Consumption of Freshwater Fish by Maine Anglers and Related Issues

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ChemRisk ®
A Division of McLaren/Hart
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1990 Maine Angler Survey

☐ Fish consumption is a primary exposure pathway to biologically accumulate chemicals in waterbodies

☐ Survey designed to fill data gap in support of AWQC process for TCDD in Maine

- purpose was to estimate fish consumption rates

- focus on recreational anglers

- determine fish consumption rates specific to rivers and streams

Freshwater Fish Consumption in Maine

☐ No commercial sources

☐ Only sport-caught fish available

☐ Anglers likely to have highest consumption rates

24% of pop. in Maine have fishing license

☐ Sources of fish

- self-caught

- provided by other anglers in household

- provided by other anglers outside of household

Maine Angler Survey Implementation Methodology

803864

- ☐ Pulled 2,953 fishing licenses from Maine DIF&W

- ☐ Pretested survey using 50 individuals

- ☐ Mailed advance letter to sample of 2,500 anglers

- ☐ Mailed follow-up "thankyou/reminder" postcard one week later

- ☐ Mailed follow-up survey to 1,111 nonrespondents

- ☐ 69% response for all deliverable surveys

Response Summary for Maine Angler Survey

Completed interviews	1612

Fished in 1989-1990	1,251
Did not fish but consumed Maine fish	118
Neither fished nor consumed Maine fish*	243

Pretest sample	50
Undeliverable	235
No Response	653
Extra Sample	403
Initial Sample Size	2,953

*dropped from analysis

Analysis of Consumption by Individual Anglers for Self-Caught River Fish

Individual 1

Species 1
| Number of fish creeled for consumption | x | Weight of fish based on average length reported | x | Edible Portion | = | Total Mass Species 1 |

+

Species 2
| Number of fish creeled for consumption | x | Weight of fish based on average length reported | x | Edible Portion | = | Total Mass Species 2 |

+

Species N
| Number of fish creeled for consumption | x | Weight of fish based on average length reported | x | Edible Portion | = | Total Mass Species N |

Total Mass Self-Caught River Fish

Total Consumption of Freshwater Fish by Individual Anglers

| Total Mass From Ice Fishing | + | Total Mass From Standing Water | + | Total Mass From Flowing Water | + | Total Mass From Other Household Sources | + | Total Mass From Non-Household Sources | + | Total Mass From Future Trips |

| Number of Freshwater Fish Consumers in Angler's Household | X | 365 days |

= Fish Consumption Rate

Analysis of Fish Consumption Rates for Anglers Fishing All Waters in Maine

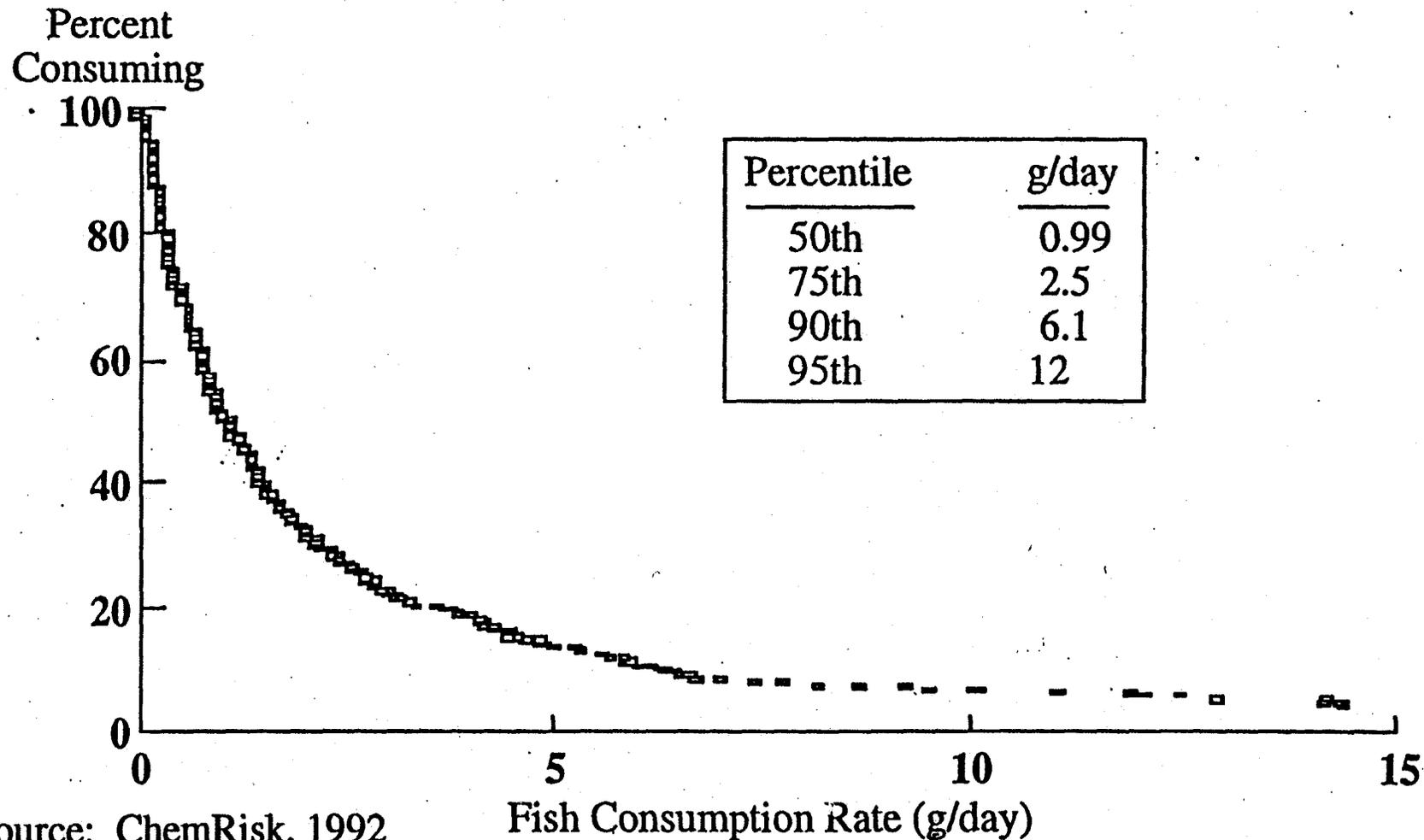|	All Anglers	Consuming Anglers Only
Number of Individuals	1,369	1,053
Median (50th percentile)	1.1	2.0
66th percentile	2.6	4.0
75th percentile	4.2	5.8
Arithmetic Mean	5.0	6.4
Percentile at the Mean	79	77
90th percentile	11	13
95th percentile	21	26

Analysis of Fish Consumption Rates for Anglers Fishing All Rivers and Streams in Maine

	River Anglers	Consuming Anglers Only
Number of Individuals	741	464
Median (50th percentile)	0.19	0.99
66th percentile	0.71	1.8
75th percentile	1.3	2.5
Arithmetic Mean	1.9	3.7
Percentile at the Mean	82	81
90th percentile	3.7	6.1
95th percentile	7.2	12

max 118

Frequency Distribution of Freshwater Fish Consumption by Maine Anglers (Rivers and Streams--Consuming Anglers)

Percentile	g/day
50th	0.99
75th	2.5
90th	6.1
95th	12

Percent Consuming (y-axis)

Fish Consumption Rate (g/day) (x-axis)

Source: ChemRisk, 1992

Other Findings

- ☐ 39% of fish caught were eaten

- ☐ 7% of the anglers ate 93% of the fish caught and eaten from Maine rivers

- ☐ 55% of river anglers ate no freshwater fish from rivers

- ☐ Median rates of fish consumption were not significantly different ($p \leq 0.05$) between age groups, income level, or ethnic groups

Issues from May Meeting

- ☐ Recall bias

- ☐ Nonresponse bias

- ☐ Suppression due to bans or pollution concerns

- ☐ Preferred species

digit bias

Recall Bias

☐ Recreational fishing and catch rates overestimated by recall surveys of 6-months to 1-year (Westat, 1989 for U.S. Fish and Wildlife Service)

☐ Longer recall periods led to overestimates in survey of Michigan anglers (West et al., 1989)

☐ 12-month recall period may lead to overestimates of fish consumption rates by at least 10% (Connelly and Brown, 1995)

Nonresponse Bias

☐ Not evaluated in Maine Angler Survey

☐ High response rate makes nonresponse less of a problem for Maine Angler Survey

☐ Accounting for nonresponse bias would result in lower estimates of intake

- Response rates positively correlated with salience of issue to respondent (Haberlein and Baumgartner, 1978)

- Other recreational surveys indicate that nonrespondents have lower participation rates (Brown and Wilkins, 1978; Connelly et al., 1990, 1992; West et al., 1989, 1991)

Suppression of Angling and Consumption

- ☐ Only 200 of 37,000 possible miles of Maine rivers, streams, and brooks have history of industrial pollution *mercury advisory is now in place elsewhere advisories at the time of the survey for industrial source*

- ☐ Survey identified 27 locations at potentially impacted waters out of 748 total locations

- ☐ No individual angler chose only impacted locations as top 5 spots

- ☐ Advisories in Maine led to substitution not suppression *angler tend to substitute fishing locations*

Species Preferences Comparison

Species	1990 ME Angler Survey*	1990-91 NY Angler Survey
Trout	1	1
White Perch	2	5
Bass	3	2
Bullhead/Catfish	9	3

*Based on consumption from rivers and streams

Factors Influencing Selection of Fish Consumption Rates for Risk Assessment

☐ Targeted populations

☐ Targeted waterbodies

☐ Regional considerations

☐ Measurement methodology

Sources for Fish Consumption Rates for Northeastern Freshwater Anglers

Study	Mean Consumption Rates (g/day)	
	All waters	Rivers and Streams
NYSDEC/Connelly et al., 1990	28*	-
Connelly et al., 1992	6.8**	-
Hudson River Sloop Clearwater, 1993 (crabs, bluefish, striped bass)		-
Ebert et al., 1993	6.4	3.7
Ebert et al., 1995	-	2.6
Connelly and Brown, 1995 based on 1992 lake Ontario	-4.5**,9.4**	-

*All sources of fish commercial, store bought, restaurant

**Based on meal size estimate of 227 g = approx. 8 oz.

NYSDEC/Connelly et al., 1990

- ☐ 1988 recall survey of NY anglers

- ☐ Designed to measure effectiveness of fish consumption advisories

- ☐ 12-month recall period

- ☐ Fish consumption rates not restricted to sport-caught fish

Hudson River Sloop Clearwater, 1993

☐ 1991, 1992 intercept survey of shore-based Hudson River anglers *excluded boat anglers, small sample size*

☐ Intended to assess awareness of and compliance with fish consumption advisories

☐ Survey not designed to represent entire population of Hudson River anglers

☐ Raw data may provide anecdotal information useful for risk assessment

Ebert et al., 1993

☐ 1990 recall survey of Maine freshwater anglers including 1989 ice fishing season

☐ Designed to measure fish consumption by waterbody type

☐ 12-month recall period

☐ Fish consumption rates available specifically for rivers and streams

Ebert et al., 1995

❑ 1984-1986 intercept survey of Housatonic River (CT) anglers

❑ Fish consumption information extracted from survey with fisheries management focus

❑ Fish consumption rates for single river
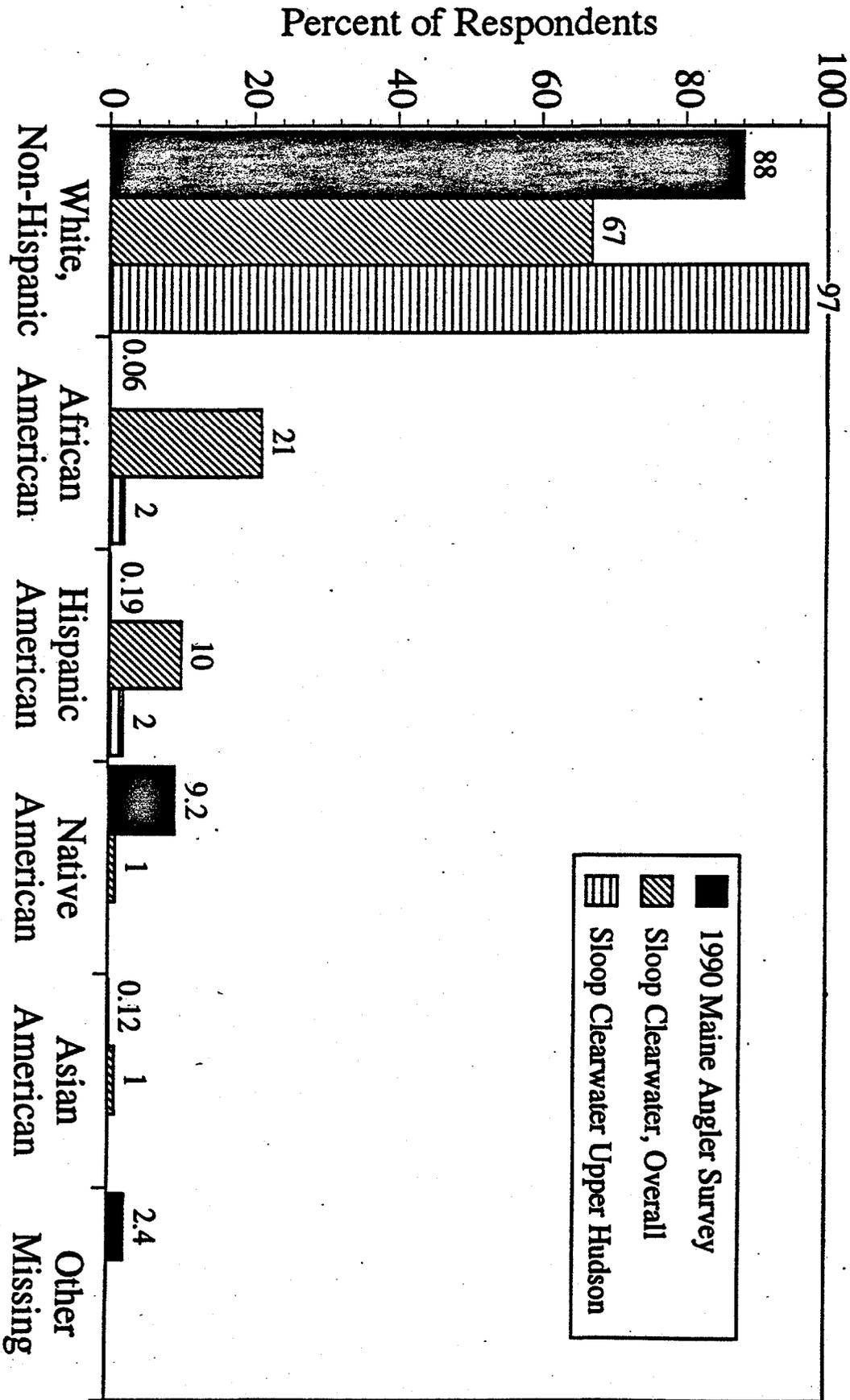
❑ Subject to sampling bias

Connelly and Brown, 1995

☐ Paired 1991 recall and 1992 diary surveys of Lake Ontario anglers

☐ Designed to compare methodologies to assess magnitude and direction of bias

- days fished
- fish consumption
- angling expenditures

☐ Established that 12-month recall period leads to overestimates

- days fished (44-45%)
- fish consumption rates (at least 10%)
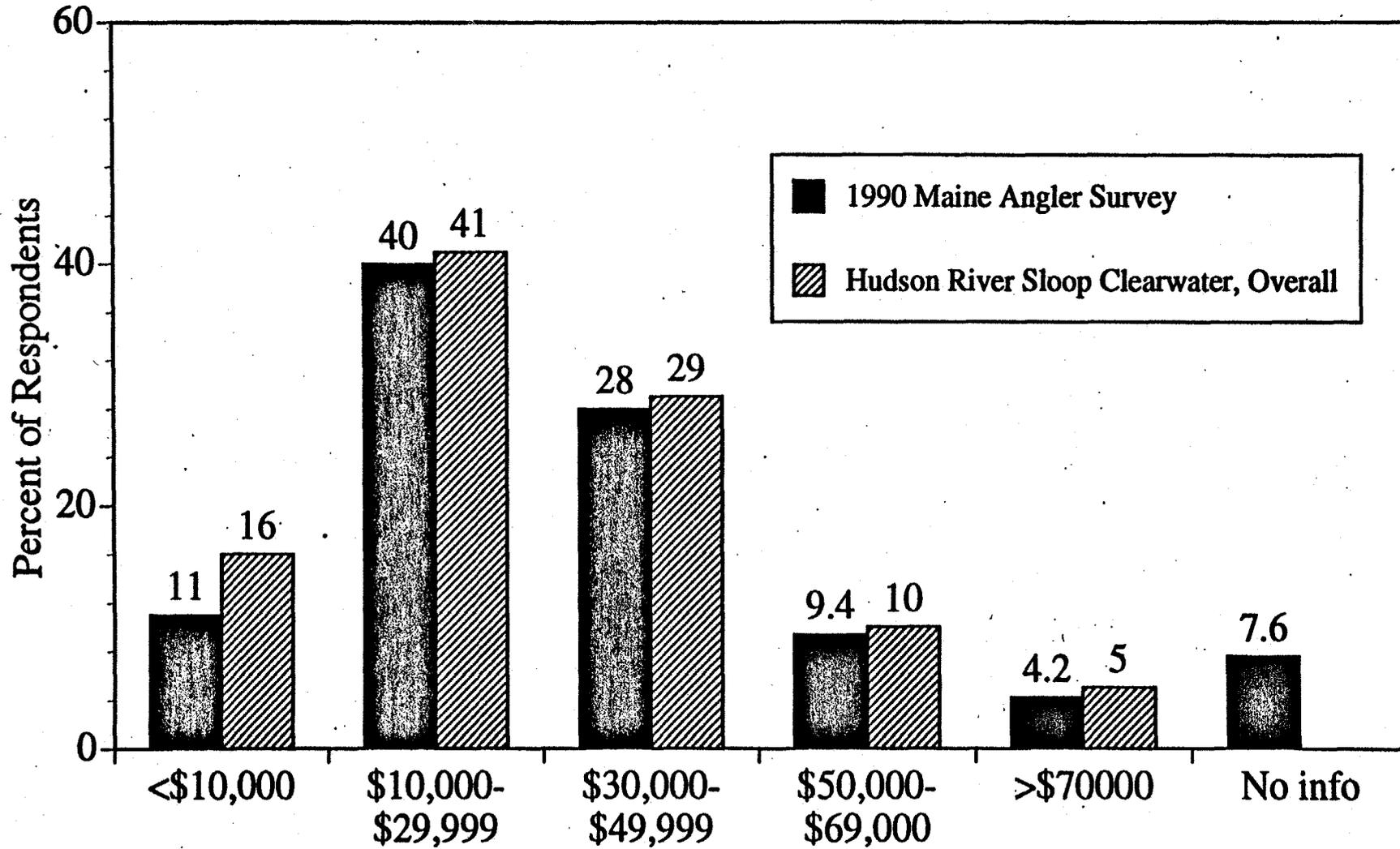- angling expenditures not overestimated

Demographics for Freshwater Anglers in Northeastern U.S.

- ☐ Age

- ☐ Income

- ☐ Ethnicity

Ethnic Group Distribution Comparison

Percent of Respondents

Legend:
- 1990 Maine Angler Survey
- Sloop Clearwater, Overall
- Sloop Clearwater Upper Hudson

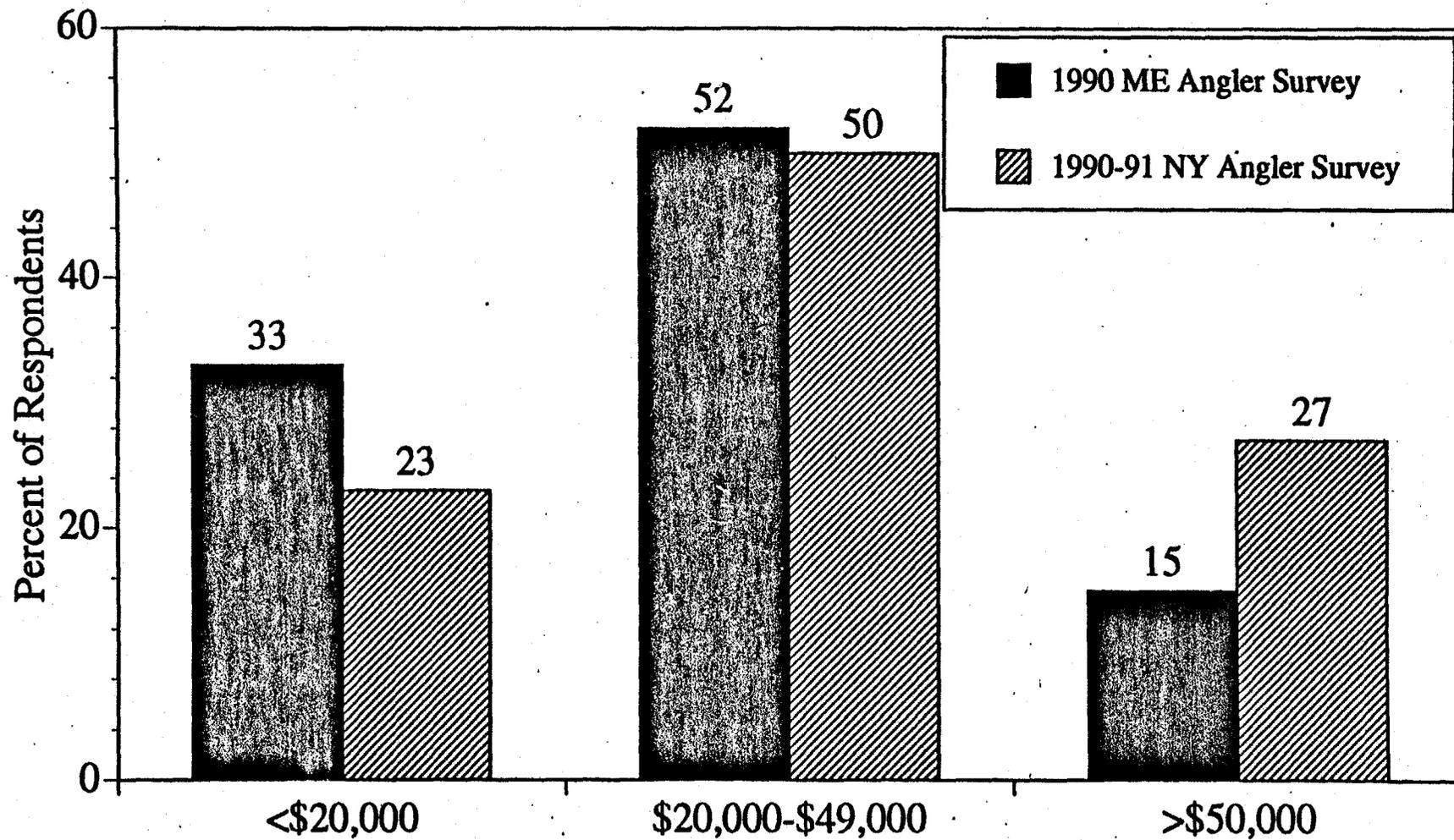| Ethnic Group	1990 Maine Angler Survey	Sloop Clearwater, Overall	Sloop Clearwater Upper Hudson
White, Non-Hispanic	88	67	97
African American	0.06	21	2
Hispanic American	0.19	10	2
Native American	9.2	1	
Asian American	0.12	1	
Other Missing	2.4		

Income Group Distribution Comparison

Income Group Distribution Comparison

Intercept Survey Bias

☐ Critical for evaluating creel surveys

☐ Published article

☐ Affects Sloop Clearwater and Ebert et al., 1995

A Hypothetical Example

Consider a town having 3,000 anglers that fall into two groups:

    High Group: 10% eat 30 fish/yr and fish 50 times/yr
    Typical Group: 90% eat 1 fish/yr and fish 2 times/yr
    All fishing is done at one location on a local river

Estimating Average Intake Rates Using Population and Creel Surveys

Population Survey

Average intake of anglers living in the town

10% eat 30 fish/yr	=	3.0 fish/yr
90% eat 1 fish/yr	=	0.9 fish/yr
Average yearly intake	=	3.9 fish/yr

Creel Survey

Average fish intake of anglers at the river

The Population of Anglers at the River

High Group

3,000 anglers x 10% x 50 trips/yr =   15,000 angler-trips/yr

Typical Group

3,000 anglers x 90% x 2 trips/yr =   5,400 angler-trips/yr

Total   20,400 angler trips/yr

Average Number of Anglers Present at the River on a Given Day

$$\frac{20,400 \text{ angler trips/yr}}{365 \text{ days/yr}} = 56 \text{ anglers present on any given day}$$

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Distribution of Anglers at the River

High Angler Group

$$\frac{15,000 \text{ angler trips/yr}}{365 \text{ days/yr}} = 41 \text{ angler trips/day} = 73\%$$

Typical Angler Group

$$\frac{5,400 \text{ angler trips/yr}}{365 \text{ days/yr}} = 15 \text{ angler trips/day} = 27\%$$

The high angler group makes up 73% of anglers surveyed at the river but only 10% of the total population

8

Average Intake of Anglers at the River

73% ate 30 fish/yr =   22.0 fish/yr
27% ate 1 fish/yr =   0.3 fish/yr
                                     ―――――
                                     22.3 fish/yr

Average intake rate for the
total angler population   3.9 fish/yr

The creel survey overestimates intake rates for the total population
by a factor of 5.7

EFH- explain the differences between creel surveys and mail surveys

9

This survey is about your freshwater fishing experiences In Maine. Your name was selected because you purchased a Maine resident fishing license in 1989.

1. About how old were you when you took your first freshwater fishing trip in Maine? *(FILL IN BLANK)*

Q1
    2 - 75 years old the first time I ever fished in Maine
    99 Missing

2. How would you describe your fishing ability? *(CIRCLE ONE NUMBER)*

Q2
    1   2   3   4   5   9
    Novice   Intermediate   Expert Missing

3. Did you go freshwater fishing in Maine in 1989? *(CIRCLE ONE NUMBER)*

Q3
    1 No
    2 Yes
    9 Missing

4. Did you go fishing in Maine during either the 1989-1990 ice fishing season or during the 1990 open-water fishing seasons? *(CIRCLE ONE NUMBER)*

Q4
    1 No
    2 Yes————>Skip to Question 6
    9 Missing

5. What was the most important reason why you did not go fishing during the 1989-1990 ice fishing season or the 1990 open-water seasons? *(CIRCLE ONE NUMBER)*

Q5
    1 Health problems
    2 Too busy with other activities
    3 I lost my interest in fishing
    4 Other (please describe: See List # i)
    9 Missing
    ● Not applicable

If you didn't fish during the 1989-1990 ice fishing season or make any 1990 open-water fishing trips, please skip to Question 25.

6. We would like to know more about the factors or site characteristics that are important in choosing the location where you fish. Please indicate how important each factor or site characteristic, listed below, is to you. *(CIRCLE ONE NUMBER FOR EACH CATEGORY)*

		Not Important	Somewhat Important	Very Important	Missing	Not Applicable
Q6_1	Easy access from a road	1	2	3	9	•
Q6_2	Availability of public access	1	2	3	9	•
Q6_3	Maintained boad launch	1	2	3	9	•
Q6_4	Type of water (pond, river, etc.)	1	2	3	9	•
Q6_5	Size of body of water	1	2	3	9	•
Q6_6	Easy to fish from the shore	1	2	3	9	•
Q6_7	Special fishing regulations	1	2	3	9	•
Q6_8	Chance of catching a trophy fish	1	2	3	9	•
Q6_9	Desirable species of fish	1	2	3	9	•
Q6_10	Chance to catch many fish	1	2	3	9	•
Q6_11	Past fishing success	1	2	3	9	•
Q6_12	Not likely to get skunked	1	2	3	9	•
Q6_13	Location where friends fish	1	2	3	9	•
Q6_14	Few anglers	1	2	3	9	•
Q6_15	Beauty of surrounding area	1	2	3	9	•
Q6_16	Close to motels, restaurants, etc.	1	2	3	9	•
Q6_17	Close to my home	1	2	3	9	•
Q6_18	Close to my camp	1	2	3	9	•

In the next section, we would like to learn about your <u>1989-1990 Ice fishing trips</u>. If you cannot recall the exact details, please answer with your best estimates.

7. Did you take any ice fishing trips in Maine during the 1989-1990 ice fishing season? *(CIRCLE ONE NUMBER)*

    1   No————>Skip to Question 12
    2   Yes ·
    9   Missing
    •   Not applicable

8. During the 1989-1990 ice fishing season, on how many different days did you spend part or all of the day ice fishing? *(FILL IN BLANK)*

    1 - 208 days fished during the 1989-1990 ice fishing season
    999   Missing
    •   Not applicable

9. During your 1989-1990 ice fishing trips, on average, how many hours per day did you spend ice fishing? *(FILL IN BLANK)*

    1 - 20 hours per day ice fishing
    99   Missing
    •   Not applicable

10. Did you catch any fish during your 1989-1990 ice fishing trips? *(CIRCLE ONE NUMBER)*

    1   No————>Skip to Question 12
    2   Yes
    9   Missing
    •   Not applicable

The previous section asked about the fish you caught during the 1989-1990 ice fishing season. This section asks about the fish you caught during the 1990 open-water fishing season. If you cannot recall the exact details, please answer with your best estimates.

12. Have you made any open-water fishing trips in Maine during 1990?

Q12
    1 No————>Skip to Question 25
    2 Yes
    9 Missing
    • Not applicable

13. Have you taken any open-water fishing trips during 1990 to any ponds or lakes in Maine? *(CIRCLE ONE NUMBER)*

Q13
    1 No————>Skip to Question 17
    2 Yes
    9 Missing
    • Not applicable

14. During 1990, on how many different days did you spend part or all of the day open-water fishing on ponds or lakes in Maine? *(FILL IN BLANK)*

Q14
    1 - 165 different days fished on ponds or lakes in Maine
    999   Missing
    •   Not applicable

15. During your 1990 open-water fishing trips, on average, how many hours per day did you spend fishing on ponds or lakes in Maine? *(FILL IN BLANK)*

Q15
    1 - 22 hours per day fishing on ponds or lakes in Maine
    99   Missing
    •   Not applicable

16. On your 1990 open-water fishing trips, how did you usually fish when you fished on ponds or lakes in Maine? *(CIRCLE ONE NUMBER)*

Q16
    1 From the shore or bank only
    2 From a boat or canoe only
    3 From both the shore or bank and a boat or canoe
    4 Other (please describe):

ID	Response
439	From my dock and in a small fishing boat
1064	Either from a canoe or from shore
1222	Chest waders
1299	On lake from wharf
1639	Wading brooks and rivers
2350	Wading

    9 Missing
    • Not applicable

17. Did you take any 1990 open-water fishing trips on any streams or rivers in Maine? *(CIRCLE ONE NUMBER)*

Q17

    1 No————>Skip to Question 21
    2 Yes
    9 Missing
    • Not applicable

18. During 1990, on how many different days did you spend part or all of the day open-water fishing on streams or rivers in Maine? *(FILL IN BLANK)*

Q18

    1 - 180 different days fished on streams or rivers in Maine
    999   Missing
    •   Not applicable

19. During your 1990 open-water fishing trips, on average, how many hours per day did you spend fishing on streams or rivers in Maine? *(FILL IN BLANK)*

Q19

    1 - 20 hours per day fishing on streams or rivers in Maine
    99   Missing
    •   Not applicable

20. On your 1990 open-water fishing trips, how did you usually fish when you fished on streams or rivers in Maine? *(CIRCLE ONE NUMBER)*

Q20

    1 From the shore or bank only
    2 From a boat or canoe only
    3 From both the shore or bank and a boat or canoe
    4 Wading
    9 Missing
    • Not applicable

21. During your 1990 open-water fishing trips in Maine, which freshwater bodies did you fish most frequently? *(FILL IN BLANKS)*

Name of Water Body	Type of Water Body (flowing or standing)	Nearest Town or City	Number of Days Fished There	Distance from Home
Q21A_1	Q21B_1	Q21C_1	Q21D_1	Q21E_1 miles
Q21A_2	Q21B_2	Q21C_2	Q21D_2	Q21E_2 miles
Q21A_3	Q21B_3	Q21C_3	Q21D_3	Q21E_3 miles
Q21A_4	Q21B_4	Q21C_4	Q21D_4	Q21E_4 miles
Q21A_5	Q21B_5	Q21C_5	Q21D_5	Q21E_5 miles
Please see list #2	1 Flowing 2 Standing 9 Missing • Not applicable	Please see list #3	99 Missing • Not applicable	999 Missing • Not applicable

22. Did you catch any fish during your 1990 open-water fishing trips? *(CIRCLE ONE NUMBER)*

Q22

    1 No————>Skip to Question 25
    2 Yes
    9 Missing
    • Not applicable

23. This question asks about the number of fish you caught during your 1990 open-water fishing trips, and what happened to these fish. If you didn't catch a particular type of fish on your 1990 open-water fishing trips, just leave that line blank. *(FILL IN BLANKS)*

| | How Many Did You Catch? | | What Did You Do with the Fish You Caught? | |
	Number Caught	Number Released	Number Given Away, Thrown Away, Used for Bait or Fed to Pets	Number Eaten by You and/or a Household Member
For Columns Q23A_1 to Q23D_15: 999 Missing · Not applicable				
Landlocked Salmon	Q23A_1 ——>	Q23B_1	Q23C_1	Q23D_1
Atlantic Salmon	Q23A_2 ——>	Q23B_2	Q23C_2	Q23D_2
Togue (Lake Trout)	Q23A_3 ——>	Q23B_3	Q23C_3	Q23D_3
Brook Trout	Q23A_4 ——>	Q23B_4	Q23C_4	Q23D_4
Brown Trout	Q23A_5 ——>	Q23B_5	Q23C_5	Q23D_5
Yellow Perch	Q23A_6 ——>	Q23B_6	Q23C_6	Q23D_6
White Perch	Q23A_7 ——>	Q23B_7	Q23C_7	Q23D_7
Bass (small mouth and large mouth)	Q23A_8 ——>	Q23B_8	Q23C_8	Q23D_8
Pickerel	Q23A_9 ——>	Q23B_9	Q23C_9	Q23D_9
Lake Whitefish	Q23A_10 ——>	Q23B_10	Q23C_10	Q23D_10
Hornpout (Catfish and Bullheads)	Q23A_11 ——>	Q23B_11	Q23C_11	Q23D_11
Bottom Fish (Suckers, Carp, and Sturgeon)	Q23A_12 ——>	Q23B_12	Q23C_12	Q23D_12
Chub	Q23A_13 ——>	Q23B_13	Q23C_13	Q23D_13
Smelt	Q23A_14 ——>	Q23B_14	Q23C_14	Q23D_14
Other	Q23A_15 ——>	Q23B_15	Q23C_15	Q23D_15

24. In the last question you indicated how many of the fish that you caught were eaten by you and/or other household members. Of the fish reported as eaten in Question 23, how many were from flowing waters (streams and rivers) and how many were from standing waters (such as ponds or lakes)? *(FILL IN BLANKS)*

For Columns Q24A_1 to Q24D_15:
999 Missing
• Not applicable

	Number eaten from flowing waters (steams, rivers)	Average length of these fish	Number eaten from standing waters (lakes, ponds)	Average length of these fish
Landlocked Salmon	Q24A_1 —>	Q24B_1 in.	Q24C_1 —>	Q24D_1 in.
Atlantic Salmon	Q24A_2 —>	Q24B_2 in.	Q24C_2 —>	Q24D_2 in.
Togue (Lake Trout)	Q24A_3 —>	Q24B_3 in.	Q24C_3 —>	Q24D_3 in.
Brook Trout	Q24A_4 —>	Q24B_4 in.	Q24C_4 —>	Q24D_4 in.
Brown Trout	Q24A_5 —->	Q24B_5 in.	Q24C_5 —>	Q24D_5 in.
Yellow Perch	Q24A_6 —>	Q24B_6 in.	Q24C_6 —>	Q24D_6 in.
White Perch	Q24A_7 —>	Q24B_7 in.	Q24C_7 —>	Q24D_7 in.
Bass (small mouth and large mouth)	Q24A_8 —->	Q24B_8 in.	Q24C_8 —>	Q24D_8 in.
Pickerel	Q24A_9 —>	Q24B_9 in.	Q24C_9 —>	Q24D_9 in.
Lake Whitefish	Q24A_10 —>	Q24B_10 in.	Q24C_10 —>	Q24D_10 in.
Hornpout (Catfish and Bullheads)	Q24A_11 —>	Q24B_11 in.	Q24C_11 —>	Q24D_11 in.
Bottom Fish (Suckers, Carp, and Sturgeon)	Q24A_12 —>	Q24B_12 in.	Q24C_12 —>	Q24D_12 in.
Chub	Q24A_13 —>	Q24B_13 in.	Q24C_13 —>	Q24D_13 in.
Smelt	Q24A_14 —>	Q24B_14 in.	Q24C_14 —>	Q24D_14 in.
Other	Q24A_15 —>	Q24B_15 in.	Q24C_15 —>	Q24D_15 in.

25. Do you plan to take any open-water fishing trips in Maine in the remainder of 1990? *(CIRCLE ONE NUMBER)*

Q25

    1 No
    2 Yes————> On how many more days in 1990 will you spend part or all of the day fishing on open-waters in Maine? *(FILL IN BLANK)*

    9 Missing

        Q25A
        0
            1 - 99 more days in 1990
            999   Missing
            •   Not applicable

In the last two sections we asked about the fish you personally caught in Maine in 1990. This next section asks about the freshwater fish caught in Maine during the open-water or ice fishing seasons in 1990 by other household members.

26. Did any members of your household **besides yourself** make any open-water fishing trips during 1990 or ice fishing trips during the 1989-1990 ice fishing season in Maine? *(CIRCLE ONE NUMBER)*

Q26

    1 No————>Skip to Question 30
    2 Yes
    9 Missing

27. Besides yourself, how many other members of your household have been freshwater fishing in Maine during either the 1990 open-water or the 1989-1990 ice fishing season? *(FILL IN BLANK)*

Q27

    1 - 22   Other household member(s)
    99   Missing
    •   Not applicable

28. Did you or anyone in your household eat the fish caught by these other household members during either the 1989-1990 ice fishing season or the 1990 open-water seasons? *(CIRCLE ONE NUMBER)*

Q28

    1 No————>Skip to Question 30
    2 Yes
    9 Missing
    • Not applicable

29. Approximately how many of the fish caught by other members of your household in Maine during either the 1989-1990 ice fishing season or the 1990 open-water seasons were eaten by you and/or members of your household? *(FILL IN BLANKS)*

For Columns Q29A_1 to Q29B_1:
   998 Don't know
   999 Missing
   •   Not applicable

	Number Eaten ——>	Average Length of These Fish
Landlocked Salmon	Q29A_1	Q29B_1 in.
Atlantic Salmon	Q29A_2	Q29B_2 in.
Togue (Lake Trout)	Q29A_3	Q29B_3 in.
Brook Trout	Q29A_4	Q29B_4 in.
Brown Trout	Q29A_5	Q29B_5 in.
Yellow Perch	Q29A_6	Q29B_6 in.
White Perch	Q29A_7	Q29B_7 in.
Bass (small mouth and large mouth)	Q29A_8	Q29B_8 in.
Pickerel	Q29A_9	Q29B_9 in.
Lake Whitefish	Q29A_10	Q29B_10 in.
Hornpout (Catfish and Bullheads)	Q29A_11	Q29B_11 in.
Bottom Fish (Suckers, Carp, and Sturgeon)	Q29A_12	Q29B_12 in.
Chub	Q29A_13	Q29B_13 in.
Smelt	Q29A_14	Q29B_14 in.
Other	Q29A_15	Q29B_15 in.

30. Since December 1989, have you or someone in your household eaten any freshwater fish that were caught in Maine by people outside of your household? (Do <u>not</u> include fish purchased at a store or fish market.) *(CIRCLE ONE NUMBER)*

Q30

   1   No------------> Skip to Question 32
   2   Yes
   9   Missing

31. Approximately how many fish caught by non-household members in Maine since December 1989 were eaten by you and/or members of your household? *(FILL IN BLANKS)*

For Columns Q31A_1 to Q31B_15:
  998 Don't know
  999 Missing
  • Not applicable

	Number Eaten ——>	Average Length of These Fish
Landlocked Salmon	Q31A_1	Q31B_1 in.
Atlantic Salmon	Q31A_2	Q31B_2 in.
Togue (Lake Trout)	Q31A_3	Q31B_3 in.
Brook Trout	Q31A_4	Q31B_4 in.
Brown Trout	Q31A_5	Q31B_5 in.
Yellow Perch	Q31A_6	Q31B_6 in.
White Perch	Q31A_7	Q31B_7 in.
Bass (small mouth and large mouth)	Q31A_8	Q31B_8 in.
Pickerel	Q31A_9	Q31B_9 in.
Lake Whitefish	Q31A_10	Q31B_10 in.
Hornpout (Catfish and Bullheads)	Q31A_11	Q31B_11 in.
Bottom Fish (Suckers, Carp, and Sturgeon)	Q31A_12	Q31B_12 in.
Chub	Q31A_13	Q31B_13 in.
Smelt	Q31A_14	Q31B_14 in.
Other	Q31A_15	Q31B_15 in.

32. Below, please describe the age and sex of each household member and indicate whether they eat freshwater fish caught in Maine (whether caught by you, another household member, or non-household member). *(FILL IN BLANK)*

	Age of Person	Sex of Person *(CIRCLE ONE ANSWER)*	Does This Person Eat Freshwater Fish Caught in Maine? *(CIRCLE ONE ANSWER)*
Yourself	Q32A_1	Q32B_1	Q32C_1
Member 1	Q32A_2	Q32B_2	Q32C_2
Member 2	Q32A_3	Q32B_3	Q32C_3
Member 3	Q32A_4	Q32B_4	Q32C_4
Member 4	Q32A_5	Q32B_5	Q32C_5
Member 5	Q32A_6	Q32B_6	Q32C_6
	99 Missing	1 Male 2 Female 9 Missing • Not applicable	1 No 2 Yes 9 Missing • Not applicable

803903

There are many ways in which people prepare freshwater fish they catch. We would like to find out how you prepare freshwater fish from Maine caught by you, another household member or non-household members.

33. What three types of freshwater fish from Maine (whether caught by you, someone else in your household, or a non-household member) do you eat most often and how do you usually cook them? *(FILL IN SPECIES OF FISH IN BLANKS BELOW AND ANSWER EACH QUESTION)*

	Species 1: Q33A (See List 4)	Species 2: Q33B (See List 4)	Species 3: Q33C (See List 4)
Do you fillet these fish before cooking them?	Q33A_1	Q33B_1	Q33C_1
Do you cook these fish with the skin on?	Q33A_2	Q33B_2	Q33C_2
Do you usually eat the liver of these fish?	Q33A_3	Q33B_3	Q33C_3
Do you usually eat the roe (eggs) from these fish?	Q33A_4	Q33B_4	Q33C_4
	1 No 2 Yes 9 Missing • Not applicable	1 No 2 Yes 9 Missing • Not applicable	1 No 2 Yes 9 Missing • Not applicable

About how many of these fish do you eat fresh (not frozen, smoked or canned)? *(WRITE ONE NUMBER FROM BELOW)*

Q33A_5	Q33B_5	Q33C_5

1 All (100 %)
2 Most (67 - 99%)
3 About half (34 - 66%)
4 Some (1 - 33%)
5 None (0%)
9 Missing
• Not applicable

How do you usually serve these fish? *(WRITE ONE NUMBER FROM BELOW IN BLANK FOR EACH SPECIES OF FISH)*

Q33A_6	Q33B_6	Q33C_6

1 Raw
2 Baked
3 Broiled/grilled
4 Fried
5 Poached
6 Boiled
7 Soup/stew/chowder
9 Missing
• Not applicable

34. What do you usually do with fish leftover from a meal? *(CIRCLE ONE NUMBER)*

Q34
1. Never have leftover fish
2. Save leftovers to eat later
3. Throw leftovers away
4. Give to pets
9. Missing

35. Do you and/or other household members ever eat freshwater fish (whether fresh or frozen) purchased from a store or fish market? *(CIRCLE ONE NUMBER)*

Q35
1. No————> Skip to Question 38
2. Yes
9. Missing

36. About how many meals of freshwater fish purchased from a store or fish market does your household have in a month? *(FILL IN BLANK)*

Q36
1 - 15   freshwater fish meals per <u>month</u>
99   Missing
•   Not applicable

37. What is the average serving size of the freshwater fish at these meals per individual? *(FILL IN BLANK)*

Q37
1 - 48   ounces of freshwater fish per individual
99   Missing
•   Not applicable

Some people have raised health concerns about water quality in public waterways. We would like to learn about any concerns you might have about the areas you fish.

38. Are you aware of any official fish consumption advisories concerning fish caught in Maine? *(CIRCLE ONE NUMBER)*

Q38
1. No————> Skip to Question 45
2. Yes
9. Missing

39. The following are some statements about fish consumption advisories in Maine. For each statement, indicate whether each statement is true, false, or if you don't know. Don't worry if these questions seem hard; very few people know all of the answers. *(CIRCLE ONE NUMBER FOR EACH STATEMENT)*

		True	False	Don't Know	Missing	Not Applicable
Q39A_1	The existing fish consumption advisories apply only to fish caught in lakes and ponds	1	2	3	9	•
Q39B_2	Only some rivers in Maine are the subject of fish consumption advisories	1	2	3	9	•
Q39C_3	The fish consumption advisories recommend that no one eat any fish caught in locations covered by the advisory	1	2	3	9	•
Q39D_4	The fish consumption advisories cover only certain species	1	2	3	9	•
Q39E_5	The fish consumption advisories cover all sizes of fish	1	2	3	9	•

40. During 1990, did you ever fish at locations covered by an official fish consumption advisory? *(CIRCLE ONE NUMBER)*

Q40
    1 No———————> Skip to Question 44
    2 Yes
    3 Don't Know————> Skip to Question 45
    9 Missing
    • Not applicable

41. Do fish consumption advisories affect whether you keep the fish caught at locations covered by fish consumption advisories? *(CIRCLE ONE NUMBER)*

Q41
    1 No
    2 Yes————> How do they affect whether you keep the fish you catch?
                           (CIRCLE ALL THAT APPLY)
    9 Missing
    • Not applicable

        Q41A   1 I keep no fish
        Q41B   2 I keep fewer fish
        Q41C   3 I keep only the smaller fish
        Q41D   4 I keep only certain species
        Q41E   5 Other (please describe: See List #5)

                For Q41A - Q41E:
                  0 Not circled
                  1 Circled
                  9 Missing
                  • Not applicable

42. Do fish consumption advisories affect whether you eat the fish caught at locations covered by fish consumption advisories? *(CIRCLE ONE NUMBER)*

Q42
   1 No
   2 Yes————>How do they affect whether you eat the fish you catch?
                  (CIRCLE ALL THAT APPLY)
   9 Missing
   • Not applicable

Q42A	1	I don't eat any of the fish
Q42B	2	I eat only the smaller fish
Q42C	3	I eat only certain species
Q42D	4	Other (please describe: See List #6)

For Q42A - Q42D:
  0 Not circled
  1 Circled
  9 Missing
  • Not applicable

43. Do fish consumption advisories affect how you prepare and serve the fish caught at locations covered by a fish consumption advisory? *(CIRCLE ONE NUMBER)*

Q43
   1 No
   2 Yes————>How do they affect how you prepare and serve the fish?
                  (CIRCLE ALL THAT APPLY)
   9 Missing
   • Not applicable

Q43A	1	I only broil or grill these fish
Q43B	2	I trim and discard any dark flesh
Q43C	3	I trim off all fat
Q43D	4	I trim off the lateral line
Q43E	5	Other (please describe: See List #7)

For Q43A - Q43E:
  0 Not circled
  1 Circled
  9 Missing
  • Not applicable

44. Suppose conditions were different so that there were no fish consumption advisories in Maine. Would you have fished any additional bodies of water during the 1989-1990 ice fishing season or 1990 open-water seasons? *(CIRCLE ONE NUMBER)*

Q44
   1 No
   2 Yes————>Which bodies of water? *(FILL IN BLANKS)*
   9 Missing
   • Not applicable

Q44A	Please See List #2 _____
Q44B	_____
Q44C	_____

In this last section of the survey, we would like to learn more about your background and your current household characteristics. You can be assured that all your answers will be kept confidential. This information will only be used to report comparisons among groups of people. We will never identify individuals or households with these responses.

45. Which of the following best describes your current employment situation? *(CIRCLE ONE NUMBER)*

Q45
    1 Work full-time (40 hours per week or more)
    2 Work part-time (less than 40 hours per week) or semi-retired
    3 Work seasonally (work only part of the year)
    4 Unemployed
    5 Fully retired
    6 Full-time student
    7 Homemaker
    8 Other (please describe: See List #8)
    9 Missing

46. What is the highest level of education you have completed? *(CIRCLE ONE NUMBER)*

Q46
    0 Did not answer question
    1 Less than 8th grade
    2 Eighth grade graduate
    3 Some high school
    4 High school graduate
    5 Some trade or technical school
    6 Trade or technical school graduate
    7 Some college
    8 Bachelor's degree
    9 Postgraduate study

47. What is your ethnic background? *(CIRCLE ONE NUMBER)*

Q47
    1 White, Non-Hispanic————>Are you of Scandinavian, French-Canadian, Italian, Irish, or some other ancestry? *(CIRCLE ONE NUMBER)*

                Q47A 1 Scandinavian ancestry
                          2 French-Canadian ancestry
                          3 Italian ancestry
                          4 Irish ancestry
                          5 Other
                          9 Missing
                          • Not applicable

    2 Hispanic
    3 Native American
    4 Asian/Pacific Islander
    5 Black
    6 Other
    9 Missing

48. What was your total household income before taxes in 1989? *(CIRCLE ONE NUMBER)*

Q48

1	Under $10,000	6	$50,000 to $59,999
2	$10,000 to $19,999	7	$60,000 to $69,999
3	$20,000 to $29,999	8	$70,000 to $79,999
4	$30,000 to $39,999	9	$80,000 to $100,000
5	$40,000 to $49,999	10	Over $100,000
		99	Missing

Do you have any comments?

Comments

0 = No Answer
1 = Answer

Type	Type of license the respondent applied to receive
Address	Address of respondents residence
City	City of respondents residence
State	State of respondents residence
Zip	Zip code of respondents residence
Sex	Sex of respondent
Legalres	Legal residence of respondent
Mlresult	Mail result 1=Completed mail survey
Mldate	Date HBRS received the survey

Summary Statistics for 1990 Maine Angler Survey Data

Population of Interest Waterbody Type Variable in analysis files	All Anglers All Waters (RPFTALL)	Consuming Anglers All Waters (CRPFTALL)	All Anglers Rivers/Streams (RPFTOHFL)	River/Stream Anglers Rivers/Streams (RARSCONS)	Consuming Anglers Rivers/Streams (CRFOHFL)
Median (g/day)	1.1	2.0	0	0.19	0.99
Mean (g/day)	4.9	6.4	1.2	1.9	3.7
Standard Deviation (g/day)	14	16	6.9	7.5	12
Qualifying Respondents (N)	1369	1053	1369	741	464
Percentiles (g/day)					
Minimum	0	0.023	0	0	0.001
5	0	0.17	0	0	0.11
10	0	0.30	0	0	0.17
15	0	0.41	0	0	0.23
20	0	0.57	0	0	0.28
25	0.10	0.72	0	0	0.35
30	0.27	0.92	0	0	0.46
35	0.43	1.1	0	0	0.59
40	0.64	1.4	0	0	0.71
45	0.87	1.7	0	0.068	0.83
Median	1.1	2.0	0	0.19	0.99
55	1.4	2.5	0	0.32	1.2
60	1.9	3.0	0	0.46	1.4
65	2.5	3.8	0	0.69	1.7
70	3.1	4.5	0.18	0.90	2.1
75	4.2	5.8	0.37	1.3	2.5
80	5.5	7.3	0.73	1.7	3.2
85	7.5	9.8	1.3	2.4	4.3
90	11	13	2.1	3.9	6.1
95	21	26	4.4	6.3	12
99	63	73	22	30	49
Maximum	217	217	118	117	118

Command Sequence for Reading and Analyzing the 1990 Maine Angler Survey Data

The attached pages include a command sequence written by ChemRisk to read and analyze the Maine Angler Survey data as provided by HBRS, Inc. The command sequence was written in SYSTAT's DATA programming language, which is similar to BASIC. As a help in interpreting the command sequence, comments have been added to the various subroutines. These comments, italicized and included in braces (i.e., {*Comments*}), are designed to help the reader understand (1) the purpose of the subroutines and (2) the physical definition of the variables created.

This command sequence, if submitted to SYSTAT's DATA module without the interpretive comments, would calculate the basic results of the survey analysis: the fish consumption distributions summarized in Table 3 of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers." The initial file MEFISH.DAT contains the raw survey data. MEFISH.DAT is a fixed-format ASCII file containing data for 175 variables provided by HBRS.

The command sequence is divided into several subroutines which produce interim files between MEFISH.DAT and TAB3SUMM, the file containing the variables of interest for summarizing the basic mail survey results. Subroutines and interim files were used (1) to divide the sequence into functional chunks that SYSTAT could process without memory constraints and (2) to provide a framework for restarting the analysis from an interim file in the event of a loss of electrical power or another problem.

{SUBROUTINE 1. This subroutine reads in the variables needed to calculate the freshwater fish consumption rates and saves them in the SYSTAT file TAB3READ. The LRECL command tells DATA to accept character strings up to 999 characters in length. The first section of the INPUT command names the variables SYSTAT is reading in. Variable names follow those from the annotated survey instrument. The second section of the INPUT command defines for DATA where the variables' values are located in the fixed-format text file "MEFISH.DAT." Positions for variables within MEFISH.DAT are obtained from the template.}

```
GET "MEFISH.DAT"
SAVE TAB3READ

LRECL=999

INPUT (ID1,Q4, Q8, Q11D(1), Q11E(1),
Q11D(2), Q11E(2), Q11D(3), Q11E(3),
 Q11D(4), Q11E(4), Q11D(5),Q11E(5),
Q11D(6), Q11E(6), Q11D(7), Q11E(7),
Q11D(8), Q11E(8), Q11D(9), Q11E(9),
Q11D(10), Q11E(10), Q11D(11), Q11E(11),
Q11D(12), Q11E(12), Q11D(13),
Q11E(13), Q11D(14), Q11E(14), Q11D(15),
Q11E(15), Q14, Q17,  Q18, Q24A(1), Q24B(1),
Q24C(1), Q24D(1), Q24A(2), Q24B(2), Q24C(2),
Q24D(2), Q24A(3), Q24B(3), Q24C(3), Q24D(3),
Q24A(4), Q24B(4), Q24C(4),Q24D(4),
Q24A(5), Q24B(5), Q24C(5), Q24D(5), Q24A(6),
Q24B(6), Q24C(6), Q24D(6),
Q24A(7), Q24B(7),Q24C(7), Q24D(7), Q24A(8),
Q24B(8), Q24C(8), Q24D(8), Q24A(9),
Q24B(9), Q24C(9),Q24D(9), Q24A(10),Q24B(10),
Q24C(10), Q24D(10), Q24A(11),
Q24B(11), Q24C(11), Q24D(11), Q24A(12),
Q24B(12), Q24C(12), Q24D(12),
Q24A(13), Q24B(13), Q24C(13), Q24D(13),
 Q24A(14), Q24B(14), Q24C(14),
Q24D(14), Q24A(15), Q24B(15), Q24C(15), Q24D(15),
Q25, Q25A, Q29A(1),
Q29B(1), Q29A(2), Q29B(2), Q29A(3), Q29B(3),
Q29A(4), Q29B(4), Q29A(5), Q29B(5),
Q29A(6), Q29B(6), Q29A(7), Q29B(7),
Q29A(8), Q29B(8), Q29A(9), Q29B(9),
Q29A(10), Q29B(10), Q29A(11), Q29B(11),
 Q29A(12), Q29B(12), Q29A(13),
```

Q29B(13), Q29A(14),Q29B(14), Q29A(15), Q29B(15),
Q31A(1), Q31B(1), Q31A(2),
Q31B(2), Q31A(3), Q31B(3), Q31A(4),
Q31B(4), Q31A(5), Q31B(5), Q31A(6),
Q31B(6), Q31A(7), Q31B(7), Q31A(8),
Q31B(8), Q31A(9), Q31B(9), Q31A(10),
Q31B(10), Q31A(11), Q31B(11), Q31A(12),
Q31B(12), Q31A(13), Q31B(13),
Q31A(14), Q31B(14), Q31A(15), Q31B(15),
Q32A(1), Q32C(1), Q32A(2), Q32C(2),
Q32A(3), Q32C(3), Q32A(4), Q32C(4), Q32A(5),
Q32C(5), Q32A(6), Q32C(6), Q45, Q46, Q47,
Q47A, Q48) ,
(#4, #1, #3, #3, #2,
 #3, #2, #3, #2, #3, #2,
 #3, #2, #3, #2,
 #3, #2, #3, #2,
 #3, #2, #3, #2,
 #3, #2, #3, #2,
 #3, #2, #3, #2,
 #3, #2, #3, #1, #3,
 30*#3, #2, 29*#3, #1, #3, 30*#3,
 30*#3, #2, #1, #2,
 #1, #2, #1, #2, #1, #2,
 #1, #2, #1, 4*#1, #2)

RUN

{SUBROUTINE 2. This subroutine recodes variable values to zero where respondents either did not answer the question (coded as "999" by HBRS) or the question was not applicable (coded as "." by HBRS). In formulating the analysis plan, it was decided that recoding to zero was the best way to handle incomplete or non-applicable data on fish quantity or length. The purpose of this recoding is to permit calculation of the fish consumption estimates for each respondent. Using "999" would yield a falsely high result; using "." would result in a missing value for the consumption estimate, because in DATA operations on missing values yield missing values.

In the instance that a respondent reported a non-zero number of fish consumed, but did not report the length of the fish consumed, the median length of the particular species for the particular fishing method was assigned as the length of the consumed fish. For example, if a respondent reported that he/she consumed 20 smelt (species #14) from ice fishing, but did not indicate the length of these fish, the median length of smelt caught by ice fishing, 6 inches, was assigned as the length of the 20 smelt for this respondent.

The CODE statements perform the reassignment of missing or non-applicable responses to zero. The DIM statement creates subscripted variables. The 15 subscripted IMEDLEN variables are assigned the median non-zero lengths of the fifteen species caught by ice fishing. These median lengths were determined by analyzing frequency tables for the raw survey data. At the end of the subroutine, the IMEDLEN variables are removed from the file using the DROP command since they are not needed in later subroutines.}

```
USE TAB3READ
SAVE CODE1

CODE Q14 / 999=0 .=0
CODE Q18 / 999=0 .=0
CODE Q8 / 999=0 .=0

CODE Q11D(1), Q11D(2),  Q11D(3), Q11D(4),
  Q11D(5),  Q11D(6),  Q11D(7),  Q11D(8),
  Q11D(9),  Q11D(10),  Q11D(11),  Q11D(12),
  Q11D(13), Q11D(14), Q11D(15) / 999=0 .=0

CODE Q11E(1), Q11E(2), Q11E(3), Q11E(4),
  Q11E(5), Q11E(6), Q11E(7), Q11E(8),
  Q11E(9), Q11E(10), Q11E(11), Q11E(12),
  Q11E(13), Q11E(14), Q11E(15) / 99=0 .=0

DIM IMEDLEN(15)
LET IMEDLEN(1)=17.5
LET IMEDLEN(2)=19
LET IMEDLEN(3)=20
```

```
 LET IMEDLEN(4)=12
LET IMEDLEN(5)=17
LET IMEDLEN(6)=8
LET IMEDLEN(7)=10
LET IMEDLEN(8)=14
LET IMEDLEN(9)=16
LET IMEDLEN(10)=16
LET IMEDLEN(11)=12
LET IMEDLEN(12)=15
LET IMEDLEN(13)=8
LET IMEDLEN(14)=6
LET IMEDLEN(15)=18

FOR I=1 TO 15
 IF Q11D(I)<>0 AND Q11E(I) = 0 THEN LET Q11E(I) = IMEDLEN(I)

DROP IMEDLEN(1), IMEDLEN(2), IMEDLEN(3), IMEDLEN(4),
 IMEDLEN(5), IMEDLEN(6), IMEDLEN(7), IMEDLEN(8),
 IMEDLEN(9), IMEDLEN(10), IMEDLEN(11), IMEDLEN(12),
 IMEDLEN(13), IMEDLEN(14), IMEDLEN(15)

RUN
```

{SUBROUTINE 3. More recoding and assigning lengths. The 15 subscripted RMEDLEN variables are assigned the median non-zero lengths of the fifteen species caught from flowing water (i.e., rivers and streams). See comment for Subroutine 2.}

```
USE CODE1
SAVE CODE2

CODE Q24A(1), Q24A(2), Q24A(3), Q24A(4),
  Q24A(5), Q24A(6), Q24A(7), Q24A(8),
  Q24A(9), Q24A(10), Q24A(11), Q24A(12),
  Q24A(13), Q24A(14), Q24A(15) / 999=0 .=0

CODE Q24B(1), Q24B(2), Q24B(3), Q24B(4),
  Q24B(5), Q24B(6), Q24B(7), Q24B(8),
  Q24B(9), Q24B(10), Q24B(11), Q24B(12),
  Q24B(13), Q24B(14), Q24B(15) / 999=0 . =0

CODE Q24C(1), Q24C(2), Q24C(3), Q24C(4),
  Q24C(5), Q24C(6), Q24C(7), Q24C(8),
  Q24C(9), Q24C(10), Q24C(11), Q24C(12),
  Q24C(13), Q24C(14), Q24C(15) / 999=0 .=0 99=0

DIM RMEDLEN(15)
LET RMEDLEN(1)=18
LET RMEDLEN(2)=22
LET RMEDLEN(3)=13
LET RMEDLEN(4)=9
LET RMEDLEN(5)=12
LET RMEDLEN(6)=8.5
LET RMEDLEN(7)=9
LET RMEDLEN(8)=14
LET RMEDLEN(9)=17
LET RMEDLEN(10)=16
LET RMEDLEN(11)=9
LET RMEDLEN(12)=10
LET RMEDLEN(13)=6.5
LET RMEDLEN(14)=5
LET RMEDLEN(15)=19

FOR I=1 TO 15
 IF Q24A(I)<>0 AND Q24B(I) = 0 THEN LET Q24B(I) = RMEDLEN(I)
```

DROP RMEDLEN(1), RMEDLEN(2), RMEDLEN(3), RMEDLEN(4),
RMEDLEN(5),RMEDLEN(6), RMEDLEN(7), RMEDLEN(8),
RMEDLEN(9), RMEDLEN(10), RMEDLEN(11), RMEDLEN(12),
RMEDLEN(13), RMEDLEN(14), RMEDLEN(15)

RUN

{SUBROUTINE 4. More recoding and assigning lengths. The 15 subscripted LMEDLEN variables are assigned the median non-zero lengths of the fifteen species caught from standing water (i.e., lakes and ponds). The 15 subscripted HMEDLEN variables are assigned the median non-zero lengths of the fifteen species obtained from other household sources. See comment for Subroutine 2.}

```
USE CODE2
SAVE CODE3

CODE Q24D(1), Q24D(2), Q24D(3), Q24D(4),
  Q24D(5), Q24D(6), Q24D(7), Q24D(8),
  Q24D(9), Q24D(10), Q24D(11), Q24D(12),
  Q24D(13), Q24D(14), Q24D(15) / 999=0 .=0

DIM LMEDLEN(15)
LET LMEDLEN(1)=18
LET LMEDLEN(2)=18
LET LMEDLEN(3)=20
LET LMEDLEN(4)=10
LET LMEDLEN(5)=14
LET LMEDLEN(6)=8
LET LMEDLEN(7)=9
LET LMEDLEN(8)=14
LET LMEDLEN(9)=17.5
LET LMEDLEN(10)=11
LET LMEDLEN(11)=10
LET LMEDLEN(12)=13
LET LMEDLEN(13)=6
LET LMEDLEN(14)=5
LET LMEDLEN(15)=24

FOR I=1 TO 15
  IF Q24C(I)<>0 AND Q24D(I) = 0 THEN LET Q24D(I) = LMEDLEN(I)

DROP LMEDLEN(1), LMEDLEN(2), LMEDLEN(3), LMEDLEN(4),
  LMEDLEN(5),LMEDLEN(6), LMEDLEN(7), LMEDLEN(8),
  LMEDLEN(9), LMEDLEN(10), LMEDLEN(11), LMEDLEN(12),
  LMEDLEN(13), LMEDLEN(14), LMEDLEN(15)

CODE Q29A(1), Q29A(2),
  Q29A(3), Q29A(4), Q29A(5),
  Q29A(6), Q29A(7), Q29A(8),
  Q29A(9), Q29A(10), Q29A(11), Q29A(12),
  Q29A(13), Q29A(14), Q29A(15) / 999=0 998=0 .=0
```

```
CODE Q29B(1), Q29B(2),
  Q29B(3), Q29B(4),Q29B(5),
  Q29B(6), Q29B(7), Q29B(8),
  Q29B(9), Q29B(10), Q29B(11), Q29B(12),
  Q29B(13), Q29B(14), Q29B(15), / 999=0 998=0 .=0

DIM HMEDLEN(15)
LET HMEDLEN(1)=17
 LET HMEDLEN(2)=24.5
LET HMEDLEN(3)=20
LET HMEDLEN(4)=9
LET HMEDLEN(5)=14
LET HMEDLEN(6)=10
LET HMEDLEN(7)=9
LET HMEDLEN(8)=14
LET HMEDLEN(9)=16
LET HMEDLEN(10)=12
LET HMEDLEN(11)=10
LET HMEDLEN(12)=14
LET HMEDLEN(13)=6
LET HMEDLEN(14)=6
LET HMEDLEN(15)=19.5

FOR I=1 TO 15
  IF Q29A(I)<>0 AND Q29B(I) = 0 THEN LET Q29B(I) = HMEDLEN(I)

DROP HMEDLEN(1), HMEDLEN(2), HMEDLEN(3), HMEDLEN(4),
  HMEDLEN(5), HMEDLEN(6), HMEDLEN(7), HMEDLEN(8),
  HMEDLEN(9), HMEDLEN(10), HMEDLEN(11), HMEDLEN(12),
  HMEDLEN(13), HMEDLEN(14), HMEDLEN(15)

RUN
```

(SUBROUTINE 5. More recoding and assigning lengths. The 15 subscripted
OMEDLEN variables are assigned the median non-zero lengths of the fifteen species
obtained from other out-of-household sources. See comment for Subroutine 2.)

```
USE CODE3
SAVE CODELAST

CODE Q31A(1), Q31A(2),
  Q31A(3), Q31A(4),Q31A(5),
  Q31A(6), Q31A(7), Q31A(8),
  Q31A(9), Q31A(10), Q31A(11), Q31A(12),
  Q31A(13), Q31A(14), Q31A(15) / 999=0 998=0 .=0


CODE Q31B(1), Q31B(2),
  Q31B(3), Q31B(4),Q31B(5),
  Q31B(6), Q31B(7), Q31B(8),
  Q31B(9), Q31B(10), Q31B(11), Q31B(12),
  Q31B(13), Q31B(14), Q31B(15) / 999=0 998=0 .=0

CODE Q32A(1) Q32A(2) Q32A(3) Q32A(4) Q32A(5) Q32A(6) / 99=0

DIM OMEDLEN(15)
LET OMEDLEN(1)=17
LET OMEDLEN(2)=24.5
LET OMEDLEN(3)=20
LET OMEDLEN(4)=9
LET OMEDLEN(5)=14
LET OMEDLEN(6)=10
LET OMEDLEN(7)=9
LET OMEDLEN(8)=14
LET OMEDLEN(9)=16
LET OMEDLEN(10)=12
LET OMEDLEN(11)=10
LET OMEDLEN(12)=14
LET OMEDLEN(13)=6
LET OMEDLEN(14)=6
LET OMEDLEN(15)=19.5

FOR I=1 TO 15
  IF Q31A(I)<>0 AND Q31B(I) = 0 THEN LET Q31B(I) = OMEDLEN(I)
```

DROP OMEDLEN(1), OMEDLEN(2), OMEDLEN(3), OMEDLEN(4),
  OMEDLEN(5), OMEDLEN(6), OMEDLEN(7), OMEDLEN(8),
  OMEDLEN(9), OMEDLEN(10), OMEDLEN(11), OMEDLEN(12),
  OMEDLEN(13), OMEDLEN(14), OMEDLEN(15)

RUN

{*SUBROUTINE 6. This subroutine "trims" the file CODELAST to yield the population of interest, defined as those respondents who fished in 1989-90 (from Q4) or who consumed fish from Maine sources caught by other members of their household (from Q29A(1-15)) or provided by others outside their household (from Q31A(1-15)). Persons were assumed to have fished in 1989-90 if they did not answer "No" to Q4.*}

USE CODELAST
SAVE TAB3TRIM

IF Q4<>2 AND SUM(Q29A(1-15))=0 AND SUM(Q31A(1-15))=0 THEN DELETE

RUN

{*SUBROUTINE 7. This subroutine establishes 33 variables: FAMSIZE, SLPE(1-15), CNST(1-15), EDP(1-15), ICEGRMS(1-15), REPICGRM, and RPICCONS. At the end of the subroutine, 42 variables are dropped to conserve disk space because they are not needed by future subroutines.*}

FAMSIZE: The total number of individuals in a respondent's household (from Q32A) who consume freshwater fish from Maine sources (from Q32C).

SLPE(1-15): The slope in the length-mass relationship for the species number indicated by the subscript. Values for SLPE(1-15) come from Appendix G of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers."

CNST(1-15): The constant in the length-mass relationship for the species number indicated by the subscript. Values for CNST(1-15) come from Appendix G of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers."

EDP(1-15): The edible portion of whole fish mass for the species number indicated by the subscript. Units are g edible/g whole fish. Discussion of the choice of edible portion fractions for each species is given on page 11 of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers."

ICEGRMS(1-15): For the species number indicated by the subscript, the edible mass in grams obtained from ice fishing for the entire household for the one-year (365 day) period covered by the survey (1989-90 ice and 1990 open-water fishing seasons). The LOG function in DATA is the natural logarithm. The conversion 25.4 mm/inch is also used in the equation.

REPICGRM: The reported total edible mass in grams of all fish species consumed from ice fishing sources by the entire household for the period covered by the survey.

RPICCONS: The per-day rate of freshwater fish consumption from ice fishing sources

for fish-consuming individuals in the respondent's household; units are g edible/person-day. Uses only consumption information reported by the respondent.}

```
USE TAB3TRIM
SAVE TEMPA

LET FAMSIZE=0
FOR P=1 TO 6
  IF Q32A(P)>0 AND Q32C(P)>=2 THEN LET FAMSIZE=FAMSIZE+1
NEXT

DIM SLPE(15)
LET SLPE(1)=3.035
LET SLPE(2)=3.0
LET SLPE(3)=3.306
LET SLPE(4)=3.022
LET SLPE(5)=3.037
LET SLPE(6)=2.390
LET SLPE(7)=3.177
LET SLPE(8)=2.606
LET SLPE(9)=3.098
LET SLPE(10)=3.241
LET SLPE(11)=3.065
LET SLPE(12)=3.223
LET SLPE(13)=2.98
LET SLPE(14)=3.40
LET SLPE(15)=3.01

DIM CNST(15)
LET CNST(1)=-5.145
LET CNST(2)=-5.038
LET CNST(3)=-5.879
LET CNST(4)=-5.054
LET CNST(5)=-5.096
LET CNST(6)=-3.519
LET CNST(7)=-5.273
LET CNST(8)=-3.844
LET CNST(9)=-5.491
LET CNST(10)=-5.677
LET CNST(11)=-5.061
LET CNST(12)=-5.395
LET CNST(13)=-3.972
LET CNST(14)=-6.2
LET CNST(15)=-4.69
```

```
DIM EDP(15)
LET EDP(1)=0.4
LET EDP(2)=0.4
LET EDP(3)=0.3
LET EDP(4)=0.3
LET EDP(5)=0.3
LET EDP(6)=0.3
 LET EDP(7)=0.3
LET EDP(8)=0.3
LET EDP(9)=0.3
LET EDP(10)=0.3
LET EDP(11)=0.3
LET EDP(12)=0.3
LET EDP(13)=0.3
LET EDP(14)=0.78
LET EDP(15)=0.3

DIM ICEGRMS(15)
FOR Q=1 TO 15
 IF Q11D(Q)>0 THEN LET,
 ICEGRMS(Q)=Q11D(Q)*10^(SLPE(Q)*LOG(Q11E(Q)*25.4)/LOG(10),
 +CNST(Q))*EDP(Q)
 IF Q11D(Q)=0 THEN LET ICEGRMS(Q)=0
NEXT

LET REPICGRM=SUM(ICEGRMS(1-15))

LET RPICCONS=0
IF FAMSIZE>0 THEN LET RPICCONS=REPICGRM/FAMSIZE/365

DROP Q11E(1), Q11E(2), Q11E(3), Q11E(4),
 Q11E(5), Q11E(6), Q11E(7), Q11E(8),
 Q11E(9), Q11E(10), Q11E(11), Q11E(12),
 Q11E(13), Q11E(14), Q11E(15),
 Q11D(1), Q11D(2), Q11D(3), Q11D(4),
 Q11D(5), Q11D(6), Q11D(7), Q11D(8),
 Q11D(9), Q11D(10), Q11D(11), Q11D(12),
 Q11D(13), Q11D(14), Q11D(15),
 Q32A(1), Q32A(2), Q32A(3), Q32A(4),
 Q32A(5), Q32A(6), Q32C(1), Q32C(2),
 Q32C(3), Q32C(4), Q32C(5), Q32C(6)

RUN
```

{SUBROUTINE 8. This subroutine establishes 17 variables: PNDGRMS(1-15), REPPDGRM, and RPPDCONS. At the end of the subroutine, 30 variables are dropped because they are not needed by future subroutines.

PNDGRMS(1-15): For the species number indicated by the subscript, the edible mass in grams obtained from standing water sources for the entire household for the one-year (365 day) period covered by the survey (1989-90 ice and 1990 open-water fishing seasons).

REPPDGRM: The reported total edible mass in grams of all fish species consumed from standing water sources by the entire household for the period covered by the survey.

RPPDCONS: The per-day rate of freshwater fish consumption from standing water sources for fish-consuming individuals in the respondent's household; units are g edible/person-day. Uses only consumption information reported by the respondent.}

```
USE TEMPA
SAVE TEMPB

DIM PNDGRMS(15)
FOR Q=1 TO 15
 IF Q24C(Q)> 0 THEN LET,
 PNDGRMS(Q)=Q24C(Q)*10^(SLPE(Q)*LOG(Q24D(Q)*25.4)/LOG(10),
 +CNST(Q))*EDP(Q)
 IF Q24C(Q)=0 THEN LET PNDGRMS(Q)=0
NEXT

LET REPPDGRM=SUM(PNDGRMS(1-15))

LET RPPDCONS=0
IF FAMSIZE>0 THEN LET RPPDCONS=REPPDGRM/FAMSIZE/365

DROP Q24C(1), Q24C(2), Q24C(3), Q24C(4),
 Q24C(5), Q24C(6), Q24C(7), Q24C(8),
 Q24C(9), Q24C(10), Q24C(11), Q24C(12),
 Q24C(13), Q24C(14), Q24C(15),
 Q24D(1), Q24D(2), Q24D(3), Q24D(4),
 Q24D(5), Q24D(6), Q24D(7), Q24D(8),
 Q24D(9), Q24D(10), Q24D(11), Q24D(12),
 Q24D(13), Q24D(14), Q24D(15)

RUN
```

{SUBROUTINE 9. This subroutine establishes 17 variables: FLOGRAM(1-15), REPFLGRM, and RPFLCONS. At the end of the subroutine, 30 variables are dropped because they are not needed by future subroutines.

FLOGRAM(1-15):   For the species number indicated by the subscript, the edible mass in grams obtained from flowing water sources for the entire household for the one-year (365 day) period covered by the survey (1989-90 ice and 1990 open-water fishing seasons).

REPFLGRM: The reported total edible mass in grams of all fish species consumed from flowing water sources by the entire household for the period covered by the survey.

RPFLCONS: The per-day rate of freshwater fish consumption from flowing water sources for fish-consuming individuals in the respondent's household; units are g edible/person-day.   Uses only consumption information reported by the respondent.}

```
USE TEMPB
SAVE TEMPC

DIM FLOGRAM(15)
FOR R=1 TO 15
 IF Q24A(R)>0 THEN LET,
  FLOGRAM(R)=Q24A(R)*10^(SLPE(R)*LOG(Q24B(R)*25.4)/LOG(10),
  + CNST(R))*EDP(R)
 IF Q24A(R)=0 THEN LET FLOGRAM(R)=0
NEXT

LET REPFLGRM=SUM(FLOGRAM(1-15))

LET RPFLCONS=0
IF FAMSIZE>0 THEN LET RPFLCONS=REPFLGRM/FAMSIZE/365

DROP Q24A(1), Q24A(2), Q24A(3), Q24A(4),
 Q24A(5), Q24A(6), Q24A(7), Q24A(8),
 Q24A(9), Q24A(10), Q24A(11), Q24A(12),
 Q24A(13), Q24A(14), Q24A(15),
 Q24B(1), Q24B(2), Q24B(3), Q24B(4),
 Q24B(5), Q24B(6), Q24B(7), Q24B(8),
 Q24B(9), Q24B(10), Q24B(11), Q24B(12),
 Q24B(13), Q24B(14), Q24B(15)

RUN
```

{SUBROUTINE 10. This subroutine establishes 32 variables: HOUGRAM(1-15), OUTGRAM(1-15), REPOTHGM, and RPOHCONS. At the end of the subroutine, 105 variables are dropped because they are not needed by future subroutines.

HOUGRAM(1-15): For the species number indicated by the subscript, the edible mass in grams obtained from other within-household sources for the entire household for the one-year (365 day) period covered by the survey (1989-90 ice and 1990 open-water fishing seasons).

OUTGRAM(1-15): For the species number indicated by the subscript, the edible mass in grams obtained from out-of-household sources for the entire household for the period covered by the survey.

REPOTHGM: The reported total edible mass in grams of all fish species consumed from other within- and out-of-household sources by the entire household for the period covered by the survey.

RPOHCONS: The per-day rate of freshwater fish consumption from other within- and out-of-household sources for fish-consuming individuals in the respondent's household; units are g edible/person-day. Uses only consumption information reported by the respondent.}

```
USE TEMPC
SAVE TEMPD

DIM HOUGRAM(15)
FOR R=1 TO 15
  IF Q29A(R)>0 THEN LET,
    HOUGRAM(R)=Q29A(R)*10^(SLPE(R)*LOG(Q29B(R)*25.4)/LOG(10),
    +CNST(R))*EDP(R)
  IF Q29A(R)=0 THEN LET HOUGRAM(R)=0
NEXT

DIM OUTGRAM(15)
FOR R=1 TO 15
  IF Q31A(R)>0 THEN LET,
    OUTGRAM(R)=Q31A(R)*10^(SLPE(R)*LOG(Q31B(R)*25.4)/LOG(10),
    +CNST(R))*EDP(R)
  IF Q31A(R)=0 THEN LET OUTGRAM(R)=0
NEXT

LET REPOTHGM=SUM(HOUGRAM(1-15))+SUM(OUTGRAM(1-15))

LET RPOHCONS=0
```

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IF FAMSIZE>0 THEN LET RPOHCONS=REPOTHGM/FAMSIZE/365

DROP Q29A(1), Q29A(2), Q29A(3), Q29A(4),
  Q29A(5), Q29A(6), Q29A(7), Q29A(8),
  Q29A(9), Q29A(10), Q29A(11), Q29A(12),
  Q29A(13), Q29A(14), Q29A(15)

DROP Q31A(1), Q31A(2), Q31A(3), Q31A(4),
  Q31A(5), Q31A(6), Q31A(7), Q31A(8),
  Q31A(9), Q31A(10), Q31A(11), Q31A(12),
  Q31A(13), Q31A(14), Q31A(15)

DROP Q29B(1), Q29B(2), Q29B(3), Q29B(4),
  Q29B(5), Q29B(6), Q29B(7), Q29B(8),
  Q29B(9), Q29B(10), Q29B(11), Q29B(12),
  Q29B(13), Q29B(14), Q29B(15)

DROP Q31B(1), Q31B(2), Q31B(3), Q31B(4),
  Q31B(5), Q31B(6), Q31B(7), Q31B(8),
  Q31B(9), Q31B(10), Q31B(11), Q31B(12),
  Q31B(13), Q31B(14), Q31B(15)

DROP CNST(1), CNST(2), CNST(3),
  CNST(4), CNST(5), CNST(6),
  CNST(7), CNST(8), CNST(9),
  CNST(10), CNST(11), CNST(12),
  CNST(13), CNST(14), CNST(15)

DROP SLPE(1), SLPE(2), SLPE(3),
  SLPE(4), SLPE(5), SLPE(6),
  SLPE(7), SLPE(8), SLPE(9),
  SLPE(10), SLPE(11), SLPE(12),
  SLPE(13), SLPE(14), SLPE(15)

DROP EDP(1), EDP(2), EDP(3),
  EDP(4), EDP(5), EDP(6),
  EDP(7), EDP(8), EDP(9),
  EDP(10), EDP(11), EDP(12),
  EDP(13), EDP(14), EDP(15)

RUN

{SUBROUTINE 11. This subroutine establishes 13 variables: FLOTOISF, OTHSRCFL, FUTTRIPS, RPALTRIP, FTALCONS, FLTOALTP, FTFLCONS, RPFTALL, LRPFTALL, CRPFTALL, RPFTOHFL, LRFOHFL, CRFOHFL, and RARSCONS.

FLOTOISF: The ratio of reported consumption from flowing water sources to total reported consumption from ice, standing water, and flowing water sources.

OTHSRCFL: The portion of reported consumption from other within- and out-of-household sources attributed to flowing water sources. Units: g edible/person-day. Calculation uses FLOTOISF ratio.

FUTTRIPS: The number of future fishing trips a respondent reported were planned for after the survey was returned.

RPALTRIP: The total number of fishing trips to ice fishing locations (from Q8), standing water (from Q14), and flowing water (from Q18) that a respondent reported were taken during the period covered by the survey. In the event of missing or not-applicable responses, the number of each type of trip was recoded to zero.

FTALCONS: An estimate of fish consumption rate from all Maine sources for future planned fishing trips. Based on the ratio of future to reported trips (FUTTRIPS/RPALTRIP) to reported consumption from ice, standing water, and flowing water sources.

FLTOALTP: The ratio of fishing trips reported to flowing water (from Q18) to the total number of fishing trips reported (RPALTRIP).

FTFLCONS: An estimate of fish consumption rate from all Maine sources for future planned fishing trips. Based on the ratio of reported trips to reported consumption (FTALCONS) and the ratio of reported flowing water trips to all reported trips (FLTOALTP).

RPFTALL: The sum of reported and estimated future fish consumption rates for all Maine sources. Units: g edible/person-day. This is the variable whose distribution is summarized in the "All Waters, All Anglers" column of Table 3 of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers."

LRPFTALL: Natural log of RPFTALL. If RPFTALL equals 0, LRPFTALL is set to missing.

CRPFTALL: The sum of reported and estimated future fish consumption rates for all Maine sources for those repsondents whose households consume some fish. Equals RPFTALL if RPFTALL is greater than 0. Otherwise, is set to missing. This is the variable whose distribution is summarized in the "All Waters, Consuming Anglers"

column of Table 3 of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers."

RPFTOHFL: The sum of reported and estimated future fish consumption rates for Maine flowing water sources. Units: g edible/person-day. This is the variable whose distribution is summarized in the "Rivers and Streams, All Anglers" column of Table 3 of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers."

LRFOHFL: Natural log of RPFTOHFL. If RPFTOHFL equals 0, LRFOHFL is set to missing.

CRFOHFL: The sum of reported and estimated future fish consumption rates for Maine flowing water sources for those repsondents whose households consume some fish. Equals RPFTOHFL if RPFTOHFL is greater than 0. Otherwise, is set to missing. This is the variable whose distribution is summarized in the "Rivers and Streams, Consuming Anglers" column of Table 3 of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers."

RARSCONS: The sum of reported and estimated future fish consumption rates for Maine flowing water sources for those repsondents who fished on rivers and/or streams. Equals RPFTOHFL if RPFTOHFL is greater than 0 and person responded "Yes" to Q17. Otherwise, is set to missing. This is the variable whose distribution is summarized in the "Rivers and Streams, River Anglers" column of Table 3 of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers."}

```
USE TEMPD
SAVE TEMPE

LET FLOTOISF=0
IF (RPICCONS+RPPDCONS+RPFLCONS)>0 THEN,
  LET FLOTOISF=RPFLCONS/(RPICCONS+RPPDCONS+RPFLCONS)

LET OTHSRCFL=FLOTOISF*RPOHCONS

LET FUTTRIPS=0
IF Q25=2 AND Q25A<999 THEN LET FUTTRIPS=Q25A

LET RPALTRIP=Q8+Q14+Q18

LET FTALCONS=0
IF RPALTRIP>0 THEN,
  LET FTALCONS=(FUTTRIPS/RPALTRIP)*(RPICCONS+RPPDCONS+RPFLCONS)
```

LET FLTOALTP=0
IF RPALTRIP>0 THEN LET FLTOALTP=Q18/RPALTRIP

LET FTFLCONS=FTALCONS*FLTOALTP

LET RPFTALL=RPICCONS+RPPDCONS+RPFLCONS+RPOHCONS+FTALCONS

LET LRPFTALL=LOG(RPFTALL)

LET CRPFTALL=EXP(LRPFTALL)

LET RPFTOHFL=RPFLCONS+FTFLCONS+OTHSRCFL

LET LRFOHFL=LOG(RPFTOHFL)

LET CRFOHFL=EXP(LRFOHFL)

IF Q17=2 THEN LET RARSCONS=RPFTOHFL

RUN

{SUBROUTINE 12. This subroutine saves to the file TAB3SUMM demographic variables and those variables whose distributions are summarized in Table 3 of the ChemRisk/HBRS July 24, 1992 report "Consumption of Freshwater Fish by Maine Anglers."

The command sequence execution ends after this subroutine. Calculation of summary statistics, preparation of graphics, and other analyses of the survey data are left to other command sequences.}

USE TEMPE (RPFTALL, CRPFTALL, RPFTOHFL, RARSCONS, CRFOHFL,
     Q45, Q46, Q47, Q47A, Q48)
SAVE TAB3SUMM

RUN

QUIT

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Template for File MEFISH.DAT
Data from 1990 Maine Angler Survey

Variable	Total Characters	Start Position	End Position
ID1	4	1	4
Q4	1	5	5
Q8	3	6	8
Q11D_1	3	9	11
Q11E_1	2	12	13
Q11D_2	3	14	16
Q11E_2	2	17	18
Q11D_3	3	19	21
Q11E_3	2	22	23
Q11D_4	3	24	26
Q11E_4	2	27	28
Q11D_5	3	29	31
Q11E_5	2	32	33
Q11D_6	3	34	36
Q11E_6	2	37	38
Q11D_7	3	39	41
Q11E_7	2	42	43
Q11D_8	3	44	46
Q11E_8	2	47	48
Q11D_9	3	49	51
Q11E_9	2	52	53
Q11D_10	3	54	56
Q11E_10	2	57	58
Q11D_11	3	59	61
Q11E_11	2	62	63
Q11D_12	3	64	66
Q11E_12	2	67	68
Q11D_13	3	69	71
Q11E_13	2	72	73
Q11D_14	3	74	76
Q11E_14	2	77	78
Q11D_15	3	79	81
Q11E_15	2	82	83
Q14	3	84	86
Q17	1	87	87
Q18	3	88	90
Q24A_1	3	91	93
Q24B_1	3	94	96
Q24C_1	3	97	99
Q24D_1	3	100	102
Q24A_2	3	103	105
Q24B_2	3	106	108
Q24C_2	3	109	111
Q24D_2	3	112	114
Q24A_3	3	115	117
Q24B_3	3	118	120
Q24C_3	3	121	123

Template for File MEFISH.DAT
Data from 1990 Maine Angler Survey

Variable	Total Characters	Start Position	End Position
Q24D_3	3	124	126
Q24A_4	3	127	129
Q24B_4	3	130	132
Q24C_4	3	133	135
Q24D_4	3	136	138
Q24A_5	3	139	141
Q24B_5	3	142	144
Q24C_5	3	145	147
Q24D_5	3	148	150
Q24A_6	3	151	153
Q24B_6	3	154	156
Q24C_6	3	157	159
Q24D_6	3	160	162
Q24A_7	3	163	165
Q24B_7	3	166	168
Q24C_7	3	169	171
Q24D_7	3	172	174
Q24A_8	3	175	177
Q24B_8	3	178	180
Q24C_8	2	181	182
Q24D_8	3	183	185
Q24A_9	3	186	188
Q24B_9	3	189	191
Q24C_9	3	192	194
Q24D_9	3	195	197
Q24A_10	3	198	200
Q24B_10	3	201	203
Q24C_10	3	204	206
Q24D_10	3	207	209
Q24A_11	3	210	212
Q24B_11	3	213	215
Q24C_11	3	216	218
Q24D_11	3	219	221
Q24A_12	3	222	224
Q24B_12	3	225	227
Q24C_12	3	228	230
Q24D_12	3	231	233
Q24A_13	3	234	236
Q24B_13	3	237	239
Q24C_13	3	240	242
Q24D_13	3	243	245
Q24A_14	3	246	248
Q24B_14	3	249	251
Q24C_14	3	252	254
Q24D_14	3	255	257
Q24A_15	3	258	260
Q24B_15	3	261	263

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Template for File MEFISH.DAT
Data from 1990 Maine Angler Survey

Variable	Total Characters	Start Position	End Position
Q24C_15	3	264	266
Q24D_15	3	267	269
Q25	1	270	270
Q25A	3	271	273
Q29A_1	3	274	276
Q29B_1	3	277	279
Q29A_2	3	280	282
Q29B_2	3	283	285
Q29A_3	3	286	288
Q29B_3	3	289	291
Q29A_4	3	292	294
Q29B_4	3	295	297
Q29A_5	3	298	300
Q29B_5	3	301	303
Q29A_6	3	304	306
Q29B_6	3	307	309
Q29A_7	3	310	312
Q29B_7	3	313	315
Q29A_8	3	316	318
Q29B_8	3	319	321
Q29A_9	3	322	324
Q29B_9	3	325	327
Q29A_10	3	328	330
Q29B_10	3	331	333
Q29A_11	3	334	336
Q29B_11	3	337	339
Q29A_12	3	340	342
Q29B_12	3	343	345
Q29A_13	3	346	348
Q29B_13	3	349	351
Q29A_14	3	352	354
Q29B_14	3	355	357
Q29A_15	3	358	360
Q29B_15	3	361	363
Q31A_1	3	364	366
Q31B_1	3	367	369
Q31A_2	3	370	372
Q31B_2	3	373	375
Q31A_3	3	376	378
Q31B_3	3	379	381
Q31A_4	3	382	384
Q31B_4	3	385	387
Q31A_5	3	388	390
Q31B_5	3	391	393
Q31A_6	3	394	396
Q31B_6	3	397	399
Q31A_7	3	400	402

Template for File MEFISH.DAT
Data from 1990 Maine Angler Survey

Variable	Total Characters	Start Position	End Position
Q31B_7	3	403	405
Q31A_8	3	406	408
Q31B_8	3	409	411
Q31A_9	3	412	414
Q31B_9	3	415	417
Q31A_10	3	418	420
Q31B_10	3	421	423
Q31A_11	3	424	426
Q31B_11	3	427	429
Q31A_12	3	430	432
Q31B_12	3	433	435
Q31A_13	3	436	438
Q31B_13	3	439	441
Q31A_14	3	442	444
Q31B_14	3	445	447
Q31A_15	3	448	450
Q31B_15	3	451	453
Q32A_1	2	454	455
Q32C_1	1	456	456
Q32A_2	2	457	458
Q32C_2	1	459	459
Q32A_3	2	460	461
Q32C_3	1	462	462
Q32A_4	2	463	464
Q32C_4	1	465	465
Q32A_5	2	466	467
Q32C_5	1	468	468
Q32A_6	2	469	470
Q32C_6	1	471	471
Q45	1	472	472
Q46	1	473	473
Q47	1	474	474
Q47A	1	475	475
Q48	2	476	477