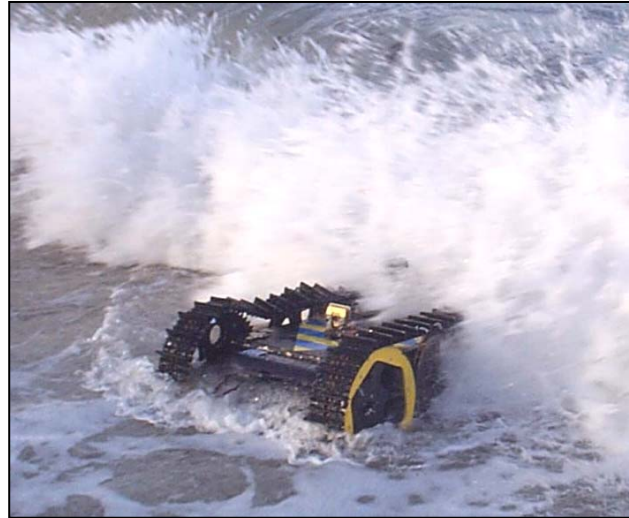




Foster-Miller



Surf Zone Crawler Reconnaissance



CSS POC:

Chuck Bernstein
Principal Investigator
850.234.4083
BernsteinCL@ncsc.navy.mil

Foster-Miller POC:

Tony Aponick
Foster-Miller, Incorporated
781.684.4300
TAponick@foster-miller.com

ONR POC:

Tom Swean, Jr.
Team Leader
Ocean Engr & Marine Systems
3210E
703.696.4025
sweant@onr.navy.mil

The crawler reconnaissance effort is part of the VSW/SZ MCM Program sponsored by ONR Code 3210E. Coastal Systems Station and Foster-Miller have teamed to demonstrate the key components of reconnaissance: search and area coverage, sensing and discrimination of bottom objects, communications, and autonomous control of multiple platforms. The effort is developing practical techniques for navigation, communication, sensing, and autonomous control. The goal is to use robots to scout or to exhaustively map potential amphibious approach lanes through the surf zone. The reconnaissance concept is to release one or many crawlers to search within predetermined regions of the sea bottom. Each robot carries a suite of close range sensors to detect mines and obstacles and reject clutter. On detection of a threat-like object, a robot reports to a remote human operator and provides an image for identification. In this manner, the collection of reports, together with the target locations, creates an electronic map. The developmental platforms are the Foster-Miller Tactically Adaptable Robots (TARs). These tracked robots are the descendents of the smaller Lemming robots originally developed under DARPA funding. The vehicles can operate on land or in water and can be configured with various battery, sensor, and payload options. The latest TAR vehicles provide over 4500 in³ payload volume, can travel up to 10 miles underwater, and have a top speed of 5 ft/s.

Physical Characteristics:

Size: 28 x 24 x 11 inches
Weight: 90 lbs dry
Speed: 0-5 ft/s
Max Range: up to 10 nm

Sensors in Development:

Tactile Sensors
Magnetic Gradiometer
Pulse-Eddy current Induction
Coil (PEIC)

Navigation System:

Kalman Filter-based, Fused
Multi-sensor Position
Estimator (PE)
Swimmer Inshore Navigation
System (SINS)
Differential Global Positioning
System (DGPS)
Odometers, Triaxial Compass,
Yaw Gyro

Communication Options:

ISM SS Radio Modem
Acoustic Modem
Magneto-Inductive (MI)

Control System:

PC104, x86-based Controller
Remotely Programmable and
Retaskable