OCEAN ROULETTE

CONSERVING SWORDFISH, SHARKS AND OTHER THREATENED PELAGIC FISH IN LONGLINE-INFESTED WATERS

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PREFACE

Drift, or pelagic, longlines are incompatible with effective management and our national goal of sustainable fisheries. The use of longlines *must* be severely curtailed. That is the conclusion reached in this report and it is by no means a rush to judgment. Quite the opposite. It is the end product of over two decades of experience in the conservation of large pelagic fish – swordfish, tunas, billfish and sharks - which are both the intended targets and accidental casualties of longline fishing. The non-selectivity of longlining has been at the root of many, if not most, of our pelagic fisheries management problems throughout this period and remains so today.

A principal reason for the failure to curb overfishing in the pelagic fisheries is the failure to directly address the problems caused by widespread non-selective fishing with longlines. Two years ago, the National Coalition for Marine Conservation (NCMC) undertook a study of longline management. Our objective was to review and evaluate the available options for resolving longline-related management problems in the Atlantic large pelagic fisheries, in particular the so-called "bycatch" and subsequent discard of unwanted or prohibited fish that has proven to be an unremitting consequence of fishing with longlines.

The NCMC has been working to conserve large pelagic fish of the Atlantic since the organization's inception 25 years ago. Throughout this period, we've worked assiduously to address a variety of serious conservation problems caused by longlining. From the time United States fisheries authorities began developing management programs to prevent overfishing of swordfish, marlins and sharks (circa 1977), finding ways to deal with longline bycatch has been a principal goal and a persistent dilemma. The urgent need to reduce longline bycatch and its associated mortality (or bykill) has been recognized by U.S. and international management authorities for all these years, yet little or no progress has been made - despite repeated assurances from the longline fishing industry that these problems were solvable.

In fact, the problem has worsened due to the deteriorating status of the resources and changes in the fisheries themselves. As pelagic fish populations have declined across the board, the longline industry has evolved into a mixed-target fishery, not only taking advantage of the non-selective nature of the gear, but actually relying on it to remain profitable. They are the profits of doom for the ocean's giant fishes.

With this report, we've arrived at a crossroads. One path remains a dead end, blocked by the unwillingness or inability of longline fishermen and fishery managers to effectively curtail longlining's adverse impact on the ocean environment. The other path, more challenging and therefore less taken, meets the problem head on -- and demands that tough decisions be made now. This is the path we've chosen.



Ken Hinman
President

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EXECUTIVE SUMMARY

Nearly one quarter of the global catch of fish is discarded as unintended or unwanted catch, according to the United Nations Food and Agriculture Organization. Reducing this "bycatch" - the incidental capture of non-target, unwanted, or prohibited species or age groups - has become a priority in virtually all marine fisheries. On October 11, 1996, President Bill Clinton signed legislation amending the 20-year-old Fishery Conservation and Management Act, declaring a new national resolve to end overfishing and restore overfished stocks of fish to sustainable levels. As an integral component in meeting this goal, the law for the first time features an explicit federal mandate to "minimize bycatch and, to the extent bycatch cannot be avoided, minimize the mortality of such bycatch."

In recent years, as a growing number of concerned fishermen and conservationists clamor for something to be done to resolve this widespread problem, numerous workshops, conferences and symposia have been held to explore possible remedies. But the reality is that, in many fisheries, little has been done to directly reduce fish bycatch and, in some fisheries, serious conservation problems persist. This is especially true in the pelagic longline fisheries, where even identifying how to approach the problem has proven elusive.

AN UNDERWATER MINEFIELD

Pelagic longlining - also known as drift lining or drift longlining - occupies the front lines of the battle over marine fish bycatch. Longlining is the principal harvester in the global commercial fisheries for the highly valuable but severely overfished swordfish and larger tunas. But longlines are indiscriminate, taking scores of different pelagic species, even on the same set, making it difficult for fishery managers and even the fishermen themselves to distinguish between "target" and "non-target" catches.

In fact, as many large pelagic fish populations in the Atlantic Ocean decline due to overfishing - most are currently at historic lows, several are severely depleted - the longline fisheries have evolved into opportunistic, multi-target fisheries. Fishermen actually take advantage of and rely on the non-selectivity of their gear to catch a wide range of marketable fish. Meanwhile, fishery managers are rendered incapable of effectively controlling fishing mortality for any single species.

- In the U.S. Atlantic swordfish fishery, in which 98% of the fish are taken by longline, two out of three fish caught are juveniles. The adult breeding population - swordfish grow to over 1,000 pounds - has decreased by two-thirds over the last ten years and is still shrinking at an alarming rate. The average fish landed in 1995 weighed just 90 pounds (whole weight), an immature fish two years shy of its first chance to reproduce. A minimum size limit intended to protect enough young fish to eventually rebuild the adult population merely results in 30-40% of the swordfish catch being discarded, with most of those fish – an estimated 40,000 in 1996 - dead or dying when returned to the water.

- Commercial fishing for overfished Atlantic blue and white marlin has been illegal in the U.S. since 1989. Yet the commercial longline bycatch remains today, as it was then, the largest source of mortality in both the domestic and international fisheries. From 1993-96, three times as many marlin were killed and discarded by U.S. longliners as were landed by all other fishermen combined.

- Many more sharks are killed accidentally as unwanted bycatch than as target species. In 1993, for instance, longliners fishing for swordfish in the northwest Atlantic caught over 50,000 blue sharks, twice their catch of swordfish. Unwanted, all the sharks were thrown overboard. Nearly half were dead.

- Longliners discarded dead an estimated 1,349 extremely rare giant bluefin tuna caught as bycatch in 1995, an amount equal to 10% (by weight) of the total allowable catch in the tightly restricted U.S. fishery.

The longline fishing industry, so far unwilling or unable to modify its fishing practices in order to minimize the intertwined problems of bycatch, waste and overfishing, likes to accuse environmentalists and competing fishing interests of exaggerating the severity of the problems associated with their chosen method of fishing. Taking to task those who equate drifting the multi-hook longlines, which can extend from 20 to 70 miles in length, with large-scale drift netting - the universally condemned and now internationally banned "walls of death" - one spokesman for the industry dismissively characterized longlines as "a rather porous picket fence." Actually, a more accurate description of fishing with longlines is laying an underwater minefield.

By any reasonable standard, the wasteful mortality associated with bycatch and dead discards in the pelagic longline fisheries is appalling. In 1993, for example, the U.S. Atlantic longline fleet captured nearly 70 species of pelagic fish. A total of 362,138 fish were caught, according to the vessels' own logbooks. Of this total, 174,819 fish, or about 1 of every 2 fish hooked and brought to the boat, were unwanted, unmarketable or non-legal and were thrown overboard. Of those fish discarded - mostly non-target species such as sharks and billfish but also many thousands of undersize swordfish and tunas, the principal target species - 55% were reported dead when cut loose. It's unknown how many more died from trauma or predation afterward.

The Trouble With Longline Bycatch

As any fisherman knows, the very act of baiting a hook for a particular fish creates the possibility of catching something else. "The exciting thing about fishing offshore in the ocean waters is that the angler never knows what fish may strike his bait," writes Louis Mowbray in A Guide to the Reef, Shore and Game Fish of Bermuda (1965). "It may be a blue or white marlin, sailfish, swordfish, wahoo, dolphin, yellow-fin, blackfin, or big-eye tuna, mackerels, bonito, barracuda, amberjack, mako shark, or even get snagged in the fin of a giant manta ray."

Mowbray's list of species the angler can encounter with rod-and-reel may read just like the average longline logbook, but with longlining, there is a critical difference. Bycatch is a serious conservation problem in any fishery where

(a) there is a significant catch of unintended, unwanted or protected fish, *and*

(b) there is a high level of mortality of fish at capture.

In the pelagic longline fishery, fully half the catch is returned to the water unwanted or illegal and *more than half of these fish are already dead when discarded*. More often that not, bycatch means *bykill*.

The problem with longlines is in the design as much as the operation. Longlining is a passive method of fishing, effective in capturing fish that are widely dispersed or not susceptible to large-scale active fishing methods at the surface (e.g., purse seines and trawls), and that are of a high individual value, principally swordfish and the larger tunas. (The Pelagic Longline, p.17) U.S. longline fishing gear consists of a monofilament mainline that varies in length from 20 to 45 miles long, from which leaders and baited hooks are suspended and which in turn is supported in the water column by lines attached to floats on the surface. The hooks remain in the water up to 16 hours or more. Recent improvements in gear and electronic fish-finding technologies have greatly increased the effectiveness, if not the efficiency (i.e., selectivity), of longline fishing, making it economically viable even as populations of target species decline.

U.S. longline fisheries generally target either yellowfin (or occasionally bigeye) tuna or swordfish. (Description of the Fisheries, p. 21) Longlines set for yellowfin have a substantial bycatch of swordfish, bluefin tuna, billfish (marlins and sailfish) and sharks. Swordfish longlines have a substantial bycatch of yellowfin and bluefin tuna, billfish, sharks and undersize swordfish. Since high proportions of fish hooked on longlines are dead on retrieval, management measures that restrict landings in these fisheries (e.g., trip limits, size limits, quotas and protected status) do not necessarily reduce mortality. Likewise, because fishery management is single-species oriented, limits on individual target species merely shift effort to other species, resulting in continued high mortality of the entire large pelagic species complex.

Virtually all species of large pelagic fish in the Atlantic are overfished or rapidly approaching this condition, including blue and white marlin, sailfish, bluefin tuna, swordfish, bigeye tuna, yellowfin tuna, and a number of species of oceanic shark. (Status of Atlantic Large Pelagic Fish Populations, p. 31) Several of these species have been severely overfished simply as an indirect consequence, or bycatch, of the longline fisheries. Continued bycatch mortality impedes recovery efforts for all species.

The non-selectivity of longline gear, and the resulting problems of overfishing and bykill, has severe biological, ecological, social and economic consequences. The impact goes beyond the significant reduction in yields from these fisheries and the lasting social and economic costs to other commercial, recreational and subsistence fishermen. It goes beyond the moral issue of discarding and wasting substantial amounts of valuable living marine resources. Large, long-lived predators, such as the swordfish, sharks, billfish and tunas, provide stability and serve to shape and structure their ecosystem. It is not unreasonable,

then, to expect that significant simultaneous population declines among so many of the ocean's top predators have ecosystem-wide consequences.

Regulated, But Unmanaged

There is a long-standing and increasingly urgent need to feature effective longline bycatch reduction measures in the management of all large pelagic fish. But fishery managers, while acknowledging this need in nearly every fishery management plan and research agenda of the last decade, nonetheless have given it little more than lip service, and have shown little inclination to address it directly.

Though longline fishermen are subjected to numerous fishing regulations, longlining is, for all intents and purposes, "unmanaged." There are currently no limits on longline effort, including the numbers of vessels, quantity of gear fished, or the way in which it is used. Generally speaking, management measures in the large pelagic fisheries are limited to restricting what fish of what size may be landed and in what amount. The non-selective nature of longline gear as commonly deployed makes these types of rules ineffective in controlling overall fishing mortality. (Management Objectives and the Effectiveness of Current Regulations, p. 51)

Current regulations that require longline fishermen to release marlins, that limit landings of juvenile swordfish, that prohibit targeting breeding bluefin tuna, are not effective conservation measures. Although such rules restrict what fish the vessels may keep, they do not and cannot directly control what fish are hooked and killed. Likewise, annual and/or seasonal quotas – currently in place to protect swordfish, large coastal and pelagic sharks and bluefin tuna – are exceeded when longlines fishing for other species continue to incidentally catch and kill large numbers of the protected fish after the total allowable catch is taken. In addition, there are substantial amounts of economic discards in the longline fisheries, fish of the target species that are thrown away dead at sea because they are of an undesirable size or quality.

We know from costly experience that traditional management strategies that attempt to control the fishery *outputs* - that is, the disposition of fish caught, such as what fish are legally landed and in what number - are not effective for the longline fisheries. Management must regulate *inputs*; the gear itself and where, when and how it is used.

The Need to Restrict Where, When and How Longlines are Fished

The whole range of pelagic fish are in trouble, and the longline is a major source of fishing mortality for each of them. Therefore, a comprehensive approach to controlling the use of longlines, one that deals directly with the bycatch or selectivity problem, is essential and will yield benefits for the conservation and management of all threatened pelagic fish as well as other marine wildlife.

In reviewing the literature and record of discussion relative to longlining, four possible approaches to reducing the bycatch in pelagic longline fisheries - either by avoiding bycatch or minimizing the mortality of unavoidable bycatch - emerge. The first is by

modifying existing fishing gear or methods. The second is by reducing effort through various limited access systems. The third is by restricting the area and/or period of operation of the longline fisheries. The fourth is to severely restrict or prohibit the use of drift longlines. (Options for Managing Longline Fisheries, p. 73)

The first approach - gear modification - is the most appealing, since it holds out the possibility of reducing bycatch without significantly impairing the catch of target species. Unfortunately, it also holds the least promise. Studies to date reveal no means to fish selectively for multiple target species while avoiding those pelagic species or age groups that are either unwanted or prohibited. Scientists are clearly at a loss as to where even to begin, as reflected in the lack of research done in this area, despite its being identified as a high priority for well over a decade. Not coincidentally, fewer and fewer people – in government or industry – are promoting gear modification as a viable solution to longline bycatch problems (with the exception of certain seabird and marine mammal interactions).

The potential of limited entry programs as a means to reduce bycatch in longline fisheries is unknown at this time. Certainly, a substantial reduction in the total amount of longlining would reduce undesirable interactions between longline hooks and pelagic species. Reductions in the number of participants must be accompanied by a strict limit on the amount of fishing gear permitted per vessel. But limited access proposals currently under development involve plans to restrict the number of participants at current levels in order to resolve problems of overcapitalization and allocation within the commercial fisheries, that is, to achieve so-called "economic rationalization" of the fisheries. Any conservation benefits, such as bycatch reduction, would be purely serendipitous and rely largely on voluntary changes in the behavior of fishermen given a new "ownership" responsibility for the resource and, theoretically, a greater incentive to fish "cleanly." Providing economic incentives to minimize bycatch is one thing; finding the means to do so is another entirely.

It is our conclusion that management measures that strictly limit the use of longline gear itself, as well as diminish its lethal impact, are the only measures capable of producing immediate and lasting conservation benefits to the large pelagic resources. (Recommendations, p. 88) We emphasize the ability to produce *immediate* benefits for both historical and practical reasons. Longline bykill has been the bane of large pelagic fisheries management for over two decades. Potential solutions have been proposed and discussed *ad nauseum*, to no avail. To delay action because of the contention that more data and more time are needed to evaluate other options is tantamount to continuing the *status quo* indefinitely, which is unacceptable and unnecessary.

The most viable and supportable options for immediate action are:

1. INTERIM. The establishment of no-longlining zones (also commonly referred to as time and area closures) where the bykill of protected or overfished species or age classes (spawning and/or juvenile fish) is highest or most detrimental to the recovery of the resource. No-longlining zones should be supplemented by certain gear restrictions in open areas to enhance the survivability of incidentally-caught fish, including but not limited to maximum length of mainline, number of hooks,

and period of soak time (time between setting the gear and retrieving it).

2. PREFERRED. A moratorium on the use of pelagic longlines, allowing a limited exemption for vessels carrying an observer and engaged in approved bycatch reduction research or demonstrating an "insignificant" level of bycatch and/or bycatch mortality.

A moratorium on longlining would be akin to making the pelagic longline fisheries an experimental fishery; discounting their historical use and *post facto* applying the emerging precautionary standard of assessing the impact of fishing gear and taking steps to mitigate its adverse impacts before its use is permitted on a wider scale. If gear modifications were the most appealing option, a prohibition on longlining would obviously elicit the stiffest resistance from the longline industry. Yet the net long-term economic benefit of curtailing longlining to rebuild pelagic fishery resources would be positive. The economic value and participation in the present U.S. longline fleet is small when compared to the value and participation of other commercial and recreational fisheries that depend on these resources now, plus the future benefit from fisheries restored to their optimum population levels.

A prohibition on longlining is also the option most difficult to apply on the high seas to the fishing fleets of other nations, at least for the foreseeable future. These political realities, however, do not diminish the compelling rationale for a longline moratorium, nor are they reason enough to reject it out of hand. A political compromise that perpetuates the problems of overfishing, bycatch and waste caused by longlining is a viable option only by default.

Notwithstanding, we believe that substantial and immediate benefits to the conservation of large pelagic fish would be realized through *interim* implementation of time/area closures coupled with selected gear restrictions. We further believe that these benefits can be attained and should be pursued through action at both the national and international levels.

Pelagic fish are not randomly distributed throughout their range. Catch rates are higher where fish congregate, to nurse, feed or spawn, or on their migratory paths between feeding grounds. That's why fishermen concentrate their effort in these areas. Logbooks and observer data document where the captures of different species and age groups are highest, and these areas are fairly consistent and predictable from year to year. Closing offshore areas of ocean to longlining during the periods when there is the highest incidence of catch of non-target or threatened fish would reduce these captures and reduce overall mortality.

Area closures could be supplemented by restrictions on the number of hooks per mile of line, total length of mainline, and soak time in areas where longlining is permitted. Generally the longer the fish are on the line, the lower their survival rate, although survival rates vary by species and age within species. Such gear restrictions would require, however, expanded onboard observer coverage as well as vessel monitoring systems to ensure compliance at sea.

Moreover, closures are adaptable and would provide incentives, by encouraging commercial fishing experimentation with modified gear or alternative fishing methods. Closed areas can be reduced (or made accessible) as fishermen demonstrate reduced bycatch/more selective fishing. As bycatch in the fisheries declines, closures can be decreased, in either time or area. Conversely, a system of closures could be used, as they should be, to gradually phase-out longlining over a set period of time, in the event that selected area closures, expanded gear research and experimentation do not significantly enhance the manageability of longlining, which is a very real possibility.

Specific Recommendations

The highly migratory nature of swordfish, billfish, tunas and pelagic sharks, as well as the requirements of U.S. and international law, argue that conservation goals should be pursued throughout the range of these fish and in cooperation with other nations fishing the same stocks. In fact, the strong new conservation provisions of the U.S. Fishery Conservation and Management Act are mirrored in the 1995 United Nations Agreement on Conserving Highly Migratory Fish Stocks (Article 5, General Principles). It is clear that the quest for international cooperation does not mean, however, that actions at the domestic and international levels are mutually exclusive, or that unilateral action should be superseded or replaced by multilateral efforts alone.

The inadequacies of current fisheries management as it pertains to large pelagic fish, and the political hurdles that inhibit timely and effective conservation, are even more pronounced when dealing with other nations within the multilateral context. It is, therefore, our conclusion that the U.S. must implement the provisions of the Fishery Conservation and Management Act requiring conservation and management measures to prevent overfishing, restore overfished populations and minimize bycatch, while diligently working toward the future adoption of complementary measures on the high seas. The U.S. has always been a leader in global efforts to conserve living marine resources, and we have an opportunity now to lead once again. To wait for other nations to act will only continue the prevailing international policy of setting management goals by the lowest common denominator, resulting in the mutually assured destruction of our pelagic resources.

Domestic

The new bycatch provisions of the Fishery Conservation and Management Act as amended in 1996 require that all U.S. fishery management plans be re-written to include conservation and management measures to end overfishing, rebuild overfished fisheries, and minimize bycatch and bycatch mortality by October 11, 1998. The National Coalition for Marine Conservation recommends that the Atlantic Billfish Fishery Management Plan and the Highly Migratory Species Fishery Management Plan (which manages tunas, swordfish and sharks), currently under development, be amended to:

- Establish no-longlining zones in known swordfish nursery and spawning areas; in areas where the capture of marlin and pelagic sharks is highest, with the objective of reducing longline mortality by at least 75% from recent levels; on and around bluefin tuna feeding grounds (circa Hatteras, North Carolina and Cape Cod Bay,

Massachusetts) and on the bluefin's northern Gulf of Mexico breeding ground.

- ❍ Require longline vessels to be equipped with automated, satellite-based vessel monitoring systems (VMS) to monitor and enforce compliance with area closures.

- ❍ Limit total allowable soak time to six hours and require that longline vessels retrieve gear in the order in which it is deployed.

- ❍ Limit maximum length of mainline to no more than ten miles.

- ❍ Require the use of "breakaway" gear to avoid capture of giant bluefin tuna in areas of high concentration, such as summer migratory routes off the mid-Atlantic coast.

- ❍ Count dead discards against all U.S. quotas for swordfish, bluefin tuna, large coastal and pelagic sharks.

- ❍ Phase-down effort in the longline fishery by reducing permits to no more than 150 by the year 2000 and no more than 75 by 2003.

- ❍ Levy a user fee on active longliners to defray the cost of full observer coverage for fisheries monitoring and enforcement.

INTERNATIONAL

Current international restrictions on landings result in a high rate of dead discards, with minimal conservation benefit. Atlantic swordfish, blue marlin and white marlin in particular cannot be restored to their former abundance without management measures that strictly curtail the use of longline gear and minimize its lethal impact on the most vulnerable species or age groups. As the U.S. implements new domestic regulations to protect swordfish and marlin through time/area closures in known nursery and spawning grounds, or other identified "hot spots" where these severely overfished species are most vulnerable to capture by longline, we believe it is vital that the U.S. pursue complementary action at the international level.

The U.S. delegation to the International Commission for the Conservation of Atlantic Tunas should seek international support for the establishment of "ocean reserves" or protected zones to conserve highly migratory fish on the high seas. The U.S. should work with ICCAT's Standing Committee on Research and Statistics to study the feasibility of restoring overfished populations of billfishes and tunas by designating protected zones where the use of non-selective fishing gear such as longlines (and small-scale drift nets) would be prohibited.