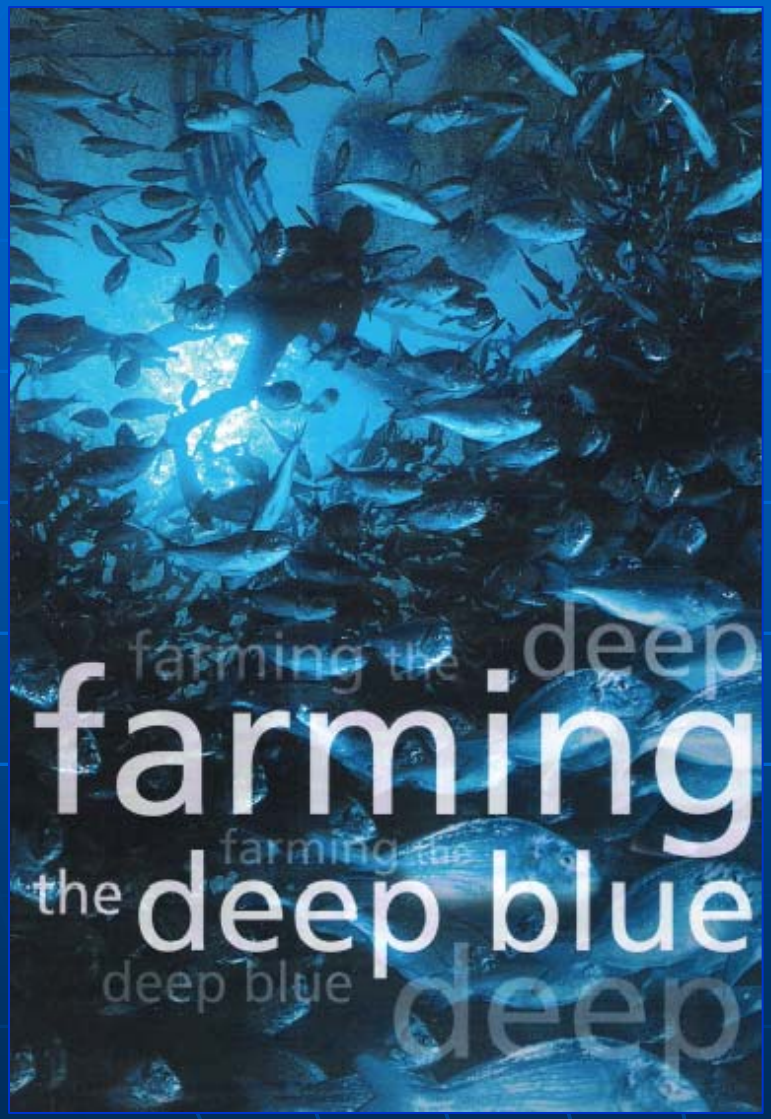
An International Perspective of Offshore Aquaculture around the Globe

Perspectives

1. Global realization of the need.
2. Development will be technology driven.
3. The open sea provides level playing space
4. “Offshore” conditions highly variable
5. Decades / centuries, to reach full potential.

1. Global realization of the need

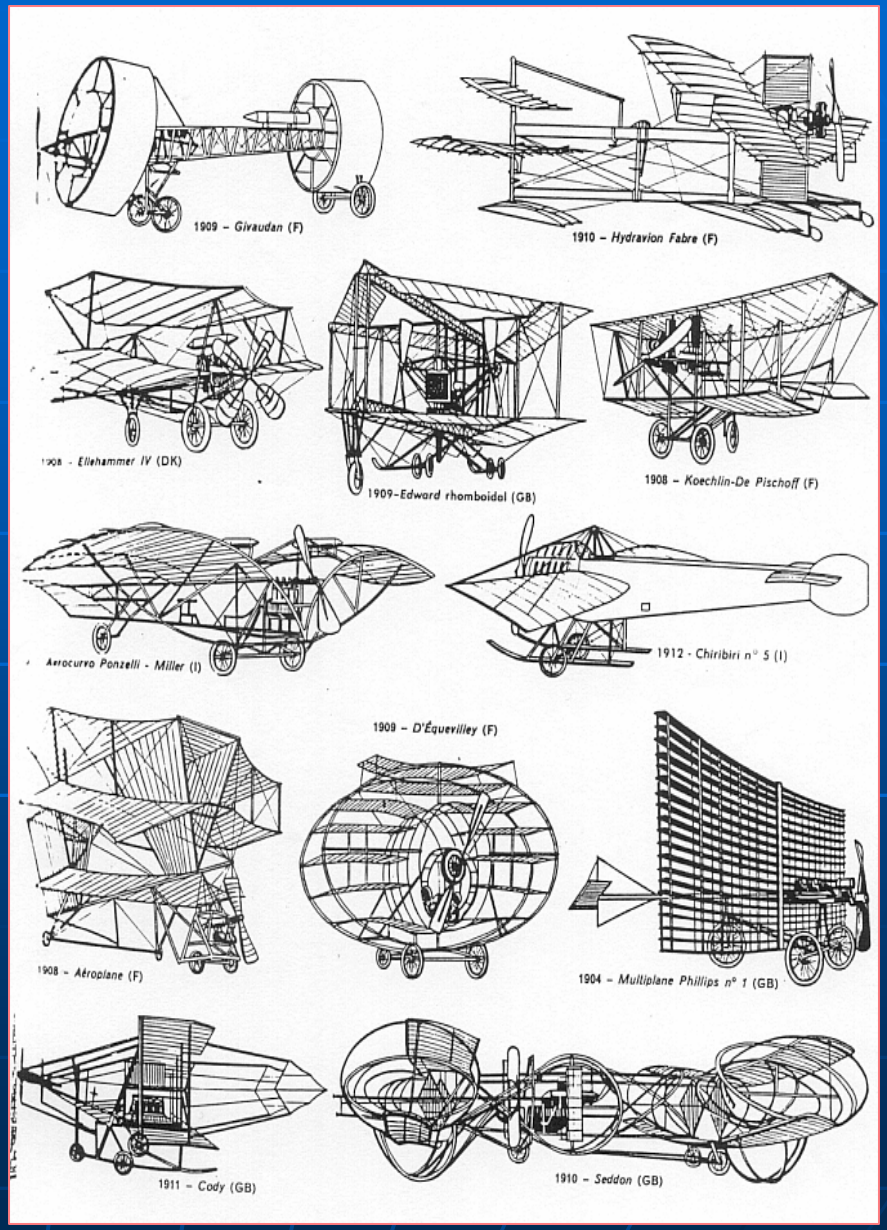


Irish Sea Fisheries Board
www.bim.ie

- Aquaculture is growing things in water
- To grow a lot of things needs a lot of water
- 97% of water on Earth is in the sea
- Our coastlines are crowded
- The seafood we prefer is SEAfood
- More choice of species in the sea
- Land based systems not practical
- Towards an “Ocean Agronomy”

2. Technology Driven

- Creativity of engineers
- Materials science
- Telemetry
- Remote control

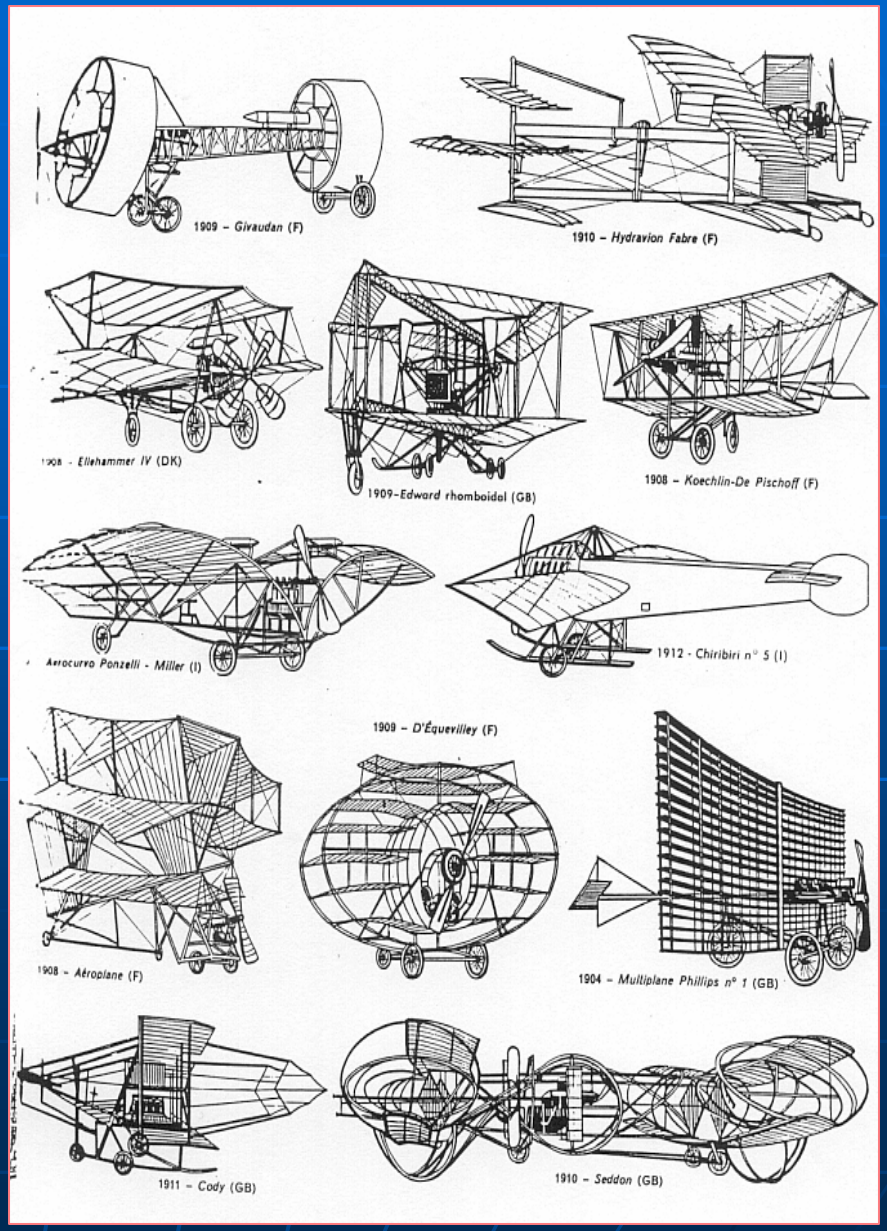


3. Level Playing Space

Success requires:

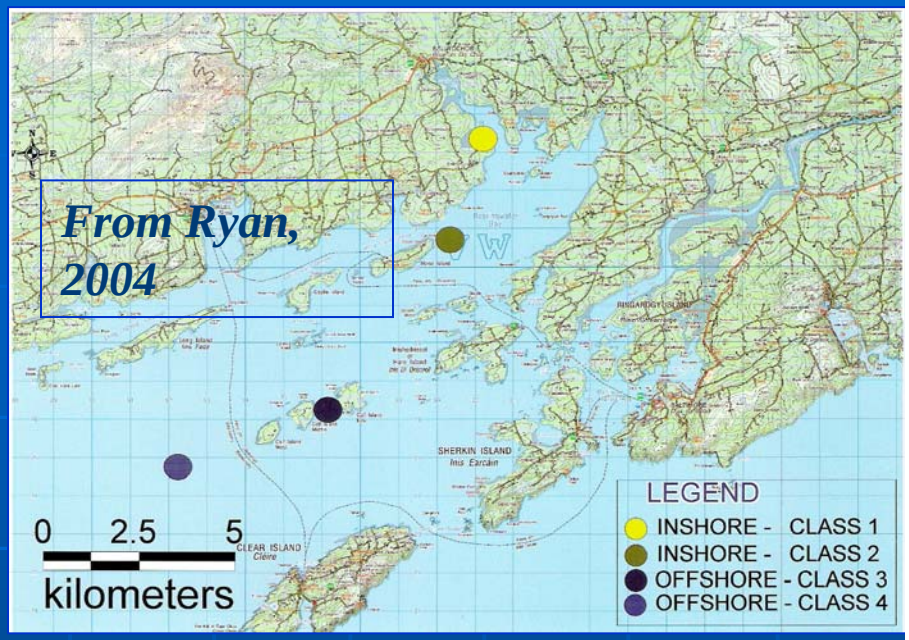
- **Skillful, well-trained staff**
- **Good containment systems**
- **Tech. based support systems**
- **Clean environment**

***Those who say: "Aquaculture can only work in countries with low labor costs and weak environmental standards" are* wrong**



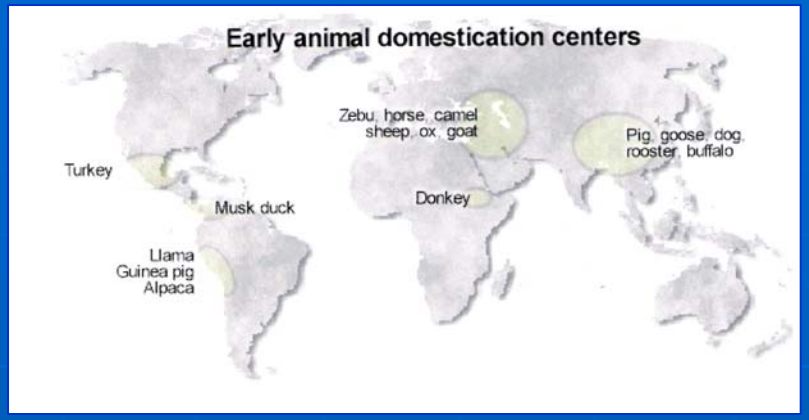
4. What is 'OFFSHORE'

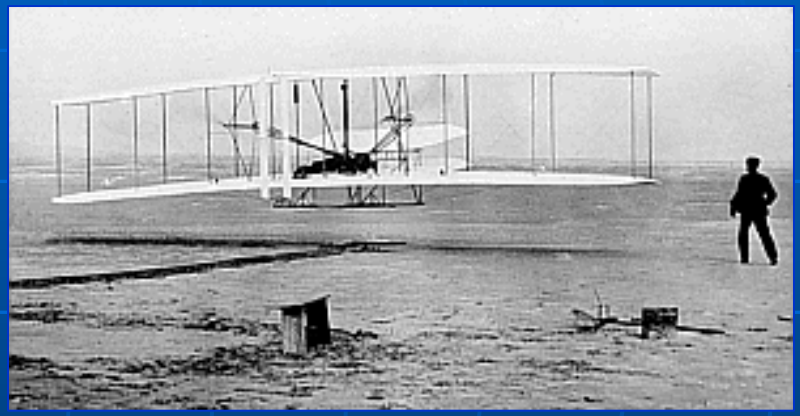
- Globally, conditions can be very different.
  - Irish West Coast
  - Mediterranean Spain
- Even in the U.S. there are big differences.
  - New England
  - Gulf of Mexico
  - S. California
  - Pacific NW
  - Hawaii



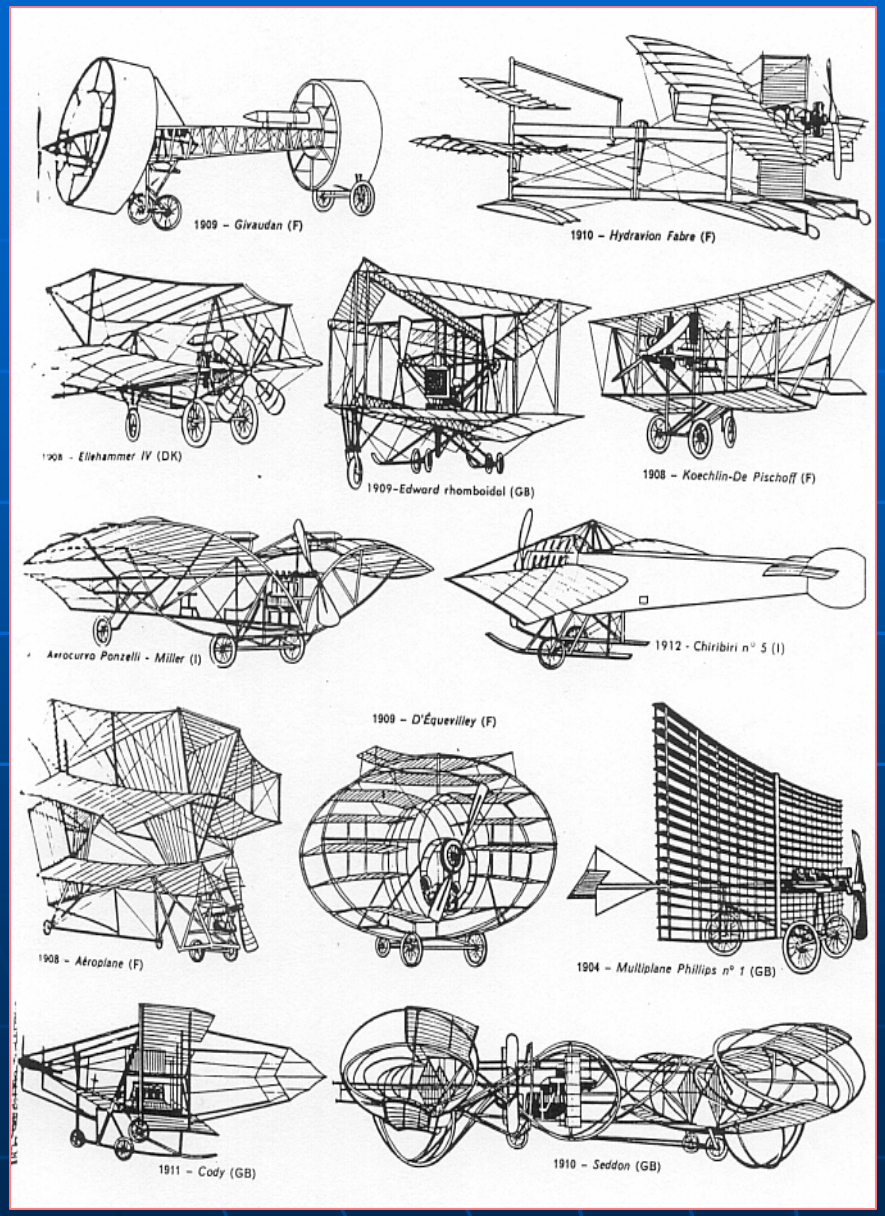
5. Time to Develop

- Terrestrial agriculture began 10,000 years ago.
- The Wright Bros first flew in 1903.
- *"To farm the sea as we farm the land"* is no less an endeavor.
- We must be careful what we promise.
- But not shrink from the vision.

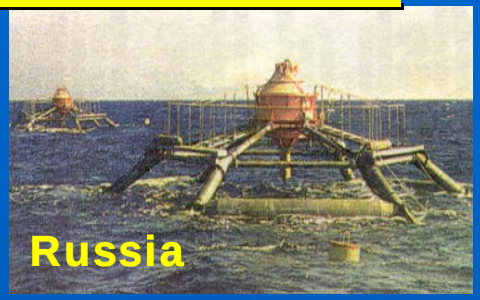


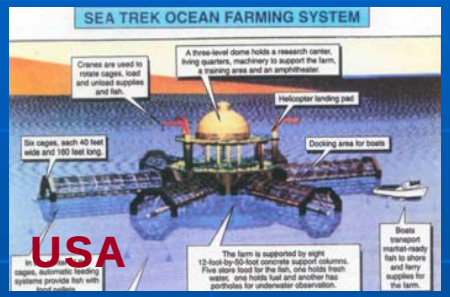


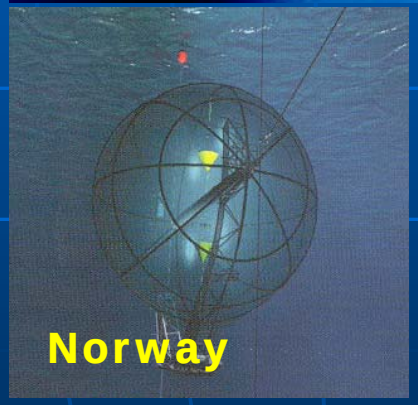
Early Flying Machines

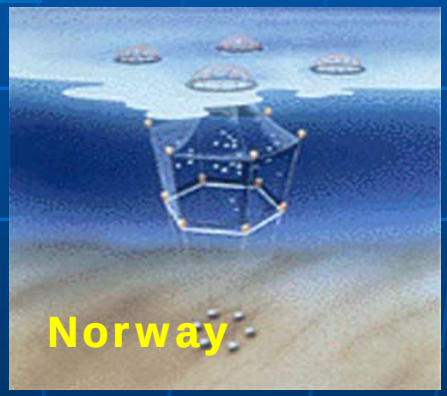


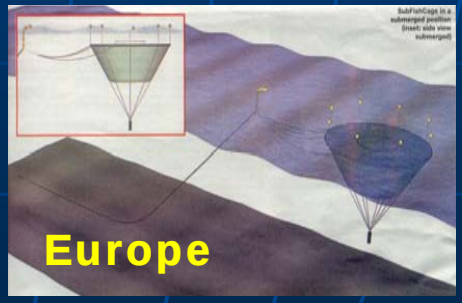
The Early Ocean Farms



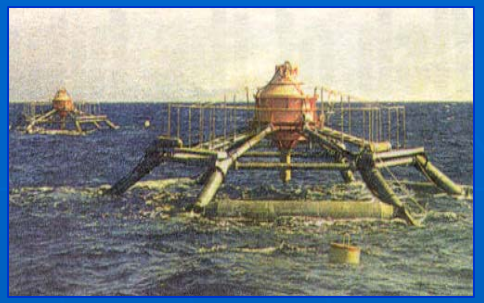






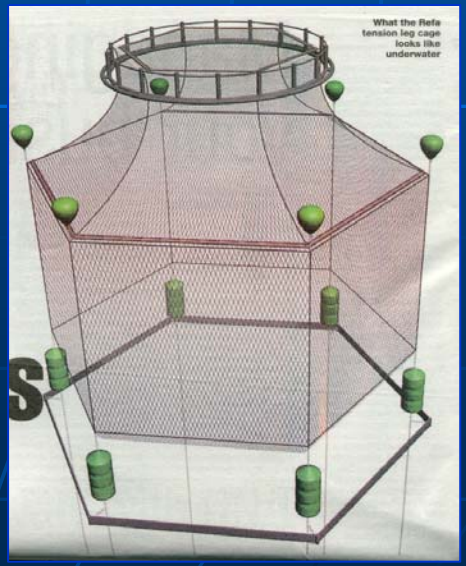


Development around the Globe



- **Europe** – Cyprus, Ireland, Italy, Norway Portugal, Spain

- **Mid-East** – Israel
- **Asia** – China, Japan, South Korea, Taiwan
- **Australia** – tuna farms



- **S. America** – Brazil?
- **Caribbean** – Bahamas, Mexico

Global recognition of need but no global dominance

USA – where we're ahead!!

- **Design & manufacture** NET Systems, Ocean Farm Technologies
- **Farms** – Cates International, Kona Blue Water Farms, Ocean Harvest Aquaculture, Snapperfarms.
- **Research & Demonstrations** – UNH, Hubbs SeaWorld, U Mass., U Miami, Oceanic Institute.
- **Oil platform projects** – ideas for Gulf, S. California

Why? ***We've been forced into it because our nearshore marine aquaculture is stalled. Presently it contributes only 0.5% of our national seafood supply.***

Can we stay ahead?

- Preeminent in all necessary technologies
- Large Internal Market
- We have an EEZ of 4.5 millions square miles
- Produce all necessary feed ingredients price in USD
- Sound law and strong environmental regulations

Just as energy conservation technology is now an opportunity for companies like General Electric and American industry in general, so too is marine aquaculture.

BUT government has to be a partner because it is the Lessor.

And, if we let misplaced controversy get in the way, it won't happen