



# Advancing the Aquaculture Agenda

Paris, 15<sup>th</sup> – 16<sup>th</sup> April 2010

'Managing Risk and Uncertainty'

Tom Rutter

Head of Aquaculture

Sunderland Marine Mutual Insurance Ltd





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**Forget that we are Insurers;  
we are all Risk Takers**



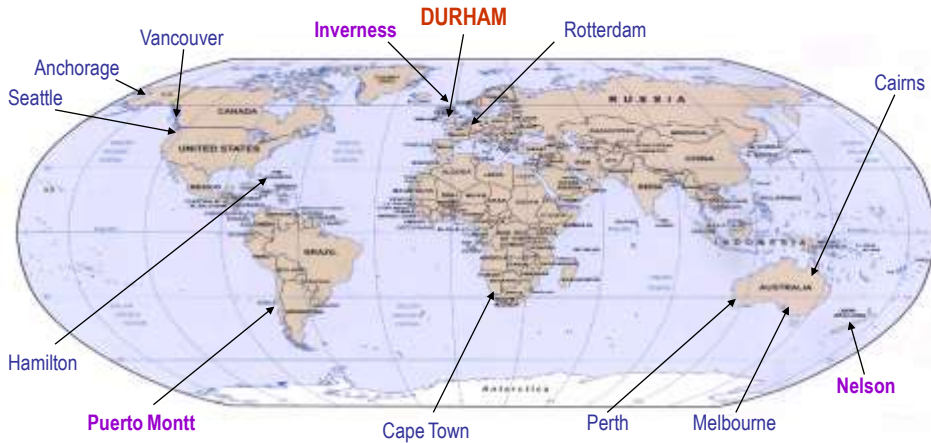
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## **Credentials**

- A mutual insurer established 1882
  - Specialising in marine and aquaculture
  - Insuring aquaculture risks since 1986
  - A survey database of 6,000 site specific risk reports, risk scales and beacons.
  - Clientele includes the David's and the goliaths eg Marine Harvest
  - Risk Management
-



**Regional Offices - exporting the Company's philosophy around the world**

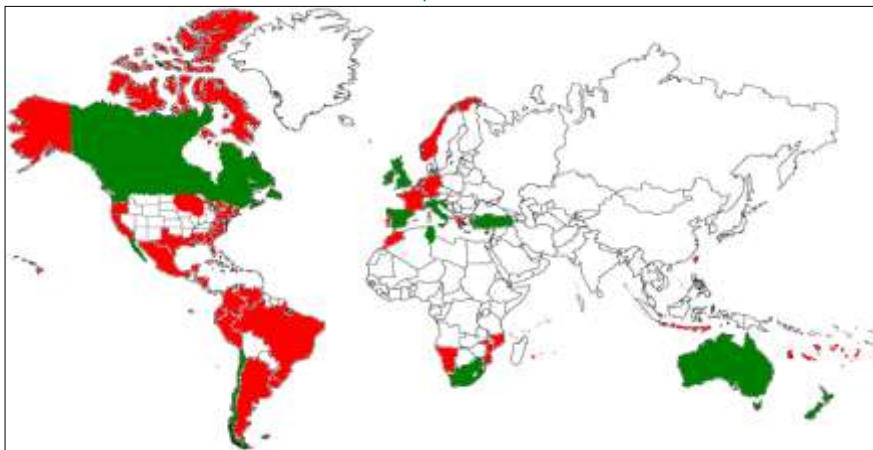


Senior management within many of these offices originate from, and were trained, in the North East of England.



**SMMI insure Marine and Aquaculture risks in 55 countries worldwide**

• Marine • Aquaculture & Marine





**Nidderdale - UK**



**Akua-Dem - Turkey**



**North Atlantic Sea Farms – Canada East**



**Grieg Seafoods – Canada West**



**Cooke Aquaculture - Canada East**



**Tuna Graso Cartagena - Spain**



**Ocean Wave Seafoods – Australia**



**Sea Bait - Northumberland**



## Species Diversification

Atlantic Salmon  
Halibut  
Barramundi  
Yellow Perch  
Eel  
Blue Fin Tuna  
Yellow Fin Tuna  
Rag Worm  
Flounder  
Rainbow Trout  
Brown Trout  
Lugworm



Abalone  
Haddock  
Cod  
Pearl Oyster  
Bass & Bream  
Tilapia  
Oyster  
Mussels  
Arctic Charr  
Snapper  
Lobsters



## Claims View

80001795 This Site Data Access

View All Site Content

Documents

- Chain Documents

Pictures

Links

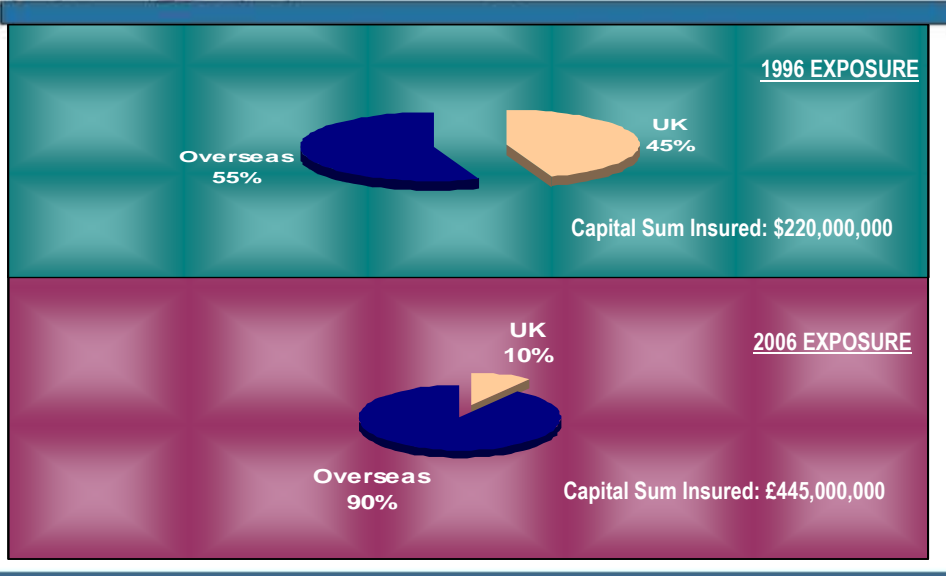
- Calendar
- Activities
- Receipts

**Gifts Details**

Site Details	Cause of Loss	Date Covered	Claim No
<a href="#">Hardside Island</a>	Algal Bloom	13/10/2006	80001795

**Activities**

Date	Activity	Signature
13/10/2006	E-mail from Faith Sutherland (00) to James Hagedorn (04), John Webb (33), John King, Rod Maxwell, Notification of allocated Outclaimant <a href="#">View</a>	JL
13/10/2006	E-mail from JL to FB, Acknowledge receipt of notification <a href="#">View</a>	JL
25/09/2007	E-mail from JL to JG/HRM, Markably update: 19,000 (9) removed so far <a href="#">View</a>	JL
14/10/2006	E-mail from JL to JL, Confirmation that RH will be on site on the 15/10/06 <a href="#">View</a>	JL
16/10/2006	E-mail from Bruceur Gates to JL, Preliminary report received <a href="#">View</a>	JL
17/10/2006	E-mail JL to HRM, Provision of policy documents etc <a href="#">View</a>	JL
19/10/2006	E-mail from PPH to JL, Suggested reserve of \$575,000 <a href="#">View</a>	JL
24/10/2006	E-mail from JL to SH, Update on the situation <a href="#">View</a>	JL
01/11/2006	E-mail from PPH to JL, Situation update <a href="#">View</a>	JL
05/11/2007	E-mail from Alan Sutherland (40), Completed claim form <a href="#">View</a>	JL
11/02/2007	Post received from Bruceur Gates by JL, Loss Adjusters report unboxed <a href="#">View</a>	JL
15/04/2007	E-mail from JL to HRM, Questions and comments on the loss adjusters report <a href="#">View</a>	JL
16/04/2007	E-mail from PPH to JL, Confirmation that PPH is still awaiting a response on the queries from the Insured <a href="#">View</a>	JL



## Aquaculture Division

### Provision of Aquaculture Insurance and Risk Management Services

Insurer	- Global
Capital Insured	- \$906m
Sites	- 454
No. of species	- 23





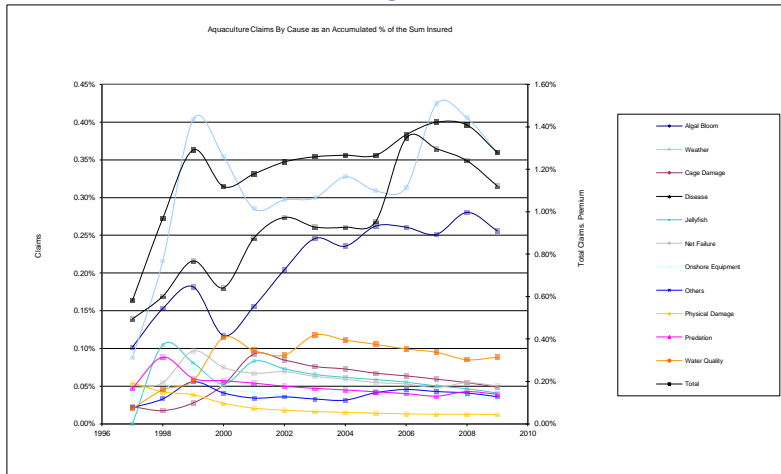


## Geographical Underwriting Methodology





## Industry Losses



## Industry Losses

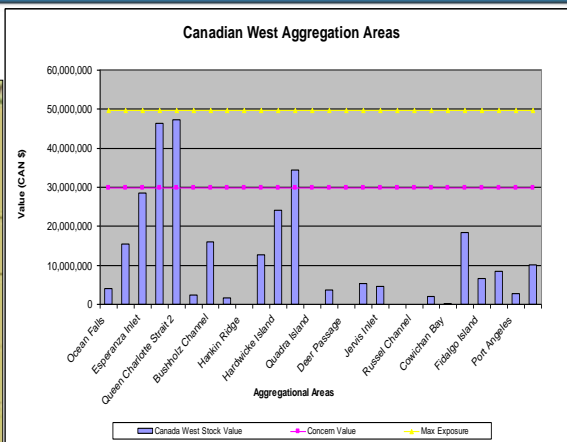
Top 5 Causes by Value		
1997	2002	2007
Disease	Disease	Weather
Algal Blooms	Algal Blooms	Disease
Weather	Weather	Algal Bloom
Physical Damage	Jellyfish	Water Quality
Net Failure	Cage Damage	Cage Damage

Top 5 Claims by Country (Value)		
1997	2002	2007
Ireland	UK	Chile
UK	Canada	Spain
Chile	Norway	UK
Spain	Chile	Norway
Australia	Australia	Ireland





## G.I.S. - GEO Coding



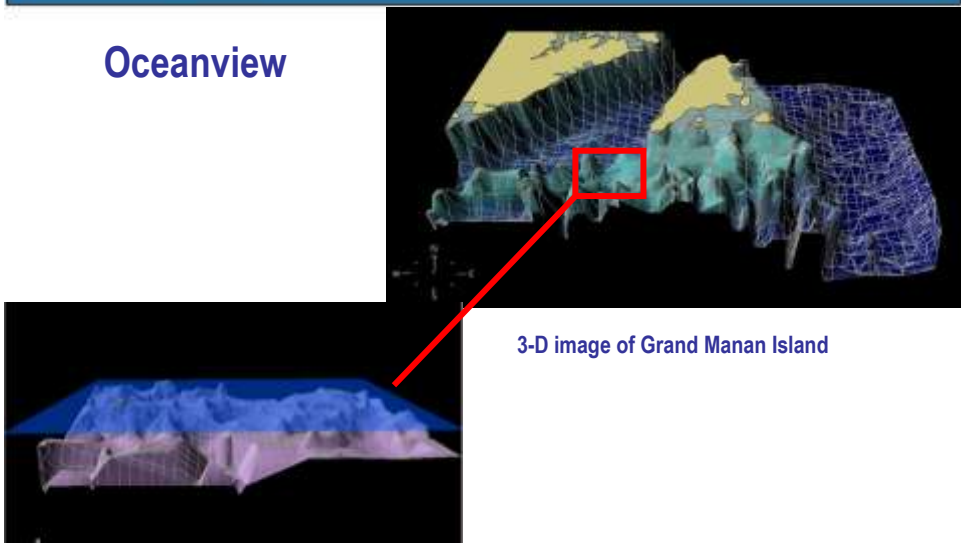
Policy	Policy Type	Owner	Site	Location	Category	Stock	Latitude	Longitude	URL	Stock Value
M2258BT	AQ	Marine Harvest Canada	Big Tree Creek - 000079	Canada	Hatchery	Salmonids	50°14.173'N	125°45.786'W		2150750
M2296CE	AQ	Marine Harvest Canada	Chancellor Channel	Canada	Sea Site	Salmonids	50°24.052'N	125°39.095'W		5438074



## Satellite Exposure Mapping

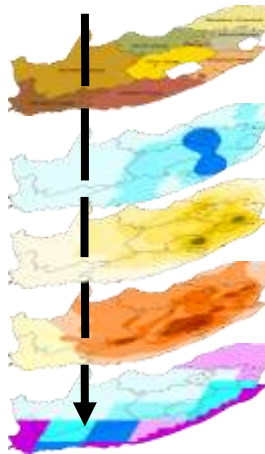


## Oceanview



## Principles of GIS - Thematic Layer Model

Themes & Scales



Exposure data

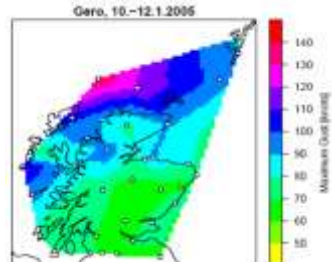
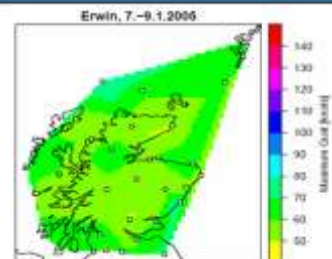
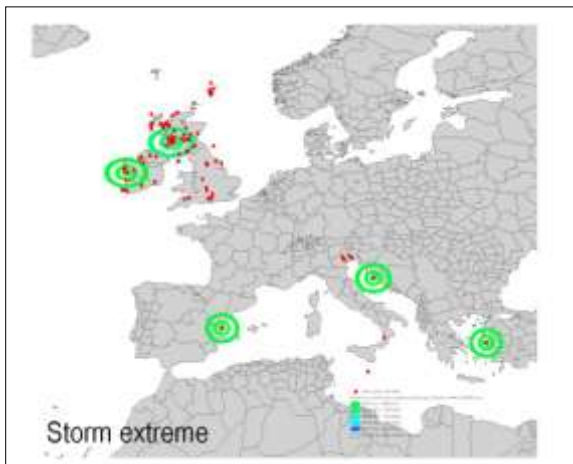
Tornado

Lightning

Hailstorm

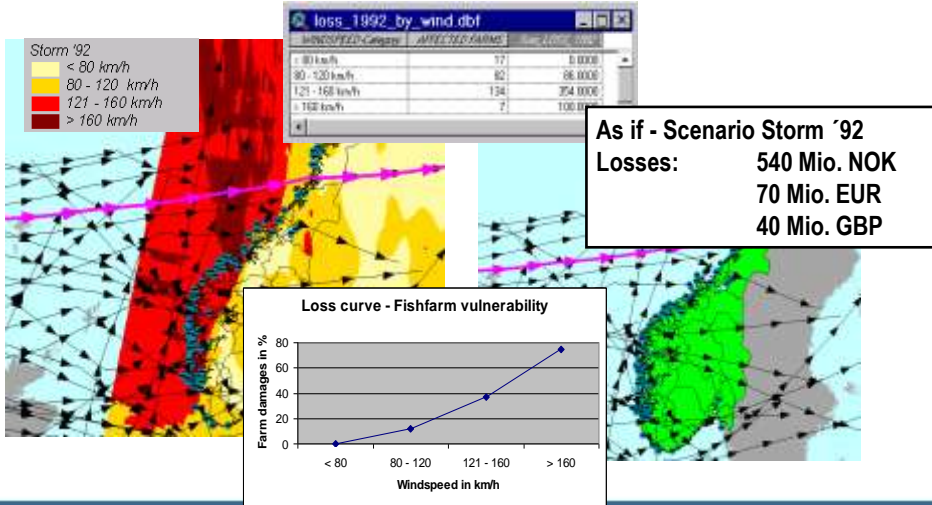
Flood

## P.M.L. Scenario Analysis



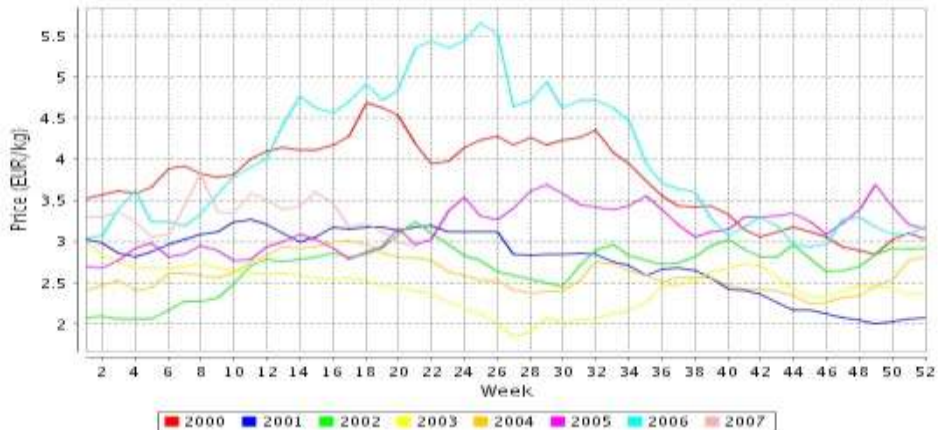


## Modelling winter storms in Norway - Storm scenario of 1992



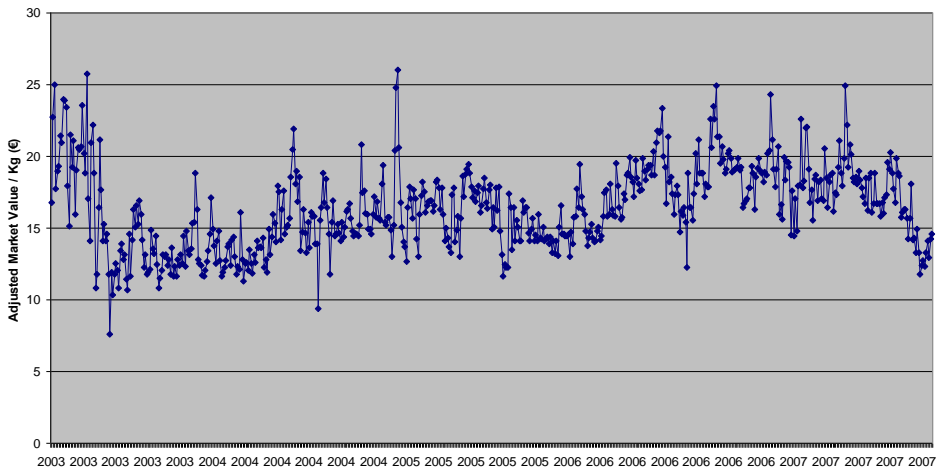
## Price Graphs

Fresh Atlantic salmon cross-section  
FCA Oslo



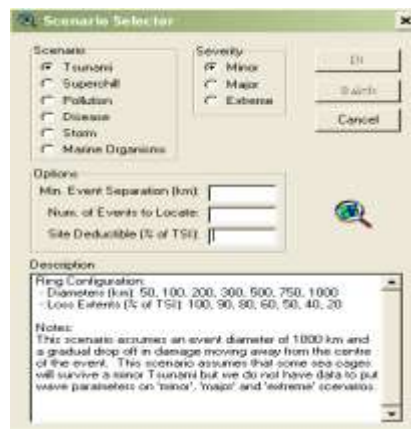


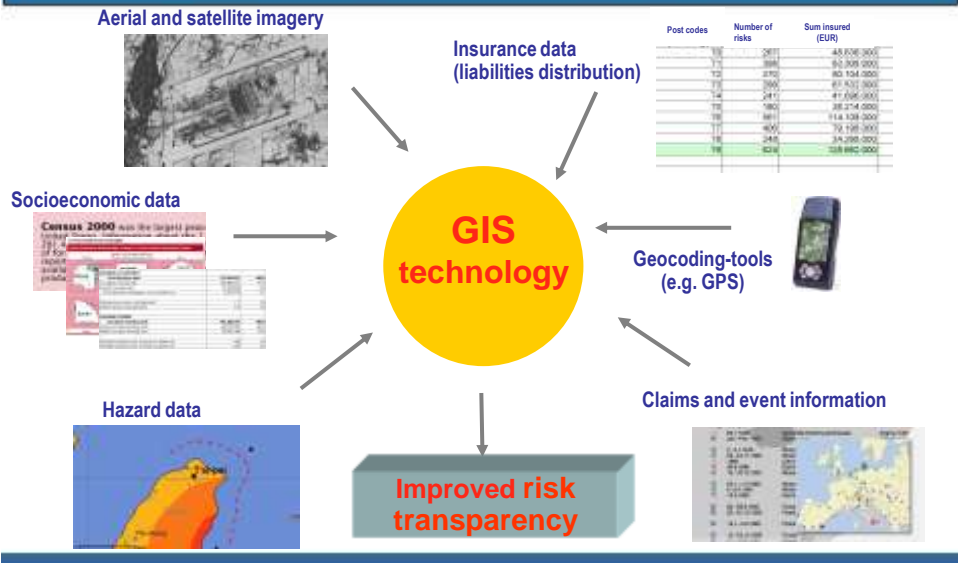
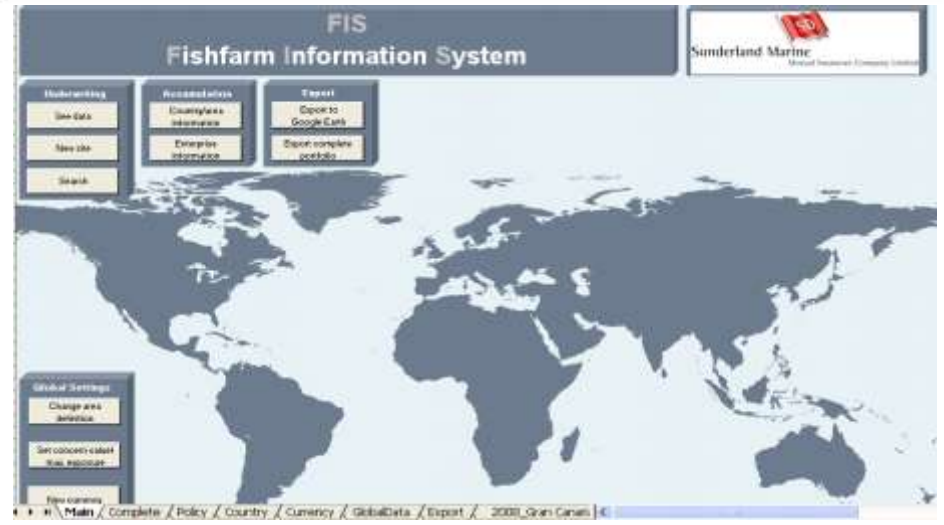
## Spanish Farmed Tuna



## PML Analysis

- Algorithm determines the event location to produce the largest loss
- Systematically places the event in a large number of locations relative to each site & computes event loss
- 15 largest losses presented considering the specified min. event separation



**FIS**  
**Fishfarm Information System**

**Home/Linking**  
See data  
New job  
Search

**Workspaces**  
Countryless insurance  
Emerging information

**Export**  
Export to Google Earth  
Export complete possible

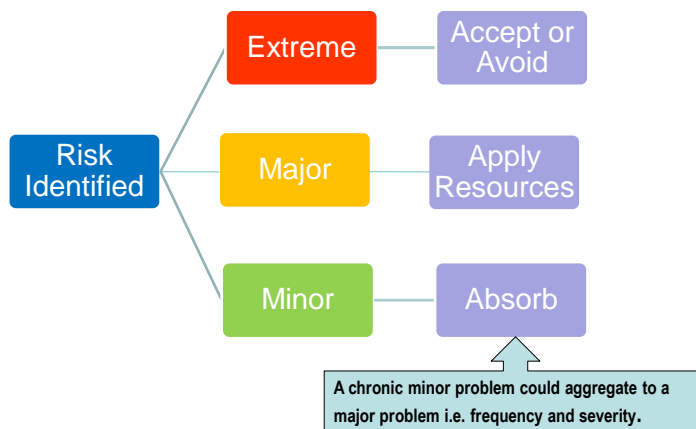
**Global Settings**  
Change area  
Settings  
Set concern email  
New employer  
New company

Navigation: Main / Complete / Policy / Country / Currency / GlobalData / Export / 2008\_Open Content





## Risk Strategy



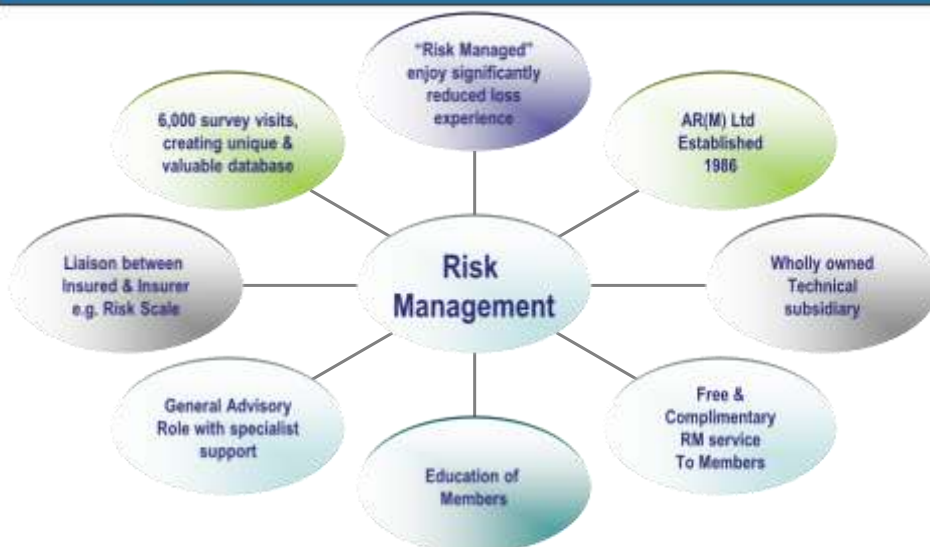




## Risk Management

### Providers of Insurance & Risk Management

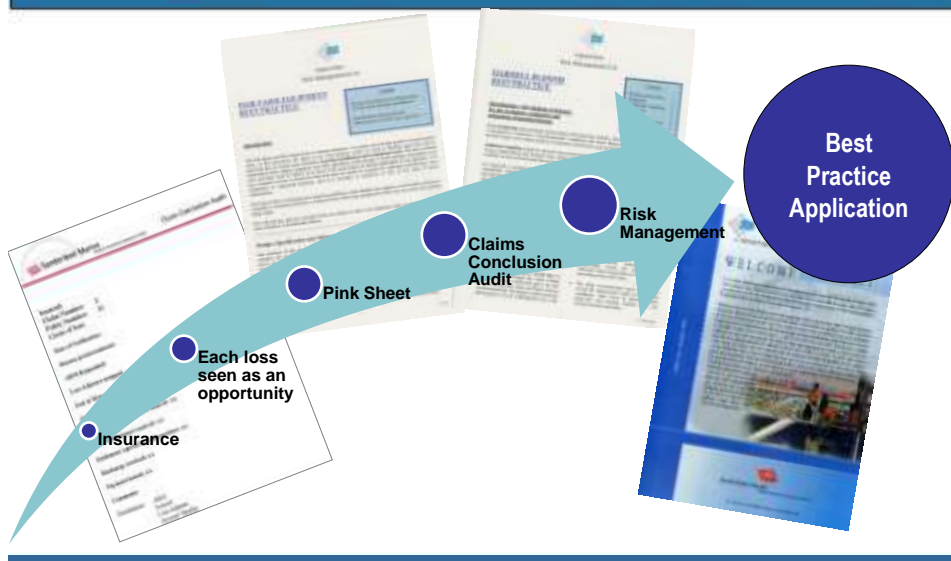
For nearly 24 years our dedicated team of Underwriters, Marine Biologists and Aquaculture Specialists have worked together to provide Insurance and integrated Risk Management to the worldwide Aquaculture Industry.





-SMMI Risk Managed sites    - Non SMMI sites    - "AS IF" SMMI Risk Managed

		<u>Sum Insured</u>	<u>Gross Loss</u>	<u>Ratio</u>	<u>Saving</u>
<b>2003</b>					
1.	Company X	\$30.3m	\$268,793	0.89%	
2.	Company X	\$104.8m	\$2,106,537	2.01%	
3.	Company X Risk Managed	\$104.8m	\$932,720	0.89%	\$1,173,817
<b>2004</b>					
4.	Company X	\$30.8m	\$110,591	0.36%	
5.	Company X	\$104.3m	\$4,031,892	3.87%	
6.	Company X Risk Managed	\$104.3m	\$375,480	0.36%	\$3,656,412
<b>2005</b>					
7.	Company X	\$28.6m	\$504,600	1.76%	
8.	Company X	\$106.5m	\$5,248,448	4.93%	
9.	Company X Risk Managed	\$106.5m	\$1,874,400	1.76%	\$3,374,048



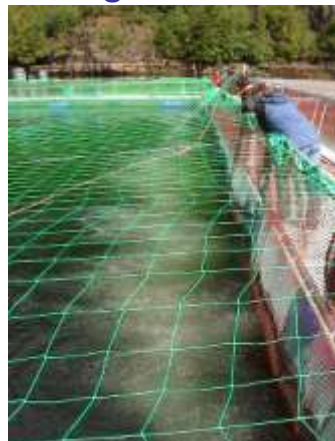


## Proactive Schemes

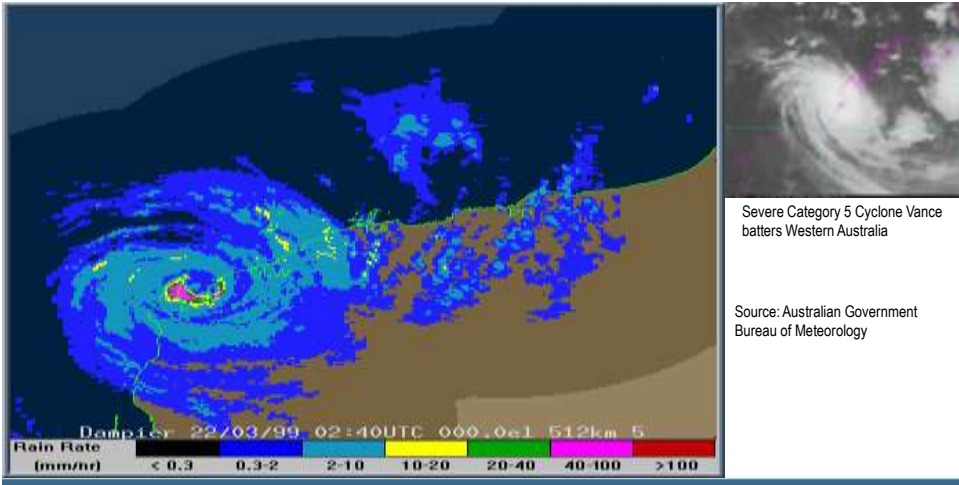
- Natural blooms of algae and jellyfish is a global problem leading to mortality of stocks by toxic insult, depleted oxygen levels or jellyfish stings
- SMMI & ARM Ltd fund and are actively involved with a pilot project on the West Coast of Scotland to monitor algae levels in the sea
- Liaison is maintained with aquaculture companies, government agencies and other stakeholders such as Scottish Office, SAMS, CAIA, FAO
- The buoy collects real-time data validated by additional monitoring from fish farm staff to assist in the prediction of harmful bloom situations



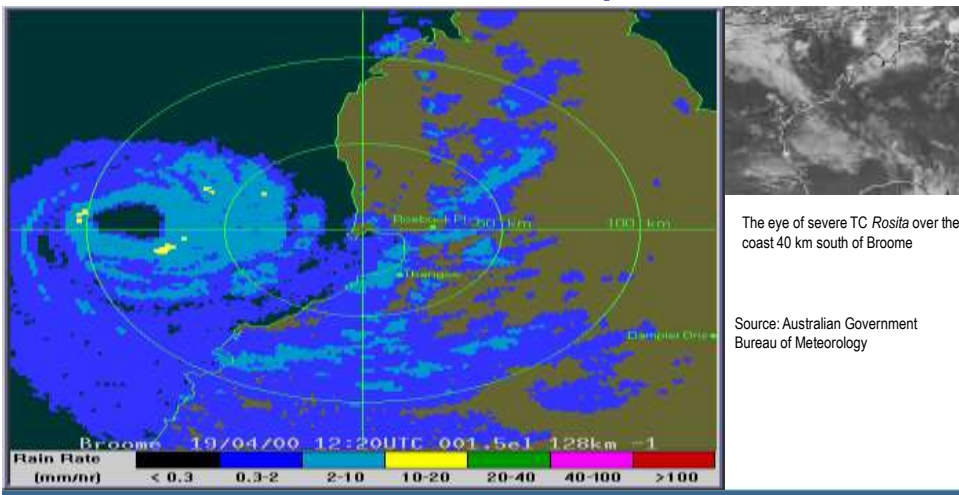
## Algal Bloom/DO Mitigation



## TC Vance – 17 - 24 March 1999



## TC Rosita – 17 – 21 April 2000





## TC Ingrid – 25<sup>th</sup> July 2004



## TC Ingrid – 25 July 2004







## Lessons Learned

- Importance of infrastructure both physical and procedural
- Importance of capital providers and access to finance
- Data collection and collation (including industry wide losses)
- Long term and global experience
- Be fearful when people are greedy and be greedy when people are fearful
- Take full advantage of insurance and risk management experience. Important, (always expensive) lessons have been learned on risk minimisation and loss avoidance
- "Best Practice" should not remain theoretical but must be put in to practice indeed become embedded in the companies psyche.
- Biosecurity is essential
- Discriminate between high and low risk operations
  - ❖ Identify, quantify, evaluate and action
  - ❖ Focus limited resources on what is important
  - ❖ Disease, Bloom and Equipment Best Practice



## Future Challenges

- Short memories- succession planning
- Low stress regime
- Sea Lice
- PD – until recently
- State sponsored/subsidised
- Licensing of treatments – too slow?
- Bio-security and Area Management Schemes
- Low stress regimes compete with commercial considerations
- Risk knowledge empowers management but are the means available, desirable or affordable?
- The industry's challenge is to continually earn the support it deserves.