



**NOAA
FISHERIES**

Northeast Regional Initiative 2013–2015

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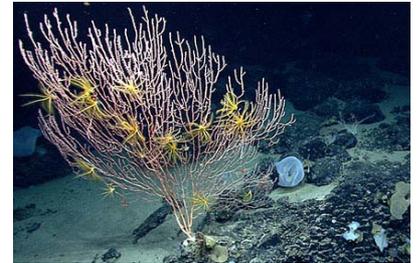
Rich Langton - NEFSC

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Paul Ticco - Marine Sanctuaries

John Tomczuk/Jeremy Potter - OER



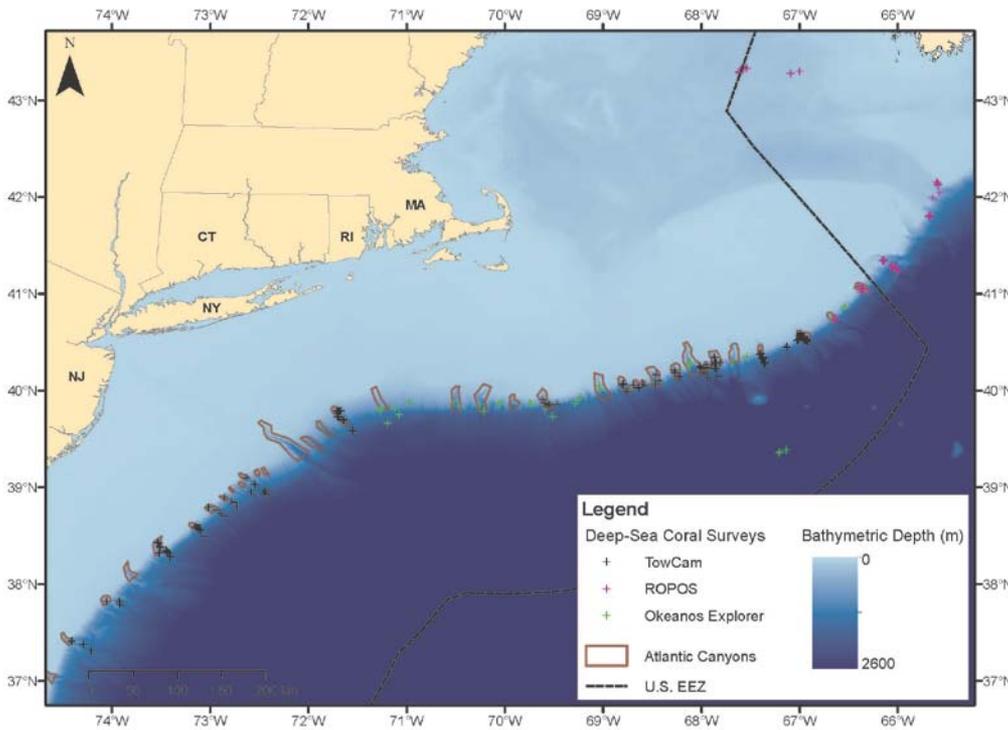
Objectives of the Initiative

- Location and characterization of deep-sea coral habitats
 - Field work
 - Predictive modeling
- Biology, biodiversity, ecology of deep-sea corals
 - Taxonomy
 - Reproduction
 - Age/growth
 - Connectivity

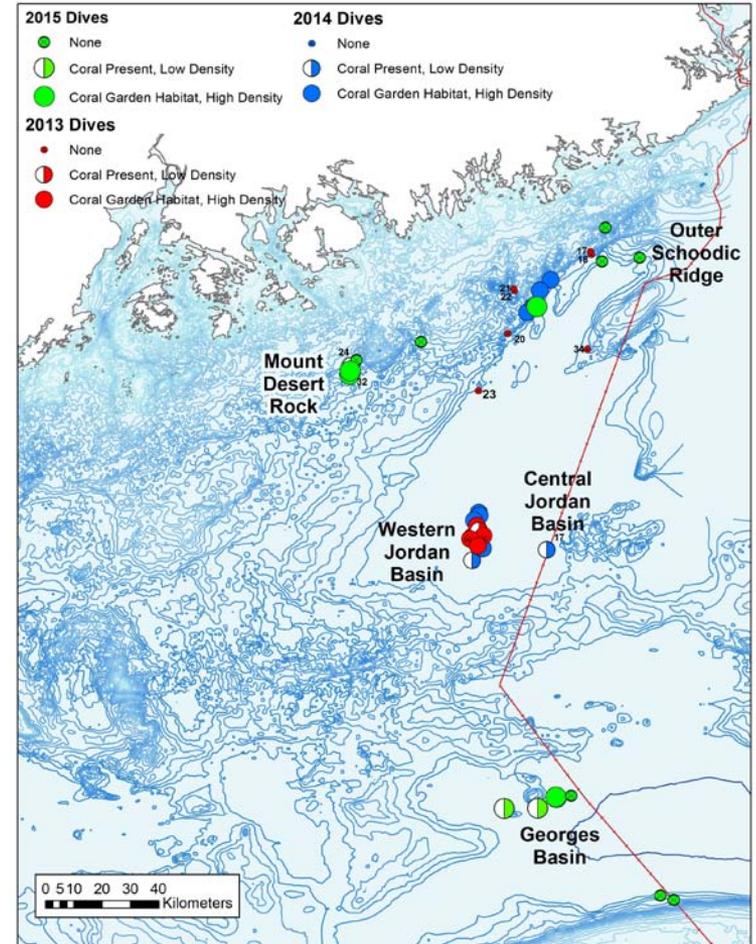
Summary of Work

Canyons

Canadian Collaboration



Gulf of Maine

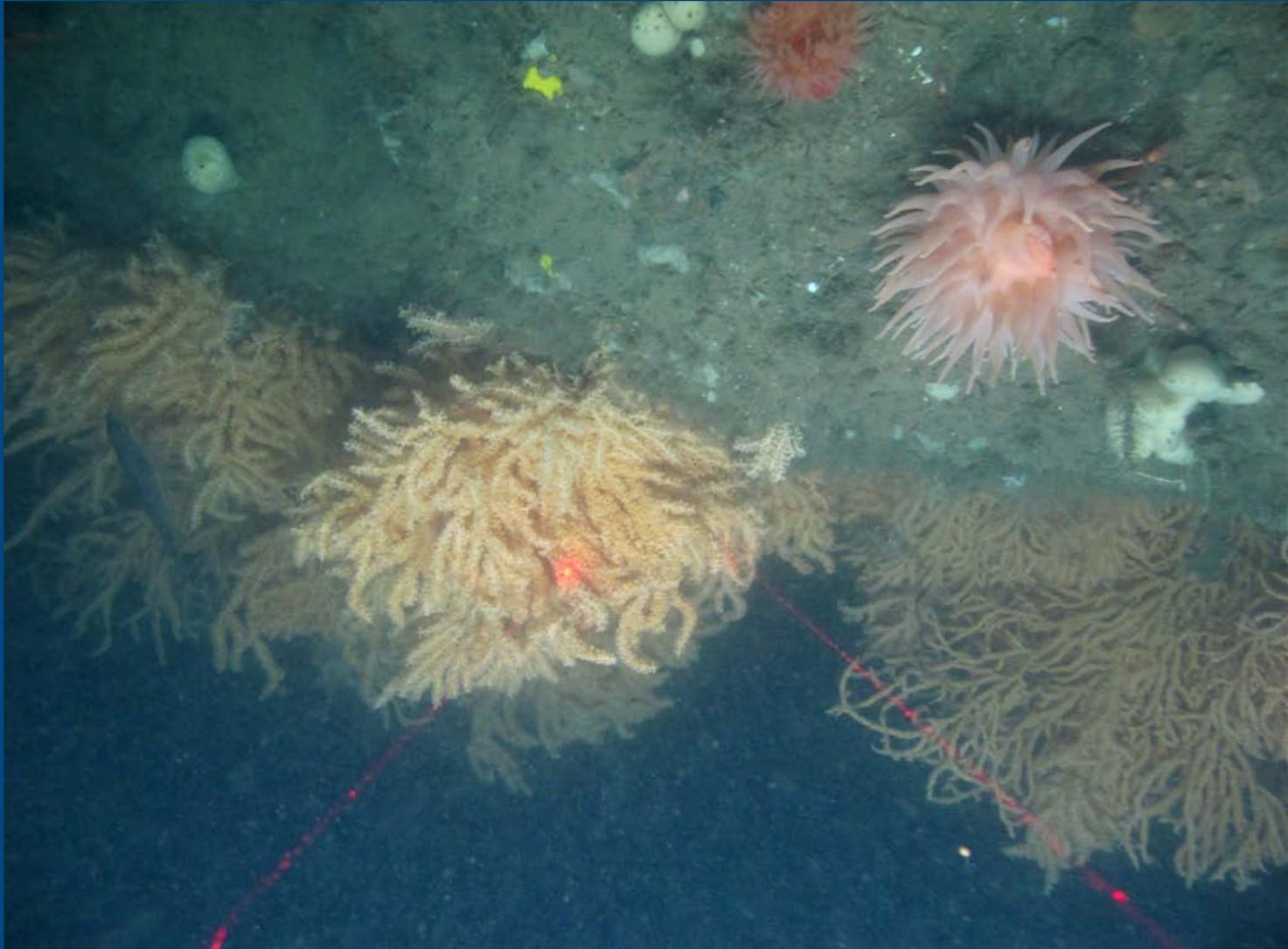


Summary of Work

- 9 cruises
- 151 camera tows
- 52 ROV dives
- 1002 hrs of video
- 39,011 frame grabs
- 188,579 images (60% bottom)
- 250 specimens collected for taxonomy, age/growth, reproduction, and genetics
- Habitat suitability model/groundtruthing
- Coral gardens discovered in < 200 m depth in Gulf of Maine
- 31 canyons/ 1 seamount surveyed
- Patterns of coral distribution and abundance revealed between and within canyons



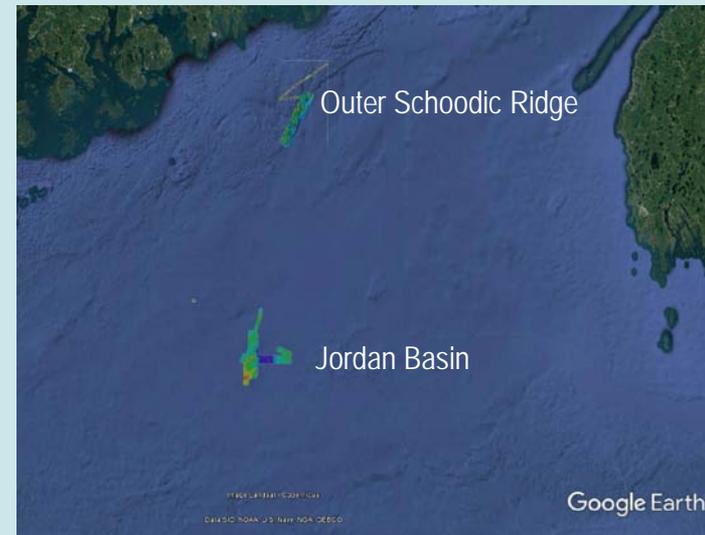
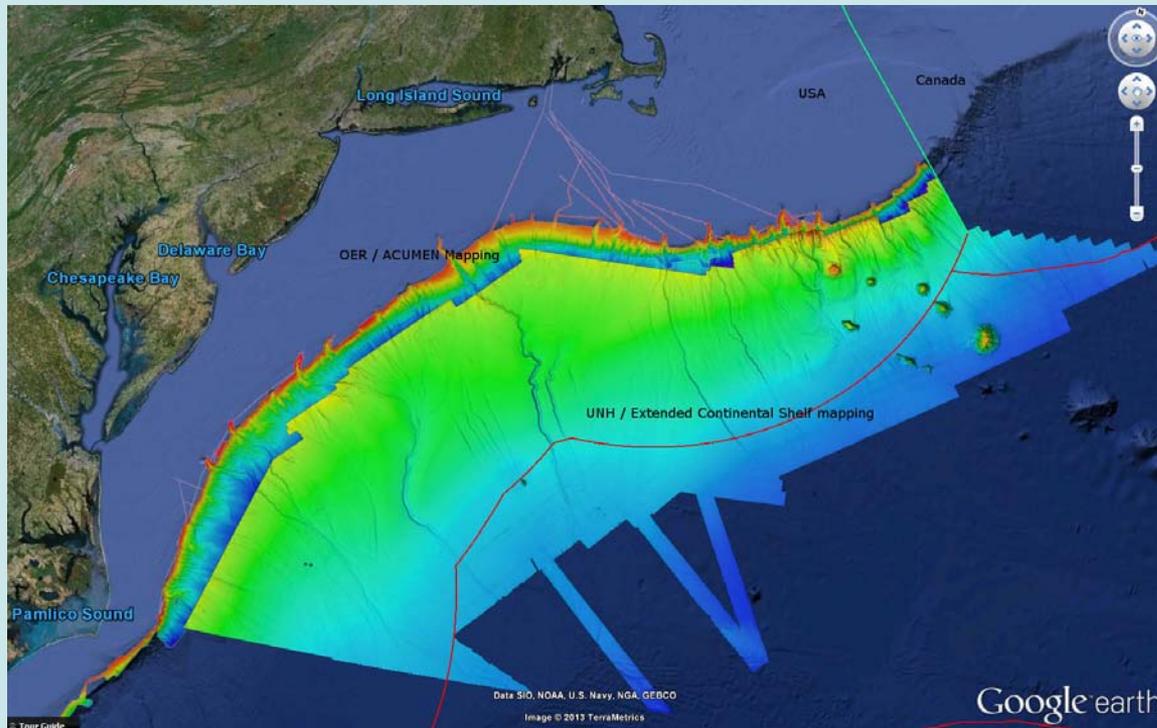
Outer Schoodic Ridge



Results

- Combination of towed camera and ROV operations allowed for increased number of surveys at lower costs to collect much needed contemporary data
- Used habitat suitability model to guide sampling and to increase efficiency of locating corals
- Majority of projects exceeded expectations in data collection. Corals confirmed and identified in a variety of habitats and locations
- Information used directly by MAFMC and NEFMC to inform decision making
- Many projects were adaptive – success lies in the ability to roll with the punches; targets selected to meet council needs
- Collaborations and partnerships stretched research dollars
- Specimens collected used in five additional studies
- Need for data capture outweighed need to hire dedicated staff, but this choice had its consequences

Multibeam Mapping

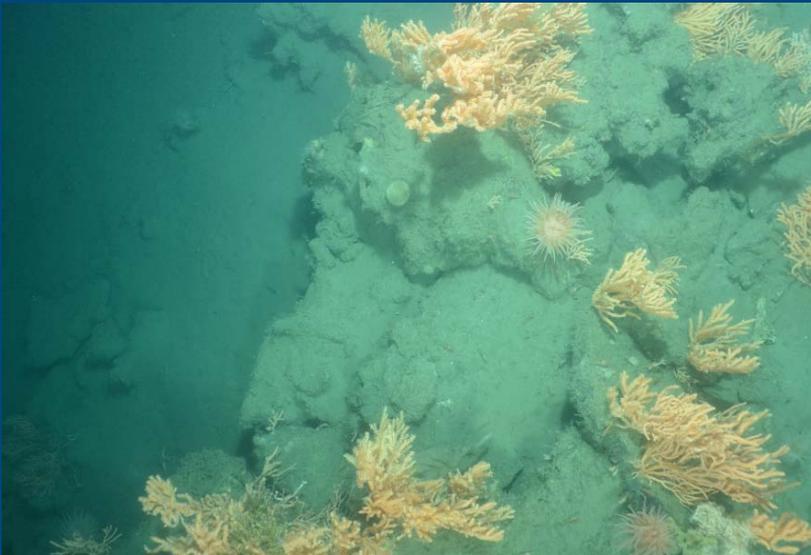


Over **90,000 km²** mapped during ACUMEN and NE Initiative through collaboration and partnerships

Challenges

- Started at ground zero; no contemporary data
- Lack of infrastructure supporting coral research
- Staffing limited; no dedicated admin or technical
- Ship time/gear
- Adapting new gear types for survey vessels
- Dynamic three-year plan required flexibility for:
 - Adapting and responding to council/regional stakeholder priorities and data needs
 - Outreach a major component to the initiative

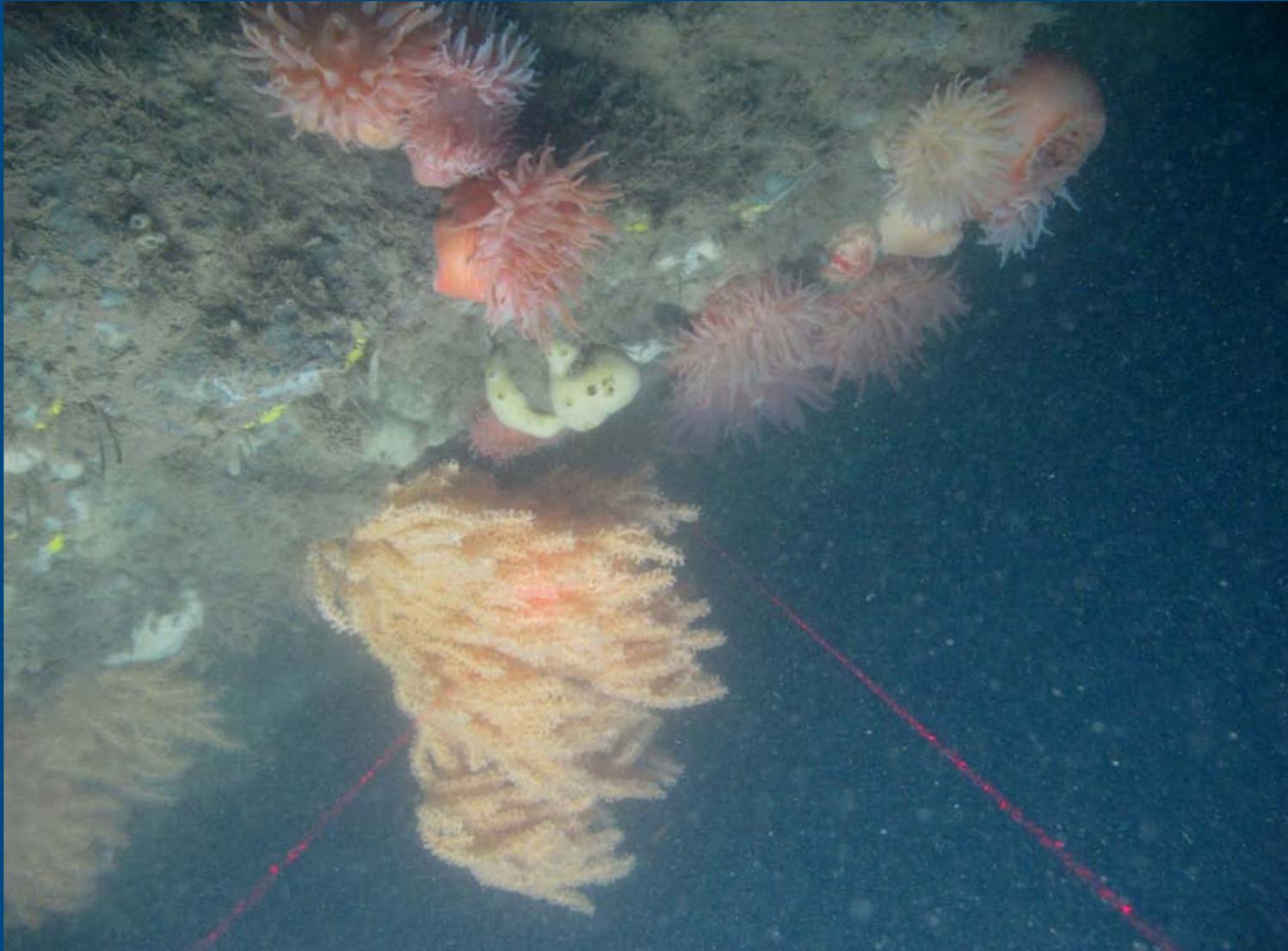
Wilmington Canyon (370-520 m)



Standardized Data Products

- Completion and submission of standardized data products was a major challenge
- Some delays in reporting due to non-paid collaborators, volunteers, interns, short-term contractors, and students involved with processing massive amounts of data
- Data products pushed back in priority to accommodate Council data needs which differed from program requirements
- Changes/refinements to reporting requirements during initiative caused confusion
- PIs favored upload of complete dataset at the end of all annotations to allow for refinement and revisions incorporating improvements in identifications and new taxonomic information.
- Resolving delays in reporting through increased effort by NOAA FTEs, U Maine student, and qualified contractors (small amounts of funding found to continue support of contractors)
- New, streamlined reporting process has much improved data entry

Mount Desert Rock



Initiative Operation

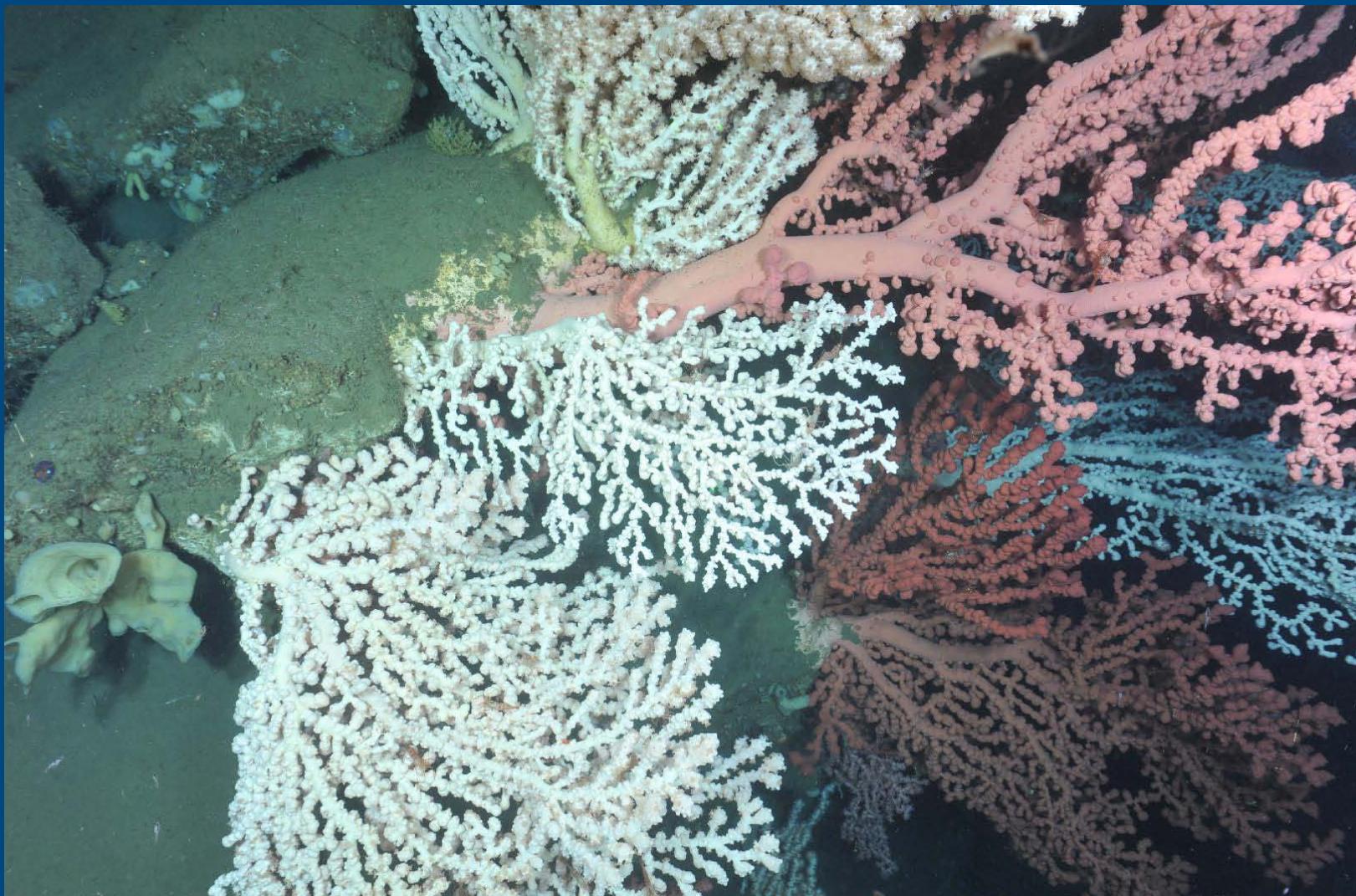
- Overall, field components and collection of contemporary data (highest priority for the region) were successful beyond expectations
- “Got by with a lot of help from my friends”
- Cross line-office collaborations expanded sampling over a much broader geographic range
- Leveraged additional funding for coral research through collaborative efforts
(e.g., International collaboration, two vs one leg EX NE Canyons expedition, grants)
- Representation on Council committees helped facilitate exchange of scientific information
- Need for DSCRTP-funded project manager
- Staging needs to begin in year prior to start of regional initiative

Operations

CRUISE	LOCATION	DIVES				REPORTS	
		NUMBER	SPEC	ANNOTATION	SUMMARY	CRUISE	SITE CHAR
HB1204	NE/Mid-Atlantic Canyons	18 Camera Tows		Y*/P	P	Y	N
HB1302	NE Canyons	22 Camera Tows		Y*/P	P	N	N
GOM2013	W Jordan Basin Outer Schoodic Ridge	40 Camera Tows		Y*/P	P	Y	N
EX1304L2	NE Canyons	15 ROV		Y*/P	Y	Y	N
HB1402	US/Canada Canyons/GOM	16 ROV	100	Y*/P	P	N	N
GOM2014	W Jordan Basin Outer Schoodic Ridge	21 ROV	134	Y*/P	P	N	N
HB1404	Mid-Atlantic Canyons	25 Camera Tows		Y*/P	P	Y	N
HB1502	NE Canyons	20 Camera Tows		Y*/P	N	N	N
GOM2015	OSR/Mount Desert Rock/ Georges Basin	26 Camera Tows		Y*/P	P	Y	N
Sea Pen	Gulf of Maine	21 trawls	117	NA	Y	NA	NA

Y*/P denotes data reviewed in an initial rapid assessment, second phase of annotation conforming to DSCRTP protocols (in progress)

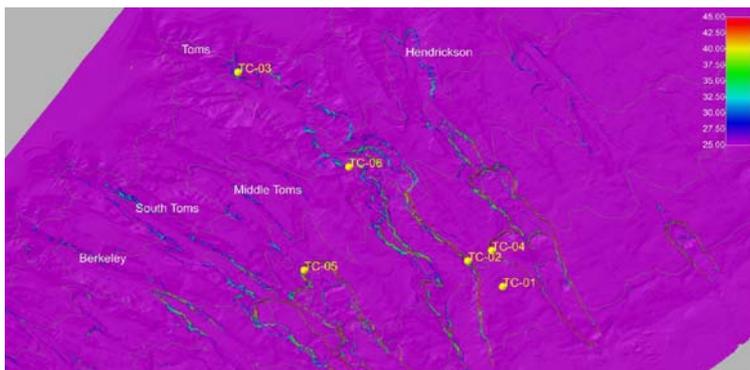
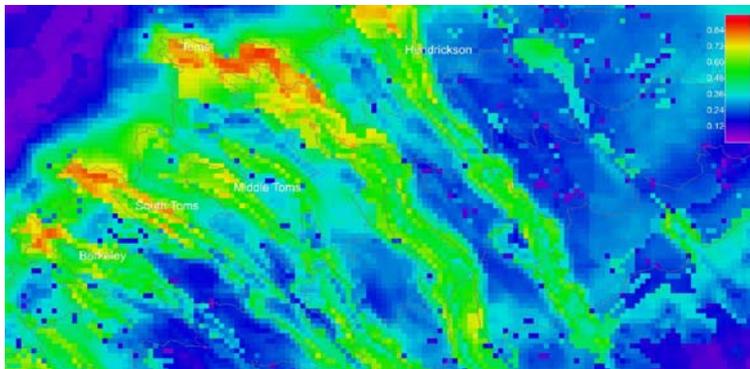
Heezen Canyon



Small Projects

Only two small projects funded by DSCRTP

- Predictive modeling
- Observer program



- Increased reporting of coral bycatch by observers
- At-sea identification guide produced
- Identification of specimens by experts to improve data quality
- Specimen sharing/opportunistic collections

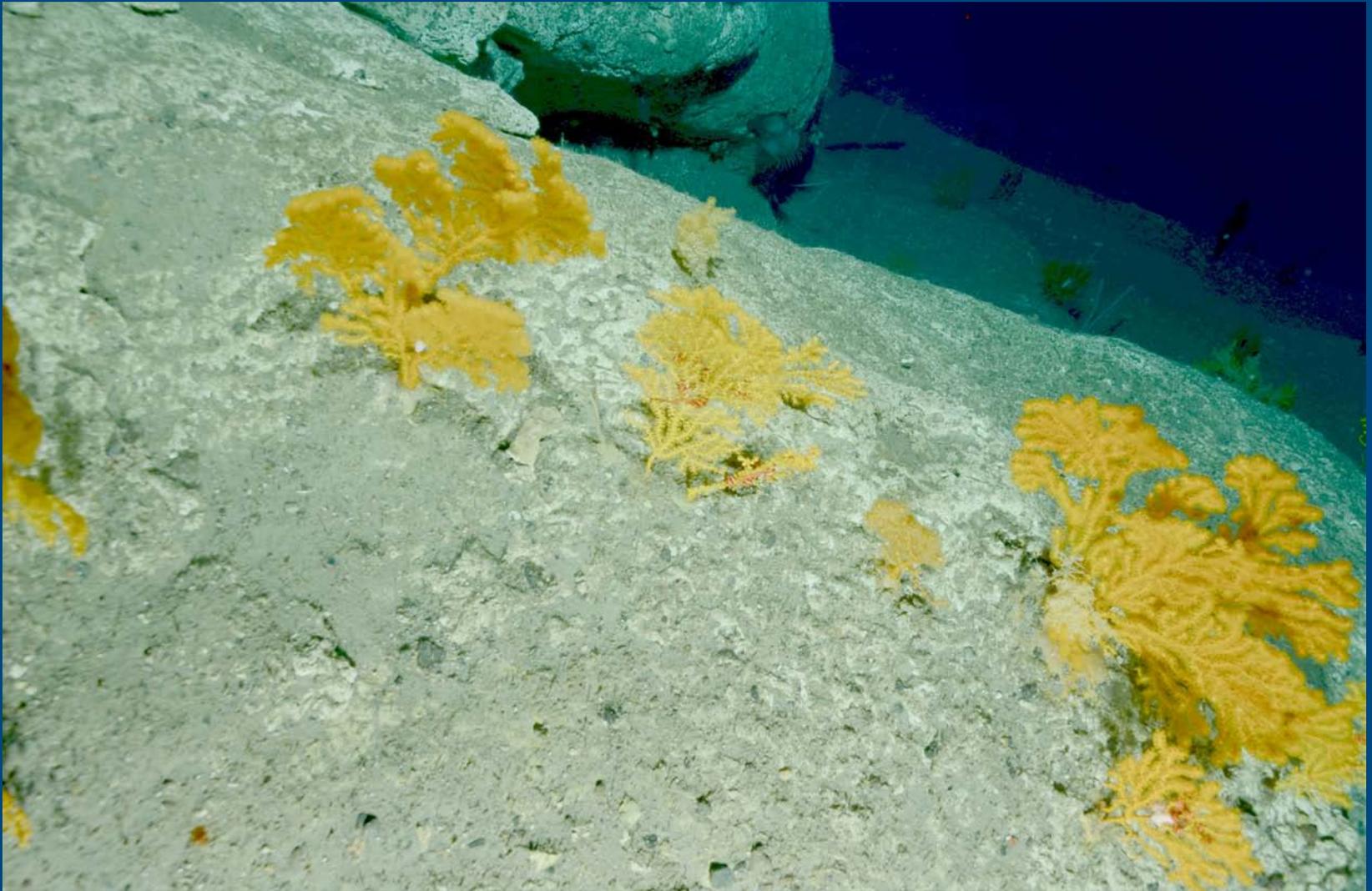


No Cost Added Value Projects

- Anthropogenic disturbance (trash, fishing gear)
- Cephalopod, crustacean identifications/locations
- New records/range extentions
- Increased public awareness of deep-sea corals
 - YouTube videos
 - *Okeanos Explorer* footage
 - Public seminars/scientific presentations
 - Documentary
 - Capitol Hill briefing to Congressional staff



Powell Canyon



Conclusions

- Primary objective, locating and characterizing coral habitat, was successfully completed
 - 31 canyons, most poorly known, were surveyed
 - Habitat Suitability Model tested and revised through groundtruthing
 - Coral gardens discovered in the Gulf of Maine
 - Much better understanding of extent and distribution of deep-sea coral habitats in region
- Work continues on other objectives
- Data collected supported:
 - Designation of coral closure area in the Mid-Atlantic
 - Designation of the first Atlantic National Marine Monument
 - NEFMC efforts to conserve habitat
- Expertise and ability of science team (NOAA and academic partners) increased efficiency of field operations
- Three-year science plan with flexibility gave us options to direct resources and react to changing council priorities
- Assembled team of collaborators will maximize use of data collected

Lindenkohl Knoll



Future Plans and Priorities

- Fulfill program data requirements
- Data synthesis
- Support Council data needs and priorities
- Version 2 of habitat suitability model (presence/absence; better defined taxonomy; multibeam)
- Big picture questions: synthesizing large data sets to address questions about deep-sea corals in general
- Sea pens as nursery habitat for redfish
- Coral studies: taxonomy, aging, growth, connectivity, reproduction

Future Plans and Priorities

2017 ASPIRE and GOM mapping

- US/Canada collaboration II
- Gulf of Maine multibeam data
 - Potential time on *Ferdinand Hassler*
 - Potential time on *Thomas Jefferson*

2018-2019 ASPIRE (funding dependent)

- US/Canada collaboration III (mapping & ROV)
- Trans-Atlantic work (mapping & ROV)

TowCam 2015

