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**Proceedings From the
Third North Carolina**

Marine Recreational Fishing Forum

Finding Common Ground

February 19, 1994

Proceedings from the Third Annual North Carolina Marine Recreational Fishing Forum

Planning Committee

Jim Murray, N.C. Sea Grant College Program
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This forum was convened Feb. 19, 1994, to provide the latest information on fisheries management issues and research that affects the recreational fishing industry.

Moderated by Jim Murray, director of Marine Advisory Service for the
North Carolina Sea Grant College Program
Edited by Eric Liebhauser and Jeannie Faris

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Jim Murray is director of the Marine Advisory Service for the North Carolina Sea Grant College Program.

Prompted by evaluations from the 1993 forum, the planning committee focused this year's agenda on the relationship between sport and commercial fishermen. The intent of the forum is to explore the relationship between these groups in order to find a common ground, mitigate user conflicts and promote sharing of resources. Toward these ends, speakers at the 1994 Marine Recreational Fishing Forum will relay success stories and divulge tools for compromise. The presentations are published so that students of fisheries management can build on the information to further fishery interests and reduce fisheries conflicts.

Status of the Fishery: Interjurisdictional Fisheries Management

Bill Hogarth was director of the N.C. Division of Marine Fisheries at the time of the conference. He is now employed by the National Marine Fisheries Service.

Each year, North Carolina is among the top 10 states in the nation in both commercial and recreational catches. Sport anglers caught an average of 11.3 million fish annually from 1987 to 1991, with an average annual weight of 13.8 million pounds. Commercial finfish landings averaged about 131.6 million pounds during the same period.

As you have heard in the past, over 80 percent of North Carolina's economically important species, both sport and commercial, are estuarine-dependent. These include red drum, spotted sea trout, weakfish, striped bass, Atlantic croaker, spot, flounders, bluefish and Spanish mackerel. These species spawn in the open ocean, around inlets or near shore. They use the estuaries as nursery and feeding grounds and eventually emigrate to join important nearshore stocks that migrate seasonally along the Atlantic coast. As a result of this migratory nature, these species and others — such as king mackerel, cobia, amberjack, snapper and grouper — are managed on a regional basis.

Species such as king mackerel that are harvested primarily in the Exclusive Economic Zone (three to 200 miles) are managed by the regional fishery management councils (Mid-Atlantic Fishery Management Council and South Atlantic Fishery Management Council). Those that occur predominantly in nearshore coastal waters (out to three miles) are managed by the Atlantic States Marine Fisheries Commission.

I want to talk about the Atlantic States Marine Fisheries Commission (ASMFC) and new legislation that will have a significant impact on fisheries management in North

Carolina. The ASMFC was established in 1942 by the Atlantic coast states to address interjurisdictional fisheries problems. It is comprised of three commissioners from each of the 15 member states stretching from Maine to Florida. Each state's delegation consists of the executive officer of the state marine fisheries agency, a state legislator and a governor's appointee.

Until now, the ASMFC's function has been to recommend coastwide management measures for interjurisdictional fisheries through the development of fishery management plans, which individual states must implement. An exception to this is striped bass. The Striped Bass Conservation Act, passed in 1984, provides that federal action can be taken by imposing a moratorium if the ASMFC finds an individual state to be out of compliance with the striped bass plan.

On Nov. 22, 1993, Congress completed action on the Atlantic Coastal Fisheries Cooperative Management Act — legislation that has been strongly supported by the ASMFC. The bill passed as Title VIII of H.R. 2150, the Coast Guard authorization bill. The Atlantic Coastal Fisheries Cooperative Management Act is landmark fisheries legislation. Based on the states' successful promotion of the Atlantic striped bass recovery, the bill will provide for the effective, mutual implementation of fisheries conservation programs among the Atlantic coast states.

The bill directs the ASMFC to adopt fishery management plans for coastal fisheries and establishes an affirmative obligation on the part of the states to implement the commission's plans. The commission must adopt standards and procedures to ensure that fishery resources are conserved, that the best scientific information is used and that the public has adequate opportunity to participate in the process. The commission is required to continuously review state implementation and report its results to the secretaries. If it finds that a state is not in compliance, it must report that finding. If the secretary of commerce agrees with the commission, he may impose a moratorium on all fishing for the species in question within the offending state until it comes into compliance.

Violation of the moratorium would be a federal offense punishable by criminal and civil penalties and forfeitures. The secretary of commerce and the secretary of interior are authorized to provide financial assistance to the commission and the states that carry out this program. Authorized appropriations included in the bill are \$3 million for fiscal year 1994, \$5 million for fiscal year 1995 and \$7 million for fiscal year 1996.

The species that I am going to talk about next are all managed under the fishery management plans developed by ASMFC or, in cases such as summer flounder and bluefish, under joint ASMFC and council plans.

Summer flounder

The geographic range of summer flounder encompasses the estuarine and coastal waters from Nova Scotia to Florida. The center of its abundance lies within the mid-Atlantic. Summer flounder are found in coastal and estuarine waters during the warmer months of the year and move offshore to depths of 120 to 600 feet during the fall and winter. Spawning begins at about age 2 or 3 (13 to 16 inches) and occurs during fall and winter. Larvae drift and migrate inshore to estuarine nursery areas, where they spend their first year or two.

Summer flounder are caught in North Carolina waters with two similar species — the southern and gulf flounders. The recreational fishery catches summer flounder with hook and line in the vicinity of inlets and in the ocean from April or May to October or November. The major commercial fishery for summer flounder is a fall and winter otter trawl fishery. Total landings of summer flounder have declined since 1979-80. Based on information about age composition of the catches, juvenile recruitment and relative abundance, the stock is overfished (see Figure 1, Page 3). North Carolina's contribution to coastwide commercial catches of flounder have ranged from 26 to 37 percent (see Figure 2, Page 3).

In October 1982, ASMFC adopted a fishery management plan for summer flounder that recommended a coastwide 14-inch minimum size limit. In 1988, the Mid-Atlantic Fishery Management Council adopted a management plan for summer flounder with a minimum size limit of 13 inches in the Exclusive Economic Zone. These plans have recently been revised and include minimum size limits, mesh sizes, recreational bag limits and season and commercial quotas (see Figure 3, Page 4).

Red drum

Red drum range the Atlantic coast from Massachusetts to Key West, Fla., but they are primarily found from New Jersey southward. In North Carolina, females mature at ages 3 and 4 (32 to 34 inches); spawning occurs from August to early October in both the estuarine waters of Pamlico Sound and the coastal waters near barrier island inlets. Subadults are very limited in their coastal movements, generally staying within estuarine systems or in nearshore coastal waters. Adults migrate seasonally along the coasts of North Carolina and Virginia, moving inshore and north during spring, south and offshore during fall.

The recreational fishery for red drum is in nearshore ocean and estuarine waters; coastwide, it takes a much larger harvest than the commercial fishery (see Figure 4, Page 4). Trophy-sized fish are taken along the barrier islands, and small red drum are usually taken in shallow estuarine waters. Subadult red drum dominate the recreational catches — only 7 percent of the red drum landed

from 1987 to 1991 were adults longer than 34 inches. Red drum captured by commercial gears such as gill nets, long haul seines and pound nets are typically subadults as well.

Stock assessments have indicated that total mortality rates on red drum are extremely high with less than 2 percent escapement to the spawning stock. However, the severe size and creel limits imposed in the early 1990s may have distorted the data so that survival and possibly escapement are greater than indicated by the most recent stock assessment.

The ASMFC adopted a management plan for red drum in 1985 that recommended a 14-inch size limit and a daily possession limit of no more than two fish over 32 inches (see Figure 5, Page 5). In 1990, a federal plan was prepared by the South Atlantic Fishery Management Council in cooperation with the Mid-Atlantic Fishery Management Council to prohibit the harvest of red drum in the Exclusive Economic Zone. The ASMFC plan has been amended to recommend a slot limit.

Spotted sea trout

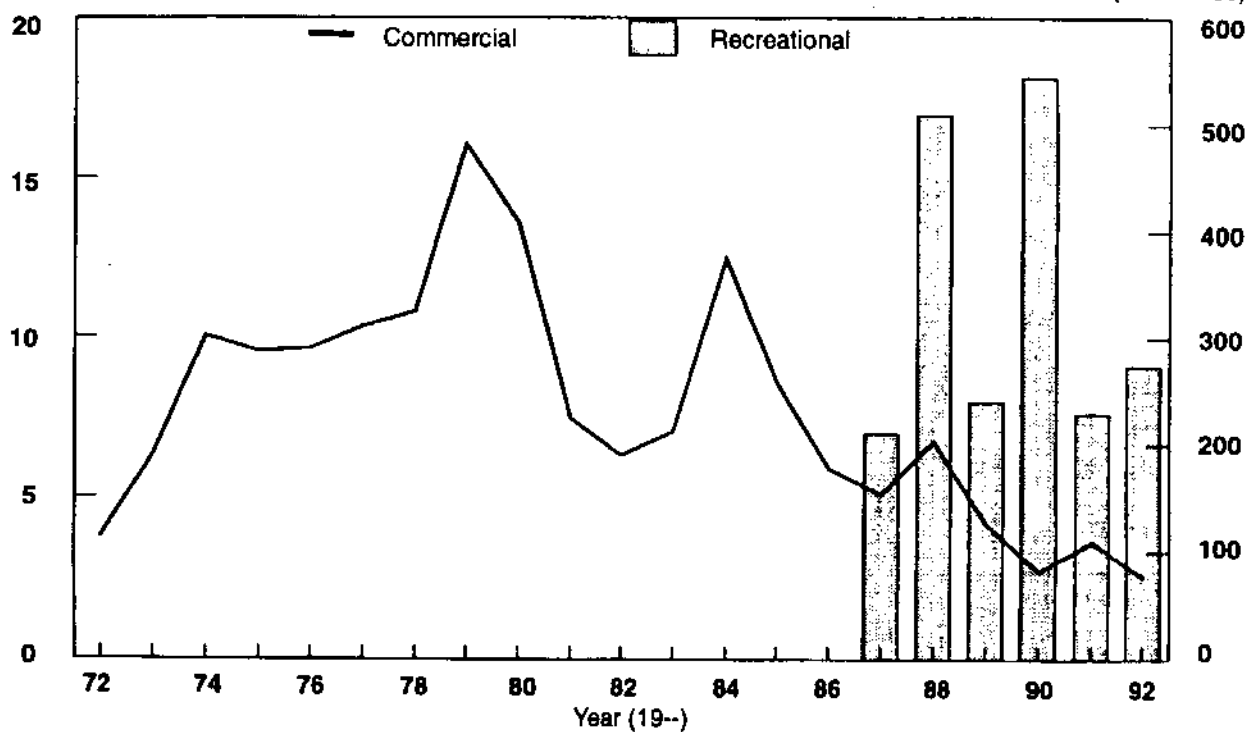
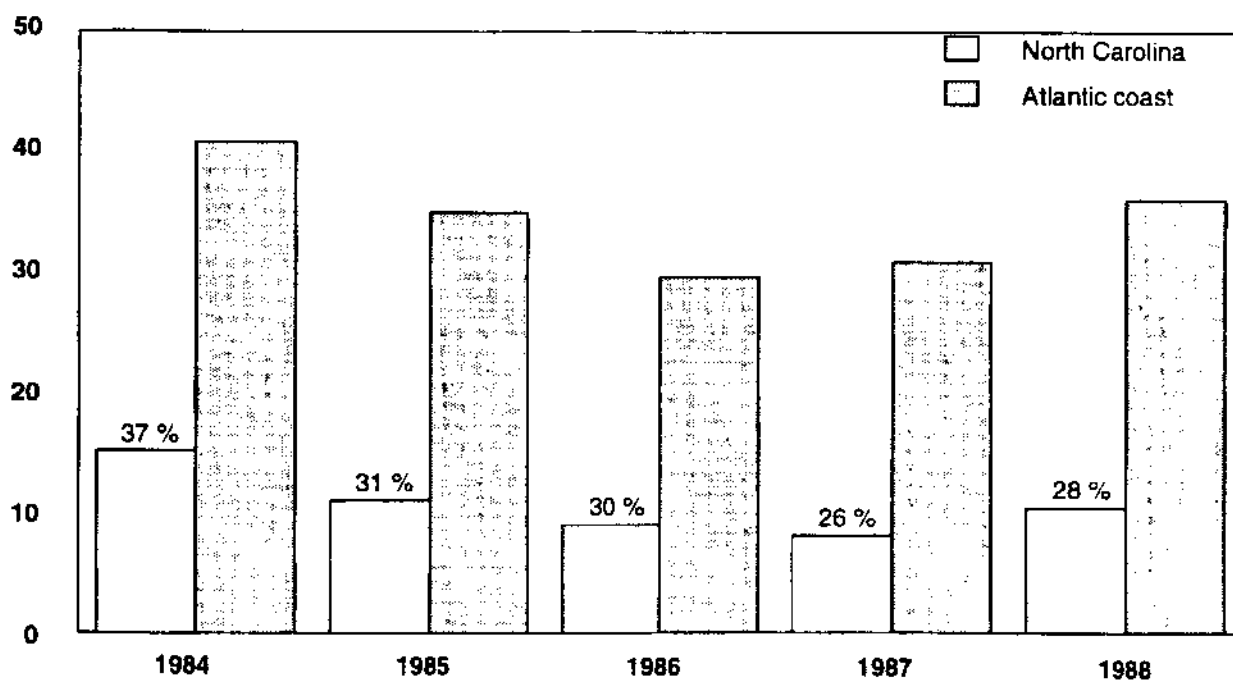
Spotted sea trout occur from Cape Cod to the Florida Keys on the Atlantic coast and are most abundant from the Chesapeake Bay southward. They are found primarily in estuaries but move into nearshore ocean waters during cold periods. They appear to be nonmigratory and generally spend their life within 5 to 10 miles of their natal estuary. Adults frequent grass beds, live oyster beds, creek mouths and structures and are abundant in depths of less than 10 feet. Spotted sea trout prefer water temperatures between 60 to 80 F; temperatures below 45 F appear to cause large-scale mortalities. Spotted sea trout mature at 10 to 11 inches and spawn from April to September around inlets.

Recreational catches on average are about the same as commercial landings in North Carolina and greatly exceed commercial landings over the species range (see Figure 6, Page 5). An ASMFC plan was adopted in 1984 with a minimum size limit of 12 inches (see Figure 7, page 6). Since adoption of the plan, all six states with an interest in this species have established the minimum size limit or more restrictive limits (14 inches in Virginia, 14 to 24 inches with only one fish over 24 inches in Florida). North Carolina has a daily creel limit of 10 fish; South Carolina, 20 fish; Georgia, 25 fish; and Florida, 10 fish per day.

Weakfish

Weakfish, or gray grout, range along the Atlantic coast from Florida to Massachusetts. They are most abundant from North Carolina to New York during the warm season, while the stock retreats to the North Carolina area during the winter. Weakfish mature at ages 1 to 2 (10 to 12 inches) and spawn in nearshore ocean waters and estuaries from April through September.

Continued on Page 6

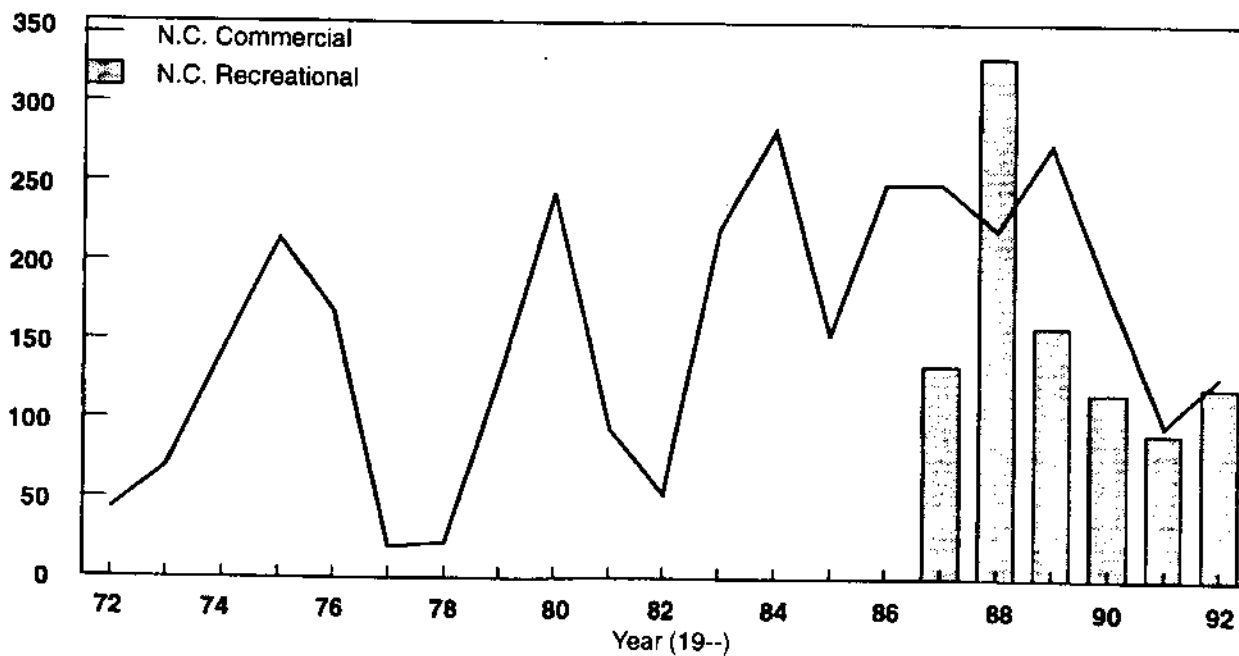
Pounds
(millions)**Figure 1: Summer Flounder**Pounds
(thousands)Pounds
(thousands)**Figure 2: Flounder**

**Figure 3: State Response to ASMFC Recommendations
December 1993 — Summer Flounder**

State with an interest	State	ASMFC Recommendations					
		14-inch size limit, recreational	13-inch size limit, commercial	Commercial quota	Recreational season	6-fish bag limit	5 1/2-inch mesh
ME, NC	ME	13	13	##			5 1/2
	NH	14	14	##	x	6	5 1/2
	MA	14	14	x	x	6	5 1/2
	RI	14	14	x	x	6	5 1/2
	CT	14	14				
	NY	14	13	x	x	6	5 1/2
	NJ	14	13	x	x	6	5 1/2
	PA						
	DE	14	14	x	x	6	
	MD	13	13	x	x	10	
	VA	14	13	x		10	
	NC	13	13				##
	SC						5 1/2
	GA						
	FL						
	DC						

= no fishery allowed

x = implementation

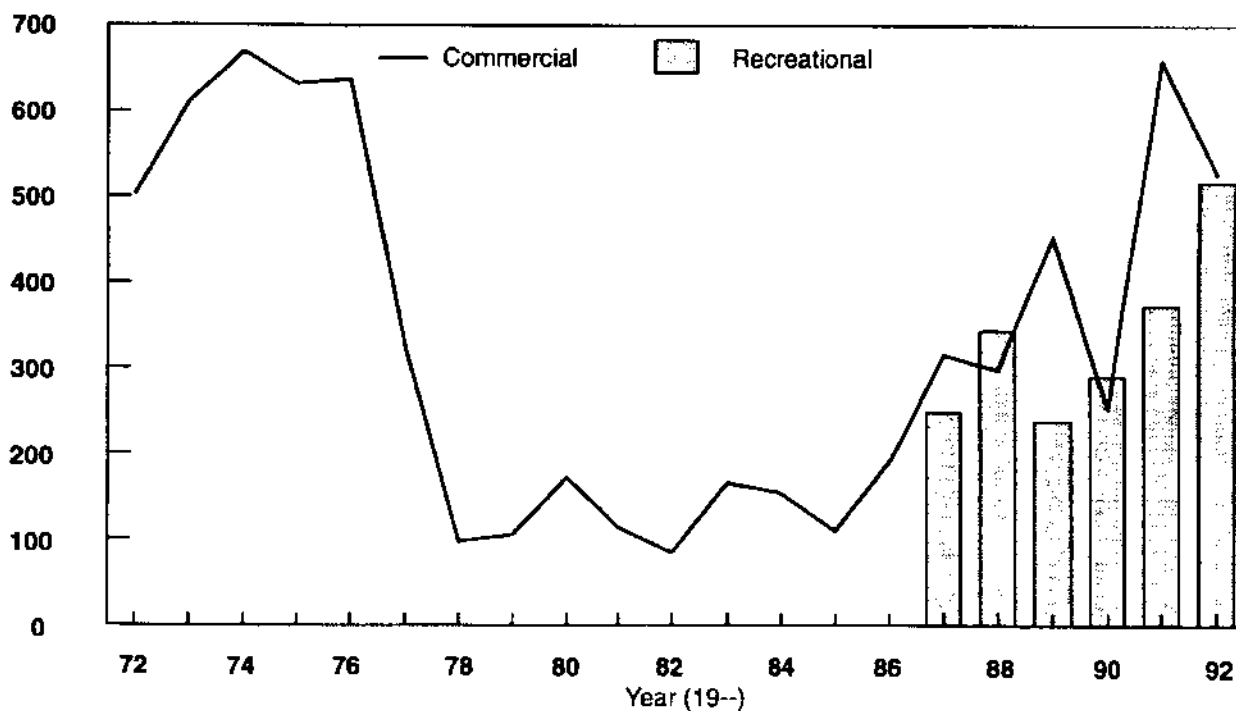
Pounds
(thousands)**Figure 4: Red Drum**

**Figure 5: State Response to ASMFC Recommendations
December 1993 — Red Drum**

State with an interest	State	ASMFC Recommendations		
		18-27 inches or 14-27 inches	1>27 inches or 0	5-fish limit
ME, FL	ME			
	NH	14-27	0>27	5
	MA	14		
	RI			
	CT	32		
	NY	14	2>32	
	NJ	14	2>32	
	PA			
	DE	14	2>32	
	MD	14	2>32	
	VA	18	1>27	5
	NC	18	1>27	5
	SC	18	1>27	5
	GA	14-27	1>27	5
	FL	18-27	0>27	1
	DC			

Pounds
(thousands)

Figure 6: Spotted Sea Trout



**Figure 7: State Response to ASMFC Recommendations
December 1993 — Spotted Sea Trout**

State with an interest	State	ASMFC Recommendation
		12-inch size limit
MD, FL	DE	12
	MD	12
	VA	14
	NC	12
	SC	12
	GA	12
	FL	14-24 ++
		1>24

++ = recreational only

Weakfish have supported important commercial fisheries since the 1800s. They are harvested inshore with pound nets and long haul seines during the spring, summer and fall and offshore in the winter with trawls and gill nets. Weakfish are popular with recreational fishermen, primarily in the mid-Atlantic region. Combined recreational and commercial landings peaked in 1980 at over 20 million pounds (see Figure 8, Page 7). Catches have declined drastically in recent years and the species is now considered overfished. North Carolina's contribution to commercial landings have ranged from 58 to 90 percent (see Figure 9, Page 8).

A fishery management plan for weakfish was adopted in 1984 that recommended that the Northern states (Rhode Island to Virginia) delay harvest of weakfish until they are more than 1 year old and that South Atlantic states promote bycatch reduction devices in their shrimp fisheries (see Figure 10, Page 8). The plan was amended in 1991 to recommend minimum size limits of 10 inches in 1992, 11 inches in 1993 and 12 inches in 1994 with a reduction in exploitation of 25 percent. North Carolina has a 10-inch minimum size limit, 10-fish creel limit and a requirement of finfish excluder devices in shrimp trawls.

Spot

Spot are most abundant on the Atlantic coast in estuarine and coastal waters from the Chesapeake Bay through North Carolina. They migrate seasonally, entering bays and estuaries in the spring where they remain until late summer or fall and then move offshore to spawn. When they mature, spot are between 2 and 3 years old and 7 to 8 inches long.

Spot are an extremely important sportfish from the Chesapeake Bay through North Carolina. They have ranked first in numbers of fish landed by recreational fishermen since 1987. Spot are an important commercial fishery resource as well, harvested by a variety of commercial gears, including haul seines, pound nets, gill nets and trawls. North Carolina harvests from 64 to 72 percent of the commercial catch (see Figure 11, Page 9).

Spot are a short-lived species, resulting in year-to-year fluctuations in catch (see Figure 12, Page 9). The ASMFC plan for spot recommends promoting the use of bycatch reduction devices in the southern shrimp fishery and delaying capture of spot until after they are 1 year old. There are no size limits in place for spot, although North Carolina does require the use of finfish excluder devices in shrimp trawls.

Atlantic croaker

Atlantic croaker is one of the most abundant inshore demersal fish from the Chesapeake Bay south to Florida. Seasonal migrations of croakers have not been well defined, but they appear to move northward and inshore during the warmer months and south and into the ocean during winter.

Croaker is an important fishery resource, particularly from Maryland through North Carolina. They are harvested inshore by anglers and a variety of commercial gears, including haul seines, pound nets and gill nets. In the recreational fishery, croaker rank second or third behind spot and bluefish in number of fish landed. During the winter, they are caught in nearshore ocean waters by the trawl and gill net fisheries. Commercial landings have fluctuated

widely over the years with the most recent peak in 1977 and 1978 (see Figure 13, Page 10). North Carolina lands 70 to 90 percent of the coastwide commercial harvest of croaker (see Figure 14, Page 10). Atlantic croaker catches have declined in recent years.

The ASMFC plan for Atlantic croaker recommends the use of bycatch reduction devices in the southern shrimp fishery and delaying harvest to age 1 and older (see Figure 15, Page 11). Minimum size limits in place are 8 inches in Delaware and 10 inches in Maryland. North Carolina requires the use of finfish excluder devices in shrimp trawls.

Bluefish

Bluefish is a migratory pelagic species generally found in continental shelf waters from Nova Scotia to Florida on the Atlantic coast. Adult bluefish travel north in spring and summer and south in fall and winter with inshore-offshore movements as well. During the summer, bluefish stocks are centered between Cape Cod and Cape Hatteras, with larger fish living farther north. During the winter, they tend to be offshore and south on the outer continental shelf between Cape Hatteras and Florida. Most bluefish are sexually mature when they reach about 20 inches in length (generally age 2).

Bluefish catches are predominantly recreational (averaging about 90 percent of total landings) and are generally the number-one recreational species landed along the North and mid-Atlantic coast. In North Carolina, bluefish ranked

number-one in pounds landed from 1987 to 1990, third in 1991 and second in 1992. North Carolina generally lands more commercially caught bluefish than any other state, mainly by trawls and gill nets.

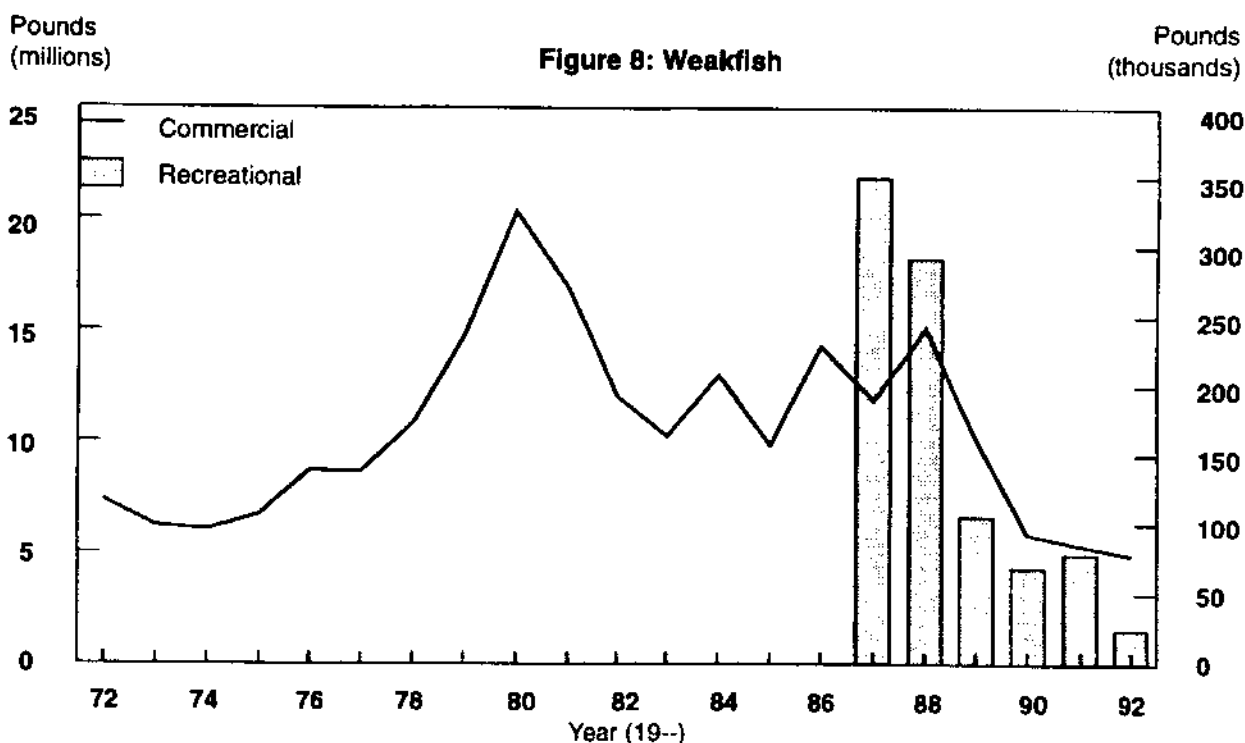
Current data indicate that the Atlantic coast bluefish stock is being fully exploited and may be showing signs of being overfished (see Figure 16, Page 11). In 1989, the Mid-Atlantic Council and the ASMFC adopted a joint fishery management plan for bluefish. This plan provides for a distribution of the fishery between the recreational and commercial sectors by capping the commercial landings at 20 percent of the total landings and requiring a permit to sell any fish. North Carolina has a 12-inch minimum size limit for hook-and-line-caught fish with a 20-fish creel limit (see Figure 17, Page 12).

Spanish mackerel

The Atlantic stock of Spanish mackerel ranges from the Florida Keys to New York. After spending the winter off southern Florida, they move northward, appearing off North Carolina as early as April and New York in June. In late summer, they begin moving south, with their year-round distribution governed by water temperatures higher than 68 F. Spanish mackerel have a prolonged spawning season that extends from April to September.

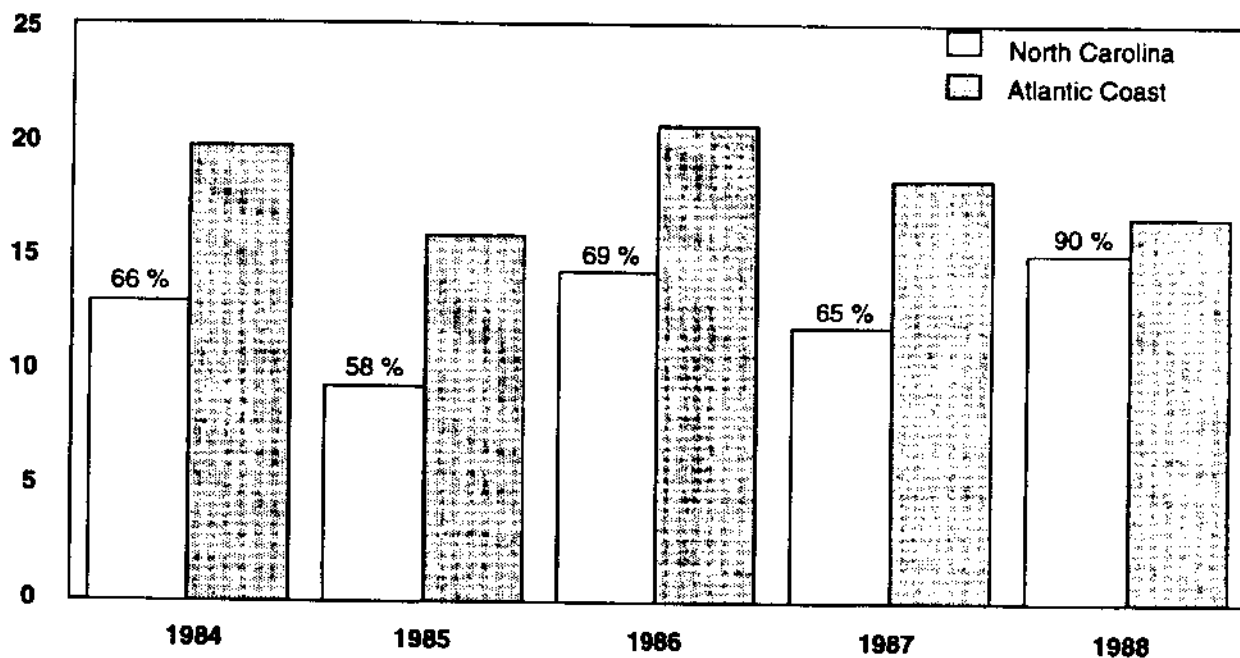
Although a commercial Spanish mackerel fishery flourished in the late 1800s in the mid-Atlantic and Chesapeake Bay,

Continued on Page 12



Pounds
(millions)

Figure 9: Weakfish

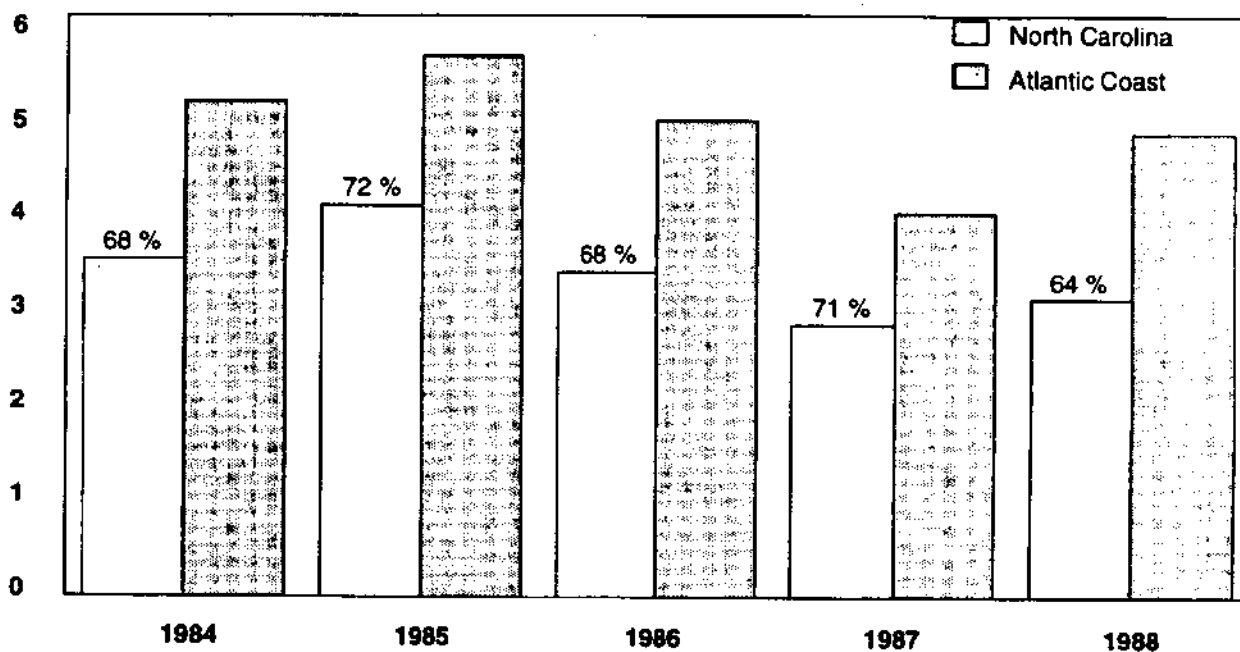
Figure 10: State Response to ASMFC Recommendations
December 1993 — Weakfish

State with an interest	State	ASMFC Recommendations		
		11-inch size limit, recreational	11-inch size limit, commercial	Control mortality
ME, FL	ME			
	NH	16	16	
	MA	16	16	
	RI	16	16	
	CT		12	
	NY	16	16	
	NJ	13	11-13	
	PA		13	
	DE	13	12	x
	MD	10	10	
	VA	10-12	10-12	
	NC	10		
	SC			
	GA			
	FL			
	DC			

x = implementation

Pounds
(thousands)

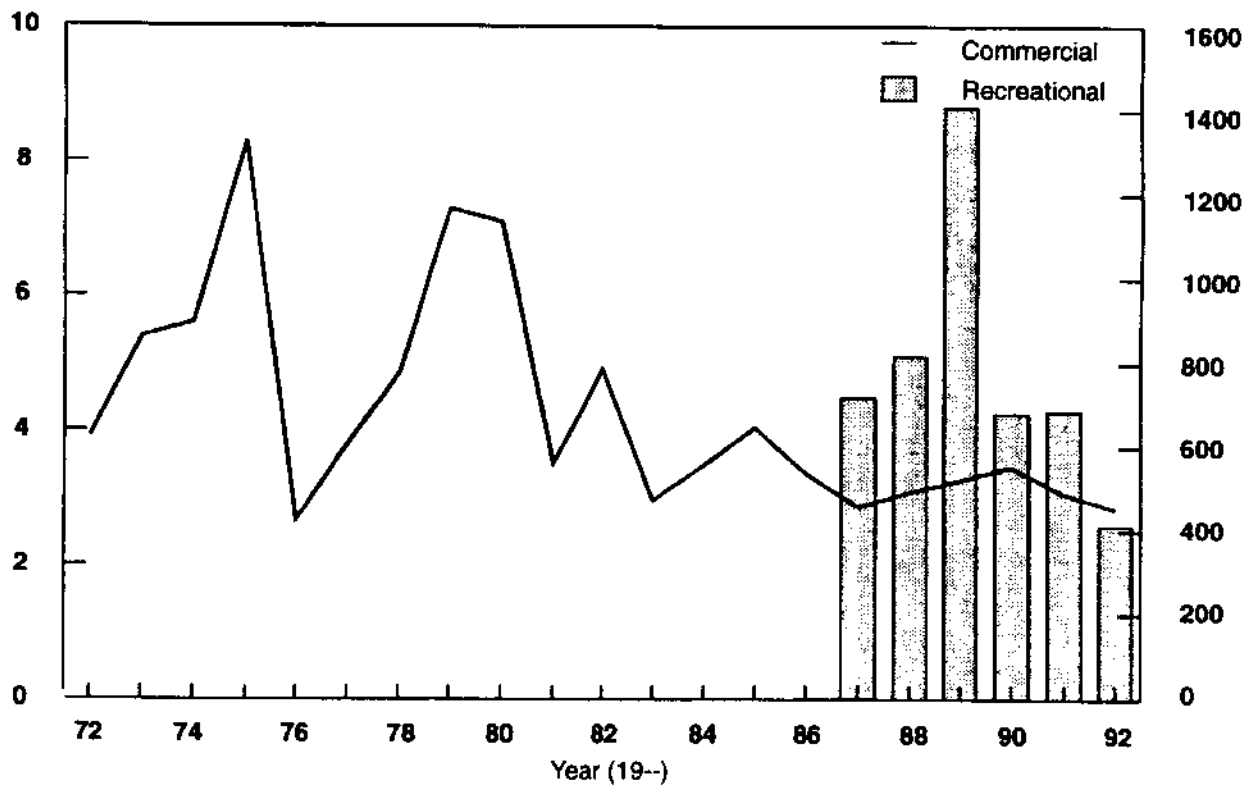
Figure 11: Spot



Pounds
(millions)

Figure 12: Spot

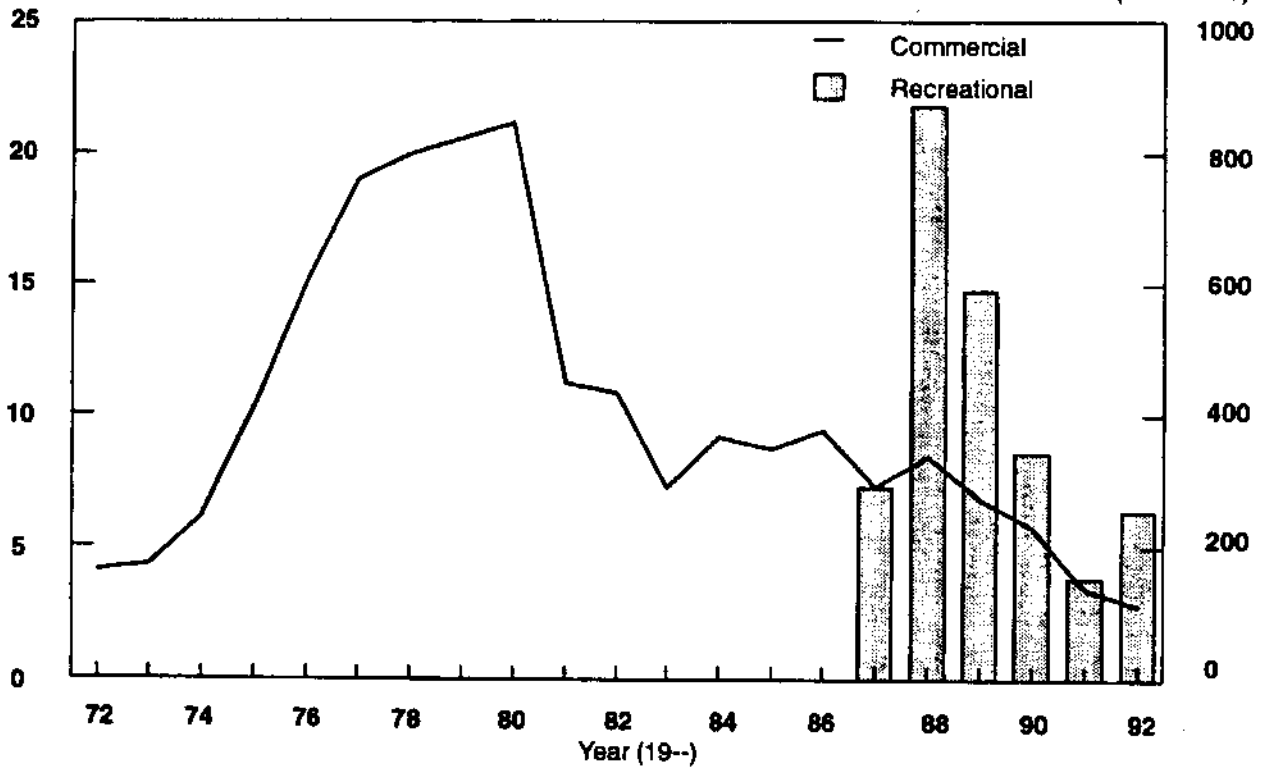
Pounds
(thousands)



Pounds
(millions)

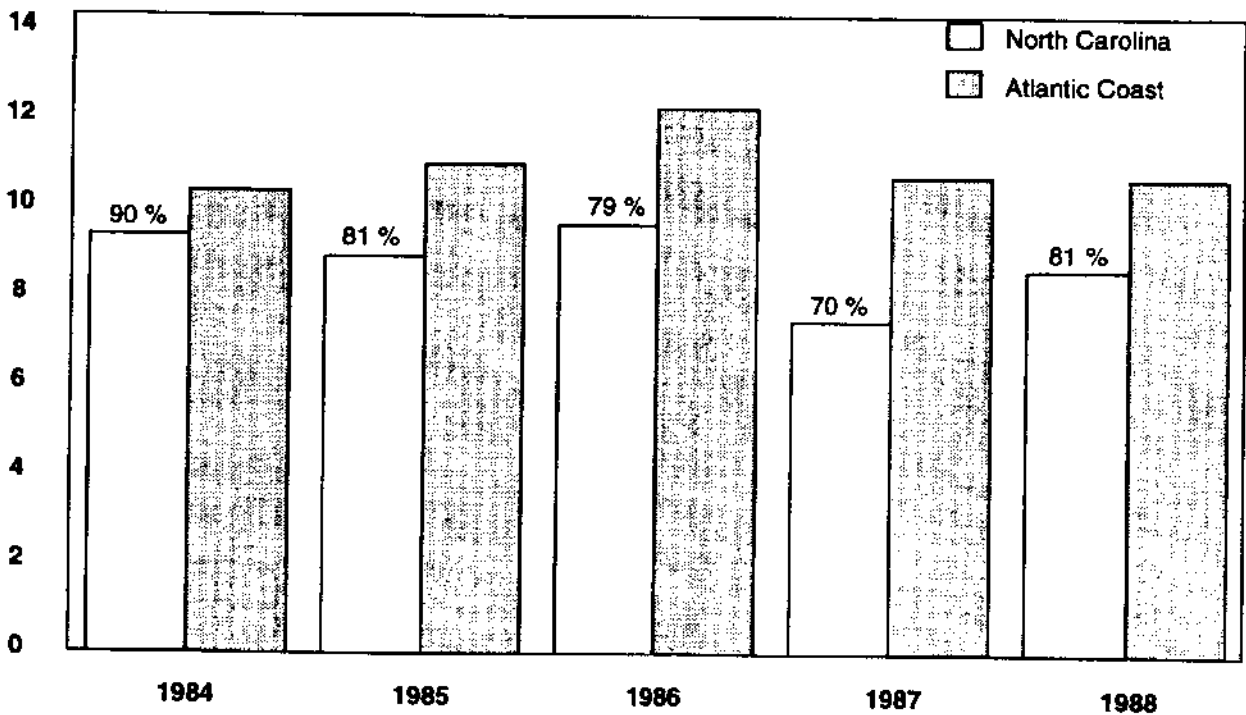
Figure 13: Atlantic Croaker

Pounds
(thousands)



Pounds
(millions)

Figure 14: Atlantic Croaker

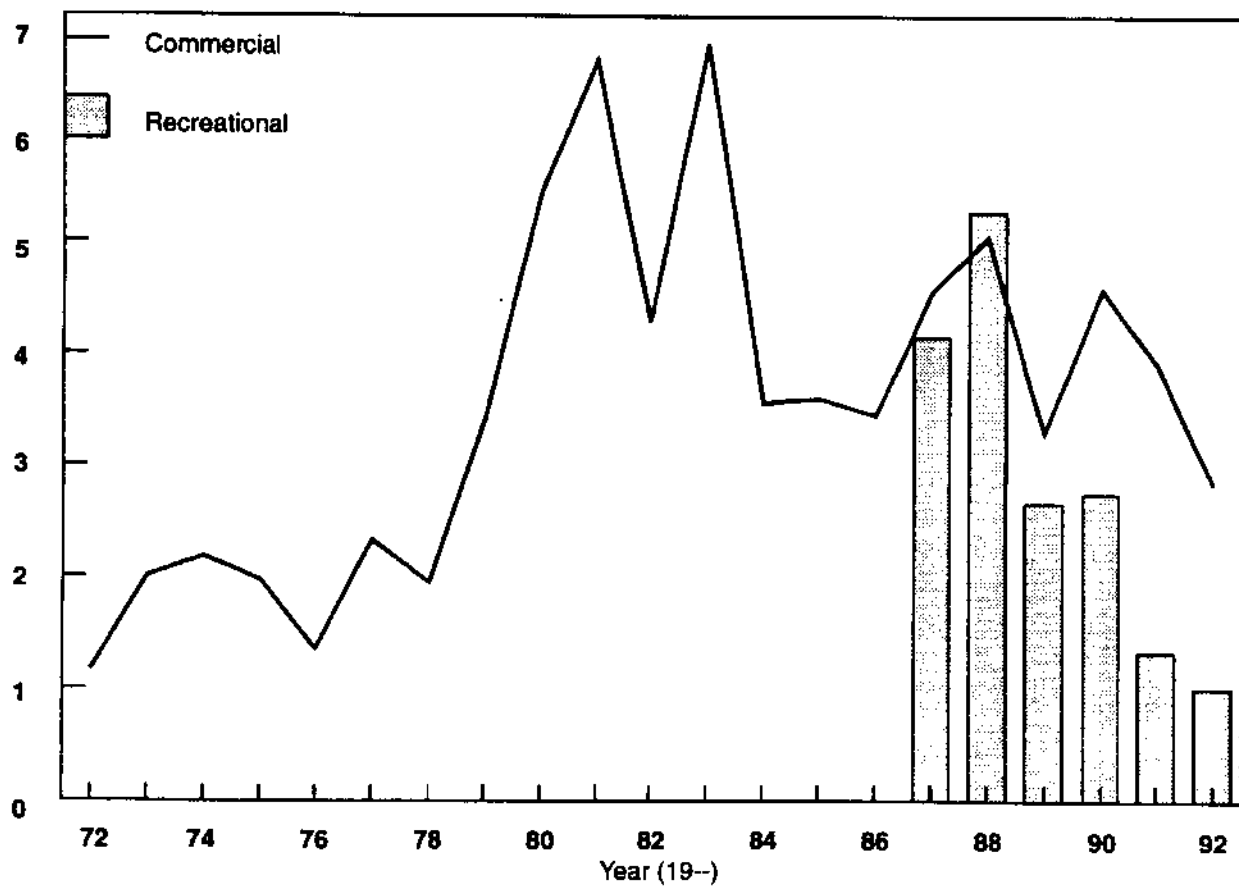


**Figure 15: State Response to ASMFC Recommendations
December 1993 — Croaker**

State with an interest	ASMFC Recommendations		
	State	Size Limit	Age 1 +
DE, FL	DE	8 inches	
	MD	10 inches	
	VA		
	NC		
	SC		
	GA		
	FL		
	DC		

Pounds
(millions)

Figure 16: Bluefish



**Figure 17: State Response to ASMFC Recommendations
December 1993 — Bluefish**

State with an interest	State	ASMFC Recommendations	
		10-fish bag limit	Or equivalent conservation
ME, FL	ME	10	
	NH	10	
	MA	10	
	RI	10	
	CT	10 **	
	NY	10	
	NJ		
	PA		
	DE	10	
	MD	10	
	VA	10	
	NC	10	
	SC	10	
	GA	15	x
	FL	15	
	DC		

** = only applies to fish over 12 inches

x = implementation

peake Bay, Florida has been the major commercial producer since the 1950s. North Carolina and Virginia fisheries have grown in recent years, mainly pound nets and gill nets. Florida and North Carolina account for the majority of the recreational catch, with a trend of increasing catches in the most recent years (see Figure 18, Page 13).

Expanded commercial and recreational fishing effort led to overfishing of Spanish mackerel, which prompted state and federal management measures beginning in the mid-1980s. Stocks are managed under the federal plan for coastal migratory pelagics and a complementary ASMFC plan. Recreational and commercial quotas are set annually, and the recreational fishery is controlled with creel and minimum size limits. North Carolina now has a 12-inch fork length minimum size limit and a 10-fish creel limit (see Figure 19, Page 13).

Striped bass

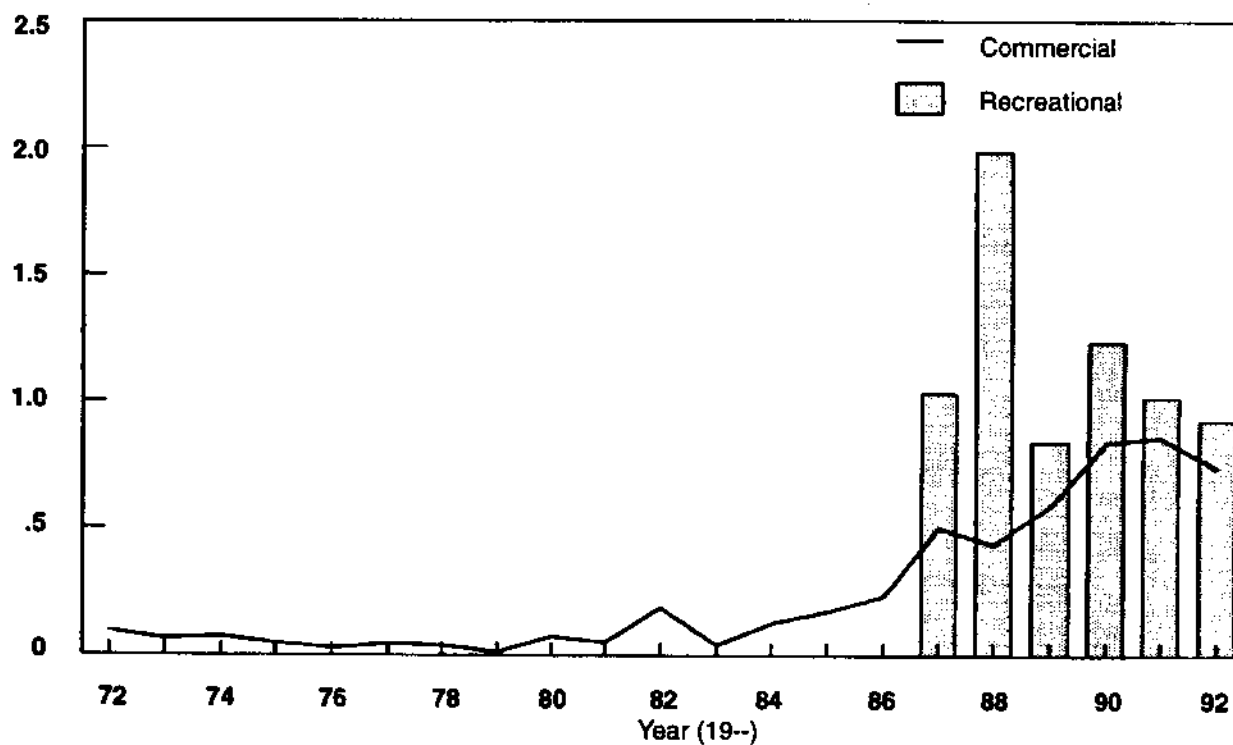
The striped bass is native to most of the East Coast, ranging from the lower St. Lawrence River in Canada to northern Florida. The population component targeted for management by the ASMFC is the coastal migratory stock that frequents waters from Maine through North Carolina. Coastal migratory stripers spawn in rivers and brackish areas of estuaries from spring to early summer. The Ches-

apeake Bay system produces the majority of migratory fish, followed by the Hudson River and possibly the Roanoke River/Albemarle Sound. Males mature at ages 2 to 3 and females at 4 to 8 years. Striped bass are a relatively long-lived species, with some females reaching 20 years of age or more. Most fish over 30 pounds are females.

Historically, coastal migratory striped bass have exhibited alternating periods of extreme scarcity and great abundance. A series of dominant year classes, particularly in the Chesapeake Bay, seem to be required to sustain coastal migratory stocks and the fisheries that depend on them. North Carolina commercial landings peaked at over 2 million pounds in 1970 and declined rather steadily thereafter (see Figure 20, Page 14).

Declines in the abundance of striped bass, particularly the Chesapeake Bay stocks, prompted a number of legislative, regulatory and administrative actions directed at reversing the decline (see Figure 21, Page 14). The ASMFC adopted a coastwide management plan in 1981 that recommended a combination of minimum size limits and spawning area closures to reduce fishing mortality. This was followed by two major amendments in 1984 and 1985 as striped bass stocks continued to decline. During the same

Continued on Page 15

Pounds
(millions)**Figure 18: Spanish Mackerel****Figure 19: State Response to ASMFC Recommendations
December 1993 — Spanish Mackerel**

State with an interest	ASMFC Recommendations	
	State	12-inch FL size limit 10-fish bag
NY, FL	NY	14TL 10
	NJ	
	PA	
	DE	14 TL 10
	MD	
	VA	14 TL 10
	NC	12 FL 10
	SC	12 FL 10
	GA	12 FL 10
	FL	10
	DC	

TL = total length

FL = fork length

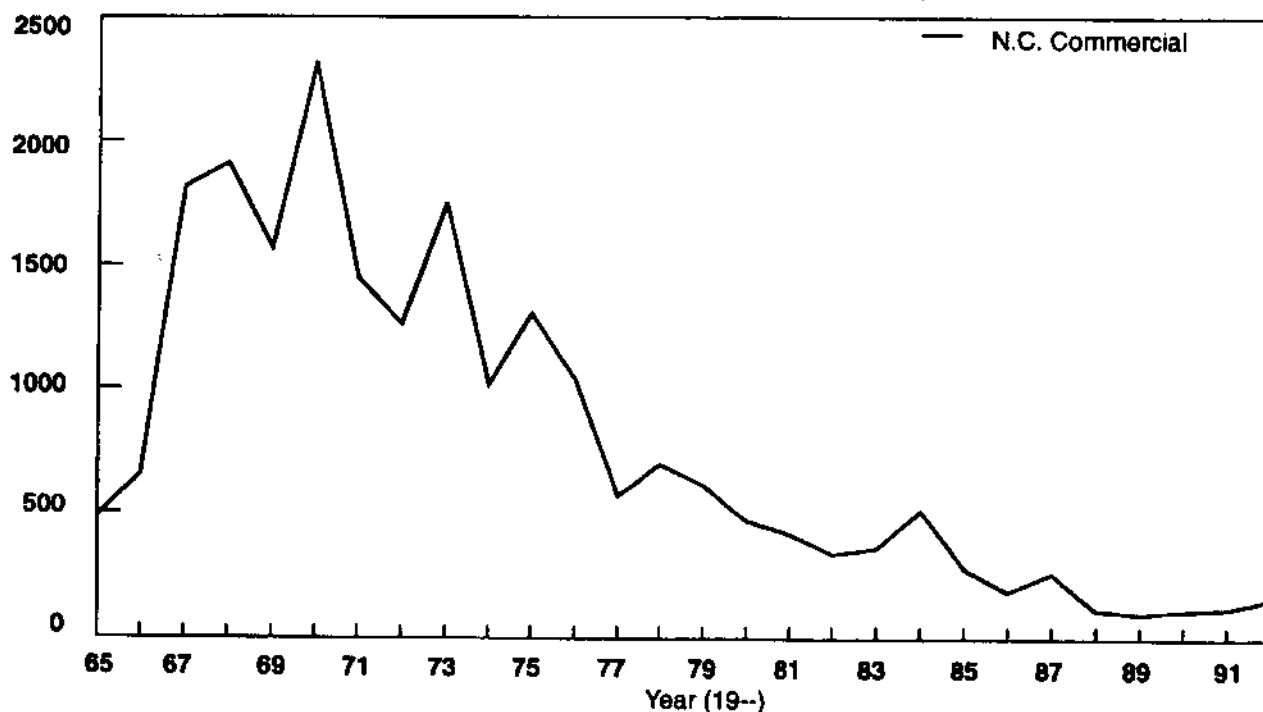
Pounds
(thousands)**Figure 20: Striped Bass**

Figure 21: Coastal Commercial Striped Bass Fishery
 Regulations¹ for 1994 (regulated by Division of Marine Fisheries)

Water	Season ²	Size Limit	Total Allowable Catch
Inland Waters	No commercial harvest in all inland waters		
Joint Waters	Feb. 15-April 15 Nov. 15-Dec. 15	18 inches minimum	Albemarle Sound area: 98,000 pounds Total: 123,000 pounds Other internal waters: 25,000 pounds
Coastal Waters	Feb. 15-April 15 Nov. 15-Dec. 15	18 inches minimum	Same as above
Ocean Waters	Dec. 1-March 1	28 inches minimum	Atlantic Ocean quota: 96,000 pounds

¹ Gill net restrictions (Albemarle Sound management area) fishing allowed Monday through Thursday only.
 Jan. 1-April 15 5.25-inch stretched mesh and greater
 3.0-3.25 inches attended at all times (1,000-yard webbing)
 Feb. 15-April 15 3.0-3.25-inch drift gill nets allowed in Roanoke River and tributaries, Meherrin River and Chowan River.
 April 16-Dec. 31 5.5-inch stretched mesh and greater

² Season closures are by proclamation upon reaching the total allowable catch as follows:
 Albemarle Sound management area, 98,000 pounds; all other internal coastal waters, 25,000 pounds; total allowable commercial catch statewide, 123,000 pounds.

period, Congress passed the Atlantic Striped Bass Conservation Act mandating that all states comply with the ASMFC's Striped Bass Management Plan or face a federally imposed fishing moratorium. Amendment 4 to the striped bass plan was adopted in 1989 and is designed to be flexible and responsive to changes in stock conditions. North Carolina is now managing striped bass in the Albemarle Sound and Roanoke River under a memorandum of agreement between the N.C. Marine Fisheries Commission and the N.C. Wildlife Resources Commission.

Changes in the Marine Fisheries Commission and Issues for 1994

Bob Lucas is chairman of the North Carolina Marine Fisheries Commission.

Why does the Marine Fisheries Commission sometimes seem so unpopular? Why is it a lightning rod? I have thought about this and I will tell you why. The answer is in the law. It is very short. It reads, "The function, the purpose and the duty of the Marine Fisheries Commission shall be to manage, to restore, to develop, to cultivate, to conserve, to protect and to regulate the marine resources of the state of North Carolina." This means that if we undertake that duty — raise our right hands and take the charge seriously — then there is going to be a collective group of hard choices. We will have to make some hard choices. Those hard choices will revolve essentially around two issues: the resources and the conflicts along the coast.

As chairman, I have tried to fulfill this duty and to make some changes. You would like to think that this would go without saying, but everybody on the commission wants to do the right thing. What we need is the right information. Everyone has an interest in this. Now stop and think about it. If you had the responsibility of doing the right thing, what you want more than anything else is for people to feel that they're part of the decision-making process and that you have the right information. How are you going to get that information and how are you going to get people involved?

First, we made some changes in the Division of Marine Fisheries. Nancy Fish was hired for publicity and education purposes. The Marine Fisheries Commission needs to educate North Carolinians from an early age, starting in the classrooms like the anti-drug program does. It also became apparent to me that I needed day-to-day help. So Jess Hawkins was hired as the liaison between the Marine Fisheries Commission and the Division of Marine Fisheries and the public. A deputy director will soon be brought in as well.

Despite its charge by law, however, the Marine Fisheries Commission cannot do it all by itself. The Legislature

must help with some of these issues. So in the fall, the commission invited legislators to the fall meeting in Morehead. Among them was Rep. David Redwine and Gov. Jim Martin, who said that the commission is going to have to make hard decisions without worrying about the politics. So we started the ball rolling that way. In the past year, the commission has made some hard choices and dealt with a lot of issues such as trawling.

The second thing I did as commissioner — again, in order to get the right information and to involve the people — was to make the Marine Fisheries Commission a working commission with committees. There are committees on gear, finfish, a saltwater fishing license, oysters, clams and scallops, blue crabs, law enforcement, proclamation, water quality, habitat and an interagency liaison committee. Several commissioners and division people will sit on the committees. But more importantly, these commission members will discuss the issues with commercial and recreational advisors. This way, the Marine Fisheries Commission will have input on an issue before getting to the public hearing process. The people will be involved.

This year and next, the commission will face many issues: the saltwater fishing license and the federal government's increasing involvement in fisheries. Specifically, we need to look into the striped bass controversy. People are aggravated by this. They believe that this is our state, our water, and the last thing they want is for Washington or a national organization to tell them what to do. Other issues concern gear and law enforcement. When someone violates a fisheries law, for instance, we need to make the consequence serious. We also need to work on our blue book, to make it more understandable. I'm a lawyer and I don't mind telling you that I can hardly read it. Let's get rid of useless regulations and pare it down.

Also, the book says that I should consider the socioeconomic impacts of the commission's actions. In other words, how will they affect people? I appreciate that, but the commission gets no information. We need to understand and appreciate the consequences of what we do.

The commission needs to develop a plan for the next two to five years. We don't want to manage, in terms of a course of action, by ambush. We need to show the community where we are heading in the future. So I formed a planning committee that chairs all other committees.

And finally, it is my opinion that the commercial gear ought to be in the hands of commercial fishermen. Setting nets and selling fish are not recreational activities. A lot of my friends sell king mackerel, and I don't agree with that. People will differ with me, but I think this is something the commission should consider. It should go through the committees for public input.

Now, I'd like to issue a challenge. Recreational fishermen must do more than come to the commission meetings and say that they support regulations and want the resource protected. They have to get involved, to know the issues, to give sound input. My point is not to be critical. My point is that they have to let their voices be heard — write letters, talk to decision-makers. But their suggestions must be based on fact and good science.

To the commercial fishermen, my challenge is this: become more involved and learn the issues. They can no longer come to the commission saying that it doesn't care, that it wants to put them out of business with regulations. Those days are gone. They must become part of the process. Intimidation by either side won't work.

Next, I challenge the Division of Marine Fisheries to become even more involved, to stand up and not be afraid of politics. Politics is sometimes the worst part of the fisheries issues. We must all feel free to say what we think.

These are my challenges, and they're all about partnership to protect the resources.

Activities of the Joint Legislative Study Commission on Seafood and Aquaculture

Representative **David Redwine** serves the 14th District in the N.C. Legislature and is co-chairman of the Joint Legislative Study Commission on Seafood and Aquaculture.

Perhaps I can best describe the duties of the Seafood and Aquaculture Commission by first explaining what it does not do. It is not the Marine Fisheries Commission, although a lot of people bring in issues that didn't pass the commission. The first thing they do is run to their legislator, who says, "Oh, we've got a commission for that," and the issue ends up in the lap of the Seafood and Aquaculture Commission. The commission is then drawn into the middle of the conflict. I try to steer away from that, though, because Bob Lucas is doing an outstanding job.

The commission has 15 members: four senators are appointed by the president pro-tempore of the N.C. Senate, four representatives are appointed by the speaker of the N.C. House, four members are appointed by the governor and three members are appointed by the commissioner of the Department of Agriculture.

The commission has the power to monitor and study the seafood industry in North Carolina. As a result, it studies the feasibility of increasing the state's seafood production, processing and marketing. It is also charged with studying: the potential for increasing the role of aquaculture in the state; the feasibility of creating a central permitting office for fishing and aquaculture matters; and the ac-

tions of the Marine Fisheries Commission, state or local government and any other board, commission, department or agency that relates to the seafood and aquaculture industries.

Commissioners make recommendations to regulate the seafood and aquaculture industries. We review and evaluate changes in federal law and regulation, court decisions and technology. We also review existing and proposed state laws and rules that affect the seafood and aquaculture industries in order to determine whether any modification is in the public interest. We submit reports and make recommendations, including draft legislation, to the General Assembly from time to time on matters that pertain to the powers and duties of this commission.

In our last session, we increased and changed the membership and qualification for membership on the Marine Fisheries Commission. We expanded the commission from 15 to 17 members and added some folks to represent different interests. We also gave the governor the option of appointing the spouse of a commercial fishermen to one of the positions designated for commercial fishermen. We passed legislation transferring the authority to regulate production and sale of commercially raised freshwater fish from the Wildlife Resources Commission to the Department of Agriculture. We transferred the authority to grant shellfish cultivation leases and water column leases from the Marine Fisheries Commission to the secretary of the Department of Environment, Health and Natural Resources. Part of that bill, effective Jan. 1, required that hazardous liquids on vessels be stored in closed containers adequate to prevent their release into state waters. The bill also directed the Seafood and Aquaculture Commission to study and evaluate the effects of littering on coastal waters.

We passed a bill to modify water column leases. Perhaps the most controversial bill we passed was the Marine Fisheries Endorsement to Sell Bill. It was a huge undertaking, and the commission spent an inordinate amount of time in public hearings and discussion groups listening to recommendations before the 1993 session.

It was a fairly complicated issue, but now we require an endorsement to sell. From the data collected, we hope to understand what we are doing to the resource and how we can protect it. The data will also support us in discussions with any national marine fisheries councils that might allocate quotas on particular species.

In the area of funding, the commission appropriated money as aquaculture funds that will support the Mountain Aquaculture Resource Center at Western Carolina University. Money was appropriated to the seafood laboratory in Morehead City to provide extension education and applied research for the state seafood industry. The commission

granted money to the Coastal Futures Committee to examine the effectiveness of the Coastal Area Management Act through a yearlong, comprehensive study of its successes and failures. That committee will make some legislative recommendations. Finally, the commission continued a shellfish enhancement study to discover ways of promoting and enhancing the industry.

Among the issues that the commission will study this year are the use of commercial nets on fish and shellfish stocks and their estuarine habits. It will also study the shellfish leasing program.

As I already mentioned, the commission will study the effect of littering on water pollution, first by defining marine debris. The discussion has covered measures to prohibit disposal of yard wastes in the waterways and a possible adopt-a-waterway program. The commission has also talked about posting signs on waterways noting violations and the associated penalties. It has considered giving Marine Fisheries officers the same enforcement authority as Wildlife Resources officers and increasing the number of marine law enforcement officers on the issue of littering.

Finally, the big issue has been the saltwater fishing license. The bill was referred to the Marine Fisheries Commission, which has assigned it to a study committee. Eventually, I believe the Seafood and Aquaculture Commission will get a chance to review the recommendations. But they will have to be introduced for debate by a member of the Legislature.

I have been involved in this process to some degree. I was appointed in 1993 to fill a vacancy. In 1994, when I was still the new kid on the block, I read a national fisheries magazine about the debate over a saltwater fishing license. I thought that sounded like a good idea — so I introduced a bill to study this issue. I almost got run out of my county.

Since then, the issue has been discussed. Obviously, people at hearings along the coast have had strong feelings on both sides, but perhaps it is beginning to mellow some. I hope this committee within the Marine Fisheries Commission will look at the issue deliberatively and return a reasonable request to the General Assembly. Many other states have moved into this area since 1984, and so it is an area of concern for us.

In addition to the issues that the commission is charged with examining, it has started to discuss why the Marine Fisheries Division of the Marine Fisheries Commission changed its advisory groups from four regions to three. Also worth mentioning is the North Carolina Oyster Summit, where experts from as close as the Outer Banks and as far away as France will converge to share their experiences and recommend improvements.

The commission has also been concerned with water quality issues. Although it is not directly involved, the commission asked the governor to request that the Coastal Futures Commission meet with other commissions on the overlapping rule-making authority. It has asked that the Marine Fisheries Commission, the Coastal Resources Commission, the Environmental Management Commission and the Commission for Health Services get together and develop a uniform plan to manage and protect coastal waters.

I co-chair the Seafood and Aquaculture Commission with Sen. Charlie Albertson from Duplin County, and we are interested in making sure that the seafood inspection process is safe, from the time the seafood is caught to the time it is consumed. We are aware that some of what is now in place is perhaps a bit fragmented between the Department of Environment, Health and Natural Resources and the Department of Agriculture. Our commission will begin examining ways of improving that. We will ask for testimony or recommendations from the state and national levels to ensure that seafood caught in our coastal waters is safe.

I hope that I have presented an overview of what the commission is and is not. It is one of the driving forces on fisheries issues in the General Assembly and a good organization. Its membership of legislators and nonlegislators offers a broad perspective of what the public thinks about these issues.

Audience: Can you explain the process behind, and the reasons that prompted, the increase in Marine Fisheries Commission membership from 15 to 17 members?

Redwine: Four members represent commercial fishing interests, one of whom must be actively connected to and experienced in seafood processing and distribution. Previously, there were four commercial and two seafood processors. There are four sportfishing representatives. Three members represent the interests of the new shellfish category. There are three members with special training and expertise in marine or estuarine sciences or the environment. Three are at-large, up from two at-large previously. The General Assembly made these changes because the shellfish industry was underrepresented on the Marine Fisheries Commission. Shellfishing is a tremendous commercial activity in our state and merited additional attention.

Audience: You mentioned recommending additional enforcement officers. Could you provide specific numbers and a time frame for actual implementation?

Redwine: At this time, we have yet to make any official recommendations. Bill Hogarth is always telling us the Division of Marine Fisheries needs expansion, for various reasons. Sometimes we can accommodate him and sometimes we can't. In this instance, if we're going to get into the marine litter issue and pass laws or regulations, then the thought was that we should put some other people out there to help enforce them. I think the division is overworked as it is now. Additional rules or regulations to enforce would undoubtedly hamper the operation. But once again, that is not a firm recommendation at this point. I don't know what the commission will do in terms of recommending additions to the littering laws or adding officers.

Audience: It is difficult to imagine how we could expect our marine litter laws to be any better enforced than our highway litter laws. Adding staff probably wouldn't be of much help.

Redwine: If we add additional law enforcement officers, we would hope that their duties would include more than that. But you make a good point. It is an issue that has been raised in the commission and we will continue grappling with. Some would say that at least we ought to try, that perhaps fishermen would do a better job than motorists.

Audience: Have you considered, as an alternative to hiring additional officers, significantly raising penalties?

Redwine: We have discussed that possibility in past assemblies, and it is certainly an option. I will take that back to the commission as something we can look into.

Recreational/Commercial Fishing Conflicts: Finding the Common Ground

Jeff Johnson is an associate professor at East Carolina University with the Institute for Coastal and Marine Resources. He is also associated with the Department of Biostatistics.

First, let me point out that I share the credit for this research with my co-author, David Griffith, who is also with the Institute for Coastal and Marine Resources and the Department of Anthropology. This is a project that was sponsored by the North Carolina Sea Grant College Program.

In conducting this research, we wanted to use some new anthropological techniques that would not only allow us to examine conflict issues and search out common ground but also give us a measurement of how much common ground there is. Our theory is that we can deal with

and resolve conflicts once we know where the disagreements lie and what the agreements are.

I generally begin my talks with a famous quote from somebody, but since I couldn't locate any relevant quotes from any famous people, I've decided today to quote myself. I will read from a volume I edited with Dick Pollnac, University of Rhode Island, on managing marine conflicts. Before I do, however, it is important to realize that there are a multitude of users who can be involved in any one conflict. Legislators, state and federal agencies, environmental groups, industries, special interest groups and coastal residents are just a few among many. The philosophies, perceptions, objectives and goals of these groups and individuals can affect the nature of disputes over marine resources and will certainly have a significant impact on their resolution. Now, the key words are "philosophies," because philosophies make a big difference, and "perceptions," the forces that drive almost everything.

It might help to compare the situation to one that arises in the courtroom. The only victim in court is the truth. In many cases involving resource issues, we don't know what the truth is. We only have our perceptions, which arise from our different perspectives.

I would prefer to deem the issue "competition" rather than "conflict." After all, we don't have people shooting one another out on the water, and we don't necessarily have people beating one another up. Competition arises when people vie for the same resource. Competition of this nature may result in conflicts of different kinds, some of which may be very subtle. Along the coast, competition for resources varies as a function of natural cycles. We listened to Bill Hogarth discuss how temperature variations can affect fish populations, for instance. In most cases, however, it is human impact, water quality issues and overharvesting that have the greatest impact.

User groups of coastal resources have grown in number and size and often have different philosophies about using and managing the resource. The coast's growing population does nothing to mitigate this trend. Projections suggest that 75 percent of the United States' population will one day be living within 100 miles of the coast. Another factor that has been particularly influential in the past 20 or 30 years is the expanding importance of leisure in American culture. Scholarly writings at the turn of the century projected an increase in leisure among the upper class. As it turns out, the enjoyment of leisure has become an integral part of the lives of all American classes. Yet another problem is the result of increasing regulatory agencies with overlapping jurisdictions. At times, it is very difficult to determine where each is coming from and what business they have doing so.

There are differing perceptions about the cause of coastal resource problems. Consequently, there are differing solutions. The data is useful because it examines the causes of our problems and offers potential solutions from a spectrum of different perspectives. During a stay in Alaska, I witnessed very few conflicts over the resource. The same was true of my time in California. Texas was a different story. When I started work there in 1982, I observed a great deal of user conflict, which began in the GCCA (Gulf Coast Conservation Association), a very different kind of political arena. Lamentably, I am now starting to see North Carolina take on similar characteristics. This shift is largely due to the spread of different philosophies. Some of it has been caused by other factors, such as increased population.

Pressure from rising seasonal and year-round populations is affecting the coast — another issue upon which management opinions vary from group to group.

In conducting this study, we wanted to determine whether there was any common perception. In anthropology, we measure culture, which is shared and learned. We knew that if all the groups we questioned had a common perception, our job would be easy. We prepared, however, for dissimilar perceptions. We then wanted to determine if differences in opinion could be broken down along group lines. We were prepared to determine consensus among groups, even if there was no consensus overall. This type of approach is called consensus analysis and, for those of you who care about statistics, is based on a single-factor solution to the minimum residual-factor analysis. We conducted a series of in-depth interviews with coastal residents, asking what they thought were the problems affecting the coast. We then assigned four independent researchers the task of compiling the most common responses. From that research, we determined 59 responses to be similar. We then compiled these similar responses for use in a direct-mail survey of sport and commercial fishermen. Respondents were asked to agree or disagree with survey statements. We then examined response patterns. Consensus analysis allows us to construct a "key" for what the answers may be. For example, an anthropologist could produce an accurate answer key from a class's test results without knowing the correct answers simply by examining response patterns. We took a similar approach in our research. Respondents were asked to evaluate the following statements as true or false. For example, "Most changes in fish populations and behaviors are due to changes in water temperature," and "Trawlers catch mostly trash fish." Some of the survey statements had no relation to the study but were included to extract responses that reflect the sentiments of their particular user group.

When all the data was compiled, as you might have already guessed, there was no consensus. In fact, the structure of the results indicates that the users are extremely polarized, with commercial fishermen on one side and recreational fishermen on the other. From the point of recognizing the primary division, we wanted to search out agreements within each subgroup. We determined that there is a great deal of consensus among recreational fishermen. Commercial fishermen also agreed with one another, but less so, primarily because they are not a homogenous group. They don't agree amongst themselves because they don't use the same type of equipment. This tendency to use disparate gear was reflected in their response patterns. We discovered, for instance, many trap fishermen who were against trawling.

The margin of disagreement, however, was much wider when the responses of commercial fishermen were compared to those of sportfishermen. The two groups disagreed on whether biological factors were the greatest contributors to population fluctuation and whether fish are depleting faster than they can reproduce. They disagreed on the proper location for shrimp trawling and the status of fish stocks. And they disagreed about each other's inclination to band together. One group would assert that the other was a tight, politically effective unit, only to have the so-deemed group deny such status. There was disagreement over commercial fishermen's right to receive aid from the government. There was also disagreement on the effects of pollution and tourism. They further disagreed on whether commercial fishermen receive an inordinate amount of blame. There were disagreements on whether to cut back on flounder nets, limit trawling and tighten commercial fishing regulations. They disagreed on the importance of the cultural traditions of commercial fishermen vs. economic motivations. They disagreed on these statements: "Sportfishermen haven't caught as much in a lifetime compared to the damage of a single commercial boat in one week," and "Commercial fishermen have always had it their way." They disagreed on harvest level control capabilities, problems due to weekenders, respect for the law, money allocation and the economic import of sportfishermen.

Importantly, however, there was some agreement between the two groups. Both sides believe that pollution is contributing to fish stock problems, that commercial fishermen should have sole rights to sell fish, that recreational fishermen should contribute to the costs associated with conservation and that stock fluctuations are in part the result of natural factors. Both groups also cited problems with resource management, deeming it too political.

On the other hand, the survey elicited some encourag-

ing acknowledgments. Both groups admitted their members had abused the resource and both admitted a lack of understanding about the other side. They admitted, furthermore, that consumers are often not considered in the fishing equation, and they agreed that they should be granted more resource access. They said, however, that such access should be coupled with regulations on all resource users. No one, that is, should receive special liberties. There were other discoveries of common ground. Pamlico Sound fishermen agreed that theirs is a great place to fish, and that trawlers should stay clear of shallow and nursery areas. In general, there was a willingness even on the part of the trawlers to limit, to some extent, where they would fish. They agreed that everyone should pay the cost of resource management.

In general, commercial fishermen attributed resource problems to natural cycles, tourists and pollution — and not to themselves. Recreational fishermen, meanwhile, attributed their problems mainly to commercial harvesting but also to natural cycles and other factors. Each group believed the other to be more cohesive, more powerful and more favored. And about half of each group agreed there was little room for compromise — they agreed, in other words, that they would disagree. Fortunately, only half the respondents were of this mind-set. The other 50 percent believed there was room for compromise, and half is better than nothing.

While on the subject of future user-group conflicts, I want to read a letter from Gil Radonski (of the Sport Fishing Institute) for the purpose of requesting money.

"Biodiversity, the Endangered Species Act, the nonindigenous aquatic nuisance species act, preservationism, environmentalism — ideas and legislation that should be good for fishing. Now, however, these acts and attitudes have been reinterpreted to where they literally threaten our ability to keep and manage our great recreational fisheries mostly created through good fishery and habitat management. Attitudes and policies in our Washington agencies and across America are swinging rapidly away from providing recreational and consumptive activities. There is a dangerous trend to embrace more passive ideas like hiking, biking, bird watching, tiptoeing through the tulips or other pirouettes with nature. And you guessed it, they want dollars from fishery programs to underwrite these new ideas."

The letter goes on to declare the importance of "meeting head-on those who would like to ban the rod and spoil your fishing throughout America," all in an effort to solicit some money. But I read this letter because it describes the type of intricate conflict that we are seeing more and more.

The Marine Mammal Protection Act is an example of marine protectionist philosophy that has inhibited the commercial fishing of abalone and crab in California. Sea otters in California, protected as an endangered species, ate crabs and abalone. Consequently, the fishing of crabs and abalone became restricted. It seems to me that those who push for such restrictions want to protect the environment for aesthetic, not consumptive, reasons. Compromise between commercial and recreational fishermen seems far more viable than compromise with protectionists. Commercial and recreational fishermen are conservationists; they want to conserve the resource, not impose needless protection acts. So the good news is that commercial and recreational fishermen have a great deal in common given the new varieties of user groups competing for the resource. And because they share similar philosophies, it would be better to work together than separately. Both groups have a vested interest in conserving the resource. I challenge them to do so together.

Audience: How many questionnaires did you mail out?

Griffith: Around 235.

Audience: I received one and didn't answer it because I felt the questions begged a simplistic answer. They asked the respondent, essentially, to agree or disagree with pretty radical statements. And so I was wondering how much your results were influenced by this line of questioning. However, it does seem like you got some good, useful results.

J. Johnson: Yes, one way of looking at a study like this is from within the group. When there is a full consensus, when everyone agrees, you know your results are highly reliable. The problem was that we wanted to make sure we were using statements that fishermen use. We as academics did not want to decide the important issues — we wanted them told to us. We pulled sentences from the community responses, even if they were inflammatory or disturbing, so long as they were issues fishermen said they were grappling with.

Audience: I think there is a lot of agreement among commercial and recreational fishermen. But your survey may not accurately reflect that because the negative questions may have caused respondents to shy away.

J. Johnson: We included many neutral questions in the survey. We found that there was still agreement and disagreement. Some of the questions to which you refer are admittedly extreme. In posing those questions, we were attempting to discover if some respondents held extreme views.

Audience: You mentioned that the recreational questionnaires were from the Atlantic Coast Conservation Association. What about commercial? Were they taken from commercial licenses?

J. Johnson: The problem with conducting this type of research is that you need a sampling universe. It is very easy to find the commercial fishermen because they have licenses. Recreational people are tough to find. Our jobs would have been much easier if there was a sportfishing license. Your concern is valid, and we would have liked to make the study more representative. We went out and got the best random sample of recreational fishermen we could generate and then compared their responses to those of sportfishing clubs. We found that they were not very different, so we feel confident that we did the best job possible under the circumstances.

Panel Discussion of Use Allocation at Hatteras Point/Pond: A Case Study

Moderator **Bo Nowell** is president of the Atlantic Coast Conservation Association of North Carolina and the past president of the Raleigh Salt Water Sportfishing Club.

The panel will discuss two situations involving recreational and commercial user conflict. The goal is to determine if there is a way that anglers and commercial fishermen — two groups in direct competition for the same fish — can sit down together and work out a compromise. Is there a structured model that government staff or the local community can follow to assure that these issues can be mediated fairly and for the benefit of the community in a climate free of ill will, intimidation and threats? Or will the solution be one-sided?

The first issue arose as a result of conflict over the Pond. To resolve the discord, the existing Nags Head Committee to Resolve User Conflict (CRUC) stepped in. CRUC administrators felt they could be of some help because their organization had existed for some time and they had talked frequently about such issues. In resolving the problem, National Park Service Superintendent Tom Hartman acted as a facilitator and held a very structured meeting with a balanced group of representatives. He also tried to keep the discussion focused on the issues and less on personalities and allegations. However, there arose some complaints of favoritism from the Buxton meetings, which were handled by the Division of Marine Fisheries. Tempers got hot, and although a solution was reached, I'm not sure how happy everybody was with it. This process may have realized a little less success than we would like from a model, but

that's an issue that should be addressed by those who participated.

The body of water we refer to as the Pond is located on the north beach of Oregon Inlet. It is a small, lake-sized tidal pool where netters and recreational fishermen compete for the same fish. This competition tends to raise the ire of fishermen on both sides. Recreational anglers object when the pond is netted at night because they feel it depletes fish in the day. And there have been confrontational incidents. On one occasion, commercial fishers dragged their nets through a location that was already occupied by recreational fishers. The incident resulted in the exchange of some harsh language. Another confrontation occurred up the beach between some haul seine nets and beach fishermen.

The Point at Buxton, just south of the Hatteras lighthouse — perhaps the premiere surf fishing spot on the East Coast — has also been a hotbed of user conflict for some time. I was told that in the 1970s the commercial/recreational conflict over striped bass got so bad that a U.S. marshal had to be called in. Eventually, legislation was passed to resolve some of the weekend problems, an accomplishment that was largely the result of the Park Service's effort. The solution was to install pound nets. One was placed on the Point and others were installed in the bight, south of the Point. The bright side of all this is that when I was at the Cape Hatteras Anglers Club Tournament Banquet, the club president thanked the netters for agreeing not to set nets in areas where fishing teams would be on fishing days. That indicates that there was some hope — albeit after the fact — for cooperation.

I have asked the panelists here to share their views and provide constructive insight. Prior to these proceedings, I asked them to give me their perspective going in, their position once they were involved, how the issue was ultimately resolved, what made the issue resolvable and, finally, what suggestions or lessons we might glean from the experience to avoid future conflicts. I invited them so that they might point us in a healthy direction toward common ground.

Mary Collier is management assistant of the Cape Hatteras National Seashore.

Before we get started, I want to explain the role of the National Park Service, its purpose for involvement and the extent of its authority. Then I will talk about the particular conflicts addressed at the meetings and explain the perceptions and motivations that prompted the Park Service to act as it did.

The Park Service has management authority over the water only between high and low tide. As a result of this responsibility, when we examined the issue, we were address-

ing recreationists who surf cast and commercial fishermen who drove along our beaches with their dories and sets. We had to work closely on these issues with the state and Harrel Johnson of the Division of Marine Fisheries. For our purposes, commercial and recreational fishermen were considered visitors.

The legislation that established Cape Hatteras also makes it different from most other beach areas. When Congress created it in 1937 as the nation's first national seashore, the Park Service was required to allow commercial fishing by legal residents of the community. Such legislation may seem to invite conflict, and to some degree it does; we are always trying to protect everyone's rights and promote balance. In fact, the National Park Service itself is a balancing act. It is mandated to conserve our resources and at the same time provide for the enjoyment of the visiting public. This balance extends to the Park Service's dealings with commercial and recreational fishermen.

It sounds, as the superintendent says, like a 51-to-49 situation: 51 percent perhaps in favor of recreational fishing because the secretary of interior can restrict commercial fishing to protect the area for recreational use. But at the same time, there are other factors to consider. We've got 70 miles of ocean seashore. That's a lot of space. And when you start to look at the number of people who are active commercial fishers, your perceptions tend to change. As the exclusive authority for issuing commercial fishing permits, we grant 70 per year. We have 2.2 million visitors a year. These figures might lead one to conclude that we should easily strike a balance. After all, it stands to reason that we would be able to find space for so few commercial fishermen among so many people. The problem is that this theory does not account for the fact that fishing is particularly good in certain areas, that there are hot spots where everyone wants to fish. Cape Point is one such hot spot, as is the Pond.

The Pond was the first area we targeted with a series of workshops. We knew some people on both sides who were particularly interested in the issue, and we invited about 35 of them to join us in our effort to resolve the problem. At the outset of the workshop, we tried to impress upon them the importance of their involvement. We said, "We've got to come to a solution. We are coming to you for that solution." We charged them with an important responsibility, but we didn't rush them into their decision. We believe, after all, that when people are asked to brainstorm, it's important to grant them enough time to thoroughly weigh the issues, talk with others and then return to the mediation table. We hoped by allowing them such liberty, they might generate, if not a consensus, at least something that was acceptable to all parties.

We also encouraged letters on the subject and learned a good deal from what we received. Recreational fishermen sent about 90 form letters concerning the Pond issue, and we also received about 30 personally written letters from them. Of the two letters we received from commercial fishermen, one declared, "I don't think commercial fishing ought to occur in the Pond," and the other asserted the opposite. Once all the mail was in, it became clear where the majority of respondent opinion lay. If our letters had counted as votes, we would have simply eliminated commercial fishing in the Pond. But that, of course, isn't how it works. Because we are charged with protecting everyone's rights, we cannot disregard minority opinion, although we certainly take numbers into account. We also realized that letter campaigns may be more accessible and representative of some groups than others. We ultimately decided to grant the Pond to recreational fishers for a different reason: commercial fishermen stood up and said, "It is not that big of an issue to us. Give them the Pond if it will create peace."

The matter of Cape Point, however, still stood to be resolved. And as Bo Nowell said, that had been an area of some contention in the '70s. But that squabble was ended when the secretary of interior stepped in and told the Park Service what to do. Because we didn't want that to happen again, we asked locals for a solution.

The solution was the result of a thorough examination of the issue. We now have an 8-mile zone that is open strictly for recreational use on certain weekends. Going into the meetings, the recreational fishermen wanted to extend the restrictions on commercial fishing, while the commercial fishermen saw no reason to change the policy. As the meetings progressed, we learned the importance of hearing out valid questions. This lesson was learned in the wake of the commercial fishermen's repeated query: "Why do you need all eight miles?" The recreational fishermen ultimately determined that they did not, and they settled for a half-mile radius around the Point. Because we had the consent of both parties, we could then make a strong recommendation to the state.

The third area reviewed by the National Park Service was Bodie Island, near the Pond. The question was whether to restrict commercial offshore fishing from an area at ramp access point number four to the Bonner Bridge. In this case, we determined the area was not of particular interest to commercial fishing because of its strong currents. The commercial fishermen had willingly yielded, with the assumption that recreational fishermen would take note of their good will and reciprocate in turn.

The fourth lesson from the meetings was that those involved in the conflict often have the answer to their own

problems. We realized, consequently, that it is important for management to play a facilitating role in the resolution, rather than attempting to impose its own solution. As a result of the meetings, we also realized the importance of hearing out subgroups that are usually categorized under the commercial or recreational blanket. We heard out people who do various forms of fishing, such as drop netters and seiners. Each fisherman would have his own dates and needs that were of particular interest to him.

The process went extremely well, largely due to the efforts of several people here today, and I think the final resolution is one that everyone can accept.

Susan West is president of the Hatteras-Ocracoke Auxiliary Chapter of the N.C. Fisheries Association.

Before I address the Cape Point issue, I want to describe our auxiliary. Its membership is primarily from commercial fishing families. There are members in the business community — seafood restaurants, wholesalers, retailers and general merchandisers — but the wives, daughters and sisters of the Outer Banks fishermen are the ones who are active and attend our meetings. Our members generally don't venture out on the boats, but they are involved in many aspects of fishing. These are, after all, family businesses. Wives and children often help clean the boats and rig up gear. Moreover, wives are usually the businesses' record-keepers and accountants. Our lives are different from other peoples' — we are intimately dependent on weather patterns and fishing conditions. Our auxiliary is involved in a number of activities. Water quality, for obvious reasons, is important to us. However, our most basic concern is shaping fishery management plans so that they offer a future for our fishermen and families.

Basically, we thought the problem at Cape Point was minor. In several public forums, the district ranger for the Cape Hatteras National Seashore pointed out that the Park Service receives very few complaints about commercial fishing activity. He also pointed out that complaints from recreational fishermen were more frequently directed at other recreational fishermen. Everyone who lives and works on our island knows that while most people enjoy visiting, some tourists will always find something to complain about. And a handful of complaints about the commercial fishing industry certainly didn't seem like a crisis to us. We didn't think that we had adversely affected recreational fishing at the Point, and we definitely didn't think that we had a negative impact on tourism at Hatteras Island. This fact is evidenced by the growth of the tourism industry, as you are well aware if you've recently visited our island. Nonetheless, Bill Hogarth of the Division of

Marine Fisheries was pressured into taking action by a successful letter-writing campaign that requested the restriction of commercial gear at Cape Point. Furthermore, he had been recently granted proclamation authority to do just that. Remember, too, that we were in the thick of the menhaden issue in Dare County at the time, and there were rumors that unless Hogarth acted, this issue would also go to the Legislature.

So, one difficulty from the outset was that we didn't see conflict at Cape Point, but some of the recreational spokespeople said they had heard complaints. Also keep in mind that many members of the recreational community did not think that the situation at the Point required any action at all. We knew that the "conflict" certainly wasn't of the proportions it had been in the 1970s. And no one spoke of specific incidents of conflict. There was a general, obvious absence of ostensible information about how commercial fishermen were interfering with sportfishing. It became clear that we were dealing with something much more vague and abstract.

And yet there was apparently a perception among some in the recreational community that we somehow interfered with sportfishing. Perception problems are often caused by a lack of knowledge, and I don't know how to get around this. There are many types of commercial fishing, and I'm really not convinced that the public wants to learn all of the technical aspects. Some of the tackle shop owners on our island said they have tried to explain our activities, but many have grown tired of continually reiterating the situation. I am sure this gets tedious at times, but I would hope that these owners will continue their efforts. Toward that end, our auxiliary team has worked with the Park Service to differentiate these forms of commercial fishing in an article that will appear in the free newspaper for park visitors.

As I said, perceptions are often rooted in misinformation and half-truth. And such misinformation can be spread quite effectively through the efforts of a very few intent on furthering their agenda. Those who use such means are often so effective that they instill negative perceptions in anglers even before they reach the island. Unfortunately, the media is often a vehicle for spreading such misinformation. So be aware that while you may read a sportfishing column every week in your newspaper, you probably do not see one dedicated to the interests of commercial fishing. Because no such column exists in a widely circulated publication, the public doesn't have regular access to the commercial viewpoint.

The media certainly did not help with the Cape Point issue by printing unfounded rumors. In the midst of the meetings, an article appeared citing a proposal to ban surf

casters from a mile of beach south of Cape Point. No such proposal existed. It was simply one beach netter's personal opinion. The media also criticized the meetings, saying that there was no public notice of their location or time. There was plenty of public notice about the first meeting, where we decided to break into smaller groups to address this issue. There were complaints that our meetings did not have even representation. This, we admit, was a problem. But there are so many different types of commercial fishing that it is unlikely for fishermen in one discipline to thoroughly understand another. In all fairness to the media, I recently read a more neutral article on the matter, which called for both sides to cooperate in resolving the conflict. And I believe that the media has a responsibility to help us achieve that goal.

Progress in the Cape Point discussions was hindered by a lack of communication. It was difficult for the recreational and commercial factions to overcome the tension and talk. I hope the regulatory agencies will learn from our difficulties and strive to communicate carefully and honestly with both sides. There was confusion over who would attend one session. This might seem of small consequence, but it had the potential to send us back to square one. While regulators might view these issues as just a few in a long list of problems, they are critical to those involved.

We offered to not fish within a half-mile radius of Cape Point for reasons I have already mentioned. Commercial fishermen and their families realized that the situation had been made to seem quite serious by some media and recreational proponents. At the same time, we were very much aware that Hogarth was going to act. And finally, we took into account that Cape Point has historically been a popular sportfishing destination. From the beginning, however, we made it clear that our decision to yield was not a bargaining tool but an honest representation of what we could accept without enduring very real economic hardship. We hoped that our frankness would save some time, and we believed our offer provided a solution. As a result, anglers who perceive us as a problem now have a safe haven at the Point where they can avoid proximity with the few commercial fishermen who work the beach nearby.

Human perception can be a difficult thing to work with. Not only is it vague and abstract, but it can be extremely personal as well. While some visitors to our island apparently perceive us as a problem, many other visitors view commercial fishing as an interesting and respected profession. And the commercial community wonders where it will all end. If haul seiners and gill netters are perceived as a problem at Cape Point, where and what will be deemed a nuisance next? As more anglers visit our island, will other commercial activities in other locations come under fire?

The commercial community stands firm in its conviction that regulations must be based on substantive justifications, not mere perception. Laws and regulations founded on perception are unjust and unfair, and ultimately amount to discrimination. A glance at the history of our country should serve as a reminder that laws and regulations based on perceptions comprise its less honorable chapters.

Bob Eakes is owner of the Red Drum Tackle Shop in Buxton, near the Point, and a member of several N.C. Division of Marine Fisheries advisory councils.

This was a vastly complicated meeting process that began for me with the question of whether to allow a pound net to be installed at or around Cape Point. Many who regularly fish Cape Point realized that the intended point of installation was too close to the Point, so we sought out the applicant in hopes of persuading him to look elsewhere. Our concerns, however, were met with a less-than-cooperative attitude. The applicant said that if he couldn't have his pound net where he wanted it, he would wrap Cape Point up with gill nets and target the puppy drum population.

Our fears were not unwarranted. One gill net can divert the natural migration of fish and halt their travel to the Point. It can also detract from the fish that we, the recreational people, want to catch. There is the safety factor to consider. And, most importantly, there is the law — the area has been posted by the National Park Service as a non-commercial fishing zone. Such considerations make the situation a bit complicated. Here is a net in a zone with a sign up, and you just can't explain that to the average person. We tried to explain the ramifications of the situation but failed to find an audience with commercial fishermen.

The problem of the Oregon Inlet Pond was no secret. Recreational fishermen had been encircled and wrapped up by commercial dory fishermen, a fact evidenced by Division of Marine Fisheries enforcement tickets.

Cape Point's problem is twofold. First, there is a great deal of swipe netting in the fall for speckled trout in a walk-in-only zone south of the lighthouse. The average recreational fisherman has to walk a mile to enter that zone. The commercial dory fisherman, meanwhile, tows his equipment in with a truck, sets a net and creates an untold number of hard feelings in the fall. Cape Point's second major problem is that it is too heavily netted. To explain the extent of the problem, there were 22 nets from Cape Point south for 3 1/2 miles on the Saturday of Easter weekend alone, and seven of them were in the noncommercial zone around the Point. These nets are 300 to 500 yards long. And when 22 nets are in the water, there are also 22

anchors in the water and 22 nets on the beach. What's more, there are 22 more anchors for the pull ropes. Put simply, there is a problem.

The meeting last year helped to mitigate this situation, which had become quite confrontational in the last five or six years. As one who has personally witnessed some strong words exchanged over the years between commercial and recreational fishermen, I can wholeheartedly say that the meetings have alleviated some problems. Both groups realized, furthermore, that if they didn't settle their problems, outsiders would intervene and solve them.

Cape Point is very much a traditional surf fishing recreational area. The Park Service aggravates the problem by forcing all the mobile recreational surf fishermen into one spot. Mary Collier referred to an 8-mile noncommercial zone that the Park Service enforces around the Point. What she didn't mention was that within that zone, and for 10 miles north and south, there are only 4 1/2 miles that recreational fishermen may drive on. In effect, the Park Service has concentrated many recreational fishermen in a relatively small area and done very little in the way of net restriction.

The first meetings on this matter, hosted by Park Service Superintendent Tom Hartman, were the most productive. The least productive, also hosted by the Park Service, was the last. Both meetings were by invitation. In his initial letter of welcome, Hartman wrote, "Public workshops held earlier regarding use of the Pond on the north shore of Oregon Inlet resulted in an excellent exchange of views and a fair and accepted resolution of the issue." His statement was on the mark, as were his personal efforts to assuage a tense situation at the meeting. He personally greeted each person who entered the room and set a tone of cordiality.

The Cape Point meeting was another situation. Hartman's opening comment was, "You have all made me mad by making me miss my supper." He went on to align himself with the commercial side by saying, "There's no problem here." The superintendent had, in effect, made it very difficult for recreational fishermen to make any argument whatsoever. After all, what is there to say after management announces that you have no case? And the negative tone pervaded the proceedings. At the Oregon Inlet first meeting, the room was divided into four or five tables on each side. Equal numbers of commercial and recreational fishermen were invited. All questions and statements were addressed to a central moderator. At the last Cape Point meeting, 15 or so recreational fishermen were surrounded by 50 or more commercial fishermen with insults and innuendo being addressed to us, the recreational side, not the moderator. This made the meeting a travesty. The proceedings then degenerated into a series of accusa-

tions almost as soon as they had begun.

I believe that the last meeting was unfair because its moderator clearly played favorites. We attended under the assumption that Hartman would refrain from voicing his personal opinions, a standard he had upheld in all meetings prior to the last. When the community is invited to a series of discussions, the standards for governance must be upheld. But Hartman disappointed us in this respect.

Perhaps my greatest regret is that the meetings were not videotaped. If they had been, we could hear some of the incredible statements. "There are very few phone calls. There are no problems," the Park Service said at the last meeting. What the Park Service didn't recognize was that if there was a problem, it was its own mismanagement of the situation. For what other reason would the Division of Marine Fisheries get involved?

The Park Service needs to enforce the zone around Cape Point. If it goes unenforced, it leaves room for conflict. Right now, nets are being set and commercial fishermen are in that zone because the Cape Point regulations are not being enforced. We need some Division of Marine Fisheries personnel on our island. Consider the area that the division is charged with patrolling — it extends three miles into the ocean and 10 miles into the sound for a total of 700 square miles of water. Not a single division enforcement officer lives on our island.

The Division of Marine Fisheries should have an in-house meeting specialist to keep proceedings simple, uniform and fair. The fall meetings with their continually changing moderators served only to garble the issues and perplex the audience. An in-house specialist would keep meetings on track and reduce repeated conflict and rehashed arguments.

Sometimes I think that small advisory groups, dedicated to the resolution of these problem areas, should be formed. Other times, I'm not so sure. I am certain, however, that there is too much argument over these issues, primarily because the parties involved (the Park Service in particular) aren't forthcoming with one another. A meeting should never be held in such a manner as to intimidate attendees. Many people in my county don't even attend fishing-issue meetings precisely for this reason. They are scared to. Perhaps we could cooperate if there was less intimidation and more participation.

Some would have us think that issues-management necessitates a give-and-give relationship. That is, one side always has to give up something. I'm not sure this is just. Take, for example, the decimation of the shark population. Nobody asked me if I cared to give up catching and releasing these big fish; nonetheless, I am barred from ever doing so again because they have disappeared. When man-

agement decides how to handle a problem, I am invariably penalized regardless of whether I had a stake in the species' disappearance.

Harrel Johnson is regional director of the North Carolina Division of Marine Fisheries.

The Division of Marine Fisheries' stances on the Pond and Cape Point issues varied somewhat and were considered separately. Both came on the heels of some newly created authority for the division and some newly created authority for Bill Hogarth. Hogarth had just been granted the power to zone commercial and noncommercial areas up and down the coast.

The question surrounding the Pond was one of responsibility. Who, we asked, had jurisdiction? As Mary Collier pointed out, many were asking the same kinds of questions. Is the Pond in the waters? Does it come totally under the jurisdiction of the Park Service? It was, however, clear that those thought to be responsible for the problem fell under the division's jurisdiction.

So the Pond issue was an interesting one — one that was resolved through a process called the CRUP, or formation of a rather large group. As Bob Eakes indicated, invitations to the process were initially issued to certain individuals, although they were later extended to anyone who cared to sign up. The meetings began with public hearings, where the director of the Division of Marine Fisheries asked specific groups and individuals to offer recommendations and solutions. The director had complete authority for determining a solution, but the Park Service also had authority over shoreside access to the Point. A small negotiating group was convened after the initial public meeting so that the division might determine the scope and agenda of later meetings. At the time, Hogarth asked me to attend these meetings to determine the nature of the conflicts and propose a course toward common ground.

Most conflict issues that the Division of Marine Fisheries deals with are resource-related and easy to resolve. The conflicts that are not resource-related usually prove less intricate — the division tells the affected user-groups that it will intervene if they don't settle their own conflicts. This practice is often used productively with commercial fishermen who don't want outside intervention. A resolution through such means was not foreseeable in this case. Hogarth decided that the situation clearly required division intervention because more than resources was involved.

It is very important that everyone has an opportunity to speak his or her mind. That means that anyone who has been involved in the conflict should be part of its resolution and have the chance to speak uninhibitedly and at length.

Yet this can be difficult, particularly when two adversarial groups meet. Oftentimes, people feel self-conscious in the presence of others, particularly their adversaries, and refuse to express themselves. Therefore, we decided to allow the groups to meet somewhat separately.

One of the problems we encountered with separate meetings was the manner in which each group approached them. The commercial fishermen were extremely willing to meet with the division, most already decided on their positions, yet willing to listen and communicate. The recreational group, meanwhile, had met before the division meeting and brought a single position to the table.

As we began to meet together, and the two groups began to voice their differences, it became increasingly clear that we would need to expand the committee. We decided to do so after realizing that commercial fishermen who use a single gear type can't comment on or make recommendations about other varieties. It became clear that we had an imbalanced representation of interests, which we were doing our best to fight. Toward that end, we removed a committee member who said he was representing a large group. He said, "This is my position. It is my position because this is what I've been directed to come for." Such a position was harmful to negotiation.

In our quest for resolution, we also learned that negotiations of this nature cannot follow a predetermined, inflexible schedule. Deadline was perhaps the single factor that most contributed to the ill will in the Cape Point negotiations. As a result of the time frame we were struggling to work within, Hogarth advised me to meet separately with numerous representatives from each side. The climate of negotiations was rushed and its chairman hurried. "I haven't put out a proclamation," he would say. "I haven't resolved the issue." How could he expect to under such a frantic climate?

All negotiations must at some point come to an end. In the course of meetings, you may find that your groups initially disagree, then come to some agreement on half of the terms, only to have the entire proceedings fall apart. It has to be rebuilt to some common ground.

Nowell: I want to mention that a year ago a lot of recreational fishermen attended the Southeastern Waterman's Association meeting. They didn't go to talk over their problems or discuss conflict; they went to sit down and talk as fishermen. One thing that stood out was a comment to both groups by the organization's chairman, Melvin Shepard. He said, "Let's not talk about personalities. Let's not point fingers at people and say what we think they are thinking or what their hidden intent might be. Let's talk about the issue." And when his meeting began to drift off

course, he invariably returned it to the subject. I thought he handled the meeting very well and, most importantly, promoted an empathetic atmosphere. As a result, we were repeatedly surprised by how much both sides agreed.

Audience: I'm from Virginia and I attended the last meeting in Cape Hatteras that Bob Eakes referred to. As a recreational fisherman, I was appalled by the tone the National Park Service directed at sportfishermen. I think the whole issue was handled in an utterly contemptible, intimidating manner. As a recreational fisherman, I was afraid to stand up and state my beliefs. Such a fiasco should never occur again.

Nowell: I think we established that the last was one of the weaker meetings. Perhaps we can reduce the incidence of intimidation in future meetings.

Audience: I was not at the meeting, but I am concerned about the problems Bob Eakes addressed. Was the application for a pound net at the Point approved, and does netting continue in the exclusion area? Also, are gill nets being set in the restricted area on the weekends?

H. Johnson: There was an application for a pound net at the Point, which was addressed by Bill Hogarth during the public meetings. There were no objections at that time. Hogarth decided to permit the net but restricted its use to outside of the Park Service's no-fishing zone. The applicant was directed to strictly abide by the ruling.

Audience: Don't you think the recreational fishermen's concerns were still warranted? After all, we are excluded from a substantial part of the National Park Service, at least in terms of access. The Point is a very popular recreational fishing area and the rules against commercial use on weekends should be upheld. Some say that commercial fishermen should be excluded from the area throughout the week. Can the agency not understand that there was a real problem?

H. Johnson: I won't say at this time whether such concerns were legitimate. That is a decision for Bill Hogarth or the Marine Fisheries Commission to make. There are also several factors to consider. Was it a resource issue? Were — and are — the gill net regulations being enforced?

Audience: As I said, I'm not there all the time so I cannot be certain. But what of the Park Service? Is it enforcing the regulations?

Collier: Because the National Park Service is only able to manage the sand, its jurisdiction extends to fishing activities that originate or end on the beach. This apportioning of authority has been a problem. On one occasion, a commercial fisherman entered from an area that was open to him and then proceeded to the waters off the restricted zone. His actions were perfectly legal and outside of our jurisdiction. So, as you can see, there are some enforcement problems. However, I don't think we should be debating this issue; we should be discussing ways to mitigate conflict. Let's direct our questions toward positive ends.

Audience: I have a question about our use of the media to advertise meetings. Aside from publishing articles, can any panel members suggest another way to disseminate information about commercial and recreational meetings, statements, ideas or even conflicts? The point is to find a forum for addressing our problems so that we can be better equipped to solve them.

West: I touched on this subject earlier. Many times, the commercial community is unhappy with what the newspapers say. As I said, the perception problem on Hatteras Island originates with the anglers who have heard that nets are bad and consequently bring that perception with them to the island. The key is to get rid of the stereotypes and deal with one another as human beings, rather than dwelling on the negativity spread by the media. I believe that we as individuals can solve our problems faster than the printed word can.

H. Johnson: When the N.C. Division of Marine Fisheries holds a meeting, it's usually because the division is involved in some type of regulatory process. And although the commission definitely wants to hear from the public, it usually proves impolitic to invite large numbers to meetings. Forums are usually the best way to foster positive communication and resolve issues. However, it is worth noting that the committee reorganization that Bob Lucas mentioned earlier was initiated for more public input and quicker resolution of problems.

Nowell: The Division of Marine Fisheries recently hired someone to handle public relations and announce event and meeting dates. The division has needed this position for a long time and it will impartially represent both sides.

Audience: Three of our panelists — the commercial, recreational and Marine Fisheries representatives — were at the Cape meetings, which got off to a very tense start. Their presence at those meetings made a genuine differ-

ence. The meetings that they didn't attend were initially very tense, but we relaxed as they progressed. An atmosphere of cooperation developed, despite the representatives' absence. The media and our tight schedule were to blame for the last meeting's failure. We would no doubt have succeeded with more time to deliberate and less media intervention.

Hogarth: If anyone here is willing to work with the division on the issues we've addressed, such as the saltwater fishing license or conflict resolution, please contact us. I also want to explain why the Division of Marine Fisheries has had to cut back on many things. Quite simply, money has been very short. We do have an expansion budget this year, which we will be very lucky to receive. Such an increase will enable us reinstate some programs. One of them is *The Tar Heel Coast*, a small quarterly publication that we used to keep everyone informed about goings-on. It is critical that we reinstate that project, and we hope to do so shortly after July 1.

A Fisheries Perspective from the U.S. Congress

Representative **Martin Lancaster** serves North Carolina's 3rd District in Congress.

As the congressman who represents much of the North Carolina coast and who sits on the Merchant Marine and Fisheries Committee, I am often thrust into conflicts I am unable to resolve, especially if the goal is to do right by all competing interests. You might be surprised by this, but Congress as a body has consistently tried to stay out of fisheries management disputes. It has not been comfortable when presented with proposals to write laws for particular species or to choose between competing user groups. For the most part, Congress has avoided getting drawn into the specifics.

Instead, it has preferred to set up general standards by which experts in fisheries management should make decisions. It has also set up structures to designate who those experts or fisheries managers are. In some cases, it is the secretary of commerce or the director for the National Marine Fisheries Service. In other instances, it is the regional fishery management councils or interstate bodies such as the Atlantic States Marine Fisheries Commission or even international organizations of which the United States is part.

Congress recognizes that fishery management requires some degree of specialized knowledge and expertise that it does not possess. Consequently, it chooses to set general policy guidelines and turn the day-to-day decisions over to

its designated managers who have that expertise. However, some would say that Congress doesn't want to make unpopular choices between constituents who disagree, so it tells other people to take on that unpleasant chore.

Whatever the reason, Congress has enacted a variety of laws — some large, some small — that create the federal mechanism for resolving policy conflict. Let's look at a couple of them.

Our main federal fisheries law is the Magnuson Fishery Conservation and Management Act. Enacted in 1976, almost 20 years ago, in some aspects it has achieved what its sponsors intended, especially in resolving one particular conflict. Two decades ago, we had numerous foreign fishing vessels operating off our shores. Our citizens complained bitterly. One goal of the Magnuson Act was to "Americanize" our offshore fisheries. In this, it has been a spectacular success. In 1977, foreign nations harvested 71 percent of the fish caught in the Exclusive Economic Zone (the area three to 200 miles offshore). Over the next 15 years, this percentage declined steadily; by 1992, no foreigners were operating in our Exclusive Economic Zone.

But as some of the Magnuson Act's initial goals were achieved, new issues and conflicts have emerged; the act has not been as successful in dealing with them. It has not been successful in keeping many stocks of fish from being overharvested; the National Marine Fisheries Service says that 28 percent of fish groups in this country are overutilized. Our federal fisheries managers now spend most of their time trying to emulate King Solomon: they must decide who among various claimants gets the baby. Like Solomon, they are sometimes asked to kill the baby by cutting it into two pieces. There are more and more interests at home that want access to our fishery resources, and the resources available for allocation are often declining. The Magnuson Act doesn't always provide the best guidance for our managers' hard decisions.

Make no mistakes about it. Management decisions are hard. Resolving conflicts is not easy. If the wrong decision is made, or if hard decisions are deferred, the consequences can be devastating for everybody. Look at New England. Our history books tell us that the first Europeans who came to the region were fishermen searching for schools of cod. For hundreds of years, New England waters and groundfish have been thought of as synonymous. But because hard management decisions were postponed, the fish are nearly gone. Early this year, under pressure from a lawsuit, the federal government finally approved a fish restoration plan that will cut groundfish harvests by 50 percent or more. This is going to cause huge economic distress on New England coastal communities. It's even worse in Canada. There, fishing for cod and haddock has been in-

definitely banned, and over 30,000 Canadian fishermen are likely to be unemployed for years. What a tragedy for all concerned. Let us resolve that we do not defer hard decisions here in North Carolina and end up with such a calamity. My priority — and I believe yours — is to preserve the resources. Then you and the commercial fishermen will continue to have fish to catch.

Congress is poised to reauthorize and amend the Magnuson Act this year. In the House, we have had a series of hearings. In my view, we will consider amendments that will emphasize conservation and recovery of depleted stocks. We will look at policies that promote habitat protection, particularly for juvenile fish. We will encourage managers to think and act more with regard to bycatch rather than considering only the fate of the targeted species. We will examine how management decisions are made to ensure that while all interests have their voices heard during the process, the final decisions are made with the public interest in mind, not that of a particular faction.

This was an item of some interest at our October hearing in Beaufort. Some commercial witnesses testified that federal fishery management councils have too many members identified as sportfishermen. Other witnesses contended that persons who are paid spokespersons for organized groups, commercial or recreational, should not be appointed to councils. Others said that we need council members drawn from a wider range of interests and professions, such as environmental groups or even the field of sociology. I can't predict what direction Congress may choose to go with regard to council members, but the overriding concern should be to ensure the integrity of management decisions, to make sure councils act in the public interest, with the public's confidence.

With this in mind, our witnesses in Beaufort all agreed on one particular matter: The Magnuson Act needs to be amended so that the state of North Carolina has full voting membership on the Mid-Atlantic Fishery Management Council. Right now, our state has representatives only on the South Atlantic Council. We certainly belong there, but we also belong on the Mid-Atlantic Council because of the unique geographic feature of Cape Hatteras that is the break point for many fisheries. Some fisheries are below and others above the cape. The Mid-Atlantic Council makes key decisions on species of great interest to recreational and commercial fishermen in North Carolina. Among these species are summer flounder, bluefish and weakfish. In fact, North Carolinians catch more of some species regulated by the Mid-Atlantic Council than do fishermen from any of the states currently on that council.

Therefore, when I return to Washington next week, I will introduce a bill to amend the Magnuson Act to make

North Carolina a full-fledged member of the Mid-Atlantic Council while at the same time retaining membership on the South Atlantic Council. I announced the introduction of this bill recently in Dare County at the Oregon Inlet Fishing Center. I was gratified to have letters of support from both the Atlantic Coast Conservation Association of North Carolina and the North Carolina Fisheries Association. Bill Hogarth, director of the Division of Marine Fisheries, was kind enough to attend, as were local recreational and commercial fishermen. One of the bill's co-sponsors was Congressman Tom Manton of New York, chairman of our fisheries subcommittee, so I have high hopes that chances for passage as part of the Magnuson Act reauthorization are excellent.

All too frequently, people in Washington have the mistaken impression that making a decision about federal policy is the same as making a decision about all policy. So it is with regard to fisheries. It is easy for members of Congress to think that simply because the Magnuson Act is the preeminent federal fishery law, it is the preeminent fishery law, period. That's just not the case, as most of you can and should remind us. State jurisdictions extend out three miles into the ocean, and they embrace the sounds, estuaries and coastal rivers. Thus, the individual state decisions on fishery management may have as much, if not more, of an impact on recreational fishing than do federal decisions. On the Atlantic and Gulf coasts, only about 11 percent of recreational harvests come from offshore waters under federal jurisdiction.

Last year, Congress acknowledged this fact by passing a new law. It is the Atlantic Coastal Fisheries Cooperative Management Act of 1993. It recognizes that each state cannot manage its fish in a vacuum, that cooperation and coordination among states is essential and that the federal government has a policy stake in supporting the states when they attempt to act in concert. It also provides a mechanism for resolving conflicts between individual states along the Atlantic coast.

Based on the earlier Striped Bass Conservation Act, the new law encourages the Atlantic coast states to develop fishery plans within the context of the Atlantic States Marine Fisheries Commission. This has been a stated federal policy for years. What is new, however, is a provision that would allow the federal government to impose a moratorium on a particular fishery within a state that fails to conform its management policy to a plan developed by the commission. A similar provision in the Striped Bass Act provided the incentive to various states to make the hard decisions needed to start that distressed species back on the road to recovery. It may be that for many species, particularly those of interest to recreational fishermen, the

new act will turn out to be of more consequence than the Magnuson Act.

Let me move from federal laws that set up frameworks for resolving management conflicts to one that is a landmark of cooperation among the federal government, the states and the recreational fishing community. Of particular interest to sportfishermen over the years, the Dingell-Johnson Sports Fish Restoration Act is part of a larger law known as the Wallop-Breaux Act. What makes this law so unusual and significant? In a word, money.

This program is based on the premise that sportfishermen are willing to pay certain taxes on their equipment, boats and fuel to fund efforts to enhance sportfish populations and public access to them. The federal government collects the taxes, then awards grants to the various states according to the formula.

Unlike most federal laws, this law is written in a way that the taxes collected cannot be diverted to other purposes. The money eventually flows back to the states, where it must be spent on activities set out in the statute. These include sportfish management and restoration programs, aquatic education, boating access and safety, and coastal wetlands protection.

Also, unlike most federal programs, this one has grown steadily in recent years because tax revenues have increased. This, in turn, has meant bigger grants to the states. In fiscal year 1993, Dingell-Johnson sportfish grants to states totaled a whopping \$195 million, and North Carolina received nearly \$3 million.

Let me highlight two features of the law that may be of interest to you. First, marine coastal states are supposed to equitably divide their grant money between freshwater and saltwater activities. They are to do this based on the proportion of resident freshwater anglers to resident saltwater anglers. As North Carolina debates the pros and cons of a saltwater fishing license, you might take into account that such a step might mean more Wallop-Breaux funds being devoted to marine purposes.

Also, Congress passed the Clean Vessel Act in 1992. It provides money for five years to help states deal with the problem of handling sewage from recreational boats. All too frequently, this sewage has gone right into our shallow estuaries, causing problems for fish and other marine life. These funds are available to states to see that pump-out facilities are located at marinas and elsewhere. However, states have to compete for the grants. In the first cycle, North Carolina received \$206,000, but several other states with more aggressive plans were awarded far greater grants. You might consider urging our Wildlife Resources people to submit a more ambitious application in the next funding cycle.

Finally, let's consider the Clean Water Act. This law is up for action again in Congress, and it may be the most significant environmental issue to come up in Washington this year. Obviously, it doesn't deal with resolving fisheries management conflicts, but it does have major implications for the health of our fish stocks.

This law has for the most part dealt with point source pollution. But now we find that nonpoint sources, such as urban runoff and agricultural practices, continue to degrade our rivers, lakes and bays. We can expect a major debate about whether and how to tailor the Clean Water Act to deal with nonpoint source pollution.

There will be no one single step that can be taken to solve this problem. We will have to be flexible, practical and work at it over a period of time. Some of the possible options are being discussed in the context of the Albemarle-Pamlico Estuarine Study (APES), a venture set up several years ago under a provision of the Clean Water Act. Debate in North Carolina over the APES recommendations will provide a case study of some of the debates likely to occur in Washington regarding the Clean Water Act.

Conflicts don't always have to be resolved with someone winning and someone losing. In some instances, everyone comes out a winner. I think that in the near future, we will see a case right here in eastern North Carolina on the Neuse River. Along this river and its tributaries, there are some older, obsolete dams. They aren't much to look at and they've been there for years, seemingly without causing any problems, even after their original usefulness has ended. However, these dams do in fact cause problems for migrating herring and shad that move up the rivers each spring to spawn. For decades, these dams have blocked the annual migration and deprived the fish of traditional spawning grounds.

An effort is underway to take these dams out, to reopen the rivers to the fish. There are numerous state and federal agencies, private companies and individuals working to accomplish this. We are almost ready to proceed. There is a bureaucratic obstacle in Washington between the Environmental Protection Agency, which must issue a permit, and the U.S. Marine Corps, which will provide the personnel and equipment to blow up the dams. I have been working to get this last hurdle overcome, and I have every confidence that this will soon be done.

We can act together to restore fish habitat on the Neuse River. We can work with one another to preserve water quality in our sounds and estuaries. We can resolve to put the health of our natural resources, including our fisheries, at the highest level of state and federal policy. If we do so, and do so consistently, we won't have to spend so much time on conflict resolution. We'll find, perhaps much to our surprise

and delight, that the conflicts will have resolved themselves. As I stated earlier, our top priority must be resource protection and restoration — a goal that all interests must embrace. If we do, there will be plenty of fish for all of us. I enlist your efforts in that goal.

Tools Available to Mediate Fisheries Conflicts

Moderator **Mac Currin** is head of N.C. State University's Sport Fishing Schools and a former member of the forum planning committee.

Limited Entry and Effort Management Programs

Mike Orbach is a Duke University professor of cultural anthropology and a member of the Marine Fisheries Commission.

The concept of limited entry and effort management is quite relevant to the goal of conflict resolution. There is a limited amount of resource out there and a limited amount of space for interaction among different users. So in these cases, the question arises of whether to limit the effort or the participation.

Limited entry or access is a form of fisheries management that assigns specific privileges or rights, depending on your viewpoint, to specific fishermen or fishing vessels. The concept is different from a fishery quota, which allows only a certain number of fish to come out of the water but at the hands of almost anyone. Limited access stipulates that fishing is appropriate for only certain individuals at certain times in certain amounts. Principally, limited access has been applied to the commercial fishing industry, although it has at times been directed at the recreational side as well. And it is implemented when there are either too many fishermen or too much gear. "Too much" or "too many" means a lot more than are necessary to actually take the available amount of resource. Now, that can create problems of open conflict and inefficiency. It can create problems in administration of rules and regulations. It can also create problems for habitat or the resource itself.

Access to marine fisheries is currently limited on all U.S. coasts. Access to salmon is limited on the West Coast, access to halibut and sablefish is limited in Alaska. The same is true of spiny lobster in the Florida Keys; surf clams in the mid-Atlantic; and corals, lobsters and bottom fish in Hawaii.

In North Carolina, there are indications that some form of access and entry limitation may be appropriate. Consider limited entry and access as a tool kit containing many different tools for many different needs. Before we can use

these tools, we must determine our needs exactly. Is our problem the result of too much gear? Are there too many people using the resource? Are there too many fish coming out of the water?

The state of crab fishing in North Carolina may illustrate the situation. Although the crab catch itself has varied considerably, generally with environmental conditions, the total number of crab pots has increased steadily from 1979 to 1990. The data is approximate, but the trend is clear — there are more pots catching the same amount of crab. In 1980, about 37 million pounds of crab were landed in about 200,000 traps. Again, in 1990, about 37 million pounds were landed in about 600,000 traps. So we are catching the same amount of crab with 400,000 more traps.

The fact that people are still earning a living in this fishery should not eclipse the fact that they are becoming less efficient over time, although this trend varies throughout the state. This, in turn, is creating the type of user conflicts that we have assembled here to address. That's the issue. The question is, how do we get the genie back in the bottle? The answer lies in limited entry and access systems.

Three systems have been used to date. The first, license limitation, restricts the number of people and vessels that participate in the fishery. This is an "in-or-out" situation because those who are licensed are in; those who are not are out. The second system makes use of individual quotas to limit the amount of fish that each fisherman may take each year, both commercial and recreational. This system is similar to that for hunters. The third system is gear-based and it limits the amount of equipment each fisherman may use. We recently worked with organized fishermen in Florida to develop a system for reducing the number of spiny lobster traps while maintaining each fisherman's catch. These systems share some similarities. In their early stages, licenses tend to be granted only to the fishermen with a history of participation in the fishery. Later, the systems become markets where people buy and sell privileges with certain provisions such as monopoly caps so that nobody can dominate.

When these systems are implemented, it is crucial to take the following measures. First, make sure you have enough data to assess the impacts of the systems and examine alternatives. Any form of limited access is a big step, after all, and it should be considered very carefully. Second, follow Florida's example for garnering support by getting recommendations from the fishing constituency. The Florida law had the support of both commercial and recreational fishermen before it was passed in 1991. The point is that rather than telling fishermen what they should be doing, managers helped them generate their own plan and the Legislature approved it. We are currently working toward

such involvement in North Carolina. We recently finished a fairly extensive series of workshops around the state that allowed fishery constituents to discuss alternatives.

However, if North Carolina does adopt a system similar to Florida's, we would have follow the same process. That is where you become involved — not only by attending the workshops or meetings to develop the concepts but by entering the political process to tell your representatives what you think public policy should be in the state.

Gear Modifications: The Case for Reducing Bycatch

Jim Murray is director of the N.C. Sea Grant College Program Marine Advisory Service and has been instrumental in planning the annual fishing forum.

If you read the newspaper or listened to Congressman Martin Lancaster today, you know the bycatch issue is an increasingly important part of Southeast fisheries management. And unfortunately, this issue of increasing prominence is one that seems to be driven by increasing conflict. I want to start off by describing some of the work that Sea Grant and the Division of Marine Fisheries (DMF) have done on the issue.

First, let me bring you up to date on the state of bycatch and bycatch management. Typical shrimpers would much prefer a tailbag full of shrimp over one mixed with bycatch. There are a variety of reasons for this. One, it is a nuisance to cull through bycatch and, as any shrimper can attest, it's harder work. The more bycatch a fisherman has in the tailbag, the more money he loses in fuel because of the extra trawl drag. Furthermore, a large amount of bycatch tends to reduce shrimp quality because it crushes the shrimp.

Most shrimpers fish for part of the year and they are as protective of the resource as you or I. In my view, shrimpers have been very receptive in the past three or four years to our search for a system that will minimize the bycatch problem yet allow them to continue their livelihood. They certainly have taken a greater interest in this issue than they have with similar issues in the past, such as the turtle issue. Most shrimpers could not be convinced of the turtle problem because typically they would only catch a turtle every year or two and could not see its impact.

So, for these reasons, I think shrimpers would like to do something about the bycatch issue. But the system is really being driven by one statistic. There is a 4.1-to-1 ratio of bycatch to shrimp according to the fishery management plan for shrimp released by the South Atlantic Fishery Management Council. So the key question that we in the

scientific and fisheries management communities ask is whether this number means anything. Some commercial fishermen will argue that there is no cause for alarm, as bycatch has been around forever. But intuitively, I think all of us in the general public would tend to think that this is a problem. This morning we talked a great deal about perception. After that discussion, I think we all realize that if we perceive there to be a problem, then there is one.

The bycatch issue, in my view, has arisen over the course of the past few years for a variety of reasons. The reduction in catch per unit of effort has contributed to the problem, which can be attributed in part to bycatch in the shrimp trawl fishery. Second, sportfishing groups are becoming increasingly politically sophisticated. The Atlantic Coast Conservation Association, which has increasingly influenced public policy and legislation, is one example. Third, the bycatch problem has caught the attention of the environmental community. As a result, groups such as the Marine Fish Conservation Network — an amalgam of groups such as the Audubon Society and Greenpeace — were formed for the purpose of reducing bycatch in U.S. fisheries. I also think the issue carries with it a public perception problem because many casual observers confuse shrimp trawl bycatch with other more destructive fishing practices, such as Japanese drift net fishery. Consequently, the average person tends to view all gear as evil. And the final factor that I think has contributed to the increased attention was the success of turtle excluder device (TED) gear development. I think many fishery managers, realizing what we did for the turtles, began to hope and expect we could do the same for bycatch.

The bycatch issue is of no small consequence. There are 11,000 inshore shrimping boats in the Southeast region and about 65,000 boats operating offshore. These boats harvest about 250 million pounds of shrimp per year at a value of close to half a billion dollars in dockside landings. Put simply, the stakes are fairly high.

Taking no action is an unrealistic alternative considering that Congress is requiring action from the National Marine Fisheries Service (NMFS) and the Atlantic States Marine Fisheries Commission has identified bycatch as a problem in at least three fisheries. In the wake of such declarations, there is little doubt we will see some action in the near future. As I see it, we have three alternatives in the face of impending changes: seasonal closures, geographic closures and gear requirements. In 1991, the regional research bycatch plan was launched, a major three-year study under the auspices of NMFS and the Gulf of the South Atlantic Fisheries Development Foundation. One part, headed by NMFS, examined bycatch characterization — what species, where and at what times is the shrimp industry catching fin-

fish bycatch? The second part, addressed by a variety of agencies and universities, analyzed gear requirements. In North Carolina, the gear work was an offshoot of our work with net-makers who were developing TEDs. In fact, some of these net-makers came to us with ideas for letting bycatch out of the trawl while maintaining shrimp catch.

The endeavor began about three and a half years ago, when we appointed an advisory committee of the state's leading fishermen to help us design gear. By involving fishermen from the outset, we were also trying to avoid some of the problems experienced with the TED controversy. As I discuss this project, keep in mind that I am principally addressing what has been accomplished in North Carolina. Within the Southeast region, about 60 different gears have been examined in the past three years. Some gears, it has been determined, are not working very well at all, while others are functioning quite well. And the three that we decided to test in North Carolina were deemed the best.

The first system is called the square mesh excluder. Essentially, it is composed of a funnel accelerator that blows the shrimp back to the tailbag. The fish congregate in the slack water around a funnel where there are 4-inch holes for escape. The diamond mesh is a simpler design, which is also easier to construct and install. A shrimper needs to simply cut out some mesh. It works similarly to the square mesh or an extended funnel. The DMF concentrated on the Florida fish eye, which Bill Hogarth mentioned this morning. Essentially, fish congregate in dead water behind the conical opening. The fish exit through the nearby hole.

Allow me to run through some data here in order to highlight our results. The square mesh bycatch reduction device (BRD) was pulled for 15 tows in 1991 in Pamlico Sound. Under these conditions, there was an overall 70 percent reduction in total fish, from about 1,000 pounds to 300. Thirty-one tows were performed with the diamond mesh BRD, which yielded about a 39 percent reduction in finfish bycatch. There was also a 33 percent reduction in crab bycatch. However, the diamond mesh lost a significant amount of shrimp (7.8 percent). An additional 14 tows on the diamond mesh BRD showed a 36 percent reduction.

The particular Florida fish eye used by DMF was located 70 inches from the tailbag tie-off, or 70 inches back toward the boat. The tows with the Florida fish eye yielded a 51 percent finfish reduction and only a 1 percent shrimp loss (although this figure is statistically insignificant as they were not catching much shrimp). A second device, with two fish eyes located toward the side of the tailbag, showed a 60 percent bycatch reduction but lost a bit more shrimp. The DMF concluded that moving the fish eyes closer to the boat (85 inches from the tailbag tie-off) was

less effective. But as Hogarth mentioned, there will be more study conducted on this subject, because the division recently obtained more money for BRD research. At 94 inches, they found the device to be less effective.

By combining data from several studies in the Southeast, NMFS shows that the large-mesh BRD with 130 trials has consistently performed well, with bycatch reduction in the 50 percent range. Importantly, there has been no shrimp loss with this device. Overall, the fish eye has achieved approximately a 70 percent bycatch reduction rate, which is the best performing of the devices examined in the Southeast region. However, there has been a statistically significant loss of shrimp. Even though the devices may be working quite well overall, operating at about 50 percent reduction, their exclusion rates vary by species. For example, the square-mesh BRD reduces Spanish mackerel bycatch by about 55 percent, while it released croaker by over 80 percent. Hardhead catfish in the Gulf, as a result of their different responses inside the net, are also released at a ratio of around 80 percent. I mention these figures in an effort to dissuade you from taking percentages at face value. If the figure indicates a 50 percent bycatch reduction, it is an expression of total fish or total biomass. In the Gulf, that may mean that you'll be releasing all catfish, and that may not be in line with your fishery management objectives. We found that the square mesh funnel performed well with shrimp. Through 130 tows it did not lose any shrimp, while shrimp were lost with some of the other devices.

Other gear has been examined. One that comes to mind is the skimmer trawl. The device is not a BRD per se, although within the past two years it has become the device of choice for about 50 or so shrimpers. The inshore shrimpers who have turned to this method achieve around 28.8 percent less bycatch per unit of effort compared to the traditional otter trawl. This method also causes less mortality. Fifteen of the 20 species studied showed decreased mortality when caught by the skimmer trawl. And during the white shrimp season, when the skimmer trawl is used most frequently, there was an eightfold decrease in the fish-to-shrimp ratio. The commercial industry asserts that it should receive credit for the percentages that they are already reducing through TEDs: the Georgia jumper shows bycatch losses of 11 percent while other TEDs are achieving upwards of 60 percent reduction.

We are dealing with a great variety in species, in areas and in conditions. NMFS is compiling all this data, and with the benefit of a significantly broader regional perspective, we should be better equipped to determine and predict trends. Based on the management objectives of the fishery, it is my view that these kinds of gears are an option. Those of us doing gear work have examined this issue further

than the stock assessment scientists, who need to start providing us with targets. As it stands now, we have targets for two species, red snapper in the Gulf and weakfish in the South Atlantic, and for both of these fisheries we need to reduce bycatch 50 percent to rebuild stocks. I feel that these goals are within our reach, but it is also my feeling that we need bycatch reduction targets for other species of fish. To obtain the targets, we need more work from the stock assessment people.

We are probably about a year away from federal regulations that will require BRDs. North Carolina was the first in the Southeast to require them, and the division will probably be tightening the existing BRD regulations in the next year or two. Before such action is necessary, I hope that we can wait for some information from the larger data set from the Southeast.

Water-Use Zoning in Public Trust Waters

Walter Clark is the coastal law specialist for North Carolina Sea Grant and he teaches at N.C. State University.

Usually, when a lawyer stands up and mentions the word "zoning," most people grab the deeds to their land and head for the hills instead of the coast. But some people head for the coast and take their lawyer along on one of those deep-sea fishing trips you hear jokes about where the lawyer disappears among the sharks. Bob Lucas probably feels like he's surrounded by sharks ever time he attends a Marine Fisheries Commission meeting.

Because we are talking about coastal and ocean waters, "zoning" is really not an appropriate word. I think the more accurate term is "planning," and more specifically, "water-use planning." All of us are aware that the waters of our coastal sounds and rivers as well as the three miles of ocean extending from the coast belong to the state and are referred to as public trust waters. It's for this reason that the term "zoning" is inappropriate. Zoning generally refers to the regulation of private property — not public lands and waters. However, the forces that brought zoning to the land do exist in our coastal waters. Those forces are the growing number of water-use conflicts.

Inconsistent uses of land, such as cement factories next to residential areas, created situations that initiated land-use planning and zoning. Historically, people would bring lawsuits to halt the construction or operation of such facilities, citing them as a nuisance. Over time, local governments got involved and determined appropriate uses for different areas within their jurisdictions. Zoning was the result.

Regarding public waters, the conflicting uses might be marinas and shellfish beds, jet skis and swimmers, or

boaters and crab pots. But like land-based conflicts, the result is an attempt to separate conflicting uses and allow people equitable use of public waters. Coming up with a plan for separating these uses first requires an understanding of the forces responsible for managing our estuarine and ocean resources.

Put simply, state jurisdiction begins at mean high tide and extends oceanward for three miles. Within this area, the Marine Fisheries Commission and the Division of Marine Fisheries are responsible for managing most living resources. The Coastal Resources Commission and the Division of Coastal Management are responsible for managing development activities in state waters. The Atlantic States Marine Fisheries Commission regulates fishery activities across state boundaries in waters from zero to three miles. This commission has some newfound power, and it will be a force to reckon with in the coming months.

Federal jurisdiction begins at the three-mile point and, for purposes of managing natural resources, extends oceanward to 200 miles. Fisheries in this area off the North Carolina coast are managed by the South Atlantic Fishery Management Council through fishery management plans.

We are seeing use conflicts in all of these areas, and any long-range solution will have to cross jurisdictional boundaries and address resource depletion and conflict from a holistic perspective. But since this conference has a North Carolina perspective, I want to discuss an idea for managing fishery resources within state waters. However, this is an approach that should be applied across state/interstate/federal jurisdictional boundaries; and for that to happen, it will entail unprecedented cooperation among the various levels of government.

The basis for this approach goes back to the idea of separating conflicting uses — to establishing zones where certain uses are permitted or prohibited. In reality, the Marine Fisheries Commission has, in a limited way, been doing this for years. For example, the commission has designated primary nursery areas where certain uses are prohibited. Just last year, the commission gave the director of the Division of Marine Fisheries proclamation authority to close areas around ocean piers and out to a half-mile in the ocean to the use of specified gear. Also last year, some of the waters in Dare County were closed to menhaden fishing during certain months.

The problem with the commission's efforts to separate use conflicts is that they have often occurred in a vacuum generated by crisis. They have occurred without the benefit of long-range planning that focuses on the fishery resource and the external forces that work to limit that resource. Unfortunately, this is often the reality of management by

crisis. Conflicts tend to bubble up, and the commission and the division must find ways to resolve them with a limited staff and budget.

Bob Lucas has taken a step toward addressing this gap by establishing a long-range planning committee within the commission. This is an excellent beginning, but for the committee's work to be successful, I suggest the following.

First, I'd recommend that the planning committee set some long-range objectives. Where does the state want its fishery and the people who use the fishery to be in 20 years? For this process to work, it must involve the users. I contend that it must also have input from the other state commissions that manage activities impacting fisheries, such as the Environmental Management Commission (which works with water quality) and the Coastal Resources Commission (which works to regulate development and has planning experience).

Several years ago, I was involved in a study through the Albemarle-Pamlico Estuarine program that examined the issue of water-use planning and zoning. Using Carteret County as a model, we extended into state waters techniques traditionally used by planners to separate conflicting uses on the land. We began by establishing an advisory board of users and regulators and made it responsible for establishing long-range objectives for the county's public waters. We also collected data on social and economic water-use trends to help us understand the situation in the county. Inasmuch as possible, we entered that information into the state's GIS system — a computer-generated mapping system.

In establishing long-range management goals, it is also imperative to understand the resources and pressures from external factors such as water quality and adjacent land-use patterns. Consequently, in the Albemarle-Pamlico study, we collected information such as the location of submerged aquatic vegetation beds, land uses and water quality classifications, and entered it into the GIS system. Using the GIS system, we were able to overlay all of this information and establish classifications for the county's waters. Each classification identified appropriate and inappropriate uses. Inappropriate uses are those that would be detrimental to the sustainability of the resource or would generate user conflict.

Finally, once objectives have been set, we need to understand how they can be implemented. Once you understand user needs and resource limits, how do you coordinate the responsibilities of the various commissions to implement a single long-range plan? Granted, the Marine Fisheries Commission should play the lead role, but how should the Coastal Resources Commission's mandate for planning or the Environmental Management

Commission's clean water responsibilities figure in? For example, North Carolina's Coastal Management Act (CAMA) identifies 20 coastal counties and requires local governments within the counties to develop long-range plans. County jurisdiction includes the waters of the coastal sounds and rivers even though the plans developed to date focus on land uses. If CAMA's planning process is extended into the water, then how could it mesh with long-range planning goals developed by the Marine Fisheries Commission? These are legitimate questions.

I want to conclude with a few points. First, we have some excellent opportunities right now. We have the Coastal Futures Committee, which has been formed to look at CAMA and make suggestions for improvement. Intercommission cooperation will likely be an issue there. We have the Ocean Policy Task Force that is looking at ocean resources and developing an ocean policy plan. There will likely be recommendations regarding fisheries management in the final plan.

Second, it may seem that several planning processes are already occurring in and around North Carolina's estuarine and ocean waters. We have the Environmental Management Commission, which is preparing river basin plans. We have the Coastal Resources Commission, which is developing land-use plans. We have the South Atlantic Fishery Management Council, which is developing fishery management plans outside the state, and we have the Atlantic States Marine Fisheries Commission, which is developing coastal fishery management plans across state waters. But I will guarantee you, there is not much cooperation among these planning processes. And until we get on the ball and start cooperating to come up with a holistic planning process, we will never get the job done. We are going to continue to operate in a vacuum, commission by commission and council by council.

I came across a poignant quote several years ago, and I read it whenever I can because I think it's important. It's from a book entitled *North Carolina and Its Resources*, published in 1896. The author is talking about the decline of shellfish or shellfishing in other states:

The consequence of exploitation or over-exploitation is a depletion of grounds once regarded as inexhaustible, the diminution of waters where diminution seemed impossible, followed by the assertion of local rights, attempts at the exclusion of invading trespassers, contention, bloodshed, and finally legislative action and the effort to define rights by law, with the power to assert and secure them by force, all of this made necessary because human nature knows no moderation in the use of the free gifts of providence ... The attempt to retrace the steps of

past waste and neglect is what invariably follows in locking the stable door after the horse is gone, vain regrets and fruitless self-reproach.

And I contend that if we don't start planning holistically in this state, we will have nothing in 20 years but vain regrets and fruitless self-reproach.

Improving Communications: Preventive Medicine for Fisheries Disputes

Bill Foster is a member of the Marine Fisheries Commission and a commercial fisherman from Hatteras.

I have been asked to talk about effective communication as a means of resolving conflicts, and I will probably shock many people by saying that I see no overriding conflicts between commercial and recreational fishermen. What I do see are conflicts among individuals. As pointed out this morning, these conflicts are based on perceptions and usually involve resource allocation rather than the resource itself. A friend once told me that as long as only two people are involved in an issue, no one is wrong. When these two people are unwilling or unable to communicate, one will solicit support, gain it and initiate a conflict. The more people involved, the bigger the conflict.

In order to resolve conflicts, the parties involved must be willing to communicate. I think the cases in Dare County this past year demonstrate what happens when you do and do not communicate. The beach seining issue was handled expertly by the town of Nags Head, which got all the parties involved and made recommendations they could live with. Meanwhile, there were individuals who were concerned about menhaden but chose not to communicate with the Marine Fisheries Commission. Instead, they involved Sen. Marc Basnight and, in so doing, alienated the commercial fishermen, the commission and many legislative groups, including the black caucus.

Out of that came a political solution that nobody was really happy with. But more importantly, it moved fisheries issues off the sports page. If the conflict is big enough, it makes the features page, where fisheries issues are increasingly reported. There, you get more objective reporting instead of editorials running under the guise of news articles. The issue also made the Marine Fisheries Commission — through the work of Bob Lucas and legislators — communicate more frequently and openly. It has made the legislators much less receptive to people who holler at them about introducing one sort of bill or another. Nobody wants to get into the mess that was created over this menhaden deal. And so now it's up to the commission to do its part.

There are some dos and don'ts for effective communi-

cation, but we all know them. It really has nothing to do with fisheries. If you're going to communicate, you have to listen. My father once told me that no matter how dumb you think someone is, he knows something you don't and you might learn if you listen and don't talk. To communicate, you need to define the issue. One of the points that cropped up in the Cape Point discussion, and continues to crop up today, is the difference of opinion about what Cape Point is. That caused a lot of problems.

To Bob Eakes, it was the so-called commercial fishing zone or some area from up the beach to down in the hook. To commercial fishermen, it was that point of land where the beach turns to go back the other way. People weren't talking about the same thing, and that creates problems if you don't define what you're talking about. The same is true in talking about goals. People try to bring in every little bit of information to build up their case rather than sticking to the point. If we're talking about allocation, let's not talk about red drum or turtles or something else.

The other point is to stick to what you know for sure. We have to get away from hearsay. For instance, Bo Nowell mentioned that he heard about a federal marshal being called in in the early 1970s. Might have been; my memory is bad. But I was there and I don't recall a federal marshal. We ought to stick to what we know.

To communicate, I think you need to look for common ground. And one thing that has struck me in listening to fishermen — commercial and recreational — during public hearings is that both sides want to be sure that there are fish for their children and grandchildren to catch. For the commercial fishermen, there is an additional concern of continuing the business through generations. It's a common concern, but slightly different viewpoint. I think it's a common basis for those people to communicate.

As a commissioner, I am frustrated by the people who go from place to place stirring up conflicts faster than we can put them down. The commission has tried to address that through the proclamation authority for resolving conflicts, which I might add has a deadline. It will be in effect another year. The commission took this step because it was tied up listening to people argue and it couldn't do anything about the fish. So perhaps we will be able to better communicate and get on to managing the resource.

Currin: Communication is the key. Sometimes this can be difficult, especially when the issues are emotionally charged. And it's hard for people to sit down and think long enough to realize that the other side's argument may have some merit. When relations become this difficult and drawn out, it's often necessary to call in a hired gun. That is precisely who we have as our next speaker.

Professional Mediation

Andy Sachs is coordinator of the public disputes program for the Dispute Settlement Center in Carrboro, N.C.

The answer to the question, "What is a mediator?" is threefold. First, a mediator is impartial. The mediator does not advocate one side's position over the other and does not have a stake in the outcome of the dispute. Second, the mediator is one who encourages the involved parties to come to their own resolution. A mediator does not make decisions for you or tell you what to do. In this respect, mediation is different from arbitration or litigation, two processes in which the neutral third party produces a decision for the disputants. Third, a mediator is a process expert. A mediator knows how to encourage communication and arrange meetings to achieve a consensus. The mediator does not provide legal help or advice on technical issues.

A mediator for a fisheries dispute, such as the one we're concerned with, is going to pay attention to three things. First, those involved in this case are organizations, such as public agencies and interest groups. This is not simply an argument between two individuals. Second, there are multiple issues involved, and many of them are highly technical. Third, the resources involved are those in which there is a public interest. A significant portion of a mediation process of this kind is going to be in the public eye.

Generally, a mediator will first assess the dispute. For example, I was part of the mediation team that helped to resolve a dispute over a state nutrient control strategy for the Patuxent River in Maryland. We did so as the result of a court order. A coalition of scientists, downstream county officials and watermen making their living from oysters successfully froze \$29 million of federal sewage construction money that was being sought by the counties, water utilities, state wastewater managers and those upstream. For this case, we went out in teams of two to interview everyone whom we determined to have a stake in the case. We sought to understand each individual's position and concerns as well as how his or her interests would be served should no resolution be found. We also interviewed members of the scientific community in order to determine what data needs still existed, to gauge their research findings and to discern what advice they were giving to their respective affiliates based on those findings.

Using information from the conflict assessment, a mediator should tailor a process to the parties and issues involved. There are different ways to structure a mediation process. In the Patuxent River case, our assessment, first of all, confirmed that the scientific issues were intimately related to the dispute. Consequently, we organized a daylong

workshop and gathered 18 scientists and engineers who were collectively advising both sides on this issue. We drafted a set of technical recommendations to policy-makers and river users regarding the key underlying technical questions. The unique process design we developed for the Patuxent case provided for an intensive three-day workshop for 43 different river users, policy-makers, scientists and citizens. We organized a six-person steering committee that brought together people from different sides of the issue to help us develop the ground rules, agenda, material and invitation list for the process.

In another case, the process was yearlong and involved hundreds of community members. This case did not concern the environment, but rather Forsyth County's drug and alcohol treatment services. Only through such a large-scale mediation would the community have been capable of reaching a solution that reflected a consensus of citizen opinion. Sometimes the situation demands such an approach.

Conflict assessment, process design and facilitation are all provided by the mediator in an effort to move the involved parties through six steps. The first three steps encourage the groups to share perceptions of one another, foster an understanding of the issues and provide the means to arrive at a consensus. And if you remember nothing else of what I say, remember that in order to reach consensus on solutions, groups must first agree on what the problems are. The first three steps of the mediation process are geared toward achieving that simple end. The latter three steps help groups generate and evaluate options for resolution and to exchange commitments so that it becomes clear who will do what by when. In both the Forsyth County and Patuxent River cases, the parties developed an action plan that stipulated responsibilities.

Whenever there are private organizations or government agencies represented in a mediation, major decisions will have to be ratified. Any agreement must be allowed ample time to pass through the participating organizations' decision-making processes. Different organizations have different methods for ratifying agreements and the mediation process must accommodate this.

Creative public participation methods are often part of the mediation process in public disputes. It is also important to ensure that the interests of those absent from the mediation table are represented and considered.

I have one final point to make. I want to share with you some of the thinking that a mediator goes through when he steps into a dispute, in the hope that my experience will provide some perspective for those of you in this situation. In the Patuxent River case, we were dealing with what at first appeared to be a win-lose situation. The up-

stream interests squared off against the downstream interests. One side supported the state's proposed nutrient control strategy; the other side opposed it. We tried to instill a different perspective. We asked them about the interests underlying their positions. The Patuxent River mediation channeled the dispute away from either opposing or supporting the nutrient control strategy and focused it on finding ways to achieve the disputants' goals, such as water conservation, oyster and fish stocking, minimum flow levels, flood proofing, land treatment of sewage, nonpoint runoff controls, caps on nutrient loadings and a monitoring assessment program to ensure that goals were being met. I think the Patuxent mediation redefined what the upstream and downstream relationship was about.

I hope that recreational and commercial interests can move in a similar direction by redefining their relationship as a joint search for satisfying underlying interests and not as a fight for the defense of one or the other's position.

Audience: I have a question for Jim Murray. Earlier, you said that the bycatch rate for shrimp trawling was 4.1 to 1. My memory cells are not as good as they were four years ago, but my recollection is a higher number, like 8 to 1. Am I just mistaken?

Murray: As a matter of fact, there was a *News and Observer* article a few weeks ago that quoted the figure 2,000 to 1, which lends further credence to my claim that there is great variation in the reporting of these numbers. It all depends on what is being examined. The 4.1-to-1 figure is the average of a number of data sets and it's the figure that the South Atlantic Fishery Management Council used in the shrimp fishery management plan. To me, it's the most accurate. One problem with any of these attributions is that bycatch varies from location to location. Furthermore, sometimes what gets reported is scientific data that wasn't collected under actual shrimping conditions. If a shrimper was in 100-to-1, 25-to-1 or even 10-to-1 waters, chances are he would move. In my own view, the 4.1 number is an approximation, but it's as good as we're going to do.

Audience: That's an important number to have a good understanding of if we stand to have a 40 or 50 percent reduction in bycatch through these devices. If the figures are off, however, we're not going to yield 4-to-1 results. Is there some ongoing effort to resolve the discrepancy?

Murray: Let me answer your question with an example. Let's say there is some evidence from a stock assessment model, which is actually being done at N.C. State University, that a 30 percent reduction in mortality from commer-

cial fishing operations in the Gulf of Mexico is enough to rebuild croaker stocks. That number is real, not the 50 percent. Since we know we can reduce croaker bycatch by more than 30 percent, bycatch reduction devices (BRDs) become an effective option if our goal is to get the croaker stock back to sustainable levels. From a public standpoint, this argument is being driven by estimations of 2,000 to 1, which are meaningless without a thorough explanation. For a few fisheries (weakfish and red snapper), there is good stock assessment data with targets in the 50 percent range. These targets may be achievable through different fishery management options — seasonal closures, geographical closures and BRD requirements. But unless we receive more of those numbers, our arguments will be of little consequence from a fisheries standpoint.

Audience: It seems to me that part of the reason we have conflict is the perception of the people who use the resource recreationally as opposed to commercially. I, for one, have seen acres of fish lying on Pamlico Sound, dead from some fishing operation that was probably not recreational. That is just no longer acceptable. We simply don't have the resources to allow that sort of thing. I have fished in the sound for 20 years, and although I'm not a scientist, I can conclusively say that something bad has happened to the resource.

Murray: You are right. We cannot wait for the scientists. In my talks, I have been telling the stock assessment people that they better start giving us some numbers or this whole argument is going to be driven purely by emotion.

Audience: Related to that point, I have come to each of these conferences and I never walk away feeling comfortable. I don't walk away from the beach feeling comfortable because I know the stocks are down. You can tell they are down. I applaud the efforts of bycatch techniques, but this is a multivariable problem that has to be approached in different areas. If the ratio is 4.1, but my incentive is to fish more, maybe I'm still killing the same or greater poundage but doing it more efficiently. The bottom line is that because the drive is still on a downward trend, one of the variables we control has to be access. How many boats can we have out there doing that? Another variable that comes to mind is habitat. What happens to the undersea habitat in wake of a trawling operation? I think we need certain controls. The commercial side wants them, and I think we all have to want them in order to change that pattern so that we can come back to these conferences and actually hear that there has been a fish population increase.

Orbach: That is where effort management comes in. That is, you heard today about size limits on fisheries, the quotas that Bill Hogarth mentioned earlier this morning, the fact that we have the bycatch reduction requirement on shrimp now. And in fact, there are some folks out there in the commercial industry, the crabbers for instance, who realize these restrictions will help everybody in the long run. They understand that they will be able to catch more crabs with fewer traps. That is the kind of agreement that we need to emphasize. But you are right. For the effort to succeed, we need everyone's cooperation.

Audience: Is the bycatch ratio determined by comparing trawlers side-by-side, one with reduction devices and the other without?

Murray: Yes. And the side is flip-flopped. After several tows on one side, the BRD tailbag is added as a control in case one side of the boat is fishing harder than the other.

Audience: Do they measure the bycatch and quantity when they do that?

Murray: Quantity and length frequency, species and so on.

Audience: Are you aware of what the bycatch ratio to shrimp was?

Murray: The norm — the average from a number of South Atlantic Fishery Management Council studies — was 4.1 to 1. That is the figure we think best represents the South Atlantic region. However, as I tried to stress earlier, this ratio varies with its application. When tows from the same night are compared, or when two sides of the same vessel's catch are compared, the ratios tend to differ greatly. Therefore, the 4.1-to-1 ratio is probably the most accurate because it represents the average of many studies in the South Atlantic region.

Audience: Did this test demonstrate that?

Murray: Yes, it did. I don't have the exact numbers now, but we found, for example, that the skimmer trawl in the white shrimp season is much less than 4.1 to 1. It was actually close to a 1-to-1 ratio. But we couldn't use that number because it isn't indicative of the larger trend.

Audience: Are you saying they averaged in ocean trawls with sound trawls?

Murray: That is correct. The 4.1 figure is the average of a

number of studies in the South Atlantic region as well as the figure the South Atlantic Council chose to use in the bycatch section of its shrimp fishery management plan. The Gulf and South Atlantic Fisheries Foundation is in the process of conducting a three-year study that characterizes bycatch from Texas to North Carolina. The study will entail thousands of observer days and probably close to 20,000 tows for the purpose of generating more accurate numbers. The figures will provide more precise ratios and more accurately assess what species we are catching, what time of year we are catching them and where we are catching them. The National Marine Fisheries Service (NMFS) will report its findings to Congress by April 1. And although we are at least a year away from any kind of regulations, when they are implemented we will see a combination of seasonal, geographic and bycatch reduction device (BRD) mandates throughout the entire Southeast region. The Division of Marine Fisheries and the Marine Fisheries Commission have plans to tighten the requirements for BRD use in North Carolina. Some measures are working better than others. My hope is that we will implement further restrictions only after all the Southeast data is in. This will be done in accordance to NMFS regulations.

Audience: When can we expect the bycatch reduction devices to be mandatory?

Currin: They are now mandatory in North Carolina. Ours was the first state in the Southeast region, and perhaps in the nation, to require them. The Southeast will soon see additional regulations. I would also predict that we will see the Marine Fisheries Commission and the Division of Marine Fisheries tightening up the BRD-related regulations already in place.

Orbach: Two years ago, we held a series of workshops around the state where we talked to recreational fishermen about possible solutions to the bycatch issue. In the wake of those workshops, we advised the director to consider a proclamation requiring some kind of bycatch reduction device in all shrimp trawlers. This proclamation is in place now. But fishermen have the flexibility to determine the types of devices they use in their nets.

Meanwhile, Sea Grant has been researching the different bycatch reduction methods in an effort to determine which is most effective. Consequently, we will be able to determine, with the benefit of experience, which worked best. But what we hoped would happen, and what did happen even before the proclamation, was that fisherman realized the devices worked and started using them.

The N.C. Artificial Reef Program

Steve Murphey is manager of the artificial reef program for the N.C. Division of Marine Fisheries.

I would like to briefly describe what the Division of Marine Fisheries is doing in the way of artificial reefs. The artificial reef program in North Carolina began in the 1960s through the efforts of some fishing clubs. The state became involved in the latter half of the '60s. The division's responsibility is to maintain a system of artificial reefs in the ocean and estuarine waters, beginning at Oregon Inlet and extending to the beaches of Brunswick County. The main office is located in Morehead City, where the artificial reef program is based. The Division of Marine Fisheries receives funding from state receipts and the Wallop-Breaux or sportfish restoration fund. North Carolina has one of the more aggressive programs with 38 ocean sites ranging from 1 1/2 to 38 miles offshore. Reef sites are located outside of every navigable inlet in the state.

We try to provide access for all different types of users. We have seven estuarine sites, which have not received much construction in years past because we didn't know what the processes were on these sites that related to reef fish. There was a different type of fishery there. But we will be building two experimental artificial reefs this year, if funding allows, on a site behind Frisco and another in the Neuse River near Oriental.

Artificial reefs are built and implemented with state funds and private donations. However, once in place, they can be used by anyone who fishes. There are no special gear restrictions. I would like to emphasize that fishing clubs and civic organizations provide a lot of support to the artificial reef program.

We build artificial reefs off North Carolina because the majority of nearshore coastal waters are distinguished by vast expanses of sand. They have very limited carrying capacity for recreationally and commercially important fish such as sea bass and groupers. Some king and Spanish mackerel will frequent these areas, but they are usually transitory, following schools of bait. There is a lot of live bottom off the coast of North Carolina, concentrated near the Wilmington/Carolina Beach area as well as Cape Lookout. The live bottom is extremely productive, even though much of it is only a foot or two tall. It provides shelter and a great deal of food for the fish that live there.

Early builders of live bottom used tires, which seemed like a good idea at the time. There were a lot of them, and they were difficult to dispose of. But tires were abandoned for live bottom construction in the 1980s because they tended to wash back onshore. We have been picking them

up in Brunswick County since the March storm. The last tally indicated around 8,000 tires were retrieved from the beach, and we trawled for another 4,500. So tires are no longer used, not even in a ballasted form with concrete, because eventually the concrete will wear away and leave the tire. Today, we use traditional materials such as vessels. Many come to us fairly plain, so we try to dress them up.

We have successfully installed 210 train cars on 21 reef sites that provided four years of fishing. But the sea has pretty much torn them apart. In retrospect, it seems that spreading the trains between two or three sites would have increased their effectiveness. However, even with the benefit of the best placement, artificial reefs will deteriorate.

In our search for suitable artificial reef material, we have also made use of old bridges. Recently, we have completed a project off the New River using the old Sneads Ferry bridge on Highway 172. We have deployed a lot of concrete pipe. Commonly, we use large pipe (5 feet in diameter). In the past five years we have installed about 10,000 such pieces, usually at least two barge-loads at a time crowded into a 125-square-yard area. We also deploy some out-of-the-ordinary materials, such as military aircraft. We do not do this often, but if the opportunity arises and the material is clean and stable, we make exceptions. We have experimented with some fiberglass and plastic prefabricated dome units. These units are about 8 feet wide, 5 feet high and are encircled by a large concrete ring. The domes are quite successful in attracting marine growth.

Once the vessels are underwater, they provide a great deal of habitat. Six months after the *Indra* was sunk off of Pine Knoll Shores, it had become colonized by brown algae and barnacles that attracted fish. Different fish are attracted to different areas. The spadefish and the cubyue are often found beneath underhangs. Bait fish, such as cigar minnows, school around a lot of the artificial reefs, which makes them popular with king and Spanish mackerel fishermen. Reef fish tend to associate tightly with a structure.

The *Indra* was a one-time World War II LST turned landing craft repair ship. For its installation, we didn't remove much of its superstructure. The vessel was sunk in 62 feet of water about eight miles offshore in an area equidistant from the Bogue and Beaufort inlets. We sunk it with the help of the Cherry Point Marine Corps Air Station explosives ordinance disposal team, the organization we turn to when a sinking may be complex. When undertaking such an operation, it is important to use the appropriate amount of explosives. After all, it doesn't make much sense to spend \$80,000 or \$90,000 preparing a vessel only to split it in two with an inordinate amount of explosives. We want the explosion to be controlled. Sometimes during the process, however, a vessel will roll. We try to avoid that.

We have realized some very positive results from our projects with concrete pipe. Furthermore, use of the material in the future seems to be a viable alternative. Although not a replacement for live bottom, it does provide a great deal of hard substrate for the colonization of marine organisms, which in turn draw the fish. Particularly attracted to the pipes are bottom fish. Many fishermen are unaware of the abundance of these fish near pipe. A lot of people, for instance, busy themselves dragging for king mackerel while there are 15-pound grouper right beneath them.

Our artificial reefs are monitored by biologist Kurtis Gregg, who conducted aerial surveys to get an idea of how many people use the artificial reefs. Gregg counted the boats around every reef twice daily, three times a month, during the fall, spring and summer for two years. If you fish in king mackerel tournaments, you can help us by responding to the questions about artificial reefs. Gregg conducts other studies as well. He monitors reef stability, percentage of growth and subsidence to ensure that the material is not collapsing or sinking into the bottom.

A major part of the project, and the one that is probably the most frustrating, is the duty of maintaining buoys on the reefs. Buoys are deployed from two division-owned landing craft, the *Rose Bay* and the *Long Bay*, with heavy-duty shackles and chains. These boats are quite effective because their bow ramps can be dropped for loading cranes, trucks and bulldozers. The buoys are released with about twice as much chain as there is ocean depth.

In closing, I want to comment about the conflicts between fishermen as they relate to our work. One major reef-specific conflict occurs between divers and fishermen. I've seen some cooperation when I've told the dive boat operators, "You know, we are fishing over here. As soon as you are out of the way, let us know so we can go back to fishing." We have taken steps to mitigate user conflict by spreading our reefs apart, so that a fisherman has other options if a diving vessel is on one side of a reef.

Audience: I believe you examined three railroad car reef sites outside of Hatteras Inlet that are unlocatable on a depth finder. Are there any plans for these sites?

Murphey: Yes. We get some material from Texasgulf that we've been using at Ocracoke. We've considered using some material for the Hatteras 225 site, where we have three vessels. One of the sites off Hatteras has a pretty significant chunk of live bottom on it, and by our permit, we cannot build on any such area. Many of these permits were issued years ago, before we could adequately investigate the bottom substrate. So ultimately, we may attempt to pull the permit and build on the remaining reefs.

Audience: You mentioned that you plan to put a reef behind Frisco. Is that the same site as the old reef?

Murphey: Yes, that will be on the old reef site because it is probably the most successful estuarine site we have. We receive more comments about it and lose more buoys off it than any other. We are going to place five bargeloads of 6- to 8-inch marl on the site. We found that oyster culture planting sites throughout the Pamlico Sound are often the most successful fishing areas. Unfortunately for fishing, when the material is repeatedly dredged up, it needs to be replenished. So we are going to put some large material down at the Oriental site as well the Frisco site.

Audience: What is your department's budget for sinking ships and so forth per period?

Murphey: We have a line item in our budget that allows us to spend about \$150,000 a year for reconstruction on the projects, which includes vessel operations.

Audience: Do you foresee the use of fish aggregating devices (FADs) in the future?

Murphey: We worked with Carteret County Sport Fishing one year on some deepwater FADs 38 miles offshore. We placed about 500, but they are very short-lived. At the time, we discovered there are some problems with FADs — they need a lot of flotation to stay afloat for a long time. And the more flotation that's used, the more anchoring is needed. Before long, they become unmanageable. The swift current in our area would only make them more difficult to manage. This longevity problem, coupled with the lack of funding, makes FADs unlikely in the near future.

Audience: Is a permit required to place a FAD?

Murphey: Yes. To legally put anything in the water, you need a construction permit from the U.S. Army Corps of Engineers. Because the division has a general permit with the corps, if you asked the corps to put out a reef, it would in turn ask the division. And the division oversees all reef construction.

Audience: If I wanted to pay you with my own money to install a FAD someplace, could I get a permit?

Murphey: No. You would have to get a permit through the Army Corps of Engineers and demonstrate that you could pay restitution if someone ran over the FAD and damaged his or her equipment.

Organizing More Effectively

Dick Brame is executive director of the Atlantic Coast Conservation Association.

Fishery management in North America is a mess.

Through the Magnuson Act, the federal government has the authority to manage fish in the ocean from three to 200 miles out. The Mid-Atlantic Fishery Management Council makes all fishery management decisions for Virginia, Maryland, Delaware, New York and New Jersey. Above that is the New England Fishery Management Council. The South Atlantic Fishery Management Council makes decisions for North Carolina, South Carolina, Georgia and Florida.

These are councils with three members from every state — the director of the state fisheries agency and two at-large members. Now, the Southern and mid-Atlantic fisheries actually separate in North Carolina at Cape Hatteras, but the state does not have representation on the Mid-Atlantic Council. Legislation has recently been introduced to give North Carolina three seats on the Mid-Atlantic Council. As it stand now, however, the fishery is managed as though the fish don't cross that line.

The Division of Marine Fisheries and the Marine Fisheries Commission manage coastal waters out to three miles. The N.C. Wildlife Resources Commission manages inland fisheries, striped bass fishing and gill netting for speckled trout. Almost every county allows some kind of netting in inland waters through special regulations. Most of it is for shad, herring or catfish.

A new bill was recently passed that promises to be among the most revolutionary legislation we'll see in our lifetime. It declares that the Atlantic States Marine Fisheries Commission will manage migratory fish from New York to Florida, over 15 state lines. The National Marine Fisheries Service (NMFS) currently has authority in state waters under the Endangered Species Act and the Marine Mammal Protection Act. Consequently, NMFS can require a state to mandate turtle excluder devices in its inside waters through the Endangered Species Act or to protect manatees under the Marine Mammal Protection Act. But generally, federal jurisdiction starts three miles out. The states have jurisdiction from shore to three miles, except that now there is an interstate compact for managing the fishery. The U.S. Fish and Wildlife Service can have moratorium authority over the entire striped bass fishery.

Federal management is dispersed among the Department of Commerce, Department of Agriculture and the Department of the Interior. In North Carolina, the duty is shared by the Department of the Environment, Health and

Natural Resources through the Division of Marine Fisheries and the North Carolina Wildlife Resources Commission. Primary nursery responsibilities are designated to the Division of Environmental Management.

This is a mess. And, if you believe for one minute that you can be heard as an individual citizen, you are mistaken.

The first question to ask is whom do you go to? Who has authority? That is the problem. And that's why you have to be effectively organized in this and any other state.

North Carolina anglers were not much involved in the regulatory scene until recent years. Because there was a mishmash of saltwater fishing clubs around the state, they would occasionally get fired up about some issue. It was eight years ago with menhaden around Morehead. They went to the Legislature to try to get menhaden fishing stopped in state waters. But the issue sort of died down when Joe Whitley, who runs the menhaden plant, said he would not fish around king mackerel tournaments.

In the wake of this campaign, the anglers formed a saltwater fishing club, which lasted about a year. They subsequently joined the Coastal Conservation Association as a new charter and hired me. My job is to organize anglers.

But exactly how is that done? First, you have to speak with one voice. A bunch of different people can say it, but speak with one voice so that someone in the wilderness will hear you. But it's like Winston Churchill once said, the democratic process is the worst form of government there is; you just can't think of a better one. It is, after all, difficult to arrive at one voice because the issues involve people's passions, recreation, what they love. They often don't speak with reason but they care a whole lot about it.

To speak in one voice, there must be organization. There are a wide variety of organizations in North Carolina. The Atlantic Coast Conservation Association (ACCA) and N.C. Wildlife Federation both have dealt with striped bass, the saltwater license and other marine fisheries issues. Inland, there is Trout Unlimited. Nationally, there is the Center for Marine Conservation, the Sport Fishing Institute, the United Sport Fisherman's Association. These organizations are all worthy of your involvement.

Once you have an organization and a single voice, you need to decide what to say. This can be the biggest challenge. After all, if you wanted me to organize a chapter to save loblolly pines, I could do it. If you wanted me to convince them to speak with one voice, I could do that as well. But the most difficult part would be knowing what to say.

What you say is the hardest thing to come up with, especially in this mishmash when you are trying to plan ahead three to five years. Meanwhile, the Marine Fisheries Commission is having an emergency meeting on striped bass. The South Atlantic Fishery Management Council is

holding hearings on tuna and shark fishing. The Legislature is trying to do something with the fisheries. In Washington, D.C., Congress is trying to pass the Magnuson Act, and you are literally running around trying to put out fires all the time. So you have to figure out what you want to say.

Next, you need to decide whom you're going to say it to. This is the fourth decision to make. For each body of water in this state, there are at least two different agencies that manage it. Sometimes one is state and one is federal, sometimes both are federal under different departments or divisions. So determining the agency that can help you may be more complicated than you think.

From here, you need to devise a strategy so that people hear you. For example, the Marine Fisheries Commission recently held public hearings that revealed some very good data that the crab trawl fishery catches a lot of small flounder. This is the trawl that drags across the bottom. The agency has information that a 4 1/2-inch mesh tailbag would help the fishery and reduce the catch of illegal crabs and flounder under 10 or 11 inches. The crabbers, however, said it would put them out of business. So they would show up with these nets and demonstrate them with a sleight of hand to say they would lose every crab. Well, we have data to show they do catch crabs. The nets don't actually operate that way. But the commission heard those crabbers loud and clear. They were very effective in having the commission hear what they had to say. But it was a gimmick.

The best way to get your point across is to be factual and repeat your point. For example, the ACCA for three years has called for a moratorium on the sale of striped bass from Albemarle Sound. The population is in trouble, although a couple of year classes are doing OK. We need to protect them so that we will have a fish population that is fairly evenly distributed. That way, there is still a spawning stock if several years pass without spawning. If only one or two age classes are in the water, any sort of natural catastrophe can wipe them out.

So a moratorium means you can't catch them, and to do that, you have to remove the gear that catches them.

Now, in recent weeks, the Marine Fisheries Commission is saying that gill nets are the problem. If you put them out for catfish or perch, they catch striped bass. That's what we've been saying for over three years. So you have to say something over and over for someone to hear you. It takes persistence to effectively organize. The key is not to expect too much too soon. You are not going to revolutionize fishery management in the state overnight. You won't do it in the next five years, primarily because the system is driven by profits and crises. People make a living on the sale of fish, and if they don't catch them, they don't make a house payment. That's what drives the equation.

So with well-reasoned, outspoken persistence, change can be made. You'll never get all the change you want, but an organized strategy will get the best results.

Audience: What will most effectively get results, repeating your message or personal contact?

Brame: Personal contact is best. The problem is that we are dealing with commissions that are not elected, and consequently, are not as responsive as legislators. I could bring a petition with 10,000 signatures on it and the commission could care less. The commissioners would probably look at it, and perhaps make reference to it in a public hearing, but ultimately it wouldn't sway them. Personal letters might be better. Politics in fishery management is one of the biggest problems we have in this country. One of the things going on in the striped bass controversy is extremely significant. Bill Hogarth, in a proclamation, limited the gill netters in Albemarle Sound to 2,000 yards of net per operation and prohibited them from fishing on Saturday and Sunday. These fishermen are absolutely apoplectic over that. So they've done what commercial fishermen have always done. They asked their legislators to persuade Hogarth to change his mind. In the past, these tactics have worked. But now we have a new governor and a new commission chairman. And this chairman, Bob Lucas, has told the governor that the commission and the agency will handle these problems internally. Lucas has informed the governor that as chairman, all decisions must go through him, and if he is overridden, he is gone. Furthermore, the governor has wisely decided to stay out of the striped bass controversy.

I have always been disappointed by our inability to attract more legislators to these meetings. If we had more commercial fishermen here, perhaps we'd have more legislators. I think we are slowly learning to play that part of the game. We do not have a great deal of clout yet, but I think that status is slowly changing. Becoming part of the appointment process to the Marine Fisheries Commission is also important if you are to going to be effective. One of the most significant things the Atlantic Coast Conservation Association has done, in my opinion, was become involved in the process that appoints people to that commission.

Audience: My home is in Davidson County. Can you offer some advice on how to deal with my legislator?

Brame: As anglers, the best way to deal with your legislator is talking to him. Just go visit and offer your opinions. Tell him fishing is not as good as it once was. Tell him what you think needs to be done. He will apply pressure in his own way. And this is a lesson we can all learn. After all,

the two agencies that manage fish are empowered by the state Legislature. You can believe that commercial fishermen talk to their legislators everyday. So you should too.

Audience: Do they play the same game? Do they speak with one voice?

Brame: No. They have an organization, but as you saw in Jeff Johnson's presentation, it is fractionalized. They have realized success because they have kept close ties with legislators. If they didn't like a commission policy, they got the commission to back off because legislators would threaten to cut funding. What's more, legislators tend to listen to people who earn their livelihoods fishing before people who do it for pleasure.

Audience: The problem is that commercial fishermen need to realize they're depleting the resource. I know they are because three years ago you could catch more fish in less time than you can today. That alone tells me there are not as many fish out there. The commercial fishermen have to realize they are cutting their own throats because in time there will be nothing left to fish.

Brame: That is right.

Audience: What industry gets all of its raw material for nothing? When the oil companies want to build rigs, they pay for it. When you want to start up a lumber company and saw some oak, you pay for the logs. What do the commercial fishermen pay for? They pay for nothing.

Brame: The fishery, to my knowledge, is the only common property natural resource with no extraction fee.

Audience: But I have as much right to it as this man does.

Brame: That is right. Four years ago, Jerry Stubbs, chairman of the House Merchant Marine Fisheries Committee, introduced a bill that was essentially a commercial Wallop-Breaux bill. It was an excise tax on diesel fuel for commercial vessels to pay for research and enhancement. Of course, it never got anywhere. So you are correct. Unlike the mineral, timber, oil and gas industries, there is no extraction fee for fish.

Audience: The March issue of *The Saltwater Sportsman* lists survey results in which 75 percent of respondents said they ought to be paying for the resource but they are not.

Brame: We pay a 10 percent excise tax for saltwater

equipment that the state receives returns on, based on the number of anglers and its amount of water.

Audience: They do pay for a commercial fishing license and a gear license.

Brame: There is a nominal fee for a commercial license. There is no gear license.

Audience: How much of the Wallop-Breaux money is apportioned to the state? How much of it goes to fresh water?

Brame: Most of it. About \$2.2 million or \$3 million goes to fresh water and about \$700,000, down from about \$1.2 million, goes to salt water.

Audience: Because they don't know how many saltwater anglers there are.

Brame: That is right. Every five years, the U.S. Fish and Wildlife Service surveys recreational hunting and fishing. From that, it determines the number of anglers. In 1990, the service changed the way it surveyed, resulting in a 25 percent decrease in saltwater angler effort, days and time. So that is where we lost \$250,000 in Wallop-Breaux money.

Audience: A saltwater license, then, should provide a good count and eventually a bigger share of the Wallop-Breaux money.

Brame: That is right. Right now, the Marine Fisheries Commission estimates about 1.2 million people have fished at least once in the state's marine fisheries waters. Half of them are from out of state. The Wallop-Breaux is only apportioned according to the number of in-state anglers. And North Carolina doesn't have a count.

Sampling Recreational Fisheries

Paul Phalen is statistics coordinator for the Division of Marine Fisheries.

My discussion will perhaps explain how the Division of Marine Fisheries arrived at the recreational statistics that Bill Hogarth used earlier. We have collected long-term information on catch, effort and biological data through the Marine Recreational Fishing Statistics Survey (MRFSS). Before I get started, however, I want to give credit where credit is due. The project's primary funding source is the sportfish restoration money that Congressman Martin Lancaster mentioned. This money was matched with state

funds. Additional moneys were provided by the National Marine Fisheries Service (NMFS), which has conducted regional surveys since 1979. In 1987, North Carolina took over the program in order to make estimates on a state, rather than regional, basis. This was primarily accomplished by increasing the sample size.

Why did we join the MRFSS instead of starting our own survey? First, we wanted to avoid duplication. We didn't want to conduct the same survey as NMFS. We also wanted to take advantage of the fact that the program in North Carolina was already being paid for by NMFS. We were able to use its tested procedures instead of coming up with our own designs.

The inherited design is broken into different regions, but the data are collected using the same methodology throughout the Atlantic coast. Consequently, we can separately examine a state estimate, a South Atlantic estimate and a mid-Atlantic estimate, or we can simply combine them into one data base. Such a data base is of particular use to us because our fish migrate up and down the coast.

To estimate catch, we need to collect two statistics: catch and effort. We collect the catch data by interviewing fishermen at the access sites. To do this, we have a fairly structured sampling scheme in place. We have developed a site register of all the fishing access points in the state. We then weigh these according to month, whether they are weekday or weekend, and the type of fishery. We split these statistics into the beach bank mode, the pier fisheries, the private rental boat fisheries and the charter boat fisheries. From the interviews, we are looking for specific information. We want to discern the angler's state and county of origin. We want to learn about the trip, where it took place, the fishing mode, area fished, body of water fished. We are also looking at the catch information: species caught, catches released and the number actually harvested. We then take the biological or observed data, such as length and weight. Basically, with these intercept data, we arrive at catch per trip by dividing the catch of the species by the number of anglers interviewed.

In the past eight years, we have markedly augmented North Carolina surveying efforts. At the time we stepped in, NMFS had been surveying about 1,400 fishermen per year. We have increased that figure fivefold, now interviewing between 13,000 and 15,000 fishermen per year. This increase is not the result of increased staff, but rather increased efficiency. We know where the sites are and we have better trained samplers.

The distribution of interviews is as follows: 20 percent charter boats and 27 percent beach bank. When conducting this survey, we determine the catch per effort. We are not, however, determining the effort itself. We use a telephone

survey to find this figure. Because there is no sampling frame, we are compelled to make random calls within a defined geographic area. We ask contacts if they participate in marine recreational fishing and inquire as to the number of anglers in their household. We ask them how many fishing trips they've made and the nature of the location they visited: whether it was on a pier, beach bank or charter boat. In addition, we ask the state, county and date of the fishing trip. From these numbers, we calculate the mean number of trips per dialing area and multiply that by census data to arrive at the total number of trips per area. The survey's weak point is that it does not pinpoint fishermen directly. Rather, we must randomly call numbers, and only about 10 percent of the coastal population actually fishes within a given 12-month period. So out of 24,000 calls, we glean about 2,400 samples.

Then, we multiply the estimated number of trips by the catch per trip to arrive at an estimated number of fish. And we also get expanded numbers of fishermen, trips, and number and weight of finfish species caught, which can be broken down into many of the subunits sampled: state, two-month periods, fishing modes and areas fished.

The following is a summary of the survey results. Anglers fishing in North Carolina by residence have been averaging a little over 1 million. The trips per year and by fishing mode have been averaging as follows: 41.8 percent are beach bank trips, 1.1 percent are charter and 25 percent are pier trips. There are over 4 million trips per year using these modes.

The other figure we are concerned with is catch. This figure comprises the major species, pounds and number of fish caught. A particular catch's population standard error (PSE) tells how good the estimate is. A low number, such as five, is extremely good in this type of survey. We are also concerned with total harvest. Other than harvest, because we get the disposition of the catch, we can look at the total catch and break it down into harvest, release and season in two-month periods. Season for bluefish is usually conducted in September and October. Summaries can also be conducted by mode. For example, 25.9 percent of king mackerel is caught by charter boat, 73 percent by private rental boat and a few are caught off the piers.

The following is an example of how we have modified the survey in North Carolina. Several years ago, there was a big debate in the Gulf because incredible numbers of king mackerel were being caught off piers. As it turned out, the shore mode and the pier mode had been combined because the sample size was not large enough. We, in turn, have split the two modes in order to get more accurate sampling.

We also collect biological data. We tabulate the numbers of major species that are measured and weighed, which

we use to make stock assessments and management decisions. When the length/frequency data are examined in light of age data, we can determine age composition. With this information, we can set quotas and make allocations. We are also able to set openings and closings at optimal times. Currently, flounder and king mackerel catch quotas are being monitored.

It would be foolish to say that we get everything. That would be impossible. Among the factors that our survey doesn't consider are tournaments. The biological staff has been sampling those for a number of years, along with an endorsement-to-sell program. Starting this year, all tournaments must register and buy an endorsement so that we can keep track of their total harvest. Rare events species, such as billfish, tend to escape our survey. We don't get enough samples or interviews with fishermen who are catching them. Night fisheries, such as red drum, we sample proportionally with the fishing pressure, but because it is so low, we don't get enough samples. Other means of funding, however, are being sought to address this problem.

Although we currently do not interview private access fishermen, we do learn of their trips through the telephone survey. However, we don't get their catch per effort. We assume this figure is the same as that of the anglers at the boat ramps. Preliminary data indicates the anglers take more trips and may have higher catch rates. Data on head boats is collected by NMFS south of Hatteras and by the Division of Marine Fisheries in Dare County.

Audience: You take your catch surveys at the docks and interviews on the beach. Why don't you do your trip surveys at the same time?

Phalen: It's necessary to get an overall random distribution of your trips. There are different kinds of creel surveys. One is a roving creel and the other is access, but you wouldn't be able to maximize your effort in sampling the fishermen. You would have to be at sites where very few fishermen are for a certain amount of time to get your estimates on trips. Catch per effort is critical. To get that estimate, you have to go when you can get interviews. This is known as probability sampling. We go to the high-use areas and sample there, so we increase the probability of intercepting fishermen. If you are doing a creel survey and determining effort at the same time, you would have to visit low-use sites and wait for a certain amount of time, then go to high-use sites and wait for a certain amount of time.

Audience: It appeared to me from some of Bill Hogarth's data that the 1988 estimates of recreational catch were particularly high. Your data indicates that you had 17,000

phone calls that year, but you didn't demonstrate what portion of the calls were positive or negative. Does this have something to do with the fact that the catch was so high?

Phalen: The year 1988 was better than most, but there were some changes in the telephone survey methodology that may have affected the total effort.

Audience: Was 1988 the year that the National Marine Fisheries Service put a whole bunch of extra money into telephone calls for a brief period of time?

Phalen: I believe they basically went to monthly sampling for a period of time, and there are a lot of different things that could have happened. Those could be recall bias, asking a fisherman how many times he goes fishing for a two-month period, opposed to a one-month period. This method could have had some effect on the 1988 data.

Audience: If you change your methodology, you ought to think about restating your numbers to make it more representative of the work you are doing now.

Phalen: No one can definitively say that is what caused the peak.

Audience: Have you thought of turning this process around, given that some fishermen are prone to exaggerating or bragging? Instead, perhaps you could have a 1-800 number that people could call to report their data.

Phalen: That is possible, but it can be just as biased if not more. The same guy could call in again and again to brag.

Audience: He might have a bad day and call to tell you about that too.

Phalen: Fifty percent of fishermen don't catch anything, so they won't ever call.

An Update on the N.C. Recreational Saltwater Fishing License

Michael Orbach is a Duke University professor and member of the N.C. Marine Fisheries Commission.

I want to give a short history of the saltwater sport-fishing license issue, then talk about our plan for action and get some of your thoughts. As many of you know, saltwater sportfishing licenses have not been evenly distributed among states. That is, the West Coast states where I

grew up have had them for generations. Ever since I was a small boy in California, we've had to have one. I believe this is the case for all West Coast states.

For a long time, this was not the case with Gulf and East Coast states. However, the dominoes started to fall about 10 or 15 years ago, and now North Carolina is one of the few states that does not have a saltwater sportfishing license. We do have — and have had for some years — a freshwater license and a hunting license, administered by the Wildlife Resources Commission.

Does the fact that other states have a license mean that we should? No. The arguments in favor of a saltwater sportfishing license have been stated by various speakers, among them Paul Phalen and Congressman Martin Lancaster, who suggested that better documentation might lead to more support from the federal government as well as cost-sharing programs from marine conservation programs.

In his presentation, Jeff Johnson described the points in common among commercial and recreational fisherman. From his talk, you should have come away with at least one realization — we are all in this together. That is, everyone who harvests marine fisheries should participate in its conservation. This is a principle the Marine Fisheries Commission is very sympathetic to, although we have no formal proposal for this. As Representative David Redwine noted, the attempts in North Carolina to mandate such a requirement have not met with much favor. But since the early '80s, support for such a measure has been steadily increasing. About four years ago, the Marine Fisheries Commission instigated a review of the state's entire licensing structure, both commercial and recreational. This led to a draft license and package that had commercial gear licenses and a license to sell similar to what was passed last year.

That license had endorsement. It had provisions for limited access, a saltwater fishing license and options for income dependence for the license to sell. It was very ambitious, but we took it around the state in 12 different public hearings. We met with four regional advisory committees seated by commercial and recreational fishermen. As a result, the commercial and recreational sectors of the advisory committees were generally supportive of the concept of commercial gear and saltwater sportfishing licenses. The common thread then and now was that revenues generated by the licenses must be dedicated to the uses and the benefits of the people who made the contributions. When I spoke with Senator Marc Basnight about this last month, I made the point again that there isn't going to be much support without a dedicated fund.

In our meetings four years ago on the total package concept, there was general support from both the commercial and recreational fronts. The saltwater sportfishing li-

cense in particular was supported by major organized groups, such as the Atlantic Coast Conservation Association (ACCA), and others, including the Raleigh Salt Water Sportfishing Club. The major resistance then — and it remains today — came from coastal communities, primarily from the leisure and tourism sectors. These communities were afraid that any kind of license in North Carolina would discourage visitors. To determine if such fears were valid, we commissioned a study. Because there was not much reliable scientific data on the socioeconomic impacts of instituting new licenses, East Carolina University surveyed peoples' perceptions and impressions and any other relevant data in states that had recently adopted licenses. These researchers found that licensing did not have discernible impacts on coastal communities.

In examining the license policies of other states, it became clear that we had a great deal to consider. For example, Florida had passed a license requirement that exempted shore fishermen in order to allay the fears of the hotel industry. Consequently, the recreational license in Florida applies only to people who are fishing from a boat. But the problem is this exemption cuts out a significant amount of data on who is actually fishing and it clearly violates the principle of participation by everyone who is fishing. Anybody who attended last year's recreational fishing forum certainly heard people from other states emphasize the need for inclusive design.

The political aspect must be considered as well. There must be support among the various constituencies, including people who don't fish at all in North Carolina. I was made emphatically aware of this need when I spoke several years ago to the General Assembly. Many members, coastal and noncoastal, said, "Mike, I support this but I have to hear it from my people, meaning not just my fishermen but those I represent in my district." Consequently, there will have to be a constituency movement and a technical movement to consider this issue.

Commission Chairman Bob Lucas has asked me to chair a committee of the Marine Fisheries Commission on the saltwater sportfishing license. We are in a difficult position because even though people inside and outside the commission support this exercise, there are others particularly in the coastal communities who are just as strongly opposed. In the face of this standoff, we have decided on two initiatives. One will be within the commission — a committee seated by commission members and chaired by me. Committee members are Ed Cross, a commercial representative and a big-time recreational fisherman in his own right; newly appointed commissioner Kay Crocker, a recreational representative from the Wilmington area; Don Diltney, also a recreational representative; and Dirk

Frankenburg, a scientific appointment. As a companion to this committee, we have established an advisory committee that will work with it on a daily basis. We have already placed many individuals on this committee, which will represent organized sportfishing groups such as the ACCA and the Raleigh Salt Water Sportfishing Club. There will also be a representative of the Joint Legislative Study Commission on Seafood and Aquaculture. After all, if anything is going to happen, it will have to be done legislatively. There will be representatives from the leisure/tourism sectors of coastal communities as well as from pier and charter boat associations. There will also be what I have termed a subsistence fishery representative. That is, someone who represents the interests of low-income groups or those who actually fish to live rather than for sport or money. This group will work on a daily basis with the internal commission group, smoothing the mechanics of this exercise.

The first meeting is scheduled for mid-March, when we will set out our initial study and weigh the options available to us. This group will then report to the North Carolina Legislature in the short session in May. Subsequently, we will begin a series of public meetings throughout the state, which will be sponsored by the committee and the advisory group in concert with the legislative study commission. These meetings will take place on the coast and inland, and they should lay out our options and gather input from all around the state. The hearings will then occur during the summer and early fall, when the committee will return to the Marine Fisheries Commission and the legislative study commission. If appropriate, the committee will formally propose the general structure of a bill that would be considered in the General Assembly's 1995 session. That's the timing you need for a controversial bill to be objectively considered in the Legislature. It has to be ready by midfall. This is our intention.

Along with that exercise, we will be constructing a group to organize constituent input into the political process and work with the commission's working group. It could take several forms, but the point is that it would not be a group of the commission. We might call it the committee on the saltwater sportfishing license. At any rate, it would be an outside group of constituents who support any proposed bill in the General Assembly next year.

Some members of the Department of Environment, Health and Natural Resources have indicated that they would be interested in providing support services to such a group, but again, we must remember that the commission group will be the nuts and bolts of the operation. The constituent group will only have the duty of gathering support for any legislatively developed bill.

Some representatives have expressed interest in acting

in this year's General Assembly short session. My feeling, which is shared by many others, is that we should allow ourselves more than a few months for a fairly complicated and controversial issue. Furthermore, there are only certain kinds of bills and actions that can be considered in May. Our preference, therefore, is to take a little more time to consider this issue thoroughly. So we will probably argue against creating any major action in the short session of the General Assembly this year. Rather, we will aim for a bill in the 1995 session. Again, as chair of the commission's committee, I will try to maintain the framework that we are now looking at. Whatever form the bill should take, I am pledged to weighing all the options and soliciting all the input possible, with the intent of going back to the legislative study commission in the fall with a formal proposal. That is, of course, if the people want us to do this. For those who already want to start working toward this, the constituent support group should provide the means.

Audience: Recreational fishing gets money now from a lot of different sources, including taxes. If we have a recreational fishing license, will that money then be directed only toward recreational fishing? What happens to the other money? Will it dry up?

Orbach: There are two issues here. First, where does the money come from? Second, where does the money go? That is, are there recreational fishery uses for the money that is separate from other fishery management uses? Currently, money is directed through the General Assembly to the secretary of the Department of Environment, Health and Natural Resources for artificial reef programs and other recreational fishing uses, such as the recreational fishing survey. There are also various federal funds — Wallop-Breaux moneys that Congressman Martin Lancaster mentioned — that come to the state from taxes on sales of merchandise such as fishing tackle. It is important to replace these sources. What we don't want to do is acquire money that is appropriated to a special fund. At present, because there are so few general appropriations to recreational fishing in the state, we are placing less emphasis on replacement function. That is not to say that these revenues aren't going to be significant — they are. If the license is issued at \$15 a year (the typical amount that other states charge), and 600,000 recreational fishermen in North Carolina buy the license, the \$8 million fisheries budget will realize a substantial increase.

This is where constituent input is important. As a technical person, I have little idea of how to advise the Legislature on what North Carolinians want to do with their money. Rather, a constituent group will have to demand

that other budgets are not reduced as a result of the new money. There is no way to guarantee that, however, because the Legislature does what it wants from one session to the next. But the more constituents tell legislators what they want done with the money, the less likely they are to reduce other budgets.

But what constitutes spending for recreational fishing? This question may be a bit more complex than it seems. Would, for example, the hiring of additional enforcement officers be construed as money spent on recreational fishing? It is if recreational regulations are being enforced. Some might say it is if you're enforcing a commercial regulation that would make more fish available for the recreational fishery. Is research on recreational fish species a dedicated use of recreational money? It is if it's directed toward a species of interest. Research in recreational fisheries or reef access is most clearly in this category.

Should we get this money, we would need to ensure that the constituents are able to keep track of where it is spent. One notion advanced by Bo Nowell is to create an advisory oversight committee that would investigate these questions each year and report back to the commission and the Legislature on how the money was appropriated.

Audience: What are the benefits and drawbacks of other states' saltwater fishing licenses, and could you use that information to speed up your decision process?

Orbach: As I see it now, states are encountering two general problems. First, they aren't dedicating their funds. Some states have had programs for years that dedicate the revenues directly to their general treasury. The other problem many are encountering is the result of an improperly designed program. The Florida license, for instance, does not generate the needed information. As hard as supporters tried to make provisions for the license to gather all the relevant information, they failed and essentially ended up passing half a license. From their failure, however, we in North Carolina realize that it will be critical to work intimately with the leisure and tourism interests. I have not found any general drawbacks to the license, that is, if you accept the principle that people who participate in the harvest should contribute to its conservation.

Audience: What about, for example, the saltwater stamp in South Carolina that requires its residents to buy an out-of-state fishing license as well as a \$5 stamp?

Orbach: Those are precisely the types of programs we will have to consider. For example, some people in North Carolina have already purchased lifetime wildlife licenses,

and we will have to determine how those will relate to a marine license. The notion of a stamp on the existing license has been advanced. Many states have a uniform license and various stamps that can be affixed for ducks, marine fishing, freshwater fishing or elks. It is a complicated issue in North Carolina, however, because the Wildlife Resources Commission is structurally very different than the Marine Fisheries Commission. That is, it was originally set up as an independent enterprise. Wildlife Resources hires its own executive director, while the Marine Fisheries Commission does not. So the issue of how to marry them will be significant. Stamps are one option, as opposed to a completely separate license.

There are other factors involved, such as how Wallop-Breaux moneys are distributed within the state. Because of the complicated nature of the issue, I have been cautioning the go-fast people to take time to weigh all the options. This involves working with groups both internal and external to the government. But you are right. We will certainly seek the most administratively efficient transition. A one-stop, statewide licensing setup may be the answer.

Audience: Two comments. Last year, they were talking about a fee of \$5 or \$10, hedging on \$15. I would suggest that \$15 isn't going to be a barrier to the saltwater fisherman. When I drive from Greensboro to the coast, I spend more than that on gas. If \$15 is what it takes to ensure that the plan is effective, I am comfortable paying it. I would also like the committee to pursue a possibility for the commercial industry. If we are asking them to be more efficient so there are more fish for recreational fishermen, perhaps some portion of the money could be allocated to support equipment changes. Oftentimes, a voluntary change is phased over many years to reduce the financial burden. As a sportfisherman, I want these folks to change over quickly without penalizing them for bearing all the cost.

Orbach: I think that is a great idea. There is a lot of pressure to license gear with a fee structure in the commercial industry. We might propose a fund matched by those funds and the recreational funds for the gear's principal effect on recreational species, for example.

I am torn on the issue of cost because some people have said \$15 is too much. And I suppose I would tell them what I told people who were opposed to the \$3 aquarium charge. I encouraged them to think about other things they spend \$3 on and compare the value of the aquarium to those items. That's the question we have to encourage everyone to think about.

Audience: A lot of discussion was dedicated to this at last

year's forum. And from what you said today, I gather that there has been no legislation or study on the matter in the last 12 months. Have there been any achievements over the course of the year that we haven't addressed today?

Orbach: No. In fact, there was an attempt to introduce a bill in the last General Assembly. For the most part, it was an ill-constructed bill. It is a precise example, however, of the importance of organization in research and presentation. Quite simply, if we're going to be successful, we need to have our ducks in a line. The failed bill had many of the features that may end up in our future bill, but the groundwork was not laid for any political support.

Now, the commission was not involved last year in part because it has undergone a lot of changes. The new governor, the new chairman, several new appointments and the General Assembly's restructuring of the commission itself all served to mitigate the attention this issue has received. Both the Marine Fisheries Commission and the Department of Environment, Health and Natural Resources have, however, made this a top priority this year.

Audience: Who was responsible for the failed package?

Orbach: There are a combination of factors to blame. Legislators expressed interest in the bill and some legislative staffers worked on it with the help from the Division of Marine Fisheries. Again the problem was that the effort wasn't well-coordinated.

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