

JIMAR – PFRP ANNUAL REPORT FOR FY 2006

P.I./Sponsor Name: Heidi Dewar, Jeffrey Polovina, John Sibert

Project Proposal Title: Long-Term Deployment of Satellite Tags on Swordfish using the California Harpoon Fleet.

Funding Agency: NOAA

NOAA Goal (Check those that apply):

- ☒ To protect, restore, and manage the use of coastal and ocean resources through ecosystem-base management
- ☒ To understand climate variability and change to enhance society's ability to plan and respond
- ☐ To serve society's needs for weather and water information
- ☐ To support the nation's commerce with information for safe, efficient, and environmentally sound transportation

1. Purpose of the Project (one paragraph)

Swordfish support an economically important international fishery. Despite the commercial importance of this species there is still limited information on their large-scale movements and behaviors which are necessary to define stock structure and manage the resource. Although there have been a number of attempts to identify stock structure using fisheries statistics, genetics and conventional tags, stock structure in the Pacific is still unclear. More recent efforts using electronic tags have been hampered by the high mortality rate associated with catching fish on a longline. The goal of this study is to test the potential for using the harpoon fleet in the Southern California Bight to deploy pop-up satellite archival tags for periods of 6 to 10 months. The mortality from the harpoon fleet is minimal.

2. Progress during FY 2006 (One-two paragraphs, including a comparison of the actual accomplishments to the objectives established for the period, and the reasons for slippage if established objectives were not met):

The goal for 2006 was to deploy a total of 12 PAT tags, half at the beginning and half at the end of the season. In addition, half of the tags were to be rigged with one dart type and the other half with a second dart type. Although funding did not come through until November we were able to deploy 10 PAT tags on swordfish in 2005. Because of the delay in obtaining funding it was not possible to deploy tags at the beginning of the season and all tags were deployed from September through December. In addition, due to problems with the injection mold process the second dart type was not available for use so only one dart type was used.

Of the 10 tags deployed, 3 tags popped up and reported to satellite. The data from one of these tags indicated that the fish died shortly after the tagging event. The first mortality documented from the harpoon fleet. The remaining two released after 24 and 103 days (Figure 1). The data analysis on the second two tags is ongoing.

3. Plans for the next fiscal year (one paragraph):
 In 2006 we plan to deploy 14 tags using the California harpoon fleet; the two tags remaining from 2005 and the 12 tags allotted for deployment in 2006. The goal is to deploy half of these tags from June through August and the remaining half in October- November. This year 12 tags will be rigged with the second dart type and 2 with the original dart type. For the tags that release and transmit data, analysis will focus on both identifying general oceanographic regions as well as characterizing behaviors and habitats. In addition to the PAT tag deployments a number of complimentary efforts will be initiated. 1) Twelve fish will be double tagged with both a PAT tag and an archival tag which can be downloaded if the fish is recaptured. Using the archival tags provides the potential for multi-year records. 2) Both tissue samples and otoliths will be collected for isotopic analysis and microconstituent analysis. Tissue samples will include those taken during the tagging event. These analyses provide a complimentary method for identifying stock structure as well as insight into trophic ecology. Samples collected off California will be compared to those collected by collaborators in other locations including Australia, Hawaii and Japan.

4. List of papers published in refereed journals during FY 2006.
 None related to the PFRP project for which funding was awarded in late 2005.

5. Other papers, technical reports, meeting presentations, etc.
 Dewar, H. and Polovina, J. 2005. Deploying satellite tags on swordfish using the California Harpoon Fleet. *PRFP Newsletter* 10(4): 3-6.
 Broadbill Swordfish. *2005 Billfish News Letter*. Publication of the Southwest Fisheries Science Center. National Marine Fisheries Service. NOAA.
 Behaviors and habitats of swordfish in the Atlantic and Pacific Ocean. Fourth International Billfish Symposium. Catalina Island. Oct. 31-Nov. 3, 2005.

6. Graduates (Names of students graduating with MS or PhD degrees during FY 2006. Provide titles of their thesis or dissertation):
 0

7. Awards (List awards given to JIMAR employees or to the project itself during the period):
 0

8. Publication Count (Total count of publications for the reporting period and previous periods categorized by NOAA lead author and Institute (or subgrantee) lead author and whether it was peer-reviewed or non peer-reviewed (not including presentations):

NONE Specific to this PFRP project

	JL Lead Author			NOAA Lead Author			Other Lead Author		
	FY04	FY05	FY06	FY04	FY05	FY06	FY04	FY05	FY06
Peer-reviewed	1			1	1	2			
Non-peer reviewed		2							

9. Students and Post-docs (Number of students and post-docs that were associated with NOAA funded research. Please indicate if they received any NOAA funding. For institutes that award subcontracts, please include information from your subgrantees):

0

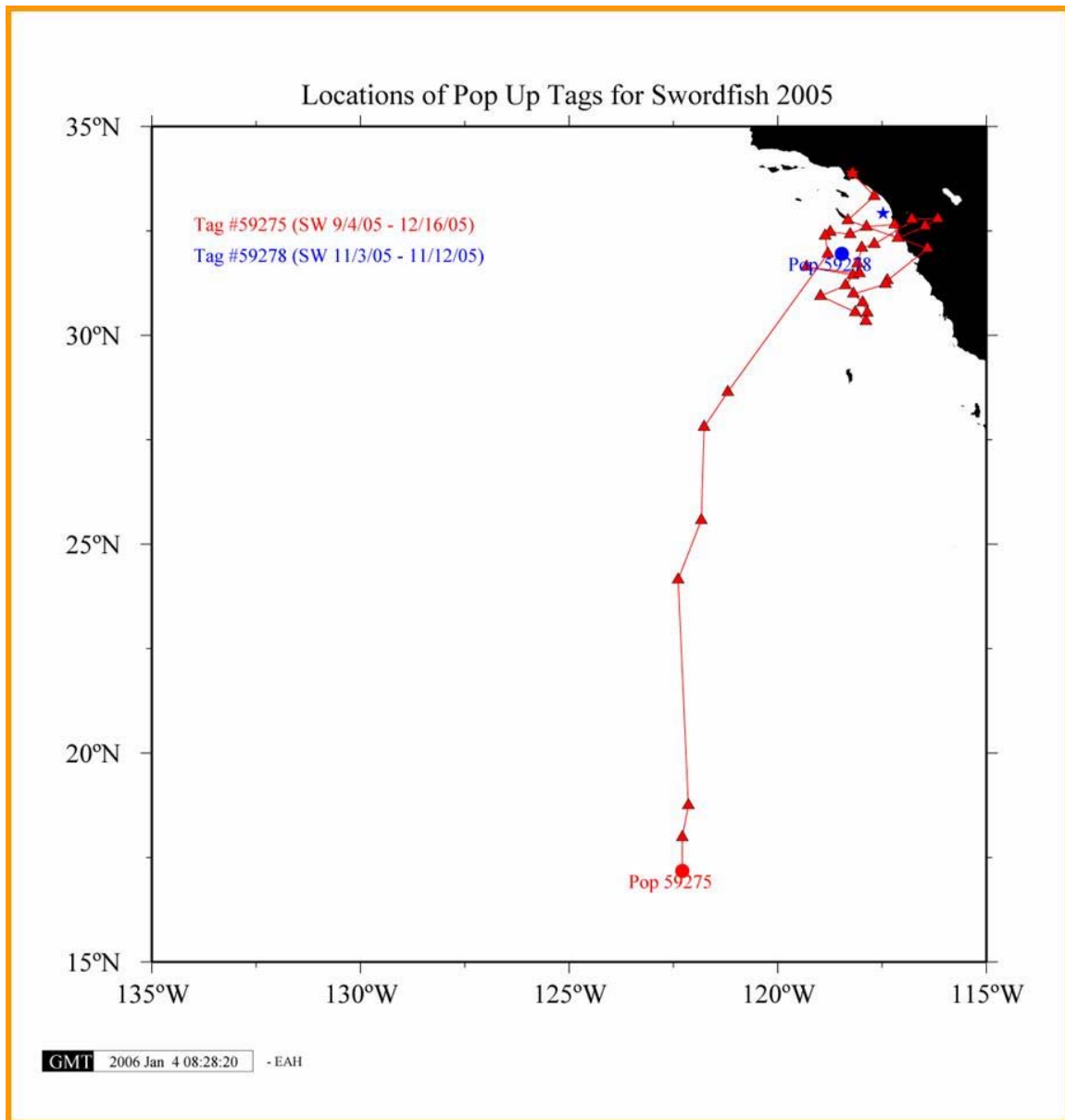
10. Personnel:

(i) Number of employees by job title and terminal degree that received more than 50% support from NOAA, including visiting scientists (this information is not required from subgrantees): 0

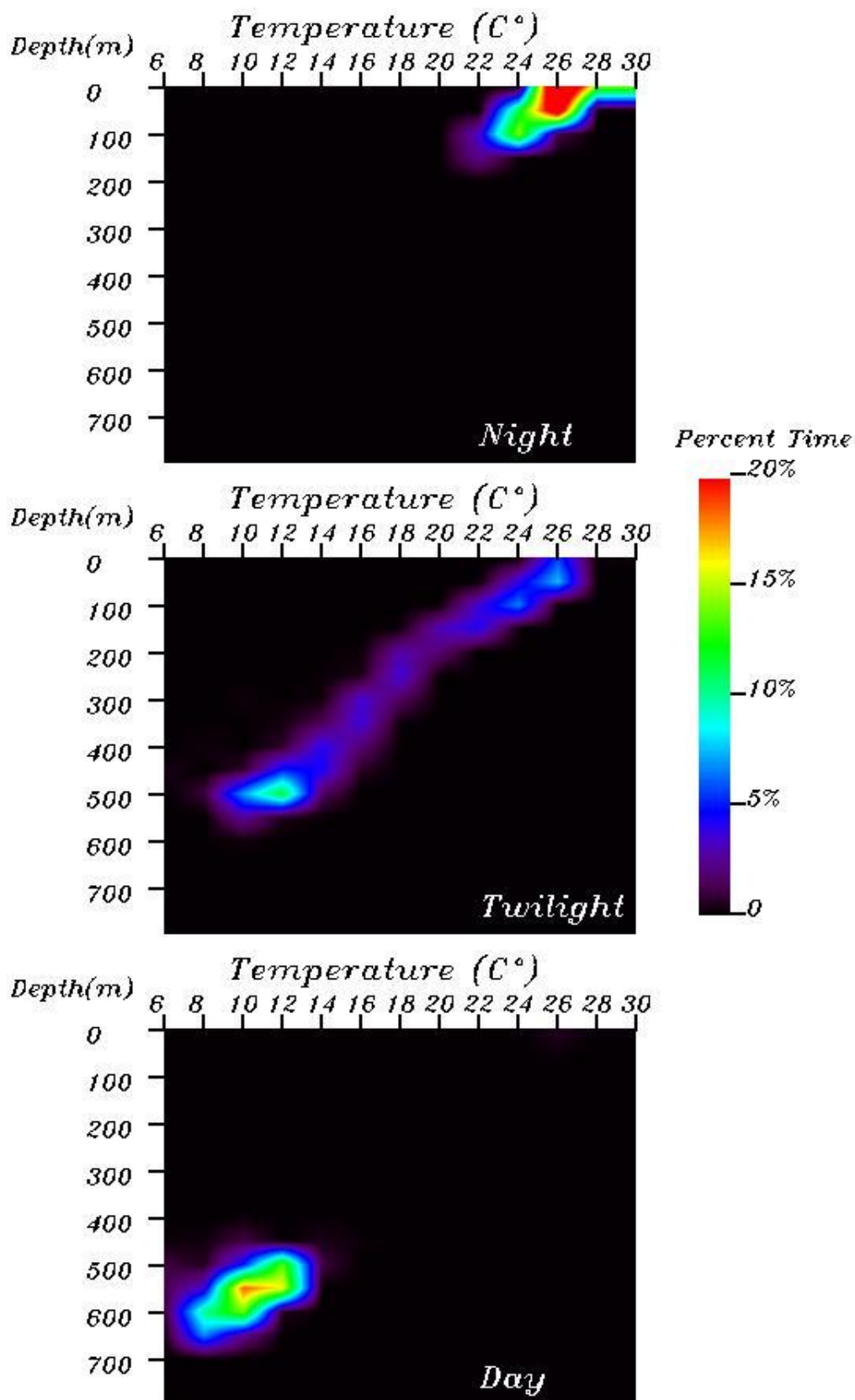
(ii) Number of employees/students that received 100% of their funding from an OAR laboratory and/or are located within that laboratory. 0

(iii) Number of employees/students that were hired by NOAA during the past year:
0

11. Images and Captions (JIMAR will be including images in the annual report. Please send two of your best high-resolution, color images (photo, graphic, schematic) as a JPEG or TIFF with a caption for each image. Hardcopies of images can be dropped off at the JIMAR office if no electronic versions are available.



- Caption 1: The release and recapture locations for the two tags that popped up in 2005 after 24 and 103 days. Intermediate locations were calculated from light levels and sea surface temperature for the longer deployment.



Caption 2: A representative vertical habitat envelope showing the most prevalent depths and temperatures occupied by the swordfish during the night, at twilight and during the day. Note the distinct difference between day and night.