Billfish Research and Management News for the Mid-Atlantic $500,000

Summer 2006

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Figure 1. *A released white marlin carrying a pop-up satellite archival tag (PSAT). The tag stays on the animal for 10 days collecting data before it releases, floats to the surface and transmits stored data to passing satellites. Our studies demonstrate that white marlin caught on circle hooks have much lower rates of post-release mortality than those caught on standard J-hooks. Photo: Dr. Guy Harvey*

Greetings! Welcome to the 2006 Mid-Atlantic $500,000. The past year has been an active one for billfish research and management. I'll briefly cover a few key items in this newsletter and provide an update on the Mid-Atlantic $500,000's fishing statistics. If you'd like to know more about billfish research or management (domestic or international), or graduate education in marine science, please drop by to talk. I'll be down at the Canyon Club weigh station in the early evening and under the tent after that. My colleague Andrij Horodysky, who is always happy to talk about fish, will be at the Ocean City weigh station.

Tight lines,

Billfish Research

The Fourth International Billfish Symposium was held last November at the historic Casino in Avalon, Catalina Island, California. Billfish scientists from over 20 countries presented more than 90 papers on various aspects of current billfish research. A special afternoon session with general presentations for billfish anglers was followed by an evening session in which Bill Boyce presented a slide show of his billfishing photos and Dr. Guy Harvey narrated some of his incredible underwater videos of free swimming billfish. Many of the papers will be included in a special volume of Bulletin of Marine Science to be published later this year.

In my lab at the Virginia Institute of Marine Science (VIMS) our billfish program is focused in two different areas: molecular genetic studies of billfish population structure and evolutionary history, and the use of pop-up satellite tags (PSATs) to investigate billfish post-release survival and habitat utilization. One of our projects on the genetic front is a study of the "hatchet marlin" that have been appearing in our waters in increasing numbers over the past few years. Analyses of mitochondrial and nuclear DNA sequences of these animals indicate that a revision of the entire genus (white marlin, striped marlin, and the spearfishes) is in order. We'll be saving specimens from the fish landed this week for morphological and genetic analyses.

In previous Newsletters we reported on a big difference in post-release survival between white marlin caught on circle hooks and those caught on standard J-hooks (Figure 1). We are now looking at differences in post-release survival among white marlin caught on three types of circle hooks: non-offset Owner hooks, non-offset Eagle Claw hooks and 5°

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Mid-Atlantic $500,0

Winning Fish (weight in lbs.)

		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
White Marlin	1st	**86**	**69**	**69**	**69**	**77**	**89**	**74**	**78**	**68**	**69**	**75**	**91**
	2nd	83	68	65	68	69	76	71	67	61	63	61	79
	3rd	76	61	65	64	66	72	68	63	---	63	60	79
Blue Marlin	1st	**466**	**615**	**586**	**746**	**455**	**748**	**534**	**522**	**566**	**578**	**558**	**433**
	2nd	384	488	542	660	410	493	468	480	476	421	---	---
	3rd	359	435	522	519	407	448	412	464	---	---	---	---
Tuna	1st	**109**	**254**	**242**	**205**	**153**	**120**	**221**	**204**	**172**	**114**	**147**	**82**
	2nd	102	218	213	166	142	103	181	185	153	114	136	72
	3rd	95	200	139	108	126	99	105	185	141	112	81	61
Dolphin	1st	**36**	**42**	**53**	**33**	**34**	**33**	**33**	**43**	**39**	**29**	**34**	**43**
Wahoo	1st	**44**	**67**	**73**	**47**	**79**	**69**	**38**	**72**	**86**	**76**	**75**	**95**

Billfish Releases

White Marlin	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Boated	15	20	23	16	18	13	10	14	3	10	10	13
Released	84	136	174	177	153	124	231	432	58	220	182	144
% Released	85%	87%	88%	92%	89%	91%	96%	97%	95%	96%	95%	92%

Blue Marlin	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Boated	9	7	11	14	7	15	8	10	2	3	3	4
Released	3	8	13	16	11	26	17	29	32	10	18	15
% Released	25%	53%	54%	53%	61%	63%	68%	74%	94%	77%	86%	79%

Catch Per Unit Effort (CPUE)

White Marlin	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
# Fish Caught	99	156	197	193	171	137	241	446	62	203	192	157
# Boats x # Days	393	408	426	417	435	381	393	411	399	378	393	384
CPUE (fish/boat-day)	0.25	0.38	0.46	0.46	0.39	0.34	0.61	1.09	0.15	0.61	0.49	0.41

Blue Marlin	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
# Fish Caught	12	15	24	30	18	41	25	39	34	13	21	19
# Boats x # Days	393	408	426	417	435	381	393	411	399	378	393	384
CPUE (fish/boat-day)	0.03	0.04	0.06	0.07	0.04	0.11	0.06	0.09	0.09	0.03	0.05	0.05
Marlin/Boat-Day	**0.28**	**0.42**	**0.52**	**0.53**	**0.43**	**0.45**	**0.67**	**1.18**	**0.24**	**0.64**	**0.54**	**0.46**

00 — Facts & Figures

2004	2005
75	**75**
74	68
71	67
518	**699**
---	525
---	418
182	**193**
150	78
132	60
44	**47**
58.5	**74**

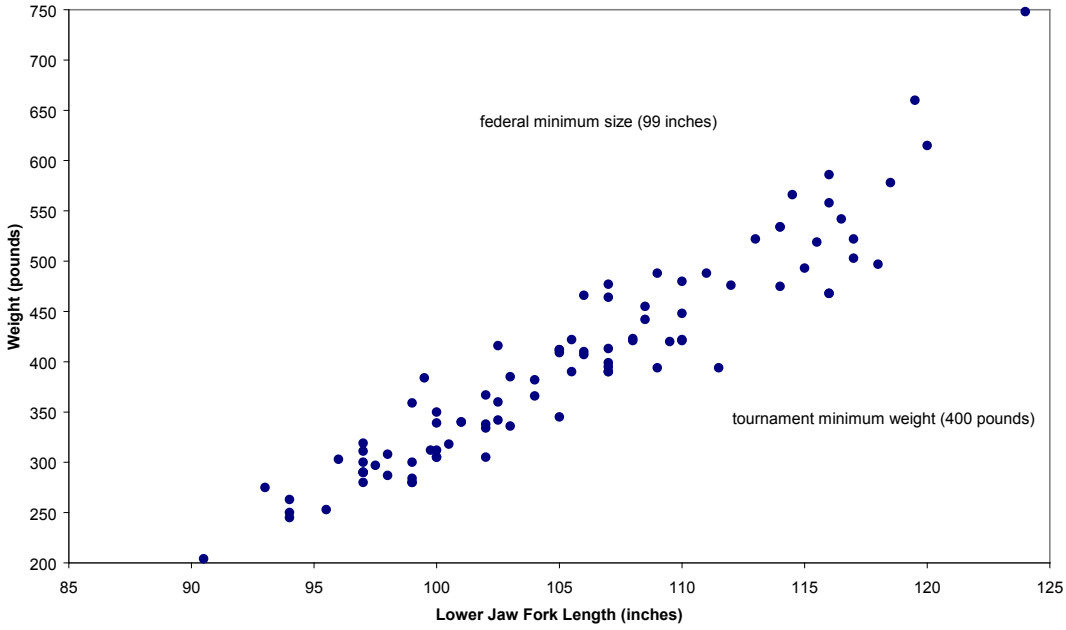
2004	2005
14	14
313	244
96%	95%

2004	2005
3	5
22	25
88%	84%

2004	2005
327	258
429	507
0.76	0.51

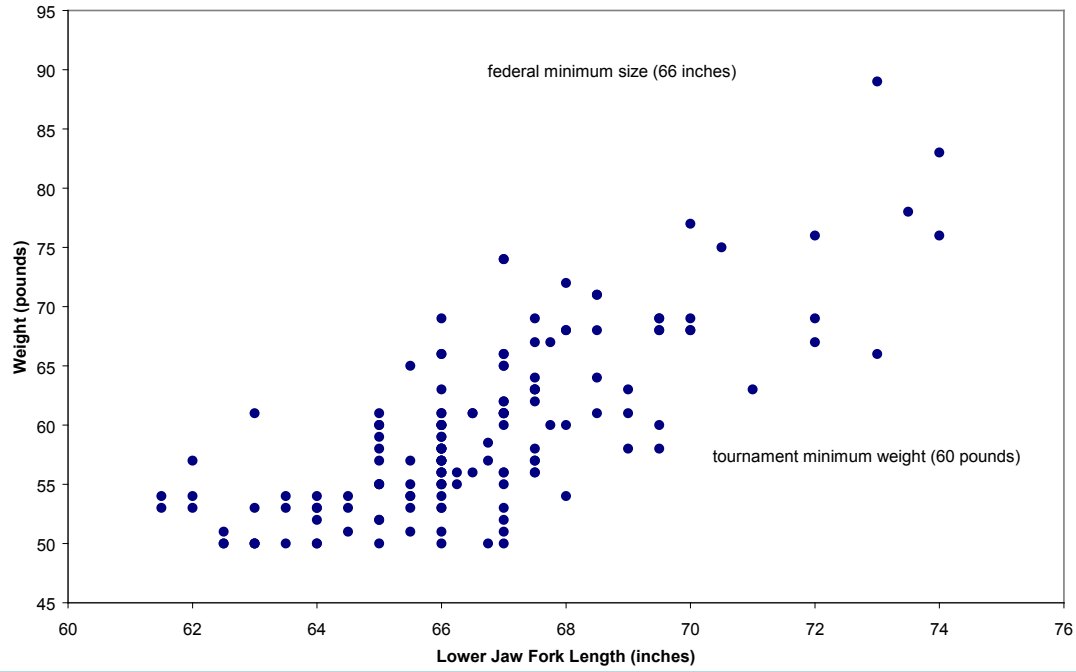
2004	2005
25	31
429	507
0.06	0.06
0.82	**0.57**

Blue Marlin Length-Weight Relationships (1992-2005)



There is a good relationship between length and weight for blue marlin. Fish need to be about 5 inches over the federal minimum size of 99 inches lower jaw fork length (LJFL) in order to meet the tournament minimum weight of 400 pounds. It's a different story for white marlin. The federal minimum size is 66 inches LJFL, but white marlin landed at the Mid-Atlantic $500,000 with a LJFL of 67 inches have weighed anywhere from 51 to 74 pounds! The best way to tell if a legal white marlin will make the tournament minimum weight is to see if it "carries the weight" all the way to the tail. Long, thin fish won't make weight!

White Marlin Length-Weight Relationships (1992-2005)



offset Mustad hooks. To date, we've put PSATs on about 15 white marlin caught on each type of hook and we don't see much of a difference in post-release survival among hook types – they all work well. In fact, of the 45 or so fish caught on circle hooks that we've tagged, only one has died. Compare that with the 35% post-release mortality we found for white marlin caught on J-hooks.

Billfish Management

This has been a big year for Billfish management at the international and domestic levels. In May 2006 the International Commission for the Conservation of Atlantic Tunas (ICCAT) conducted an assessment of blue marlin and white marlin, and for the first time since ICCAT has been doing assessments there is good news to report. The 2006 assessment shows a leveling off of the decline in blue marlin biomass and an increase for white marlin biomass over the past five years (see Figure 2). We may be seeing the results of international regulations requiring the release of live blue marlin and white marlin from pelagic longline gear. As the National Marine Fisheries Service (NMFS) will be conducting another status review of white marlin, for listing under the Endangered Species Act in 2007, these results couldn't come at a better time.

Within the United States, NMFS has declared its intent to implement a management measure in January 2007 that will require U.S. anglers fishing in billfish tournaments to use only non-offset circle hooks when deploying natural bait or natural bait/artificial lure combinations (J-hooks will still be allowed on artificial lures). This measure will significantly reduce post-release mortality of billfish without seriously impacting tournaments. So for the few of you that still aren't using circle hooks, it's time to convert. Not only will you be helping the fish out, I think you'll find that your catch rates will increase.

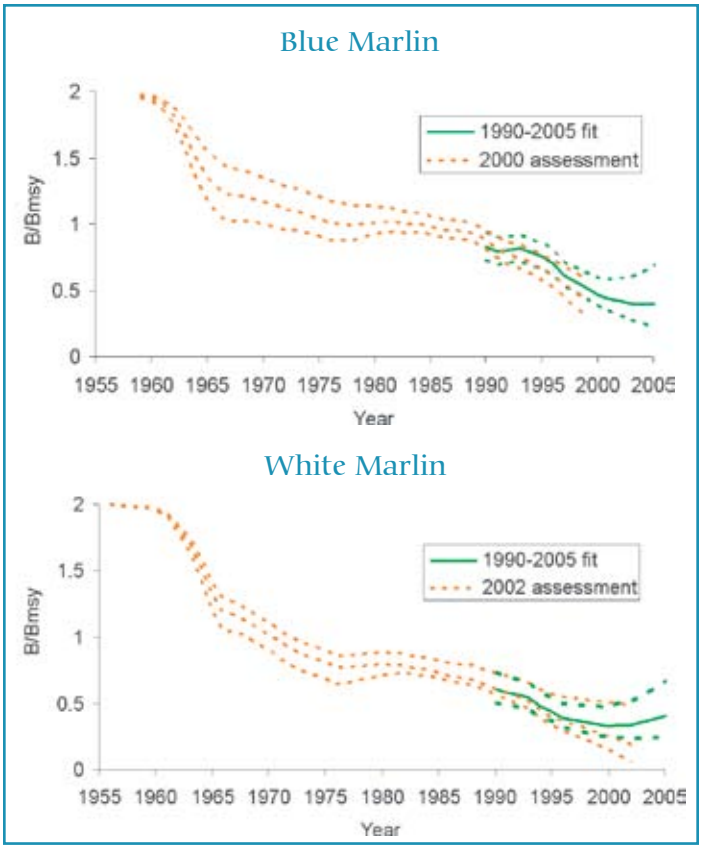
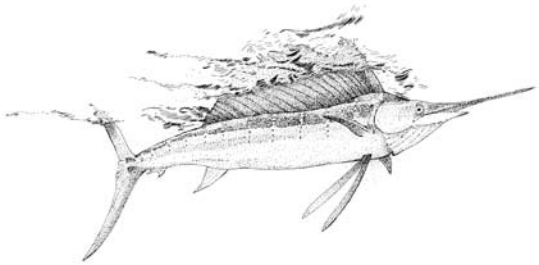


Figure 2. *Trends in biomass of blue marlin and white marlin. The graphs show the estimated biomass (B) of the species relative to that necessary for maximum sustainable yield (BMSY). Maximum productivity occurs when B/BMSY is about 1. Biomass did not fall off as rapidly as predicted by the 2000 and 2002 assessments, and over the past five years, the decline in blue marlin biomass has leveled off while white marlin biomass has increased.*



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