‘Kyowa Violet’ Grounding Incident
Yap – Federated States of Micronesia

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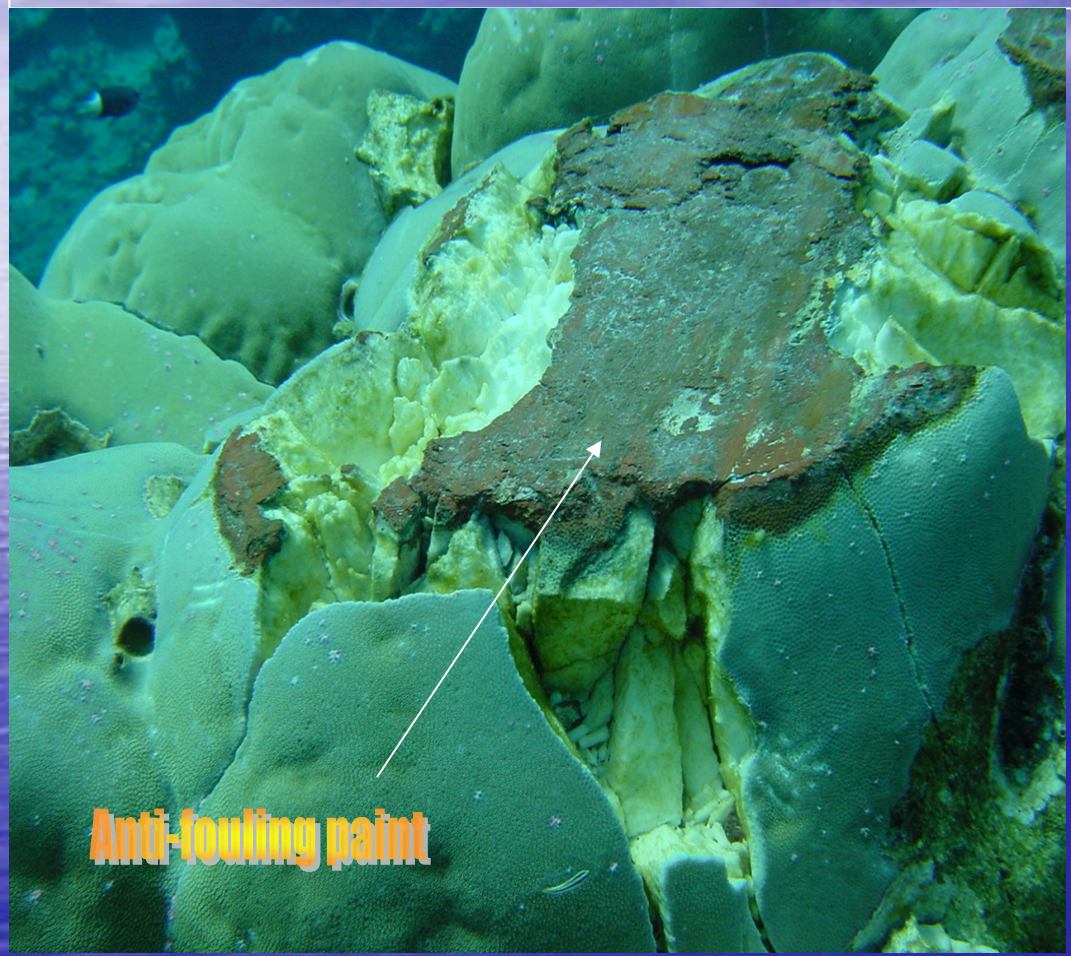
Incident – Initial Impact

- Aground – December 26, 2002
- Two fuel tanks ruptured
- Fuel spilled in harbor
- Vessel turn around

Assessment on spill impact

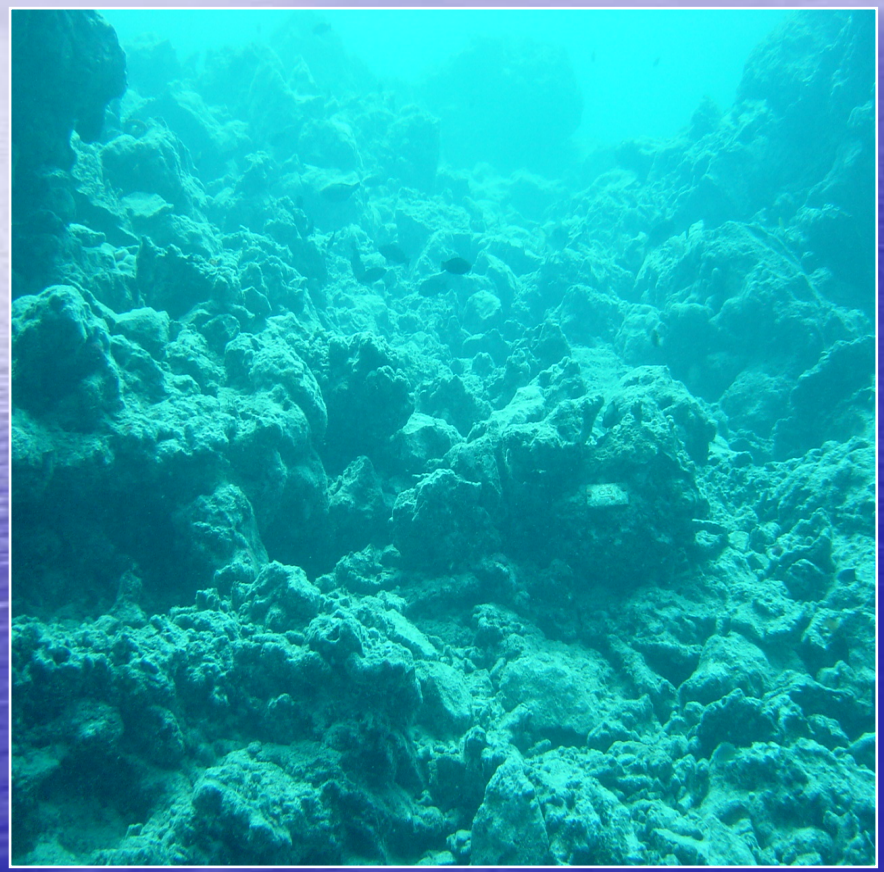
Fuel tanks containing IFO 180 were ruptured, resulting in an oil spill estimated between 55,000 and 80,000 gallons that affected 8km of shoreline

Assessment on physical impact – Primary reef damage



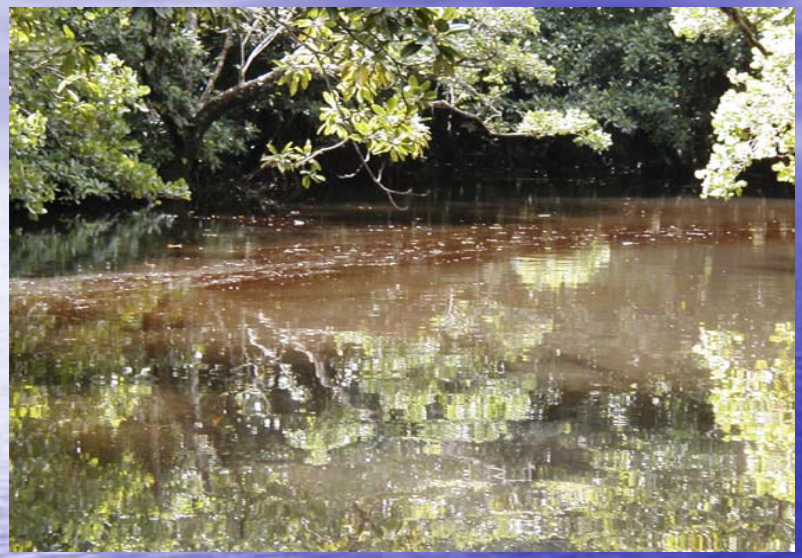
- Three separate reef areas suffered
- Damaged area, 1,500 square meters
- Anti-fouling paint, containing tri-butyl tin (TBT)

Extend of reef damage - secondary



- Damaged – depth area ranged from 60 feet to 180 feet
- Scattered rubbles within 1,500 square meters
- Massive coral rubbles and trenches

Intermediate fuel oil & debris clean up



Inter tidal/mangrove & animals

Cultural Resources

Valuable stone money and local canoe

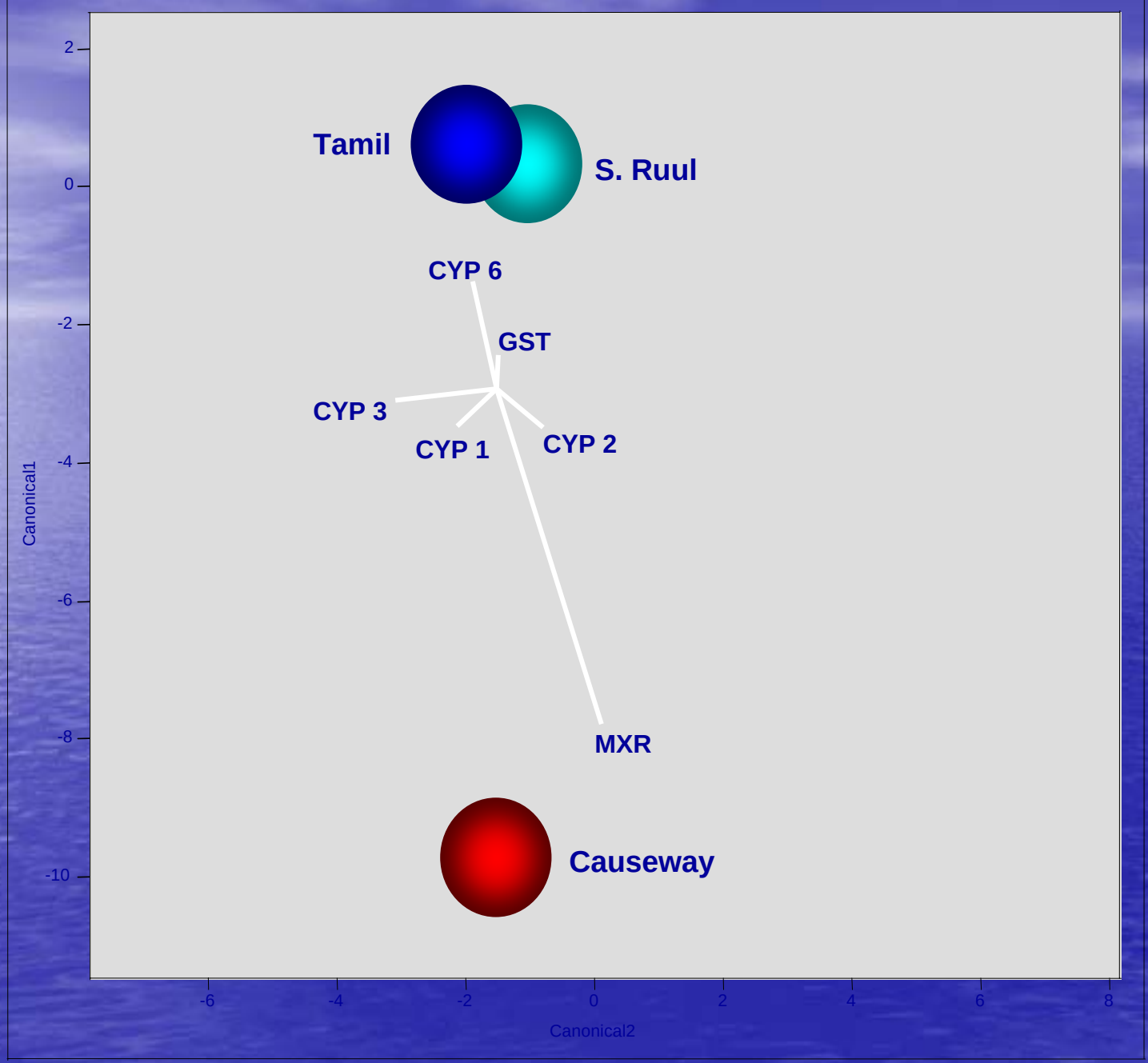
Skimming and debris

I had enough oil

Sampling and Testing

It may look healthy, but I ain't eating it

Until proven that no effect from oil, than I may eat it, but where can it be tested ?



Xenobiotic Response

Considerations in Damage Assessment

1. Damage to the resource and its related value
2. Cultural considerations on traditional resource use and reef tenure/ownership
3. Clean up costs and stabilization of sand and loose debris
4. Restoration and replacement costs where feasible
5. Legacy value of the large corals
6. Monitoring for potential ciguatera-causing dinoflagellates (*Gymnodinium toxicus*) and coral recruitment/recovery
7. Mitigation and proactive prevention of future damage

Damage Valuation

1) Commodity value, calculated on the basis of the sale price of the corals, fish and other resources damaged due to the grounding event.
2) Cost of replacement and restoration, calculated on the basis of costs involved in purchasing resources of equal size and value, performing a complete clean-up of the debris, stabilizing the substratum, fixing the corals and other benthic creature to the reef, and monitoring for recovery. This is the most expensive of the approaches.
3) Contingency value, based on tourism, cultural uses and ecological services.

estimated value: $608 per m^2 ; the damage to the Colonia reefs calculated as $ 873,088.

Thank you for listening