RUFAS—A Useful New Resource Assessment Tool

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Abstract

Exploratory fishing surveys have been conducted since the early 1950's to systematically assess biological resources of the southeastern United States. The goal has been to compile a resources inventory depicting spacial and seasonal distribution of the resources quantitatively. Utilizing a wide variety of gears, emphasis was placed on resources not used by the U.S. commercial fishing industry.

As experience developed, specific gears were refined and used for particular species. Of note is the calico scallop dredge. More recent technology led to the development of remote sensors as replacements to cumbersome fishing gears. Surveys prior to 1969 showed it was possible to make advance predictions for a calico scallop fishery since distribution and abundance are established at spat set and can be later delineated. From the Harvesting Technology Program in Pascagoula, Mississippi, in cooperation with the General Electric Company at the Mississippi Test Facility in Bay St. Louis, Mississippi, a towed, remotely controlled underwater vehicle became operational in 1968. Named RUFAS (Remote Underwater Fishery Assessment System), the vehicle was well-suited for surveying sedentary benthic organisms such as scallops. RUFAS has been utilized as a benthic surveillance system since 1969.

Slides are presented describing RUFAS: The 800 pound vehicle operates to a depth of 50 fathoms (91 meters). It is "flown" from a surface ship through a 34-conductor power cable. Essential underwater components include sled and control vanes, TV camera and dysprosium iodide lamp, 35mm pulse camera and sodium arc lamp, camera sphere, flotation, pinger, custom-built transducer, thermister and 1⅛ inch diameter power cable. Shipboard components include flight control console with vehicle and ship depth recorders, TV monitors and video tape recorders. Data acquisition procedures are described.

A second generation, RUFAS II, has been developed in cooperation with the Mississippi State University Sea Grant Program. The 1,000 pound vehicle, which operates to a depth of 400 fathoms (732 meters), is briefly described. Main features are TV camera with pan and tilt capability, forward observation avoidance sonar and automatic roll and pitch terrain follower to hold constant distance above the sea bed. It is towed on a 7/10 inch diameter torque balanced electromechanical conductor cable. Long range plans may increase the optical footprint size, which is determined by water clarity and height off bottom, with an acoustical footprint utilizing side scan sonar, to about 150 feet in width.