The Southwest Fisheries Science Center's

2006 Billfish Newsletter

- 2005 Survey: Trends in Angler Catch Rates
- 2005 Billfish Tagging and Recoveries
- Top Anglers and Captains Acknowledged
- Adopt-A-Billfish Program
- Research Highlight: Billfish Larvae Identification off Hawaii
- Successful Catch and Release

PROLOGUE

This issue of the Billfish Newsletter marks the 44th year that NOAA Fisheries and the billfish angling community have combined efforts to measure angler success for billfishing. Our efforts have created one of the longest time series available for recreational billfishing, charting trends in relative abundance for key species. With highly migratory species management unfolding in both the eastern and western Pacific, data series such as this one are key to assessing the health of the stocks. The Southwest Fisheries Science Center remains committed to monitoring recreational billfishing success.

William Fox, PhD.
Director

INTRODUCTION

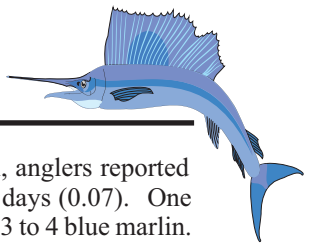
The Billfish Newsletter is an annual publication describing billfish research projects conducted at the NOAA Fisheries Southwest Fisheries Science Center (SWFSC). Emphasis is on billfish angling in the Pacific, Indo-Pacific and Indian Oceans. The results of the 2005 International Billfish Angling Survey and the Cooperative Marine Game Fish Tagging Program for the Pacific are described in this issue. The data presented are the result of cooperation with billfish anglers, sportfishing clubs, commercial fishers and agencies affiliated with the SWFSC. We express our sincere gratitude to all anglers completing the angler survey forms and to all those who tag and release billfish. Your efforts are helping to monitor and conserve these magnificent fish. We welcome comments concerning both the Survey and Tagging programs as well as the contents of this Newsletter.

THE INTERNATIONAL BILLFISH ANGLER SURVEY

The Billfish Angling Survey provides the only estimates of recreational billfish angling activities for the Pacific and Indian Oceans. This collection of recreational billfish catch and effort data began in 1969 and now provides a 37 year index of fishing success in many areas of the Pacific. Catch per unit of effort (CPUE) is measured in catch of billfish per angler fishing day. The time series of angler success provides a measure of relative abundance and is the only survey independent of commercial fisheries in the Pacific. Trends tracked over time may indicate changes in the health and size of billfish stocks. These indices of relative abundance are used in stock assessments, to aid in developing management options, and for monitoring domestic and international fishery interactions.

Table 1. Catch and effort reported for the 2005 International Billfish Angler Survey. Numbers indicate total days fished by location, number of billfish caught, and the catch-per-fishing day. Data in parentheses are values reported in 2004. The most predominant species caught by area is also listed: striped marlin (SM), blue marlin (BLM), black marlin (BLK) and sailfish (SF).

LOCATION	ANGLER FISHING DAYS	NUMBER OF BILLFISH	BILLFISH PER FISHING DAY (CPUE)	MAJOR SPECIES
PACIFIC OCEAN				
Hawaii	2,013 (2,423)	909	0.45 (0.44)	BLM
Baja California	560 (703)	429	0.77 (0.75)	SM
Southern California	554 (850)	88	0.16 (0.16)	SM
Acapulco, Guerrero, Zihuatanejo, Ixtapa	136 (237)	171	1.26 (1.70)	SF
New Zealand	93 (21)	150	1.61 (0.00)	SM
Panama	90 (198)	91	1.01 (2.25)	SF
Costa Rica	83 (134)	136	1.64 (2.57)	SF
Australia	81 (133)	129	1.59 (0.74)	BLK
Tahiti	65 (86)	12	0.18 (0.22)	BLM
Puerto Vallarta	42 (28)	29	0.69 (0.96)	SF
Manzanillo/Colima	42 (39)	43	1.02 (0.62)	SF
Mazatlan/Sinaloa	38 (12)	82	2.16 (0.67)	SM
Japan	35 (14)	7	0.20 (0.14)	BLM
Marshall Islands	17 (13)	15	0.88 (0.85)	BLM
New Guinea	15 (0)	2	0.13 (0.00)	BLM/BLK
Guatemala	14 (23)	126	9.00 (5.83)	SF
Fiji	12 (29)	2	0.17 (0.50)	BLM/BLK
French Polynesia	8 (0)	4	0.50 (0.00)	BLM
Guaymas/Sonora	4 (4)	1	0.25 (0.25)	SM
Kiribati	1 (0)	0	0.00 (0.00)	N/A
Huatulco/Oaxaca	1 (0)	0	0.00 (0.00)	N/A
Tonga	0 (8)	0	0.00 (0.25)	N/A
INDIAN OCEAN				
Dubai / United Arab Emirates	130 (0)	6	0.04 (0.00)	SF
Oman	7 (0)	12	1.71 (0.00)	SF
ATLANTIC OCEAN				
Atlantic Total	56 (60)	26	0.46 (1.05)	SF



Response rates for the Angler Survey have waned in recent years. In order to improve the reliability of the catch and effort statistics, we encourage more anglers to submit survey cards. We routinely mail forms to anglers who have submitted a completed survey or tagging card in the last 3 years. However, if you or someone you know needs additional forms, please do not hesitate to contact us. Starting with the 2006 survey, the form can be downloaded from the SWFSC website and mailed to our office: http://swfsc.noaa.gov/frd-billfish.aspx.

The Angler Survey results presented here are primarily for the Pacific areas. In 2005, billfish anglers reported catching 2,471 billfish during 4,103 fishing days. Fishing effort, in angler fishing days, and CPUE, in catch per days fishing are shown by location in Table 1 for all billfish reported caught in 2005. The mean CPUE in the Pacific for 2005 was 0.62, and for all oceans was 0.60 based on the 2005 angler survey. The 2005 Pacific Ocean mean catch rate is slightly lower than the rate of 0.66 reported for 2004, but still at a high level for the history of the survey. The recent 5 year average (2001-2005) of 0.64 is nearly double the rate of 0.34 reported for the late 1970s (1975-1979) when billfish stocks were being impacted by large international commercial fisheries.

BLUE MARLIN

Blue marlin are tropical and sub-tropical in distribution and continue to be the most common species encountered by billfish anglers in Hawaii and the central and western Pacific island nations. Survey respondents reported catching 489 blue marlin off Hawaii in 2,013 days of fishing in 2005, or 0.24 blue marlin per day. This catch rate is the highest since 1972 (Figure 1a). In the eastern Pacific, blue marlin rarely extend north of Magdalena Bay, Baja California Sur, Mexico. The reported catch off Baja totaled 28 blue marlin in 560 days fishing (0.05 per day) which is essentially the same catch rate reported in 2004, and near the lowest rate for the past 20 years. Fourteen additional blue marlin were reported caught from Mazatlan to Acapulco, Mexico, in 259 fishing days. Although few surveys were returned from anglers fishing in the Marshall Islands, 15 blue marlin were caught there during 17 days for the highest blue marlin catch rate (0.88) reported for 2005. Blue marlin catches were also reported off New Zealand, Tahiti, Costa Rica, Japan, French Polynesia, Panama, Australia, New Guinea, and Fiji.

STRIPED MARLIN

Striped marlin is the most common species encountered by billfish anglers in southern California and northern Mexico, including Baja California, as well as in New Zealand. Southern California anglers reported catching 86 striped marlin in 554 angler days for a catch rate (0.16) equivalent to that of 2004. In Hawaii, anglers reported catching 140 stripers in 2,013 fishing days (0.07). One striper was caught in Hawaii for every 3 to 4 blue marlin. The areas with the highest striped marlin catch rates were Mazatlan, Mexico, where 56 stripers were caught in 38 fishing days (1.47) and New Zealand where 114 stripers were caught in 93 fishing days (1.22). The area around the tip of Baja California Sur, Mexico, always produces good catch rates of striped marlin. In 2005, anglers reported catching 355 striped marlin in 560 days of fishing off Baja for a catch rate of 0.63. Although striped marlin are less abundant south of Acapulco where sailfish are the more abundant billfish, a few were caught in Costa Rica and Panama, as well as in Tahiti and Australia. Trends in mean angler catch rates for striped marlin in 3 areas with high reporting rates are shown graphically in Figure 1b. The data shown for Mexico is an average for all areas reported.

SAILFISH

Sailfish prefer tropical habitat and are abundant in the coastal and offshore waters from Mexico to Ecuador. The highest catch rates reported in the International Billfish Angling Survey are typically from southern Mexico and Central America. In Mexico from Manzanillo south, 222 sails were caught in 179 days for a catch rate of 1.1 sails per day. Central American sailfish catch was high with anglers in Guatemala catching 126 in just 14 days (9.0), in Costa Rica catching 123 in 83 days (1.48), and in Panama catching 74 in 90 days (0.82). The average sailfish catch rate for all areas combined was lower in 2005 than the average of the previous 5 years (2000-2004), due to particularly high catch rates of sailfish off Central America in 2003. Figure 1c shows the trend in catch rates over time for Central America and all of Mexico combined.

BLACK MARLIN

Black marlin are common in tropical waters and only occasionally frequent temperate areas. They are the most common species encountered by billfish anglers in Australia as well as in some of the western Pacific island nations. Australia's anglers reported catching 112 black marlin in 81 fishing days (1.38 per angler day) which is the highest catch rate reported there since 1973 (Figure 1d). Anglers in Panama reported 10 black marlin captured in 90 days (0.11). Catch rates of black marlin in Panama have been declining since 1994, and the latest 5 year average represents the lowest since 1982. Black marlin are often reported off Puerto Vallarta and around the tip of Baja California Sur, Mexico but rarely occur off southern California. Eleven (11) black marlin were reported taken off Mexico in 819 fishing days (0.01). Anglers also reported catching a few black marlin off Hawaii, New Zealand, Japan, New Guinea, and Fiji.

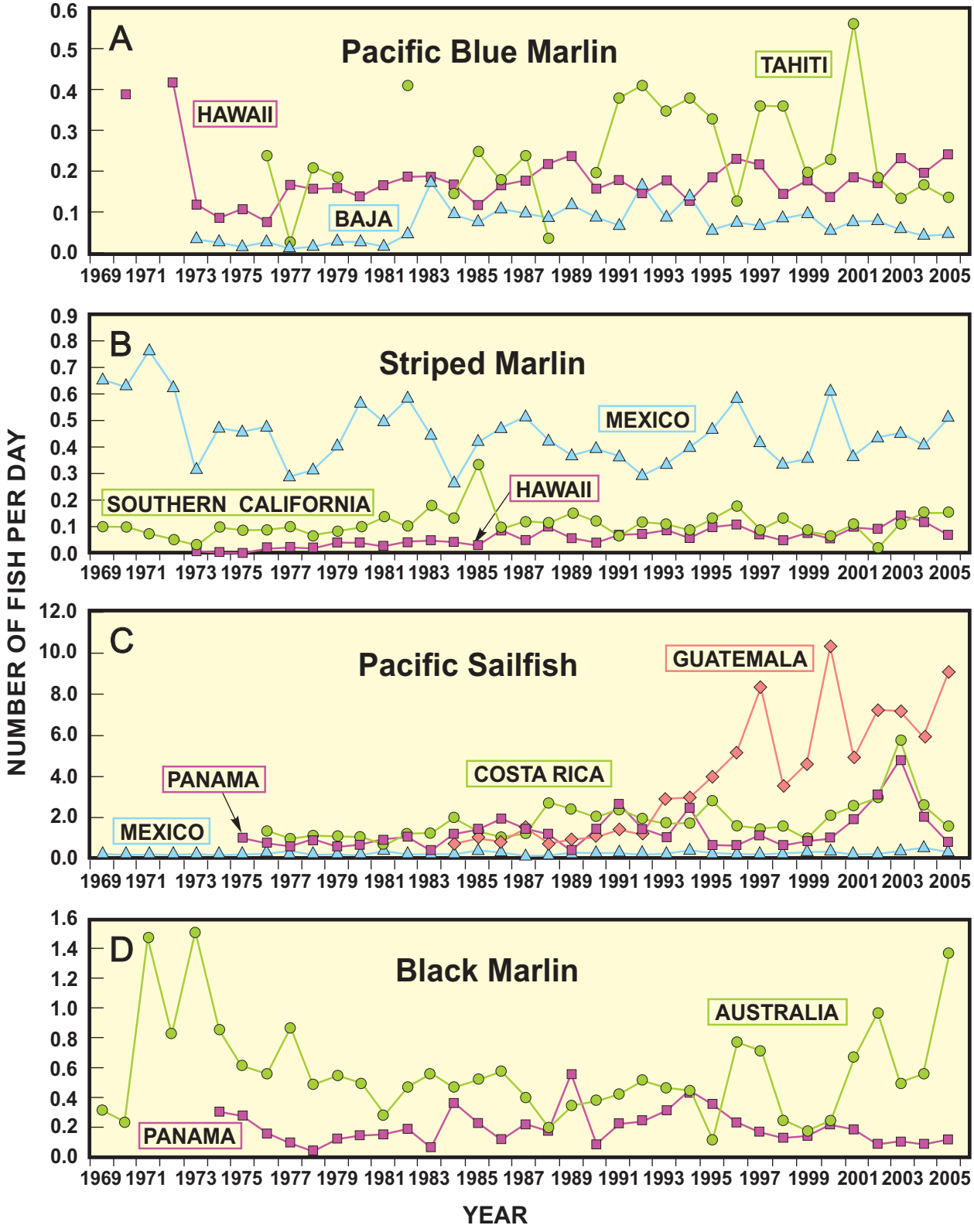


Figure 1. Catch per unit of effort (CPUE) in number of fish per angler day reported by region from 1969 to 2005, for blue marlin (A), striped marlin (B), Pacific sailfish (C), and black marlin (D).

SHORTBILL SPEARFISH

The shortbill spearfish is an oceanic species with only limited abundance near the west coasts of the U.S., Mexico and Central America. Anglers in Hawaii reported catching 267 shortbill spearfish in 2,013 fishing days for a catch rate of 0.13 fish per day. Four (4) shortbill spearfish were also reported caught in New Zealand, and one (1) was caught off Tahiti.

BROADBILL SWORDFISH

Fishing for swordfish differs from other billfishing in that the fish are targeted at night. Swordfish are a commercially important fish, but have not recently been taken in high numbers by recreational anglers in the Pacific Ocean. For example, recent recreational catches recorded at southern California sportfishing clubs show about 6 swordfish taken per year. Even so, a few respondents to the 2005 International Billfish Angling Survey reported catching swordfish in Hawaii, Southern California, Baja California and New Zealand.

THE BILLFISH TAGGING PROGRAM

The SWFSC's angler based Billfish Tagging Program began in 1963 and has provided tagging supplies to billfish anglers for 44 continuous years. Tag release and recapture data are used to determine movement and migration patterns, species distribution, and age and growth patterns of billfish. This volunteer tagging program depends on the participation and cooperation of recreational anglers, sportfishing organizations, and commercial fishers. Since inception, over 54,000 fish of 75 different species have been tagged and released (Table 2). Our emphasis continues to focus on the skillful tagging of all billfish and bluefin tuna. Other species tagged over the years for special research projects are reported here as general interest and so anglers will look out for these tags as well. These include shortfin mako, common thresher and blue sharks tagged during the SWFSC annual juvenile shark surveys. While we consider tag and release vital for conservation, we do not encourage the use of our billfish tags for other non-billfish sportfishing.

Billfish Tagging Report cards received for 2005 indicate a total of 1,359 billfish and 122 other fish were tagged and released by 1,010 anglers and 173 fishing captains. In all, 728 blue marlin, 268 striped marlin, 164 sailfish, 184 spearfish, 9 black marlin and 5 unknown billfish were reported tagged and released in 2005 (Table 2).

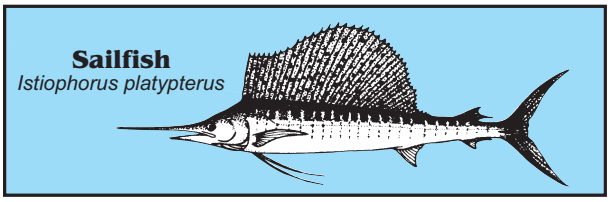


Table 2. Summary of all fish tagged in 2005 with releases and recoveries for the period 1963-2005.

Species Name	Release 2005	Release Total	Return Total	Rate %
Striped Marlin	268	22,060	339	1.54
Sailfish	164	8,848	49	0.55
Pacific Blue Marlin	728	8,052	80	0.99
Marlin, unid.	5	4,307	3	0.07
Black Marlin	9	3,365	69	2.05
Shortbill Spearfish	184	1,768	2	0.11
Shortfin Mako Shark	88	1,685	76	4.51
Broadbill Swordfish	0	520	17	3.27
Blue Shark	4	381	12	3.15
Yellowfin Tuna	1	348	24	6.90
Common Thresher	9	216	12	5.56
Skipjack Tuna	0	97	2	2.06
Albacore Tuna	0	87	1	1.15
Bluefin Tuna	1	57	8	14.04
Hammerhead Shark	1	54	2	3.70
Whitetip Shark	0	44	1	2.27
Atlantic Blue Marlin	1	42	0	0.00
Salmon Shark	6	33	1	3.03
Billfish, Unid.	0	24	2	8.33
Silky Shark	3	21	0	0.00
White Marlin	0	13	1	7.69
White Shark	0	8	0	0.00
Basking Shark	0	7	0	0.00
Whale Shark	0	4	1	25.00
Longbill Spearfish	0	3	0	0.00
Other Tunas	0	94	3	3.19
All Others	9	2,526	99	3.92
TOTALS	1,481	54,664	804	1.47

Table 3 shows the tagging efforts in 2005 by area for all billfish tagged. Most were tagged in U.S. or Mexican waters, while a few fish were tagged elsewhere in the Pacific, and in the Indian and Atlantic Oceans. Twenty-five (25) striped marlin and one unidentified marlin were reported tagged off Southern California in 2005. In Hawaii, 699 blue marlin, 120 striped marlin, 183 shortbill spearfish, 3 black marlin and 2 unidentified marlin were reported tagged and released. Tagging effort off Mexico remained strong. Along the Baja Peninsula efforts were concentrated from Magdalena Bay to La Paz where 129 billfish, most of which were striped marlin, were tagged. An additional 171 billfish, mostly sailfish, were tagged from Mazatlan to Zihuatanejo and Acapulco. In 2005, 8 billfish were tagged off Central America.

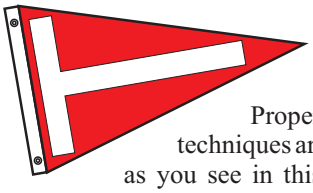
Table 3. Summary of billfish tagged in 2005 by region.

AREA	SPECIES	TOTAL
PACIFIC OCEAN		
Hawaii, U.S.A.	Pacific Blue Marlin	699
	Shortbill Spearfish	183
	Striped Marlin	120
	Black Marlin	3
	Marlin, unidentified	2
Southern California, U.S.A.	Striped Marlin	25
	Marlin, unidentified	1
Baja California, Mexico	Striped Marlin	118
	Sailfish	6
	Black Marlin	2
	Pacific Blue Marlin	2
	Marlin, unidentified	1
Acapulco / Ixtapa / Zihuatanejo, Mexico	Sailfish	116
	Marlin, unidentified	1
	Pacific Blue Marlin	1
Manzanillo, Mexico	Sailfish	40
	Pacific Blue Marlin	8
	Striped Marlin	4
Mazatlan, Mexico	Striped Marlin	1
Costa Rica	Pacific Blue Marlin	6
	Black Marlin	2
Tahiti	Pacific Blue Marlin	8
French Polynesia	Pacific Blue Marlin	2
Australia	Black Marlin	1
Fiji	Black Marlin	1
INDIAN OCEAN		
Mauritius Island	Pacific Blue Marlin	2
ATLANTIC OCEAN		
Brazil	Sailfish	2
Florida, U.S.A.	Shortbill Spearfish	1
Ghana	Atlantic Blue Marlin	1
TOTAL		1,359

CAPTAIN AND ANGLER ACKNOWLEDGEMENTS

We are pleased to recognize the cooperating anglers and captains who tag and release billfish. In 2005, 1,010 anglers reported tagging at least one billfish. This number is up from 761 anglers in 2004. Individual recognition of the 169 anglers who reported tagging two or more billfish in 2005 is presented in Table 4. We regret that limited space prevents listing all taggers. The top taggers for each region were Stan Ecklund Sr. who tagged and released 3 striped marlin off southern California. Off Hawaii, Don Brandt released 6 billfish and Robert Anthony released 5. In Mexico, Joel Gruwell with 10 releases and Don Anderson with 8 lead the tagging efforts off Baja California. Off the central Mexico coast, Howard Bond (40), Richard Pietila (16) and Brack Mann (11) tagged 67 billfish among the three of them.

Charter and private boat captains who support billfish tag and release (and catch and release) play an important roll by supporting ethical angling and conservation stewardship of the marine environment. They set an example by demonstrating skillful release of their billfish catch. This year 173 captains reported tagging billfish with their anglers and clients. We gratefully acknowledge those captains who released two or more billfish in specific regions (Table 5). In 2005, 39 captains tagged 10 or more billfish. Captains Peter Hoogs, John Bagwell, Guy Terwilliger, Marlin Parker, Dennis Cintas, McGrew Rice and Tim Hicks each tagged 30 or more billfish in Hawaii. Captains Howard Bond, Martin Cortez, Armando Arciniega, and Richard Hamilton tagged greater than 30 billfish each in Mexico. Continued interest and cooperation by all captains has greatly enhanced the Billfish Tagging Program, and their efforts and conservation ethic are truly appreciated. These efforts are a critical component of sustainable billfish angling.



Proper tagging techniques are important as you see in this photo by our winning cover photographer, Wayne Slahor. The fish should be tagged as it is being towed alongside the boat by inserting the tag in the back muscle below the tallest part of the dorsal fin. Avoid the gills, head and stomach.

Table 4. Names of anglers tagging 2 or more billfish during the 2005 calendar year, by area.

ANGLER NAME	BILLFISH TAGGED
ACAPULCO-IXTAPA-ZIHUATANEJO, MEX.	
Richard Pietila	16
Brack Mann	11
Butch Cooley	5
Bob Nelson	3
Jack Hall	3
Jim Boyer	3
Norman Cook	3
Ron Hubbard	3
Bill Speivey	2
Dale E. Smith	2
Darrell Thoma	2
Gary Bogachus	2
Gary Tamano	2
Georges Vicedo	2
Guy Causse	2
Hans J. Babels	2
Jacob Miskowic	2
Jeff Deery	2
Joan Price	2
Johnnie W. Gibbs	2
Judy Thoma	2
Kirk Strawn	2
Marianne Hazen	2
Martin Yves	2
Mary Pat Wohlford-Wessels and Walter Wessels	2
Sherry Cook	2
Sonia Hubbard	2
Steve Boll	2
Walter Boehm	2
BAJA CALIFORNIA, MEXICO	
Joel Gruwell	10
Don Anderson	8
Chris Hull	6
Ryan Sibrel	5
Randy Karsting	4
Ron Bowers	4
Fred Larson	3
Jason Church	3
Mary Kaitlin Roney	3
Pat Roney	3
Phil Johnson	3
Richard A. Johnson	3
Richard Roney	3
Walter Hamilton	3
Doug Fluhrer	2
Harold Weimer	2
Jay Henderson	2
Ken Deemer	2
Kurt Schaefer	2
Larry Peabody	2
Mike Fitzgerald	2
Richard C. Bolten	2
Sharif Mohamed	2
Tom Turney	2

ANGLER NAME	BILLFISH TAGGED
HAWAII, U.S.A.	
Don Brandt	6
Robert Anthony	5
Carl Kymla	4
John Perell	4
Johnny Clanahan	4
Michael Shimamoto	4
Mike James	4
Patrick H. Howard	4
Tim Robertson	4
Tom Pieper	4
Victor Cann	4
Adam Brown	3
Bob Creedon	3
Bob McGill	3
Carter Whalen	3
Dale Meckler	3
Don Miller	3
Eiji So	3
Gary Carruthers	3
Gary Speirs	3
George Handgis	3
James Astry	3
Jeff Waugh	3
John Patterson	3
Leo Drago	3
Masaharu Matsushita	3
Michael Adams	3
Mike Comisac	3
Scott Cranpton	3
Tracy Leverone	3
Alex Potter	2
Allen Stuart	2
Anita Conboy	2
Barry Satterfield	2
Bill Wells	2
Brenden Georg	2
Brett Schervone	2
Brian Camplin	2
Carol Hinkle	2
Charles McClintic	2
Charles W. Helscel	2
Cindy Barnett	2
Clark Thompson	2
Corky Reece	2
D. Brent Nelson	2
Dave Free	2
David Malmberg	2
Deborah Lassy	2
Derek Miller	2
Douglas Warren	2
Ed Halas	2
Eric Barron	2
Eric T. Young	2
Eugene Conrad	2
Everett Henkel III	2
George Diggles	2
Grady Mulberry	2
Greg Martz	2
Guy Rose	2
Heidi Barber-May	2
Hiroshi Ogawa	2

ANGLER NAME	BILLFISH TAGGED
HAWAII, U.S.A.	
Jacob Mertz	2
Jason Lee Carter	2
John Barbosa	2
John Evan Bible	2
John Rogers	2
John Terry	2
Keishi Shiohata	2
Ken Serigiter	2
Ken Simmons	2
Kevin Jennier	2
Kevin McLean	2
Kevin Poynter	2
Kevin Reece	2
Kiichiro Nagashiki	2
Lauren Miller	2
Levon Arklin	2
Lynn J. Moorhouse	2
Lynn Sorensen	2
Mark Mallet	2
Mason Fox	2
Mason Phelps	2
Michael Cairns	2
Michael Carter	2
Michael Tiblie	2
Mick Childs	2
Morio Wakasugi	2
Pat Mosher	2
Ralph Lane Falls III	2
Richard Martini	2
Robert J. Berg	2
Robert O'Dea	2
Shannon Garcia	2
Shawn MacMullin	2
Stephanie Lea Winans	2
Steve Stankiewicx	2
Suzanne Hein	2
TB Danes	2
Terry Smith	2
Thomas A. Seeno	2
Thomas Praytor	2
Tim Konecny	2
Tim Llacuna	2
Tom Schilling	2
Warren Brantley	2
William S. Dixon	2
MANZANILLO-COLIMA, MEX.	
Howard Bond	40
Jerry Condren	4
Dan Creamer	3
Gordon Creamer	3
SOUTHERN CALIFORNIA, U.S.A.	
Stan Ecklund, Sr.	3
Decarus Bennett	2
Jerry A!	2
Johnny L. Sanders	2
Phil Kerr	2
BRAZIL	
Marco Ribas	2

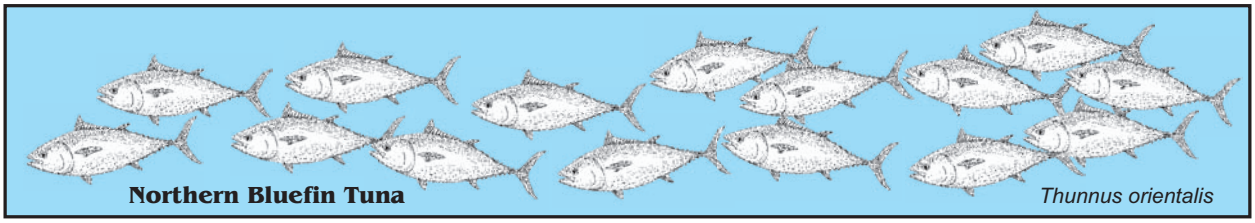


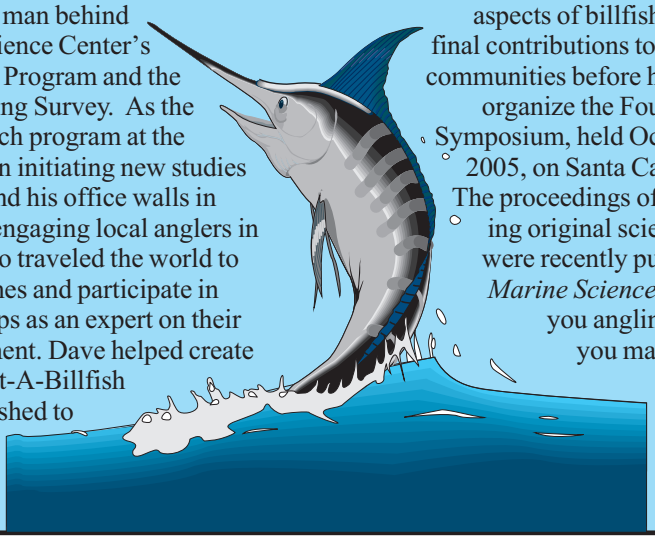
Table 5. Names of captains tagging 2 or more billfish during the 2005 calendar year, by area.

CAPTAIN NAME	BILLFISH TAGGED
ACAPULCO-IXTAPA-ZIHUATANEJO, MEXICO	
Martin G. Cortez	40
Armando Arciniega	39
Marco	29
Homero Garcia	4
Ed Kunze	2
BAJA CALIFORNIA, MEXICO	
Richard Hamilton	40
Mike Shrosbree	14
Harold Schram	10
Richard A. Johnson	9
Martin Olachea	8
Jesus Araiza, Jr.	7
Art Ponce	5
Chris Hull	4
Tim Turney	4
John Algeo	3
John Thompson	3
Paulino Martinez	3
Randy Karsting	3
Dan Loros	2
Ken Deemer	2
HAWAII, U.S.A.	
Peter Hoogs	79
John Bagwell	73
Guy Terwilliger	41
Marlin Parker	41
Dennis R. Cintas	37
McGrew Rice	34
Tim E. Hicks	32
Kevin Hibbard	29
Mike Hasbrouck	28
William Dorr	27
Sam Thies	26
Jeff Fay	24
Tim D. Cox	24
Robert Hudson	21
Bill Crawford	20

CAPTAIN NAME	BILLFISH TAGGED
HAWAII, U.S.A.	
Steve Cravens	20
Chuck Wigzell	19
Scott M. Fuller	19
Charles E. Haupert	18
Mike Holtz	18
Alan Bakke	15
Neal Isaacs	15
Steven D. Kaiser	15
Bill Duncan	13
Jerry Allen	13
Mark Shultz	13
Mike Derego	13
Tom Casey	13
Allan Ayano	11
James Dean	11
John Jordan	10
Steve Carroll	10
William Lazenby	10
John Perell	8
Marty L. Sands	8
Ryan C. Foster	8
Tony Clark	8
Bruce Herren	7
Bill Casey	6
Fran O'Brien	6
Jeff Kahl	6
Scott Crampton	6
Wayne Knight	6
Alan Abdill	5
Brian Hickey	5
Brian Wargo	5
Kenny Llanes	5
Robert McGuckin	5
Teddy Hoogs	5
Chip Van Mols	4
Frank Rennie Boyd	4
John Bennett	4
Bill Jardine	3
Chris Kam	3
Dale Leverone	3

CAPTAIN NAME	BILLFISH TAGGED
HAWAII, U.S.A.	
Gene Perkins, Jr.	3
Gus Sellers	3
Jim Scanlan	3
Devin M. Hogan	3
Rennie Boyd	3
Ryan Fiedorowicz	3
Sam Choy, Jr.	3
Chip Fischer	2
Dominic Cameli	2
Hector Ubaldo	2
Jason Holtz	2
John Jordan	2
Oleh Hunka	2
Patrick B. Tooley	2
Ron Grabowiecki	2
Scott Davidson	2
Tim Tucker	2
MANZANILLO-COLIMA, MEX.	
Howard Bond	51
SOUTHERN CALIFORNIA, U.S.A.	
Richard Hamilton	9
Kathy Ecklund	3
Bill Buchanan	2
COSTA RICA	
Daniel Espinoza	8
TAHITI	
Francis Blais	5
BRAZIL	
Chris Badsey	2
FRENCH POLYNESIA	
Chris Lilley	2
MAURITIUS ISLAND	
Colas Yann	2

The Billfish Newsletter says "Goodbye" to David Holts



For 15 years, Dave was the man behind the Southwest Fisheries Science Center's (SWFSC) Billfish Tagging Program and the International Billfish Angling Survey. As the leader of the Billfish research program at the SWFSC, Dave was active in initiating new studies on striped marlin just beyond his office walls in southern California, often engaging local anglers in the research efforts. He also traveled the world to conduct research on billfishes and participate in international working groups as an expert on their conservation and management. Dave helped create the highly successful Adopt-A-Billfish Program which was established to promote research on the effects of billfish angling on survivability and other aspects of billfish biology. One of Dave's final contributions to the research and angling communities before his retirement was to help organize the Fourth International Billfish Symposium, held October 31 to November 3, 2005, on Santa Catalina Island, California. The proceedings of the Symposium, including original scientific articles on billfish, were recently published in the *Bulletin of Marine Science*, vol. 79(3). For those of you angling in southern California, you may catch sight of Dave out fishing in his kayak. We wish Dave a "Happy Retirement, Smooth Seas and Good Fishing"!

TAG RECOVERIES IN 2005

The number of tag recoveries reported each year averages roughly 10 billfish and one or two tuna. In 2005, we received recapture information for 3 striped marlin and 5 blue marlin (Table 6). One striped marlin was tagged off Maui in Hawaii and recaptured just to the north of the northwest Hawaiian Islands archipelago. The striper had moved a net 377 nautical miles (nmi) in 83 days. Remarkably, a second striped marlin recaptured was one that had been tagged the previous day, by the same angler! Joel Gruwell and Rich Hamilton tagged a striper off Baja California Sur, Mexico on May 19, 2005 and recaught the same fish 42 nmi away on the following day! While this is not the first time in the history of the billfish tagging program that a recovery has been made within one day of tagging, it is the first time that the recapture was made by the same angler who tagged the fish. Three of the blue marlin recaptured had been tagged off the Kona coast, Hawaii. One was recaptured 11 days later, 51 nmi away off the northern tip of Hawaii. The other two blue marlin made long distance movements toward the south. One was recaptured in French Polynesian waters after 280 days, having moved a net 1,957 nmi. The other was recaptured by a Spanish longline vessel in the Eastern Tropical Pacific Ocean after traveling 3,434 nmi in 143 days. The final blue marlin, tagged off Cabo San Lucas, Baja California Sur, Mexico had moved northwest along the Baja Peninsula before being recaptured off Magdalena Bay. That fish moved a net 170 nmi in 212 days. Figure 2 shows movements of all striped and blue marlin tagged and recovered throughout the history of the Billfish Tagging Program.

Unfortunately, we have still not received the release data for one striped marlin and one blue marlin. We have calculated that nearly 15% of all billfish tagged in this program have NOT been reported. It is important that all Billfish Tagging Report cards be sent in as soon as possible. This would be a great time to check your tackle boxes and ensure all Billfish Tagging Report cards have been sent to our office.

Over the years we have seen some remarkable long distance movements and time at liberty. Table 7 provides the maximum distance traveled and maximum time at liberty of some of the large pelagic fish in our database.

Table 6. Tag recovery information for 2005.

TAGGER/CAPTAIN	RELEASE DATE	RELEASE LOCATION	RECOVERY DATE/ ANGLER	RECOVERY LOCATION	DAYS FREE	MILES/ DIRECTION TRAVELED
Striped Marlin						
Richard Mott Jeff Kahl	02/23/2005	20°45'N 156°45'W Kahoolawe, Hawaii U.S.A.	05/17/2005 Hien Huynh & Darron Basso	24°42'N 162°03'W Hawaii, U.S.A.	83	377 - NW
Tagging card not received	?	?	01/23/2005 Shannon Frazier	21°32'N 158°19'W V-Buoy, Oahu, Hawaii, U.S.A.	?	?
Joel Gruwell Rich Hamilton	05/19/2005	23°21'N 109°16'W Gordo Bank, B.C.S., Mexico	05/20/2005 Joel Gruwell	23°39'N 108°58'W Los Friales, B.C.S., Mexico	1	42 - NE
Blue Marlin						
C. Neal Monte Marlin Parker	02/21/2005	19°30'N 156°00'W Kona, Hawaii, U.S.A.	03/04/2005 Andrew Miller	20°20'N 155°50'W Tip of Big Island Hawaii, U.S.A.	11	51 - NE
Joe Dupne Mike Shrosbree	01/14/2005	22°55'N 110°05'W Cabo San Lucas, B.C.S., Mexico	08/14/2005 Williams Fernado Maldonado	24°10'N 112°49'W Baja California Sur, Mexico	212	170 - NW
James Karamouzis Tom Siebler	08/22/2004	19°36'N 156°04'W Kona, Hawaii, U.S.A.	05/29/2005 Stephan Wrucka	10°55'S 144°23'W Near Tahiti, French Poynesia	280	1,957 - SW
Tagging card not received	?	?	06/17/2005 IATTC Field Office	06°37'N 110°55'W Eastern Pacific Ocean SW of Clipperton Island	?	?
Steve Turner Bill Crawford	08/13/2004	19°40'N 156°01'W Kona, Hawaii, U.S.A.	01/03/2005 Spanish Longline Observer Prog.	29°59'S 126°27'W Eastern Pacific Ocean SE of Pitcairn Island	143	3,434 - SE

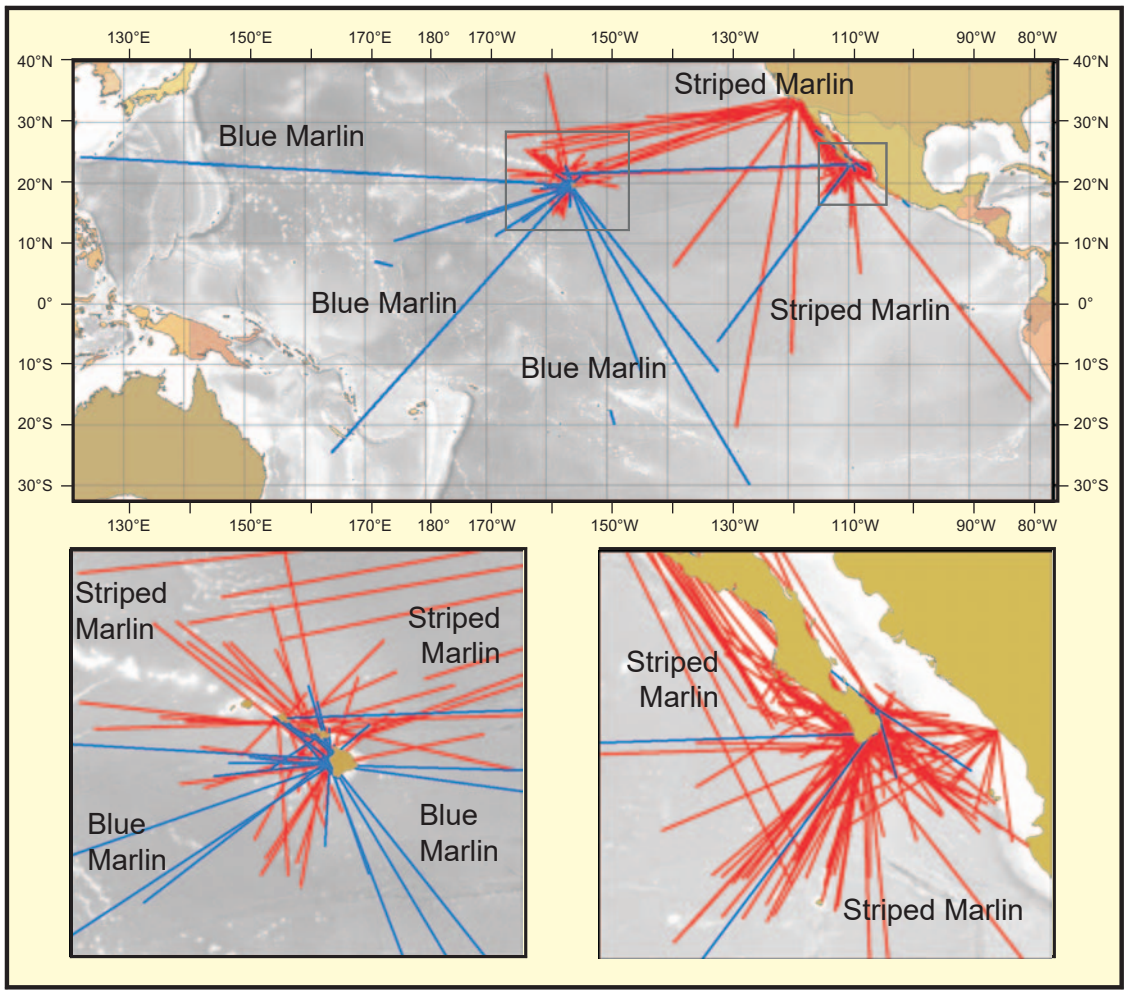
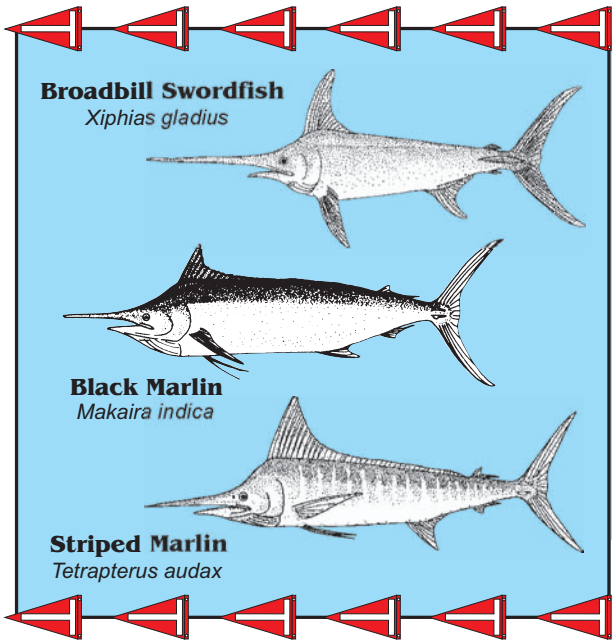


Figure 2. Movements of all striped and blue marlin tagged and recovered in conjunction with the Billfish Tagging Program. Red lines represent striped marlin and blue lines represent blue marlin.

Table 7. Maximum net distance traveled and longest time at liberty for billfish, tunas and pelagic sharks tagged in conjunction with the Billfish Tagging Program and other SWFSC research programs, 1963 - 2005.

SPECIES	DAYS AT LIBERTY	NET MOVEMENT (nmi)
Pacific Blue Marlin	1,503	4,450
Striped Marlin	1,585	3,693
Black Marlin	1,454	5,763
Sailfish	1,717	932
Shortbill Spearfish	34	173
Broadbill Swordfish	1,681	2,573
Albacore	3,565	5,587
Bluefin Tuna	1,829	5,116
Yellowfin Tuna	324	850
Skipjack Tuna	290	575
Shortfin Mako Shark	1,859	3,410
Common Thresher Shark	739	120
Blue Shark	265	4,463



ADOPT-A-BILLFISH PROGRAM

The Adopt-A-Billfish tagging program began in 2002 to determine the survival rate of large billfish caught and released during international tournaments and to evaluate site fidelity off Central America and Mexico. The focus in the Pacific Ocean has been on sailfish, the dominate billfish species caught by anglers in the eastern tropical and subtropical areas. The program is funded in part by interested anglers who "adopt a billfish" by contributing toward the cost of satellite tags used to monitor movements and behavior of sport caught billfish. The program is conducted by scientists of NOAA's Southwest (SWFSC) and Southeast Fisheries Science Center (SEFSC) in cooperation with Joan Vernon of the Presidential Challenge tournament series run off Central America and Mexico. During Phase I efforts, 41 satellite archival tags were deployed on sailfish during tournaments in central Mexico, Guatemala, Costa Rica and Panama. In August 2006, the program embarked on Phase II to monitor sailfish in the Sea of Cortez and to study larger animals on their spawning grounds.

The first research trip of Phase II was conducted August 8-10, 2006 at East Cape, Baja California Sur, Mexico. Working with two colleagues from Mexican Research Institutes, Dr. Oscar Sosa-Nishizaki and Dr. Rogelio Gonzales Armas, Dr. Eric Prince of the SEFSC deployed 4 satellite tags on sailfish and conducted plankton net tows for billfish larvae. Although the sailfish were on the small size, averaging 40 lbs. or less, the tags of all 4 fish had reported by 120 days. Predictably, the sailfish moved to the southeast toward warmer water. Plankton samples are being analyzed to determine whether billfish were spawning in the area. Further efforts in the Sea of Cortez are planned for 2007. For more information on the Adopt-A-Billfish program visit:

"http://www.preschallenge.com/news"
"http://www.sefsc.noaa.gov/fisheriesbiology.jsp".

RESEARCH HIGHLIGHT

Molecular Techniques used to Pinpoint Billfish Spawning off Hawaii

A team of scientists from NOAA's SWFSC and Pacific Islands Fisheries Science Center (PIFSC) have developed techniques to identify billfish eggs and larvae using molecular genetics. When billfish spawn, their eggs float to the surface and often collect in surface slicks with the eggs of many other fishes. Newly hatched billfish larvae can be found feeding among these slicks during their first few weeks of life. Over the past 4 years, the scientists have collected eggs and larvae from slicks off the Kona coast of the island of Hawaii and have identified a new "hotspot" for billfish spawning. Their surveys positively identified not only blue marlin, shortbill spearfish, and swordfish (Figure 3), but also the eggs and larvae of striped marlin, common and pompano dolphinfish and wahoo, all of which spawn there concurrently. The study provides the first descriptions of the fertilized eggs of blue marlin, shortbill spearfish and wahoo as well as the first documentation of striped marlin spawning in the central north Pacific.

The early life history stages of billfishes are difficult to study given their highly migratory nature, the fact that they are intrinsically rare nearshore, and the inability to maintain and study them in captivity. Using these new molecular techniques, the researchers have been able to rapidly determine the occurrence and species identity of billfish eggs and larvae captured in plankton samples. This near real-time identification capability allows the scientists to adjust their survey design when the species of interest are found. Coupled with detailed environmental information collected by water column profilers, surveys and satellites, this methodology may help to predict how short- and long-term environmental variability affects billfish recruitment. More reliable recruitment estimates for billfishes will improve stock assessments and ultimately help with the management and conservation of these species.

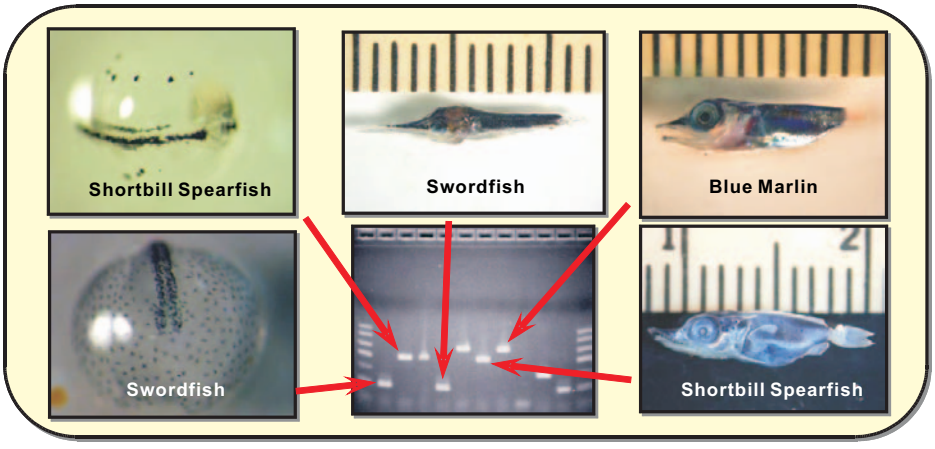


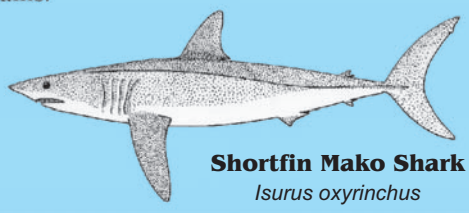
Figure 3. Photos of shortbill spearfish eggs and larvae positively identified for the first time using molecular genetic techniques. Also shown are other billfish eggs and larvae collected from the Hawaii spawning hotspot.

2006 BILLFISH ANGLER SURVEY

BILLFISH ANGLER SURVEY cards for fishing in the 2006 calendar year were mailed in early 2007. If you have not already done so, please complete the survey and return the post-paid survey form as soon as possible. Additional 2006 Angler Survey cards are available to all billfish anglers by contacting this office. Beginning this year, you can now download and print a copy of the Billfish Angler Survey form from our website. See "http://swfsc.noaa.gov/frd-billfish.aspx". However, if you choose to send us a downloaded form, you will be responsible for postage. We hope to implement an online submission in the future. U.S. Government regulations require that we purge our mailing list each year. If you wish to continue to receive the Billfish Newsletter but did not fish, please indicate "NO FISHING" on the Billfish Angler Survey form and return it to the SWFSC. Your name will be retained on our mailing list. Your continued response to the Billfish Angler Survey is needed to monitor changes in abundance of billfish stocks important to recreational fisheries.

SHARK TAG REWARD

The SWFSC's Large Pelagics group has a significant shark research program. Tagged and recaptured sharks in that program are mentioned here as general interest and because we need your support to look for bright yellow and/or white tags on the dorsal fin of shortfin mako and thresher sharks. These specially tagged sharks are part of our age and growth studies and are very important. These mako and thresher sharks were tagged with oxytetracycline which leaves a growth mark on the shark's vertebrae. We offer a U.S. $100.00 reward for the return of the tag with a 4 inch section of the vertebrae. Please notify this office as soon as possible if you catch one of these tagged sharks.

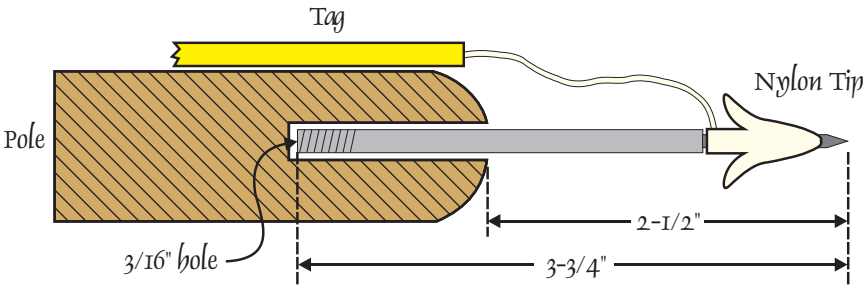


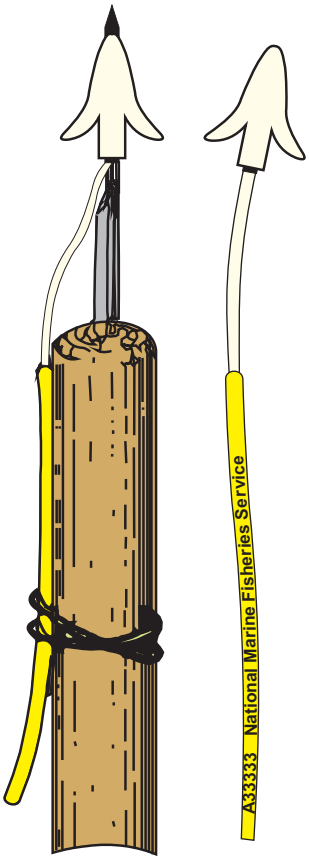
Shortfin Mako Shark
Isurus oxyrinchus

SUCCESSFUL CATCH, TAG AND RELEASE

It is important that the billfish tag be applied properly. Tag location, angle, and depth are critical to successful tagging. For striped marlin of 100 to 200 lbs, the tag should be inserted about 2.5 inches deep just below the tallest part of the dorsal fin. For larger fish, such as blue and black marlin, the tagging applicator pin may be 3.5 inches. Conversely, if you are tagging small, narrow fish like sailfish and shortbill spearfish, then it would be better to shorten the pin. Manufactured tagging poles are available at most retail sportfishing stores. It is important to check the length of the applicator pin installed on these poles to ensure the length of the tip matches the fish you are seeking. Some manufacturers produce tagging poles that have pin lengths that are adjustable by moving the stopper.

If you construct your own tagging pole, an old wooden broom or mop handle about five feet long works very well. A hole should be drilled with a 3/16 inch or No. 16 drill bit to a depth of 1.25 inches for the applicator tip (see diagram below). Use a good grade epoxy to secure the applicator pin and seal out saltwater.





Survival of tagged and released billfish depends on several decisions you, the angler, must make prior to and during fishing. Following on page 13 is a guide that will enhance post-release survival of your billfish.

Tagging Guide

1. BEFORE YOU CATCH YOUR FISH:

First decide if you plan to tag and release any fish caught. If so, circle hooks are preferred because they reduce deep or foul hooking when bait fishing. We recommend that you do not use double rigged J hooks if you plan to release your catch.

2. WHILE FISHING:

Never attempt to tag a fish while it is jumping or thrashing about. Bring your fish to leader as quickly as possible but wait until the fish is calm and swimming beside the boat before tagging. **Check for previous tags!**

3. TAGGING:

Tag the fish as it is being towed alongside the boat by inserting the tag in the back muscle below the tallest part of the dorsal fin. Avoid the gills, head, and stomach. Take care not to allow your fish to injure itself on the vessel's transom or hull.

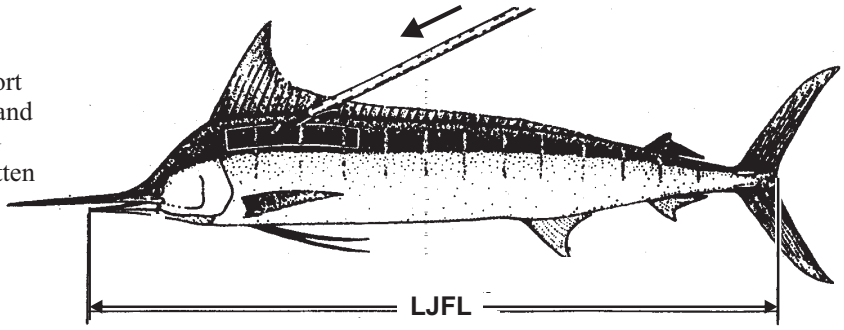
4. RELEASING:

Revive the fish by slowly towing it through the water, allowing water to flow over the gills until its normal color returns and it begins to swim on its own. Remove the hook with a good pair of pliers, or if deeply hooked in the throat or stomach, release it by cutting the leader as close to the hook as possible.

5. COMPLETE THE BILLFISH TAGGING REPORT CARD:

Fill out the yellow Billfish Tagging Report card completely and as accurately as possible indicating latitude and longitude, date of release, estimated length (lower jaw-to-fork length; LJFL) and estimated weight of the fish. Include name and mailing address of the angler and boat captain and other remarks as appropriate. Return cards promptly to us at the Southwest Fisheries Science Center.

PLEASE NOTE: Make your tagging effort count. Tag and release your fish skilfully and return the yellow **BILLFISH TAGGING REPORT** promptly. Though easily forgotten in the heat of battle and glow of success, returning the card is the most critical and final step in tagging your fish.



- Fill out the card completely and as accurately as possible.
- Indicate latitude, longitude and locally known fishing area.
- Estimate the length of the fish as "tip of lower jaw-to-fork" length (LJFL).
- Estimate weight of the fish.
- Include any remarks, club name and complete address of the angler and the boat captain.
- Return cards promptly to the Southwest Fisheries Science Center. Tagging is of no value unless this *Billfish Tagging Report* card is returned. Postage is paid if mailed in the U.S.A.

COMPLETING THE BILLFISH TAGGING REPORT CARD

NOAA, National Marine Fisheries Service
BILLFISH TAGGING REPORT
PLEASE FILL IN DETAILS AND MAIL TODAY. TAG #: A33333

If mailing outside USA, postage must be affixed
Please return card, Otherwise tagging is of no value

Latitude: 33° 14' N Longitude: 118°14' W
Locality: East End Catalina Is. CA
Species: Striped Marlin Date: 6/10/98
Estimate length (tip of jaw to fork of tail): 72 inches. Weight: 140 lbs.
Fish Condition: Good Bait type: Plastic Lure
Angler: Bill Fish Fight time (minutes): 23
Address: P.O. Box 271 La Jolla, CA Zip: 92038
Club: Anglers Club
Captain: Capt. Joe Dew Boat name: Good Grief
Address: P.O. Box 271 La Jolla, CA Zip: 92038

Response to this form is voluntary.
OMB 0648-0009, expiration date 08/31/2001
NOAA 88-162, 2/99

SEND US YOUR PHOTOGRAPHS

This year's cover photo is provided by Wayne Slahor. The photo is of a striped marlin that was tagged and released during the 2006 Invitational Light Tackle Tournament (ILTT) put on by the San Diego Marlin Club in memory of Gene Grimes. The next ILTT is scheduled for September 7-9, 2007, and Wayne is the tournament Chairman. We appreciate the efforts of the San Diego Marlin Club in promoting tag and release of billfish and thank Wayne for this year's cover shot!

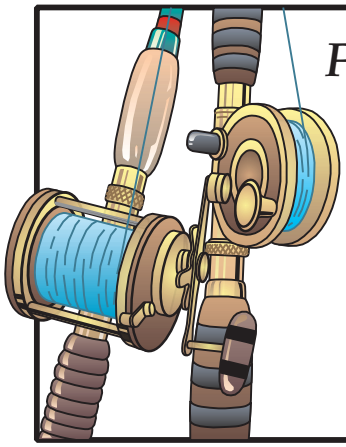
Southwest Fisheries Science Center is looking for good photographs of billfish for the cover of next year's *Billfish Newsletter*. Color or black-and-white photos of billfish and/or fishing activities are appropriate. We would appreciate your sharing your photos and will give you full credit in the 2007 issue. A billfish baseball cap and plaque will be awarded to the winning photographer.

PAPER REDUCTION ACT NOTIFICATION

NOAA Fisheries needs this information for the conservation and management of fishery resources. The information will be used for billfish research. Public reporting burden for the Billfish Angler Survey card is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed and completing and reviewing the collection of information. The reporting burden to complete the Billfish Tagging Report is estimated to average five minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate to the SWFSC, 8604 La Jolla Shores Drive, La Jolla, CA 92037. The information submitted will become a public record. Notwithstanding any other provision of the law, no person is required to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.

ACKNOWLEDGEMENTS

The information reported here would not be possible without the cooperation of thousands of anglers and volunteers who support these investigations. Their efforts and assistance are greatly appreciated. We thank John Hyde and Robert Humphreys for sharing some of their results on molecular identification of billfish eggs and larvae. We are grateful to Joan Vernon and Presidential Challenge tournament series for her assistance with the Adopt-A-Billfish program. Roy Allen designed and helped produce the newsletter. The Billfish Newsletter and 2006 Angler Survey form can also be accessed on the Southwest Fisheries Science Center's webpage at http://swfsc.noaa.gov/frd-billfish.aspx. We welcome reader comments and suggestions concerning the content of the Billfish Newsletter.



Fine fishing for now and forever!

Suzanne Kohin, Fishery Biologist
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