MAPPING THE DISTRIBUTION OF DEEP-SEA CORALS IN THE NORTHERN GULF OF ST. LAWRENCE USING BOTH SCIENTIFIC AND LOCAL ECOLOGICAL KNOWLEDGE

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INTRODUCTION

- More than 30 species of deep-sea coral occur in the Newfoundland and Labrador region.[1]
- Most corals occur on hard substrates along the shelf-slope break and where water temperatures remain above 0°C year-round.
- Information on the species of deep-sea coral present, their distribution and their importance to Gulf fisheries is limited.
- The Gulf of St. Lawrence contains a number of deep-water channels containing Labrador slope water which remains above 0˚C year-round.
- Bottom-trawling, long-lining and other gear-types may threaten deep-sea corals in the Northern Gulf in terms of physical damage, habitat alteration and coral bycatch.[2,3]

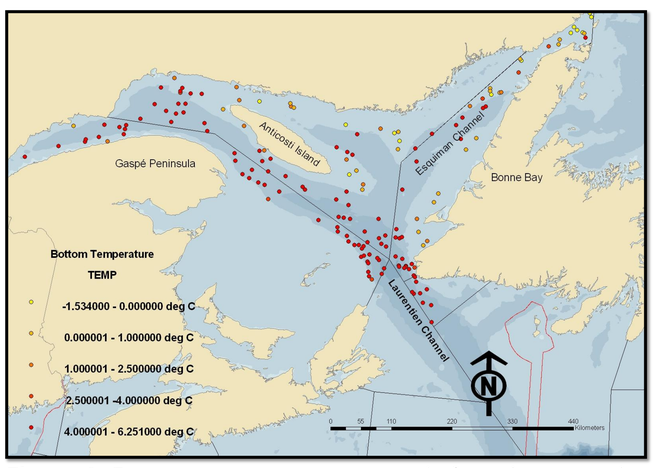


Figure 1: Bottom temperature records for where coral was caught as bycatch in DFO groundfish surveys

OBJECTIVES

- Determine which species of deep-sea coral are present in the Northern Gulf.
- Determine species distributions.
- Determine temporal changes in the abundance of deep-sea coral.
- Assess the opinions of local fishermen on the importance of deep-sea corals and their conservation.

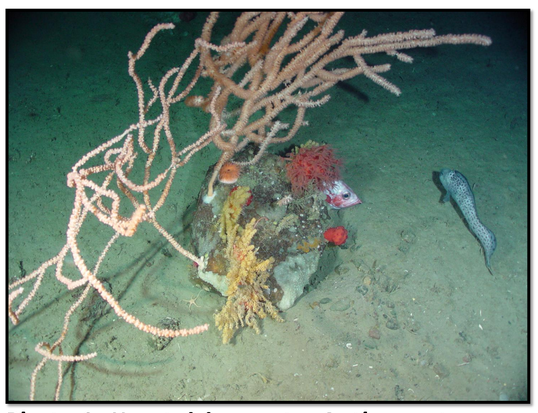


Photo 1: *Keratoisis ornata*, *Anthomastus gradiflorus* and *Acanthogorgia armata* with redfish sp. and wolffish sp.
(670m, Haddock Channel, SW Grand Banks)

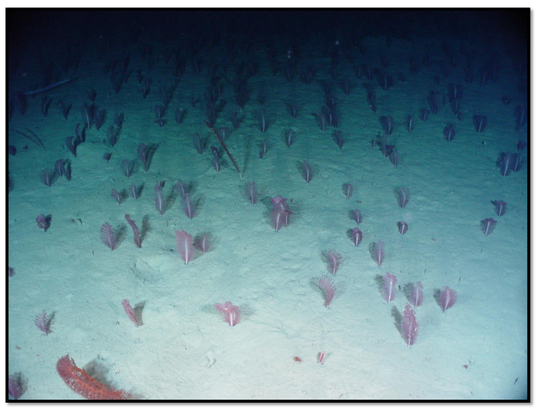


Photo 2: Sea pen meadow (*Pennatula grandis*)
(900m, Desbarres Canyon, SW Grand Banks)

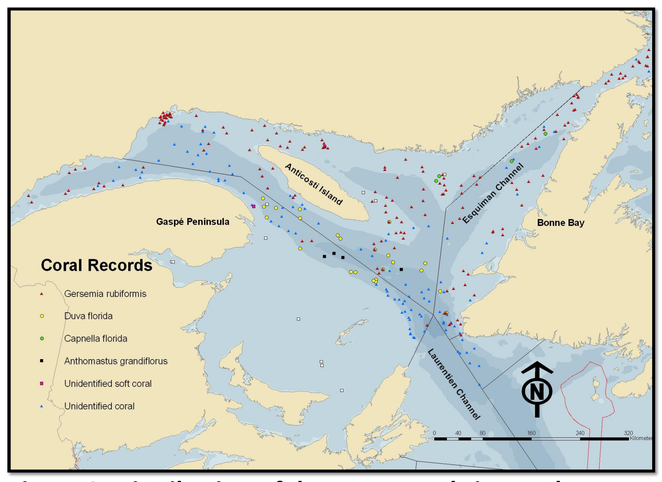


Figure 2: Distribution of deep-sea corals in Northern Gulf from DFO groundfish survey and fisheries observer records

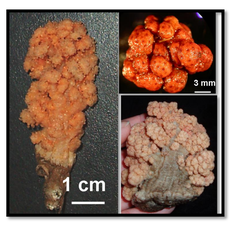
METHODS

- The distribution of deep-sea coral in the Northern Gulf and the associated changes in abundance are being determined using three sources of information:
  (i) Groundfish survey bycatch records from the Department of Fisheries and Oceans (DFO).
  (ii) Fisheries observer bycatch records from DFO.
  (iii) Interviews with Northern Gulf fishermen.
- The deep-sea coral distribution data is being combined with habitat characteristics (i.e. bottom temperatures, modeled bottom currents) in ArcMap.

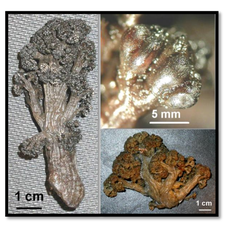
SPECIES OF DEEP-SEA CORAL KNOWN TO OCCUR IN THE NORTHERN GULF

Anthomastus grandiflorus

Gersemia rubiformis



Capnella florida



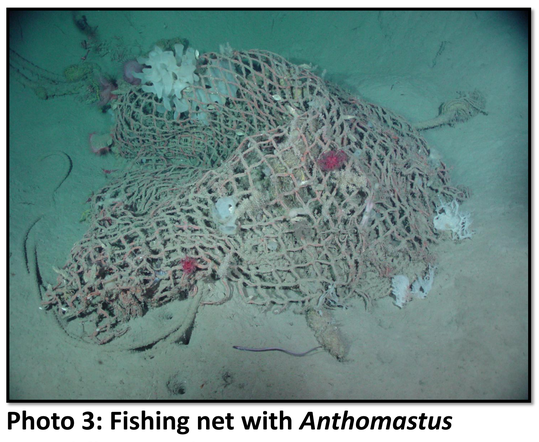


Photo 3: Fishing net with *Anthomastus grandiflorus* and sponges
(900m, Desbarres Canyon, SW Grand Banks)

WHY INCLUDE FISHERMEN IN SCIENCE?

- Local resource users' extensive knowledge of the marine environment can complement current scientific knowledge.[4,5]
- Community-based research directly involves local fishermen in the research process, giving them input on future management decisions.
- Fishermen can provide information on changes in deep-sea coral abundance over time due to fisheries impacts.[5,6]

DISTRIBUTION AND ECOLOGY OF NEPTHEID SOFT CORALS IN BONNE BAY

- Neptheids are soft water corals found in cold-water regions of the Northern Hemisphere.[7]
- Individual colonies can be either pink or white in color.
- On-going study out of the Bonne Bay Marine Station including both SCUBA-based and lab-based experiments to determine:
  (i) Distribution and depths of soft corals in Bonne Bay.
  (ii) Diel patterns in polyp expansion.
  (iii) The effects of internal waves on polyp behavior.
  (iv) Species interactions with soft corals.

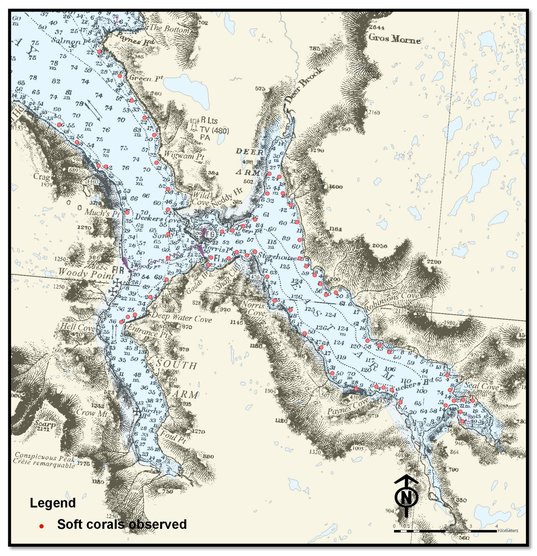


Figure 3: Distribution of neptheid soft corals in Bonne Bay as observed by a local marine scientist via SCUBA

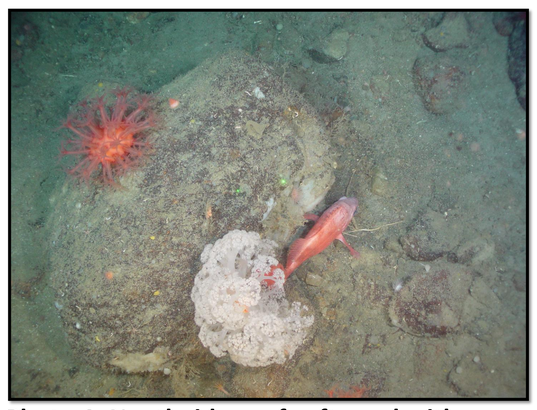


Photo 4: Neptheid sp. of soft coral with *Anthomastus grandiflorus* and redfish sp.
(540m, Haddock Channel, SW Grand Banks)

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