. 2A. Seismic reflection profile across the threshold in outer Reykjarfjörður. Modern (maðrl) sediments shaded. Horizontal scale lines approx. 7.5 m apart. Length of profile ca 1200 metres.

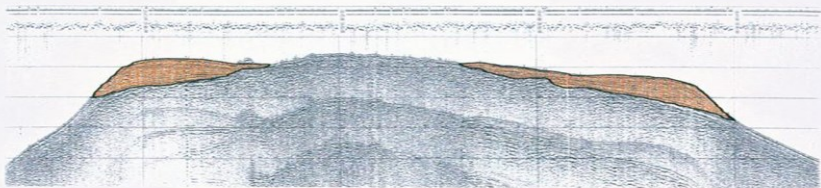


Fig. 2B. Profile across Langanegrúnn, showing sediments on both sides of a bedrock outcrop. Length of profile approximately 800 metres.

# Future Challenges

- “Low-tech” products that are supported by extensive scientific program and technical support (both animal and human health)
- Future-proofing – must move from low to higher margin products...
- How?

# Future Challenges

- Ongoing support at government-level
  - Environmental, licensing, trade policy-makers
- “Open doors” between SMEs and academic research institutes
  - IP, scale-up, funding assistance
- Focused research programs
  - Characterization and *efficacy* of higher-value bioactives (true “end-user” studies)
- Cost-efficiency always a factor
  - E.g. *Fucus vesiculosus*



# Questions?

