

Solomon Islands Fish Kill and Shellfish Poisoning

Background

- Remote community
- Limited government outreach



Subsistence

- Reef fish
- Gardening
- Pelagic
- Bush foods
- Pigs
- Chickens
- Mangrove shells
- Crustaceans



Economy

- Logging
- Fish to capital Honiara

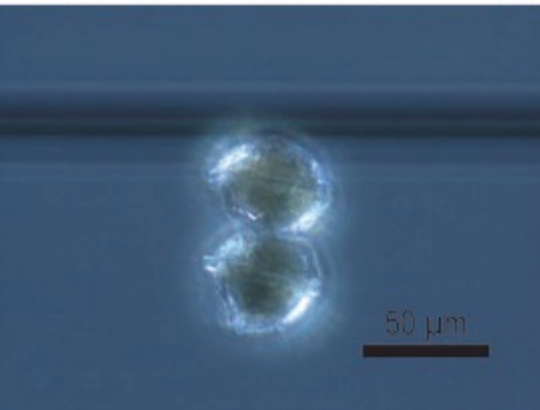
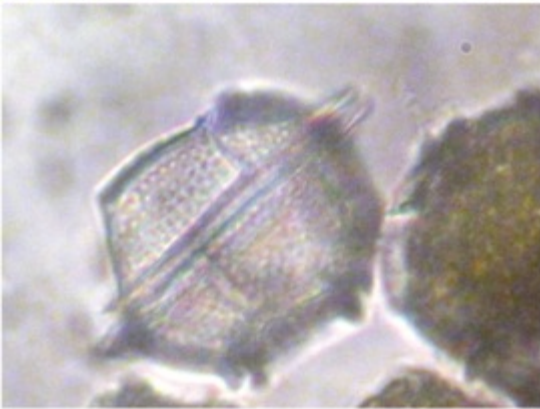
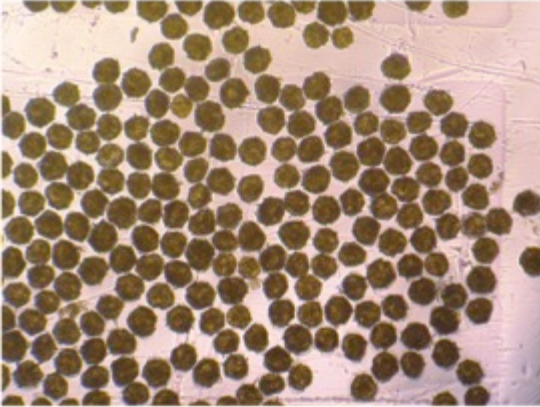


2011 HAB Fish Kill

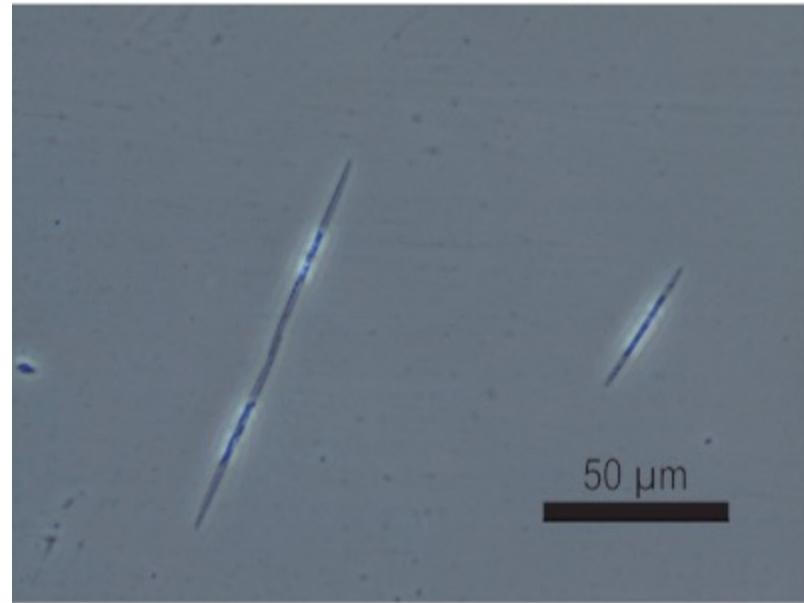


History of HAB based on TEK

Pyrodinium bahamense var. *compressum*



Pseudo-nitzschia spp.



Toxins

Pyrodinium: Saxitoxin

Paralytic shellfish poisoning (PSP)

Highly lethal (1000 times lower LD50 than cyanide)

Dozens of human fatalities in region

Pseudo-nitzschia: Domoic acid

Amnesic shellfish poisoning (ASP)

Neurotoxicity in marine mammals/fish

Large fish kills

>1 M cell per litre in June 2011

SIZE OF H.A.B.

Density
of
Bloom



Social impacts

HEALTH

- Vivid dreams, head spins and aching joints from eating seafood (especially shellfish)
- 60% increase in infant fever/diarrhoea cases after event

DIET

- 1 500 people loss of primary fishing grounds
- Prolonged fear of seafood consumption

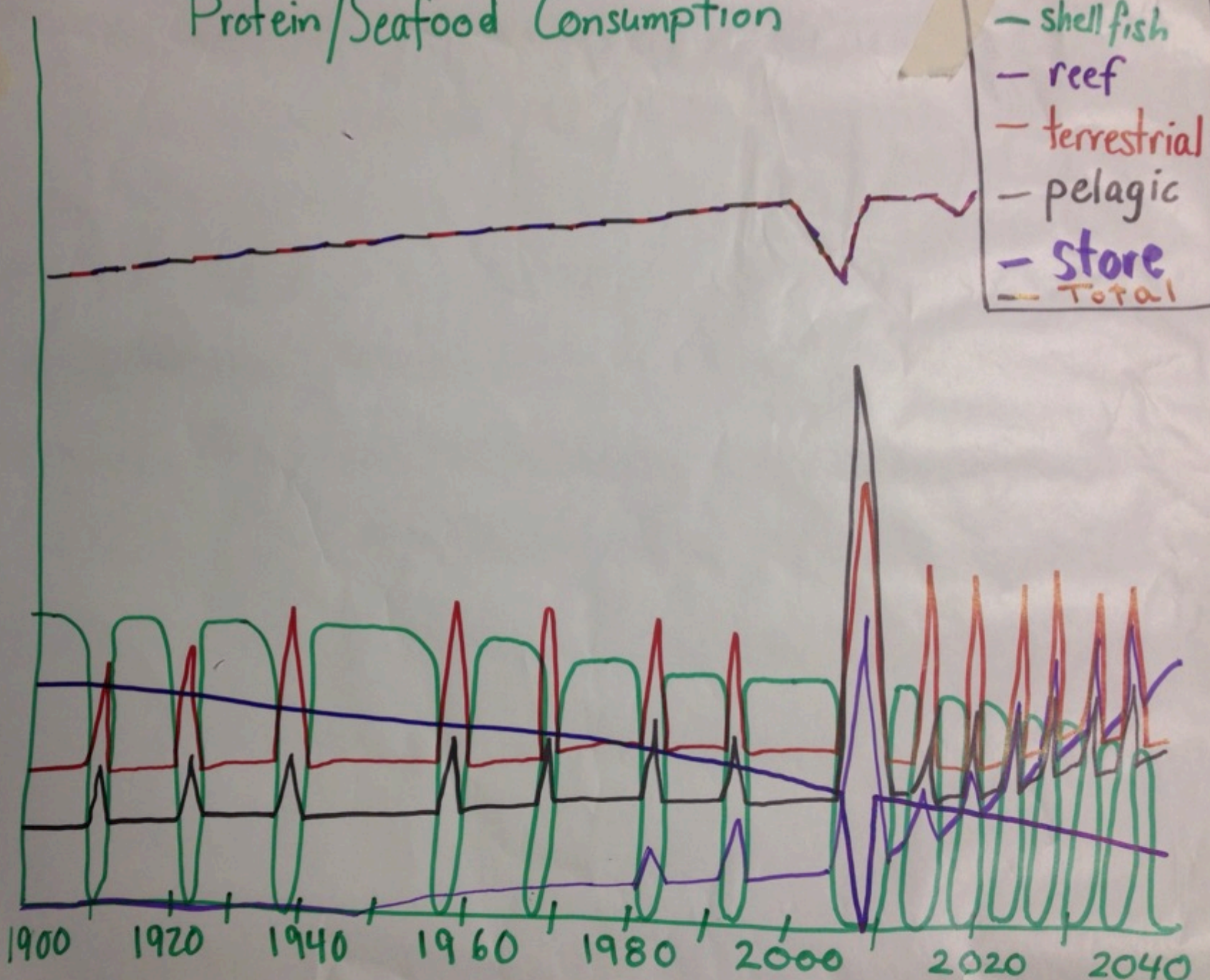
ECONOMIC

- Loss of income from fish sales
- Reliance on store foods

Protein/Seafood Consumption

Kgs/
Capita

- shell fish
- reef
- terrestrial
- pelagic
- store
- Total



Ciguatera poisoning and impacts in Kiribati



Background



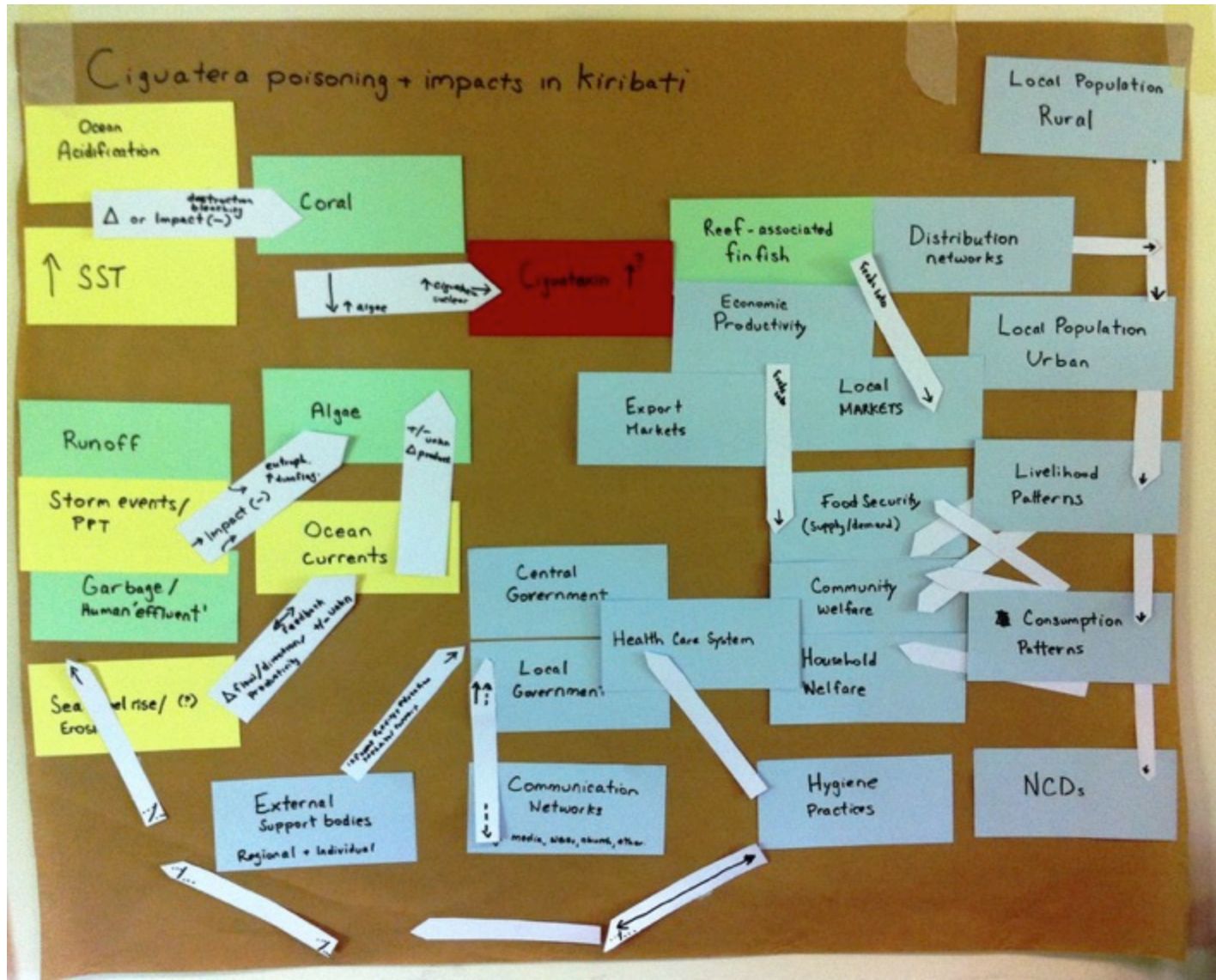
Background (continued)

- Heavy dependence on coastal, reef fisheries resources for food - particularly in rural areas (up to 90%)
- Strong reliance on tuna fisheries access revenue, limited processing, few exports
- Largely subsistence-based domestic economy
- Geographic and climate profile provide limited food and livelihood alternatives
- Projected to meet future food fish demand but problems with distribution, reef fish sources

Key Issues

- Ciguatoxic events have been present and constant since the 1970s
- Climate change drivers affecting health and productivity of reefs, expected to intensify
 - Increases to reef fish production not expected
 - Expected to increase prevalence of ciguatera
 - Increased public health risk
- Need to increase and diversify food fish sources
- Limited baseline data, a few studies, some local monitoring capacity, underreporting of cases
 - Difficult to understand who, what, where, when, why, how and respond

Understanding the complexity of system interactions and responding appropriately



Social-economic impacts

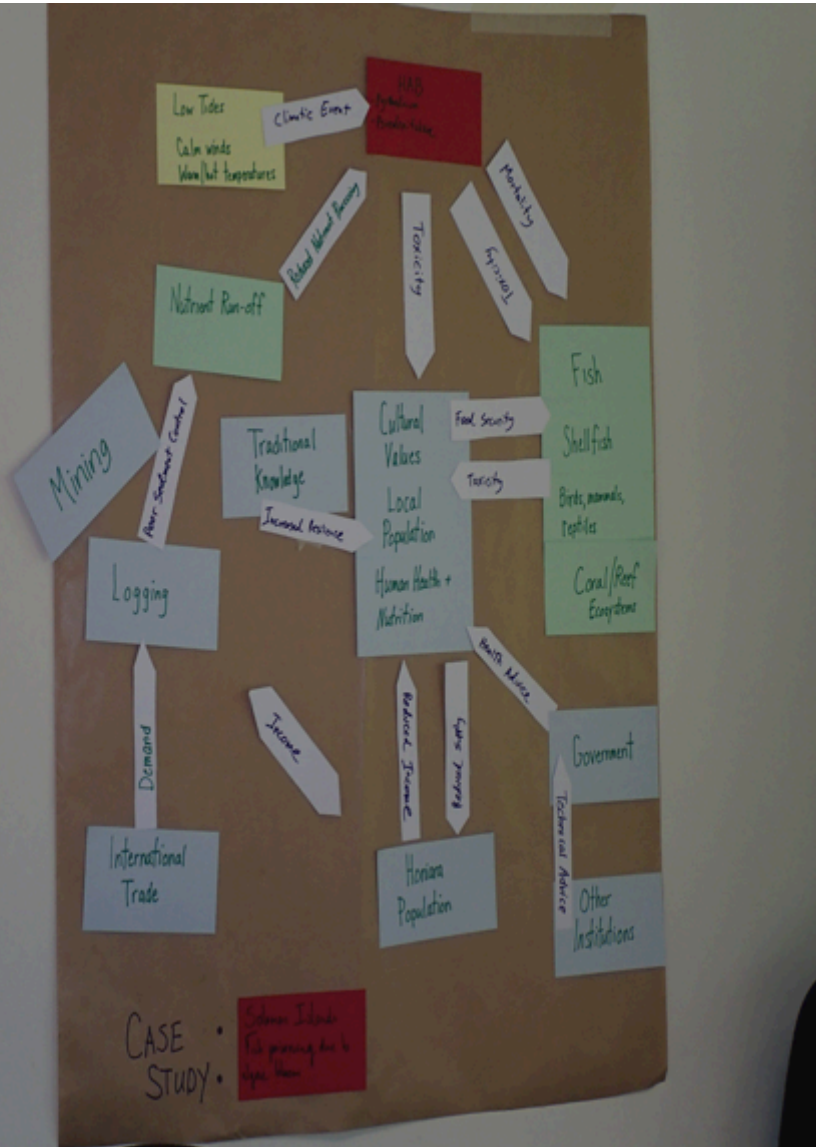
- Changes to fish consumption patterns
 - Expected future knock-on effects to public health, e.g., increase in NCDs as ‘negative’ substitutions occur
- Affects where fishers can fish, food fish can be sourced from
- Effects to exports? E.g. live reef trade to HK in 90s
- Negative effects to household, community welfare
 - reduced socio-economic contribution



Synthesis of the two case studies: problems/gaps, what works, & priorities in research, T&I for reduction in ciguatera hazards

Group 4: Societal, cultural and economic aspects – covering nutrition/dietary aspects and changes, food security, changes to traditional behaviour, practices, communication/prevention, trade, economic impacts and innovation

Actors & Factors of Two Case Studies & How They Interact



Typical Problems /Gaps & What Works Well

- Problems/Gaps
 - No historical records/baselines
 - Disjointed flow of information
 - Lack of knowledge about diagnosis of outbreaks
 - Lack of proactivity
 - Lack of reliable tests
 - Lack of diagnostic tools
 - Lack of curative measures
- What works well
 - Human ability to adapt
 - Local traditional knowledge
 - Identified well known species of fish with ciguatoxin
 - Some Govt capacity exists e.g. monitoring
 - Some trainings on ciguatoxin extraction have taken place

Research, Technology & Innovation Opportunities for the Reduction of Ciguatoxin Hazard for health, environment & economy

- Technology & Innovation
 - Monitoring systems
 - Communication networks
 - Rapid assessment tools
 - Diagnostic tools
 - Data repositories
- Research
 - Dietary/consumption pathways
 - Baseline surveys
 - Curative treatments
 - Policy coherence
 - Effectiveness of monitoring & evaluation
 - Dose-response /Threshold levels?
 - Remanence of toxicity in food
 - Quantify/collate traditional knowledge
 - Driving factors
 - Practical livelihood alternatives
 - Markets, food security, revenue sources

Priorities for Action

- Problems/Gaps
 - No historical records/baselines
 - Lack of quantitative information
 - Disjointed flow of inter and intra country information
 - No organised mechanism to ‘sound the alarm’
- What’s working well
 - Human ability to adapt
 - Change consumption patterns in response to outbreak
 - Traditional knowledge
 - Local awareness of outbreaks from previous experiences

- Technology and Innovation
 - Monitoring systems
 - Includes biophysical and socio-economic
 - Diagnostic tools
 - Accessible data repositories

- Research
 - Baseline surveys
 - Includes biophysical and socio-economic
 - Practical livelihood alternatives
 - Markets, food security, revenue sources