



The NCMC

# MARINE BULLETIN

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- NCMC Remembers Charles Brashears
- There is still time to support NCMC by purchasing your holiday cards from Sport Fishing magazine!

# TAKE MARLIN OFF THE MENU

## *New Campaign Targets Chefs And Consumers In Fight To Help Endangered Marlin*

The next time you're in a restaurant and see marlin on the menu, "just say no." That's the message of a new, nationwide campaign to take marlin and other billfish off the menus of America's restaurants and out of seafood counters.

Marlin, sailfish and spearfish are some of the ocean's most magnificent fish, swimming free in the deep waters of the Atlantic, Pacific and Indian Oceans. According to three major marine conservation organizations who have joined forces to "Take Marlin Off the Menu," billfish populations are being decimated by commercial overharvesting around the world, and the U.S. market for these fish is contributing to their demise.

By taking the "Take Marlin Off The Menu" campaign to the stomachs of American consumers, the National Coalition for Marine Conservation and our campaign partners, the International Game Fish Association (IGFA), and The Billfish Foundation (TBF), are striving to reverse the demand for marlin meat and its import into the United States. A successful campaign will take a bite out of commercial overfishing in the Atlantic and Pacific Oceans, which accounts for more than 90% of the annual marlin mortality.

"The goal of the "Take Marlin Off The Menu Campaign" is to persuade restaurants across the United States and Canada to take marlin off their menus for good," said Jason

Schratwieser, director of conservation for the IGFA.

## WORLDWIDE BILLFISH DECLINE INDICATES OCEANS ARE OUT OF BALANCE

The "Take Marlin Off the Menu" campaign is being launched in response to the declining numbers of billfish, including blue, white, striped and black marlin and sailfish, which are found throughout the Atlantic, Pacific and Indian Oceans. Billfish populations have plunged over the past several decades as a direct result of commercial tuna and swordfish fleets that catch marlin either through long-lining or through netting. On the other hand, most sport fishermen now practice catch and release of marlin and other billfish, a conservation ethic in keeping with the catch and release of other freshwater and saltwater fish throughout North America.

Marlin are top predators in the ocean, according to Ellen Peel, president of TBF. Marlin are distinguished by a long bill, an extension of the upper jaw and nasal bone; brilliant colors when "lit up;" and sleek body shapes that allow them to swim at extraordinary speeds. They are highly migratory in nature and can travel great distances, such as crossing the Atlantic Ocean. Like lions, tigers, wolves and eagles, marlin and other billfish are important top-of-the-food chain predators that help keep marine ecosystems in balance. They are called "indicator species" for their presence or, lack thereof, which indicates whether the ecosystems are balanced and functioning.

(Continued on page 3)





## TABLE MATTERS

There are many tools in the fishery management tool box. You choose the ones that fit the job at hand. Some tools are used all the time, like catch quotas and size limits. And some you reach for only when none of the others are up to the task.

The first and last time we worked to close the commercial market for a marine fish was 20 years ago, when we helped ban the sale of Atlantic billfish in the United States. Once again we're trying to Take Marlin Off the Menu - but this time, it's *all* billfish; marlin and sailfish, Atlantic and Pacific. We and our partners in this campaign, The Billfish Foundation and International Game Fish Association, believe it is the one tool left to us (the U.S.) to end any home-grown contribution to global over-exploitation of these magnificent ocean predators, while raising the need for international billfish conservation to new heights.

Nearly all billfish species are either overfished - some severely; white, striped and Atlantic blue marlin - or their status is unknown but suspect. Sale of billfish caught in the Atlantic was outlawed in 1989 to curtail a developing domestic market. In 2004, the federal government outlawed trade in striped marlin taken off the west coast, leaving Hawaii as the sole U.S. haven for commercial billfishing.

## PUBLIC AWARENESS LEADS TO POLITICAL CHANGE

But stateside markets remain wide-open to Pacific billfish taken on the high seas by foreign fleets. And the U.S. - despite limiting its own fishermen to a virtually all-release recreational fishery - is the world's largest importer of marlin; over 2 million pounds annually!

The commercial harvest of marlin and sailfish is mostly incidental to longline fishing for tuna and swordfish and thus largely unregulated. Banning the sale of billfish takes away the longliners' incentive to keep and land fish that might otherwise be released alive. Closing the U.S. market alone could save thousands of marlin a year.

We feature marlin in the name of this campaign - which will benefit all billfish - because that's what people see on the menu. Our short-term goal is to persuade consumers to stop buying marlin and for chefs and restaurants to take them off their menus.

In the long-run, if we are successful in raising consumer and public awareness of the plight of billfish to unprecedented levels, we will elevate billfish conservation as a priority for the next Congress and the new Administration, ultimately leading to national legislation to outlaw importation and sale of any species of billfish, no matter where it comes from, and a national commitment to become the world leader for more meaningful international conservation, in the Pacific as well as Atlantic.

Please join us by going "marlin-free," and spread the word.

Ken Hinman, *President*



### NATIONAL COALITION FOR MARINE CONSERVATION

**Founded in 1973**

The NCMC is a 501(c)(3) non-profit organization dedicated to the following goals:

- ◆ preventing over fishing and restoring depleted fish populations to healthy levels
- ◆ promoting sustainable use policies that balance commercial, recreational and ecological values
- ◆ modifying or eliminating wasteful fishing practices
- ◆ improving our understanding of fish and their role in the marine environment
- ◆ preserving coastal habitat and water quality.

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 Pam Lyons Gromen, Executive Director  
 Christine Snovell, Director of Communications and Development  
 Lauren Megan, Office Manager

For information or comment, contact:

The NCMC  
**Marine Bulletin**

Pam Lyons Gromen, Editor  
 4 Royal Street, SE  
 Leesburg, VA 20175  
 (703) 777-0037 / (703) 777-1107

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## TAKE MARLIN OFF THE MENU

(Continued from page 1)

### U.S. APPETITE FUELING BILLFISH DECLINE

The “Take the Marlin Off The Menu” campaign is taking aim at U.S. restaurants and grocery stores primarily because the U.S. is the world’s largest importer of billfish. That’s despite laws that currently make it illegal to commercially harvest marlin, sailfish and spearfish from the Atlantic Ocean.

According to a report commissioned by the IGFA, most marlin and other billfish in U.S. restaurants and grocery stores come from the Pacific Ocean. But because of lax standards in certifying that marlin bought and sold in the U.S. actually come from the Pacific, there’s really no way to know for sure where the fish originate, the group says.

“While there have been limited consumer campaigns in the past, there has never been more urgency than now,” said NCMC President Ken Hinman, “If we don’t stop the widespread consumption of billfish, these magnificent ocean predators will disappear from our seas. It’s simply that critical.” (see Ocean View, p. 2)

The “Take Marlin Off The Menu Campaign” will use a three-prong strategy to reduce consumption of marlin. First, the campaign will attempt to persuade America’s most influential chefs and restaurant owners to stop serving marlin, while at the same time, offering up other, sustainable seafood options that consumers will find pleasing. Restaurants that pledge not to serve marlin will be promoted widely as “marlin-free” on the [www.takemarlinoffthemenu.org](http://www.takemarlinoffthemenu.org) web site.

Second, the campaign will reach out to consumers to stop ordering marlin at their favorite restaurants, and to stop buying marlin at their local grocery store or seafood counter.

Third, the campaign will bring awareness of the harmful effects from eating marlin which, according to the United States Environmental Protection Agency’s health guidelines, contain unhealthy levels of mercury. Because marlin are large fish that mature over a longer period of time, they often contain much higher levels of mercury than other fish species.

There are many other fish species that are both more sustainable and healthier to eat. In the meantime, the best hope for marlin species is to “Take Marlin Off the Menu.” □



## Take Marlin Off the Menu

For more information  
about the “Take Marlin Off the  
Menu” campaign, visit  
[www.takemarlinoffthemenu.org](http://www.takemarlinoffthemenu.org).

## GULF BLUEFIN TUNA BREEDING GROUND CONSIDERED FOR SPECIAL STATUS

The National Marine Fisheries Service (NMFS) is recommending that the Atlantic bluefin tuna’s spawning grounds in the Gulf of Mexico be designated a federal Habitat Area of Particular Concern (HAPC). The recommendation, part of a new draft Essential Fish Habitat Amendment to the Atlantic Highly Migratory Species Fishery Management Plan, is in response to the joint request made last year by the National Coalition for Marine Conservation (NCMC) and the Tag-a-Giant Foundation.

Electronic tagging studies conducted by Dr. Barbara Block of Stanford University confirm that the Gulf of Mexico is the sole breeding ground for the severely depleted western Atlantic bluefin population. The HAPC designation “would highlight the importance of the area for bluefin tuna spawning and provide added conservation benefits if steps are taken to reduce impacts from development activities,” says NMFS.

The HAPC would coincide with the area identified in a petition submitted to NMFS in June 2005 (by NCMC, Oceana, Blue Ocean Institute, NRDC and Monterey Bay Aquarium) in which the groups called for a time-area longline closure. “In the Gulf, in the spring, every fish we kill is a rare western breeder,” said NCMC President Ken Hinman. “Closing the gulf to longlining, where and when the bluefin spawn, would do more than anything else to protect what’s left of the western bluefin spawning stock and preserve a U.S. fishery for the future.” While NMFS denied the longline closure petition, the HAPC designation would focus conservation efforts and bring heightened awareness about the area’s ecological importance and vulnerability, facilitating more stringent conservation measures down the road. □

# RISKY BUSINESS

## Mid-Atlantic Council Delays Rebuilding Key Prey Species

In 2005, the National Marine Fisheries Service (NMFS) told the Mid-Atlantic Fishery Management Council that butterfish are overfished. That is, overfishing has reduced their numbers to less than one-half the amount needed to support a sustainable fishery. Worse, for a species so important to the Atlantic food web, butterfish have been fished down to less than one-fourth an unexploited population.

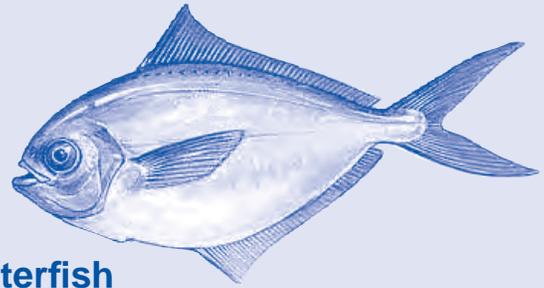
Three years later, having sat on their hands doing nothing to begin the rebuilding process, the Council voted on October 16<sup>th</sup> to postpone any meaningful conservation measures another three years, until 2011. Why? The majority of butterfish mortality comes as bycatch in the trawl fishery for *Loligo* squid, which the Council is loath to burden with butterfish conservation. As a result, the chances of restoring this key forage fish by the Magnuson Act's mandated deadline are risky at best.

The National Coalition for Marine Conservation (NCMC) has gone before the Mid-Atlantic Council several times to argue for a more vigilant recovery program, as part of Amendment 10 to its Squid, Mackerel and Butterfish Plan. Not simply because the Council needs to fulfill its statutory obligations to end overfishing and reduce bycatch. But because butterfish are not a "minor" species, as some at the Council would argue, whose condition can be disregarded in favor of other, more commercially valuable species. Butterfish and other pelagic fin-fishes such as herring and mackerel, along with squid, play a critical role in the Atlantic food web as prey items for many species, predatory fish as well as marine mammals.

One study of predation on pelagic fishes and squids in the Northeast shelf ecosystem (Overholtz and Link 2000) suggests that butterfish are particularly important to predators during times when the abundance of other pelagic fish is low. Conversely, low abundance of butterfish increases predation demand for herring, mackerel and squids. Each of these species is being fished intensively, and concerns are being raised by commercial and recreational fishermen and conservationists about whether or not we are maintaining an adequate forage base for predatory fish, seabirds and marine mammals.

As the 2004 butterfish stock assessment points out, there is relatively low surplus production in the butterfish population because of high predation demand. In other words, even under conditions of butterfish abundance, there is little "surplus" available for fisheries. So when butterfish are overfished, as they are now, high levels of fishing mortality – two-thirds of which is discarded bycatch in the squid trawl fisheries – can have a serious impact on predators.

So rebuilding butterfish is important, not just to meet Magnuson Act mandates, but as part of a broader effort to maintain a healthy forage base, which is vital to sustaining



### Butterfish

*Peprilus triacanthus*

**Maximum Size:** 11 in.; 1 lb.      **Maximum Age:** 6 years

**Range:** Form large schools over the continental shelf of the Western Atlantic from Canada to Florida

**Butterfish are an important component of the Atlantic forage base and are preyed upon by many species including swordfish, hammerhead sharks, hake, haddock, goosefish, weakfish, bluefish, and squid.**

healthy and productive fisheries for striped bass, bluefish, summer flounder, cod and weakfish, to name a few.

### LEAVING REBUILDING TO THE ELEVENTH-HOUR

The NCMC urged the Council to accomplish three things with Amendment 10: 1) revise the plan objectives to include protecting the ecological role of squid, mackerel and butterfish as forage for predators; 2) impose a bycatch mortality cap for the *Loligo* fishery, with a substantial increase in observer coverage to monitor and enforce the cap; 3) increase the minimum trawl mesh size to at least 2 3/8 inches; and 4) undertake research into larger mesh sizes and alternative net configurations that balance escapement of under-sized squid and juvenile finfish, including butterfish, with retention of marketable squid to avoid increased trawling to meet squid quotas.

At its October meeting, the Council disregarded concerns about butterfish's role as forage and voted to institute a minimal increase in mesh size (from 1 7/8 to 2 1/8) in 2010, even though an internal staff memo predicts the increase "won't result in much bycatch reduction." A bycatch mortality cap would be postponed until 2011, just three years before the rebuilding timeline ends in 2014. The delay in the mesh size increase gives squid fishermen time to re-configure their nets. The delay in implementing the cap, however, is unjustified and dangerous, given that it is the only measure expected to result in any significant reduction in butterfish bycatch mortality.

Indeed, the NMFS representative on the Council questioned why the cap couldn't be enforced in 2010, pointing out that there have been enough delays already. Six Council members joined her in trying to move the date up a year, but they were ultimately out-voted.

The thinking of the majority is that butterfish conservation can be put off until near the end of the rebuilding period, risking everything on the chance that, because the stock assessment suggests that "with average recruitment, butterfish can be rebuilt in one year if fishing mortality is controlled," eleventh-hour mortality limits can

still rebuild butterfish within the recovery timeline.

### ROLLING THE DICE

It's incredible that, at this stage of fishery management under the Magnuson Act, we have a Council whose strategy comes down to this: "Do next-to-nothing to control fishing mortality now in hopes that future events, namely the 2010 stock assessment, will find that butterfish aren't really so bad off and lessen the need to restrict squid trawling. But if we have to, we can still rebuild the stock in a year or two, if we get lucky and have a good year-class to work with."

Frankly, this is not just an unacceptably risky rebuilding strategy. It's taking the Magnuson Act mandate to rebuild overfished stocks in as-short-a-time-as-possible and stretching it out to as-long-a-time-as-allowable, back-loading all the regulations and all the risk onto the tail-end of the plan.

The risk of an eleventh-hour strategy for butterfish is two-fold: that the rebuilding target will not be achieved and overfishing will continue; or that, in order to reach the rebuilding goal by 2014, the most draconian measures will be

required in the last year or two of rebuilding, i.e., the squid trawl fishery will have to be shut down. Either result is less desirable and potentially more harmful to the butterfish resource and the squid fishery than increasing mesh sizes and imposing mortality caps beginning in 2010.

Moreover, as NCMC reminded the Council, the 2010 assessment, no matter the outcome, will not change the need for measures to reduce bycatch in the trawl fisheries. Butterfish abundance and discard rates in the *Loligo* fishery rise and fall together, and once we get a good recruitment event, it will be followed by an increase in bycatch. Without effective bycatch reduction measures in place, that year-class will be lost. And once the butterfish stock is restored to a healthy level, the task will be to control bycatch mortality in order to maintain it there, otherwise the cycle of overfishing will be repeated.

NCMC will be working with the National Marine Fisheries Service, as it reviews Amendment 10, to replace the Council's amendment with a "Secretarial Amendment" that would implement the bycatch cap no later than 2010, and to set the bycatch limits at levels strict enough to ensure recovery of butterfish as soon as possible. □

## WEST COAST HIGH SEAS LONGLINE FISHERY MOVES FORWARD

On September 9<sup>th</sup> at the Pacific Fishery Management Council meeting in Boise, ID, the Council voted to move forward with an analysis of alternatives for a West Coast-based high seas shallow-set longline (SSL) fishery. Testifying against the new fishery, NCMC Executive Director Pam Gromen read off a long list of at-risk fish species - albacore tuna, bigeye tuna, bluefin tuna, dorado, mako and blue sharks, and striped marlin - expected to be caught as bycatch if the fishery becomes a reality. "The likelihood of increasing mortality on critically imperiled sea turtles is reason enough to continue the (longline) prohibition. Adding unsustainable fishing mortality to these HMS (highly migratory species) fisheries - all of which are either overfished, fully-exploited or status unknown - would undermine the long term sustainability of resources on which many commercial and recreational fishermen already depend," she said.

The high seas fishery is being developed as Amendment 2 to the Fishery Management Plan for West Coast Highly Migratory Species (HMS FMP). Minimally, the fishery would consist of 20 vessels deploying over 1 million hooks to target swordfish. An option for an unlimited fishery (in terms of vessels and hooks) is also presented.

Provisions for a high seas SSL fishery were specifically excluded from the HMS FMP when it was finalized in 2004 because the fishery would have jeopardized the recovery of loggerhead sea turtles, violating the Endangered Species Act. Circle hook and bait combinations developed in the Hawaiian fishery have since proven successful in reducing sea turtle deaths and injuries; therefore, the National

Marine Fisheries Service (NMFS) and the Council feel that the new longline gear is "cleaner" and "more selective."

Since the 1980s, Pacific leatherbacks have declined by 95% and Pacific loggerheads have declined by 86%. While reduced in frequency, sea turtle deaths still occur on the modified longlines. Scientists have warned that just a small increase in mortality has the potential to doom these species to extinction.

In addition, studies to date have not addressed the effects of circle hooks on the bycatch of species other than sea turtles - notably marine mammals, seabirds, and highly migratory fish - and there is no reason to believe that circle hook and bait combinations alone will mitigate the significant bycatch of these animals that has been documented on shallow-set longlines.

Though NMFS is required to evaluate the risk the new longline fishery poses to vulnerable big fish in the Pacific, adequate information is not available to accurately assess the impact on these populations. The lack of sufficient stock assessment data has hindered the Council from developing and implementing HMS catch limits that are essential for preventing overfishing and/or achieving rebuilding goals. "Without scientifically-derived catch limits, any bycatch or directed fishing allowance of HMS for the new longline fishery adds an arbitrary amount of mortality to already stressed stocks," Gromen said.

After reviewing the NMFS analysis, the Council is expected to make a final decision about the fishery at their April 2009 meeting. □

## RECOVERY PLANS FOR RIVER HERRING & SHAD TO ADDRESS AT-SEA BYCATCH

On August 21<sup>st</sup>, the Atlantic States Marine Fisheries Commission (ASMFC) took important steps toward directing the recovery of river herring and American shad - species that are particularly important as prey for striped bass and numerous other predators, but whose populations have suffered significant losses in recent years.

At-sea bycatch is a prime suspect in the decline of both species of river herring - alewives and blueback herring. Landings have fallen by 90% in the last twenty years, coinciding with a rise in mid-water trawling for sea herring and Atlantic mackerel. The ASMFC reports, "preliminary analyses indicate that, in some years, the total bycatch of river herring species by the Atlantic herring fleet alone could be equal to the total landings from the entire in-river directed fishery on the East Coast."

In response to the alarming drop in river herring landings, the ASMFC Shad & River Herring Management Board developed Draft Amendment 2 to the Interstate Fishery Management Plan (FMP) for Shad and River Herring, which is now out for public review. Hearings are being held throughout the Atlantic states until mid-December, and written comments will be accepted until January 1, 2009. (Details available at [www.asmf.org](http://www.asmf.org).) The Draft Amendment proposes measures for regulating bycatch in other fisheries, both in state and federal waters, with emphasis placed on bycatch limits, mandatory reporting, and monitoring programs that allow for reliable estimation.

Similar options to address bycatch were chosen for an American shad amendment (Amendment 3), which is being developed on the heels of the river herring amendment in response to the grim findings of a 2007 stock assessment. The stock assessment team concluded that American shad stocks are at "all-time lows and not recovering." After a brief period of shad recovery in the 1980s, the scientists found a new pattern of coastwide decline beginning in the late 1990s and early 2000s, suggesting that the problem is likely caused at sea, where stocks mix together on migrations to and from their summer feeding grounds that include the Gulf of Maine where the Atlantic herring fleet operates.

"I am greatly encouraged that the Board recognizes that at-sea bycatch is also a major threat to American shad stocks, which like river herring are at historic lows. The Board voted to include in Amendment 3 recommendations from both the stock assessment team and the advisory panel (AP) that called for quantifying bycatch and employing observer coverage to verify reporting," said NCMC Executive Director Pam Gromen who serves on the Shad and River Herring AP. The American shad amendment is scheduled to be released for public review after the Board approves the draft in February 2009. □

## GULF COUNCIL DELAYS APPROVAL OF AQUACULTURE PLAN

The Gulf of Mexico Fishery Management Council (GMFMC) voted to delay approving its latest offshore aquaculture plan for NOAA Fisheries review. Though just released to the public for comment on September 12<sup>th</sup>, the plan was originally slated for final approval at the GMFMC's October 27-30 meeting in Mobile, AL. The Council may take up the issue again when it reconvenes in January 2009.

The decision is a victory for an alliance of fishermen, consumer groups, and conservation organizations that includes the NCMC, who have been protesting the GMFMC aquaculture plan as an ill-conceived strategy for circumventing national legislation. The National Offshore Aquaculture Act of 2007 (Act) is currently being reviewed by Congress after a Government Accountability Office report, released in May 2008, prompted House of Representatives Natural Resources Committee Chairman Nick Rahall to advise that the Act "does not go far enough to ensure adequate protection for the marine environment."

Last January, this same alliance blocked approval of an earlier version of the plan by persuading NOAA attorneys that it was out of compliance with several federal laws - notably the nation's fishing law, the Magnuson-Stevens Fishery Conservation and Management Act. The plan was resurrected in September with more specific language to be legally defensible, yet adequate safeguards to protect wild fish stocks and their environment are still lacking.

In an letter to the GMFMC and NOAA Fisheries, NCMC strongly opposed the new aquaculture plan citing numerous deficiencies including the omission of any standards to minimize the use of wild forage fish in feed - standards that would help safeguard against the ecological overfishing of Gulf menhaden, the primary source of domestic aquaculture feed. The Gulf menhaden fishery currently operates without any gulf-wide catch limit. □

### Charles Brashears, 1928 - 2008

Charles W. "Chick" Brashears, an accomplished deep-sea fisherman, conservationist and long-time friend and supporter of the National Coalition for Marine Conservation, died August 18<sup>th</sup> in Vero Beach, Florida after a long bout with Parkinson's disease. Chick was an original member of NCMC and joined our Board of Directors in 1975. He continued to generously support our shared cause until his death. He loved fishing and competed in the most prestigious invitational tournaments, made many record catches and won numerous awards, including the West Palm Beach Fishing Club's Beinecke Trophy for releasing 29 blue marlin in the Bahamas. Chick leaves behind his loving wife, Este, who joined him on his fishing travels around the world, and the respect and appreciation of all of us at NCMC.

# ASMFC TO LOOK INTO “ECOLOGICAL” MANAGEMENT OF MENHADEN

In a public statement at the start of the August 20<sup>th</sup> meeting of the Atlantic States Marine Fisheries Commission (ASMFC), NCMC President Ken Hinman reminded the ASMFC Atlantic Menhaden Management Board that we are now halfway through the five-year cap on menhaden harvest in Chesapeake Bay, that ASMFC-requested research is underway looking into the status of menhaden as a forage fish, and that a new stock assessment will be performed in 2009. “The ball you’ve handed the scientists is about to be tossed back into your court,” Hinman said. “The Board needs to begin now figuring out how it’s going to use the available information to implement a new management regime when the present one expires in 2010.”

After a number of Commissioners shared their concern that the move to an ecosystem-based approach to managing the menhaden fishery had “lost momentum,” the Board accepted NCMC’s recommendation to appoint a working group to develop ecological reference points – e.g., target population size, age structure, and set-aside for predators (see What Are Ecological Reference Points?) – by the completion of next year’s stock assessment.

ASMFC staff developed draft “terms of reference” to guide the panel’s work, including using the expertise of outside scientists and managers with experience in ecosystem-based management, which were reviewed at the commission’s Annual Meeting in October. The Menhaden Management Board decided to task the ASMFC’s Management and Science Committee, which recently formed a Forage Fish Subcommittee to look at the status of the Atlantic coast forage base, with developing the new ecological reference points. □

## What Are Ecological Reference Points?

The standard biological reference points (BRPs) used in single-species management are the target population size and fishing mortality rate that will maintain fishing at the highest sustainable level (MSY), and also include threshold population sizes and mortality rates that define an overfished state. Ecological reference points are BRPs set in an ecosystems context; for example, ERPs that explicitly set population size of prey species in order to supply adequate forage for dependent predators.

Recent research on Atlantic herring<sup>1</sup> suggests that fully accounting for predation demand – including expected increases in demand from cod, bluefin tuna and other overfished predators that are the object of rebuilding efforts - can dramatically increase estimates of the population size needed to sustain both predators and fisheries, while lowering the yields available to the fishery.

Below are suggestions for establishing ecological reference points for key forage fish like herring, menhaden and sardine:

### Population Biomass Target

The standard population, or biomass, associated with maximizing yields to the fisheries is  $B_{MSY}$ . In ecosystem-based management,  $B_{MSY}$  becomes  $(B_{MSY})^+$ , where + is the increase in biomass above the MSY level to accommodate predation. The goal of setting a population target for forage species higher than the  $B_{MSY}$  level is affirmed by NMFS in its proposed federal guidelines for considering ecological factors in setting catch limits.<sup>2</sup> How much higher depends on a number of factors, including projected or desired increases in predator populations above current levels, the status of other species that make up the available forage base, and the need for precaution to account for uncertainties.

Merely setting a more conservative target population does not fully account for and protect a prey fish’s role in the ecosystem. Fishing a prey population down to a fraction of its un-fished level in order to increase fishery yields not only

diminishes the total amount of prey; it reduces availability to predators in other ways. In other words, prey density changes in three ways: the number of prey (total population), type of prey available (size/age), and distribution throughout their natural range. Each of these factors is important to predators finding an adequate supply of food where and when they need it. Therefore, ERPs should also establish:

Target population age structure, i.e., an age distribution reflecting that of a natural, unfished population; and,

Target population density, i.e., prey availability distributed in time and space to avoid localized depletions.

### Population Biomass Threshold

The corollary to maintaining a higher population for key forage species is setting a higher overfishing threshold. The standard definition of an overfished stock – the point at which fishing ceases and rebuilding begins – should be re-defined from  $\frac{1}{2} B_{MSY}$  - a population level that may still be capable of rebuilding but inarguably could have a profound impact on predators – to  $B_{MSY}$ .

### Mortality Target

In an unfished population at a natural equilibrium, total mortality (Z) for a species equals natural mortality, which is primarily predation. In a population that is at a fishing-induced equilibrium, the amount of predation is reduced to accommodate desired fishery yields. As a result, estimates of the natural mortality rate (M) used in single-species assessments are influenced by the fishing mortality rate (F). The M that is “determined” is therefore an *a priori* allocation to predators, rather than a determination of actual predator needs.

It has been suggested that an ecosystem-based approach would allocate prey to predators first, before allocating to the fisheries.<sup>3</sup> Doing this would entail estimating the amount of prey fish needed to supply predators at desired levels, then determining the sustainable fishing mortality rate; or  $Z - M = F$ .

-NCMC 2008

<sup>1</sup> Overholtz et al, An Ecosystem Approach for Assessment Advice and Biological Reference Points for the Gulf of Maine-Georges Bank Atlantic Herring Complex, 2008

<sup>2</sup> 73 Fed. Reg. 32526 (June 9, 2008 (Proposed National Standard Guidelines for Setting OY)).

<sup>3</sup> Fisheries Ecosystem Planning for Chesapeake Bay, NOAA Chesapeake Bay Office, 2006.



### PURCHASE UNIQUE HOLIDAY GREETING CARDS FROM SPORT FISHING MAGAZINE!



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