

## In-situ Power + Analysis + Storage

**Overview:**

The V-fin is the fifth generation HabCam vehicle (V5) designed to be towed at a speed of 3 to 6 kts while taking overlapping high-resolution color stereo image pairs of the sea floor, imaging a track approximately 100-120 nautical miles each 24 hours of operation. V-fin collects optical imagery at an altitude of 1-3 meters off the bottom, imaging a width of approximately 0.75 to 1.25 meters (total ~170,000 - 260,000 square meters/day) and at a rate of 4-6 images per second. This provides about 50% overlap to aid in mosaicing continuous strips. Side by side stereo pair images are fused into a single image at the time of acquisition allowing precise stereo referencing with metadata such as latitude, longitude, temperature, salinity, chlorophyll, light absorption, dissolved oxygen, and other environmental data. In addition, the on-board Deep Vision OSM2 side scan acoustic system collects backscatter to a range of up to 100m on either side of the vehicle using chirp frequency of 646 KHz to 714 KHz.

**Power and Communications:**

An electro-optical cable provides Gigabit Ethernet connectivity and 240 VAC to the electronics package.

**Data Storage and Image Processing:**

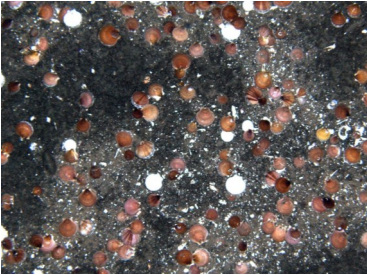
Stereo pair images are taken at 4-6 Hz, sent up the cable to the ship where a computer immediately processes each image in a software workflow for light field optimization, color correction, and rectification based on stereo calibration.

**Additional Advanced Processing Options:**

Point cloud generation in real-time; automated habitat classification and scallop detection in development.

**Applications:**

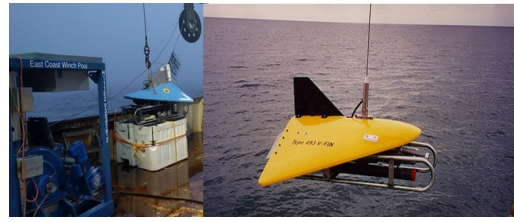
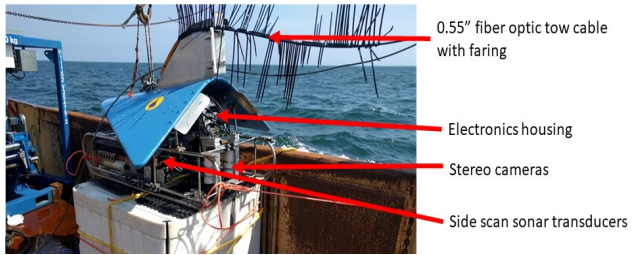
Habitat characterization, surveying commercially important species (scallop, clam, ground fish), invasive species (e.g., *Didemnum vexillum*), construction inspection (pipe burial), oil field inspection, harbor inspection for security.



Scallop bed imaged at altitude of 2.2 m on Georges Bank at depth of 74 m while towing at 6 kts.  
FOV: ~ 1.2 x 1 m

**Specifications:**

Depth	
Rating	600 m
Sensors	
Stereo camera package	Two 6 MP machine vision cameras
Lenses	Two 12mm lenses
CTD	Sea Bird 37
Plankton imaging system	CPICS-1000
Sidescan sonar	Deep Vision OSM2 Chirp 646 -714 KHz
Other sensors available	Chlorophyll, turbidity, O <sub>2</sub> , pH
Data Storage	
Transmission of all data to surface	2 TB per day
Data communication	
Fiber optics	4-channel WDM, Gigabit Ethernet
Power	
Voltage / Current	240 VAC / 2 A
Dimensions	
Length x height	1.2 m x 0.6 m
Air weight	68 kg
Towing hardware (not included)	
Electro-optical cable	0.68" or 0.5" triple steel armor Min: one fiber, three 20-awg
Winch	8,000 lbs pull, render at 6,000 lbs, electro-hydraulic



Habcam V-fin can easily be deployed aboard commercial fishing and research vessels alike.

Product specifications subject to change without notice.

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