

The Image of Coastal Sport Fishing in
Northern New England: The Fishermen's View

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How to Read This Report

This report summarizes the findings from a survey of coastal sport fishermen in New Hampshire and southern Maine. Readers who want a quick overview of the results should consult the Major Findings and Recommendations section (page ii-iii). A slightly expanded version of this text can be found in the Summary and Recommendations section (pages 17-19). The data are summarized in three ways:

- 1) The tables and graphs in the main body of the text compare and contrast charter boat, private boat and bridge/jetty fishermen.
- 2) Responses for the entire sample are presented in Appendix C.
- 3) Appendix D breaks down the responses by fishing destination (New Hampshire or Maine).

Our analyses here are intended to contribute another component to the overall management of coastal sport fishing resources. The information presented must be evaluated in conjunction with creel survey data.

Major Findings and Recommendations

- * This study surveyed 855 saltwater fishermen in New Hampshire and southern Maine during the summer of 1989. The sample included 235 fishermen at bridges and jetties, 160 private boat fishermen and 460 charter boat fishermen.
- * The private boat and bridge/jetty fishermen tended to be residents of New Hampshire or Maine, who live in close proximity to their fishing destination and who have considerable saltwater fishing experience in the region. Charter boat respondents, on the other hand, were more likely to reside outside of New Hampshire or Maine and travel a greater distance from home to saltwater fish. Compared to the other two groups, the charter boat sample have been fishing the region for fewer years.
- * Most respondents were fishing for a particular species on the day they were interviewed. Bluefish was most popular among the charter boat (65%) and private boat (47%) samples, while mackerel was the most sought after species for the bridge and jetty fishermen (41%).
- * The fishermen we surveyed were *not* catching the specific species they desired. Three quarters or more of the charter boat and bridge/jetty fishermen, and over half of the private boat operators had caught none of the species they sought.
- * Private boat fishermen were most successful in terms of the *total* number of fish caught on their trip. This group averaged 4.5 fish for their day's effort, compared to 2.4 for those on charter boats and 0.8 fish for the bridge/jetty fishermen. Nearly half of the charter boat fishermen and over three-quarters of the bridge/jetty respondents reported catching no fish.
- * Consistent with the number of fish caught, charter boat (40%) and private boat (41%) fishermen were more likely to have released fish than the bridge/jetty (12%) fishermen. Desirability and size of species were the most common reasons for releasing fish.
- * Success influenced the fishermen's evaluations of the day's experience, but catch alone is not the only determinant of a quality fishing trip. Individuals who were successful were less likely to rate their trip as *poor*, but were also not indicating *very good* or *excellent*. The majority of these individuals considered the trip to be *fair* or *good*. Most of the fishermen who reported catching no fish rated the experience as *poor*.
- * The majority of all three groups believed that New Hampshire and Maine offer high quality fishing opportunities. Factors which contributed to this positive image were the proximity of the region to their homes and a perception of good water quality.
- * Access to fishing opportunities and reductions in gamefish populations were considered problems by the private boat and bridge/jetty fishermen.
- * Increasing the number of access points or improving existing locations would facilitate access to coastal fishing opportunities, however, these solutions may exceed budgetary constraints. A more feasible alternative is to increase the fishermen's awareness of existing access points through education and promotion.

Major Findings and Recommendations (cont.)

- * The perception of depleting gamefish populations has made fishermen more tolerant of catch limits on their preferred species. Most indicated they would continue to fish in the region without focusing on a particular species if the number of fish caught was restricted. This suggests that catch limits could be imposed to help preserve the integrity of the game population without having a negative economic impact on the region. Promotional efforts would again enhance the acceptance of this policy.
- * Little support was found for a saltwater fishing license. Although charter boat fishermen (24%) were more supportive than either the private boat (16%) or bridge/jetty (14%) respondents, two thirds of the charter fishermen said they would go elsewhere to fish if a saltwater license were required.
- * The strength of the anti-license sentiment appears to be driven by tradition. Saltwater fishermen, unlike their freshwater counterparts, have never had to purchase a license. This suggests that any attempt to institute a license would need to be coupled with a strong justification of the need for the policy.
- * For those who agreed to a license fee, most felt it should be \$10 or less. The average acceptable price was higher among those on charter boats (Mean = \$9.20) than the other two groups (private boat Mean = \$5.61, bridge/jetty Mean = \$5.25).
- * Roughly half of the charter boat and private boat fishermen would support a size limit on bluefish. Two thirds of the individuals surveyed on bridges and jetties rejected the idea. Concern for their personal safety when removing the hook seems to be a major determinant of this mixed reaction. Because these concerns are real, undersized fish that would be returned to the ocean are likely to either still have the hook in their mouths or be near death from the process of removing the hook. Given that education of the fishermen cannot change the nature of bluefish, size restrictions are not likely to be effective.

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Introduction

Recreation and tourism are often noted as the largest industry in the United States. Coastal sport fishing, for example, contributes to the recreational enjoyment of millions of people each year. Adult anglers participated in about 1 billion man-days of fishing during 1985, a 15% increase over 1980 (Dept. of the Interior, 1985). One in four adults fished in 1985 and over a third of the children participated in the activity. Total expenditures on fishing and fishing-related items were \$28.2 billion (\$604/adult angler), up from \$17.3 billion in 1980.

In northern New England as well as other coastal areas, communities derive substantial revenue from their association with the sport. Hotels, service stations, local supply stores and restaurants all benefit (Sport Fishing Institute, 1980; Munda & Hastings, 1987). Individuals who operate charter fishing boats depend heavily on the revenue generated from the activity. Such economic impacts and harvests of recreational fishing are no longer considered inconsequential uses of fisheries resources.

Despite the significance of the industry, sport fishing has traditionally been viewed on a disaggregated basis, rather than as a viable business at an aggregate level. This is especially true in northern New England where commercial fisheries are typically seen as the driving force behind economic development for coastal communities. The lack of attention towards marine sport fishing development in these same communities can result in a decreased participant demand, and the transfer of dollar expenditures to other regions.

Little is currently known about saltwater anglers' perceptions of northern New England. The annual survey conducted by the National Marine Fisheries Service (NMFS) focuses exclusively on estimates of participation (number of days fishing, origin of participants), and catch and effort (type and weight of species caught). Similar information is obtained from the New Hampshire Fish and Game's yearly creel survey (Fawcett, 1988). Neither survey is intended to collect information on the economic and social consequences of the activity on the region, or the fishermen's perceptions of the image of New Hampshire and Maine coastal areas as fishing destinations.

The importance of understanding these issues becomes apparent when viewed in the light of recent regional trends. First, the number of saltwater anglers has been increasing annually over the past five years. With this growth, sport fishermen are becoming organized and are demanding a voice in policy decisions. Second, the dwindling stock of some species is creating the need for fisheries resource protection. In order to protect the resource, sport fishermen may soon face the possibility of licensing and/or harvest and length limits on their preferred game species. Third, the traditional emphasis on commercial fisheries has slowed the evolution of effective sport fishery development (Corell & Dearborn, 1986). This lack of development could result in recreational fishermen and tourists being attracted away from northern New England to other recreation areas.

These issues highlight the need for understanding fishermen's image of a region as a tourist destination and their reactions to restrictions on their recreation behavior. This study focused on the fishermen's image of New Hampshire and southern Maine and their attitudes toward potential management practices. The specific objectives of this research were to:

- 1) Profile the individuals who saltwater fish in New Hampshire and southern Maine on selected characteristics (e.g., length of fishing trip, distance travelled to fishing destination, state of residence, prior experience, species sought and preferred).
- 2) Evaluate the fishermen's current image of New Hampshire and southern Maine as sport fishing destinations.
- 3) Evaluate the impact of management alternatives on the fishermen's perceptions of northern New England as a fishing resource. Included among these management actions and potential consequences were:
 - a) establishing harvest and length limits for selected fish species.
 - b) determining the substitutability of other species of fish, if limits were established for their preferred game fish.
 - c) evaluating how a reduction in the sport fishermen's preferred catch might influence their satisfaction with the sport and their image of New Hampshire and Maine as fishing destinations.
 - d) examining the effects of licensing on the sport fishing industry.

Methods and Procedures

Sampling Procedures

Because coastal sport fishermen are not required to obtain a license, the actual population of fishermen can not be determined precisely. To test this study's objectives, fishermen were interviewed at selected sites in New Hampshire and southern Maine. Site selection procedures paralleled those used by the New Hampshire Fish and Game's and the National Marine Fisheries Service's (NMFS) on-going creel surveys.

Based on a listing of sites provided by these two agencies and observations of fishing patterns at the identified sites, key fishing locations were identified along the New Hampshire and southern Maine coastlines. Public and private launching ramps, parks, charter boat operations, bridges and jetties were included. These sites can be geographically grouped into 8 regions, 4 in New Hampshire and 4 in southern Maine (See Table 1).

On-site interviews were conducted during the 14 week period in June, July and August; the heaviest use periods indicated by the NMFS data and the states' creel surveys. To insure equal representation in New Hampshire and southern Maine across the three month period, sampling occurred in each state on alternate weeks. For example, during the first half of June one week was spent in New Hampshire and one week in Maine. Similar rotations occurred throughout the summer resulting in 7 interview weeks per state.

Interview regions within a given state were also rotated on a systematic basis. For example, the first two regions in New Hampshire were sampled during the week of June 1 to 4, and the second two regions during the week of June 12 to 18. This procedure insured that sites contained within each region were sampled during each month.

Two interviewers were used to achieve this sampling strategy. Each interviewer was randomly assigned to regions and states and rotated in a Latin square design. Specific sites and interview times within a given region were randomly selected. Fishermen were interviewed on both weekdays and weekend days. Each interviewer was in the field for 3 days per week during each of the 14 weeks. This resulted in 42 days of interviewing per each interviewer or a total of 84 days of interviewing.

Table 1. New Hampshire and Maine Interview Sites and Dates *

	1 - 4	5 - 11	June 12 - 18	19 - 25	26 - 2	3 - 9	July 10 - 16	17 - 23	24 - 30	31 - 6	7 - 13	August 14 - 20	21 - 27	28 - 3
New Hampshire														
Seabrook Region Eastman's Fishing Parties **	A	B							A				B	
Hampton Region Hampton State Park Jetty Hampton Boat Launch Garon's Deep Sea Fishing ** Smith and Gilmore Fishing Pier **	B			A					B				A	
Rye Region Rye Harbor Boat Launch Rye Harbor Jetty Atlantic Fishing Fleet **			A					B			A			
Portsmouth Region New Castle Bridges Pierce Island Launching Ramp Portsmouth Newcastle Bridge Dever Point			B					A			B			
Maine														
Saco Camp Ellis Biddeford	A													B
Kennebunkport														A
York Cape Neddick York Bridges				A									A	
Kittery Kittery Bridge Elliot				B									B	

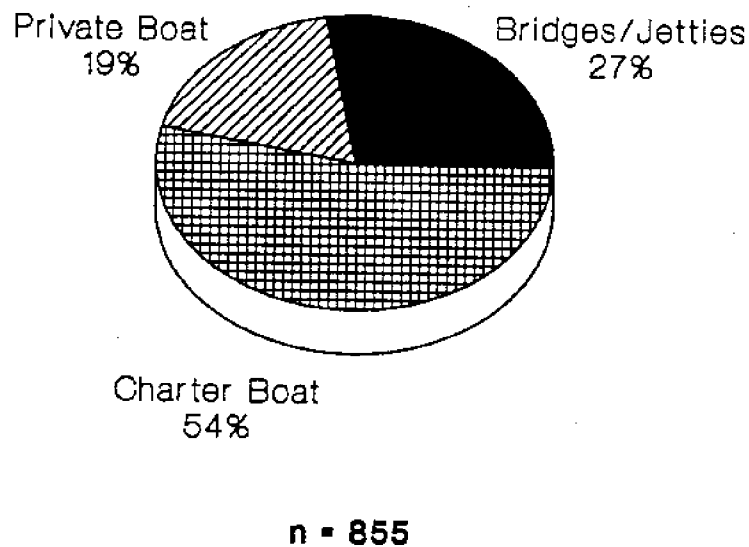
* Within an interview region, specific sites and interview times were randomly selected.

A Interviewer # 1, B : Interviewer # 2

** Charter boat operation.

At boat ramps, all fishermen were approached by the interviewer when they returned to shore from their fishing trip. Shore fishermen at parks, bridges and jetties were interviewed when they completed their day's fishing or seemed to be at a break point. Permission was obtained from charter boat operators to interview fishermen during their return trip to shore. These techniques minimized our imposition on the fishermen's recreational experience. Using these procedures a total sample of 855 fishermen were contacted. This included 235 fishermen at bridges and jetties, 160 private boat fishermen and 460 charter boat fishermen (Figure 1).

Figure 1. Types of fishermen in sample



Survey Design

The on-site survey was a short, one-page questionnaire designed to evaluate the fishermen's image of New Hampshire and southern Maine as a coastal sport fishing destination. The survey was developed with the assistance of local and state planners and resource managers (e.g., personnel from New Hampshire's Fish and Game Department, Maine's Department of Marine Resources, New Hampshire and Maine Regional Planning Councils, Coastal Zone Management Offices, etc.), and other social scientists around the country who have been involved in similar research. An attempt was made to collect data that enhances and builds upon creel census information that is already being collected.

Appendices A and B contain the New Hampshire and Maine questionnaires, respectively. Both instruments were identical. State names (New Hampshire or Maine) were simply interchanged for state specific items. The survey included questions related to the fishermen's:

- 1) evaluation of their day's fishing trip
- 2) trip characteristics (e.g. number of nights in the coastal area, distance from home, species/catch information)
- 3) prior experience with fishing in New Hampshire or southern Maine
- 4) evaluations of the image of the area as a fishing destination
- 5) reactions to policy issues (e.g. saltwater fishing licenses, catch restrictions, size limits)
- 6) state of residence

Results

The analyses in this report focus on the similarities and differences between individuals who fished on charter boats, private boats or bridges/jetties. Responses for the entire sample are presented in Appendix C. Appendix D compares the New Hampshire and Maine samples.

Most of the fishermen in our sample lived in New Hampshire, Maine or Massachusetts (Table 2). The highest percentage of both charter boat (47%) and private boat fishermen (65%) were residents of New Hampshire. About an equal percentage of those who fished on bridges or jetties came from New Hampshire (41%) or Maine (43%). More of the charter boat respondents came from out of state. Close to a third (31%) lived in Massachusetts, 5 percent each in Vermont and New York, and 2 percent in Connecticut. Five percent of the private boat owners and 12 percent of the bridge/jetty fishermen were from Massachusetts.

Table 2. State of residence

State of Residence	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
New Hampshire	47%	65%	41%
Maine	6	28	43
Massachusetts	31	5	12
Vermont	5	--	1
New York	5	1	1
Connecticut	2	--	1
Other	4	1	1
Total	100% (325)	100% (120)	100% (152)

$$X^2 = 163.3, p < .001$$

Charter boat fishermen were less experienced with fishing in New Hampshire and Maine than either the private boat or bridge/jetty respondents (Table 3). A third of the charter boat sample were fishing the area for the first year, compared to less than a fifth of the other two groups. Conversely, nearly half (49%) of the private boat operators and 39 percent of people interviewed on bridges or jetties had fished the region for more than 11 years. Only 23 percent of the charter boat fishermen reported this level of participation.

Table 3. Number of years saltwater fishing in New Hampshire/Maine

Number of Years Fishing in Area	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
1st year	33%	15%	14%
2 to 5 years	27	18	28
6 to 10 years	17	18	19
11 to 20 years	13	27	22
more than 20 years	10	22	17
Total	100% (448)	100% (159)	100% (235)
Mean	8	15	12

$X^2 = 61.2, p < .001$

Trip Characteristics

Charter boat fishermen travelled a greater distance from home than the other two groups (Table 4). On average, this group travelled 114 miles, compare to 54 and 37 miles for the bridge/jetty and private boat operators, respectively. Over half (59%) of the private boat and the bridge/jetty samples travelled 25 miles or less to their fishing destinations. Only 25 percent of the charter boat users lived this close to the fishing site. At the other extreme, a quarter of the charter boat fishermen lived more than 100 miles away, compared to only 6 percent of the private boat operators and 16 percent of the bridge/jetty fishermen.

Table 4. Distance of fishing destination from home

Number of Miles From Home	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/ Jetty
1 to 10 miles	12%	31%	39%
11 to 25 miles	15	28	20
26 to 50 miles	29	22	11
51 to 100 miles	19	13	14
more than 100 miles	25	6	16
Total	100% (450)	100% (160)	100% (233)
Mean	114	37	54

$X^2 = 113.8, p < .001$

The bridge and jetty fishermen spent more time in the coastal area while fishing than either the charter or private boat respondents (Table 5). Over half (51%) of the fishermen on bridges or jetties spent 1 to 2 nights in the area, over a quarter (26%) between 3 to 5 nights, and about a tenth (11%) stayed 6 or more nights on the coast. Only 12 percent of this group specified staying no nights, compared to 36 percent of the charter boat fishermen and over half (51%) of the private boat fishermen. For those charter fishermen who did stay overnight, 32 percent spent 1 or 2 nights, 17 percent spent 3 to 5 nights and 15 percent stayed 6 or more nights. Only 6 percent of the private boat sample were in the area for more than 5 nights.

Table 5. Number of nights spent in the coastal area during fishing trip

Number of Nights in Coastal Area	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/ Jetty
0 nights	36%	51%	12%
1 to 2 nights	32	36	51
3 to 5 nights	17	7	26
6 to 10 nights	11	4	6
more than 10 nights	4	2	5
Total	100% (259)	100% (47)	100% (78)
Mean	3	1	5

$X^2 = 32.0, p < .001$

The majority of respondents in all groups were seeking a particular type of species on their trip (Table 6). The most popular species for both the charter boat (65%) and private boat (47%) samples was bluefish. Mackerel was the most sought after species for the bridge and jetty fishermen (41%). Cod was the next most desired fish by the charter boat fishermen (25%), while mackerel (16%), flounder (14%) and cod (14%) were next in importance for the private boat sample. In addition to mackerel, the bridge/jetty fishermen were also after striped bass (26%), flounder (18%) and bluefish (14%).

Table 6. Specific species sought by fishermen

Specific Species Sought by Fishermen	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
Was there a particular species sought?			
Yes	62%	70%	64%
No	38	30	36
Particular Species Sought:			
Bluefish	65%	47%	14%
Cod	25	14	1
Striped Bass	--	8	26
Mackerel	5	16	41
Flounder	--	14	18
Pollack	3	--	--
Other Species	2	1	--

$$X^2 = 293.8, p < .001$$

The majority of all of the groups were not catching the specific species they desired on the day they were sampled (Table 7). Three quarters or more of the charter boat (75%) and bridge/jetty fishermen (80%), and over half (55%) of the private boat operators had caught none of the species they sought. Fishermen in private boats were somewhat more successful than the other two groups. Nearly a fifth (19%) caught 1 or 2 fish and over a tenth (12%) between 3 and 5 fish. Fourteen percent of this group caught more than 5 of the species they sought, compared to only 3 percent of the charter boat and none of the bridge/jetty fishermen.

Table 7. Number of specific species caught on trip

Number of Specific Species Caught	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
0 fish	75%	55%	80%
1 fish	9	8	10
2 fish	7	11	5
3 fish	3	7	4
4 fish	2	2	--
5 fish	1	3	1
more than 5 fish	3	14	--
Total	100% (278)	100% (103)	100% (146)
Mean	.79	2.6	.38

$$X^2 = 47.5, p < .001$$

Private boat fishermen were also more successful in terms of the *total* number of fish caught on their trip (Table 8). Thirty-nine percent caught 1 to 5 fish and a quarter caught more than five. Nearly half (48%) of the charter boat fishermen reported no fish; about a third (37%) caught 1 to 5, and 15 percent caught more than 5 fish. The least successful respondents were those who fished at bridges and jetties; only 21 percent caught any fish and no one caught more than four.

Table 8. Total number of fish caught on trip

Number of Specific Species Caught	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
0 fish	48%	36%	79%
1 fish	15	12	12
2 fish	10	9	4
3 fish	7	6	4
4 fish	3	4	1
5 fish	2	8	--
6 to 10 fish	9	13	--
more than 10 fish	6	12	--
Total	100% (457)	100% (157)	100% (231)
Mean	2.4	4.5	0.8

$$X^2 = 124.1, p < .001$$

Charter boat (40%) and private boat (41%) fishermen were more likely to have released fish than the bridge/jetty (12%) fishermen (Table 9). Undesirable species was the most common reason for releasing fish for the charter (54%) and private (52%) boat samples. The small size of the fish was also an important reason for releasing fish. About a third of the charter boat (32%) and private boat (36%) fishermen and over half of the bridge/jetty fishermen (59%) specified this as a reason for releasing fish. The fact that the fish were under the legal size limit and the belief that you should voluntarily limit catch size were reported as other reasons for releasing fish.

Table 9. Reasons for releasing fish

Reasons for Releasing Fish	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
Did you release fish?			
Yes	40%	41%	12%
No	60	59	88
Reasons for releasing fish:			
Undesirable species	54%	52%	10%
Too small to bother with	32	36	59
Under the legal size limit	18	22	17
Believe in voluntarily limiting my catch	8	13	21
Exceeded bag limit	--	--	--

The private boat and bridge/jetty fishermen were less satisfied with their fishing experience than the charter boat fishermen (Table 10). Just over a third (37%) of the charter boat sample rated their trip as poor, compared to over half of the private boat (55%) and bridge/jetty (57%) groups. About a quarter of each group rated their fishing experience as fair. Only about a fifth of the bridge/jetty (18%) and private boat (21%) fishermen felt their trip was good to excellent. In contrast, over a third (37%) of the charter boat fishermen rated their day this highly.

Table 10. Overall rating of fishing trip

Overall Rating of Fishing Trip	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
Poor	37%	55%	57%
Fair	26	24	25
Good	27	17	16
Very Good	7	3	1
Excellent	3	1	1
Total	100% (456)	100% (158)	100% (225)

$$X^2 = 42.7, p < .001$$

Individuals who were unsuccessful in catching fish on their trip were less satisfied with their experience than successful fishermen (Tables 11 and 12). For the unsuccessful group, about half (52%) of the charter boat sample, 86 percent of the private boat group and nearly two thirds (64%) of the bridge/jetty fishermen rated their day's fishing as poor, compared to only 37 percent or less of the successful fishermen groups. Although the individuals who caught fish were more satisfied with their fishing experience, very few indicated a rating of very good or excellent. For both the unsuccessful and successful fishermen, the charter boat respondents were most happy with their day's fishing.

Table 11. Overall rating of fishing trip by unsuccessful fishermen

Overall Rating of Fishing Trip	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
Poor	52%	86%	64%
Fair	23	7	20
Good	21	2	13
Very Good	3	2	2
Excellent	1	3	1
Total	100% (217)	100% (56)	100% (176)

$X^2 = 30.7, p < .001$

Table 12. Overall rating of fishing trip by successful fishermen

Overall Rating of Fishing Trip	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
Poor	24%	37%	33%
Fair	29	34	43
Good	31	25	24
Very Good	11	4	--
Excellent	5	--	--
Total	100% (236)	100% (100)	100% (49)

$X^2 = 24.3, p < .01$

Image of New Hampshire and Southern Maine as Fishing Destinations

Several questions asked respondents to assess the image of the New Hampshire and Southern Maine coastal areas as fishing destinations (Table 13). The majority of all three groups believe that New Hampshire and Maine offer high quality fishing opportunities. Charter boat (83%) and bridge/jetty (84%) fishermen were slightly more in agreement with this statement than the private boat fishermen (72%). Part of the attraction for fishing in the region is because it is close to respondents' homes. Nearly three quarters of the charter boat (72%) and bridge/jetty (73%) fishermen and 87 percent of the private boat fishermen view distance from home as a reason for fishing in New Hampshire and Maine.

Table 13. Image of New Hampshire and southern Maine as fishing destinations

	Type of Fishermen ¹		
	Charter Boats	Private Boats	Bridge/Jetty
NH/ME provides high quality fishing opportunities	83%	72%	84%
I saltwater fish in NH/ME because it is close to my home	72	87	73
The quality of NH/ME coastal waters is not acceptable for fishing	20	22	16
There is not enough access to NH/ME coastal waters	35	58	51
There are about as many saltwater gamefish in NH/ME waters today as there were ten years ago	34	18	21
Saltwater fishermen should be required to buy a license to support management	24	16	14
If a saltwater license were required, I would go somewhere else to fish	66	46	53

¹ Cell entries represent the percentage of individuals who responded "Agree" or "Strongly Agree" to the statement.

Other factors which may influence a person's evaluation of a fishing location are such things as water quality, access and the status of the stocks. Most of the individuals in our sample felt that the quality of New Hampshire and Maine's coastal waters is acceptable for fishing. Only about a fifth of each of the three groups believed that water quality was unacceptable. With respect to access, the groups are not in agreement. While only about a third (35%) of the charter boat fishermen felt that access to fishing in New Hampshire and Maine coastal waters is inadequate, over half of the private boat (58%) and bridge/jetty (51%) fishermen viewed access as a problem. Most individuals in our sample believed that the stocks of fish have been depleted over the past ten years. More of the private boat and bridge/jetty fishermen share this belief than the charter boat fishermen.

Reactions to Policy Issues

Licensing is a controversial issue among coastal sport fishermen. Few individuals in our sample felt that saltwater fishermen should be required to obtain a license (Table 13). Charter boat fishermen (24%) were more supportive of a license than either the private boat (16%) or bridge/jetty (14%) samples. It is interesting, however, that more of the charter fishermen (66%) would go somewhere else to fish if a saltwater license were required than the private boat (46%) or bridge/jetty (53%) fishermen. This may indicate a greater commitment on the part of these latter two groups toward the area than the charter fishermen. It should be noted, however, that nearly half or more of all of the respondents would change fishing areas if they were required to purchase a license.

This reaction to licensing is further supported by what individuals feel a fair price for a license would be (Table 14). Nearly a third (30%) of the charter boat fishermen, a half of the private boat fishermen, and 44 percent of the bridge/jetty sample felt their should be no charge for a license. For those who agreed to a charge, most felt it should be \$10 or less. The average acceptable price was higher among those on charter boats (Mean = \$9.20) than the other two groups (private boat Mean = \$5.61; bridge/jetty Mean = \$5.25).

Table 14. Fair price for an annual saltwater fishing license

Fair Price for and Annual License	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/ Jetty
0 dollars	30%	50%	44%
1 to 5 dollars	27	18	25
6 to 10 dollars	24	21	20
11 to 25 dollars	14	10	10
26 to 50 dollars	3	1	1
more than 50 dollars	2	--	--
Total	100% (405)	100% (153)	100% (230)
Mean	\$9.20	\$5.61	\$5.25

$\chi^2 = 31.7, p < .001$

The three groups differed on how they felt license money should be used (Table 15). Charter boat fishermen were most supportive of habitat improvement and monitoring (28%), research (26%) and stock enhancement (24%). Nearly half (45%) of the private boat fishermen felt the money should be used to provide better access to fishing opportunities. Bridge and jetty users believed the money should be spent on habitat improvement and monitoring (31%), provision of better access (28%), and stock enhancement (21%).

Table 15. Use of license money

What should license money be used for	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
Habitat improvement & monitoring	28%	18%	31%
Research	26	14	14
Stock enhancement	24	15	21
Better access to fishing	12	45	28
Enforcement	6	4	5
Other	4	4	1
Total	100% (375)	100% (140)	100% (209)

$X^2 = 80.1, p < .001$

Bluefish was the preferred species for the greatest percentage of both charter boat (34%) and private boat (36%) fishermen (Table 16). For charter boat respondents, cod (23%) and haddock (16%) were rated next highest as a preferred fish. Striped bass (15%) and cod (12%) were next in importance for private boat fishermen. Both bluefish (27%) and striped bass (27%) were the top rated preferred fish for bridge/jetty fishermen. If regulations were imposed on individuals' preferred species, most of the respondents would continue to fish without focusing on a particular type of fish (Table 17). About two thirds of the charter boat (59%), private boat (62%) and bridge/jetty (67%) fishermen would use this approach. Nearly a fifth (17% - charter boats, 19% - private boats and 15% - bridges/jetties) of the fishermen would fish for their preferred species in another state. About a tenth (13% - charter boats, 12% - private boats and 10% - bridges/jetties) of each of the groups would focus on another species.

Table 16. Preferred species of fish

Preferred Species of Fish	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/ Jetty
Bluefish	34%	36%	27%
Cod	23	12	8
Haddock	16	10	6
Mackerel	4	3	9
Tuna	4	3	1
Striped Bass	3	15	27
Flounder	2	10	9
Other	6	3	--
No Preference	8	8	12
Total	100% (420)	100% (156)	100% (234)

$X^2 = 166.6, p < .001$

Table 17. Actions taken if regulations imposed on preferred species

Actions Taken	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/ Jetty
Fish for preferred species in another state	17%	19%	15%
Focus on another species	13	12	10
Switch to freshwater fishing	7	7	7
Stop fishing altogether	4	--	1
Continue to fish without focusing on a particular species	59	62	67
Total	100% (419)	100% (135)	100% (221)

$X^2 = 11.9, n.s.$

Charter fishermen (56%) were more supportive of a size limit on bluefish than those who used private boats (45%) or fished from bridges and jetties (38%) (Table 18). The average acceptable size for bluefish was 20.5 inches for charter fishermen. Those fishing from private boats would accept a limit of 23.4 inches on average, while the fishermen on bridges/jetties specified an average acceptable size of 21.7 inches.

Table 18. Reactions to a size limit on bluefish

Reactions to a Size Limit on Bluefish	Type of Fishermen		
	Charter Boats	Private Boats	Bridge/Jetty
Would you support a size limit on bluefish?			
Yes	56%	45%	38%
No	44	55	62
Acceptable Size Limit			
under 10"	3%	--%	--%
10" - 15"	18	--	10
16" - 20"	42	32	37
21" - 25"	19	50	43
26" - 30"	13	11	4
31" - 40"	3	7	6
over 40"	2	--	--
Total	100% (143)	100% (28)	100% (49)
Mean	20.5	23.4	21.7

$$X^2 = 62.1, \text{ n.s.}$$

Summary and Recommendations

This study surveyed a sample of saltwater fishermen in New Hampshire and southern Maine. Responses to the questionnaire profiled the fishermen's prior saltwater experiences, trip characteristics and state of residence. Additional survey items addressed their image of the region as a sport fishing destination and their reactions to management and policy issues. Tables presented throughout the text compared charter boat, private boat and bridge/jetty fishermen. Readers interested in a breakdown of the responses for the entire sample or a comparison of the New Hampshire and Maine samples are referred to Appendices C and D, respectively.

Fishermen Profile

The private boat and bridge/jetty fishermen tended to be residents of New Hampshire or Maine, who live in close proximity to their fishing destination and who have considerable saltwater fishing experience in the region. Charter boat respondents, on the other hand, were more likely to reside outside of New Hampshire or Maine and travel a greater distance from home to saltwater fish. Compared to the other two groups, the charter boat sample have been fishing the region for fewer years.

Catch and Effort

Most of the respondents sought a particular type of species on their trip. Bluefish was most popular among the charter boat and private boat samples, while mackerel was the most sought after species for the bridge and jetty fishermen. Although the majority of all of the groups were not catching the specific species they desired, private boat fishermen were the most successful. Private boat fishermen were also more successful in terms of the *total* number of fish caught on their trip. Given their relatively higher success rate, private boat respondents released more fish than the other two groups. Desirability and size of species were the most common reasons for releasing fish.

Trip Evaluations and Image of the Region

The private boat and bridge/jetty fishermen were less satisfied with their fishing experience than the charter boat sample. As might be expected, unsuccessful fishermen rated their trip lower than those who caught fish.

Despite the relatively low catch/effort ratio, the majority of all three groups believed that New Hampshire and Maine offer high quality fishing opportunities. Proximity of the region to the respondents' home and the perception of acceptable water quality appear to contribute to this positive image. Questions pertaining to access showed more diversity of response. More private boat and bridge/jetty fishermen perceived access to be inadequate compared to the individuals on charter boats.

Most individuals in our sample believed that the stocks of fish have been depleted over the past ten years. Consistent with their prior experience in the region, more of the private boat and bridge/jetty fishermen share this belief than the charter boat fishermen.

Management and Policy Issues

Licensing is a controversial issue among coastal sport fishermen. Few individuals in our sample felt that saltwater fishermen should be required to obtain a license. Although charter boat fishermen showed the highest support, more of these individuals would go somewhere else if a saltwater license were required. This probably indicates a lower commitment to the region as a fishing destination when compared to the private boat and bridge/jetty fishermen. Nearly half or more of all respondents, however, indicated they would change fishing areas if required to purchase a license.

Consistent with this anti-license sentiment, many felt there should be no charge for a license. For those who agreed to a charge, most felt it should be \$10 or less. The average acceptable price was higher among those on charter boats than the other two groups.

Differences between the groups were noted for how the money from a saltwater license should be used. Charter boat fishermen favored habitat improvement and monitoring, research, and stock enhancement. Private boat fishermen were most supportive of improving access to fishing opportunities. Bridge and jetty users believed the money should be distributed more equally among the alternatives suggested (i.e., habitat improvement and monitoring, better access, stock enhancement, and research).

Bluefish was the preferred species among both charter boat and private boat fishermen. Both bluefish and striped bass were preferred by bridge/jetty fishermen. If regulations were imposed on these preferred species, most of the respondents would continue to fish without focusing on a particular type of fish, however, some would fish for their preferred species in another state or would focus on another species.

Charter fishermen were more supportive of a size limit on bluefish than those who fished from private boats or bridges/jetties. The average acceptable size for bluefish was 20.5 inches for charter fishermen, 23.4 inches for private boat respondents, and 21.7 inches for those on bridges/jetties.

Recommendations

This study has implications for decision-makers and resource managers at state and local levels. Just as managers are reluctant to make decisions without substantial information about the biological aspects of a species, they should be equally reluctant to make decisions without information on how the public feels about their actions. The public often demands a voice in decisions of public agencies. Managers who have ignored this demand have had management decisions reversed, become tied up in expensive court suits, and have found it necessary to redo lengthy planning efforts (Heberlein, 1975). Understanding the characteristics and perceptions of fishermen can supplement the harvest data collected by state and federal agencies, and indicate to managers the types of impacts different management practices have on fishing quality. Policy questions included in this survey lead to several conclusions and recommendations.

Saltwater Fishing License

A saltwater fishing license would *not* be supported by fishermen. Comments given by the respondents indicate that tradition has a major influence on this reaction. Unlike freshwater fishermen, licenses have never been required of saltwater participants. Any agency attempt to institute such a license would undoubtedly be criticized and could result in less demand for the activity. The majority of respondents indicated they would fish elsewhere if a license were imposed.

If a license was deemed necessary, the cost should be minimal (\$10.00 or less) and an education program should be established to explain the rationale. Research has repeatedly demonstrated that individuals who understand the reasoning underlying management actions are more supportive of the policies.

Bluefish Size Limits

Roughly half of the charter boat and private boat fishermen would support a size limit on bluefish. Two thirds of the individuals surveyed on bridges and jetties rejected the idea. Concern for their personal safety when removing the hook seems to be a major determinant of this mixed reaction. Because these concerns are real, undersized fish that would be returned to the ocean are likely to either still have the hook in their mouths or be near death from the process of removing the hook. Given that education of the fishermen cannot change the nature of bluefish, size restrictions are not likely to be effective.

Catch Limits

Because the majority of fishermen believe that gamefish populations have been depleted over the years, they were generally tolerant of catch limits on their preferred species. Nearly two thirds of the respondents indicated they would continue to fish in the region without focusing on a particular species if the number of fish caught was restricted. Under a fifth said they would go to another state to fish for their preferred species. Taken together, these findings suggest that catch limits could help preserve the integrity of the game population without having a negative economic impact on the region. Acceptance of this policy would again be enhanced by promotional efforts explaining the need for the action.

Access Issues

Over half of the private boat and bridge/jetty fishermen viewed access as a problem. Although increasing the number of access points or improving existing locations would mitigate this perceived problem, such solutions may not be financially feasible. As an alternative, increasing the fishermen's awareness of existing access points may represent a workable compromise solution.

Overall, saltwater fishermen have a positive image of New Hampshire and southern Maine as sport fishing destinations. They perceive that the region provides high quality fishing opportunities close to their homes. Concerns over licensing, stock depletion and access represent issues that need attention if this positive image is to be retained.

References

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- Fawcett, R. S. 1988. *A Creel Survey of the Marine Recreational Fishery.* New Hampshire Fish and Game Department. Technical Report.
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- Munda, J. O. & Hastings, S. E. 1987. *An Analysis of Community Attitudes Toward Growth and Development in the Inland Bays Area of Delaware.* Agricultural Experiment Station Bulletin No. 468. University of Delaware. Newark, Delaware.
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Appendix A

Sport Fishing Survey - New Hampshire

COASTAL SPORTFISHING STUDY

University of New Hampshire

1. Overall, how would you rate the quality of your fishing trip today?
 poor fair good very good excellent
2. Were you fishing for a particular species of fish today?
 no yes; *If yes, what specific species?* _____
If yes, how many of this species of fish did you catch? _____ fish
3. What was the total number of fish you caught on your trip today? _____ total number of fish caught
4. Did you release any fish today? no yes; *If yes, how many did you release?* _____ fish
5. *If you did release fish, what was the reason? (Check all that apply)*
 too small to bother with
 undesirable species
 under the legal size limit
 would have exceeded the bag limit
 believe in voluntarily limiting my catch for conservation reasons
 other (please specify) _____
6. How many nights did you spend in the New Hampshire coastal area during this fishing trip?
 nights I live in the New Hampshire coastal area
7. About how many miles is this fishing destination from your home? _____ miles
8. About how many years have you been saltwater fishing in New Hampshire? _____ years
9. If you had to pick a species that you like to catch most while saltwater fishing in New Hampshire, what would it be?
_____ saltwater species I like to catch most
10. If regulations were imposed that prohibited you from catching the saltwater species you most like to fish, what action would you take? (CHECK ONLY ONE)
 Fish for my preferred species in another state. What state? _____
 Stop saltwater fishing and switch to freshwater fishing
 Continue to fish, but focus upon another species. Please specify species _____
 Stop fishing altogether
 Continue to fish without focusing upon any particular species
11. Would you support a size limit on bluefish? yes no
If yes, what would an acceptable size limit for bluefish be? _____ inches

12. Please indicate how strongly you agree or disagree with the following statements. (Please circle the response which comes closest to the way you feel).

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
New Hampshire provides high quality saltwater fishing opportunities	1	2	3	4
I saltwater fish in New Hampshire because it is close to my home	1	2	3	4
The quality of NH coastal waters is not acceptable for fishing	1	2	3	4
There are about as many saltwater gamefish in New Hampshire waters today as there were ten years ago	1	2	3	4
There is not enough access to New Hampshire coastal waters	1	2	3	4
Saltwater fishermen in New Hampshire should be required to buy a license to support management programs	1	2	3	4
If a saltwater fishing license were required in New Hampshire, I would go somewhere else to fish	1	2	3	4

13. If fishermen were required to obtain a saltwater fishing license to support fish management programs, what do you feel would be a fair price for the annual licence? \$ _____

14. The money from saltwater licenses could support a number of different programs. What do you feel would be the most important use for the money? (CHECK ONLY ONE)

- research (e.g. to determine spawning areas)
- habitat improvement and monitoring
- better access to fishing (e.g. boat ramps, piers, etc.)
- enforcement
- stock enhancement
- other (please specify) _____

We are interested in contacting you at a later date to find out more information about your saltwater fishing experiences. Could you please give us your name and address so we can send you a questionnaire. By filling in your name and address you will also be eligible for a draw for a \$200 gift certificate for fishing equipment.

Name: _____
 Number and Street: _____
 City: _____ State: _____ Zipcode _____

THANK YOU FOR YOUR HELP!

Appendix B

Sport Fishing Survey - Maine

12. Please indicate how strongly you agree or disagree with the following statements. (Please circle the response which comes closest to the way you feel). For purposes of this survey, southern Maine refers to the coastal area south of Portland.

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
Southern Maine provides high quality saltwater fishing opportunities	1	2	3	4
I saltwater fish in southern Maine because it is close to my home	1	2	3	4
The quality of southern Maine coastal waters is not acceptable for fishing	1	2	3	4
There are about as many saltwater gamefish in southern Maine waters today as there were ten years ago	1	2	3	4
There is not enough access to southern Maine coastal waters	1	2	3	4
Saltwater fishermen in Maine should be required to buy a license to support management programs	1	2	3	4
If a saltwater fishing license were required in Maine, I would go somewhere else to fish	1	2	3	4

13. If fishermen were required to obtain a saltwater fishing license to support fish management programs, what do you feel would be a fair price for the annual licence? \$ _____

14. The money from saltwater licenses could support a number of different programs. What do you feel would be the most important use for the money? (CHECK ONLY ONE)

- research (e.g. to determine spawning areas)
- enforcement
- habitat improvement and monitoring
- stock enhancement
- better access to fishing (e.g. boat ramps, piers, etc.)
- other (please specify) _____

We are interested in contacting you at a later date to find out more information about your saltwater fishing experiences. Could you please give us your name and address so we can send you a questionnaire. By filling in your name and address you will also be eligible for a draw for a \$200 gift certificate for fishing equipment.

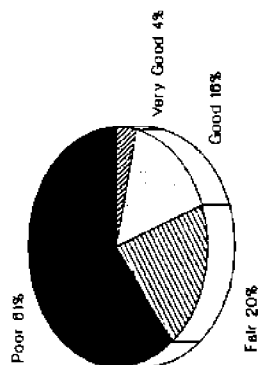
Name: _____
 Number and Street: _____
 City: _____ State: _____ Zipcode _____

THANK YOU FOR YOUR HELP!

Appendix C

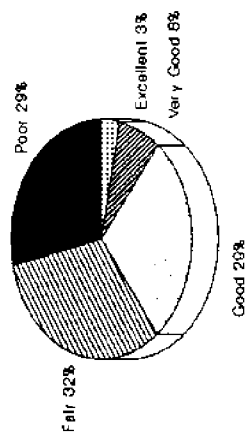
Survey Results For the Entire Sample

Overall Rating - Unsuccessful Fishermen



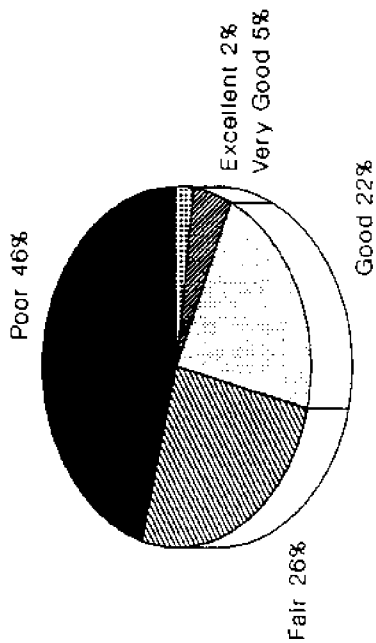
n = 449

Overall Rating - Successful Fishermen



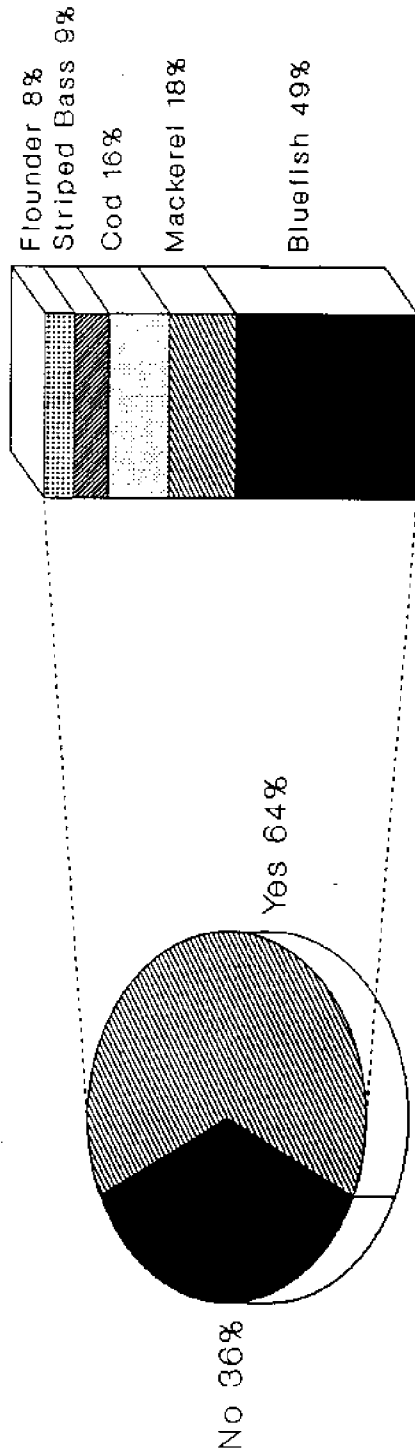
n = 385

Overall Rating of Fishing Trip



n = 839

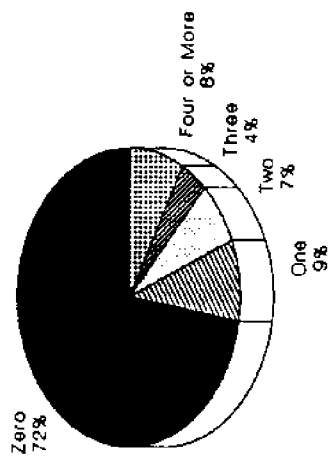
Species Sought



Fishing for Particular Species? Species Sought

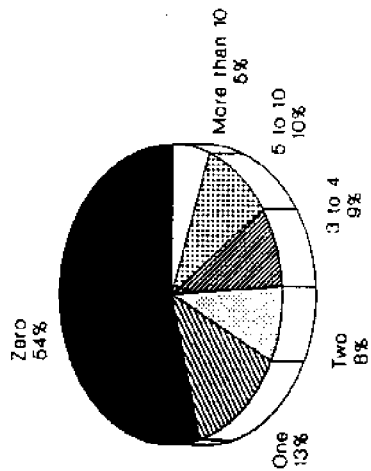
Number of Respondents = 851

Number of Desired Species Caught



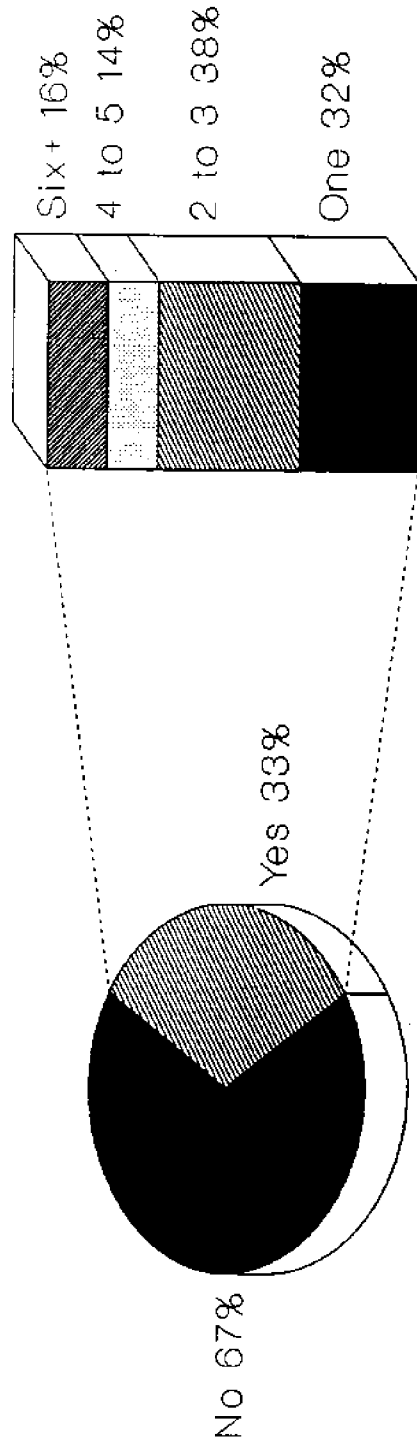
Number of Respondents = 527

Total Number of Fish Caught



Number of Respondents = 845

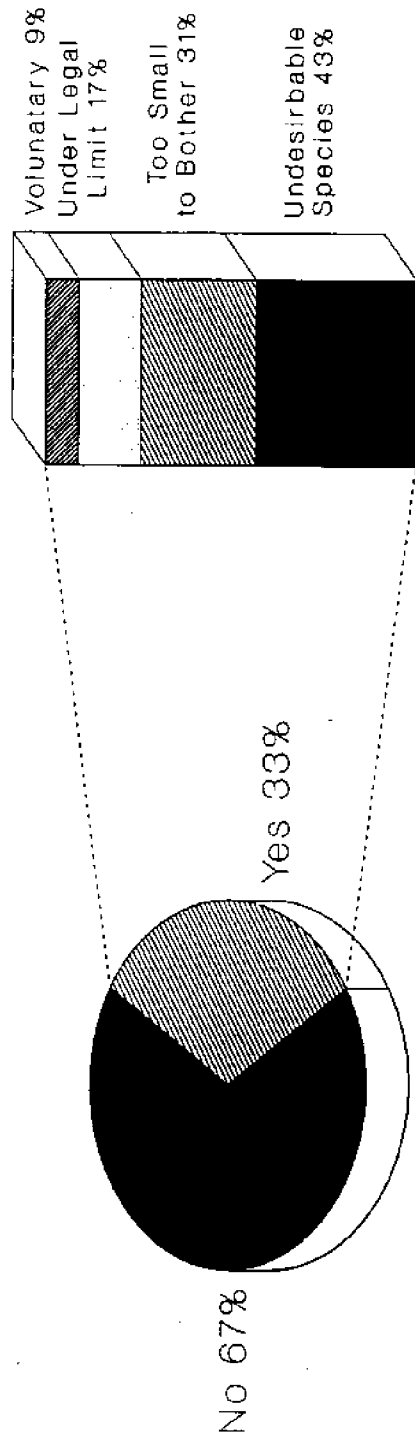
Fish Released



Did you release any fish? Number Released

Number of Respondents = 845

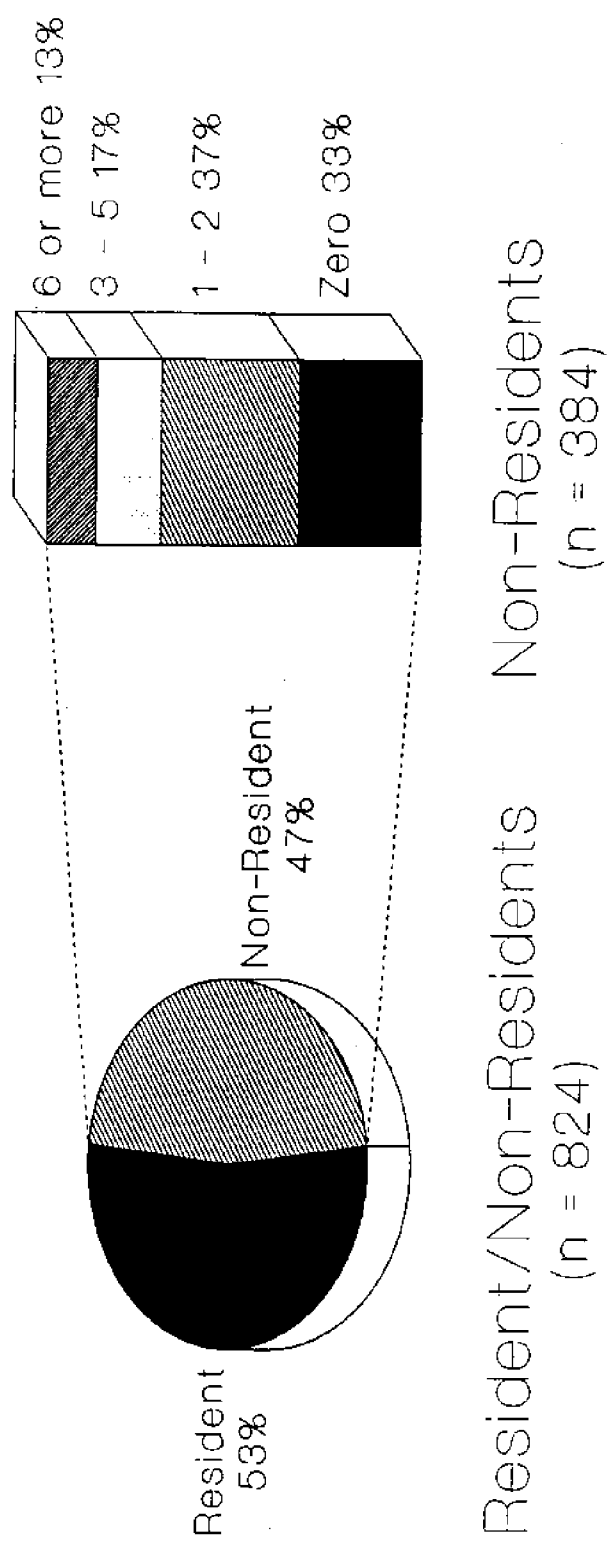
Reasons for Releasing Fish



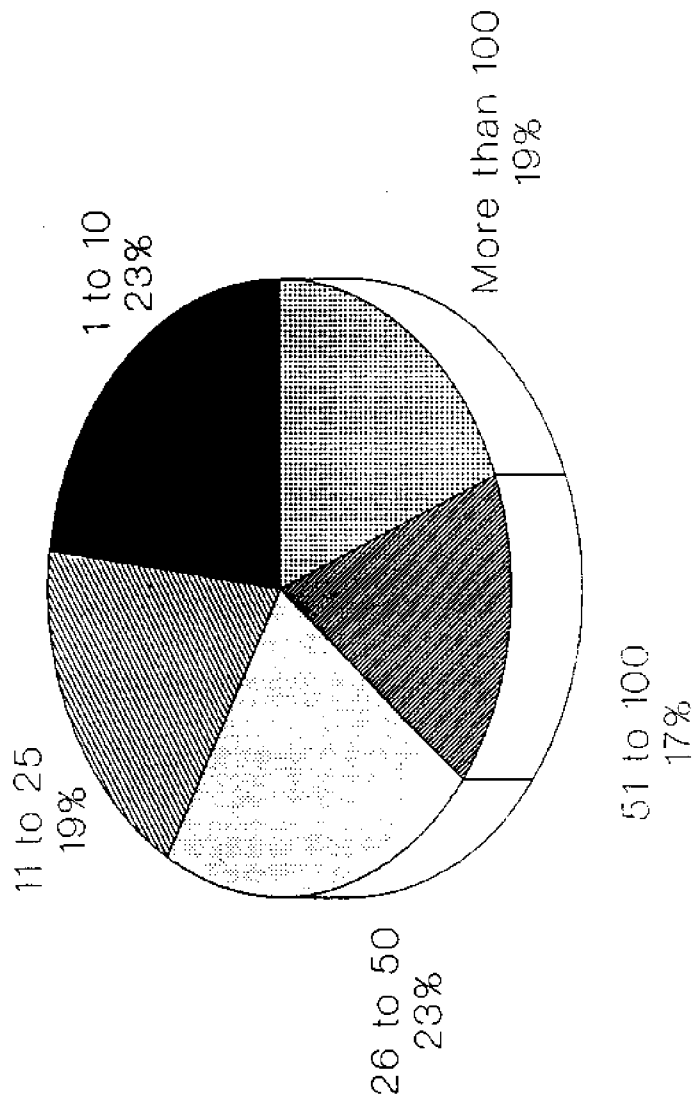
Did you release any fish? Reason

Number of Respondents = 845

Length of Fishing Trip (Number of Nights)

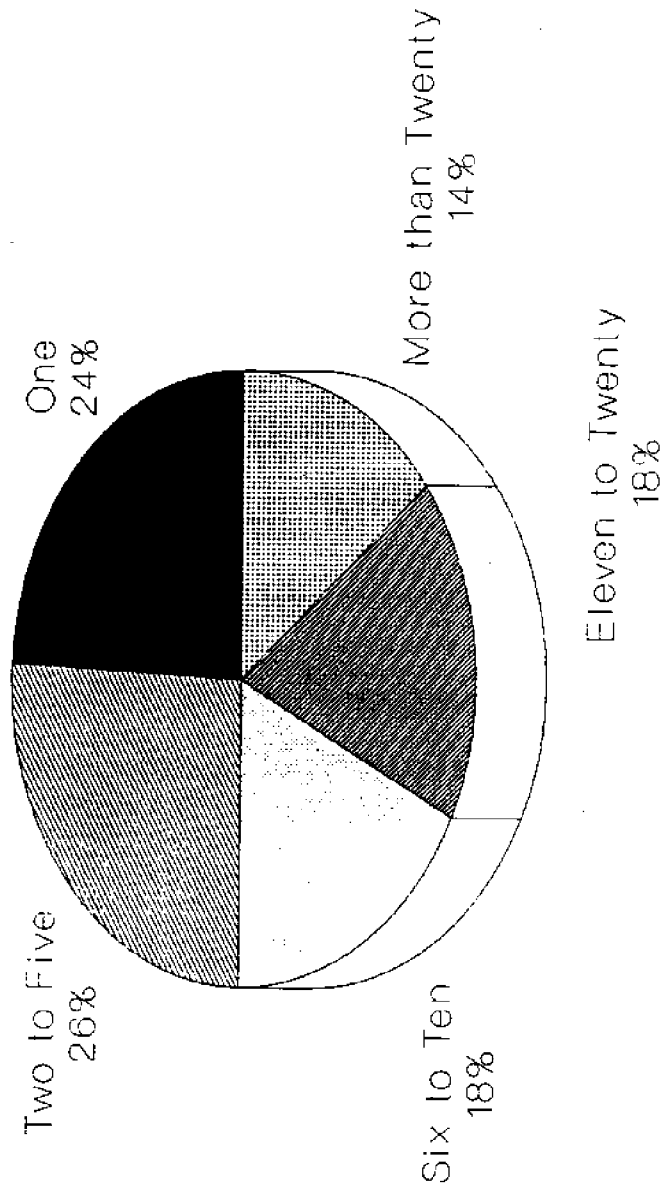


Distance from Home (Miles)



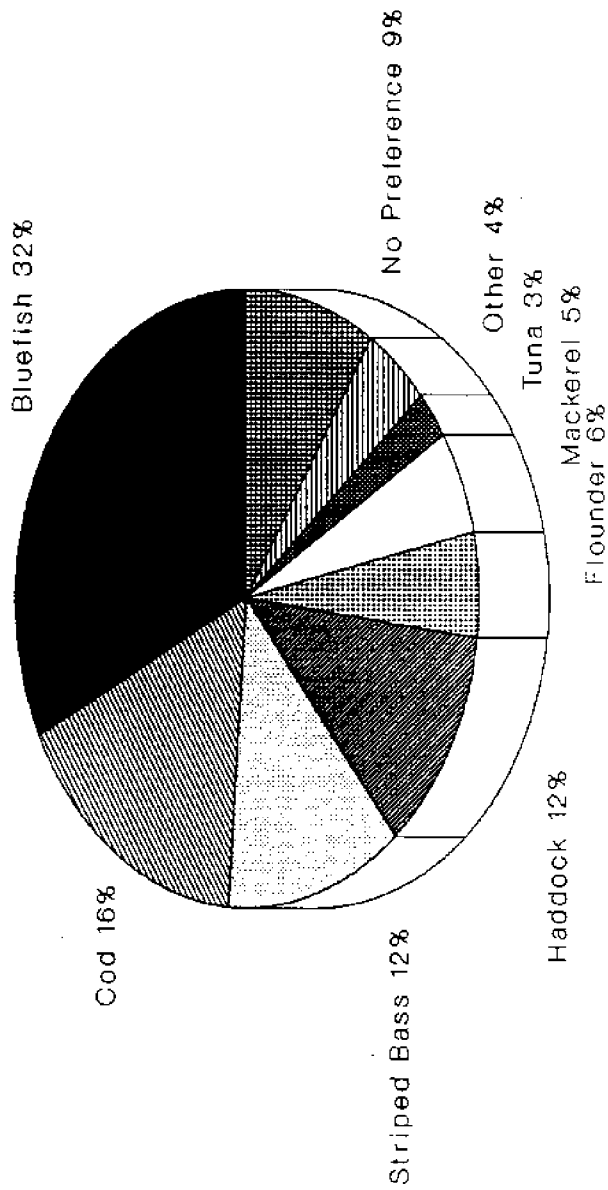
Number of Respondents = 843

Saltwater Fishing Prior Experience (Years)



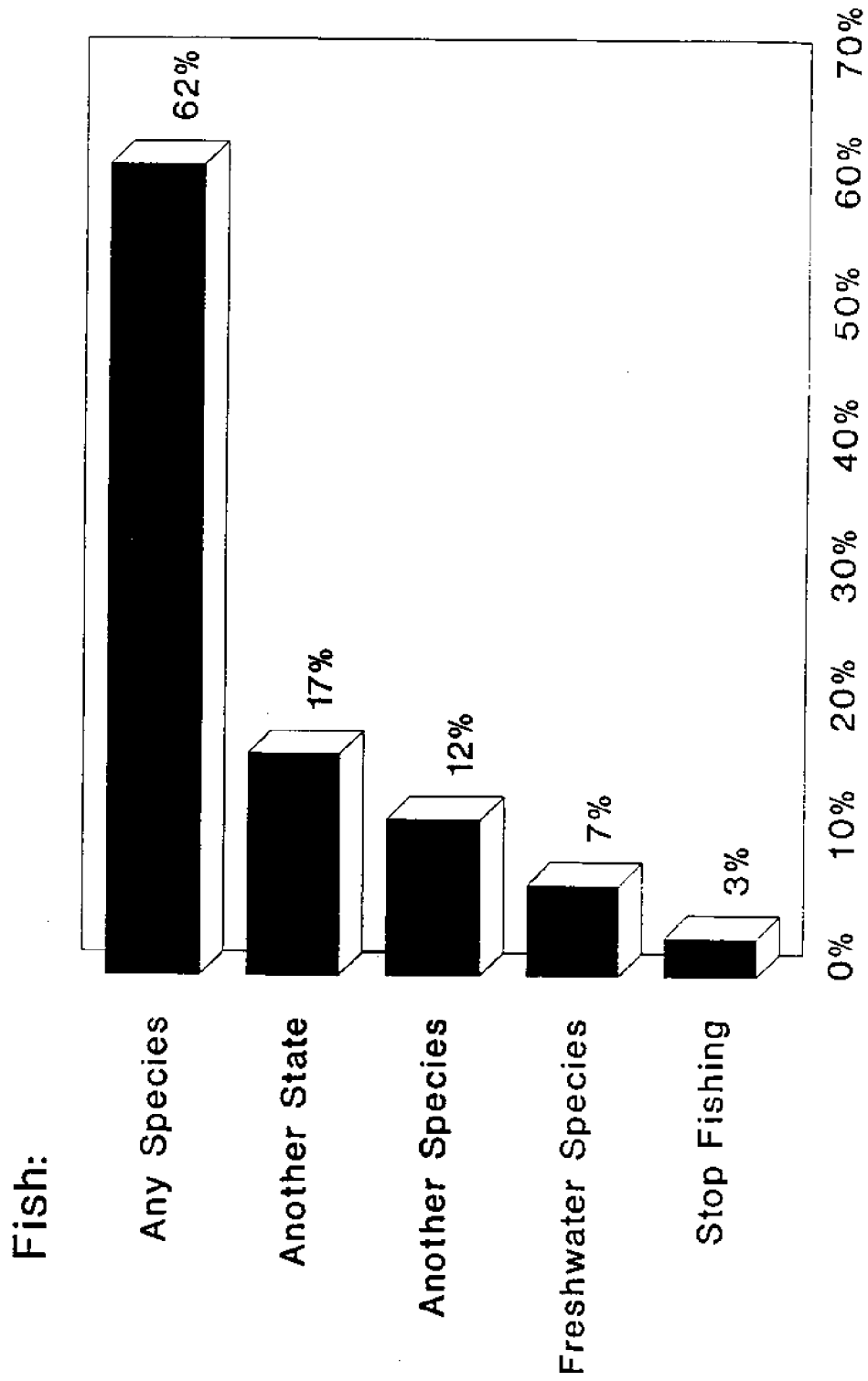
Number of Respondents = 842

Preferred Species



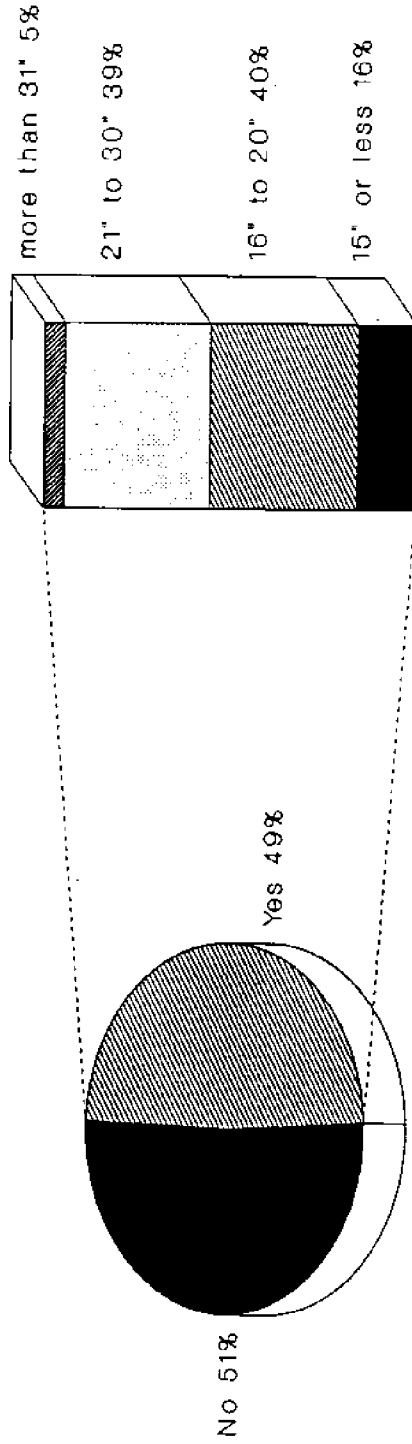
Number of Respondents = 810

Reactions to Prohibitions on Catching Preferred Species



Number of Respondents = 775

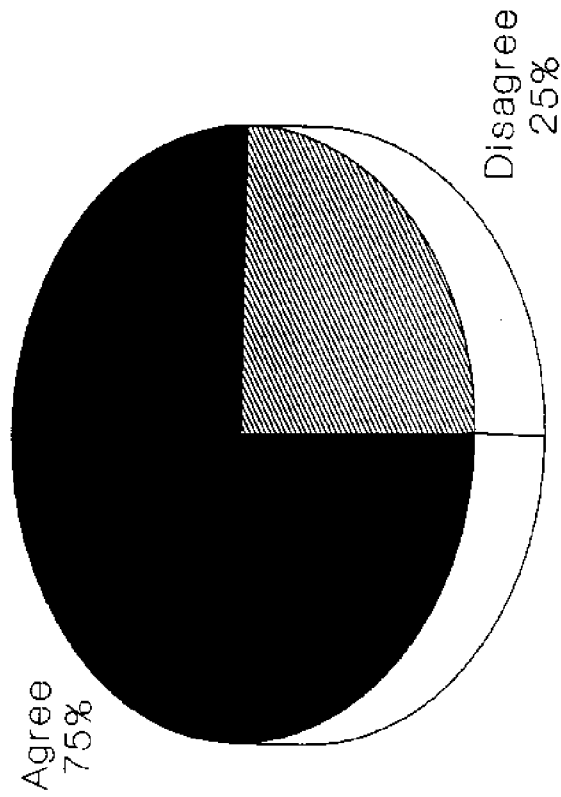
Size Limits on Bluefish



Would you support a size limit on Bluefish? Acceptable Size Limit

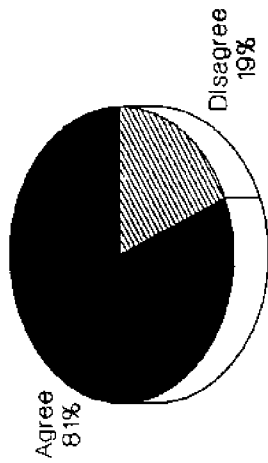
Number of Respondents = 634

I saltwater fish in southern ME/NH because it is close to my home



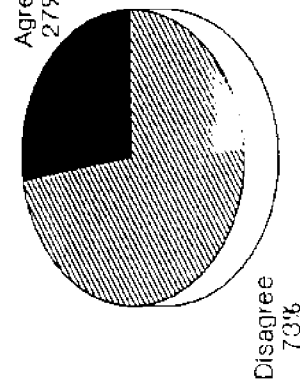
N = 839

NH/southern ME provides high quality saltwater fishing opportunities



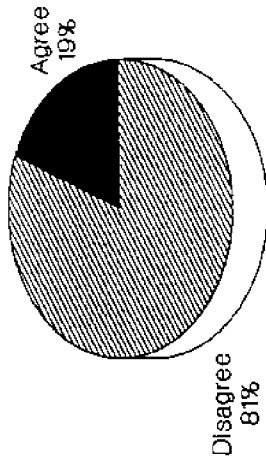
N = 831

There are about as many saltwater gamefish today as ten years ago



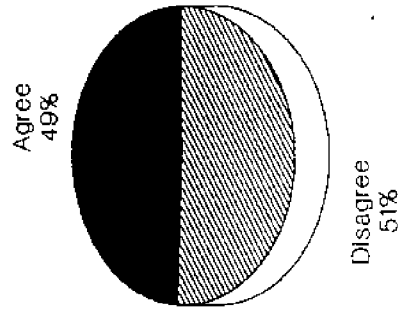
N = 707

The quality of southern ME/NH coastal waters is not acceptable for fishing



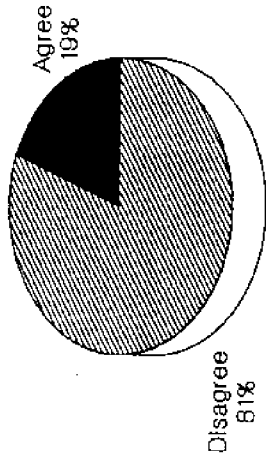
N = 817

There is not enough access to southern ME/NH coastal waters



N = 795

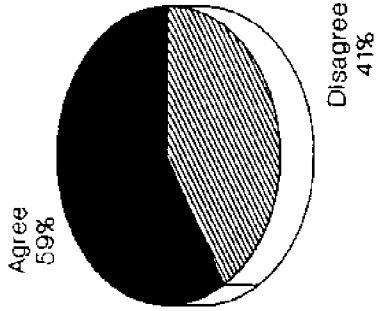
Saltwater fishermen should be required to buy a license to support management



N - 823

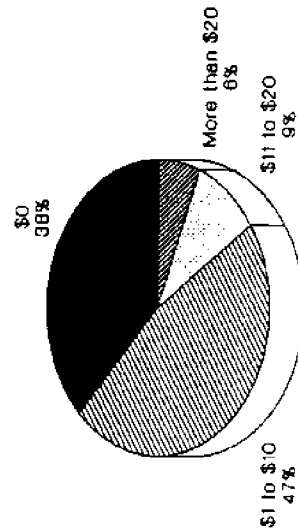
N - 788

If a saltwater license was required I would go somewhere else to fish



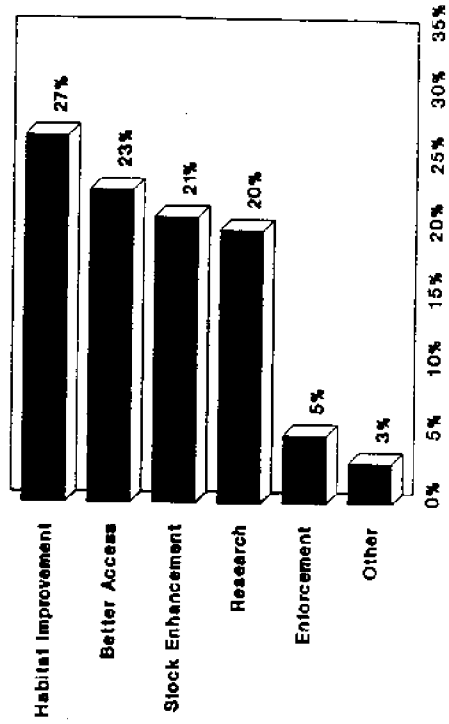
N - 826

Beliefs about a fair price for an annual saltwater fishing license

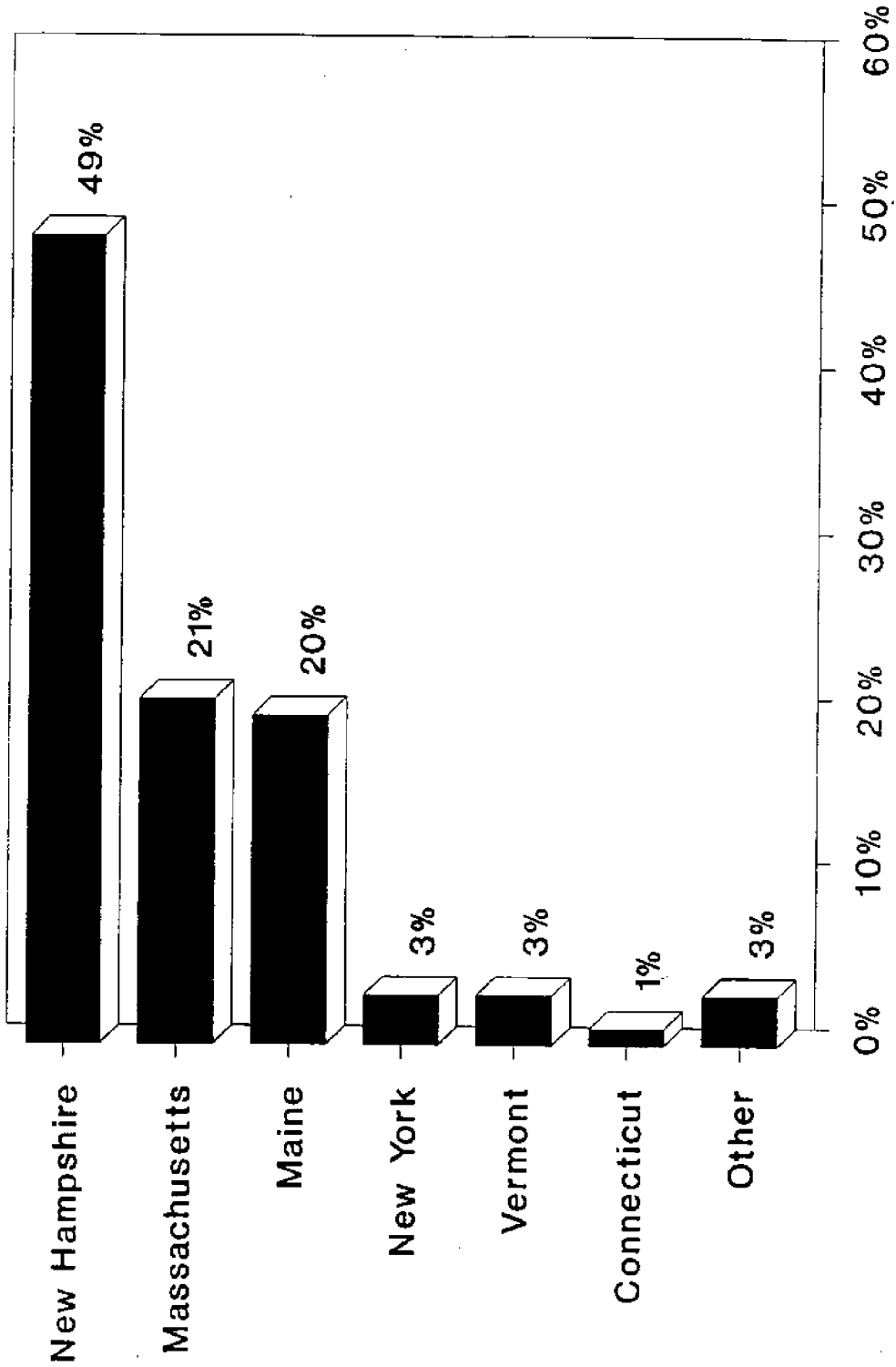


N - 724

Most important use for the money from a saltwater fishing license



Respondents' State of Residence

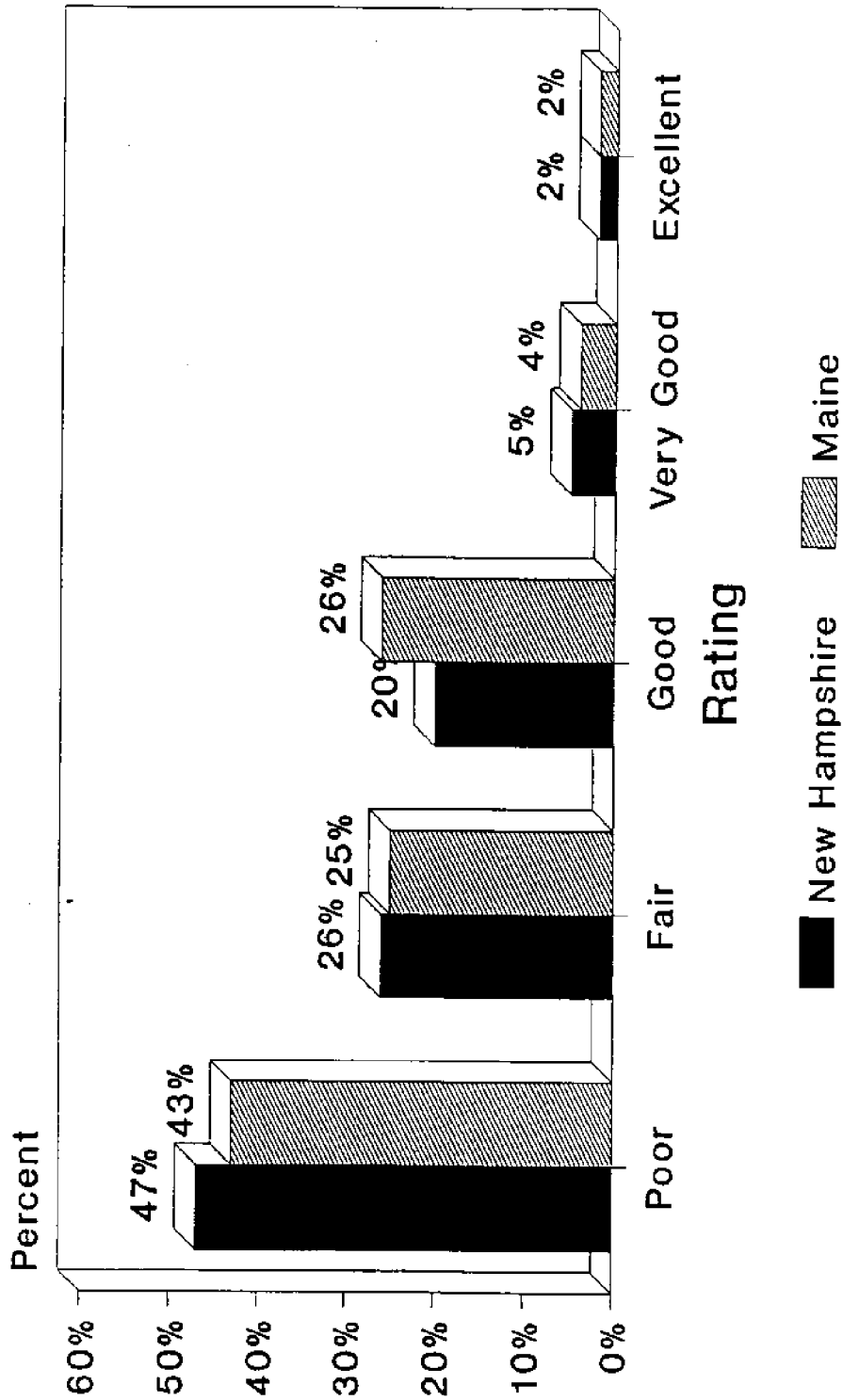


n = 597

Appendix D

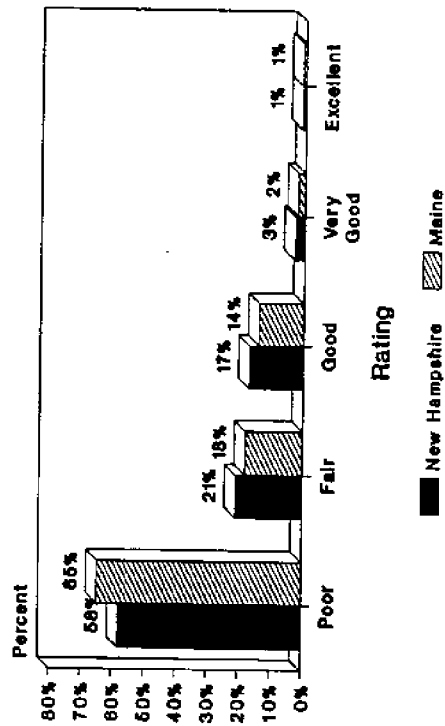
Survey Results by Fishing Destination

Overall Rating of Fishing Trip by Fishing Destination



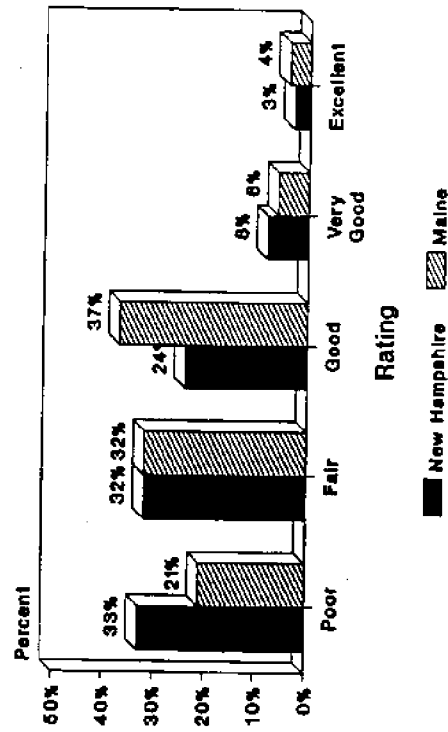
Number of Respondents = 839

Overall Rating - Unsuccessful Fishermen
by Fishing Destination



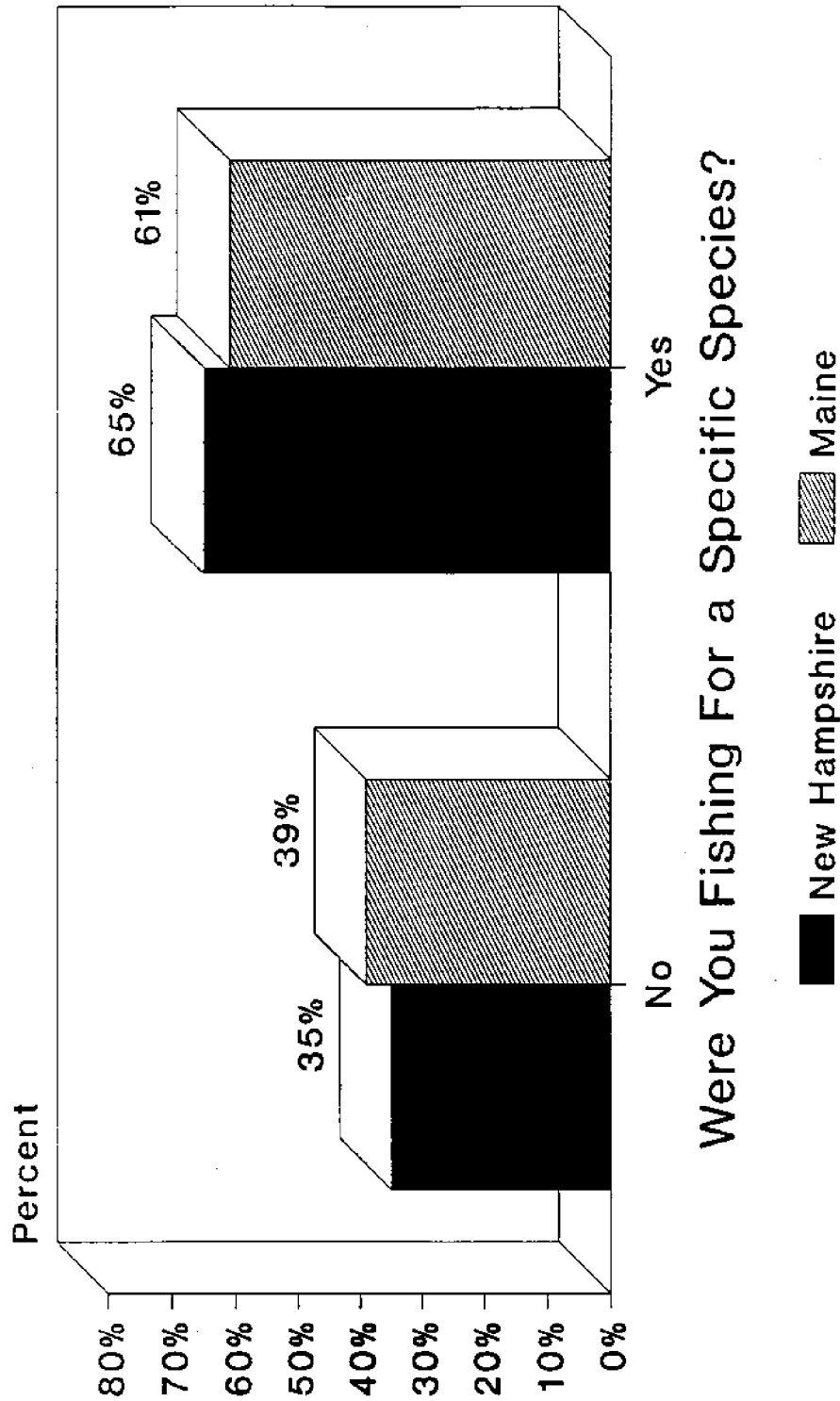
Number of Respondents - 449

Overall Rating - Successful Fishermen
by Fishing Destination



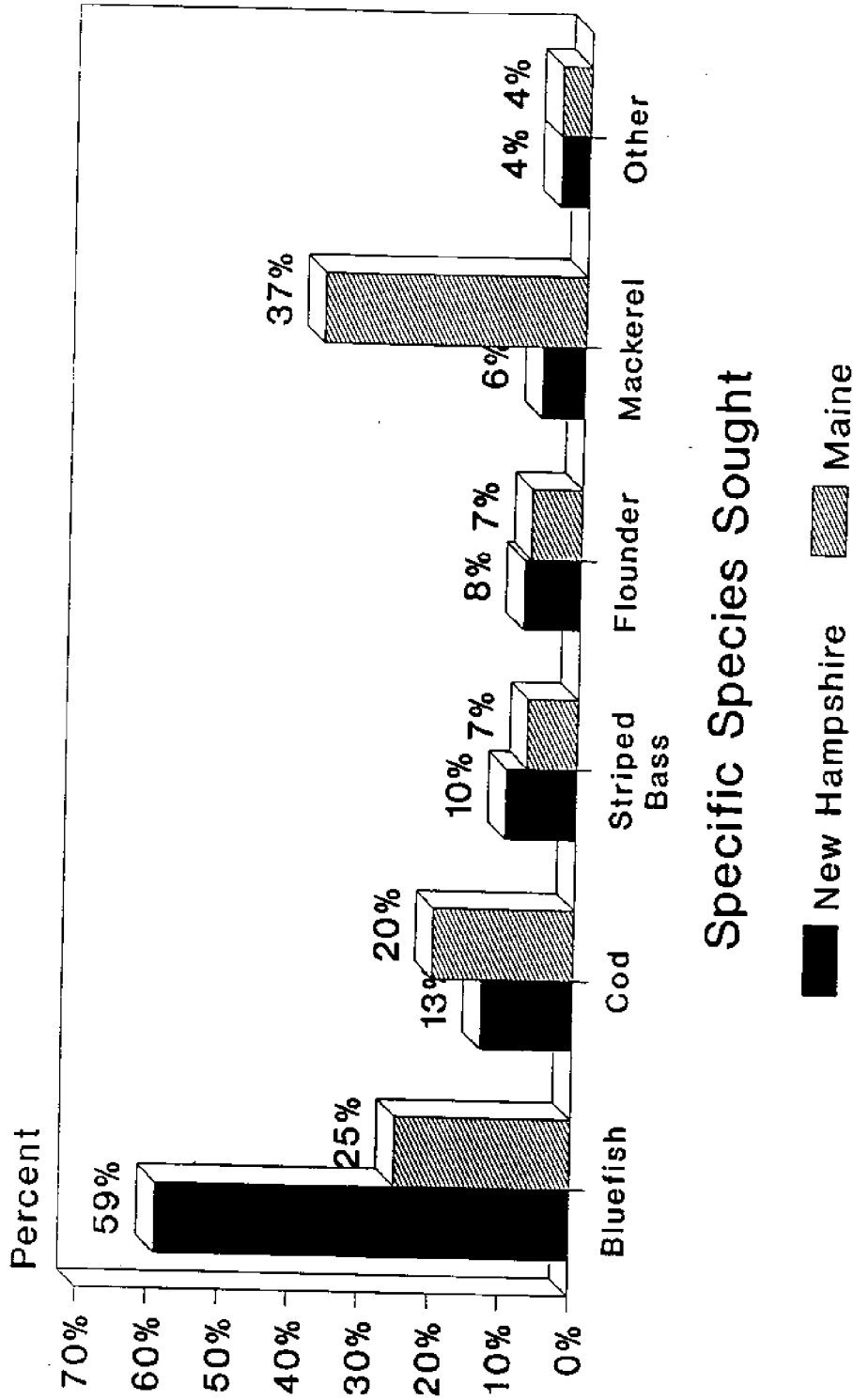
Number of Respondents - 386

Fishing for Specific Species by Fishing Destination



Number of Respondents = 851

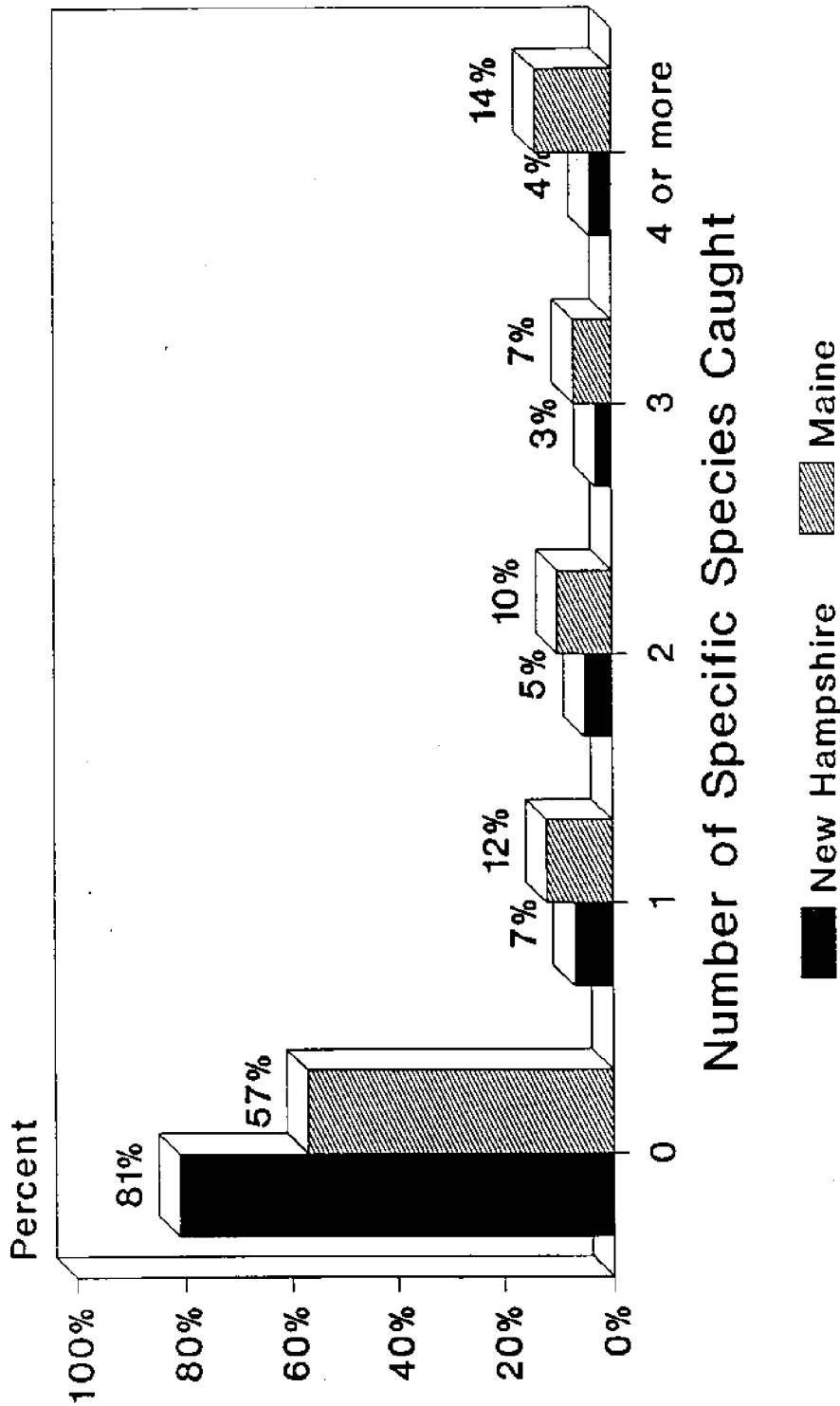
Specific Species Sought by Fishing Destination



Specific Species Sought

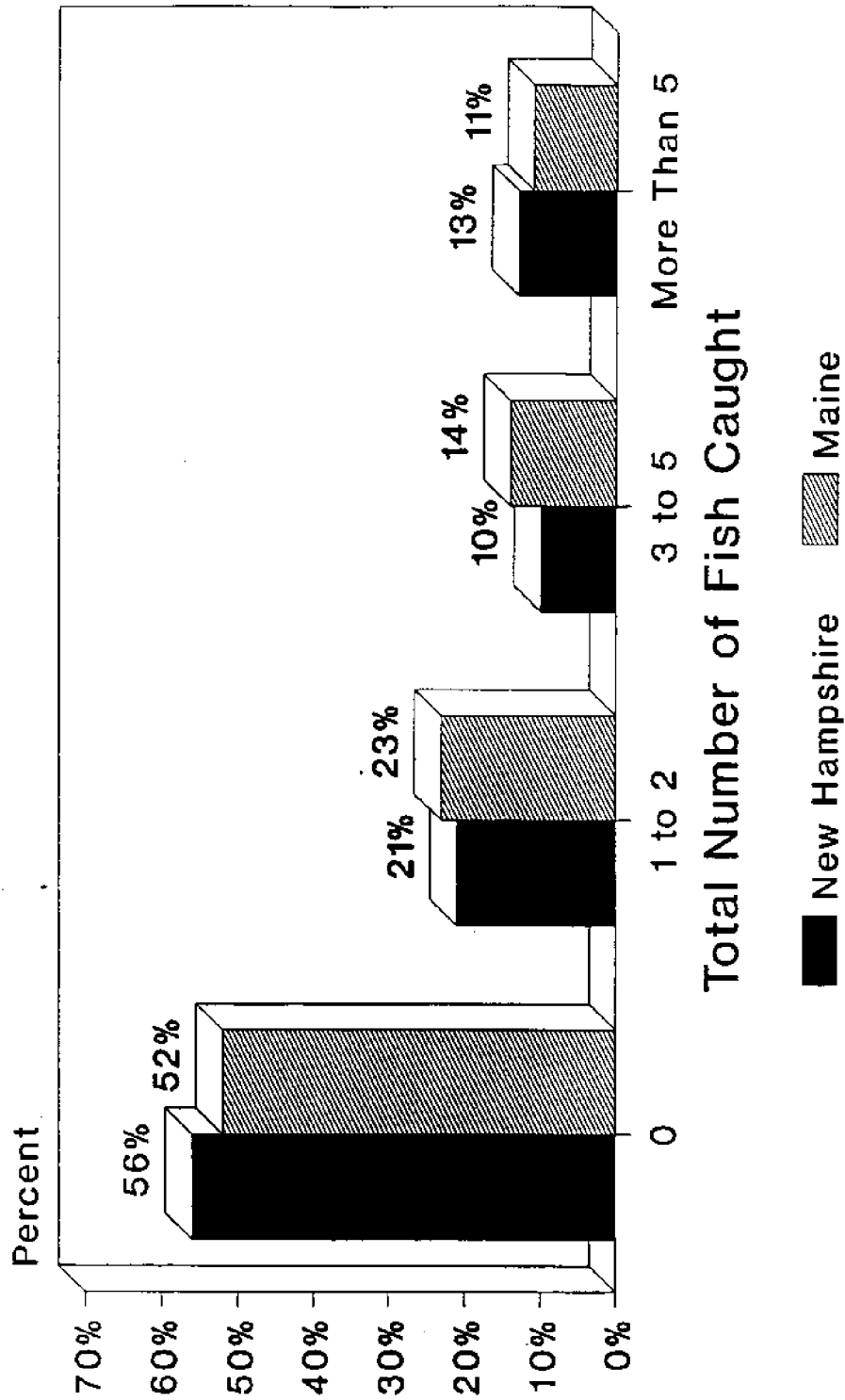
Number of Respondents = 534

Number of Specific Species Caught by Fishing Destination



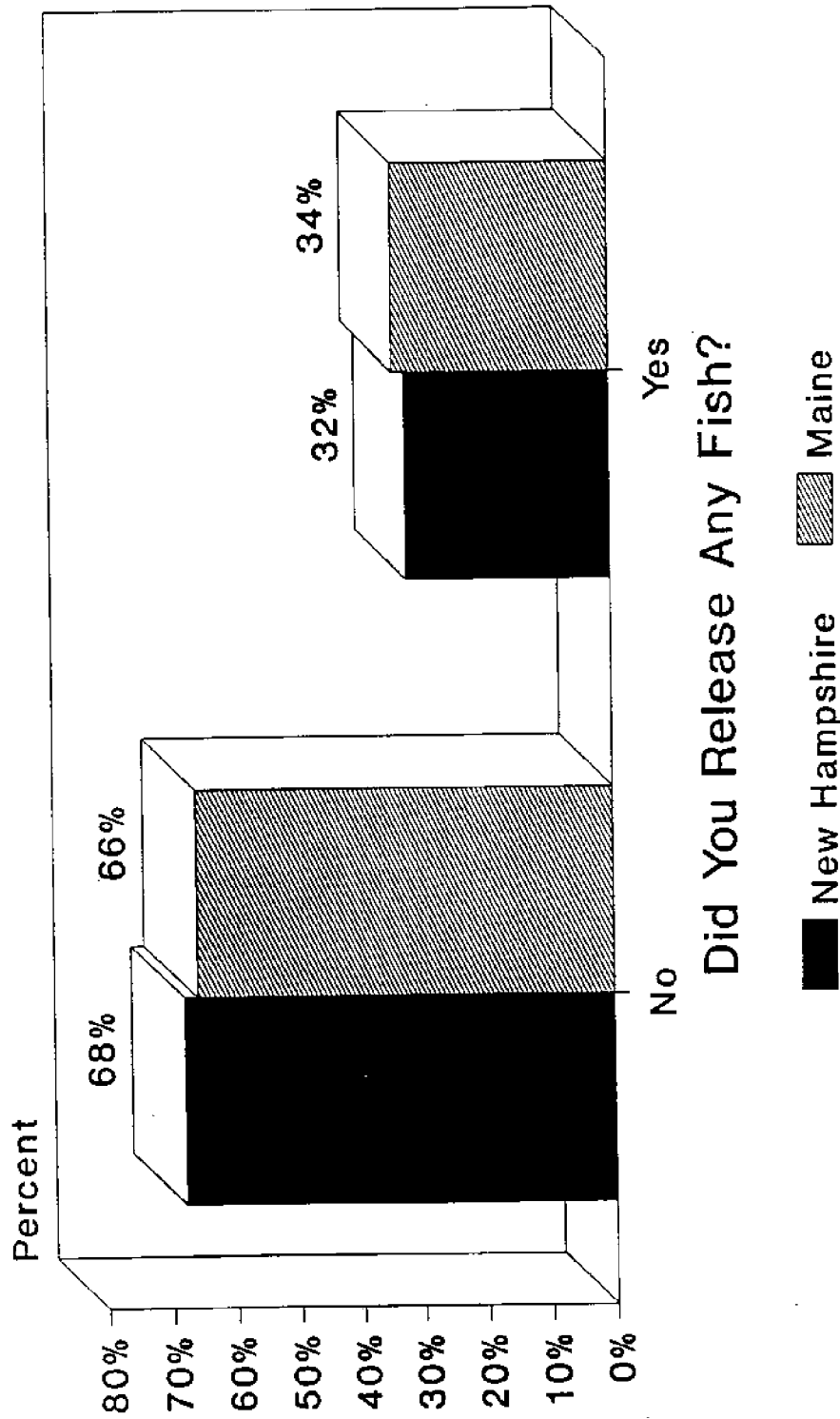
Number of Respondents = 527

Total Number of Fish Caught by Fishing Destination



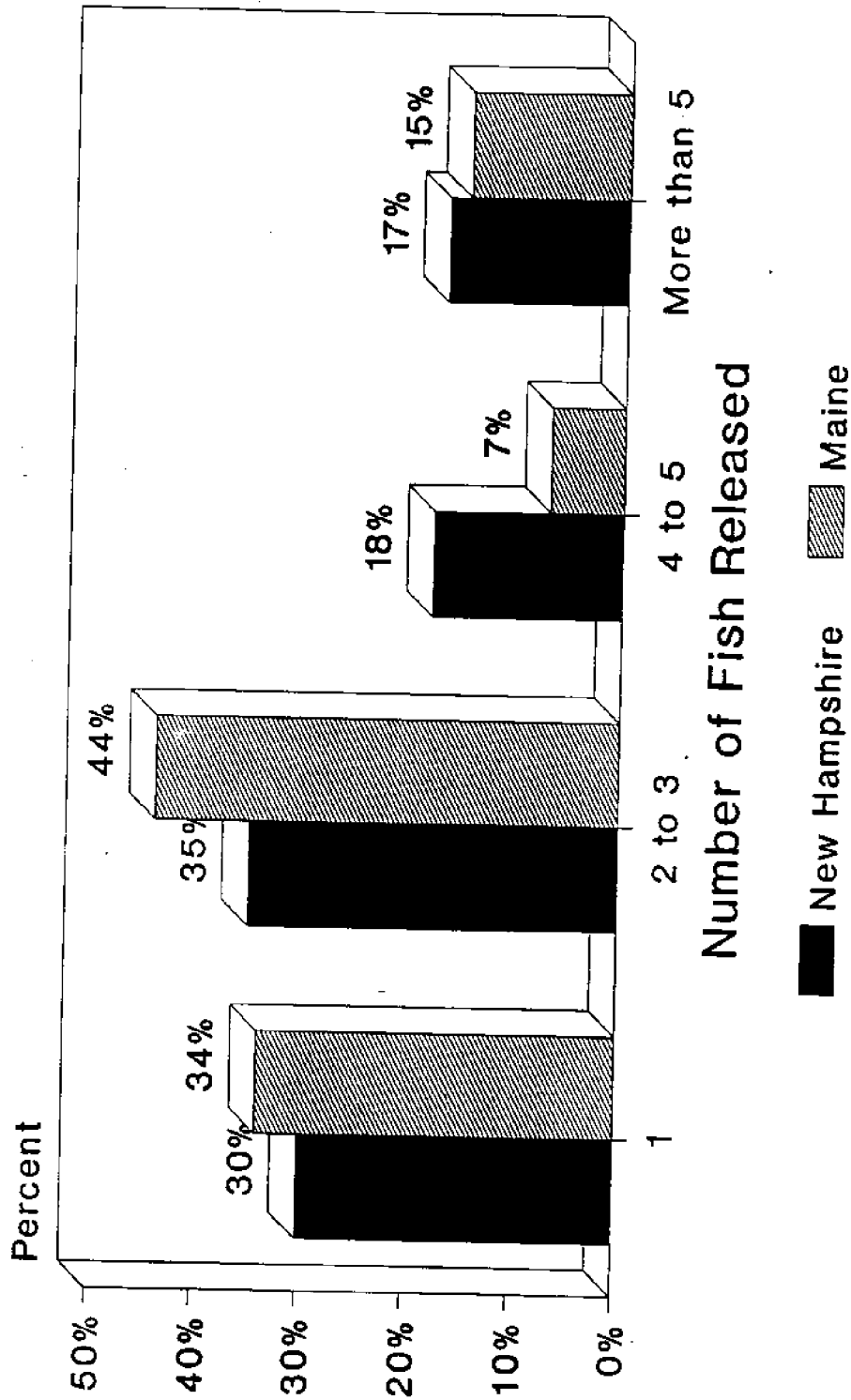
Number of Respondents = 845

Fish Released by Fishing Destination



Number of Respondents = 845

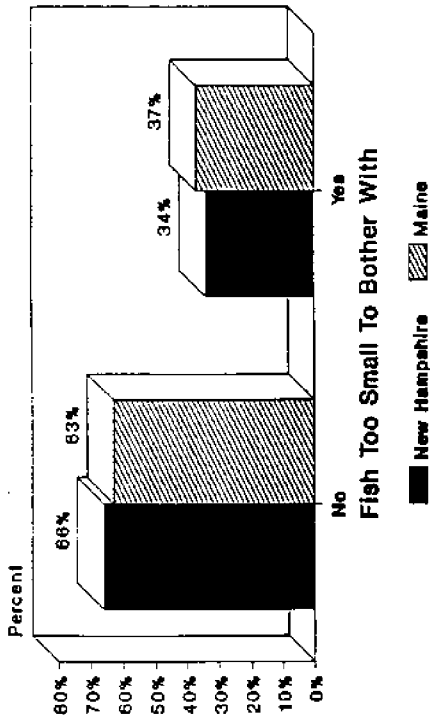
Number of Fish Released by Fishing Destination



Number of Respondents = 268

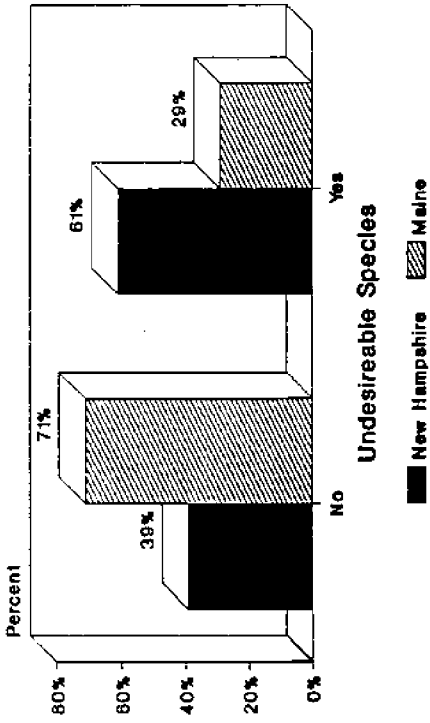
Reasons for Releasing Fish

Fish Too Small
by Fishing Destination



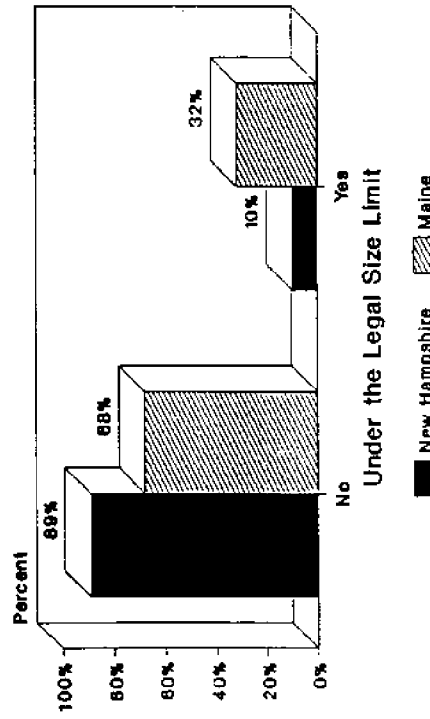
Number of Respondents - 277

Undesireable Species
by Fishing Destination



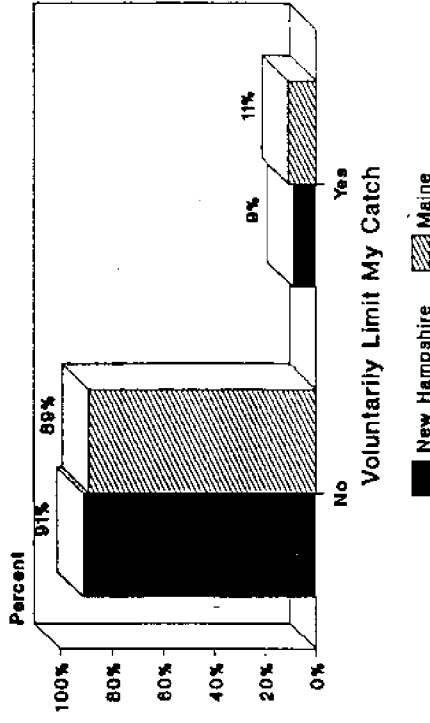
Number of Respondents - 277

Under Legal Size Limit
by Fishing Destination



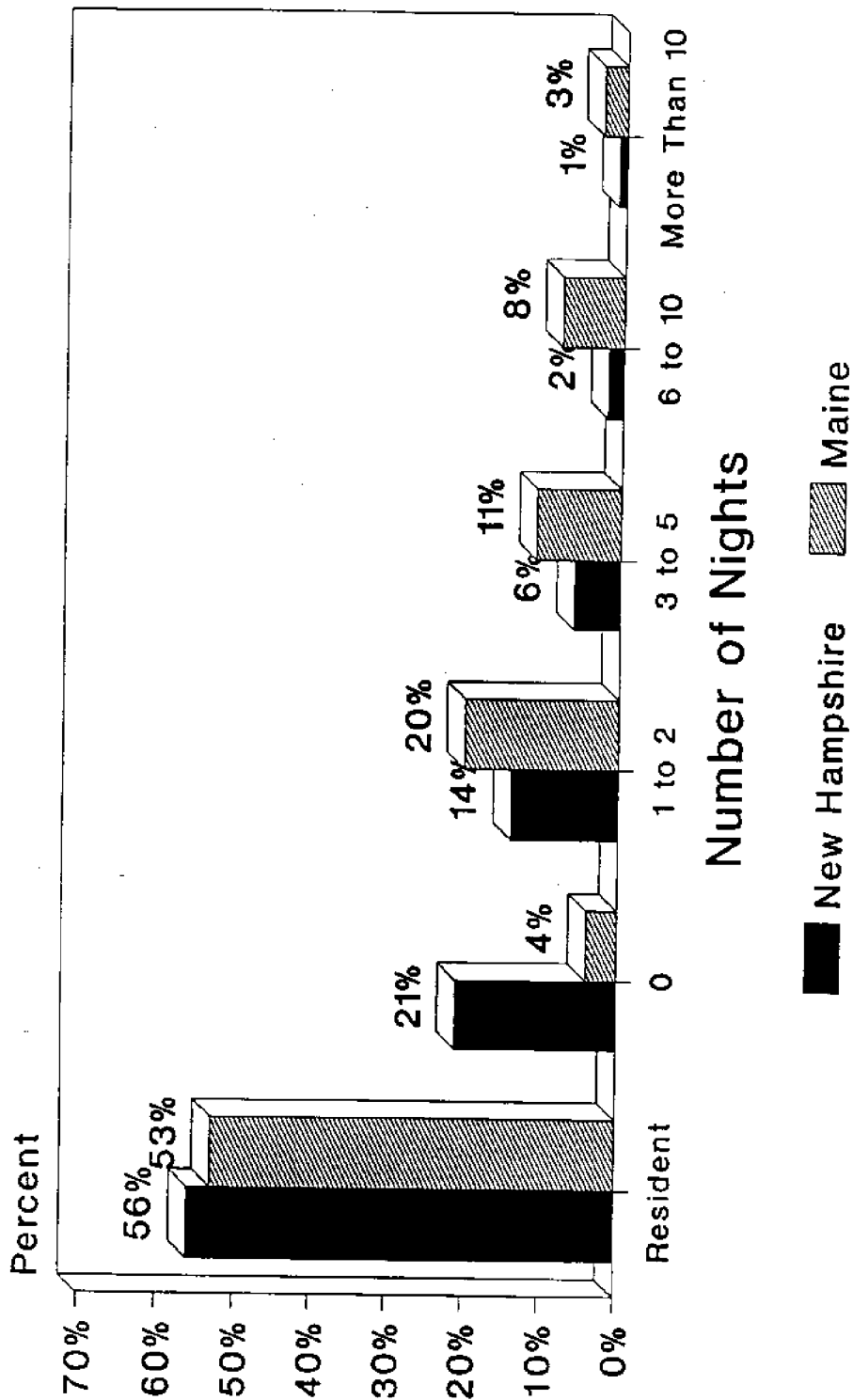
Number of Respondents - 277

Voluntarily Limit Catch
by Fishing Destination



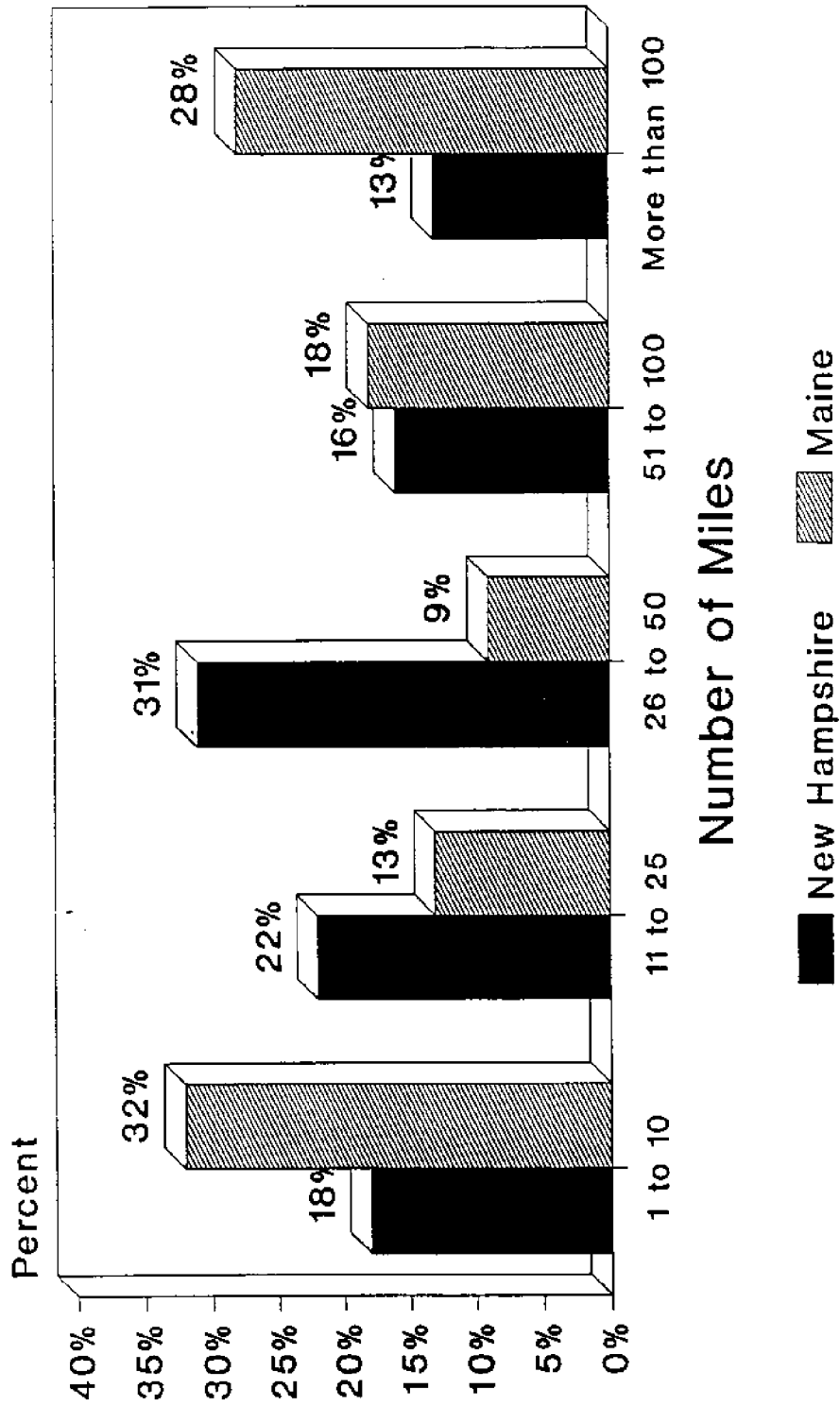
Number of Respondents - 277

Length of Fishing Trip by Fishing Destination



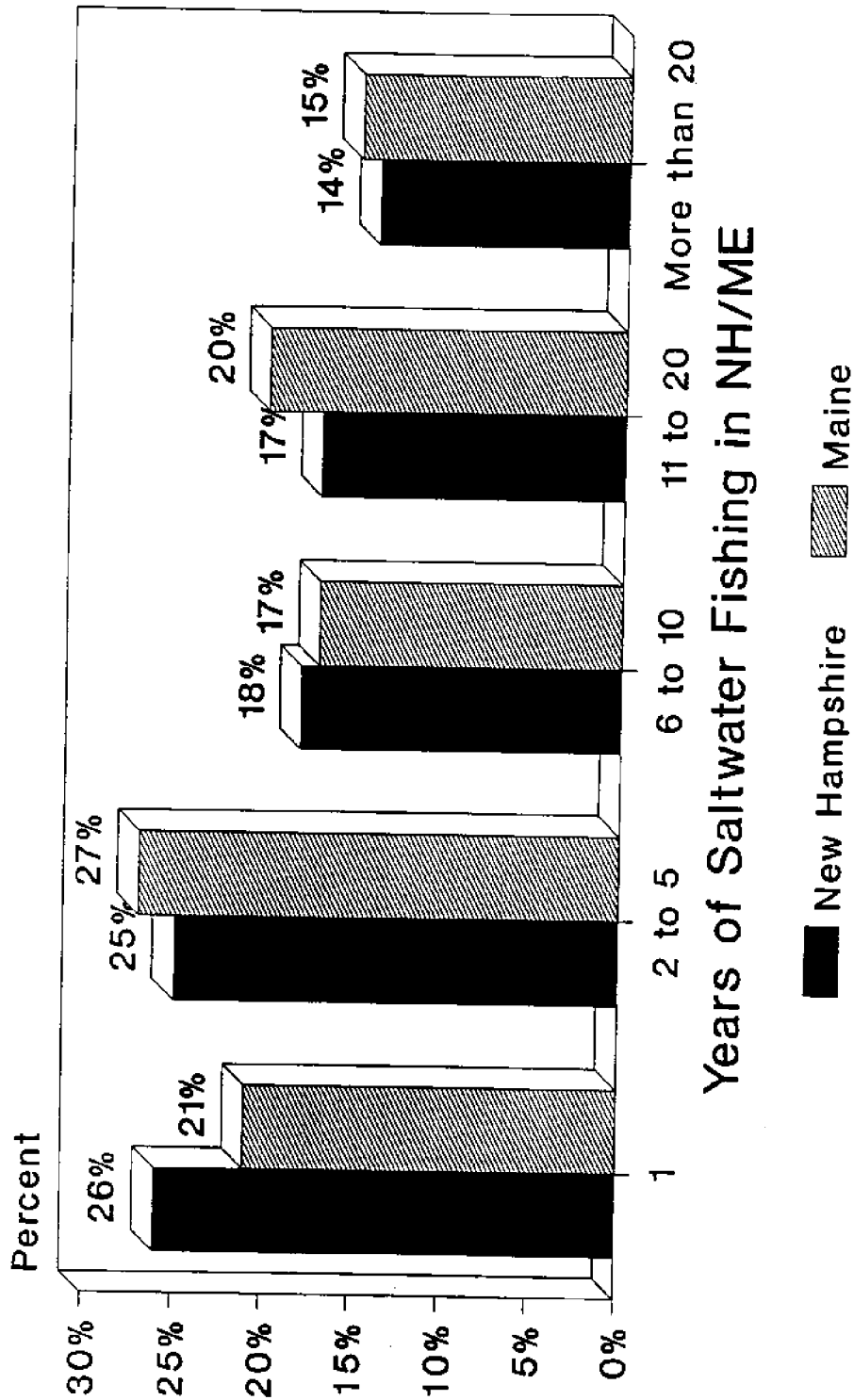
Number of Respondents = 855

Distance From Home by Fishing Destination



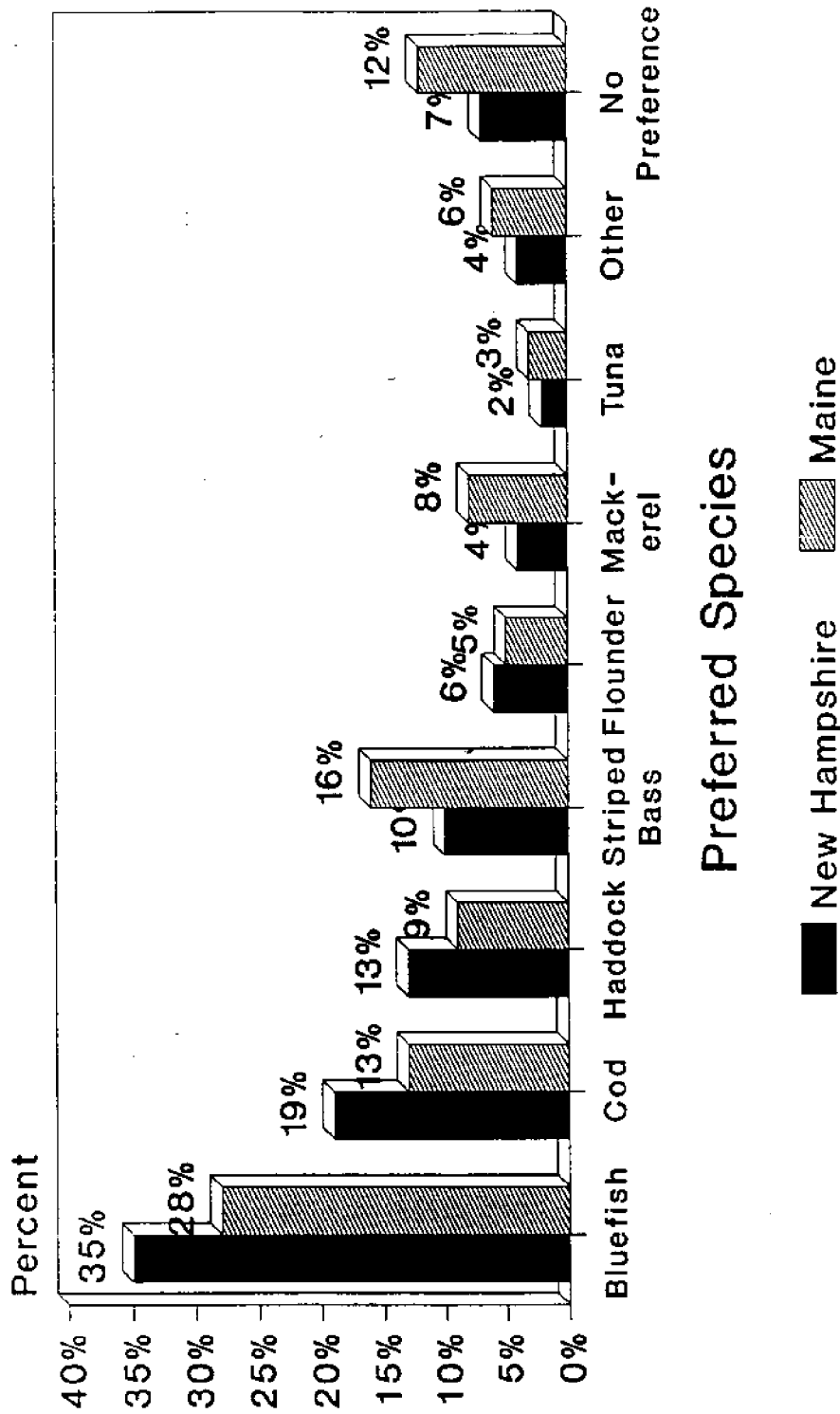
Number of Respondents = 843

Saltwater Fishing Prior Experience by Fishing Destination



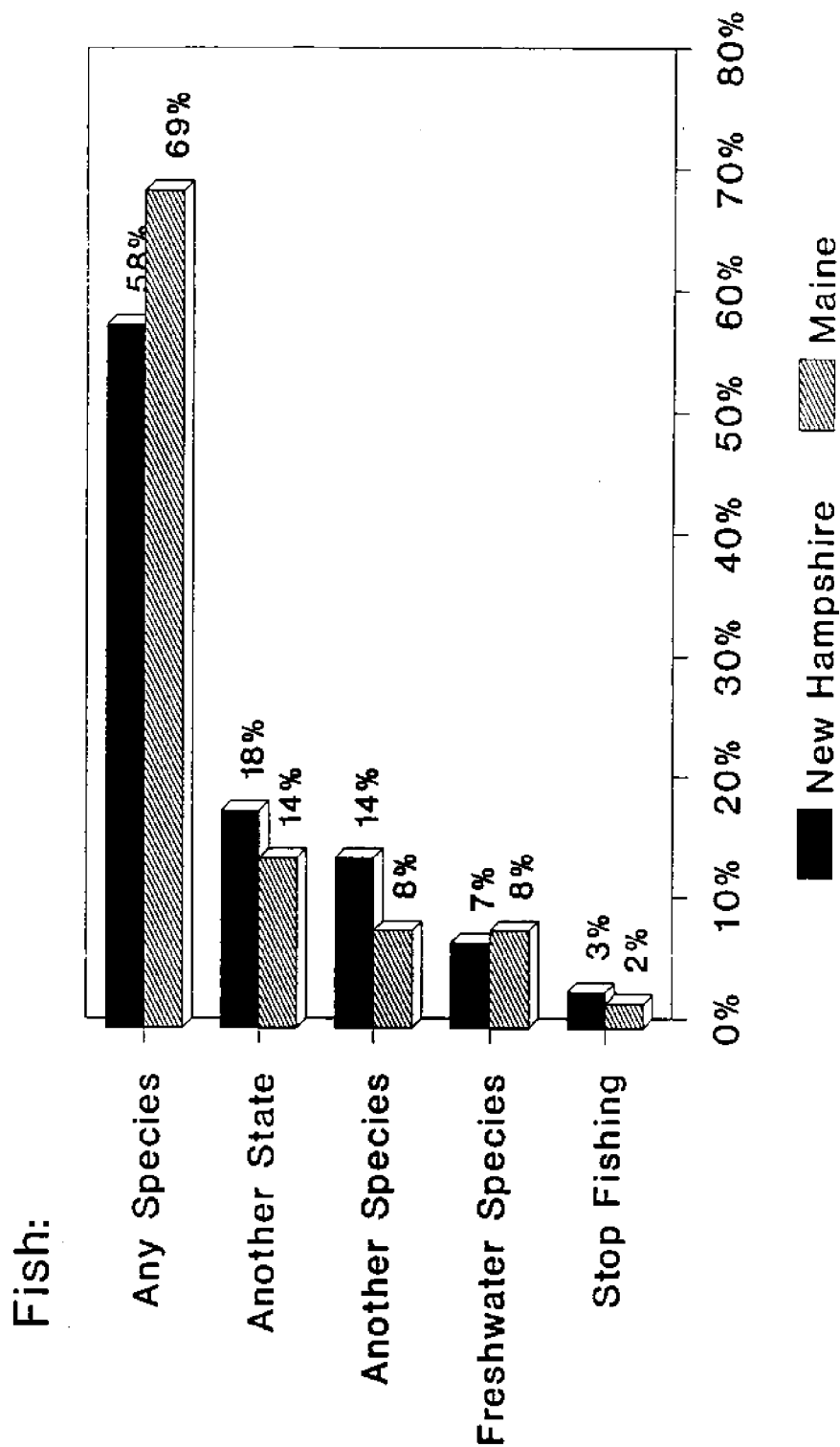
Number of Respondents = 842

Preferred Species by Fishing Destination



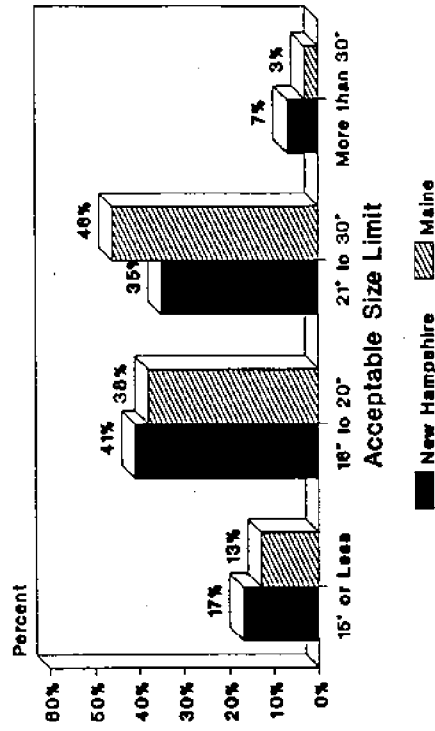
Number of Respondents = 810

Reactions to Prohibitions on Preferred Species by Fishing Destination



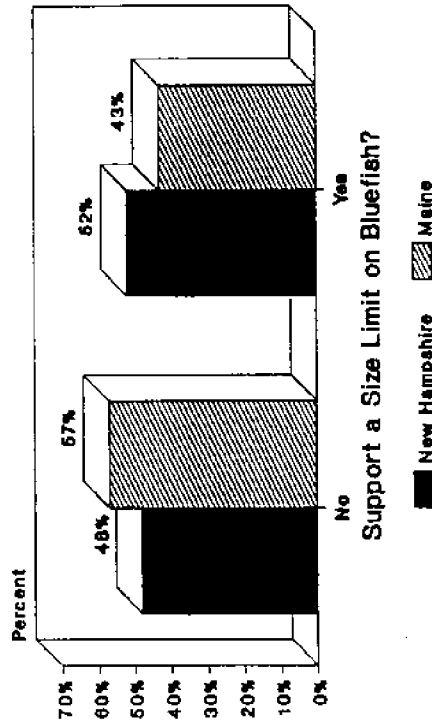
Number of Respondents = 775

Acceptable Size Limit For Bluefish
by Fishing Destination



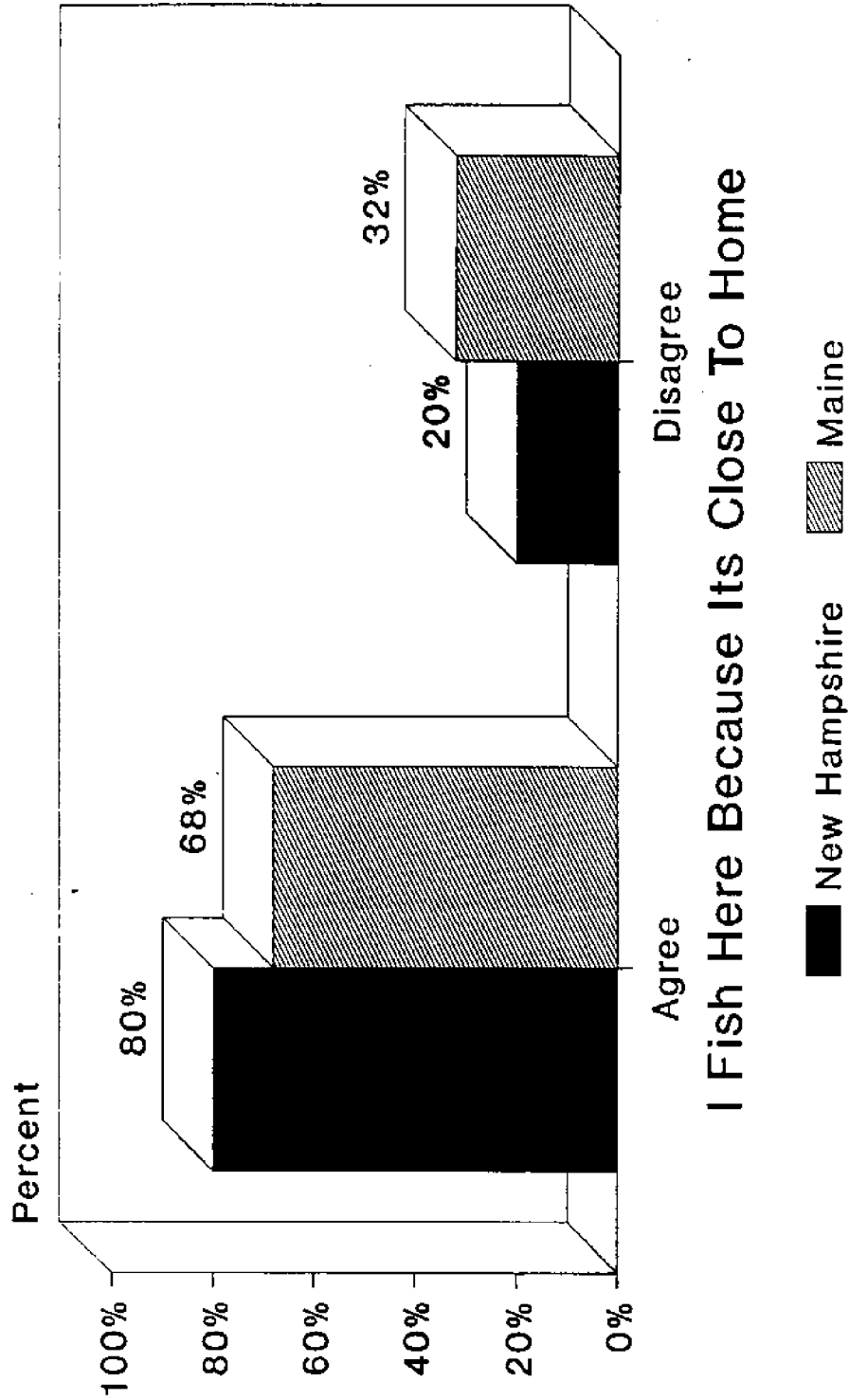
Number of Respondents • 220

Reaction to Size Limits on Bluefish
by Fishing Destination



Number of Respondents • 809

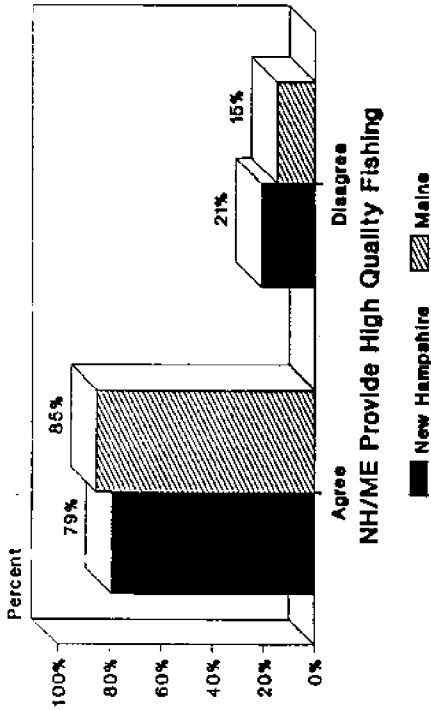
Proximity To Home As A Reason For Fishing NH/ME by Fishing Destination



I Fish Here Because Its Close To Home

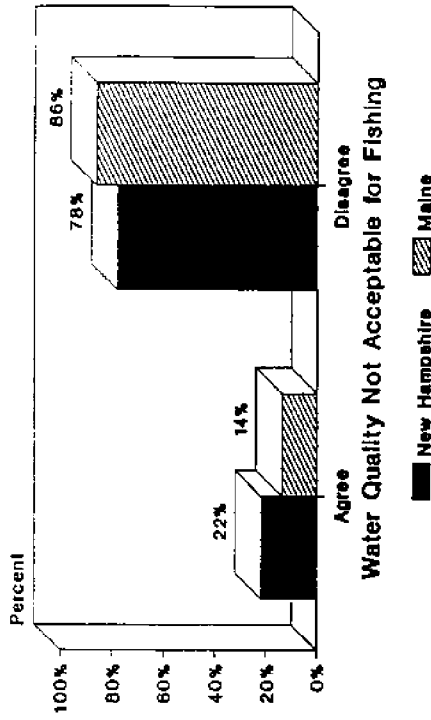
Number of Respondents = 839

NH/ME Provide High Quality Fishing Opportunities by Fishing Destination



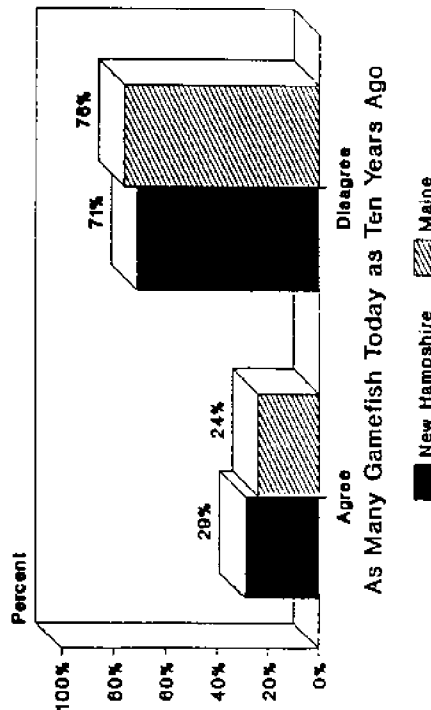
Number of Respondents - 831

Unacceptable Water Quality by Fishing Destination



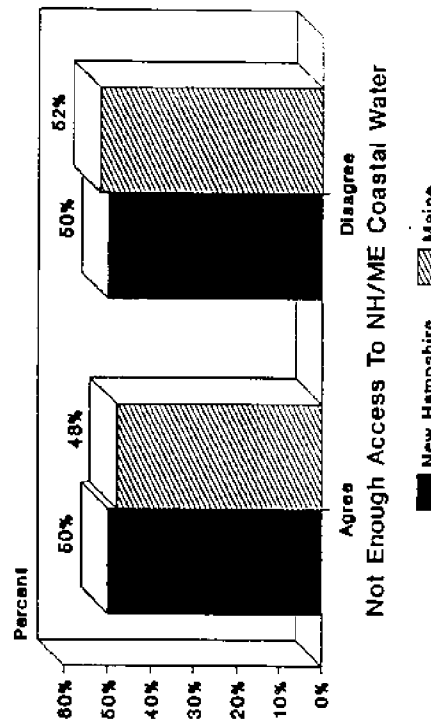
Number of Respondents - 817

Perceptions of Gamefish Populations by Fishing Destination



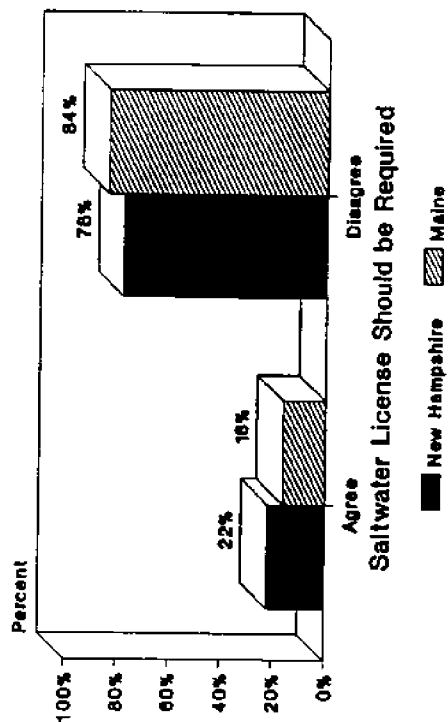
Number of Respondents - 707

Access To NH/ME Coastal Waters by Fishing Destination



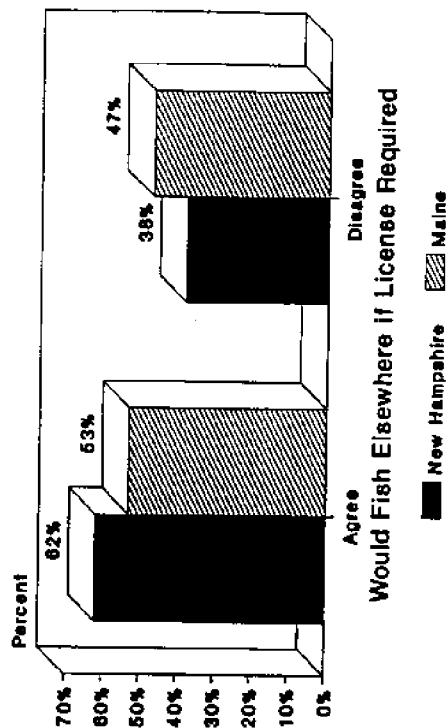
Number of Respondents - 795

Reactions to a Saltwater Fishing License
by Fishing Destination



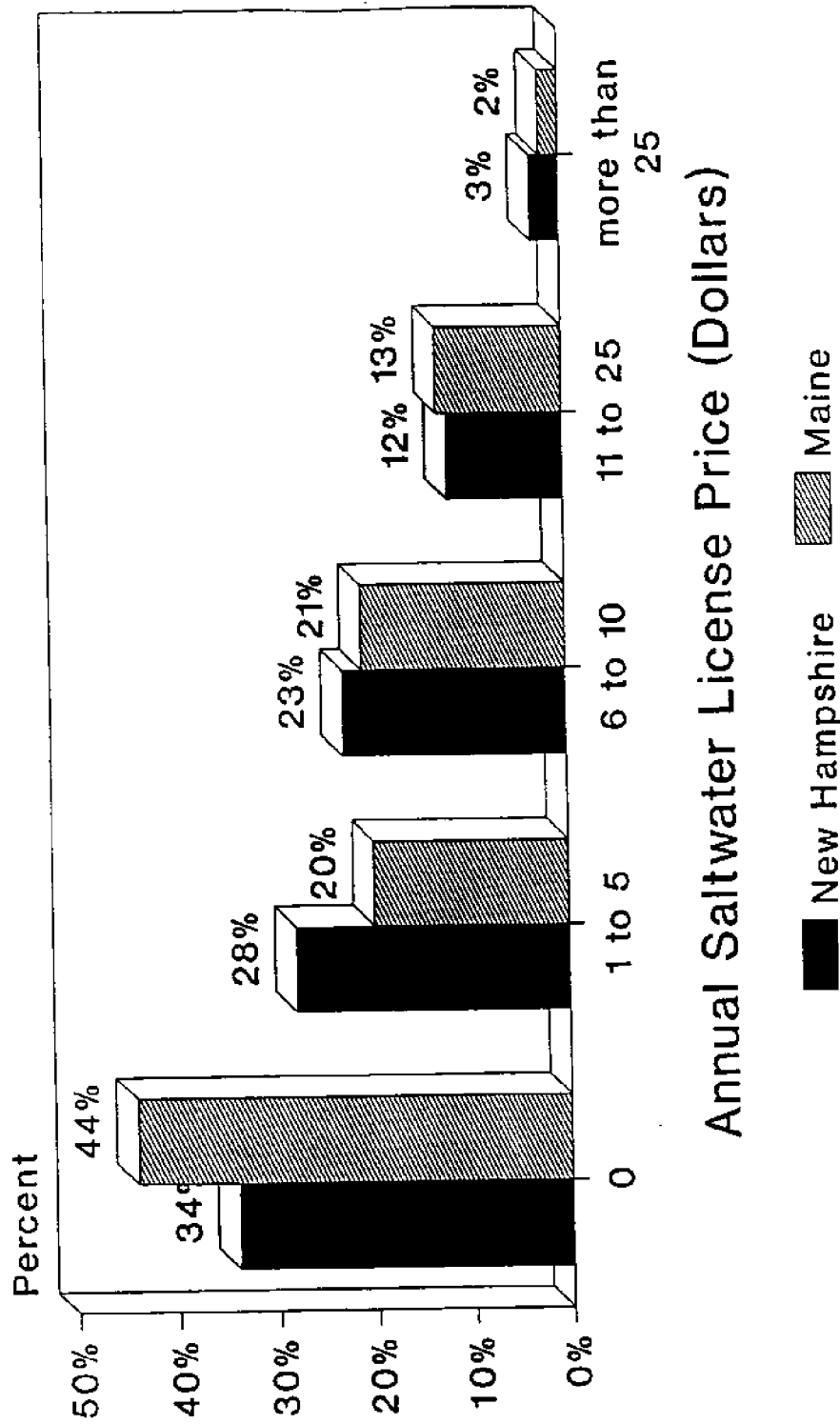
Number of Respondents - 623

Fish Elsewhere if License Required
by Fishing Destination



Number of Respondents - 626

Fair Price for Annual Saltwater License by Fishing Destination

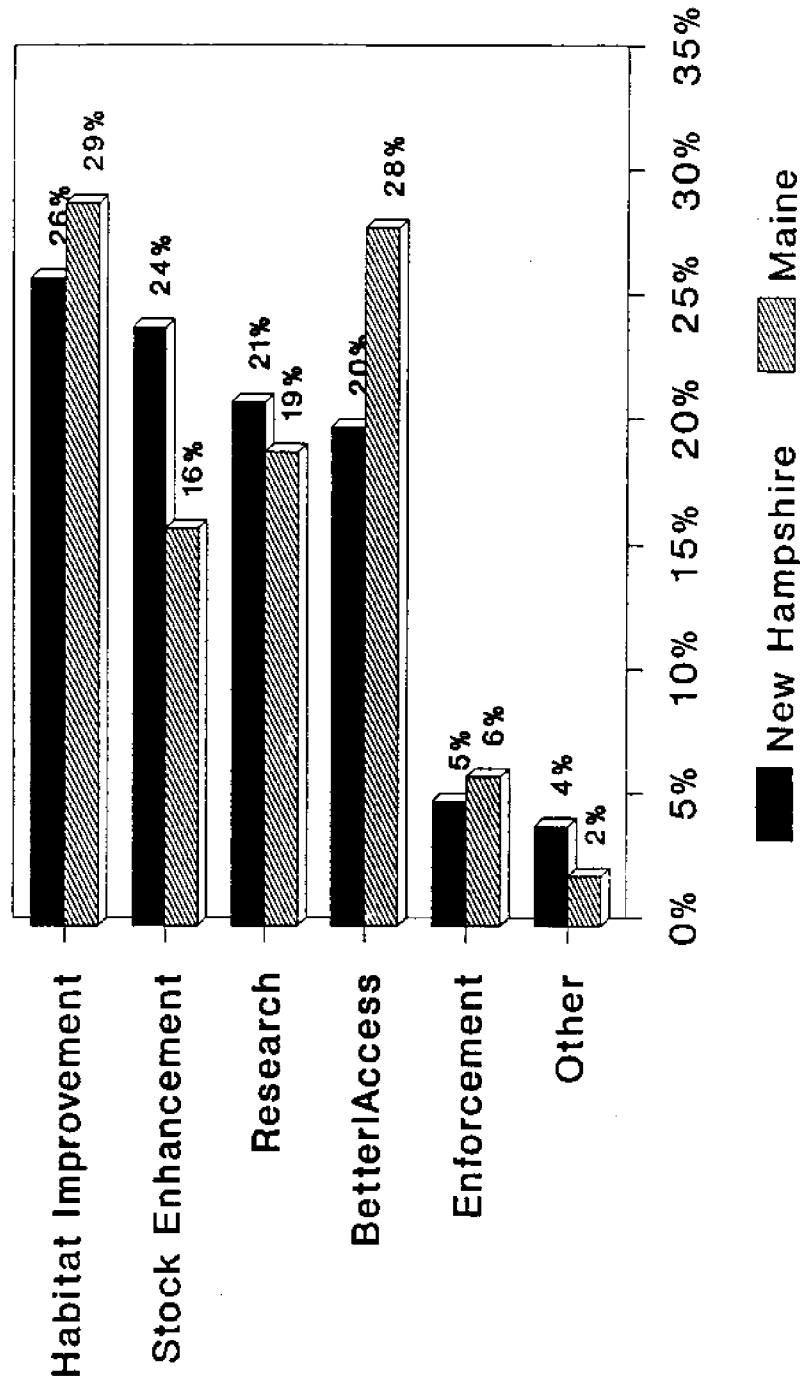


Annual Saltwater License Price (Dollars)

Number of Respondents = 788

Most Important Use of Saltwater License Money by Fishing Destination

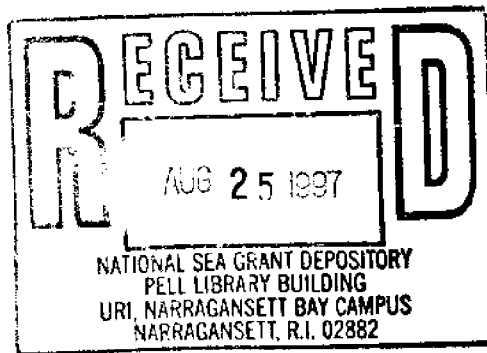
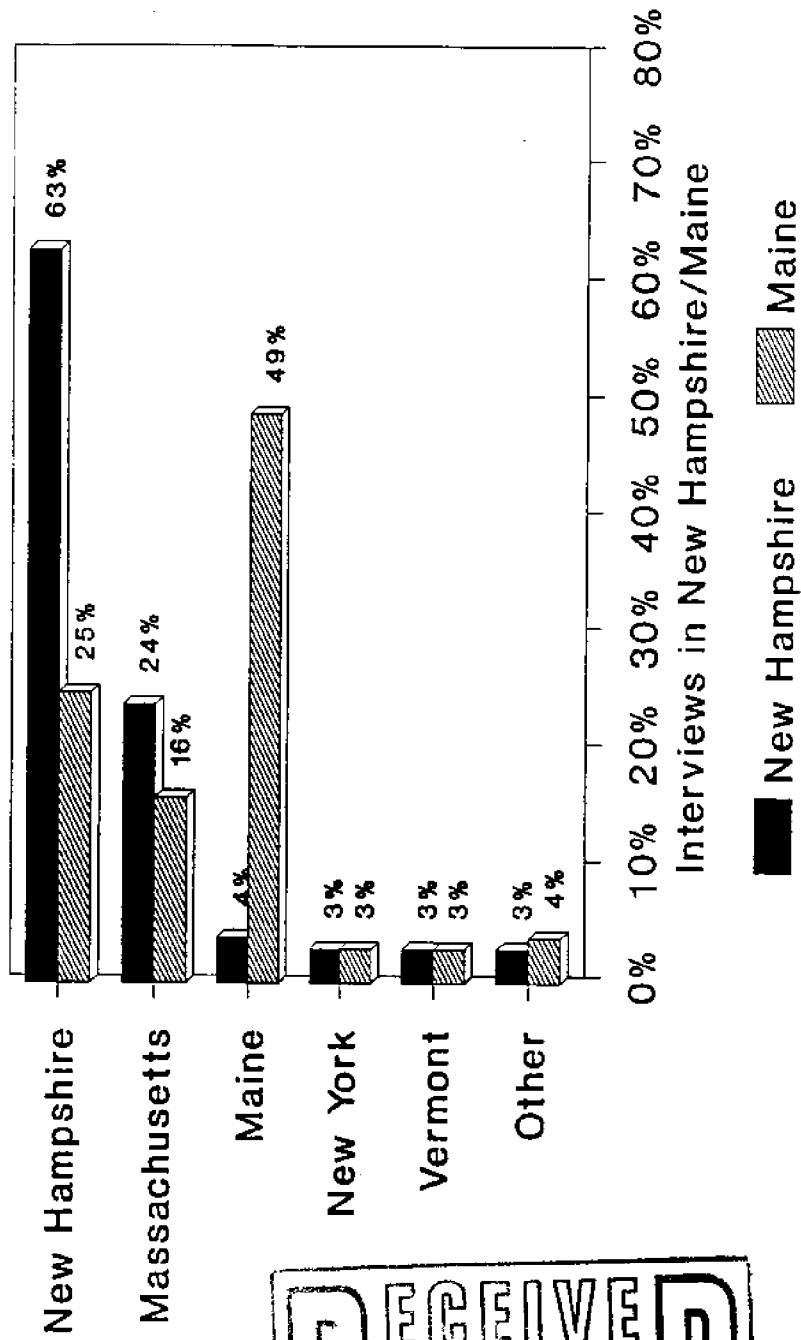
License Money Uses:



Number of Respondents = 724

State of Residence by Fishing Destination

State of Residence



Number of Respondents = 597