

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}

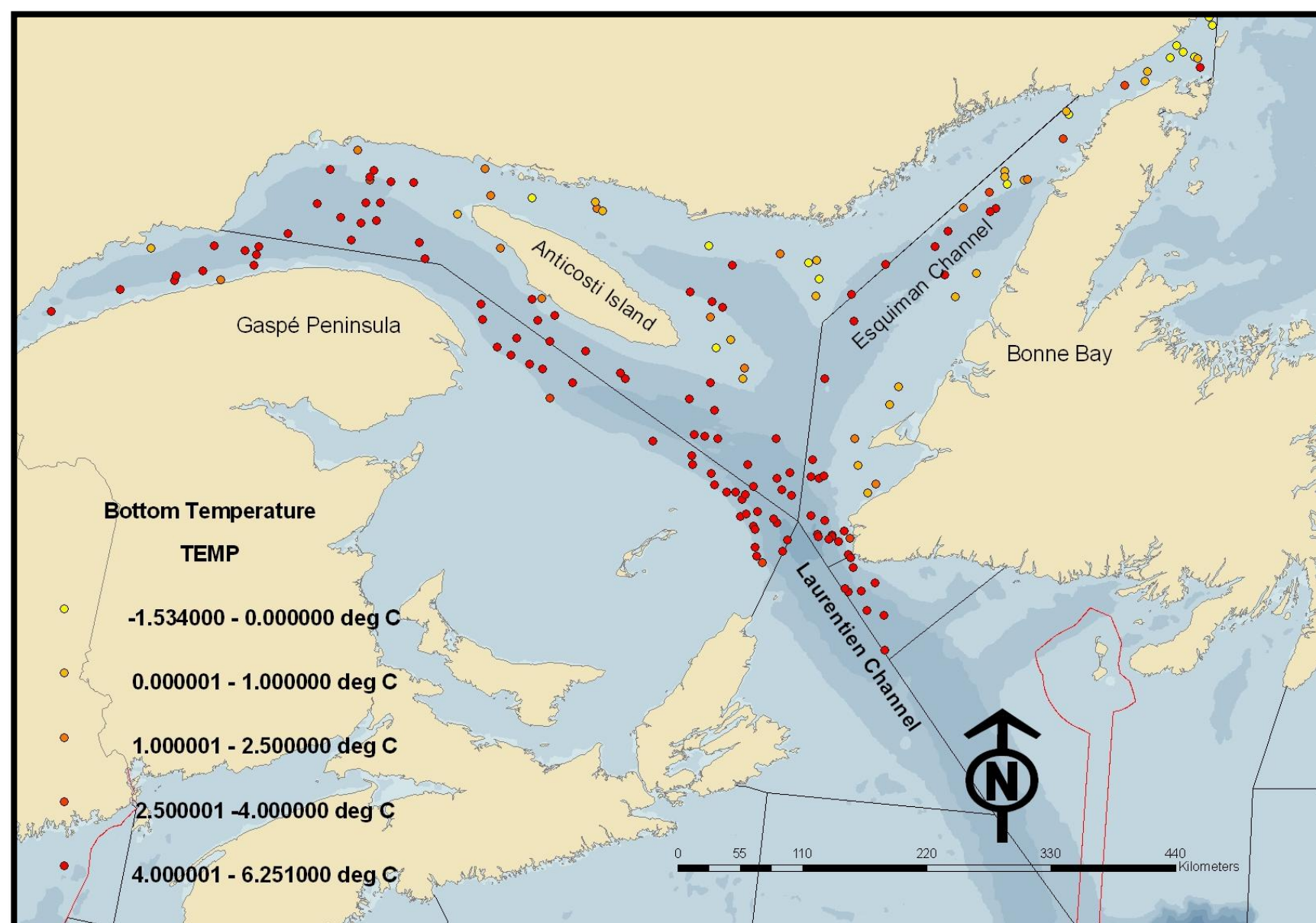


Figure 1: Bottom temperature records for where coral was caught as bycatch in DFO groundfish surveys

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.

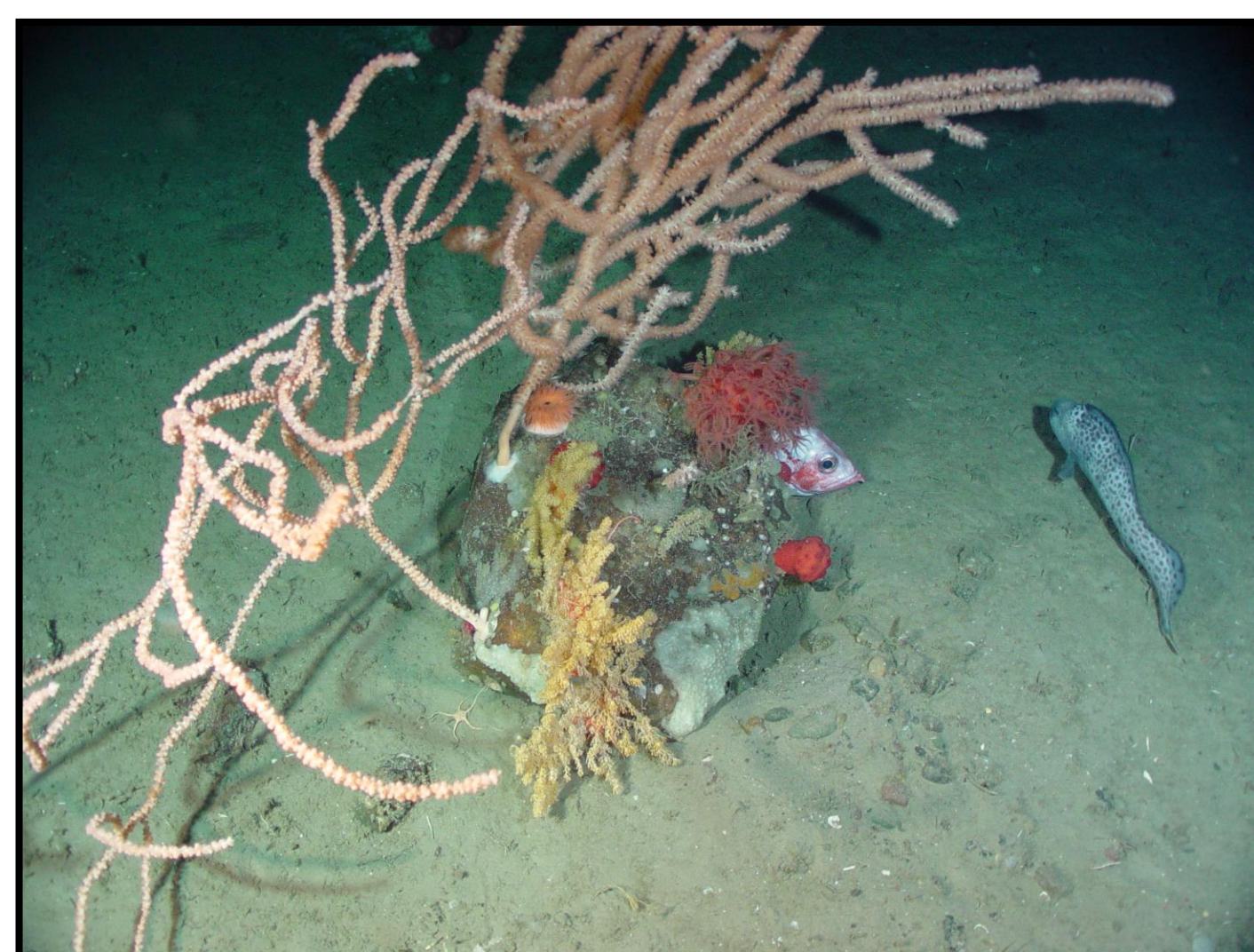


Photo 1: *Keratois ornata*, *Anthomastus gradiflorus* and *Acanthogorgia armata* with redfish sp. and wolffish sp. (670m, Haddock Channel, SW Grand Banks)

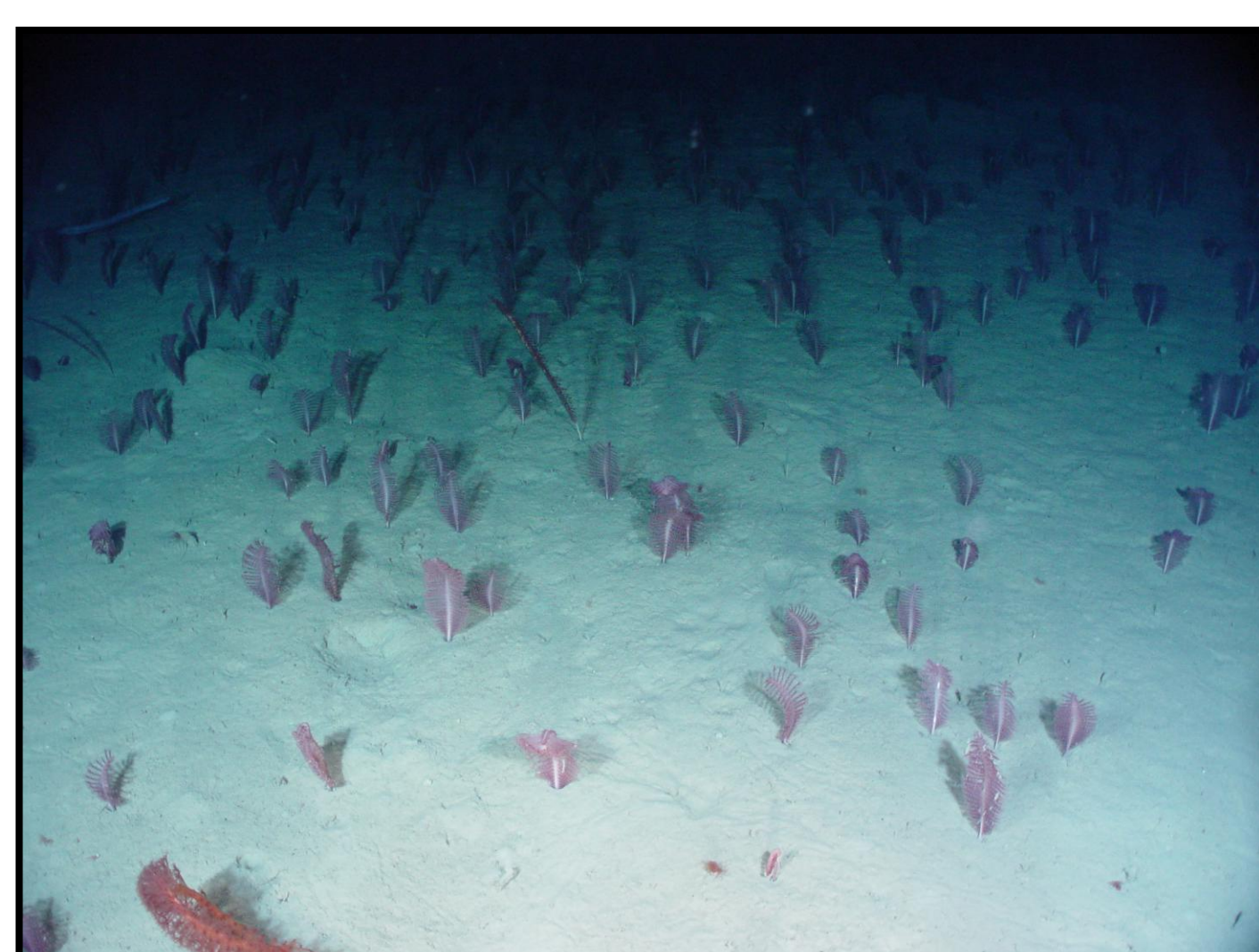


Photo 2: Sea pen meadow (*Pennatula grandis*) (900m, Desbarres Canyon, SW Grand Banks)

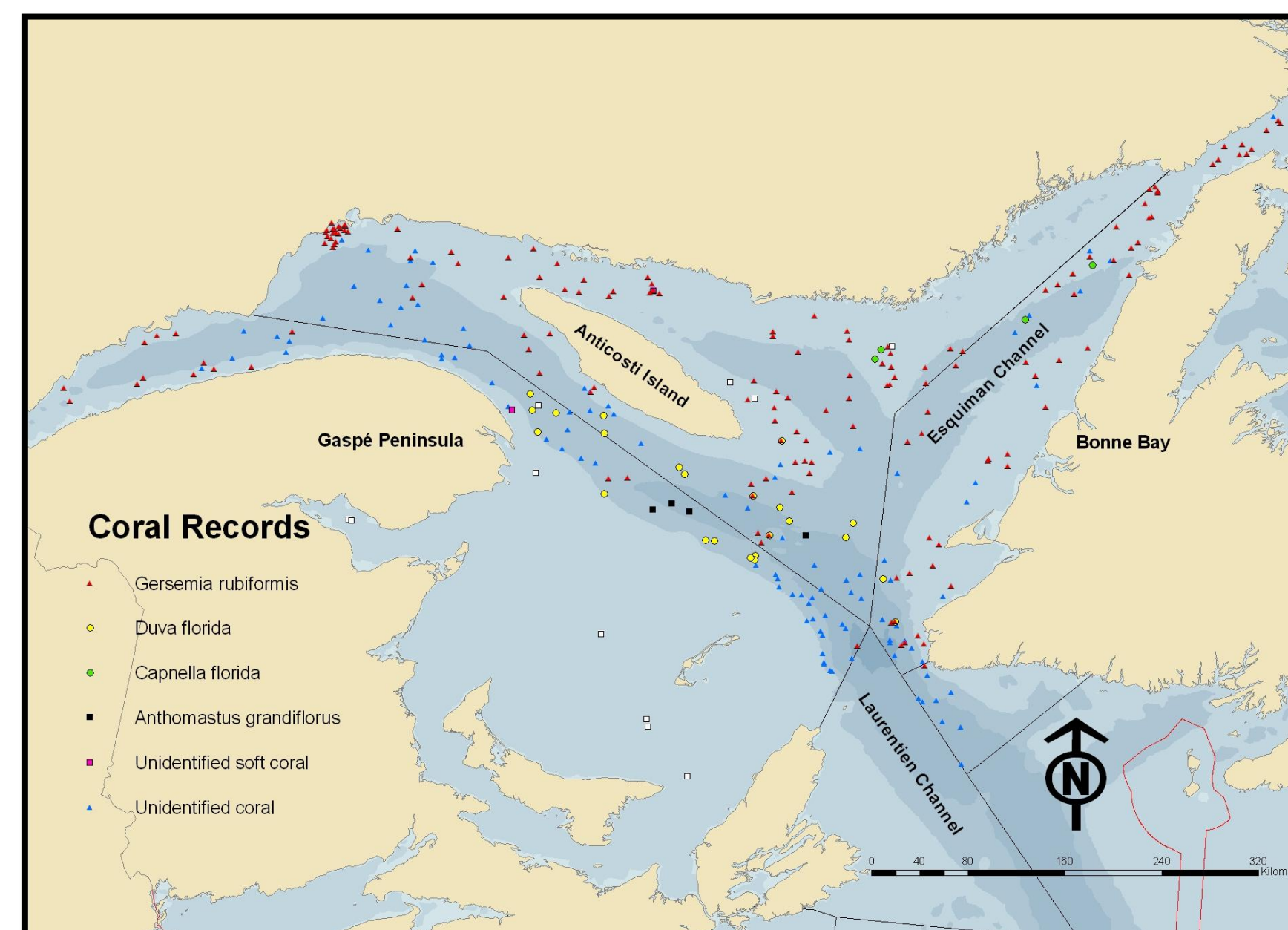


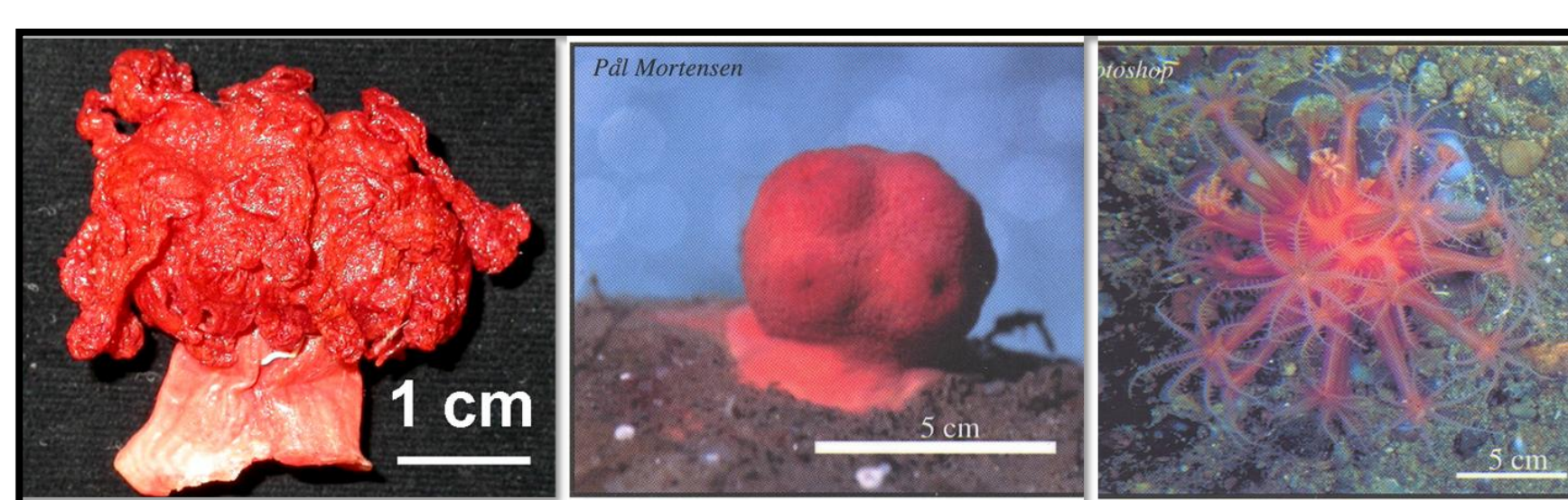
Figure 2: Distribution of deep-sea corals in Northern Gulf from DFO groundfish survey and fisheries observer records

METHODS

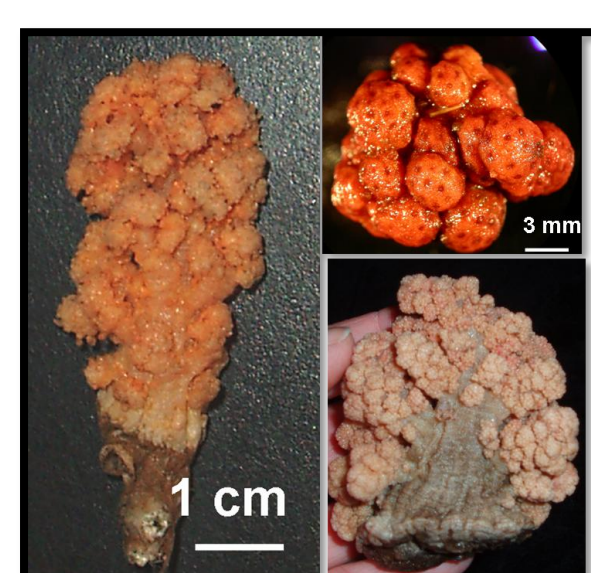
- The distribution of deep-sea coral in the Northern Gulf and the associated changes in abundance are being determined using three sources of information:
 - Groundfish survey bycatch records from the Department of Fisheries and Oceans (DFO).
 - Fisheries observer bycatch records from DFO.
 - Interviews 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

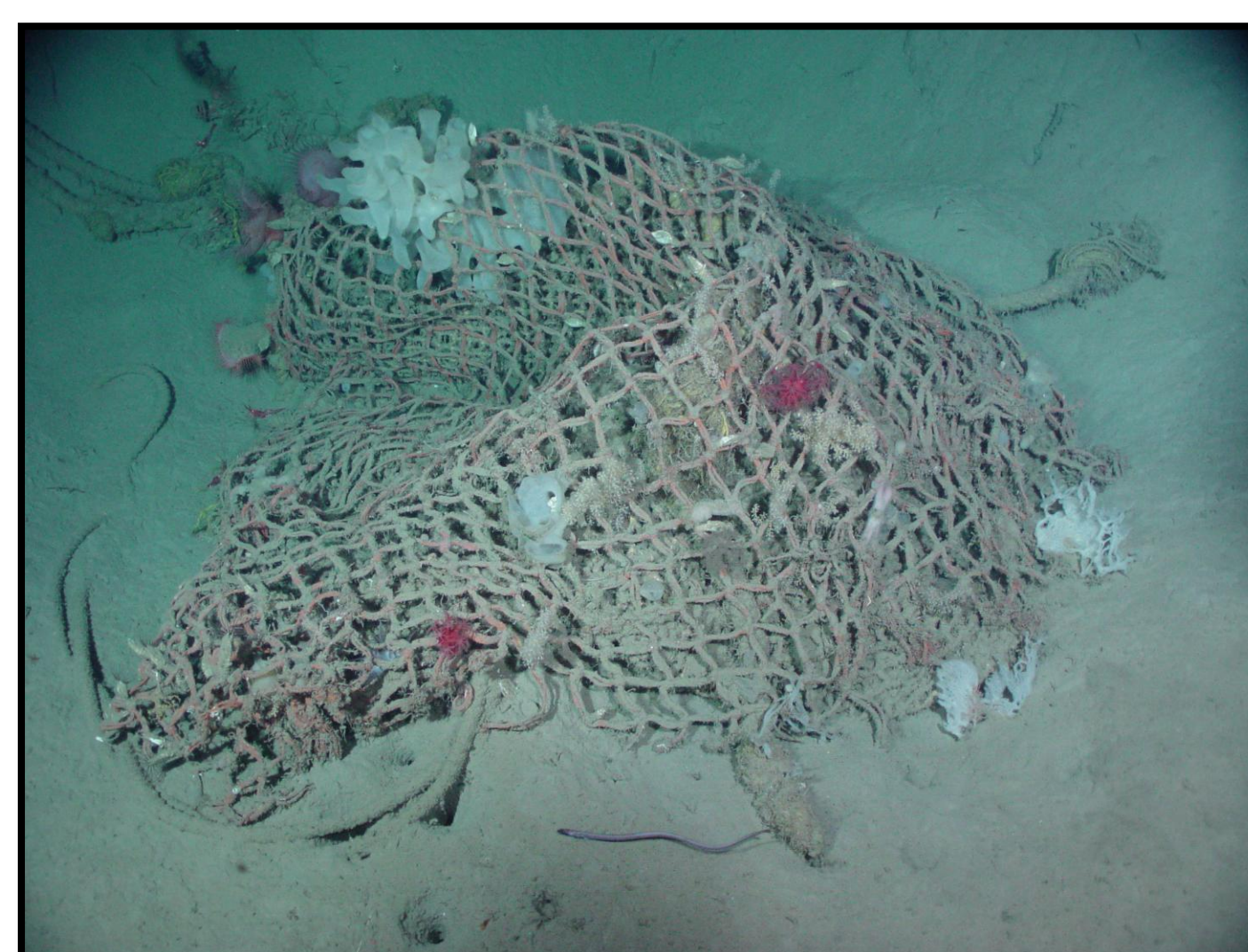
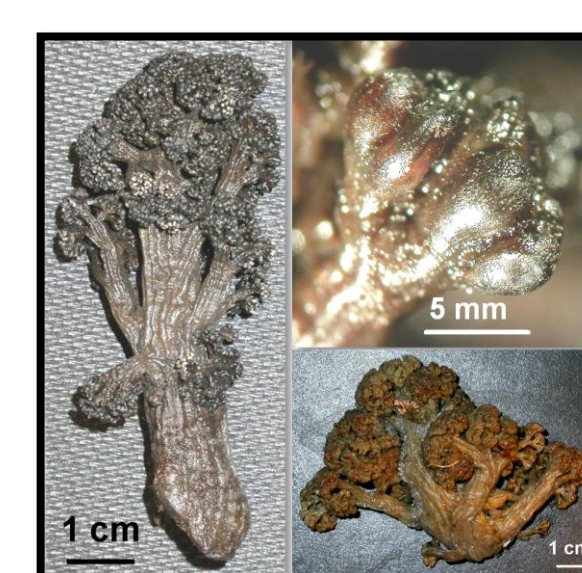


Photo 3: Fishing net with *Anthomastus grandiflorus* and sponges (900m, Desbarres Canyon, SW Grand Banks)

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:
 - Distribution and depths of soft corals in Bonne Bay.
 - Diel patterns in polyp expansion.
 - The effects of internal waves on polyp behavior.
 - Species interactions with soft corals.

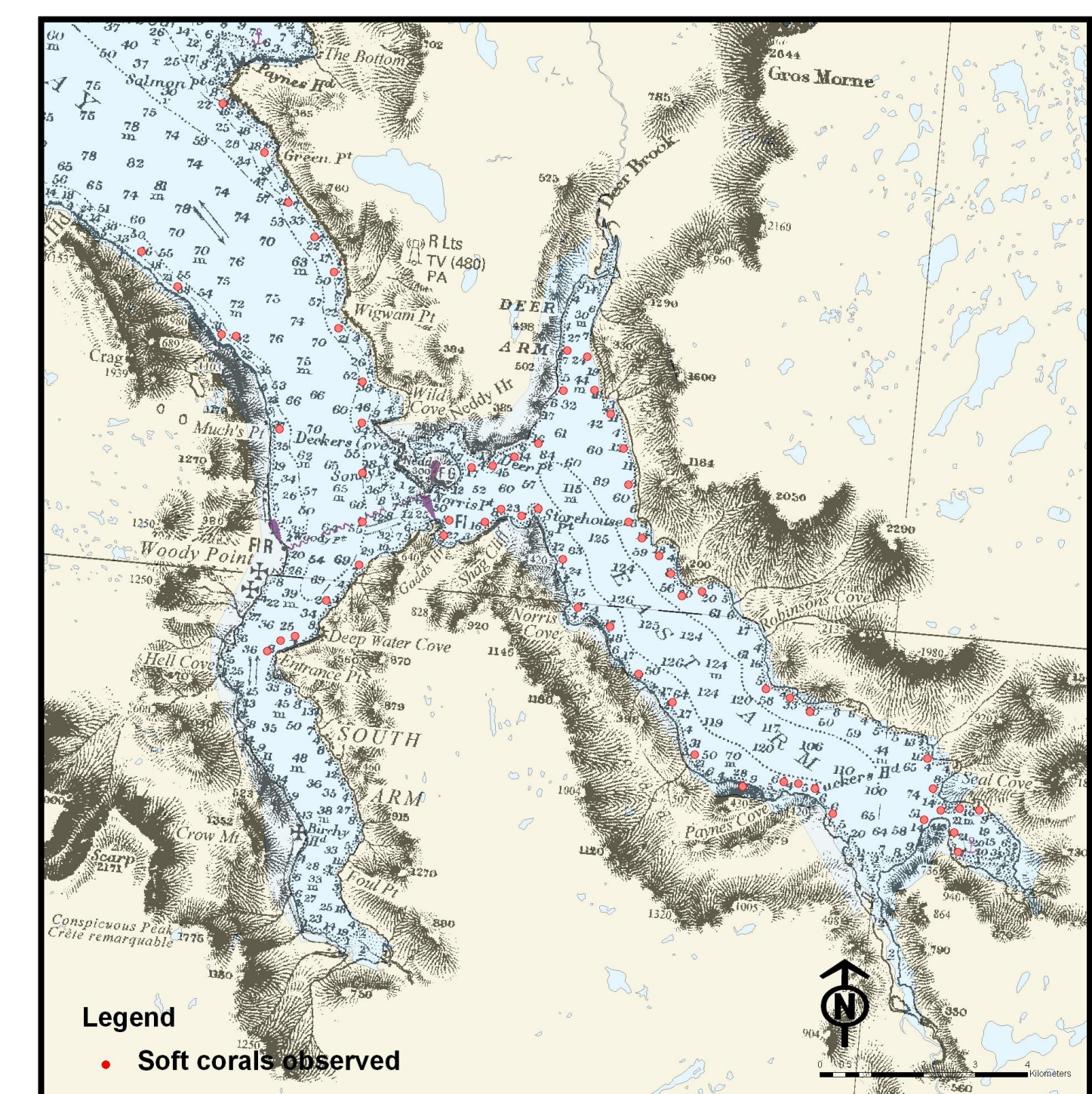


Figure 3: Distribution of neptheid soft corals in Bonne Bay as observed by a local marine scientist via SCUBA

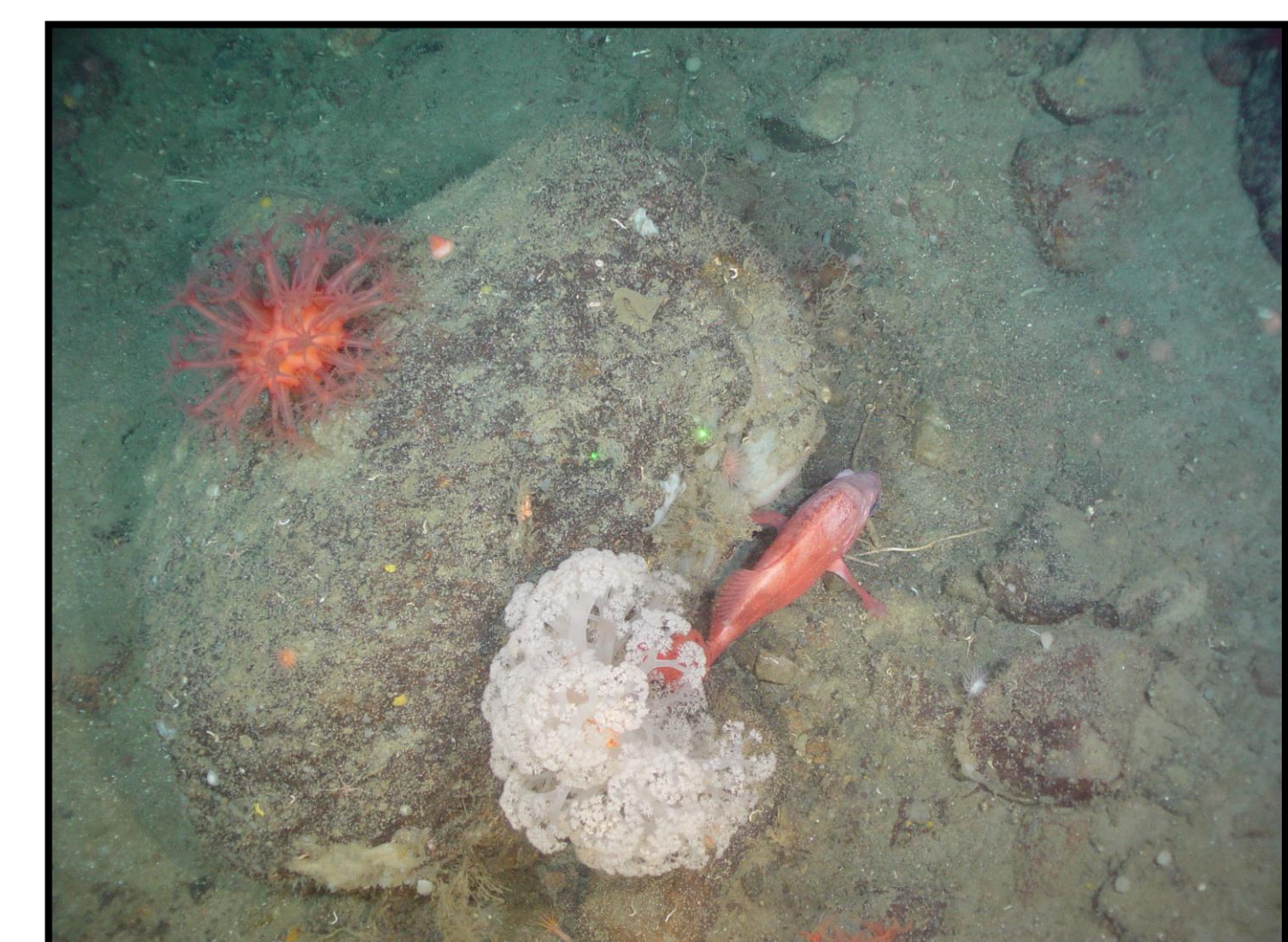


Photo 4: Neptheid sp. of soft coral with *Anthomastus grandiflorus* and redfish sp. (540m, Haddock Channel, SW Grand Banks)

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