CATCH & RELEASE

Virginia MARINE RESOURCE BULLETIN

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Highlights of the National Symposium on Catch and Release in Marine Recreational Fisheries

In this issue, you have the opportunity to immerse yourself in the principal research findings and, at times, contentious discussions from the *National Symposium on Catch and Release in Marine Recreational Fisheries* (held December 3-5, 1999 in Virginia Beach, VA). The meeting was organized not to promote catch and release but, rather, to bring fishery leaders together to discuss what we know and don't know about catch and release (C&R) in marine fisheries. Based upon up-to-date information, attendees were then asked to come to consensus on which research and education/outreach priorities need more effort.

Those who feel catch and release holds promise to improve marine anglers' fishing experiences in the future may find their beliefs tested. For example, much concern was expressed about catch and release benefits that are cancelled out by lack of control and enforcement on commercial fishing bycatch as well as the politics of quota allocations. Evidently, much work lies ahead to effectively convince anglers to more actively incorporate voluntary releasing of fish into their fishing lifestyle.

Put on your thinking hat and take this opportunity to look over the shoulders of 130 top fishery scientists and managers, as well as leaders from recreational fishing organizations, the tackle industry, charter and party boat captains, and the fishing media. Then decide whether this fishing ethic called catch and release is in fact making a difference toward the conservation of future fish populations.

While a technical proceedings will be published later this year (email Jon Lucy <lucy@vims.edu> to get on the announcement mailing list), it is hoped that this summary will move things forward so that C&R fishing becomes better understood and, ultimately, more accepted by our readers. Our underlying goal is to benefit marine fish and those pursuing them, starting where the buck always stops — with the angler!

Jon Lucy
Symposium Chair

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~Special Edition: Catch & Release~

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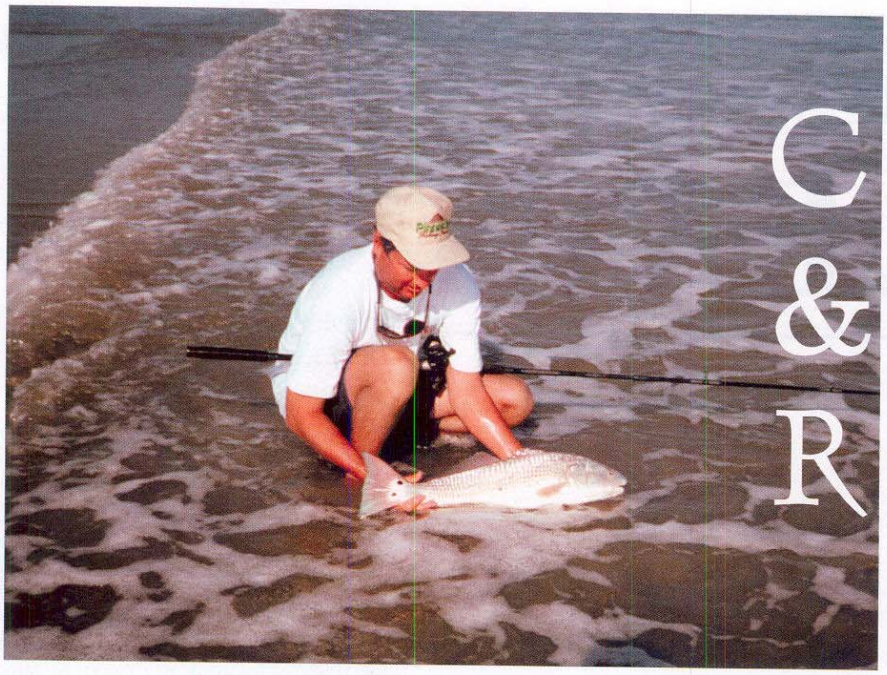


Catch & Release: Moving from Concept to Practice

By Sally Mills

During an international symposium held in December 1999, scientists, fishery managers, and members of the recreational angling community came together to discuss the subject of "catch and release" fishing in marine waters. The symposium has been noted for successfully bringing together views held in disparate cultures across the globe and for sparking a comprehensive dialogue about the current status of recreational catch and release fishing. This paper summarizes that discussion in an attempt to move the process of adopting catch and release fishing to the next level.

DEFINING CATCH & RELEASE

A problem of semantics?

Inherent to all processes aimed at changing human behavior is the challenge of first finding a universal definition that describes and accurately measures such change. The concept of "catch and release" (C&R) fishing is no exception. In fact, the blurred connotations of its current meaning among varying audiences underscore the importance of getting through this early phase in the idea's evolution in order that it can become more widely accepted. It has been suggested that the concept of catch and release is fraught with imprecision associated with its application in the real world: voluntary versus mandatory behaviors, cultural taboos, its assigned weight within the allocation process, for example. For these reasons and others, the shift toward a more universally accepted phrase such as "selective harvest" may make the idea more palatable to the fishing public worldwide.

As it was eloquently stated by Jon Lyman with the Alaska Department of Fish & Game, "Catch and release acceptance depends on the world view of the community in which the fishery occurs."

In rural Alaska, the importance of word choice is quite striking. While the idea of "selective harvest" may be acceptable

among some of the native peoples, the phrase "catch and release" evokes a very negative response tied to the taboo of "playing with one's food" (Lyman). "Selective harvest" suggests more flexibility, or broad-based participation, that can take place once dinner has been secured.

In British Columbia, where fish occupy a central role in the local diet, the term "non-retention" appears less threatening. Similarly, along the coast of Norway where most residents live in small villages and practice subsistence fishing, the phrase "catch and release" would predictably face tremendous hurdles of cultural acceptance. However, opportunities exist to promote catch and release to niche segments of the fishing public, such as the eco-tourism industry, where visitors might be compelled to practice the behavior upon private boats.

While the concept of catch and release implies that "we understand our role as both conservator and predator and attempt to minimize our waste of fish" (Lyman), its practical application is colored by many factors. Along the "application curve," very distinct perceptions (and hence, behaviors) are attached to the idea of catch and release, depending upon the initiator: fisheries manager versus long-time recreational angler; charter boat captain versus first-time pier fisherman; offshore billfish angler versus surf fisherman, to name just a few. Those who would like to see more widespread adoption of catch and release behavior must be constantly reminded that it, like any cultural value, is fluid and ever-changing. Such values must always be negotiated.

Perhaps no universal definition will emerge. Instead, varying themes on its central tenets may become widely accepted and practiced. What is critical, regardless, is that a precise definition is provided when gathering data about catch and release behavior in the field. The phrase may come to mean different things for distinct population sub-groups, but it needs clarity when researchers are collecting information about the behavior(s) taking place.

Lack of agreement in defining catch and release has rendered much of the research to date problematic. Surveys, in particular, have been sparse and inconsistent in approach, riddled with double-headed questions, unbounded questions, and other vagaries that contribute to inconclusive results. The need for more targeted questions that are tied to specific timeframes, species, and fishing events (possible with creel intercept surveys), was stressed by Dr. Robert Ditton of Texas A&M's Department of Wildlife and Fisheries Sciences and others involved in catch and release research.

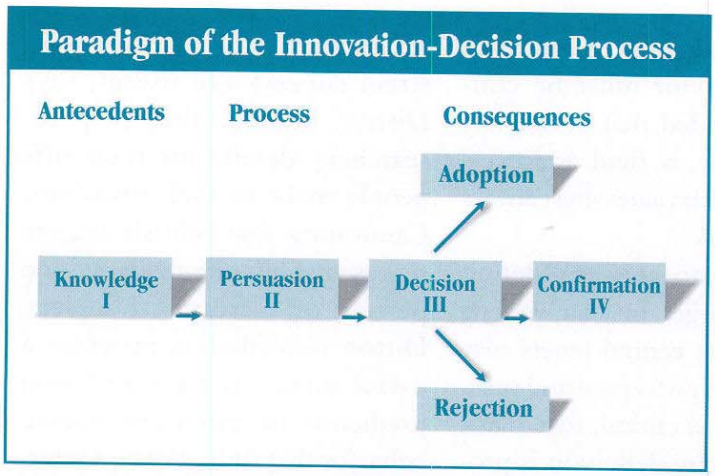
In his 1997 survey of billfish anglers, Ditton was able to glean meaningful predictors of C&R participation by querying behaviors that took place during trip events, and by targeting a narrow sub-group of the angling public. Creel surveys are useful, says Ditton, because they help researchers identify the trade-offs people make in such situations. Cautioning that billfish anglers represent only one-tenth of one percent of recreational anglers, Ditton nevertheless provides a useful survey tool for analyzing predictors of catch and release behavior that can serve as a reference in developing surveys for other angler groups (surf-fishers, for example).

MODELS OF CHANGE

Use existing models to promote C&R

Catch and release is a practice that has, quite literally, worked its way downstream. Its origins trace back to the sport of fly-fishing in freshwater environs and to marine sport fishing, where the practice of one's craft has always held as high a position as the catch itself. In the early '50s, catch and release was instituted in Michigan to help reduce the practice and expense of trout stream stocking (Radonski). It is now time to apply the principles of catch and release to the marine environment. Fortunately, one can draw upon the knowledge and sensibilities of freshwater anglers who have been practicing catch and release fishing for decades in order to reduce waste while fishing for fun.

There are as many opposing viewpoints about the best way to



promote the adoption of C&R fishing as there are definitions. But it is generally accepted that an overall strategy is needed. Key to its development is the assurance that state and local communications are well grounded and likely to yield measurable results (Ditton).

Among the many "change" models that can be drawn upon, the methods used by the Cooperative Extension Service to diffuse messages are viewed as extremely successful. Faced with rapidly changing land-use patterns, especially along coastal corridors, Extension had to educate a new generation about the critical role of farmland in a changing and urbanizing society.

The choice of models must be made with an understanding of the innovation-decision process that occurs with any behavior change, according to Ditton (see box). Fisheries managers and conservation groups should make use of these fundamental social science understandings and not recreate the wheel in the realm of catch and release application. The innovation-decision process occurs in discreet intervals over a period of time.

As an example, part of the process relies upon the use of "change agents" who work through near-peer opinion leaders. Outdoor writers, local fishing celebrities, marine extension agents, and tournament managers are just a few examples of such opinion leaders. They are the ones who can carry the catch and release message forward, who can influence anglers most directly. The Virginia Saltwater Fishing Tournament, managed by Claude Bain, was touted as an example of a statewide program that successfully "infused" the catch and release message.

Augmenting this group are peers who share long-term friendships with anglers and can act as mentors to make immediate inroads into C&R acceptance. But regardless of who serves as messenger, continued reinforcement is needed for C&R to stick. Regular updates on the status of popular fish stocks (including how C&R practices help improve stocks), written in plain language, would serve to reinforce catch and release thinking as a practical, effective consideration in angler behavior.

CURRENT IMPEDIMENTS

Research needs

Much of the research about marine recreational catch and release has been directed toward billfish and sailfish species – high profile fish caught in the big game tournaments around the world. While this work is paramount to the successful conservation of such prized fish as marlins, sharks, and tunas and has raised the tenor of catch and release in public debate, it is only a beginning. Critical to continued discussion about catch and release is a looming need for more focused studies on other fish species, and angler fishing behavior and expectations.

The most pressing needs appear to fall into three broad categories: research directed at the human motivations, or those factors in the human dimension, significantly linked to the practice of catch and release fishing; research that identifies successful "mechanics" of the practice (i.e., what really matters most in achieving high survival rates of released fish); and research directed at post-release survival rates – both short- and long-term survival. The components of each are outlined here.

The human dimension

An examination of the human motivations behind catch and release must include consideration of demographics, customs and beliefs, and the political climate of the locality, or group, being examined. Taken a step further, consideration of event-specific deci-

sions will yield insights about the trade-offs anglers make. The presence or absence of friends or peers, for example, may greatly shape behavior outcomes. The rules of the party or charter boat will necessarily impact individual decisions made while in "captivity."

In their survey of billfish anglers coming in to dock, Ditton found that two factors carried great weight as predictors of catch and release behavior: angler association with fishing clubs, and the number of times spent fishing during the past year. Other factors, such as gender and level of education, did not significantly affect outcomes (see box).

Mechanics of successful C&R fishing

By this, we seek to identify and prioritize the impacts of the physical environment: equipment, hook type, bait type, time out of water, use of live wells, human contact, and a host of more subtle influences. Also critical would be a discussion on how geographical and climatic influences such as fishing mode/location, weather, and air and water temperatures, for example, are apt to affect the success of an intended release. Considerable research exists, mostly for freshwater fish but rapidly expanding on marine species. It is typically found in scientific publications or proceedings of meetings attended primarily by fishery scientists and managers, not readily available to even the most ardent of anglers.

Post-release survival

While recent efforts have made great strides in identifying and quantifying post-release survival for particular species, more needs to be done in this arena. Specific unknowns mentioned as fundamental to future, widespread adoption of C&R include research directed at long-term mortality, physiological impacts associated with proper/improper handling techniques, and the benefits of circle hooks (i.e., do they work equally well for all species?) and other angler behaviors intended to reduce stress on the fish and thus increase its chances of survival.

Studies comparing circle to straight ("J") hooks were presented, including work on salmonids, flounder, speckled trout, striped bass, tuna, and billfish. Dr. Eric Prince of the National Marine Fisheries Service detailed his agency's work on sailfish in waters off Iztaba, Guatemala, in which he compared the use of circle hooks to J hooks. Trolling with dead bait, Prince found that catch rates between the two hook types were comparable – an important consideration for anglers when considering changing tackle. As anticipated, sailfish hooked with circle hooks had the hooks caught predominantly in the mouth/jaw area (85%). Only 15% of the fish were gut (or, deep)

Factors Affecting the Odds of an Angler Releasing All Billfish Caught

The following factors were found to be statistically significant in affecting angler behavior toward release of all billfish caught, in a study conducted by Graefe and Ditton, 1997.

Demographic Characteristics:
- Age
- Region
- Income

Fishing Behavior Variables:
- Years Spent Saltwater Fishing
- Focus Effort on One Species
- # Tournaments Entered Last Year
- Total Days Spent Fishing Last Year
- Member of Fishing Club
- Days Needed to Boat a Billfish
- # Trips Targeting Billfish

Fishing Motive Variables (ranked on 5-point scale):
- Challenge Experience
- Trophy Seeking
- Relaxation/Escape

Fishing Attitude Variables (ranked on 5-point scale):
- Catch Not Important
- Want Big Fish
- Want Many Fish
- Support No Kill Tournaments
- Support Catch &Release Only

hooked. By contrast, significantly more fish (46%) were deep-hooked by J hooks. Also, sailfish caught on J hooks were much more likely to suffer bleeding (21 times) than those caught on circle hooks (see box).

THE REGULATORY FRAMEWORK

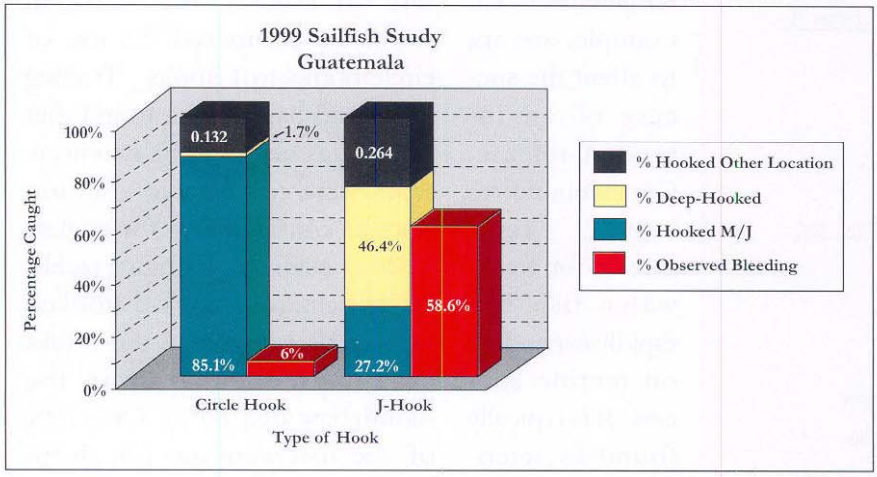
Allocating resources

It is estimated by the National Marine Fisheries Service (NMFS) that catch and release accounts for 60% of total angler catch along the U.S. Atlantic Coast. However, it became apparent during the discussions that work remains to be done to equitably factor in the efforts of catch and release fishing by anglers when fishery allocation decisions are made. While opposing sides of the management equation found ground to substantiate their positions, there was no underlying consensus that the contribution of catch and release behavior to resource conservation is currently credited to the recreational fishery in a fair manner. Therefore, the goal of expanding catch and release behavior among recreational anglers may be threatened by angler insecurity about future access to those very resources. Speakers and participants echoed these sentiments, adding that allocation decisions have been made poorly in the past and continue to be made in a flawed manner. Decisions are fraught with political pressures and often based upon unreliable, historical data applied to current stock distributions among recreational and commercial fisheries.

In response, the NMFS defended its current allocation system and emphasized new directions the agency has undertaken to establish annual quotas. Specifically, the NMFS surveys recreational anglers about release behavior, makes estimates on post-release mortality by species, and uses the information to help determine if quotas have been reached. The Service is currently wrapping up an angler survey of fishing activity between Maine and Virginia that includes questions about C&R behavior. Questions seek to identify outcome preferences – bag limits over size limits, for example – and results should be available in early 2001.

A related concern about the allocation process has to do with poor communication about how and why such decisions are made. Recreational anglers wish to better understand regulatory decisions, and want specifics on how a quota fits into the larger management plan for a particular species. Enhanced communication is viewed as a first step in softening the often contentious public debates that now occur across communities when quotas are set.

A number of manufacturers now offer circle hooks in sizes ranging from #18 to 20/0.

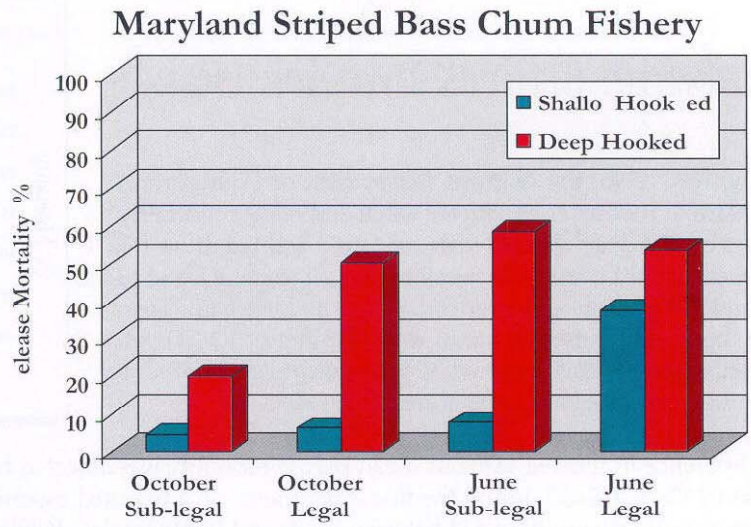


Regulated C&R

Fisheries biologists constantly face the dilemma of reconciling the law with respect for what might actually better help the resource. However, the perception and reality of "waste" created by current management regulations for commercial and recreational fisheries in the U.S. hinders efforts to promote catch and release. Most obvious is the problem of releasing small fish that are already dead, since throwing them back into the water adds to the

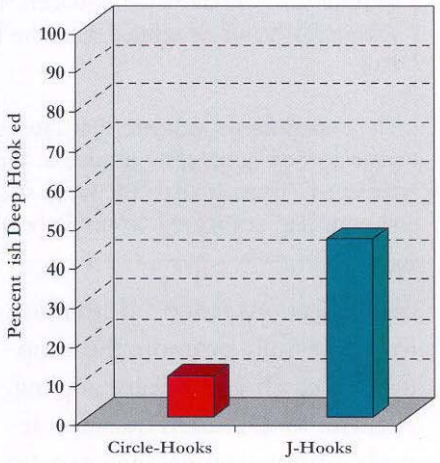
"waste" stream. But clearly, many other regulations—size limits, bag limits, closed seasons, for example—also result in increased discards of fish.

It is critical to document what proportion of discarded fish, under typical fishing conditions and both regulated and voluntary releases, are likely to survive. How much voluntary catch and release practice by conservation-minded anglers actually positively impacts the resource? Post-release survival rates may be significantly higher or lower than assumed by anglers and managers. The only way to find out is through quality research and data.



1996-97 Study Results:

1. Mortality is higher in deep-hooked fish.
2. Circle hooks reduced deep hooking.
3. Warm water and larger fish produce higher mortalities.



CHALLENGES AND OPPORTUNITIES

What we do know

Research conducted over the past ten years has resulted in important strides in the conservation of fish stocks – especially among some of the more vulnerable migratory species. Karen Burns of the Mote Marine Lab in Florida has worked to promote the venting of swimbladders in undersized red snapper before their release.

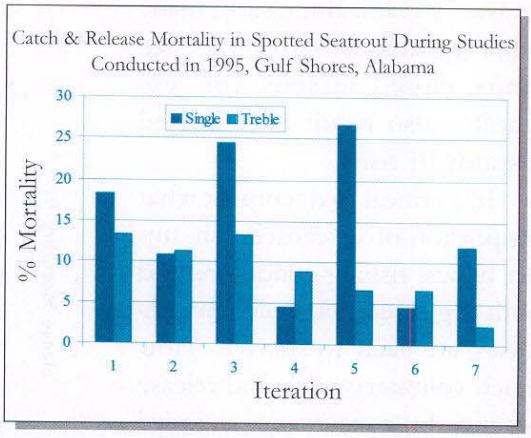
Greg Skomal and Brad Chase in Massachusetts have studied the physiological changes that occur in pelagic species (tuna, marlin, shark) as a result of prolonged "fight time." Their evidence supports reduction of fight time in order to increase fish survival rates. An interesting aspect of their research is the conclusion that, even if an angler uses circle hooks on these species, heavy tackle is recommended. Lighter tackle may, in these cases, cause more injury and stress, and therefore reduce chances of survival when the fish are released.

Other notable research includes studies on specific hook sizes and types; the impacts of C&R on fish growth and on physiological responses; and studies on the short-, intermediate-, and long-term survival of tagged fish. See the topical index on pages 11-12 for a thorough listing of research presented at the symposium.

What we don't know

What is happening in the recreational sector with regard to catch and release? How are fisheries managers worldwide dealing with the phenomenon? What are the impacts of different fishing gear on particular species? How does gear selectivity impact recreational opportunities, and catch and release in particular? How can we better prevent unnecessary waste of fish that, by regulation, anglers must return to the water? ...or, at least not possess when arriving at the dock? How can we prevent fish mortality? These are legiti-

Alabama Studies Provide Insight



During 1994-1996, the Alabama Department of Conservation and Natural Resources conducted catch and release mortality studies on sub-legal spotted seatrout (<14") and red drum (<16"). Fish were caught over a two-week period on single #2 and treble # 6 and # 8 hooks using a variety of lures and live bait. They were then held in research ponds with salinities of 10-20 ppt. Spotted seatrout trials occurred at temperatures of 21-37°C; red drum trials occurred at temperatures of 23-38°C.

No difference in spotted seatrout mean release mortality was detected between single (14.6%; N = 246) and treble hooks (9.1%; N = 242) during the first experiment. In a repeated experiment one year later, no difference in seatrout mortality was detected between single and treble hooks. While fewer trials were feasible for red drum, no differences were detected between single hooks (N = 41) and treble hooks (N = 55). Most mortalities occurred within 24 hours of release, and the highest mortalities were observed in captures involving single hooks and live bait.

The experiments indicate that favored local fishing techniques and tackle used during the warmest months of the year do not necessarily induce as high post-release mortality in spotted seatrout and red drum as commonly believed. In particular, the work shows that use of treble hook rigs does not necessarily result in excessive release mortalities, compared to single hooks.

mate questions that need attention to successfully promote the adoption of catch and release angling. A closer look at each question reveals opportunities that can be captured while moving along the research track.

Targeting new audiences

Demographic information reveals that certain sub-groups of the angling public are currently under-represented: minorities, women, single mothers, for example. These groups, as well as young anglers who have not yet formed fishing habits make good candidates for C&R education efforts. Younger participants may also be more open to hearing about broad-range, conservation-oriented management objectives. They also provide a legitimate pathway for teaching their parents and grandparents, especially when taught in a clinic setting with other family members.

Charter and party boat captains are ideal teachers already working in the angling community, and it is in their own best interest to promote C&R for conservation of the resource that forms the underpinnings of their business. Those who have been in the business for a while and view conservation as key to their long-term success have already begun promoting "alternate trip experiences." Wildlife watching, emphasis on catching bait, and learning about particular fish profiles are just a few ways to round out a fishing trip. Tagging released fish to document movement and migration patterns and identify dependence on critical habitats or water areas are other side benefits. In other words, opportunities abound to shift emphasis to a broader nature experience, versus focusing on the catch-only side of the fishing equation.

Focus shifts

When emphasis shifts to the question, "How do you significantly reduce the dead fish count during angling trips?," catch and release evolves into an even broader discussion about equipment and gear that halt the unintended catch in the first place. Such emphasis might generate greater use of circle hooks (recreational and commercial) and turtle excluder

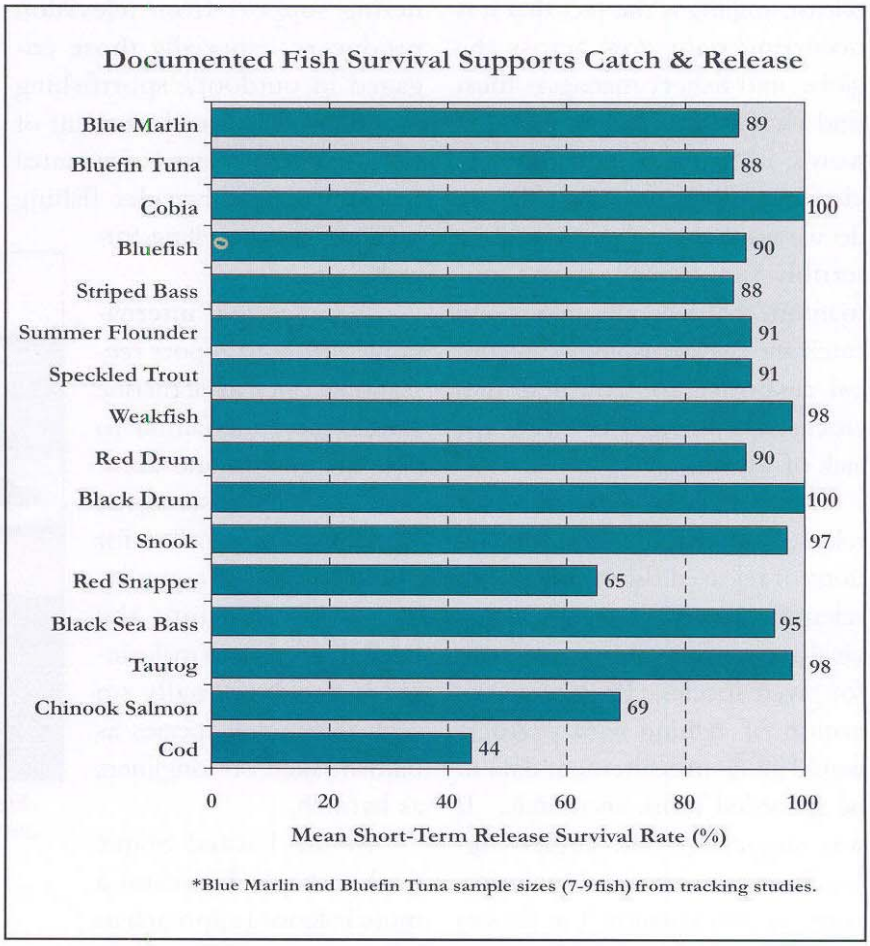
devices in shrimp trawls (commercial), and result in commercial gear modifications that reduce unwanted bycatch. Proponents of the circle hook argue that its usefulness in long-line fishing, for example, has yet to be embraced (even though circle hooks originated in that fishery). They go a step further to characterize the current long-lining situation as "wanton and wasteful" (Radonski) compared to release efforts in big game fishing.

A second, related shift in focus might involve the characterization of recreational angling as a "privilege" versus a "right." Such thinking may be more strongly considered in the near future, with fishing managers taking a hard look at whether stocks may not continue to withstand current levels of recreational fishing pressures. (Stocks have limited "fishing capacity" whether the fish are taken by commercial or recreational interest groups.) Such a shift would spark an entirely different discussion, one in which conservation rests at the ethical core and respect for the resource outweighs all other decisions. The shift toward privilege-based thinking will, in the long run, help angling-related industries that depend upon healthy fish stocks for their livelihood. Greed and self-interest succumb to the more lofty goal of preservation, that, over time, serves to protect one's business interests.

Other opportunities

An obvious partnership already exists among tag-and-release fishermen who have contributed thousands of hours toward increased knowledge about fish behavior and life history. Incorporating a catch-TAG-and-release component into an international strategy may be just the "hook" that keeps anglers coming back. Through the act of tagging, anglers report they feel a sense of connection with the fish. The act ties them to an exciting future, wherein the fish may show up just about anywhere. Today, a growing network of recreational taggers has evolved into a population sub-group, whose affinity for contributing to science provides them an opportunity to share information, data, and stories – all made more accessible by the internet. Learning the correct techniques of handling and tagging fish provides obvious carryover benefits for fish stocks and future fishing trips.

Another yet-to-be-explored opportunity involves the practice of catch-and-release-only fishing in existing marine reserves at certain times of the year. The activity might be offset by prolonged periods, or within specified areas, where no fishing is allowed. A prime example is the 1962 closure



of waters in the Merritt Island Wildlife Refuge encompassing the Kennedy Space Center for security purposes, which resulted in greater abundances of red drum, speckled trout, black drum, and snook inside the secured perimeter compared to adjacent waters. An added benefit to fishing guides and anglers working the waters within 30 miles of the preserve has been significant increases in trophy-sized fish (IGFA world records) – that first occurred a decade later.

FUTURE DIRECTIONS

Perhaps most timely to an international dialogue about catch and release angling is the fact that it is occurring right now across the globe, and fishery managers must find a way to deal with it. In other words, it is time to take the long view and ask the question, "Where do we want to go?" It would be terribly sad, indeed, if the momentum that has built up around catch and release fishing as an ethical response to troubled fish stocks was allowed to fizzle for lack of vision.

More data are needed about releases, specifically size distributions of released fish coupled with scientific data on post-release survival rates of various size classes for given species. Promoting the notion of fishing with partners would allow measurement data to be recorded more accurately. It was suggested that angler logbooks can be tremendous reservoirs of information for fishery managers and should be one of many sources used to calculate quotas and make allocation decisions. However, past problems with accurate and consistent data being recorded in logbooks by some fishing groups make this approach tenuous.

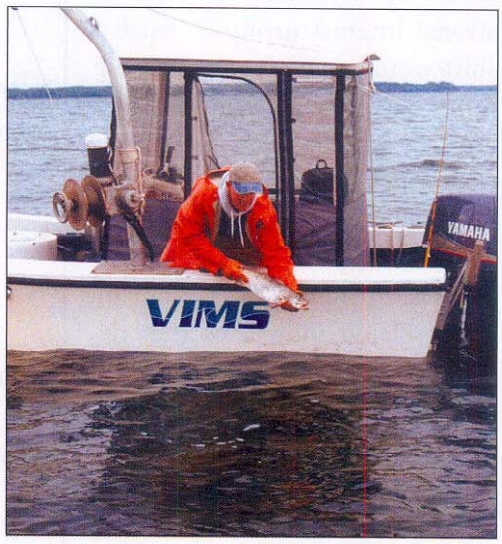
A public education campaign that covers the "how-to" of correct handling techniques to minimize fish mortality is also viewed as an immediate need. The uses and benefits of circle hooks, the use of pop-up archival tagging, and quantifying the current level of catch and release; all are topics for further research.

Many participants expressed the need for and benefits of garnering support from television producers, especially those engaged in outdoors/sportfishing programs. Their endorsement of C&R fishing is viewed as essential to reaching the broader fishing public in a compelling format.

A concerted, international effort to report recreational catch in all marine waters is fundamental to data integration and accurate stock assessments. Participants also called for the integration of commercial fishermen into the C&R dialogue – to make inroads internationally on such threatened species as billfish taken on longliners as bycatch.

In the United States (and perhaps elsewhere) a more balanced approach to recreational versus commercial allocation that seriously accounts for the contributions of C&R anglers appears to be called for. As part of such an approach, recreational anglers are asking governing bodies such as the NMFS to analyze the existing recreational data (some of which spans decades) and make it accessible to the general public. This would signal that C&R contributes to real science and reinforce the value of C&R angling among the larger fishing public.

Over the long term, it was suggested, recreational and commercial fishermen must find a way to unite for a strong political voice. This is viewed as the only way the recreational sector will achieve the financial ballast needed to protect its resource interests and address some of the allocation biases that currently exist.



Tagging fish provides opportunities for anglers to practice C&R and contribute to scientific research.

Topical Index of Symposium Presentations

Angler Acceptance, Behavior, Considerations

- "Catch and Release in Australian Recreational Fisheries: Rapid Evolution in a Changing Fishery, Social, and Environmental Landscape," Pepperell, Julian G. Contact pep@ozemail.com.au.

- "Understanding Catch and Release Behavior Among Atlantic Bluefin Tuna Anglers," Sutton, Stephen G. and Robert B. Ditton. Contact Robert Ditton, rditton@unix.tamu.edu.

- "The Discourse About the Ethics of Catch and Release in Recreational Fishing in Europe – Implications for North America," Aas, Oystein, Carol E. Thailing and Robert B. Ditton. Contact Oystein Aas, Oystein.Aas@ninanlku.noninalil.

- "To Keep or Release: Understanding Differences in Angler Behavior," Fedler, Anthony J. Contact tfedler@gru.net.

- "Cultural Values and Change," Lyman, Jon. Contact jon_lyman@fishgame.state.ak.us.

Hook Performance

- "Hook Mortality of Chinook Salmon Less Than 26" TL from Mooching with 3/0 to 5/0 Circle Hooks in California's Ocean Sport Fishery," Grover. Allen M., Melodie L. Palmer-Zwahlen, Matt Erickson, and Phillip Law. Contact Allen Grover, agrover@dfg2.ca.gov.

- "Billfish and Circle Hooks," Prince, Eric D., Mauricio Ortiz, and Arietta Venizelos. Contact Eric Prince, Eric.Prince@noaa.gov.

- "A Comparison of Circle and Straight Hooks Relative to Hooking Location, Damage, and Success While Catch and Release Angling for Bluefin Tuna," Skomal, Gregory B., Bradford C. Chase, and Eric Prince. Contact Gregory Skomal, domf@capecod.net.

- "A Study of the Effects of Using Circle Hooks by New Jersey's Recreational Summer Flounder Anglers," Bochenek, Eleanor and Steven Zimmerman. Contact Eleanor Bochenek, bochenek@vertigo.hsrt.rutgers.edu.

- "Hook Release Mortality in Marine Fisheries," Burns, Brad. Contact bigbass@gwi.net.

- "A Comparison of the Relative Mortality and Hooking Efficiency of Circle and Straight Shank (J) Hooks Used in the Pelagic Longline Industry," Falterman, Brett and John Graves. Contact John Graves, graves@vims.edu.

Post-release Mortality/Survival

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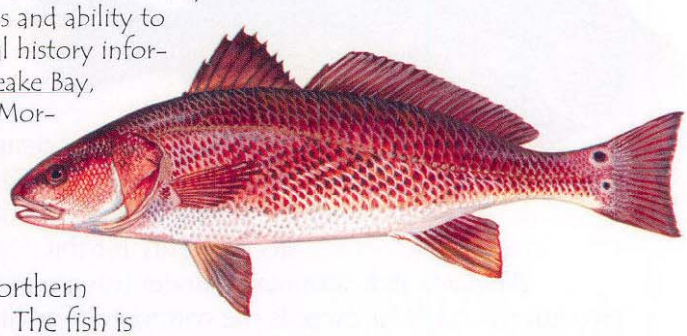
Catch 'Em Again!

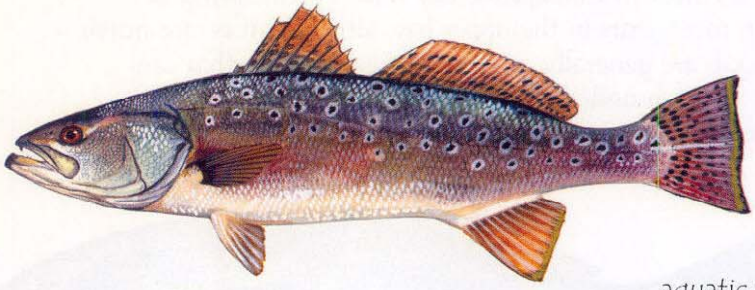
Described here are popular marine species for which catch and release mortality data are available. These species are noted for their hardiness and ability to withstand catch, tag, and release events. Much of the natural history information has been excerpted from the book, Fishes of Chesapeake Bay, by Edward O. Murdy, Ray S. Birdsong, and John A. Musick. Mortality study and tagging information provided by Jon Lucy.



RED DRUM, Scianenops ocellatus

Red drum are known from the Gulf of Maine to the northern coast of Mexico but uncommon north of New Jersey. The fish is more abundant in the Gulf of Mexico than along the Atlantic Coast. Adult red drum occur in Chesapeake Bay from May through November and are most abundant in the spring and fall near the bay mouth in salinities above 15 o/oo. However, in the bay area they are most frequently taken along seaside beaches. This species extends as far north in the bay as the Patuxent River. Adult red drum are most common in nearshore marine waters, where they may travel in large schools. Larger red drum occasionally move well off North Carolina's Outer Banks. Red drum display a northerly migration in the spring and southerly movement in the fall, but they may occasionally overwinter in the bay in mild winters (confirmed by Virginia Game Fish tag returns).

A significant recreational fishery exists, with larger fish taken by surf casting from seaside beaches and bait fishing along the bay side of the lower Eastern Shore. Smaller "puppy" drum are favored light tackle fare on western shore grass flats. Research shows as high as 50% release mortality in deep-hooked fish. Using circle hooks for bait-fishing is therefore recommended. Lip-jaw hooked drum exhibit release survival rates of 90-98% (Georgia, Louisiana, South Carolina studies).



SPOTTED SEATROUT
Cynoscion nebulosus

Spotted seatrout are found from Cape Cod to Mexico but rare north of Delaware Bay. Also known as speckled trout, the fish prefer shallow water over sandy bottoms near submerged aquatic vegetation (SAV) or structures. Adults display a wide salinity tolerance and may be found in salinities as low as 5 o/oo in Chesapeake Bay tributaries. Adult spotted seatrout are migratory in the bay, usually arriving in late April and moving offshore and south in late November (confirmed by Va. Game Fish tag returns).

Spotted seatrout, ranking second by weight in catches by U.S. saltwater anglers primarily in the Southeast, provide a premium recreational fishery in the bay. During spring and autumn, spotted seatrout are taken at high tide over shallow eelgrass beds at dawn and dusk, by using peeler crabs or artificial lures and bait. In November-December, spotted seatrout up to 12 lbs. are caught by anglers around the rocks of the Chesapeake Bay Bridge-Tunnel. Spring bait fishing results in large numbers of deep-hooked fish; therefore, VIMS is studying the use of circle hooks to enhance survival of released adult fish (2-5 lbs.). This work is particularly significant since the Virginia Saltwater Fishing Tournament will reward anglers for releasing speckled trout 24" or greater in length beginning in 2001. Release survival for live bait caught fish is as low as 74% (Louisiana study), but can be improved to 91-94% using treble-hook lures (South Carolina and Virginia studies).

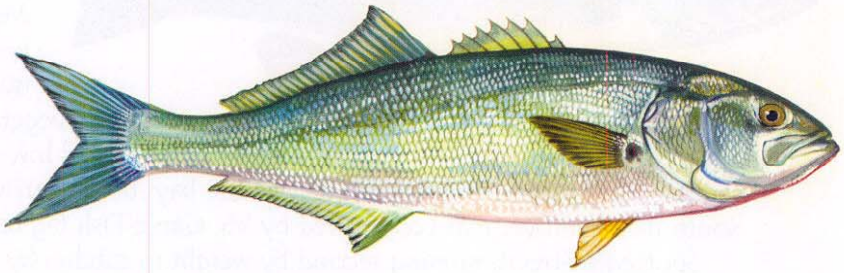
SUMMER FLOUNDER, Paralichthys dentatus

Most summer flounder are visitors to Chesapeake Bay from spring to autumn and then migrate offshore during the winter months. However, some overwinter in the bay. Adults typically occur in deep channels, ridges, or sandbars. On entering Chesapeake Bay, Virginia Game Fish tag returns show the fish stay put for at least 13-69 days, especially around fishing piers. After age 3, summer flounder primarily inhabit coastal waters.

Anglers catch summer flounder using primarily live or fresh bait, but lures also work well. The recreational catch far exceeds the commercial catch in the bay and nearshore coastal waters. Since the mid-1980s, both commercial and recreational catches have declined precipitously because of overfishing and year-class failure, but anglers have experienced increases in catches of 4-8 lb. class fish in recent years. This is possibly the result of tightening controls on commercial fishing. By not letting undersized flounder swallow baited hooks, anglers can increase survival rates of released fish from 64% (gut-hooked fish, Virginia study) to 91-95% (New York, Virginia, North Carolina study). Cutting leaders and leaving hooks in deep-hooked fish also appears to promote higher survival in such fish.

BLUEFISH, Pomatomus saltatrix

In the western Atlantic, occurring from Nova Scotia to Brazil, including the Gulf of Mexico, but rare or absent in most of the Carribbean Sea. The bluefish, a visitor to Chesapeake Bay waters from spring to autumn, is abundant in the lower bay and common most years in the upper bay, although it is rare north of Baltimore. It is a migratory pelagic species. Schools are generally groups of like-sized fish that can form aggregations that cover tens of square miles. Bluefish undergo extensive inshore-offshore and north-south migrations. Adults overwinter off the southeastern coast of Florida and begin a northerly migration in the spring. In the Chesapeake Bay area, peak spawning is in July over the outer continental shelf. Smaller fish generally enter Chesapeake and Delaware bays, whereas larger fish head farther north.



Among the most important sport fishes in Chesapeake Bay, bluefish usually rank first in both weight and number during years of high abundance. The recreational catch of bluefish greatly outweighs the commercial harvest in the bay. Bluefish abundance displays considerable year-to-year variation and also long-term cycles. Abundances of large fish typically occur only when striped bass are at relatively low levels.

Bluefish are well known to anglers for having an incredible biting power and voracious feeding habits. Because the fish will "bite the hand that unhooks it," anglers frequently do not take as much care at releasing unwanted fish to be caught another day. However, studies in New York and Australia confirm 92-97% release survival rates for bluefish.

STRIPED BASS, Morone saxatilis

Naturally ranging along the Atlantic Coast from the St. Lawrence River in Canada to the St. Johns River in Florida, and in the Gulf of Mexico from western Florida to Louisiana. Striped bass were introduced on the Pacific Coast in the 1870s with transplants from the East Coast, and their range now extends from British Columbia to the California-Mexico border. They have also been widely introduced into lakes and reservoirs with varying success.

The striped bass is an abundant year-round resident found in all tributaries of Chesapeake Bay. In summer, a portion of the bay population of second-year and older striped bass migrates north along the coast as far as southern Canada and returns to the bay vicinity in fall and winter. Females typically mature in their fourth or fifth year, and males in their second or third.

Traditionally among the most important recreational and commercial species in Chesapeake Bay, especially in Maryland. The Chesapeake Bay population of striped bass shows great year-to-year variability in recruitment success, and it is not unusual for one or two strong year-classes to dominate the population.

NMFS data indicates the Atlantic coast recreational fishery is increasingly becoming a catch and release fishery; since 1991 over 91% of Atlantic anglers' catches have been released alive! Hook release mortality problems exist in the fishery (see page 7). Maryland researchers studied the chumming fishery (anglers put minced fresh fish overboard to attract fish to baited hooks). Larger, legal fish always showed higher release mortality rates than sub-legal fish (< 26″ June; > 18″ October) in both cool water (October) and warmer water (June). During warmer months even shallow-hooked larger fish experienced 38% mortalities while rates of 53-58% were observed in deep-hooked fish. Deep hooking of fish in cooler water also produced 50% release mortality in legal fish (>18″). However, circle hooks produced only 11% deep-hooked fish compared to 46% for J-shaped hooks. By anglers using circle hooks and minimizing catches of larger fish during warm months, significant increases in survival rates of released fish could result.

WEAKFISH, Cynoscion regalis

Occurring from Nova Scotia to about Cape Canaveral, Florida. The weakfish is most abundant from North Carolina through Long Island. North of Cape Hatteras, weakfish (also known as gray trout) display a spring and summer migration northward and inshore, and a fall and winter movement southward and offshore. Larger fish (year 2 and older) appear in the lower Chesapeake Bay in April-May, with age 1 fish becoming abundant in summer.

Weakfish are a major recreational species in the bay. During early summer, Virginia Game Fish tag recaptures show fish moving from the mouth to mid-bay areas (Tangier Sound) in 11-23 days. Release mortality studies (Virginia and New York) show that carefully handled undersized fish have a 98% survival rate in water less than 75°F; warmer water (84°F) releases show a drop in survival rate to 86%.

Marinas Provide C&R Link to Recreational Anglers

By Harrison Bresee & Sally Mills

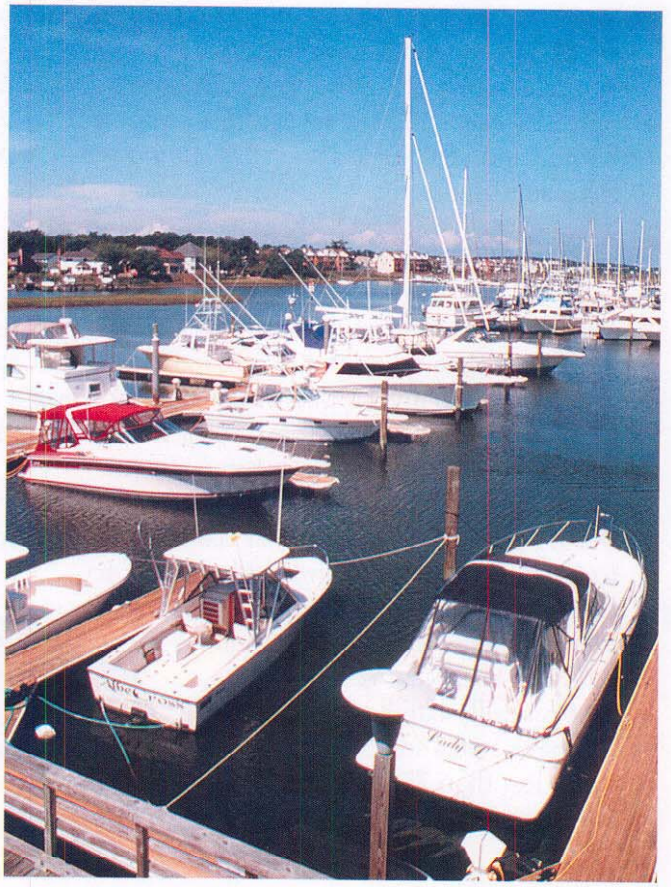
Virginia is home to almost 1,000 marinas that serve 230,000 registered Virginia boaters and at least an equal number of boaters from other states. Each marina satisfies a unique niche within the marine trades market. Some are equipped with full services: fuel, electricity, and water. They may even have restaurants, supply stores, service yards for boat repairs, pools, and tennis courts. Other marinas offer only the barest of necessities for a boater: a slip with no electricity or water, a boat ramp, ice, and bait sales. Most marinas fall somewhere in between.

The recreational angler

Boaters come here to cruise scenic waterways, view colorful wildlife, and experience excellent fishing. In fact, a study completed in 1997 by Kirkley and Kerstetter with the Virginia Institute of Marine Science illuminates the link that exists between recreational boaters and recreational anglers. The authors found that, on average, 54.4% of recreational anglers used private or rented boats to conduct their fishing activities between 1981and 1995. Another 13.7% of recreational anglers hired a head or charter boat for fishing.

The connection is obvious: marinas make a logical conduit for a targeted catch and release education campaign in Virginia. At some point or another during the boating season, the boat owner/angler and guests will likely conduct business in the marina office or store, and this presents an opportune setting for educational materials that explain the merits and proper handling techniques of catch and release fishing.

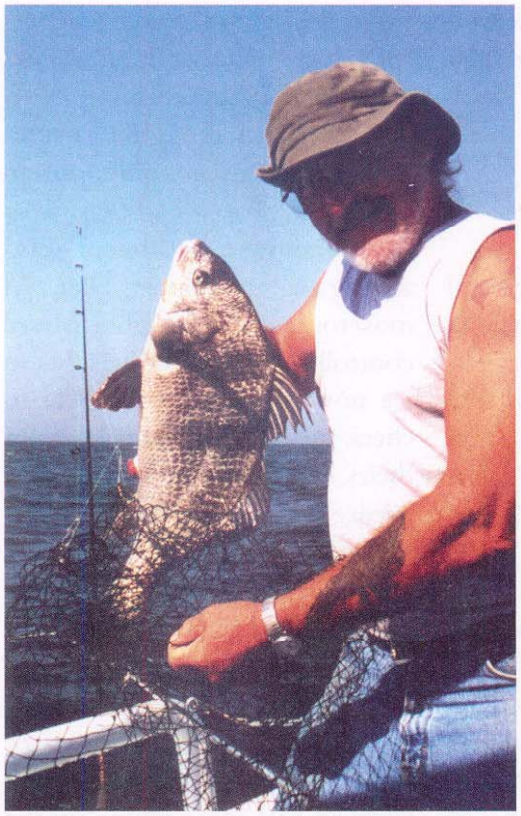
Marinas are often the weigh stations for verifying trophy catches in the Virginia Saltwater Fishing Tournament, as well. By promoting the catch and release side of the tournament at marina stores, tournament managers can help carry the message forward as a positive and exciting venue for their visitors and anglers to consider.



The Ethical Angler of the 21st Century

Catch and Release Means a Second Chance for Both Angler and Fish

By Charlie Petrocci



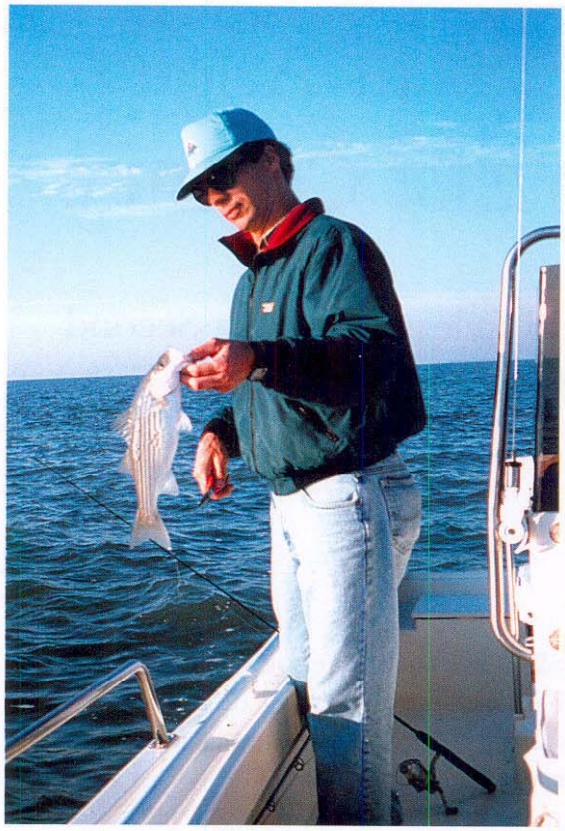
Captain Wil Lakksonnen has operated a charter boat business out of Onancock on Virginia's Eastern Shore for many years, and notices more C&R fishing by recreational anglers.

It's safe to say that many anglers these days are conscientious environmentalists, whether they want to admit it or not. The last decade has been a tough battleground not only for species on the edge of being over-stressed, but for anglers being stressed out over ever-changing harvest regulations. What seems to have evolved out of this maize of conflict and confusion is a new breed of fishermen who now fish not just to fill a cooler, but to fill their soul with a day of bluewater memories.

There is certainly nothing wrong with catching a mess of fish for the dinner table and reliving those days afield on your plate. Thoughts of a golden fillet coming off the frying pan or a marinated loin dripping on the grill is what drives many fishermen to get out on the water and brave the elements. But for a growing number of sportsmen, a day out on the water means more than just a pile of fillets. For these anglers, the hunt, the fight, and then a released fish makes for a great outdoor experience. Enough so that they'll come back and do it again.

Releasing gamefish is certainly nothing new. It's been going on for decades. As a matter of fact, the prestigious Virginia Saltwater Fishing Tournament began in 1958 by making only released tarpon and blue marlin eligible for its citation program. It has currently expanded to include 11 species that qualify as releases only (speckled trout to be added to the list in 2001).

"I've seen a positive change over the last decade among anglers," reports Claude Bain, director of the Saltwater Fishing Tournament. "Many fishermen have embraced the concept of releasing fish and this is occurring among all types of anglers. For example, many charter-boat captains have encouraged dolphin and yellowfin tuna releases, with some boat captains making self-imposed limits on how many fish may come back to the dock. Also, many fishermen have participated enthusiastically in our tagging program. We see anglers landing fish, recording tag information and then re-releasing the fish; even pier fishermen who traditionally fish for the cooler. I would like to believe that our education and management efforts have taken effect and influenced this new thinking," Bain added. The NMFS reports that from 1989 to 1998 the overall release rate by anglers increased from 45% to 57%.



Using circle hooks and minimizing the handling of striped bass produces good release survival.

Inspiration for angler release efforts has been cultivated by several factors. Number one: through regulation, which now dictates limits on size, numbers, or returning potential broodstock. Another is that many tournaments today encourage and sometimes demand that all fish be returned regardless of size, especially when billfish are caught. And education, which may be the greatest influence on fishermen, has fostered greater conservation awareness.

Influence also comes from transfer of the technique itself, with fly-fishermen being a prime example. Traditionally freshwater anglers, they have now expanded well into saltwater environs, bringing their release ethics with them.

Returns on the release

"There are several benefits from having fish released, especially tagged fish," said Bill Hall, both a past Virginia Angler and Release Angler of the Year. "One is being able to monitor migration patterns for certain species. For example, I once caught a tagged tautog twice in one day, while another time I caught one of my own tagged cobia almost five years to the day, and released it at about the same mile marker along the Bay Bridge-Tunnel. I also caught and tagged two amberjack off Rudee Inlet that were later re-caught, one in Key West and the other, in Jamaica. For me, it's sometimes more exciting to find out information such as this than see the fish in my cooler." The story documents the hardiness of fish and directly shows that one can enjoy the thrill of the catch more than just once with many fish.

Fishing tournaments, sometimes considered controversial, have evolved to encourage release of most fish. One example is the Eastern Shore Marlin Club, which hosts both a summer and fall release-only tournament.

"Response has been good among anglers," reports Hall. "In most tournaments, eligible fish are controlled by size and weight, so we now see anglers radio in to check the current lead fish, and if theirs is under, they immediately release it. Now that's good sportsmanship."

Education is possibly the greatest tool for informing anglers about the benefits of catch and release. Many organizations such as fishing clubs, tournament associations, and the VMRC have been instrumental in encouraging the release of fish of all age classes.

"I've seen an increase in fishermen who now come only for the sport . . . a lot of anglers just want to keep a few fish and then enjoy the rest of the day hooking and releasing fish. It's good for me, it's good for the customers, and certainly good for the resource."

Wil Lakksonnen

Virginia Saltwater Fishing Tournament

15 Release Citation Options!
(out of 34 species)

Release Only Species:
Blue Marlin
White Marlin
Sailfish
Spearfish
Swordfish
Amberjack
Black Drum
Crevalle Jack
Red Drum
Shark (any)
Tarpon

Release Option Species:
Bluefish
Cobia
Speckled Trout (1-1-01)
Striped Bass
Tuna, Bluefin

See www.state.va.us/mrc/ for details on citation length.

"Most anglers have an underlying philosophy of returning small fish back to grow," stated Bain.

"But now we want to educate fishermen that we can't catch all one size fish and think things will be okay. There needs to be structured population sizes to sustain the health of all species. Recruitment failure associated with taking too many large, spawning size fish is a real possibility, and we hope through education that anglers realize they are all stakeholders in this business," he added.

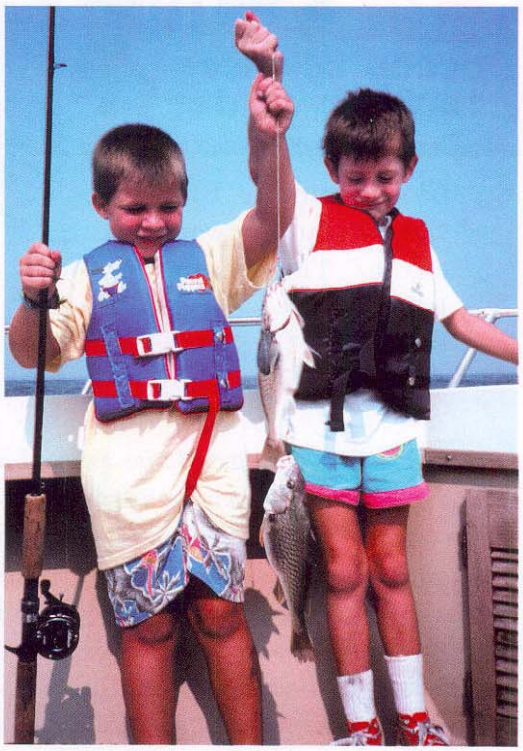
An education highlight is the Virginia Saltwater Fishing Tourna-ment's Junior Anglers Program, where kids under age16 receive a certificate for catching six different species of fish, regardless of size. This program was designed to encourage good fishing ethics, serve a goal, and promote interaction between child and parent. Program participation has been impressive.

Economics of angling

There is no doubt that sport fishermen have a positive impact on the economy of many small waterfront communities. Their seasonal presence each year injects thousands of dollars into waterfront towns through purchases and fees. These include lodging, fuel, bait, tackle, food, ramp fees and charter or boat rentals. The advent of catch and release fishing may or may not have accentuated any one of these localized economic attributes. But it has encouraged another type of angling opportunity on the water, and that still translates into revenue spending.

"I've seen an increase in fishermen who now come only for the sport," says charter boat captain Wil Lakksonnen of Onancock. "Sure, I still get the so-called meat fisherman and that's fine. But a lot of anglers just want to keep a few fish and then enjoy the rest of the day hooking and releasing fish. It's good for me, it's good for the customers, and certainly good for the resource. A win-win situation all around."

Catch and release has, evidently, hooked a new generation of anglers.



Kids releasing some catches alive produces conservation-minded adult anglers.

Announcements

Members of the Virginia Outdoor Writers Association enjoyed a visit to the VIMS campus this past fall, hosted by Virginia Sea Grant. Here, instructor Bill Roberts identifies beneficial plants in a freshwater wetland that was created as part of the educational Marsh Walk exhibit. The group also visited several laboratories, learned about the ancient Coelacanth, and were treated to programs about the blue crab and the recreational tagging program.

BRIDGE ocean sciences teacher center

Check out the BRIDGE website at www.marine-ed.org/. The data tip from January 2000 is devoted to the topic of Catch & Release.

Recruiting experienced anglers to tag fish!
To join the Virginia Game Fish Tagging Program and learn more about fish movement patterns, anglers must sign up and attend training workshops. Workshops will be held in Norfolk-Virginia Beach, on the Eastern Shore, and in the Middle Peninsula during February-March 2001. For dates and locations, contact Claude Bain, 757-491-5160 <mrcswt@visi.net>, or Jon Lucy, 804-684-7166 <lucy@vims.edu>.

Experimental Design in the Marine Science Laboratory, a one-credit graduate course for teachers, was held for the first time on the VIMS campus this fall. As a result of a generous grant from the Chesapeake Bay Restoration Fund, twenty secondary school teachers from across the Tidewater region participated in this semester-long course designed to provide them with innovative techniques and tools for implementing investigative marine science into their classrooms. Here students are separating photosynthetic pigments (chlorophyll a, chlorophyll b, carotenes and xanthophylls) extracted from marine algae using paper chromatography.

Special Thanks to the Following Sponsors Who Made the Catch & Release Symposium Possible

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