

New creatures, new information from the Gulf of Maine

BY MELISSA WATERMAN

The Gulf of Maine has been the site of explorations by Europeans and Americans for more than 400 years. Yet until Henry Bigelow set sail in 1912 aboard the *Grampus* for his twelve-year study of the Gulf, little was known about the creatures that live here. Bigelow's pioneering work set the stage for many years of additional contributions from scientists who have studied the Gulf of Maine. Another milestone was set this year.

In October, the global ten-year Census of Marine Life completed its efforts to greatly expand our knowledge of species found in the world's oceans. In the Gulf of Maine that work was conducted by a battalion of Canadian and U.S. scientists, coordinated by Dr. Lew Incze of the Aquatic Systems Group at the University of Southern Maine.

"There was no public resource on Gulf species that was easy to access by non-experts," Incze recalled as he trolled through papers in his office in the Gulf of Maine Research Institute in Portland. "We were at a meeting in Woods Hole and I think it was oceanographer Les Watling [then at the University of Maine Darling Center] who asked the question: How many named species are there in the Gulf of Maine anyway?" The group pondered the question and made an educated guess: perhaps 2,000 species had been identified as living in the Gulf.

When the Gulf of Maine was chosen as one of the project areas of the Census of Marine Life, Incze and colleagues were able to test their answer. With financial support from the Alfred P. Sloan Foundation, which underwrote the international Census program, and other sources of funding, the scientists set out to discover what currently lives in the Gulf of Maine and to make that information readily available to the public.

Part of the work involved digging into old data. "We looked at museum collections, existing databases, and existing data. The researchers began by the Huntsman in St. Andrews, New

It's important to keep all our options open. Biodiversity represents our inherited biological legacy

involved digging into old cruise reports, scientific literature, es" Incze explained. building upon the Bay Marine Species" be-Marine Science Center Brunswick. Bit by bit,

additional species were added to the list.

"A lot of it is mining and organizing information and updating names," Incze explained. Taxonomic names change as more is learned about specific species and their relationship to other species. "The names were around someplace but mostly in unpublished works," he said.

Scientific cruises also resulted in the discovery of hitherto unknown species living in the Gulf of Maine area, mostly in deeper offshore regions. Several cruises were conducted by the Canadian Department of Fisheries and Oceans (DFO) through a new "Discovery Corridor" program specifically designed to expand knowledge of marine biodiversity. "Canada was very progressive in thinking about biodiversity as an important aspect of ocean management," Incze commented.

The U.S. National Oceanic and Atmospheric Administration (NOAA) staged several cruises through its Office of Ocean Exploration to study seamounts in the Gulf of Maine, and other NOAA studies were already in the works to look at the continental slope south of Georges Bank. Additional scientific work was completed in Jordan Basin and elsewhere.

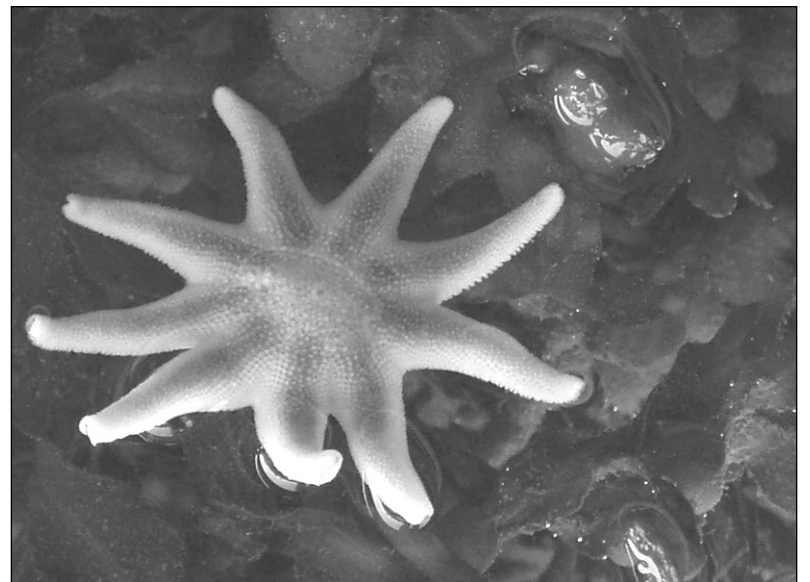
"Ultimately, the Census did new things but also incorporated ongoing work by many collaborators," Incze said. "Scientists had been to these places before, but this time we came with new tools and technology." Among the new discoveries were several species of deepwater coral, one of which lives a mile below the water's surface.

Incze emphasized that the Census of Marine Life was not so much about naming everything found in the Gulf as it was about gaining understanding of the Gulf's complexity. "We understand a lot about the dominant organisms in the Gulf, but they are supported by a huge diversity and abundance of smaller ones that we don't understand very well. When you try to manage complex systems you are really managing biodiversity, but we don't know how it is changing or what that means for the future of the Gulf," he said.

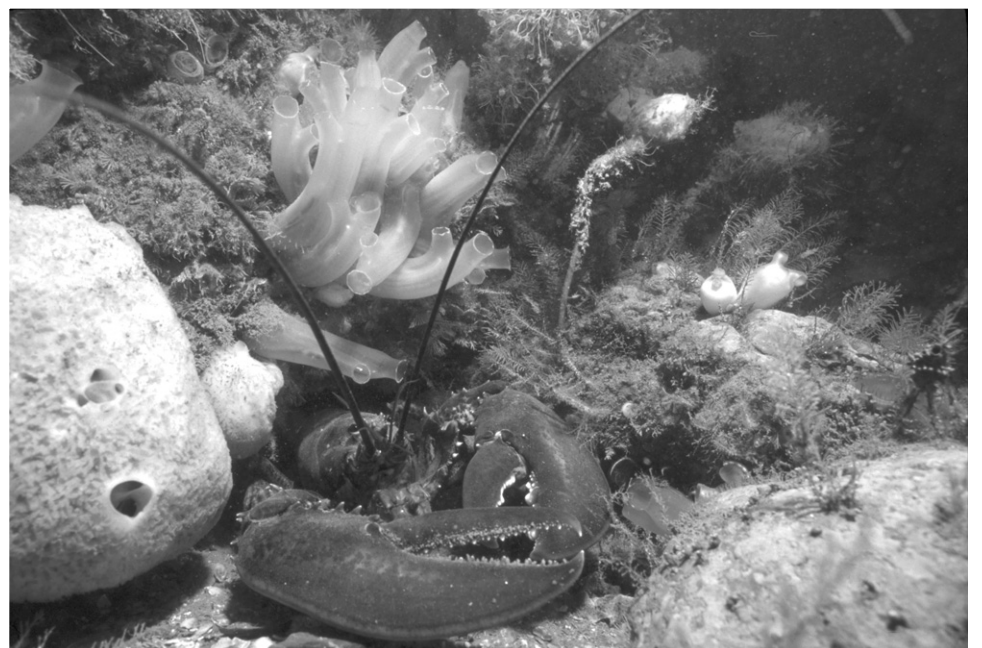
At the close of the ten-year effort, Incze and colleagues have now catalogued more than 4,000 named marine species found in the Gulf of Maine, double the original estimate. The names are being added to the growing Gulf of Maine Register of Marine Species housed at the Centre for Marine

Biodiversity in the Bedford Institute of Oceanography in Dartmouth, Nova Scotia. Over half a million records of Gulf species and locations are now accessible through the Ocean Biogeographic Information System, to be used by scientists, resource managers and curious members of the public.

According to Incze, there are no immediate plans to conduct a second census. "It's time to digest the findings," he said. "This has created a lot of focus on the need to understand patterns and functions in the Gulf. The Gulf's complexity exists for a reason and since we don't yet know all about it, it's important to keep all our options open. Biodiversity represents our inherited biological legacy."



Above, nine-armed sea star; below, a shy lobster nestled on the sea floor. Photos courtesy of Dr. Lew Incze, University of Southern Maine.



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