

CORAL REEFS

NEIL HINDS



WHAT IS A CORAL?

- PHYLUM – CNIDARIA
- CLASS ANTHOZOA
 - SUBCLASS; OCTOCORALLIA AND HEXACORALLIA
- ANIMALS – CHARACTERISED BY STINGING TENTACLES
 - COMMONLY LIVE IN COLONIES OF IDENTICAL POLYPS



Bubble Coral (*Plerogyra sinuosa*)

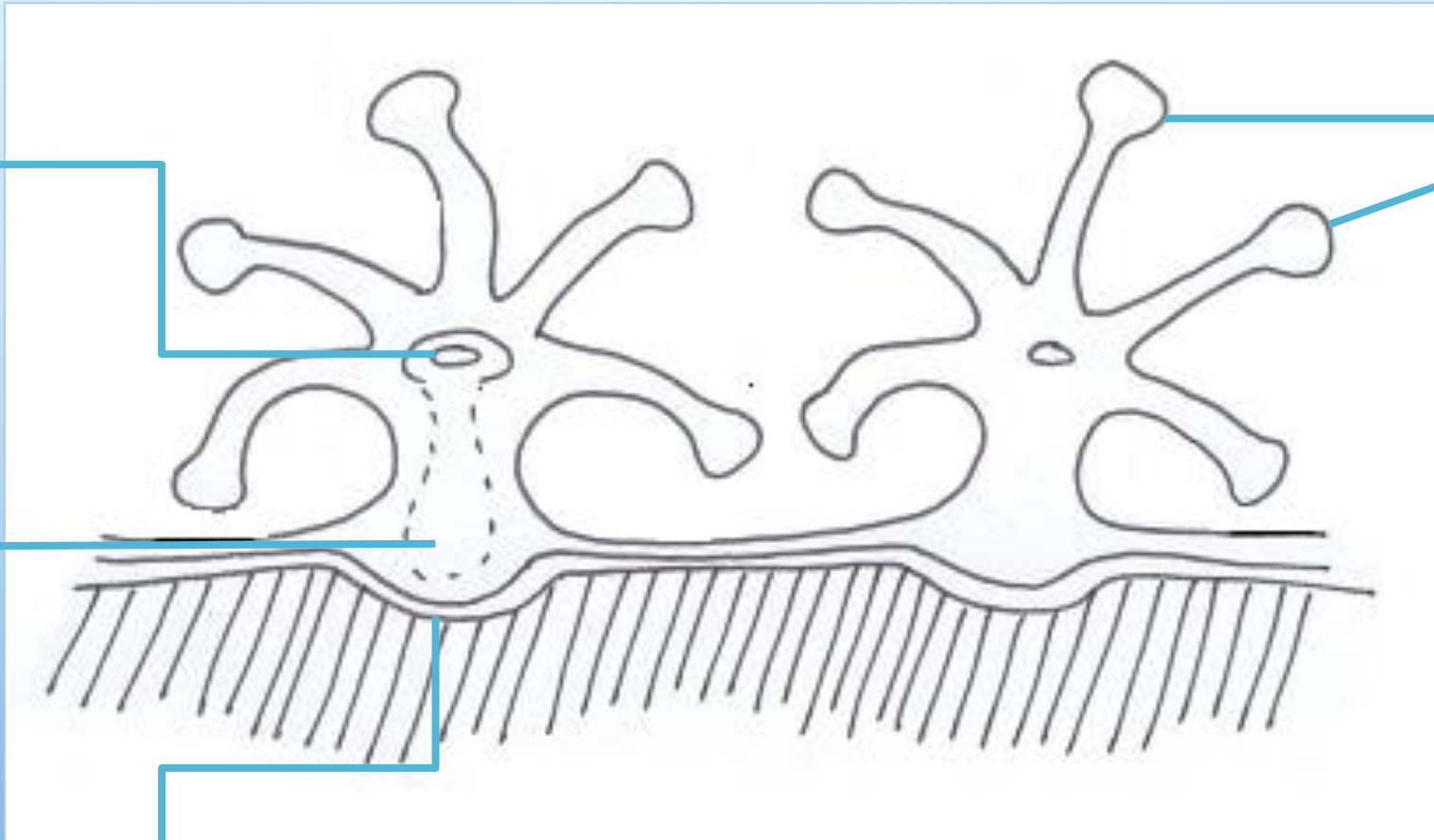
Mouth

Stomach

Tentacles

Coral Cup (hard coral only)

([Reef Check](#))



WHAT MAKES THEM COLOURFUL?

- PHOTOSYNTHETIC MICROSCOPIC ALGAE; **ZOOXANTHELLAE**
- SYMBIOTIC RELATIONSHIP
- CORAL COLOURS
- PRODUCES OXYGEN AND REMOVES WASTE
- CORAL WITHOUT ZOOXANTHELLAE ARE CONSIDERED 'BLEACHED'





Hard Coral

- TENTACLES IN MULTIPLES OF 6
- CREATE LIMESTONE SKELETON
- THE MAIN REEF BUILDERS
- BOTH COLONIAL AND SOLITARY
- BLEACH WHEN STRESSED
- SKELETON REMAINS AFTER DEATH

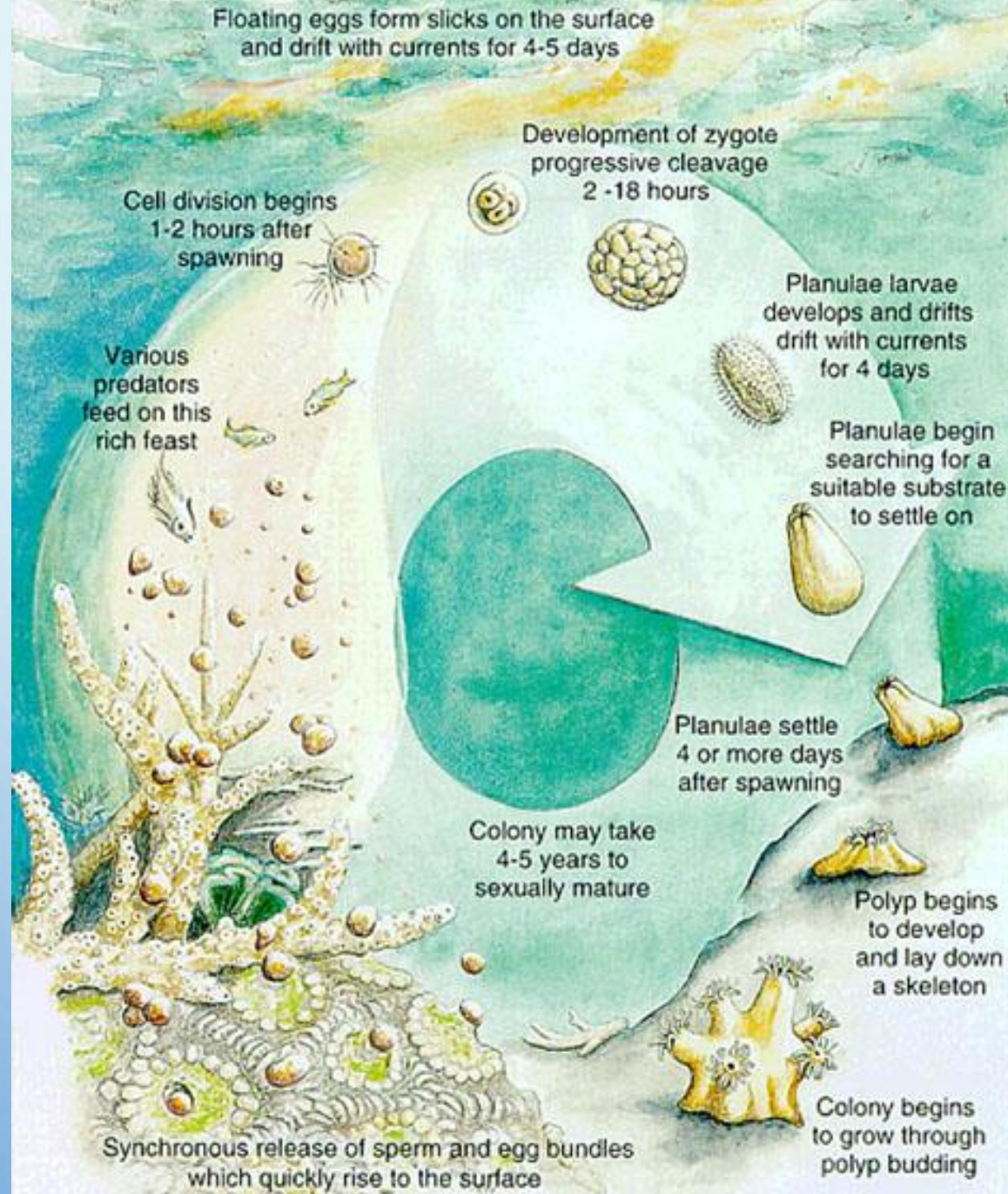
VS



Soft Coral

- TENTACLES IN MULTIPLES OF 8
- NO LIMESTONE SKELETON
- VERY FEW REEF BUILDERS
- RESILIENT
- BOTH COLONIAL AND SOLITARY
- BLEACH WHEN STRESSED
- NO TRACE AFTER DEATH

LIFE



CYCLE

Growth Forms and Rugosity



Branching



Tabular / Plate



Massive / Boulder



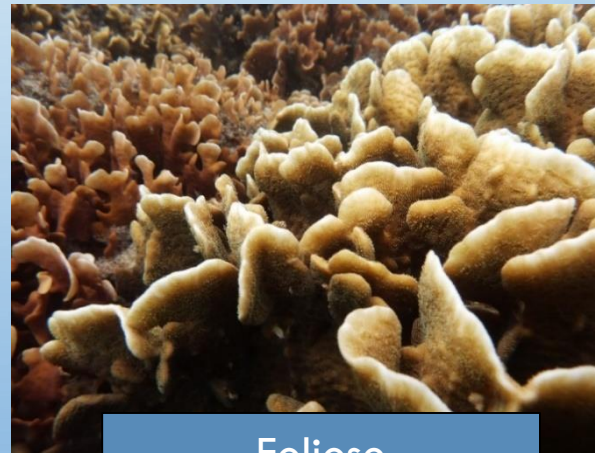
Mushroom



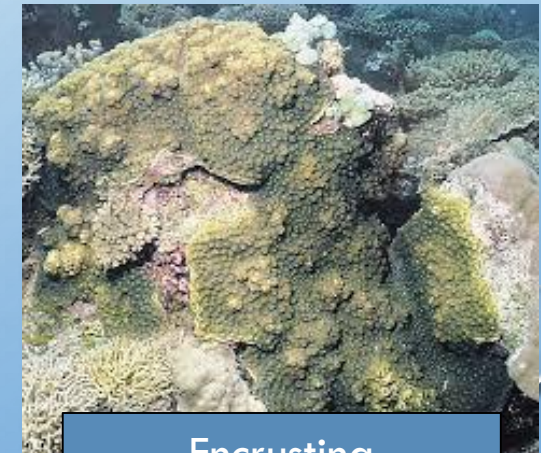
Soft



Sub-massive

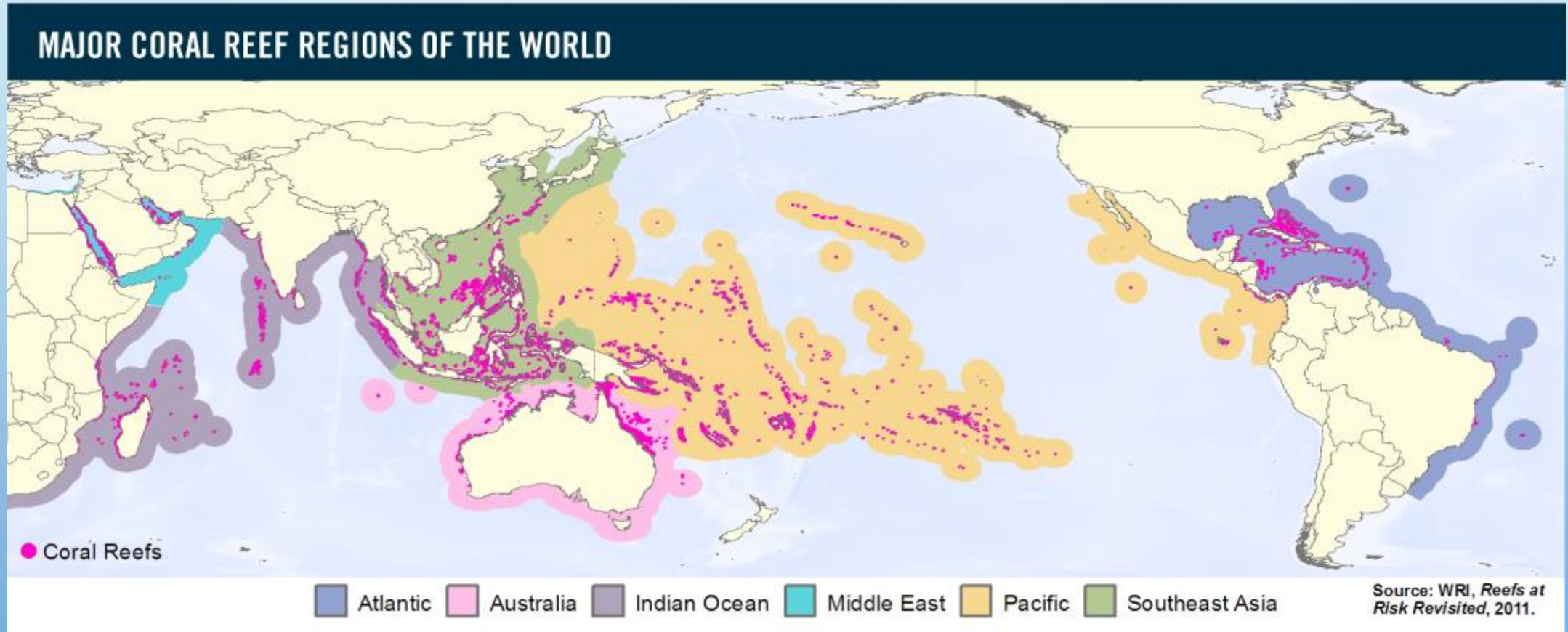


Foliose



Encrusting

WHERE DO THEY LIVE?



The Coral Triangle



- 600 types of coral
- 6/7 turtles
- > 2000 fish species
- Over 120 million people

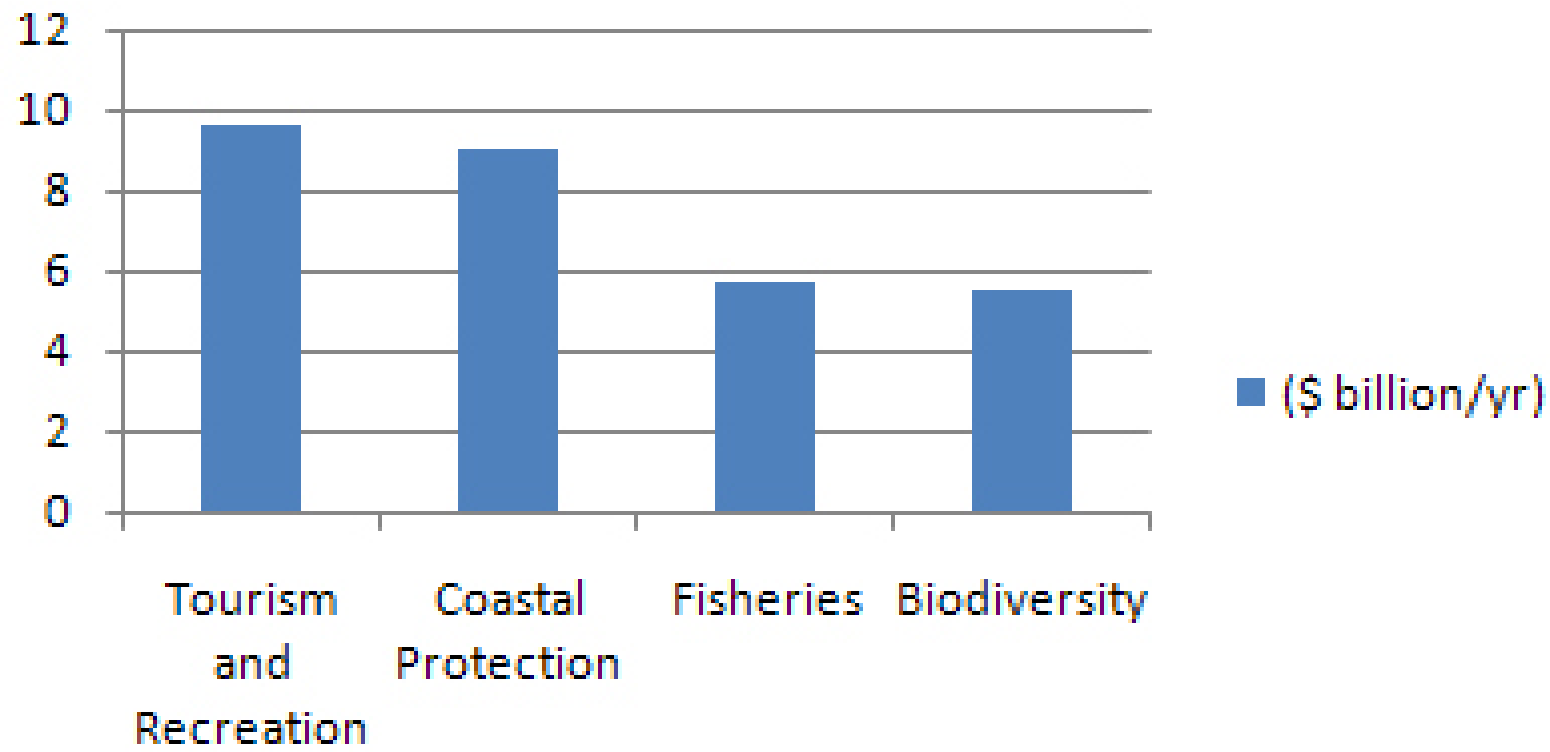
ECOSYSTEM SERVICES

Provisioning Services <i>-products obtained from ecosystems-</i> food – fish and shellfish genetic resources natural medicines and pharmaceuticals ornamental resources building materials	Regulating Services <i>-Benefits obtained from regulation of ecosystem processes-</i> erosion control storm protection	Cultural Services <i>-Nonmaterial benefits obtained from ecosystems-</i> spiritual and religious values knowledge systems / educational values inspiration aesthetic values social traditions sense of place recreation and ecotourism
Supporting Services <i>- Natural processes that maintain the other services</i> - sand formation - primary production		

Source: adapted from MA 2003

WHY ARE CORAL REEFS IMPORTANT?

Economic Value of Reefs



THREATS TO CORAL REEF

- Climate Change
- Tourism and Dredging
- Commercial Fishing
- Deforestation
- Coastal Development
- Pollution

Science

Science

Great Barrier Reef's third mass

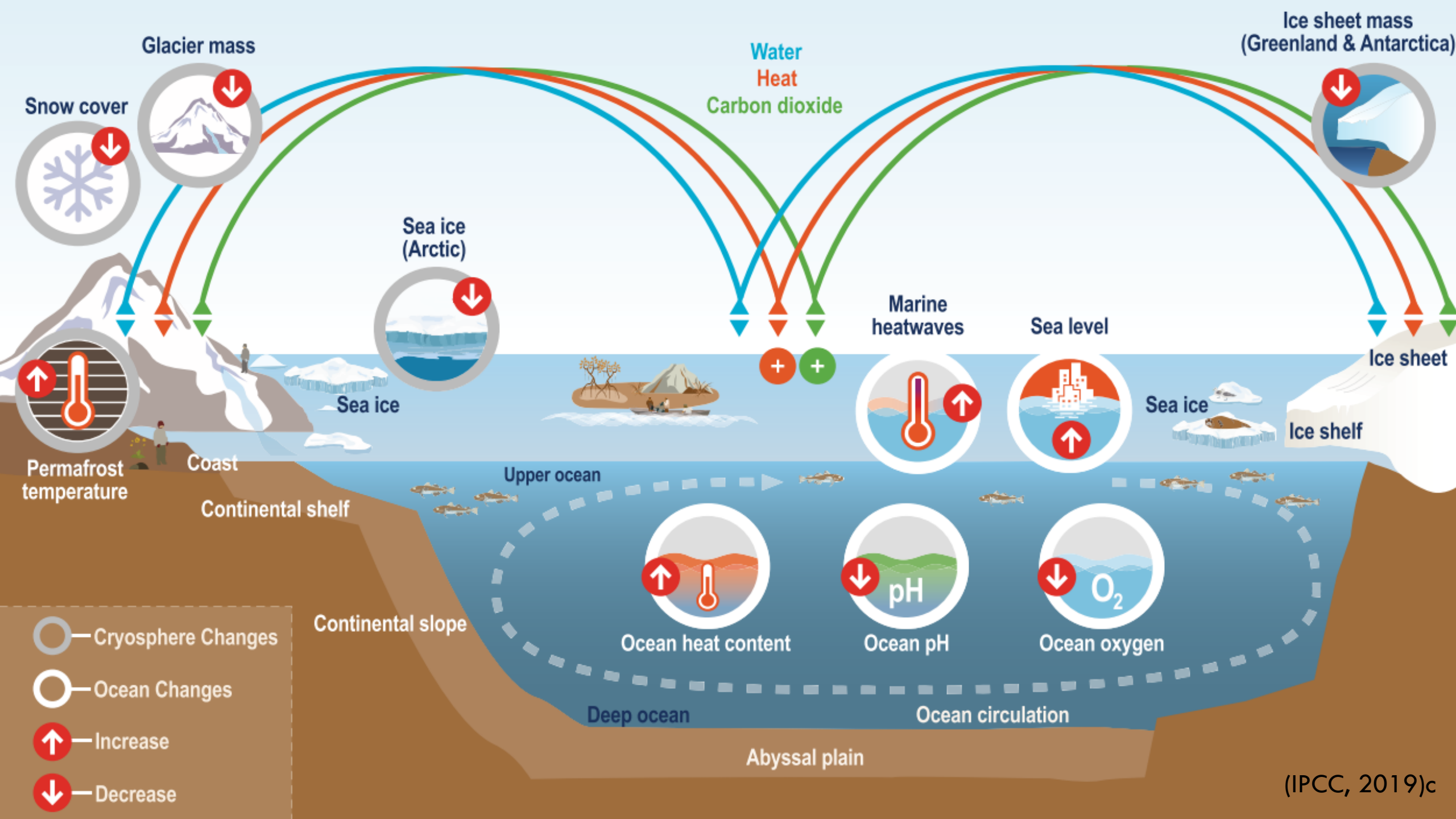
Coral Bleaching: What is it, how does it happen and how bad is it?

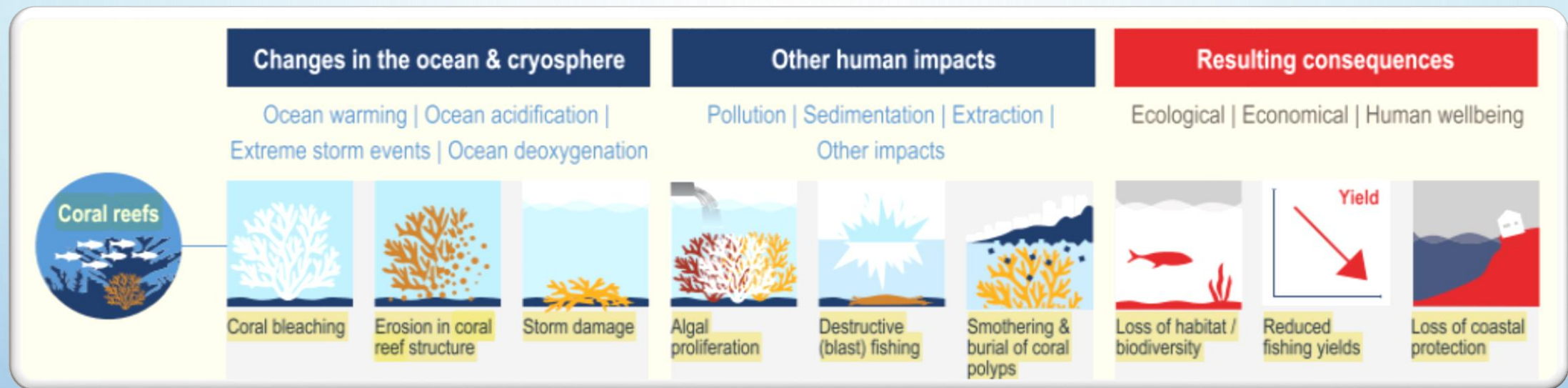
Climate Change, Human Impacts, and the Resilience of Coral Reefs
T. P. Hughes *et al*

Climate change, coral bleaching and the future of the world's coral reefs

ARTICLE in MARINE AND FRESHWATER RESEARCH · JANUARY 1999

Impact Factor: 2.25 · DOI: 10.1071/MF99078 · Source: OAI

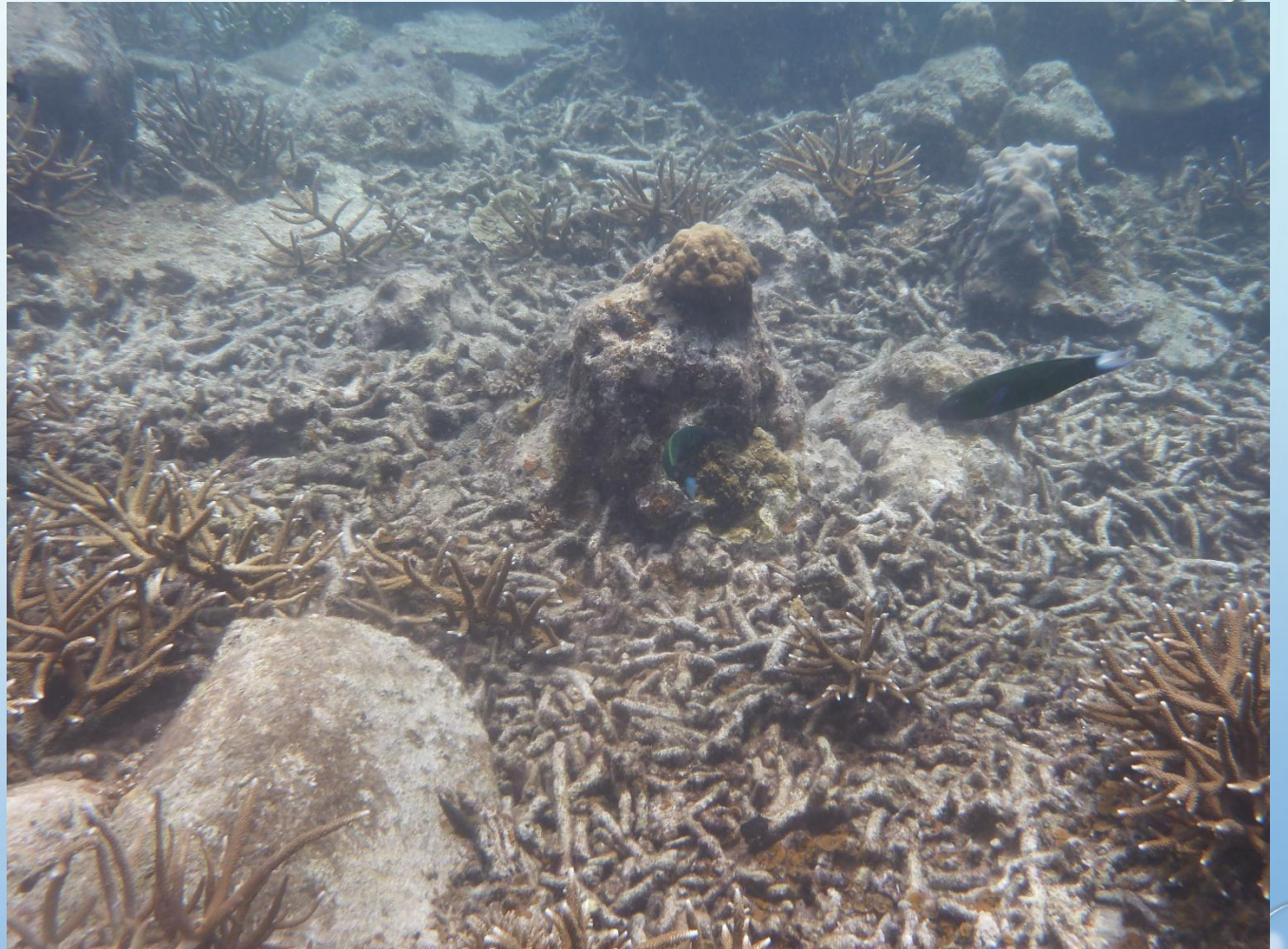




(IPCC, 2019)

OTHER THREATS

- TOURISM AND RECREATION
- COMMERCIAL FISHING
- DEFORESTATION
- COASTAL DEVELOPMENT
- POLLUTION



MANAGEMENT AND CONSERVATION

- PARIS AGREEMENT
- REEF RESILIENCE RESEARCH
- REEF RECOVERY RESEARCH
- TERRESTRIAL ECOSYSTEM MANAGEMENT
- EDUCATION AND AWARENESS
- LIFESTYLE CHOICES
- IMPROVED SUSTAINABLE PROTOCOLS FOR DEVELOPMENT / FISHING / FARMING
- ARTIFICIAL REEF CREATION

Think Global, Act Local.

CORAL REEF RESILIENCE

Resilience is defined as the ability of a system to maintain key functions and processes in the face of stresses or pressures by resisting to and then recovering or adapting to change (Holling 1973)

