

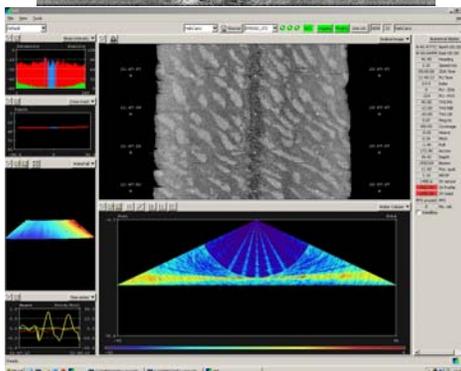
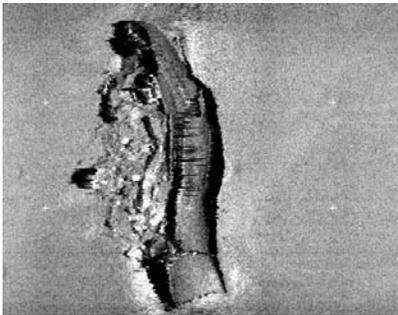
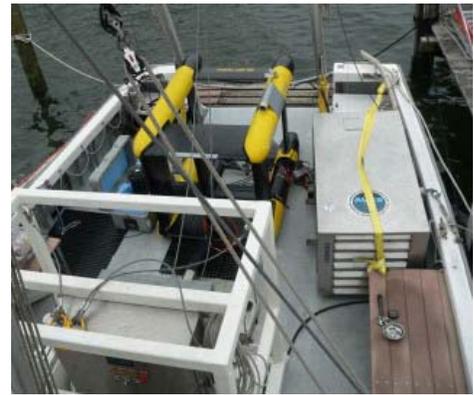
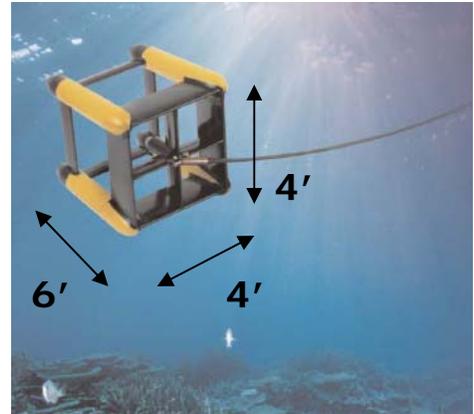


# MA Division of Marine Fisheries Habitat Program Review-Restoration-Research

## *Instrument capabilities summary*

### MacArtney Focus-2 Towed Underwater Vehicle

- The Focus-2 is a towed platform with maximum stability for underwater sensors.
- It has automatic control of flaps to control pitch, roll, and yaw. It can maintain a **constant altitude** off the seafloor within about 2 feet (using a single-beam acoustic altimeter), a **constant depth** within less than 1 foot (using a pressure sensor), it can be programmed for **vertical and horizontal undulating** tows, or it can be flown manually.
- It is on a 750 meter fiber optic cable with a max operating depth of about 250 meters at 3 kts speed.
- It comes with a winch system that weighs 4500 lb (incl. cable). Genset is available if vessel power cannot be used (440V 3-phase 11a).
- Available **sensors** include video cameras and a Kongsberg EM3002 multibeam echosounder.
- It can interface with a wide variety of sensors, including CTDs, water samplers, plankton counters, PAR sensors, and nutrient analyzers.



### Kongsberg EM3002 Multibeam

- This is a 300 kHz multibeam system useful for mapping bathymetry, seafloor features, and watercolumn biomass.
- It can image a swath of seafloor equivalent to 4x the water depth being sampled.
- It can be vessel mounted and has a depth range of 150 meters, or it can be mounted on the Focus-2 for a maximum depth range of 400 meters.



For more information, please contact Kathryn Ford, 508-990-2860 x145

## Klein 3000 Sidescan Sonar

- The Klein is a dual-frequency 100/400 kHz sidescan system this is useful for mapping seafloor features.
- It can image a swath of seafloor ~200 meters wide.
- It has a 3,000 meter cable on a winch and a 75-meter cable for shallow-water, small-boat operation.
- This instrument is on loan thanks to MIT SeaGrant.



## Biosonics DT-X Split beam Echosounder

- This is a 200 kHz singlebeam system useful for mapping fish and seafloor features including eelgrass beds.
- The DT-X can be vessel mounted with a maximum depth range of 100 meters, and it has a tow body with a 100 meter cable for a maximum depth range of about 150 meters.



## Underwater Imaging

- We utilize both standard and hi-def underwater video with live topside display and recording.
- Camera systems include lighting and pan-and-tilt.
- We have two GoPro cameras for either video or still camera operation, including 3D video capabilities.
- Three frames for plan-view imaging are available for imaging from offshore to the most shallow waters. Diver-operated cameras are also available.
- Maximum water depth for plan-view imaging is 150 meters.
- Our deep sea frame and cameras are on loan thanks to U. Mass Dartmouth, SMAST.



## Water Quality and GPS

- Two YSI 6600 sondes for CTD, light, and DO monitoring can be used for profiling or in-situ monitoring.
- Our survey-grade Trimble with wired and wireless antenna options has submeter accuracy.
- We have a Garmin handheld with remote antenna with 1-3 meter accuracy.



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