

The Namibian mariculture industry: Potential for marine micro-algae culture?

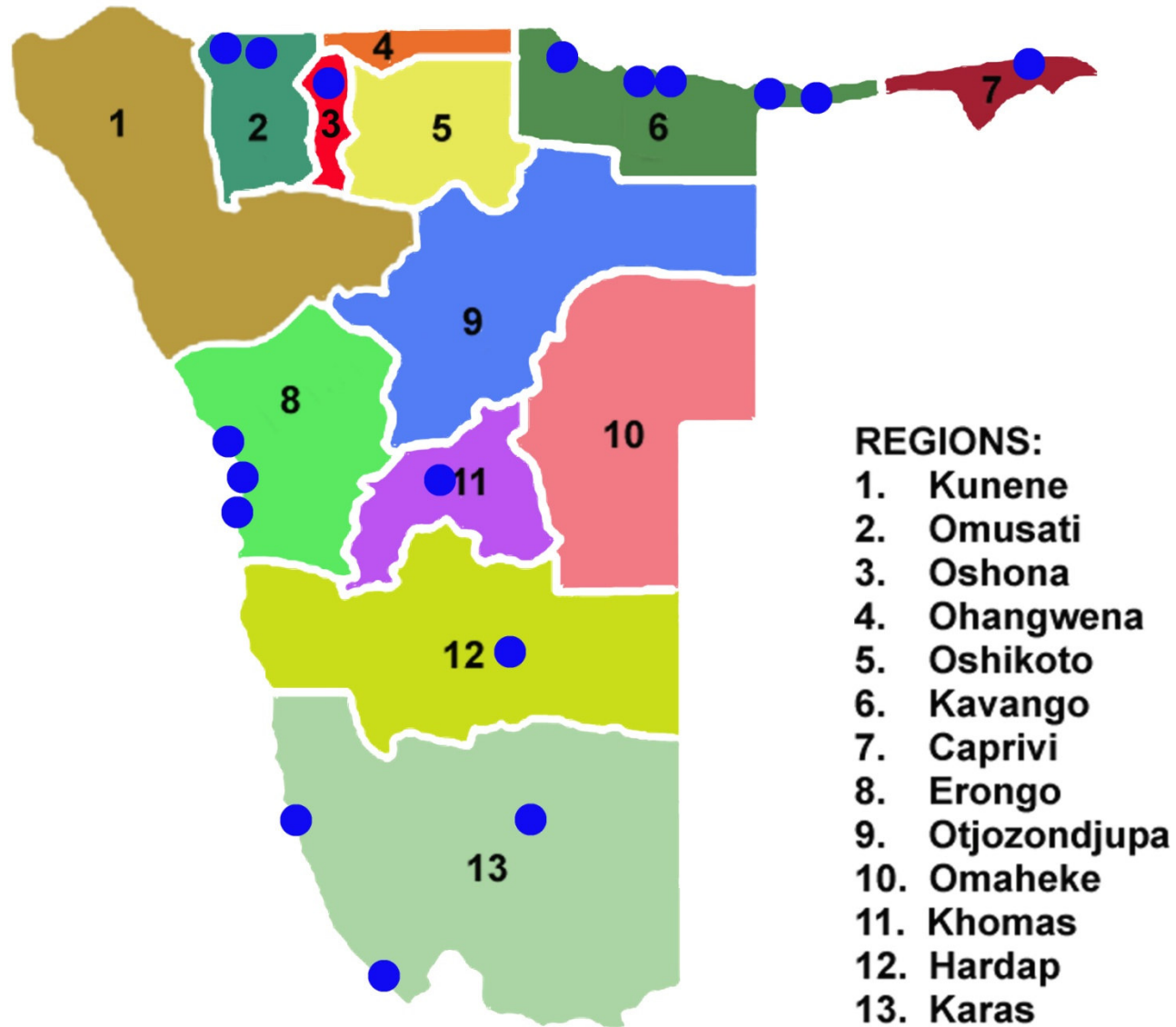
Presented by

Larry Oellermann

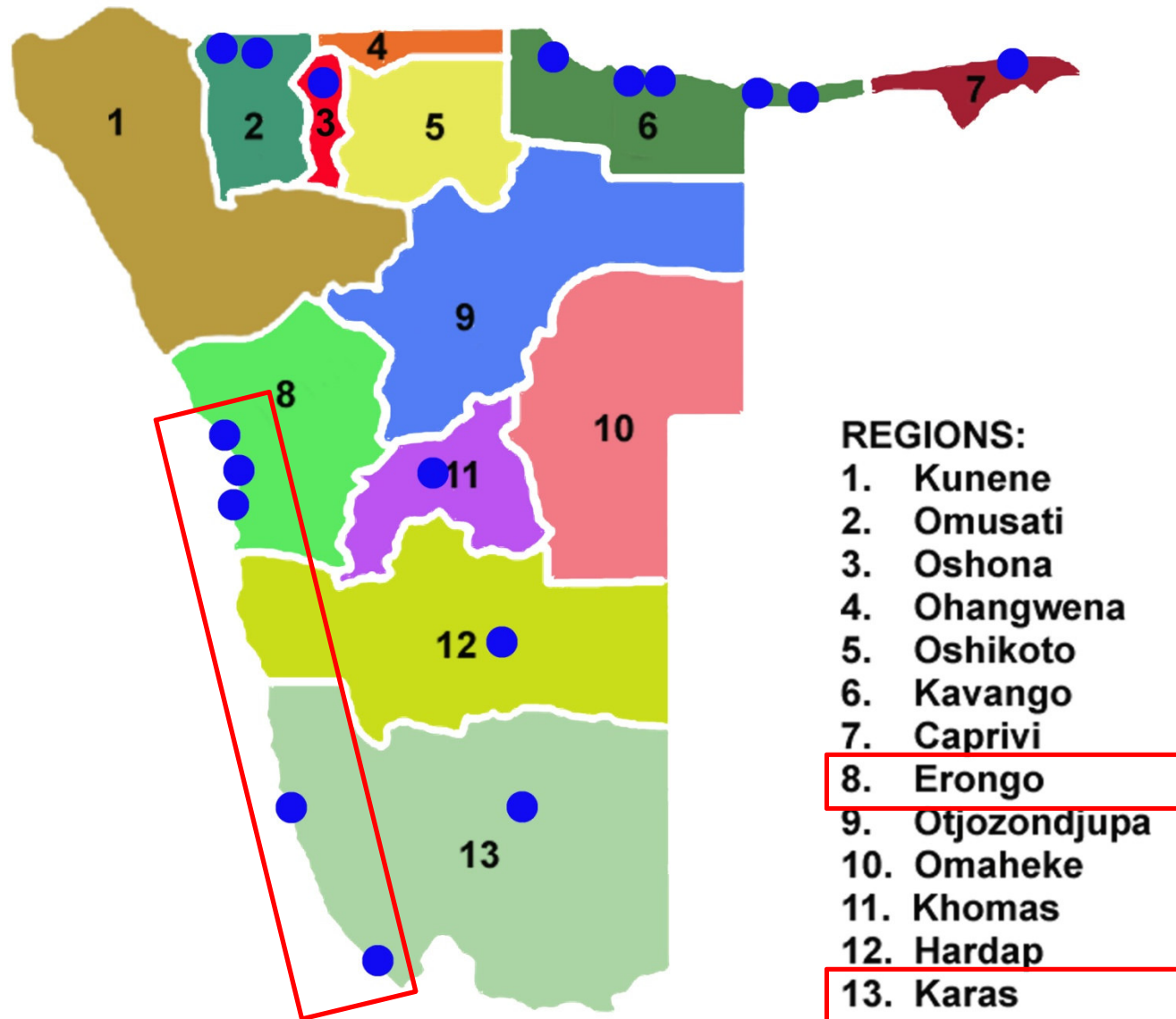
**Sam Nujoma Marine & Coastal Resources Research Centre
UNIVERSITY OF NAMIBIA**



AQUACULTURE-RELATED ACTIVITIES IN NAMIBIA



MARICULTURE-RELATED ACTIVITIES IN NAMIBIA





ERONGO REGION

| INSTITUTION | STATUS | LOCATION | SPECIES | SYSTEM |
|------------------------------|------------------------|-------------|---------------------------------------|--|
| SANUMARC, Univ. Namibia | Research | Henties Bay | Multi-species | Onshore, multiple |
| NatMIRC, MFMR | Regulation, research | Swakopmund | N/A | N/A |
| Beira Aquaculture | Hatchery, On-growing | Swakopmund | Pacific oysters | Onshore flow-through, bags in salt pan ponds |
| Richwater Oyster Company | Hatchery, On-growing | Swakopmund | Pacific oysters, European cup oysters | Poles, bags in salt pan ponds |
| Namibian Aquaculture Company | On-growing | Walvis Bay | Pacific oysters | Offshore longlines |
| Namibia Oysters | On-growing | Walvis Bay | Pacific oysters | Offshore longlines |
| Tetelestai | On-growing | Walvis Bay | Pacific oysters | Offshore longlines, salt pan ponds |
| Walvis Bay Salt Refiners | On-growing | Walvis Bay | Pacific oysters | Poles, bags in salt pan ponds |
| Seafresh Investments | On-growing, processing | Walvis Bay | Pacific oysters | Offshore longlines |
| Kuiseb Fishing Enterprises | On-growing | Walvis Bay | Mussels | Offshore longlines |
| Longbeach Aquaculture | On-growing | Walvis Bay | Mussels | Offshore longlines |



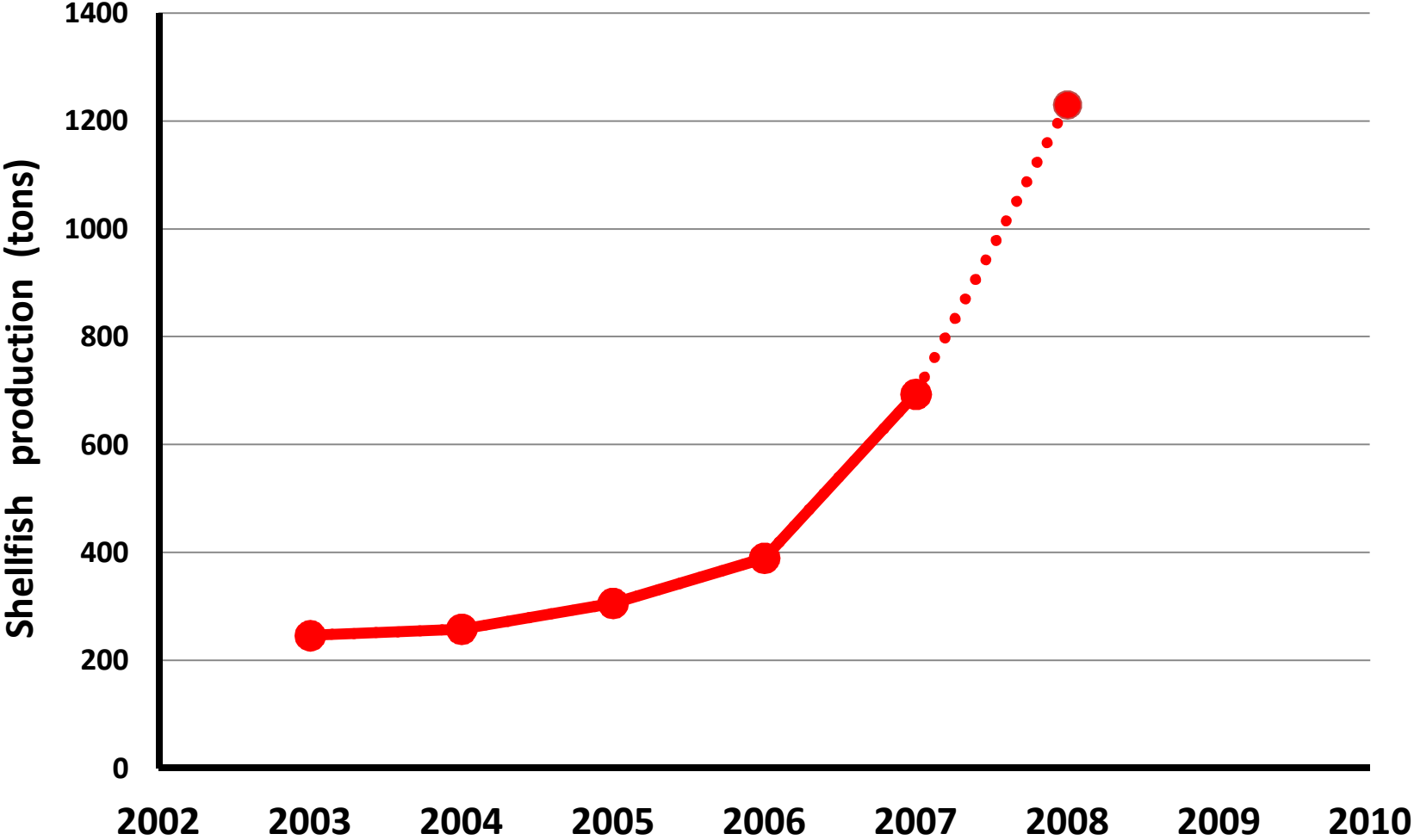
KARAS REGION

| INSTITUTION | STATUS | LOCATION | SPECIES | SYSTEM |
|--------------------------------|-------------------------|------------|--|---|
| Luderitz Research Centre, MFMR | Regulation, research | Luderitz | N/A | N/A |
| Luderitz Abalone Company | Hatchery; on-growing | Luderitz | Abalone | Onshore tanks, flow through |
| Luderitz Lobster Company | On-growing; pilot scale | Luderitz | Pacific oysters, rock lobster, mussels | Offshore longlines; onshore tanks, flow through |
| Rotaq Farming | On-growing | Luderitz | <i>Gracilaria</i> , Pacific oysters | Offshore longlines |
| Luderitz Mariculture Company | On-growing | Luderitz | Pacific oysters | Offshore longlines |
| Nova Nam | Pilot scale | Luderitz | Abalone | Onshore tanks, recirculation |
| OTM, Stellenbosch University | Pilot scale | Oranjemund | Fin fish, shellfish | Onshore tanks, dredging ponds |

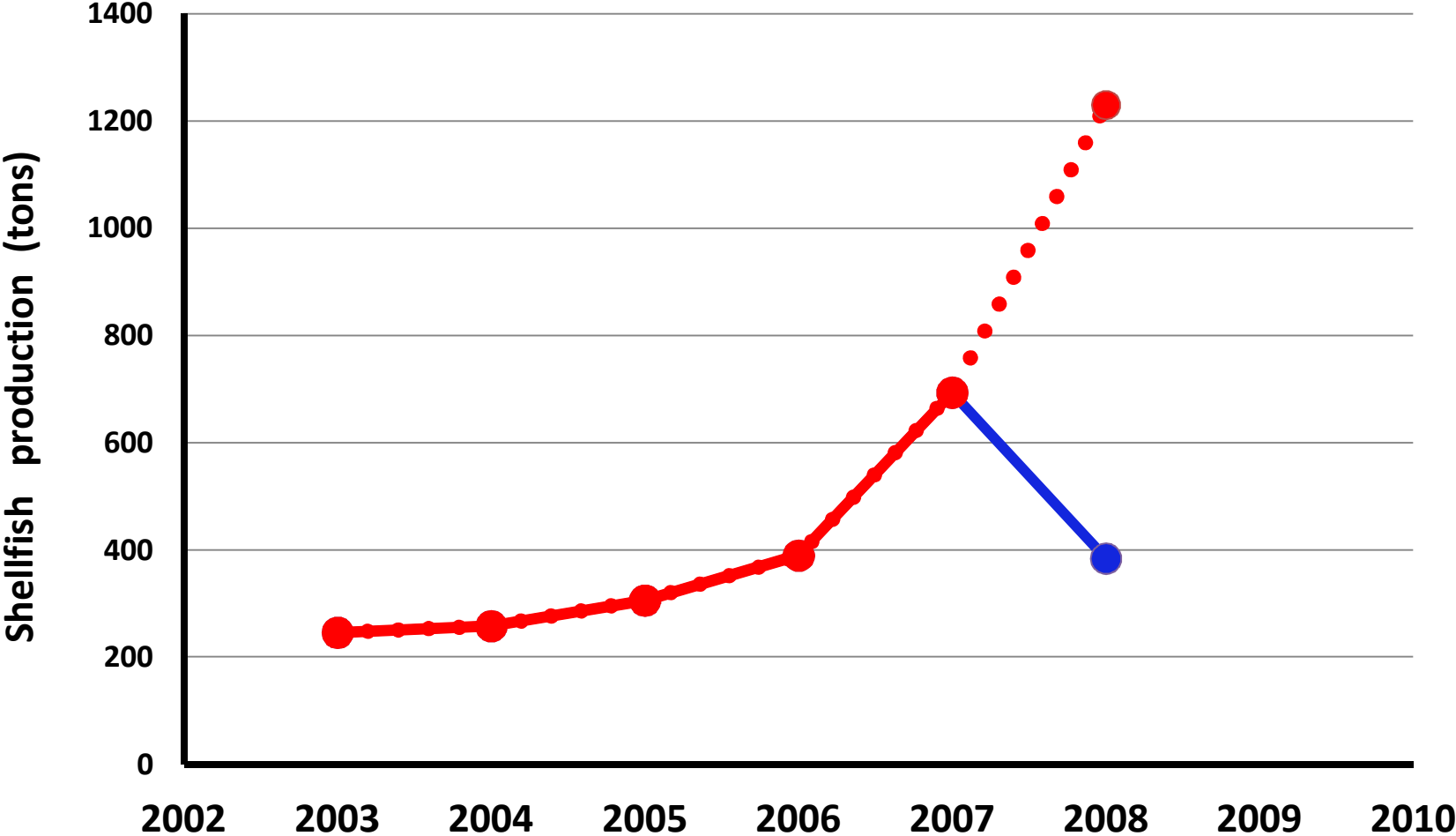
MARICULTURE SUMMARY

| PRODUCERS | 13 Commercial | | | | | | | | | | |
|------------------------------------|---|-----------------------|------------------------|--------|------------|--------------|-----|------------------------------------|-----|---------|-----|
| SPECIES | <i>Crassostrea gigas, Ostrea edulis, Choromytilus meridionalis, Mytilus galloprovincialis, Haliotis midae, Gracilaria gracilis</i> | | | | | | | | | | |
| SYSTEMS | Rafts, suspended long-lines, racks in ponds, onshore flow through tanks | | | | | | | | | | |
| SEED | Namibia, Chile, UK, Guernsey, USA | | | | | | | | | | |
| EMPLOYMENT | 2007 = 221 | 2008 = 323 | 2009 = 310 | | | | | | | | |
| INVESTMENT | 2007 = N\$ 69 MILLION | 2008 = N\$ 79 MILLION | 2009 = N\$ 101 MILLION | | | | | | | | |
| MARKETS | <p>A pie chart illustrating the market distribution of mariculture products. The largest segment is South Africa at 45%, followed by China, Singapore, Malaysia, and Taiwan at 37%, and Namibia at 19%.</p> <table border="1"> <thead> <tr> <th>Market</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>South Africa</td> <td>45%</td> </tr> <tr> <td>China, Singapore, Malaysia, Taiwan</td> <td>37%</td> </tr> <tr> <td>Namibia</td> <td>19%</td> </tr> </tbody> </table> | | | Market | Percentage | South Africa | 45% | China, Singapore, Malaysia, Taiwan | 37% | Namibia | 19% |
| Market | Percentage | | | | | | | | | | |
| South Africa | 45% | | | | | | | | | | |
| China, Singapore, Malaysia, Taiwan | 37% | | | | | | | | | | |
| Namibia | 19% | | | | | | | | | | |

NAMIBIAN SHELLFISH PRODUCTION (2003 – 2007)



NAMIBIAN SHELLFISH PRODUCTION (2003 – 2008)



HYDROGEN SULPHIDE EVENTS, 2008



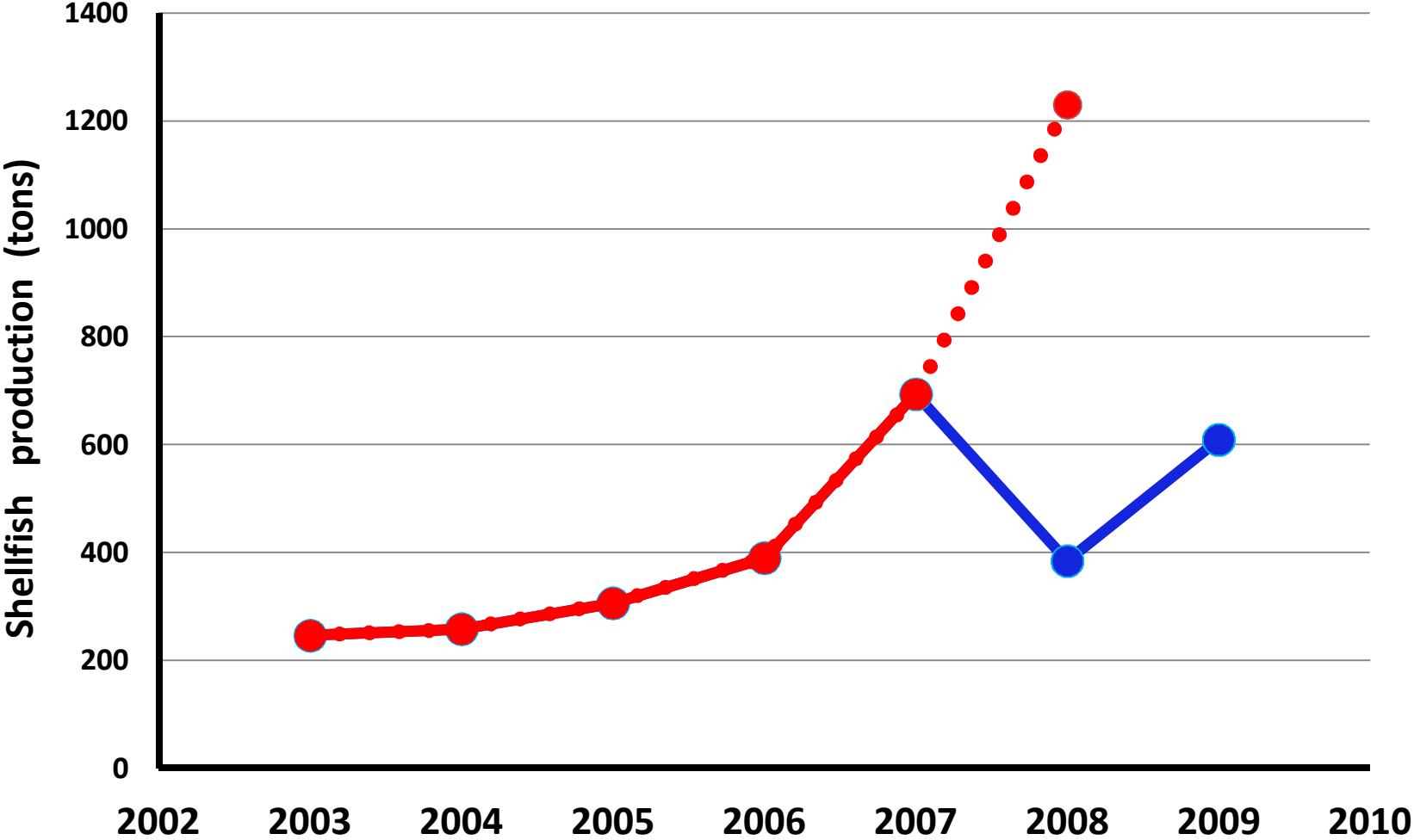
B. Currie, 2008

NAMIBIAN OYSTER PRODUCERS 2007 / 2009

| COMPANY | LOCATION | SPECIES | 2007 | 2009 |
|-----------------------------------|------------|----------------------------|------|------|
| Beira Aquaculture | Walvis Bay | Pacific oysters | ✓ | ✓ |
| Joes Oyster Company | Walvis Bay | Pacific & European oysters | ✓ | X |
| JOC Associates | Walvis Bay | Pacific & European oysters | ✓ | X |
| Luderitz Mariculture Company | Luderitz | Pacific oysters | ✓ | ✓ |
| Namib Seawater Farming & Research | Walvis Bay | Pacific oysters | ✓ | X |
| Namibia Oysters | Swakopmund | Pacific oysters | ✓ | X |
| Namibian Aquaculture Company | Walvis Bay | Pacific oysters | ✓ | ✓ |
| Richwater Oyster Company | Swakopmund | Pacific & European oysters | ✓ | ✓ |
| Tetelestai | Walvis Bay | Pacific oysters | ✓ | ✓ |
| Walvis Bay Mariculture Products | Walvis Bay | Pacific oysters | ✓ | X |
| Walvis Bay Salt Refiners | Walvis Bay | Pacific oysters | ✓ | ✓ |

PRODUCTION LOSS = 47% | PARTICIPANT LOSSES = 45% | JOB LOSSES = 48%

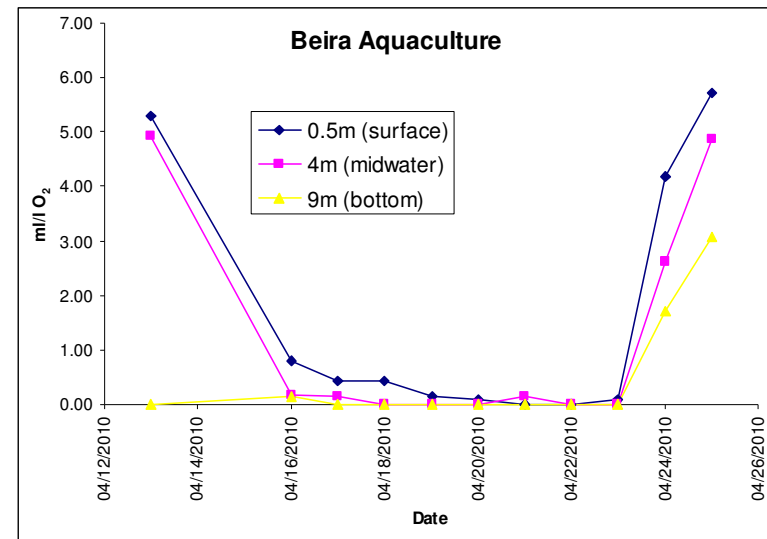
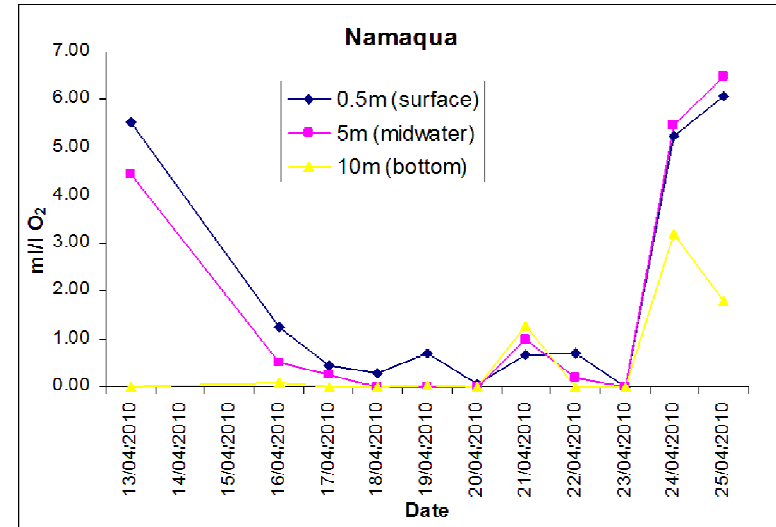
NAMIBIAN SHELLFISH PRODUCTION (2003 – 2009)



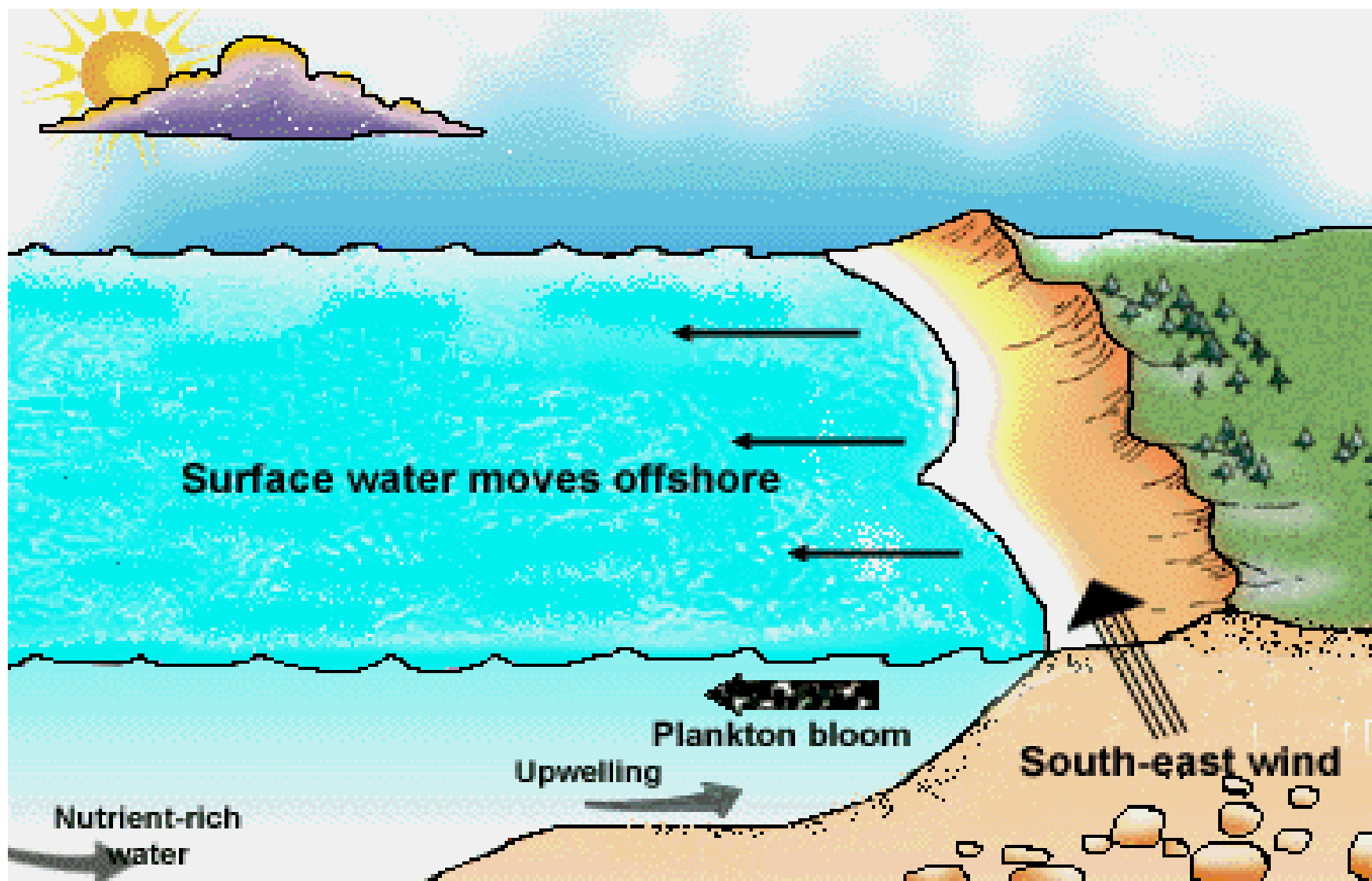
HYDROGEN SULPHIDE EVENT, 2010

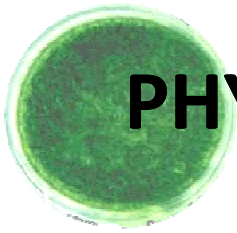


B. Currie, 2010

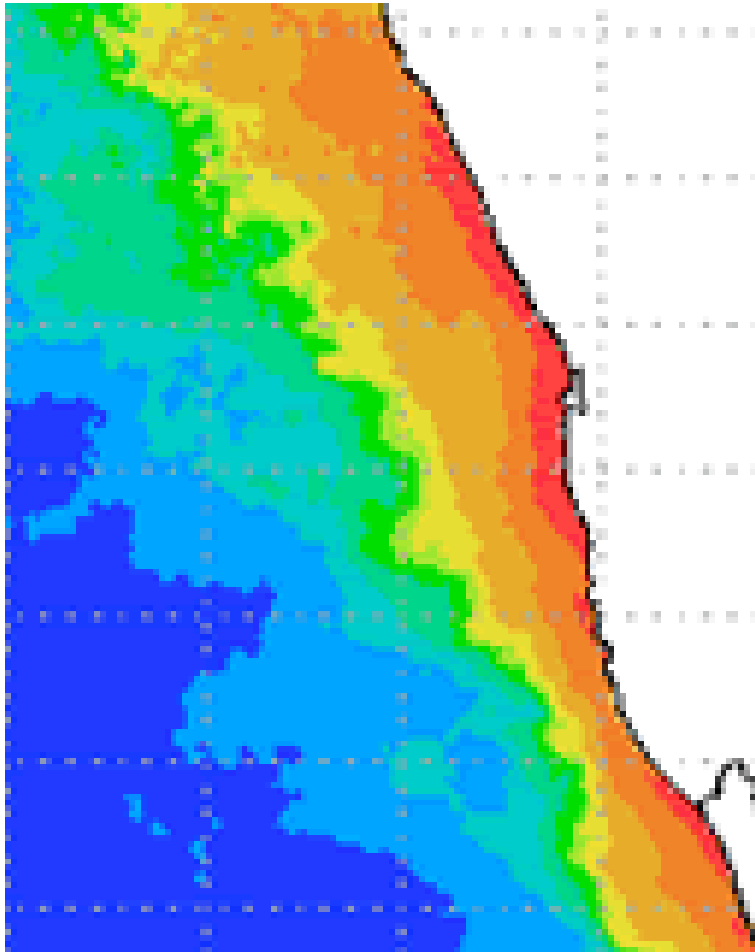


BENGUELA CURRENT UPWELLING ZONE

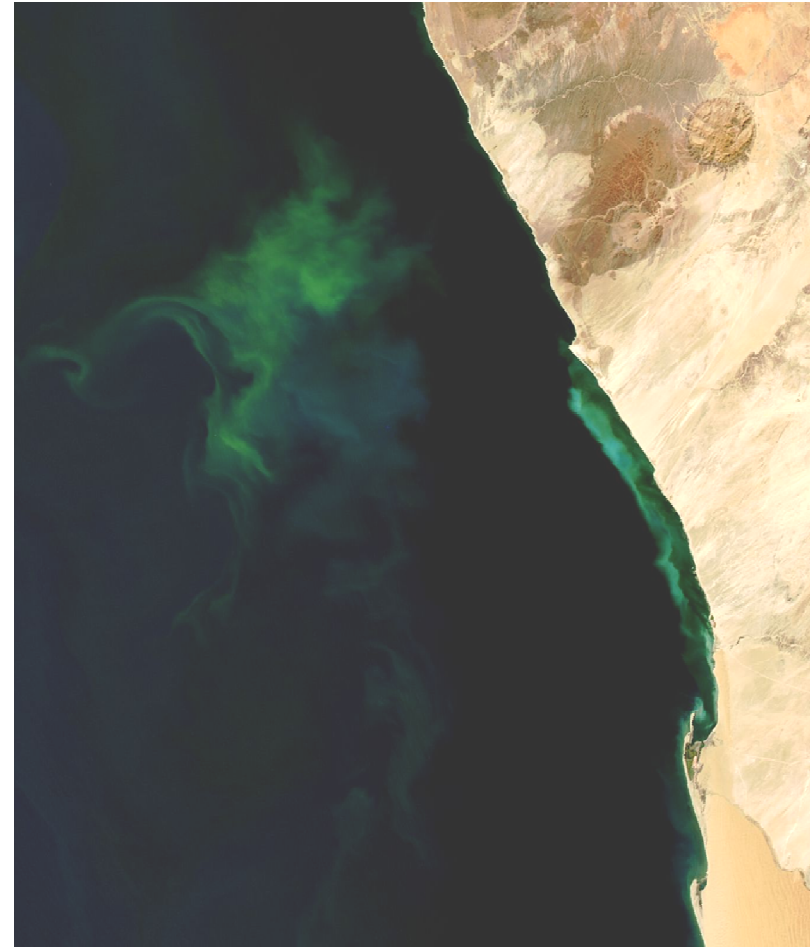




PHYTOPLANKTON BLOOMS



Chlorophyll-a concentration



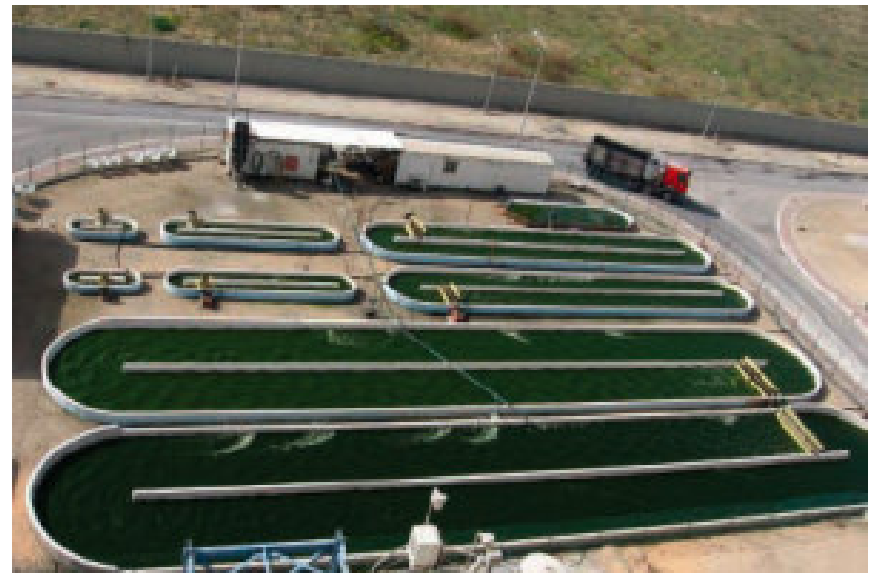
Enhanced colour satellite image

WHY FIGHT IT; WHY NOT USE IT?

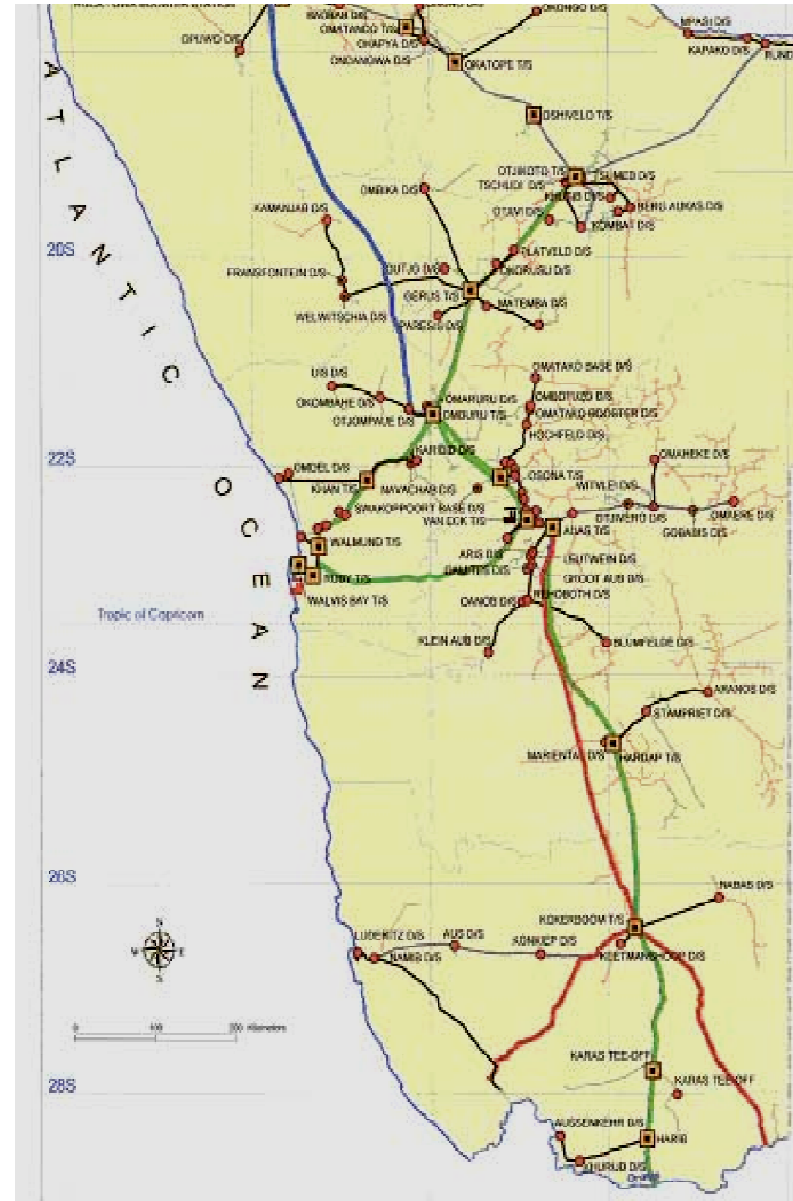
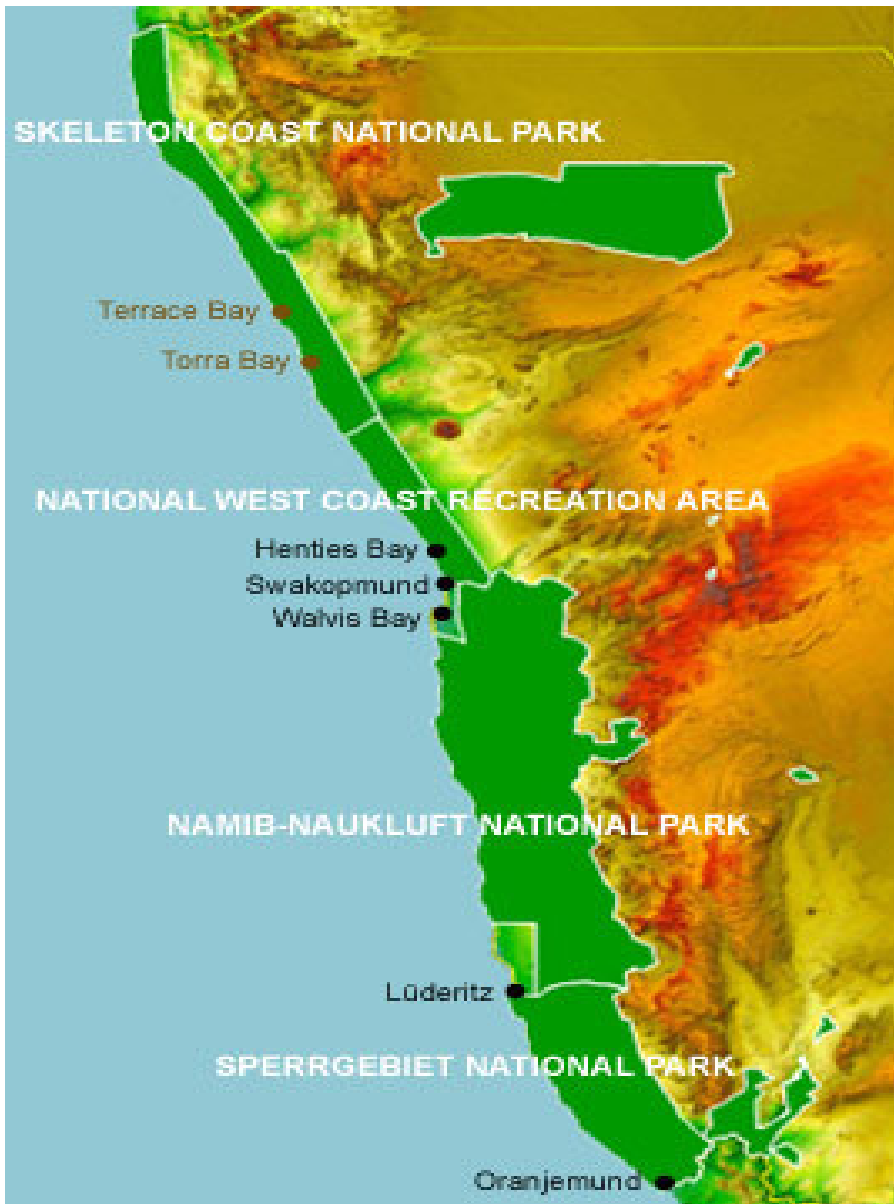
Bioprospecting



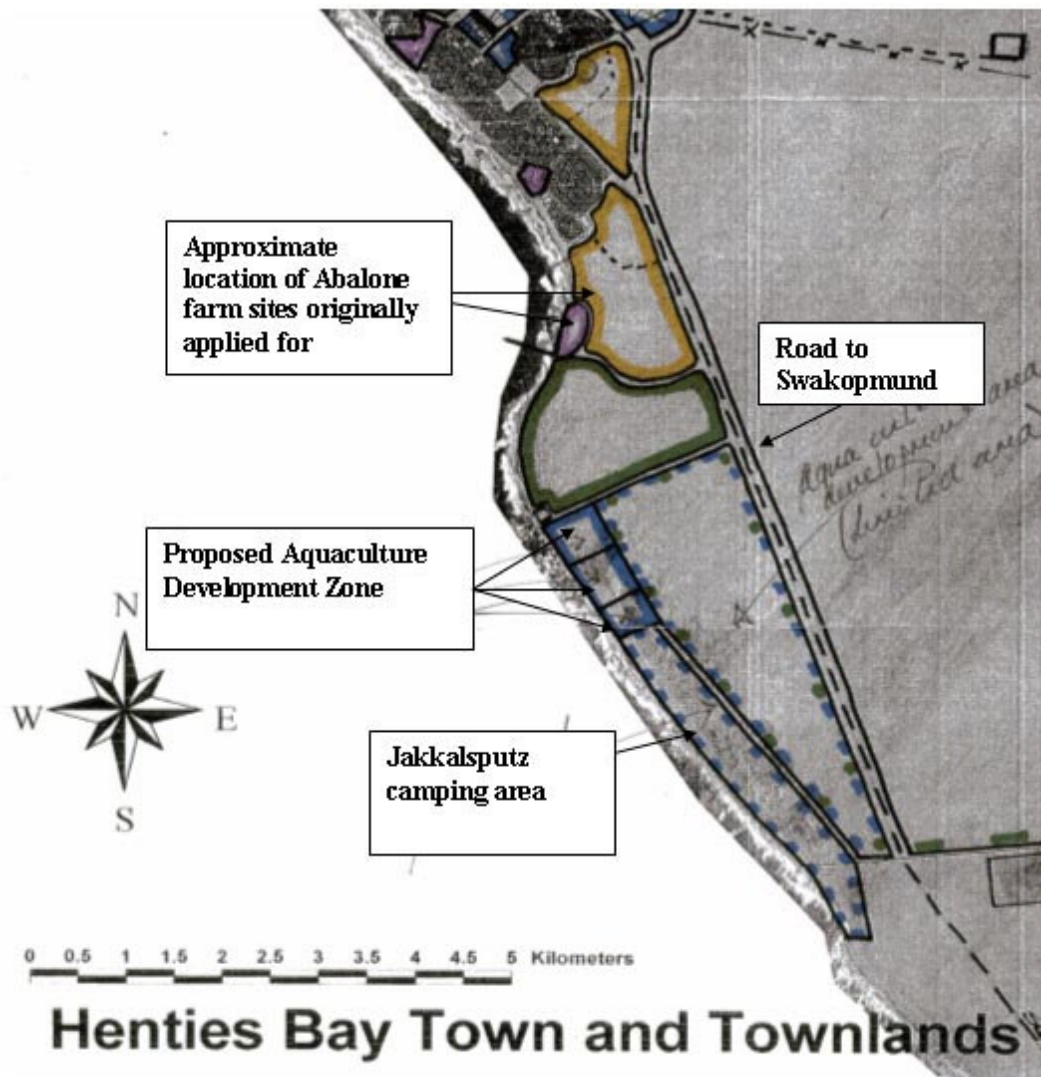
**Algal Culture for biofuels
& other products**



BUT WHERE?



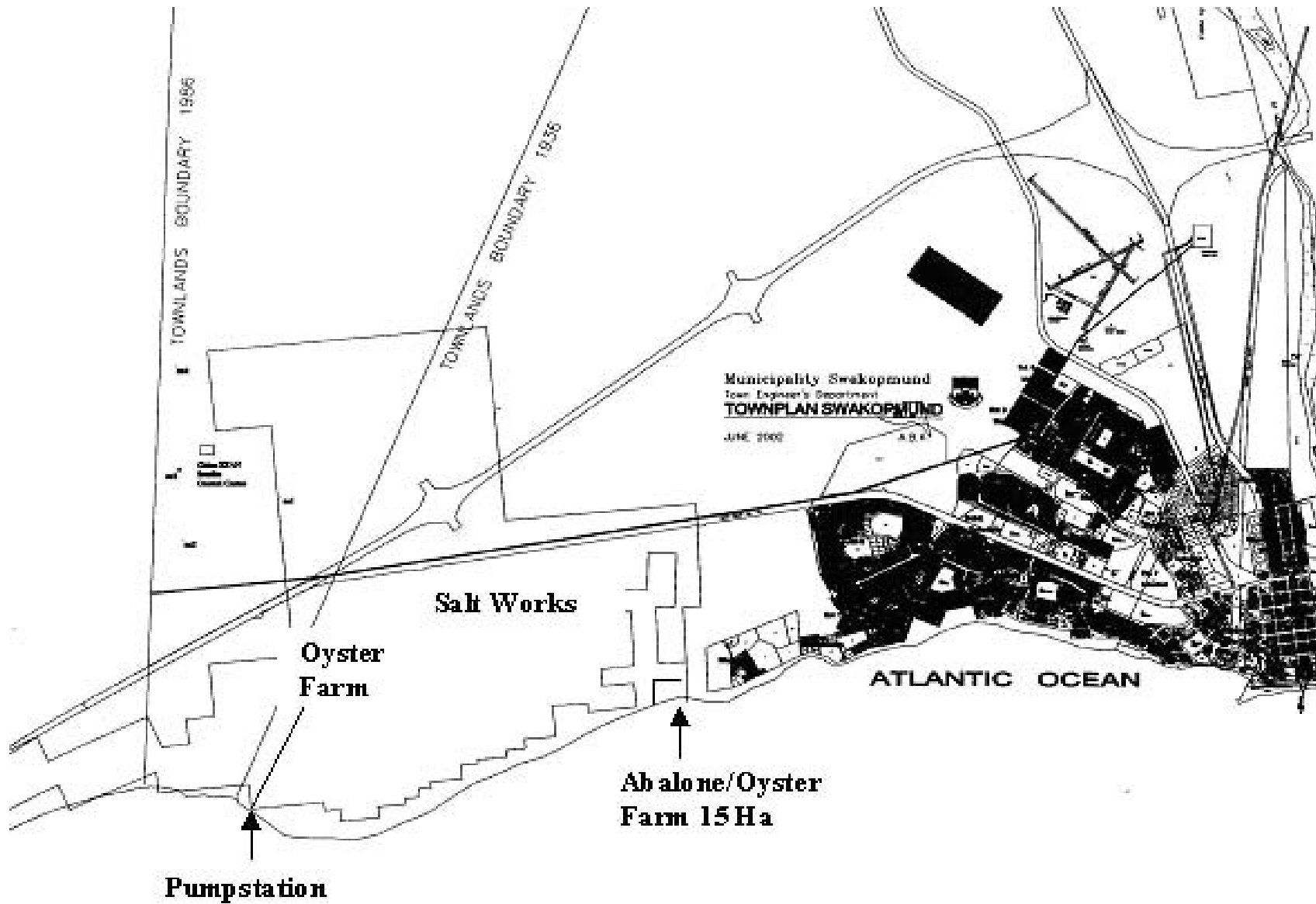
HENTIES BAY – SOLITUDE POINT



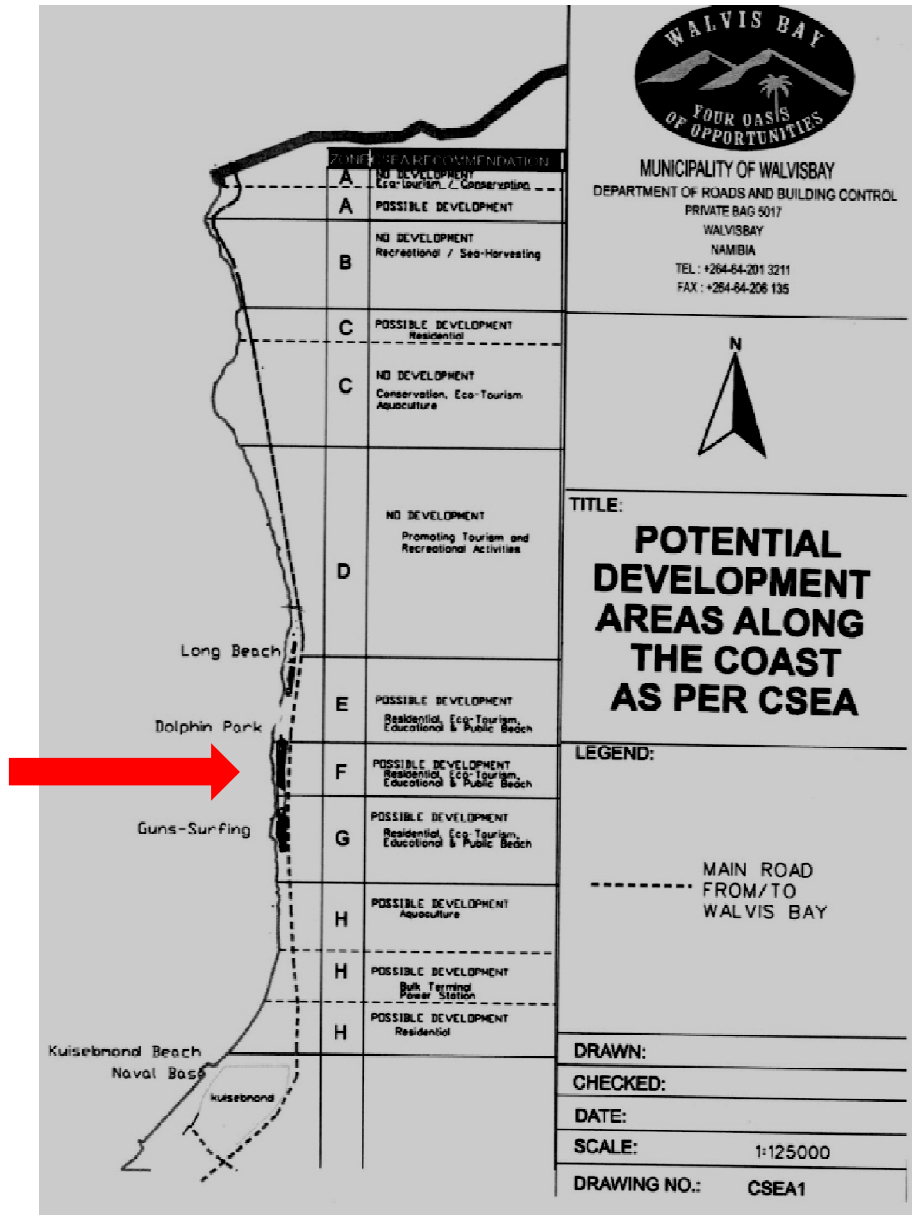
SWAKOPMUND - SALT COMPANY



SWAKOPMUND - MILE 4 OYSTER PONDS



WALVIS BAY - AREA "F" (BIRD ISLAND)



WALVIS BAY
YOUR OASIS OF OPPORTUNITIES

MUNICIPALITY OF WALVISBAY
DEPARTMENT OF ROADS AND BUILDING CONTROL
PRIVATE BAG 5017
WALVISBAY
NAMIBIA
TEL: +264-64-201 3211
FAX: +264-64-206 135

N

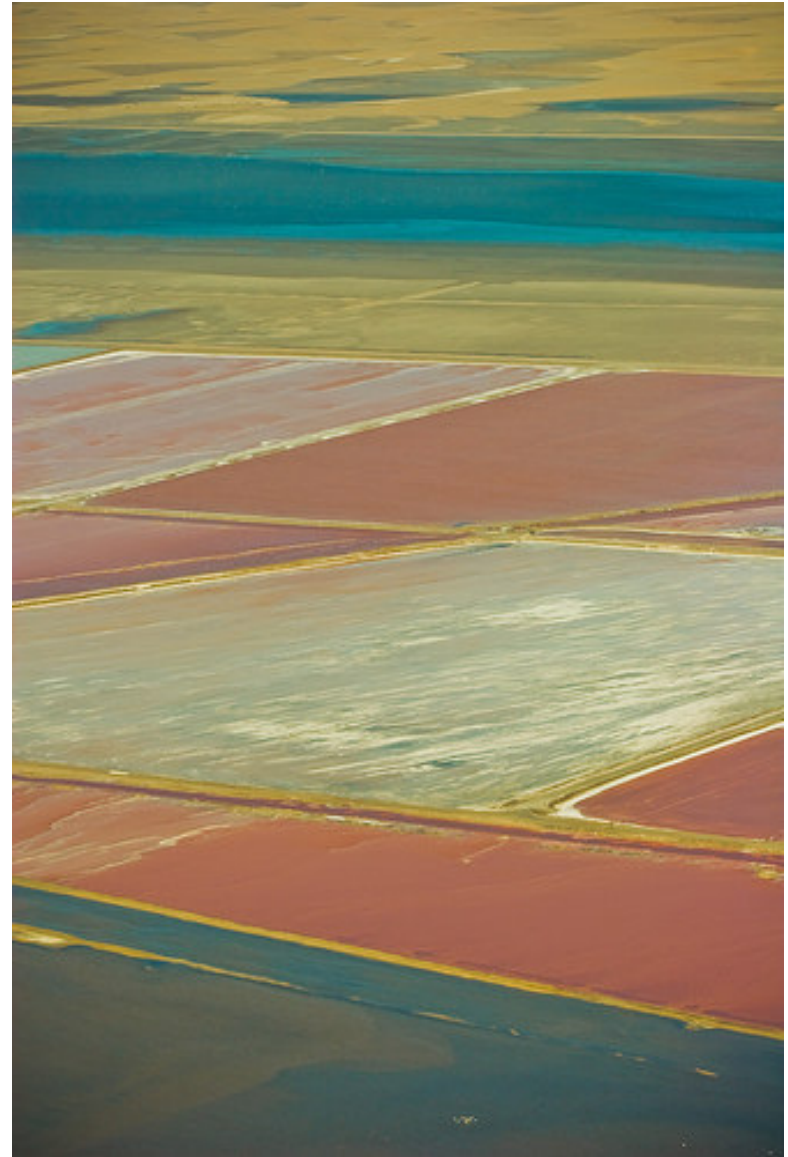
TITLE:
POTENTIAL DEVELOPMENT AREAS ALONG THE COAST AS PER CSEA

LEGEND:
----- MAIN ROAD FROM/TO WALVIS BAY

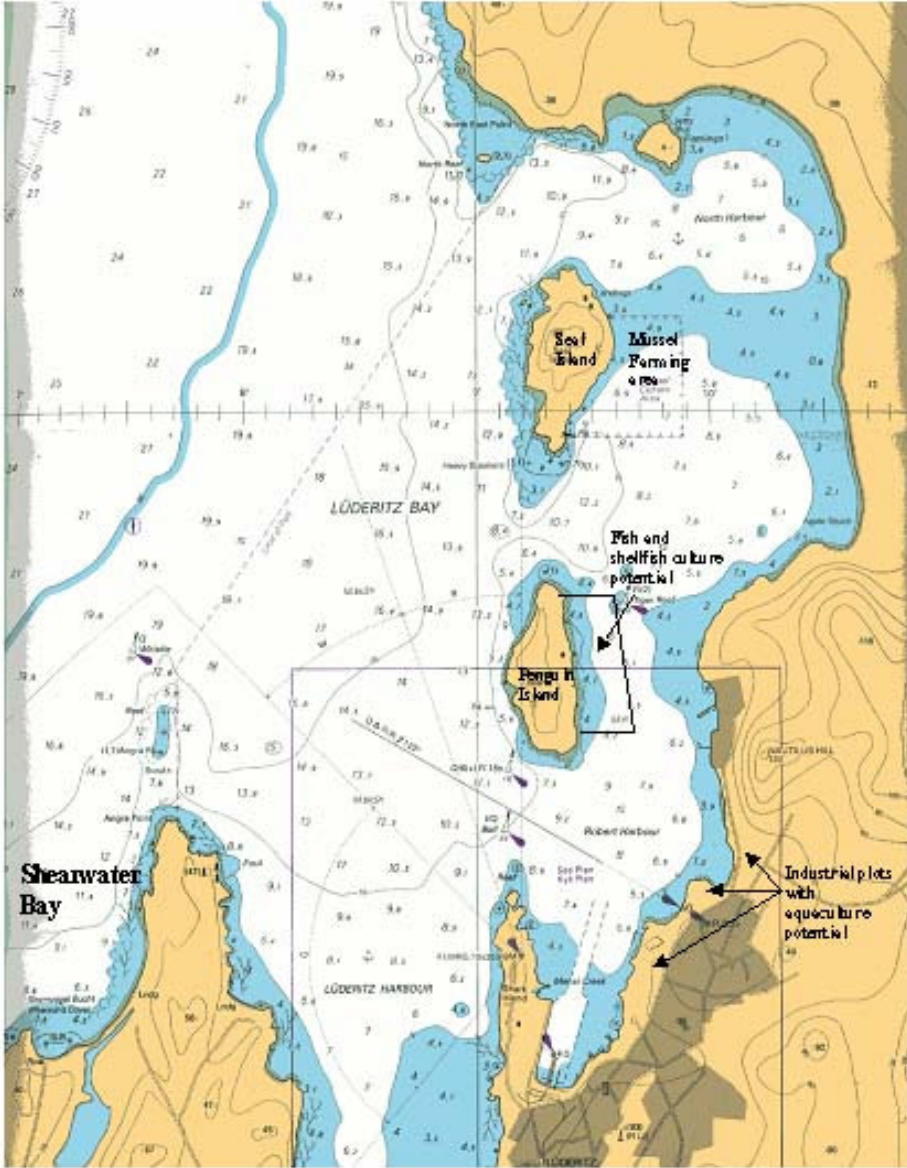
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WALVIS BAY - SALT REFINERS (3500 Ha)



LUDERITZ



ORANJEMUND



MICROALGAE AS A MARICULTURE PRODUCT

- Strong Government support
- Conducive environmental conditions
- Industry ripe for something new

- Land availability
- Species?
- Product/s?
- Method?
- Investment?

SUCCESS STORIES?