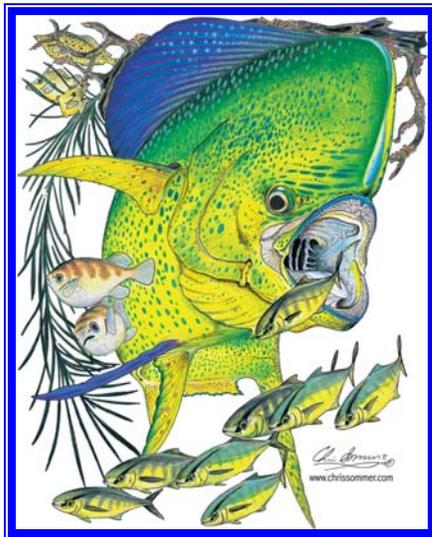


Cooperative Science Services, LLC Dolphin Tagging Research Project

March 2007



Dolphin Behavior Off South Carolina

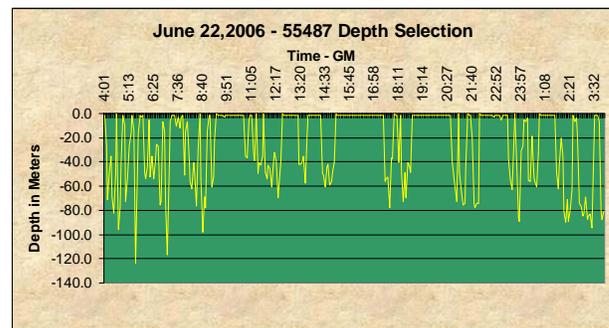
This is the second of three articles reporting on the findings from four pop-off satellite archival tags deployed on dolphinfish off the US East Coast. This research program is conducted in cooperation with the Hilton Head Reef Foundation and is funded by the South Carolina Department of Natural Resources and the South Carolina Sea Grant Consortium.

Two of the new high-tech smart tags (pop-off satellite archival tags) were attached to 30-pound bull dolphinfish off South Carolina. The first was deployed June 4, 2005, by Capt. Howard Moseley aboard his charter boat *Tag Team* out of Mt. Pleasant while the second one was deployed June 21, 2006, by the crew of Capt. Dick Rakovich's boat *Jenny Lynn* based in Charleston.

These fish were tracked for periods of 10 and 6 days respectively. During the 16 days of monitoring, the instruments cataloged more than 4,000 time-sensitive records of pressure and temperature. One of the big advantages of these miniature computers is that they do not have to be recovered for science to get the wealth of information they hold. These instruments are programmed to release from the fish, float to the surface and transmit the archived data via the Argos satellite back to home base.

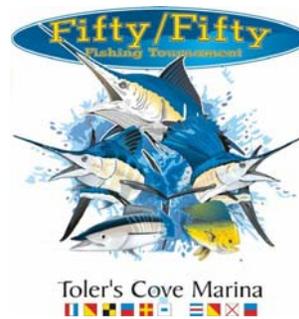
The water pressure records for the fish off the Palmetto State showed almost twice the frequency of use of the deeper ocean layers than the dolphin monitored off south Florida. The Carolina fish made dives to depths below

400 feet. Spending 15% of the daytime and 29% of the night at depths below 30m (98ft) clearly showed dolphin are not just surface dwellers but use a large portion of the water column. This deep diving behavior could explain the absence of dolphin from what appear to be quality weed lines.



The daily track of a bull dolphin through the water column off Charleston, SC. The graph follows the fish from midnight to midnight on June 22nd.

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The information showed the fish made dives beyond 30m (98ft) virtually every night and on 75% of the days monitored. As many as 40 deep dives were made in a single day with the longest dive below 30m lasting 39 minutes. Like fish off Florida, dolphin made more and deeper dives under the cover of darkness. However, they stayed below 30m for a longer period on average during daytime dives, 11 minutes, than at night when deep dives averaged 9 minutes. This difference in dive duration translated into more time spent below 30m during the day off South Carolina than at night. Regardless of the night time diving activity, one behavior always remained consistent: each morning at first light the fish would rise to the surface.

Temperatures used by the bull dolphin off South Carolina largely overlapped with those observed for the fish off Florida, 72°F to 83°F. However, these fish used much cooler waters. During forays into the deeper layers, the bulls entered waters as low as 61°F and never ventured into waters above 84°F. Use of these lower temperatures may be more related to the nature of the Gulf Stream current and the ocean's thermal layers off South Carolina in June than a conscious decision by the fish. The temperatures used by the fish may have been those that happened to occur in the water layers it used. Data did show that their travel through waters below 72°F seldom lasted more than 10 minutes without a visit to warmer waters.

Surface water temperatures selected by the fish are of the most interest to fishermen. These waters possessed the highest temperatures occupied by the bull dolphin. They were observed to use a narrow range of surface temperatures from 75°F to 83°F. Over the course of monitoring the two fish, the average surface temperature used by each was 79°F and 81°F, respectively.

When looking at these "preferred temperatures," fishermen should keep in mind that this information came from old, large fish during June. The heating and cooling of the ocean waters is a seasonal event and varies by region and from year to year. This could force the fish to use water temps that are less than ideal. While this study has observed dolphin entering a wide range of temperatures, 61°F to 87°F, there is a narrower range of temperatures which they would prefer to use in each area. More research is needed in the major geographic regions to define these temperatures.

**Donations to the Dolphin Study are
Fully Tax-Deductible**
Make checks out to:
HH Reef Foundation/Dolphin Study

Send in Your Tagging Photographs

The Dolphin Tagging Study is looking for quality digital photos depicting your tagging efforts and captures of trophy dolphin. These photos will be used in association with articles about the study in magazines, newspapers and in the program's newsletter.

Photos should be submitted in JPG or TIF format; a file size of 1 to 4MB is preferred for quality reproduction. Please identify all the people in the photo, where you were fishing, the name of the boat and the person to credit for the photo. Send your photos to the study headquarters at CSSLCC@bellsouth.net.



Capt. George Glynatsis of the boat Deep Drop 1 out of Nassau, Bahamas, shows off his 84.6 pound, 5 foot 9 inch, bull dolphin captured on June 17, 2006, off Lyford Cay, Bahamas. Photo provided by Capt. Glynatsis.

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Your Financial Support is Needed

The target budget for 2007 is only slightly higher than 2006 at \$56,600. This budget will provide funding to continue the existing tagging study along with expanding the study into new areas.

- ✓ Continue the intense tagging in the South Atlantic Bight to identify migratory routes and wintering grounds.
- ✓ Attempt to expand the tagging activity in the Gulf of Mexico and Mid-Atlantic Bight.
- ✓ Encourage a special tagging effort to determine if a fall southerly movement of dolphin off south Florida does exist.
- ✓ Continue to collect information on the affiliation of dolphin with sargassum.
- ✓ Initiate the first phase of a project to identify the origins of dolphinfish entering US Territorial Waters with the first research carried out in the Yucatan Strait.
- ✓ Conduct a pilot assessment using tagging data to identify East Coast occurrence of dolphinfish, geographic areas of importance to the species and primary recreational fishing grounds for this important game fish.

CSS personnel will also be deploying three pop-off satellite archival tags on dolphin off the Carolinas under a separate project. This cutting-edge research is being conducted in cooperation with the Hilton Head Reef Foundation, under a grant from the South Carolina Sea Grant Consortium and the SC Department of Natural Resources.

As you can see, the objectives for the 2007 Dolphinfish Research Program are very ambitious. While the program may be ambitious . . . it is also a cost-effective research effort. No academic institution or government agency could carry out the same level of work for the same actual costs. This program represents a viable alternative that conservation-minded anglers and organizations have at their disposal in addressing important fisheries issues when government does not respond.

Supporting Dolphin Tagging Research Hilton Head Reef Foundation

www.reeffoundation.com

A registered 501 (c) 3 non-profit organization.
Donations are fully tax deductible.

Donations to the Dolphin Tagging Study are fully tax deductible thanks to the help of the Hilton Head Reef Foundation. An outgrowth from the Hilton Head Sports Fishing Club, the foundation was created as a way to assist in conserving the coastal natural resources. The Hilton Head Reef Foundation is a registered 501 (c) 3 organization.

I hope that you will give positive consideration to donating to the CSS Dolphinfish Research Program to ensure this important work continues in 2007. Donations should be made out to the Hilton Head Reef Foundation (HHR Foundation/Dolphin Study) and sent to the address below.



Anglers are asked to watch for pompano among the small school dolphin they tag this summer and to make a special note on the tag card that it is a pompano. To learn how to distinguish the two species go to www.dolphintagging.com and click on Dolphin Identification. Photo provided by Richard DeLizza.

Send in Tag Cards

A tag has been recovered from a dolphin in the Bahamas that has not been reported being used. Check your tackle boxes and storage drawers for old cards and send them in promptly.



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