



The Role of Science in the Protection and Preservation of Coral Reef Ecosystems

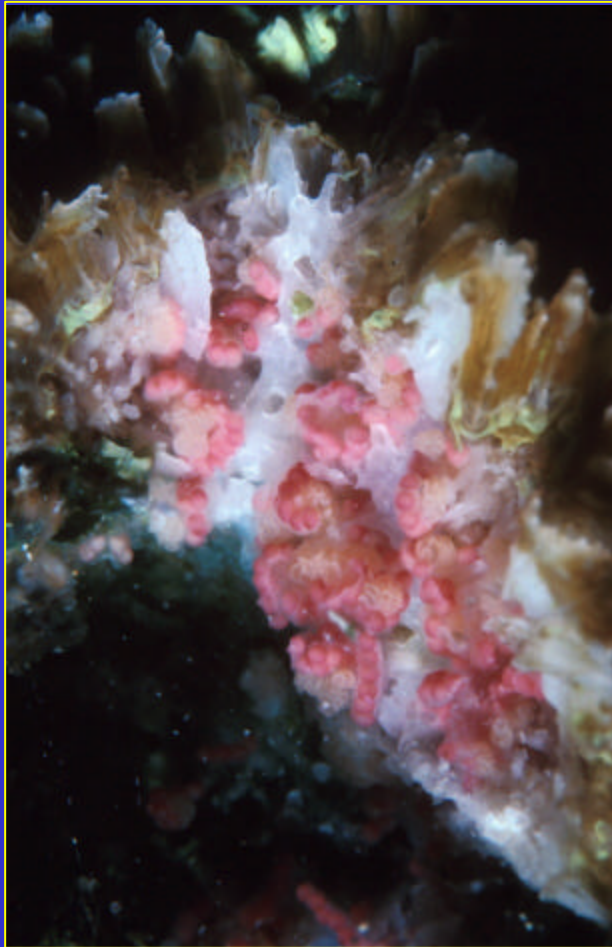
Or what I've learned and still haven't figured out after 28 years of studying coral reefs and living on tropical islands

Bob Richmond, Professor of Marine Biology, UOG Marine Lab



CORAL SPAWNING

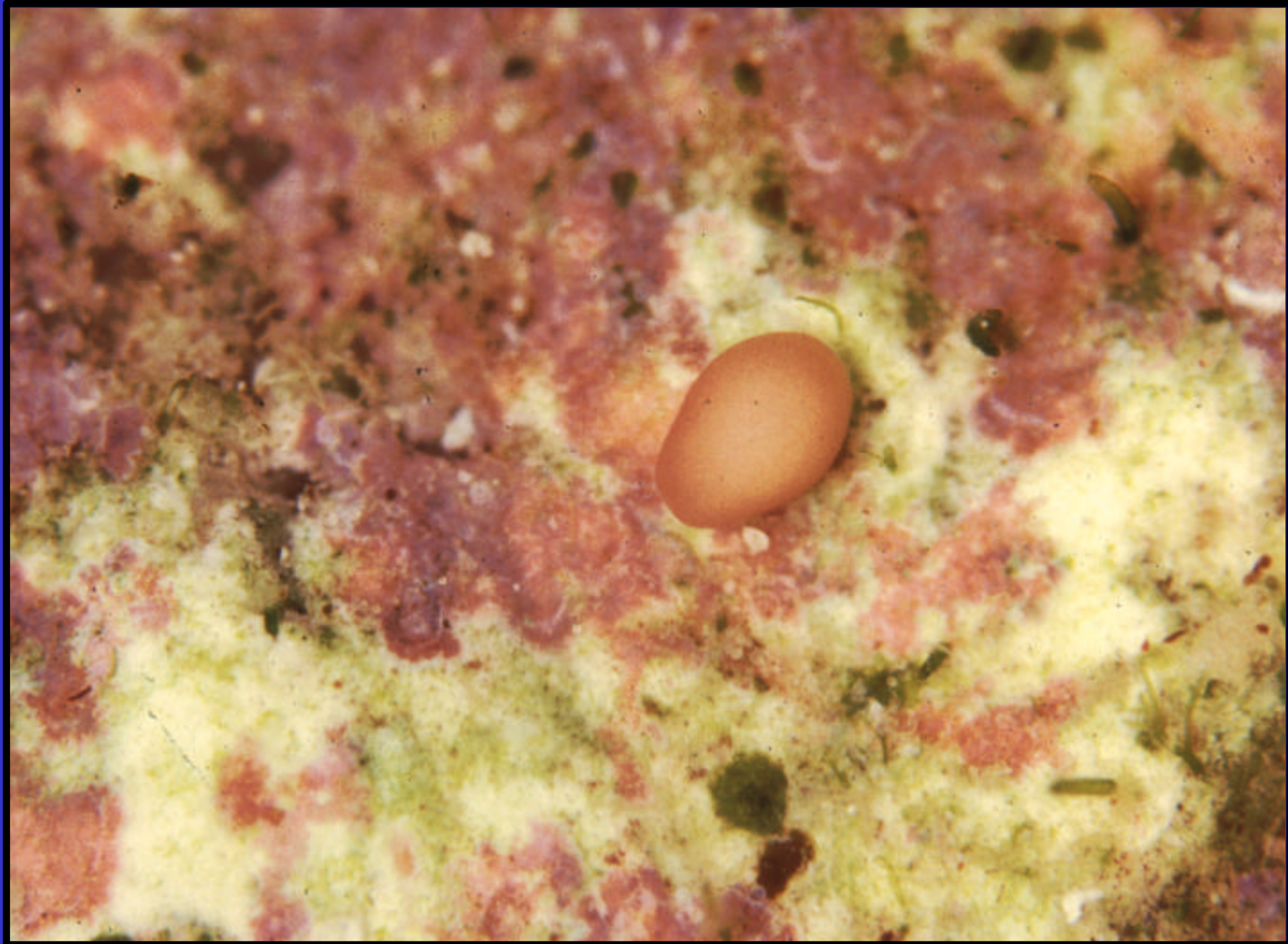
Gamete development



Gamete release

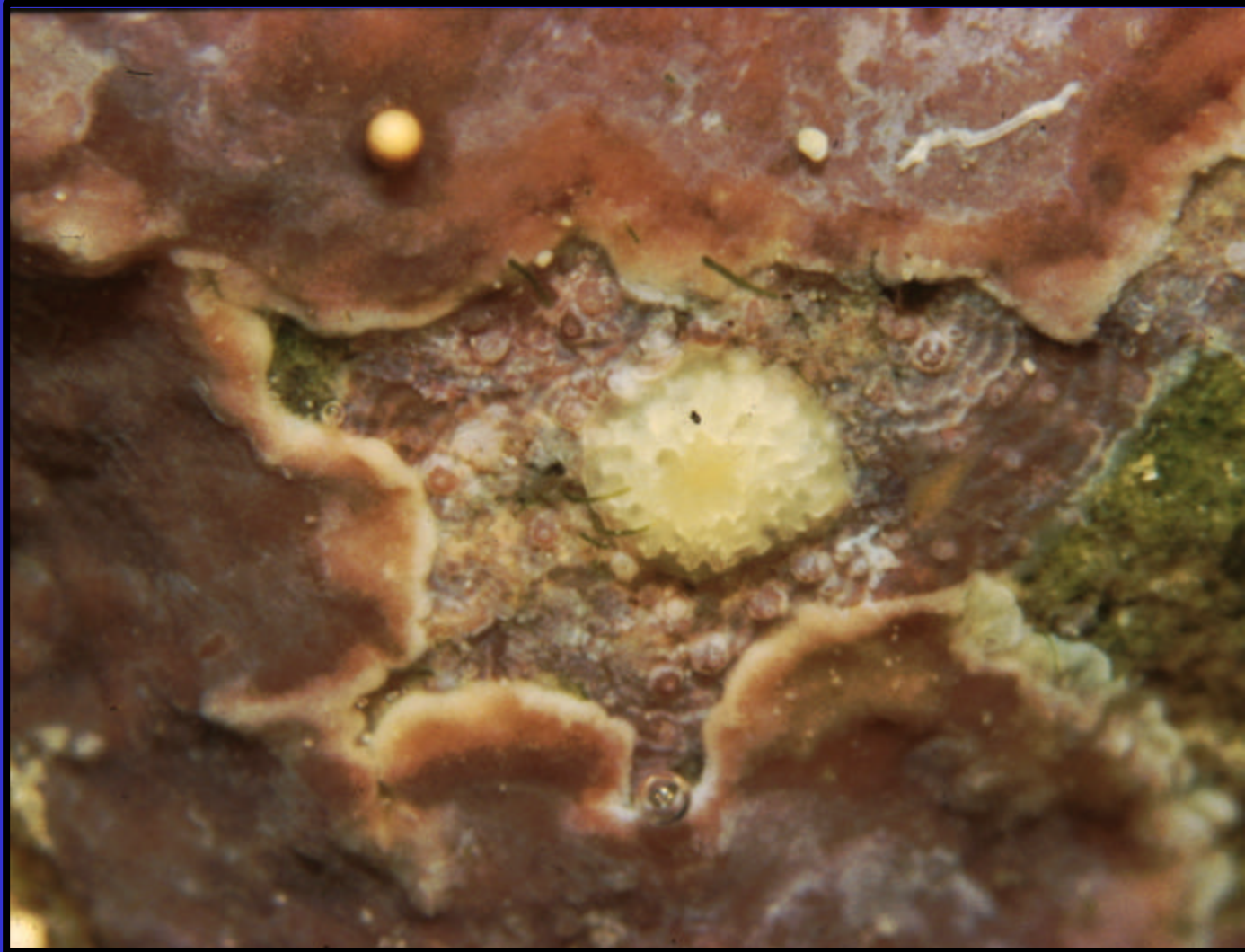
RECRUITMENT

1. Settlement

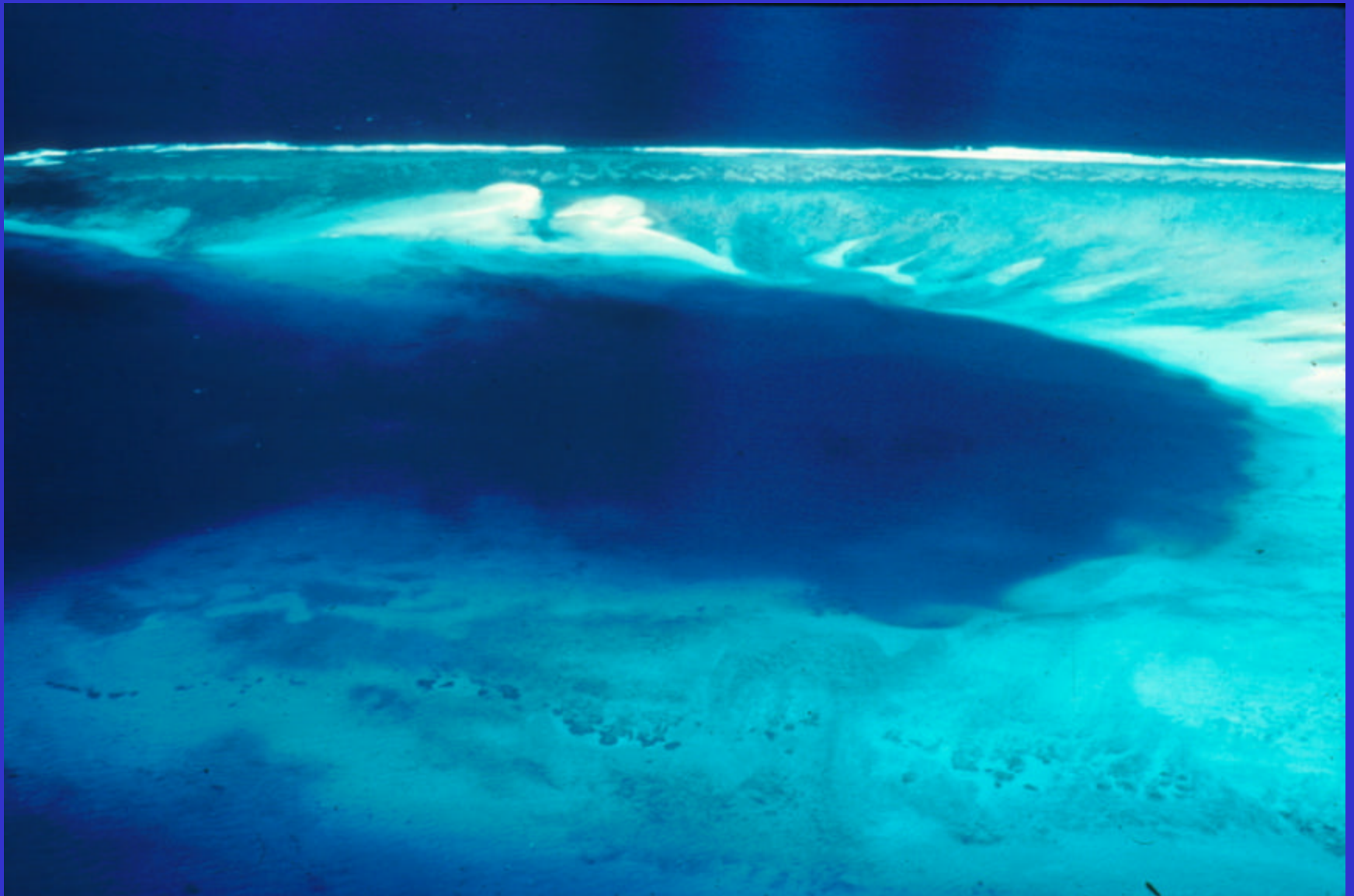


RECRUITMENT

2. Metamorphosis



Nuclear Testing: Extreme/Acute Disturbance

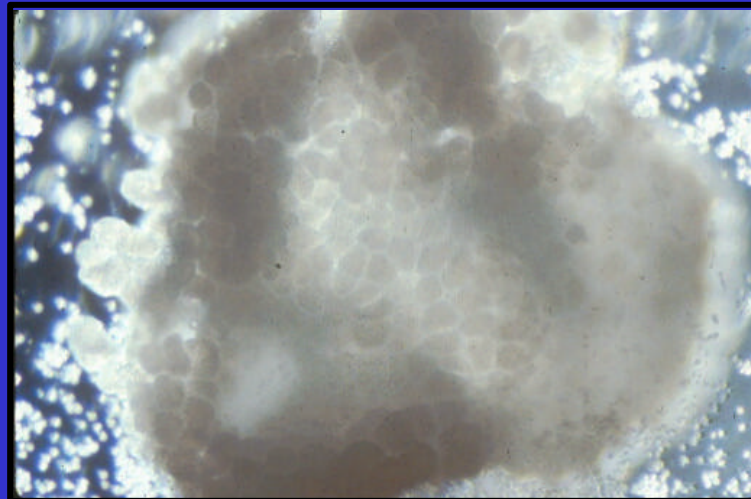
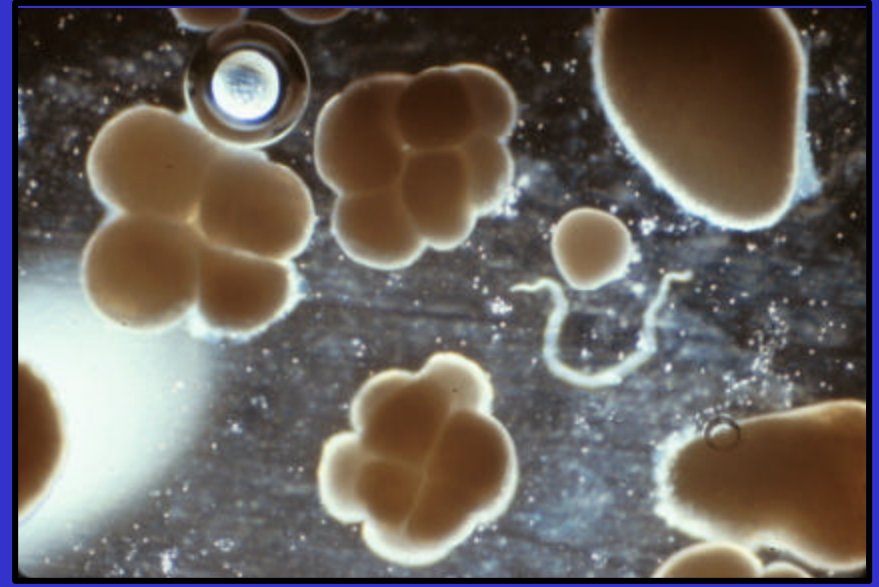
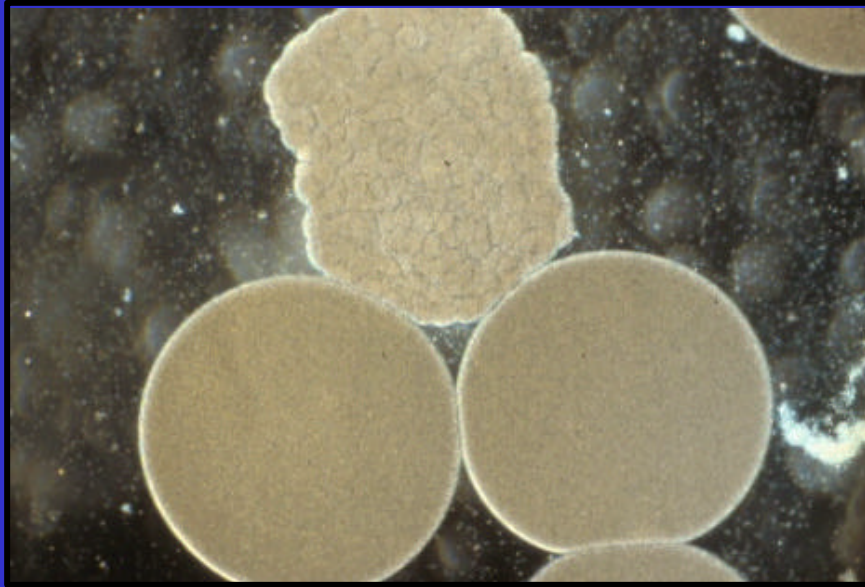


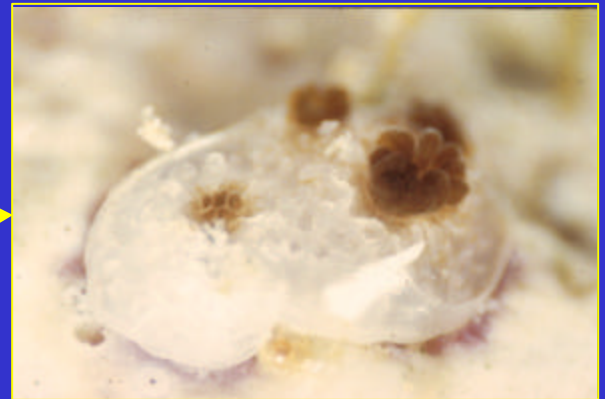
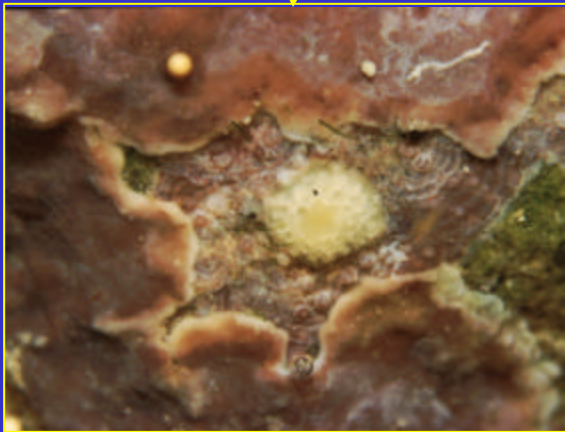
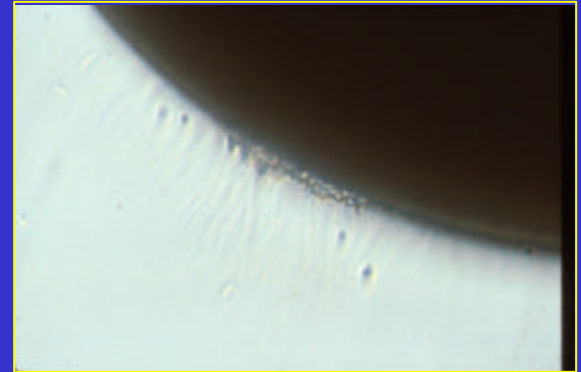
Reduced Water and Substratum Quality

Chronic Disturbance



REPRODUCTIVE FAILURE

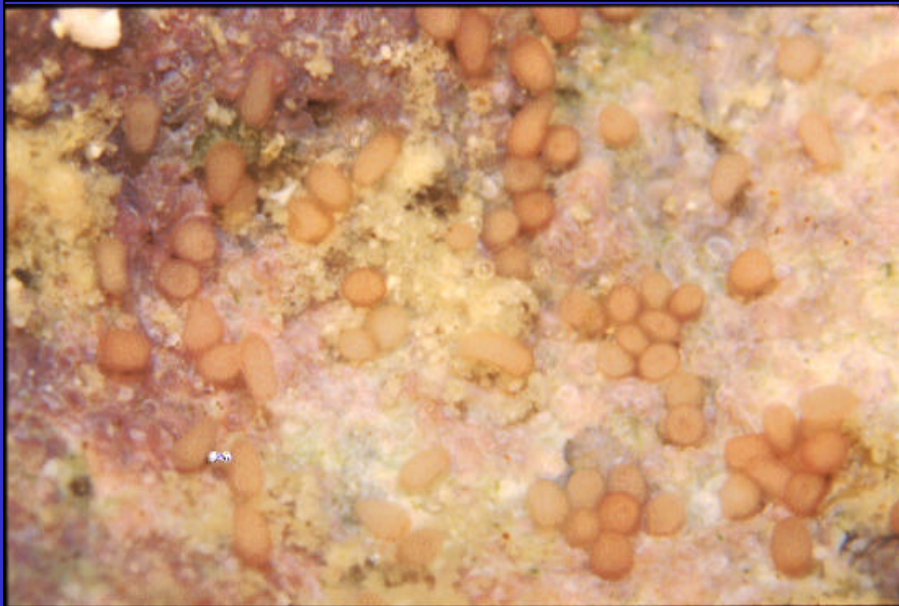
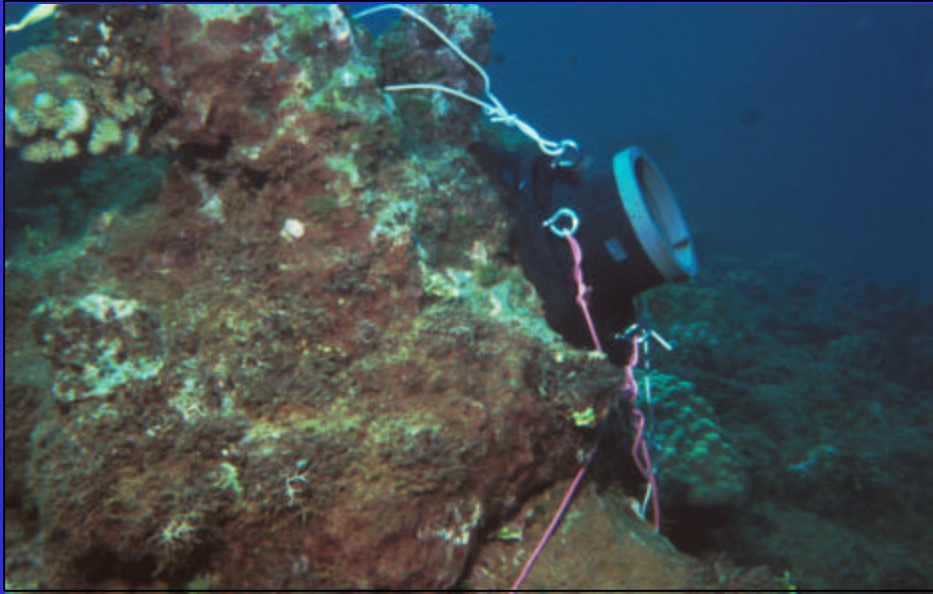




Eutrophication and Algal Overgrowth



CORAL RESEEDING & RESTORATION





Marine Snow

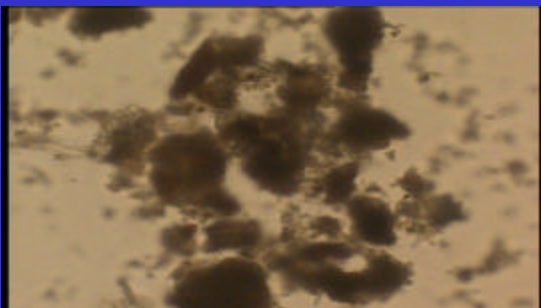
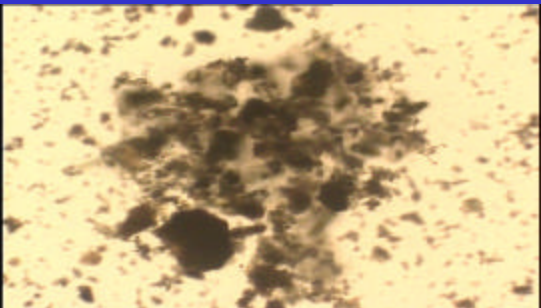
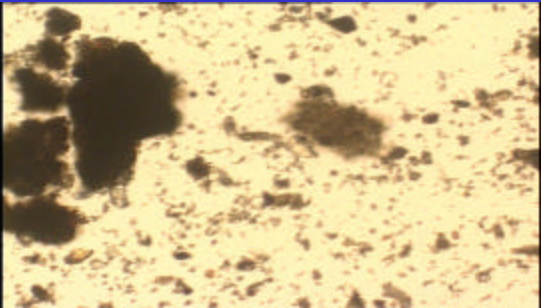
Freshwater

5 min

10 min

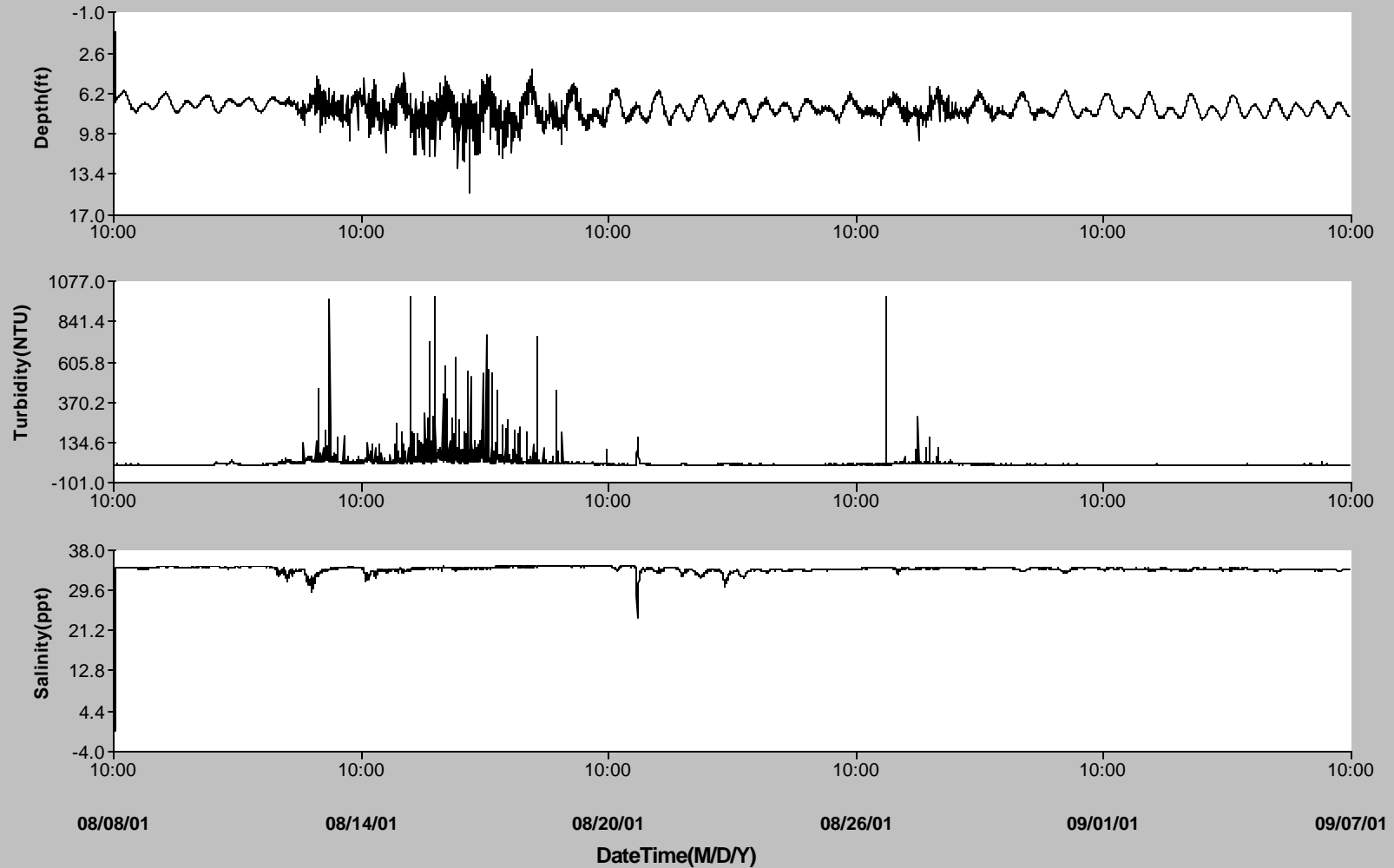
30 min

Width=1000 um

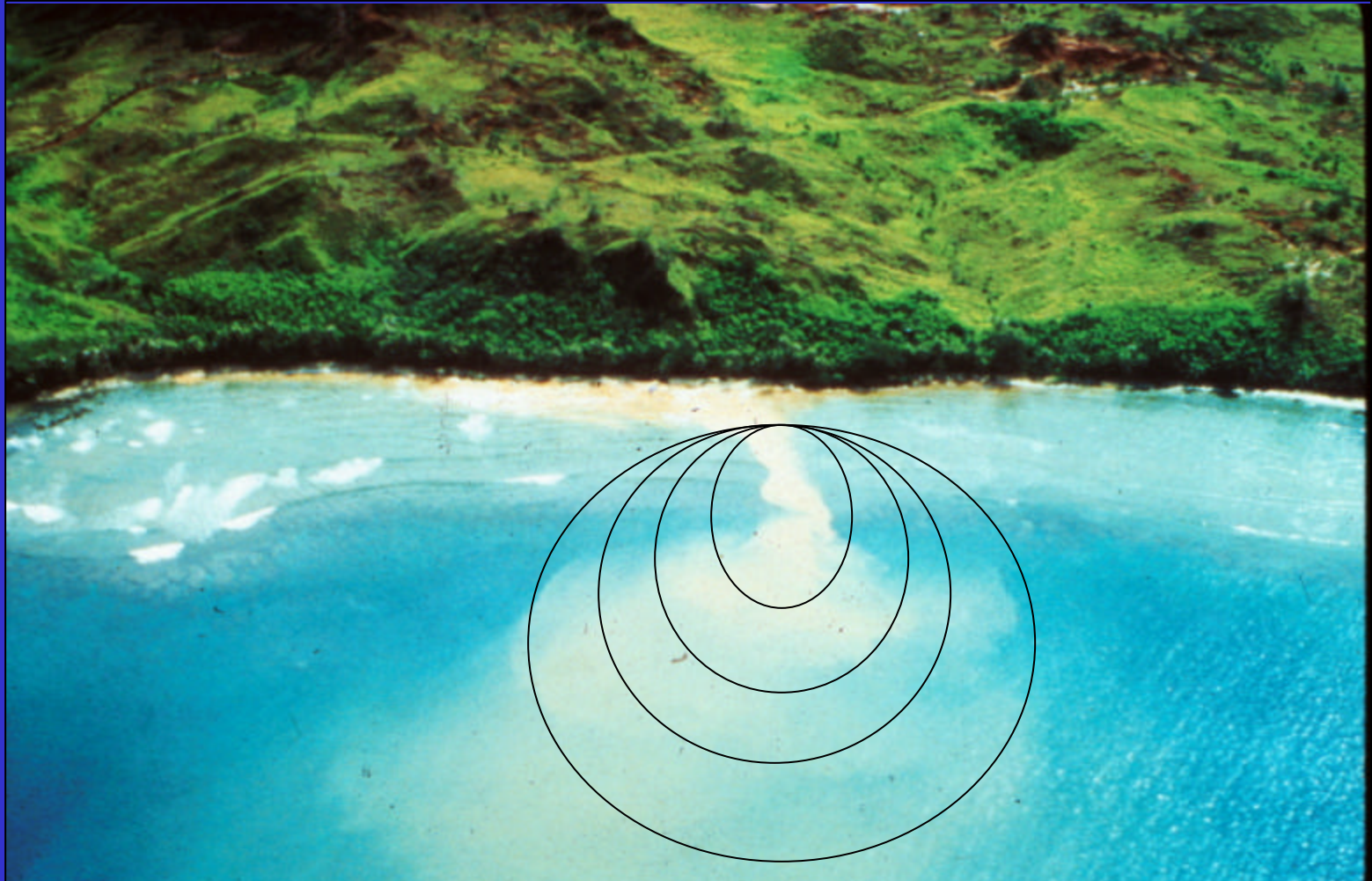


Turbidity/salinity/wave profile – Fouha Bay, Guam

Fouha Bay



Integrated Watershed Management



Mortality is a rather crude
indicator of
Stress



Multiple Technologies and their Application

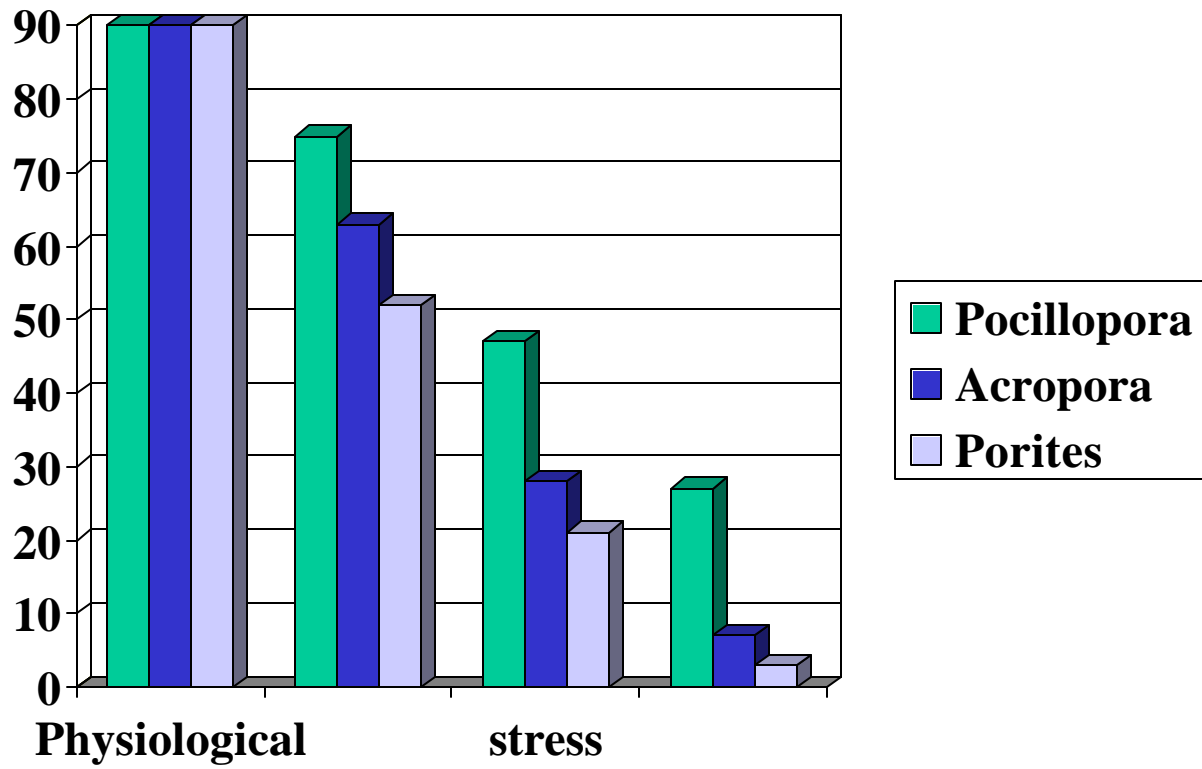


Ngerikill Watershed - Palau



Relevant Legislation

- 1) 1898 - River and Harbors Act (ACOE)
- 2) 1958 - Fish & Wildlife Coordination Act
- 3) 1969 - NEPA
- 4) 1972 - CZM Act
- 5) 1973 - Endangered Species Act
- 6) 1977 - Clean Water Act (EPA/ACE)
- 7) 1978 - Council of Envir. Quality 40 CFR 1500-1508 Sect. 404(B)(I)
- 8) Executive Order 13089



REEF
BRUISER

HEY BABY
WANNA SPAWN?

NOT TONIGHT
SWEETIE...
I'VE GOT A
SPLITTING HEADACHE.



CM Schabert '98

- **Science: Asking and answering questions. Within the context of the CRTF, Why?**
- **Interdisciplinary and Multidisciplinary approach is important including the Social Sciences**
- **Integration of land-based and coastal issues rather than separation under the present regulatory framework (integrated watershed management).**
- **Translation of scientific information into a form and format that is easily accessible to stakeholders, policy makers and managers (of human behavior and activities)**
- **Restoration is a worthwhile goal, and success is dependent upon restoration of conditions that support natural recovery**