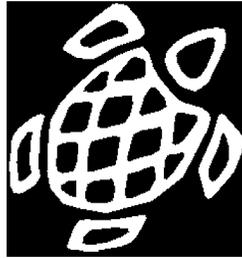


Techno-Fixing Sea Turtles

*How the Bush Administration's Manipulation of Science is Driving the
Leatherback Sea Turtle Towards Extinction*

September 27, 2004

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Newly proposed gear modifications to solve the problems of longline bycatch of sea turtles and other species have been receiving a lot of attention. These changes in hooks (from “J” style to “circle” hooks) and bait (from squid to mackerel) types have been adopted by U.S. NOAA (National Oceanic and Atmospheric Administration) Fisheries in the U.S. Atlantic, Pacific and Gulf of Mexico longline fisheries.¹ Unfortunately, the research informing this change in U.S. policy is preliminary, may be flawed, and has been manipulated by the Bush administration to the advantage of the longline industry.

The new pelagic longline fisheries policies that have resulted were put into place prior to publication as either a formal government report let alone published in a scientific peer reviewed journal. By the admission of one of its authors, the data has not even been checked for factual errors. Making matters worse, NOAA Fisheries, in response to influence from the longline industry, implemented policies that weakened the conclusions of their own scientists’ preliminary research. This is clearly another indication of an administration that has often allowed politics to trump science at the expense of sound conservation management.

As a result, the study has been subject to a number of significant criticisms of being incomplete, inconsistent, scientifically untested and politicized. Furthermore, the study has failed to solve the threat of extinction for the endangered Pacific leatherback (which cannot sustain even the reduced bycatch levels claimed to be achieved by the gear modifications). Because the new gear actually increases the catch of blue sharks and swordfish, it further displaces the problem to other species already being overfished, increasing the pressure on depleted fish stocks. Finally, the research does not address the extensive bycatch of sharks, seabirds, and marine mammals by longlines.

- **The Science is Untested, Incomplete and Not Peer Reviewed**

Two research teams have been investigating the use of circle hooks as a method to reduce the capture and severity of injuries by using circle hooks, instead of the commonly used “J” hooks. Both of these experiments have occurred in the Atlantic Ocean. Despite this geographic limitation, 16/0 and 18/0 “circle” hooks are now

¹ Compared to J style hooks, circle hooks have a barb that rounds back toward the shank. When the barb is offset from the shank the barb curves off away from the shank. The circle hook is believed to make it harder for sea turtles to swallow thereby more frequently catching them on the mouth.

being required by the US government and are currently in use in the Hawaii longline swordfish fishery in the Pacific.



J and Circle Hooks Used in the Study
Photo: NOAA Fisheries

Data Still Not Available for Peer Review

The NOAA Fisheries (formerly known as the National Marine Fisheries Service) conducted tests 2001-2003 in the Atlantic of various hooks types and sizes and bait combinations in an effort to reduce sea turtle capture that may have some promise to reduce both the likelihood of being hooked, as well as the likelihood of being internally “deep” hooked, which is more likely to cause serious injury.² Yet, three years later, this data has not even been formally written up in a standard report format and has not been peer reviewed for publication. Despite multiple presentations of the data, many months later, the data is still not available for serious scientific review and remains in a “powerpoint” presentation format only. Furthermore, NOAA admits that the study was reanalyzed in response to industry opposition.³

Best Science Not Being Used for Policymaking

The data from the studies suggests that large (18/0 and 20/0) circle hooks (non-offset) and mackerel bait most significantly reduces captures of loggerheads and leatherbacks. However, the recommendations, now being incorporated into

² Watson, J., D. Foster, S. Epperly, and A. Shah, “Experiments in the western Atlantic northeast distant waters to evaluate sea turtle mitigation measures in the pelagic longline fishery: report on experiments conducted in 2001-2003,” February 4, 2004, found at: http://www.mslabs.noaa.gov/mslabs/harvest/sea_turtle_mitigation.htm

³ See C. Burdeau, “Group says fishing hooks threaten turtles,” AP, July 4, 2004; and <http://www.mslabs.noaa.gov/mslabs/docs/watson4.pdf>

enforceable regulations, allow combinations of other hook types that are smaller and offset, including the 18/0 (10° offset) circle hooks with mackerel and squid baits inside the NED (Northeast Distant Waters, a region of the North Atlantic which was until this new rule closed to longlining) and 18/0 or larger (10° offset) or 16/0 (non-offset) outside the NED. Data for 16/0 circle hooks were not included in existing reports of findings. Another words, larger non-offset circles hooks are the most effective gear for reducing captuie and injury of sea turtles, yet new regulations allow smaller, offset hooks.

Data Shows Significance for Modification in J Hooks

While stating publicly that the reduction in capture of loggerheads is reported to be about 90 percent for loggerheads and for leatherbacks to be in a range 65-90 percent for 18/0 (10° offset) with both bait types, upon closer examination, the data shows a quite different result. In the study, circle hooks with squid bait reduce the bycatch of leatherbacks by less (57%) than J hooks with mackerel bait (66%) and circle hooks with mackerel bait (65%).⁴ Without an independent peer review, there is no way to account for the significant reduction in loggerhead bycatch by J hooks with mackerel bait.⁵

Data Set Inconsistent

Another problem with the data, which has not yet been subjected to rigorous peer reviewed testing, is that it is inconsistent. While the 16/0 (10° offset) circle hook is used as the control for tuna sets, no results are given for any of the three years of the study. As a result, we have no basis to compare the performance of the 16/0, which can now be used in the NED, against that of the J hook and 18/0 and 20/0 hooks for which data is provided.

Data Set Not Complete

The study was completed and the rule finalized before research in the Gulf of Mexico (GOM) was completed. “In fact, there is research currently underway in the GOM to compare target catches using 16/0 and 18/0 circle hooks, but that information was not

⁴ Watson, J., D. Foster, S. Epperly, and A. Shah, “Western Atlantic Pelagic Longline Atlantic Pelagic Longline, Sea Turtle Mitigation Research Sea Turtle Mitigation Research, Summary of 2001-2002 Results,” powerpoint slides, p. 13, found at: http://www.mslabs.noaa.gov/mslabs/harvest/sea_turtle_mitigation.htm

⁵ Ibid, p. 12. J hooks with mackerel bait were found to reduce loggerhead bycatch by 71% compared to circle hooks with squid (86%) and circle hooks with mackerel (90%).

sufficiently developed in time to be incorporated in the analyses in the FSEIS prepared for this rule.”⁶

New Rule Does Not Satisfy Biological Opinion

There are a number of other requirements outlined in the Biological Opinion (BiOp) that have not yet been satisfied. “The 2004 BiOp also requires additional research and/or analysis on the effects of different offsets, evaluation of the leatherback bycatch reduction, confirmation of the effectiveness of the hook and bait combinations, and improved data collection and reporting from observed trips to aid in completing these analyses.”⁷

Observer Coverage Was Extremely Low

Only 3.7 percent of the sets were observed with 273 observed interactions in 2001 and 8.9 percent of sets were observed with 335 interactions in 2002.⁸

Data for Sharks Incomplete

Furthermore, although bycatch data for blue sharks, the most frequently bycatch species for pelagic longlines, is given for 2003 it is not given for 2001 or 2002. As a result, we have no idea if “robbing Peter to pay Paul” by reducing the bycatch of sea turtles with gear that will further threaten to even further increase the bycatch of already severely threatened shark species.⁹

Offsetting Circle Hooks Defeats Purpose

On the other hand, Dr. Alan Bolten, a professor at the Archie Carr Center for Turtle Research at the University of Florida, has been conducting experiments into the use of circle hooks in the Atlantic Azores co-sponsored by NOAA Fisheries.¹⁰ His study suggests that 16/0 and 18/0 (non-offset) circle hooks reduce the take of loggerheads, but “offsetting” the circle hooks does not. In direct refutation of recommendations to use the offset circle hooks, Dr. Bolten has data “...that demonstrates that non-offset

⁶ Federal Register: Rules and Regulations, Dept of Commerce, NOAA, 50 CFR Parts 223 and 635, Atlantic Highly Migratory Species (HMS), Pelagic Longline Fishery, Final Rule, DOCID:fr06jy04-9, Vol. 69, No. 128, July 6, 2004, p. 40739; available online via GPO Access at wais.access.gpo.gov.

⁷ Ibid.

⁸ Ibid., p. 40739.

⁹ Myers, R. and B. Worm, “Rapid worldwide depletion of predatory fish communities,” *Nature*, vol. 423. May 15, 2003, p. 280, found that “large predatory fish biomass today is only about 10 percent of pre-industrial levels.”

circle hooks (flat circle hooks) reduced turtle bycatch.... I believe it is premature to recommend the offset circle hook.”¹¹

The push to use offset circle hooks is being driven by the longline industry because the baiting of “offset” circle hooks is easier and faster.

Study Rushed and Incomplete

This study, which is widely cited as “proof” that a solution to the problem of sea turtle bycatch by longlines has been found, is incomplete and, by the admission of the study’s own authors, rushed and unchecked. A parallel study in the Gulf of Mexico was not completed at the time this data was released.¹² Although no experiments on this hook-bait combination have been tested in the Pacific, results from the Atlantic study have already being used to reopen the Hawaii swordfish fishery there as well as the NED. One of the principal authors of the study even warned that “I want to stress that these results are very preliminary and may be subject to change. We have not had much time to complete these analyses and they were done under a lot of stress to meet today’s deadline. We have had no opportunity to review the analyses and check for errors.”¹³

- **Gear Already Being Exported and Used Abroad**

Once the new hooks and bait were announced in early 2004, the U.S. State Department has been cooperating with the Inter-American Tropical Tuna Commission (IATTC) to encourage other longline nations to adopt the technology. So far, Ecuador and Guatemala have agreed to use the new hooks and bait in a number of its longline vessels.

New Gear Will Increase Catch of Sharks

Guatemala is also trying to convince about 3,000 dorado (also known in English as mahi mahi or “dolphin fish”) and shark fishers to adopt the new gear. Because the preliminary results demonstrate an increased catch of sharks, it may have the effect of significantly increasing pressure on already depleted shark species. Dr. Bolten’s study

¹¹ Trivedi, B., “Reopening Hawaii Fishery May Harm Sea Turtles, Experts Say,” *National Geographic Channel*, April 1, 2004, found online at: http://news.nationalgeographic.com/news/2004/04/0401_040401_TVturtle.html. Bolton ran a four-year experiment in the Azores studying fishing gear modifications to reduce turtle bycatch.

¹² Strangely, NOAA Fisheries changed the new rule in response to Gulf fishers criticisms. See Burdeau, 2004.

¹³ Epperly, S., “NED 2003: Sea Turtle Demographics and Experiment Results,” powerpoint slide presentation, online at: http://www.mslabs.noaa.gov/mslabs/harvest/sea_turtle_mitigation.htm

showed that the CPUE of blue shark with the use of the 16/0 circle hook is actually twice as high as with the J hook.¹⁴

- **Rule Tainted by Politics**

Bait was Changed in Response to Industry Pressure

In response to comments from the longline industry that requiring *either* Atlantic mackerel or squid bait depending on whether the hook is offset or not resulted in the final rule being modified to allow the use of *both* types of bait both inside and outside the NED. Industry comments that the proposed new bait would reduce their catch outside the NED also contributed to the rule being modified¹⁵

Hook was Changed in Response to Industry Pressure

NOAA Fisheries modified the final rule to allow the use of either 16/0 or larger non-offset circle hooks outside the NED in response to the longline industry despite the fact that no data for 16/0 hooks have been provided and 18/0 hooks are shown to have a better effect on reducing bycatch of sea turtles. Industry comments that the proposed 18/0 circle hooks would reduce their catch both inside and outside the NED also contributed to the rule being modified.¹⁶

Bush Administration Cut Off Public Comment on New Rules

The Bush administration's Council on Environmental Quality (CEQ) allowed NOAA Fisheries to cut the public comment period on the Draft Supplemental Environmental Impact Statement by 31 percent (14 of the 45 days). Further approval was also given to cut the standard waiting period between the date of publication of the Notice of Availability for the Final Supplemental Environmental Impact Statement and signature of the record of decision for the action by about 87 percent (26 of the standard 30 days).¹⁷

New Rules Favors Lobby Group that Sued Government to Block Regulation

The Blue Water Fishermen's Association (BWA), which coordinated the participation of commercial vessels in NOAA Fisheries' 3 year study, actually sued the agency to

¹⁴ Bolten, A. et al, "Experiment to evaluate gear modification on rates of sea turtle bycatch in the swordfish longline fishery in the Azores—Phase 1 and Phase 2, draft paper, no date.

¹⁵ Federal Register, pp. 40740 and 40743.

¹⁶ Ibid., p. 40741 and 40743.

¹⁷ Federal Register, p. 40748.

block it from applying the Magnuson-Stevens Act to highly migratory species fisheries outside the U.S. exclusive economic zone (EEZ), including the NED, only a few years earlier. Although the lobby group lost the battle, they won the war and have had significant influence over the outcome of the science and new rules.¹⁸ For his effort, BWA's executive director Nelson Beideman was celebrated as "team member of the month" in NOAA Fisheries December 2003 newsletter.¹⁹

- **The Best Case Scenario of Turtle Bycatch Reduction Won't Prevent the Extinction of the Pacific leatherback**

Spotila et al note that if leatherbacks cannot sustain less than a 1 percent mortality rate in the Pacific, they will become extinct.²⁰ Crowder has published data that the species may become extinct in 5-30 years.²¹ Even the best-case scenario documented in the NMFS studies indicating a 65-90 percent decrease in bycatch will not save the Pacific leatherback from extinction.

- **Ecosystem Approach Needed to Solve the Ocean Crisis Caused by Industrial Longlining**

As previously noted, sea turtles are only one of several species being pushed toward extinction by industrial longline fishing. Several species of sharks and billfish, marine mammals and seabirds are also being severely impacted. Unfortunately, NOAA Fisheries refused to consider the impact on these species at the time the new rule went into effect.²² Technological fixes for each individual species are unlikely to be found. In fact, a technological fix for one species may actually increase the negative impacts on another species. For example, Dr. Bolten's study showed that the CPUE of blue shark with the use of the 16/0 circle hook is actually twice as high as with the J hook.²³

¹⁸ Ibid., 40748. See Blue Water Fishermen's Association, et al., v. National Marine Fisheries Service, et. al., 226 F.Supp.2d 330 (D. Mass. 2002).

¹⁹ Smith, C. "Nelson Beideman is the team member of the month," *NOAA Reports*, vol. XII, no. 12, p. 3 and 8; found at: <http://www.publicaffairs.noaa.gov/nr/pdf/dec2003.pdf>.

²⁰ Spotila, J., R. Reina, A. Steyermark*, P. Plotkin†, and F. Paladino, "Pacific leatherback turtles face extinction: Fisheries can help avert the alarming decline in population of these ancient reptiles," *Nature*, No. 405, June 1, 2000, p. 530.

²¹ L. Crowder, "Leatherback's survival will depend on an international effort," *Nature*, 22 June, 2000; and J. Spotila et al, "Worldwide population decline of *Dermodochelys Coriacea*," *Chelonian Conservation and Biology*, 1996, 2(2):209-222.

²² Federal Registry, p. 40746.

²³ Bolten, A. et al, "Experiment to evaluate gear modification on rates of sea turtle bycatch in the swordfish longline fishery in the Azores—Phase 1 and Phase 2, draft paper, no date.

The reliance on “techno-fixes” to solve the problem of single species fails to take into account that the problems created by longlining affect the marine ecosystem as a whole. Recognizing this, many scientists are now calling for ecosystem approach to fisheries management that replaces a concentration on individual species.²⁴ These problems would be better solved by a moratorium on longlining in the Pacific and significant decreases in effort in other regions of the world.

- **Forcing Un-Proven Changes on Fishers Can Hurt Future Cooperation**

This rush to require experimental measures before their effectiveness is proven may have severe implications for final acceptance by the industry. For example, multiple changes over time in turtle excluder device (TED) regulations, as to types, sizes, placement angles, number of floats to be used with them, etc. has often been cited by commercial fishers for mis-trust of government and a failure to accept their use (Sinkey Boone, inventor of the TED, pers. comm.).

This is already a significant problem in the Atlantic where the study of new hooks and bait has already met with significant industry opposition even though it was co-sponsored by the longline industry. As a result, rules requiring the use of the best available hook size and bait combinations to reduce loggerhead and leatherback bycatch were significantly loosened to appease industry.²⁵ The data from the study has yet to be released, according to a NOAA spokeswoman, because “The fishing industry felt that there would be a significant economic impact and so the agency reanalyzed its study.”²⁶

To date, the U.S.’s efforts to persuade other longline nations to adopt this new gear have met with resounding failure. Only one country, Ecuador, has reportedly agreed to implement them.

²⁴ Pikitch, E. et al., Ecology: Ecosystem-Based Fishery Management, *Science* 2004 305: 346-347.

²⁵ See 50 CFR Parts 223 and 635, Atlantic Highly Migratory Species (HMS); Pelagic Longline Fishery Final Rule, Department of Commerce, NOAA, Federal Register, DOCID:fr06jy04-9 July 6, 2004 (Volume 69, Number 128), pages 40740, 40741 and 40743; available online at: <http://frwebgate6.access.gpo.gov/cgi-bin/waisgate.cgi?WAISdocID=21189279268+3+0+0&WAISaction=retrieve>

²⁶ See Burdeau, 2004.