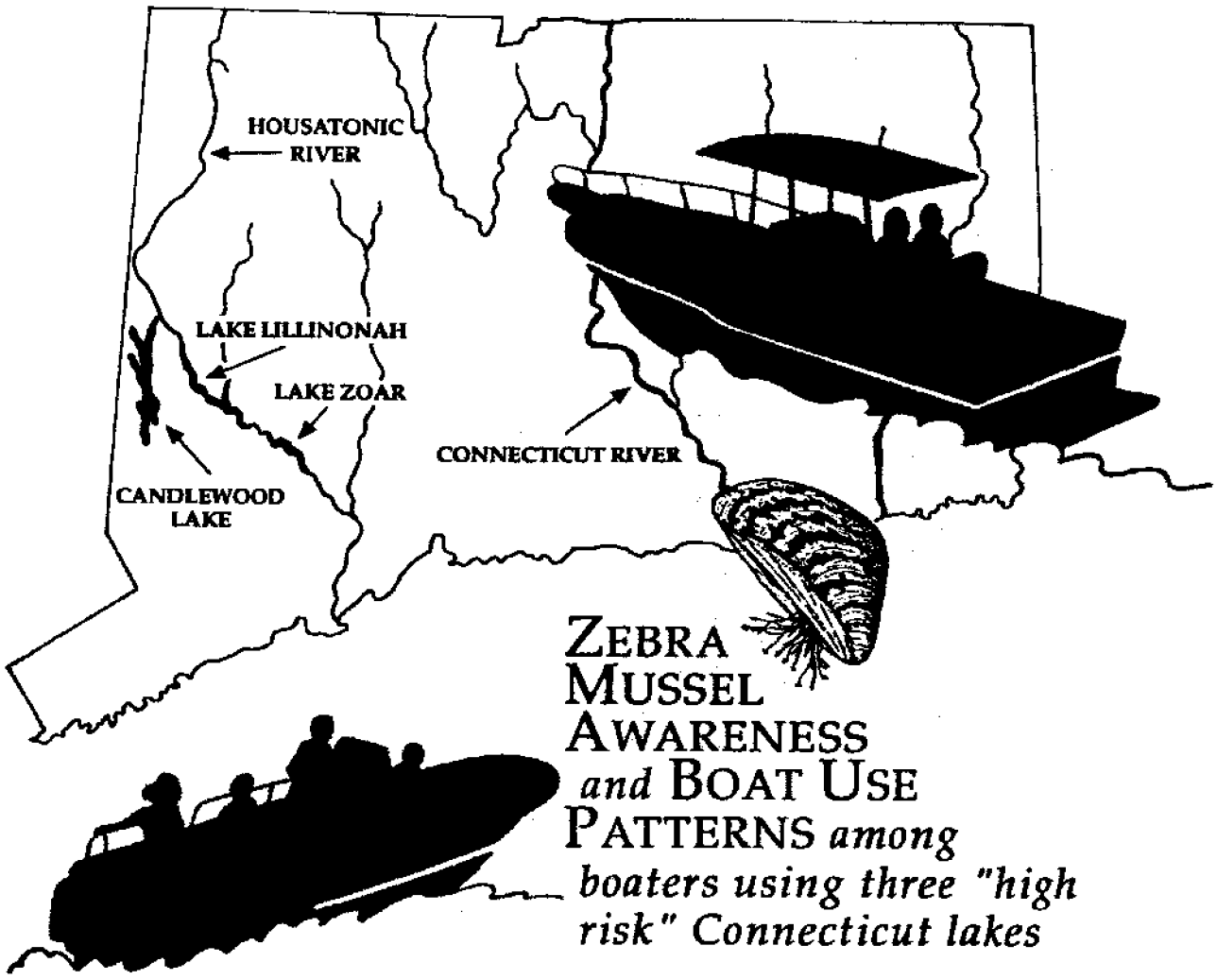

ZEBRA MUSSEL AWARENESS *and* BOAT USE PATTERNS *among boaters using three "high risk" Connecticut lakes*

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Summary

Three lakes in western Connecticut, all part of the Housatonic River drainage basin, are considered "high risks" for invasion by zebra mussels, based on water chemistry data and popularity among boaters and fishermen. A survey was conducted to assess the level of awareness of zebra mussels by users of these lakes, and to examine transient boat usage patterns.

During the summer 1993, 325 interviews were conducted with boaters using seven boat ramps on Candlewood Lake, Lake Lillinonah and Lake Zoar. At the conclusion of the interview, boaters were given a zebra mussel alert card, listing telephone numbers of key Sea Grant contacts in the Northeast, and a card with basic information on boat cleaning to minimize transportation of aquatic nuisance species like zebra mussels from one waterbody to the next.

Fishermen (95.4%) had the greatest awareness of zebra mussels; many (75.9%) also knew that their boats and fishing activities could be a means for spreading the mussels. Far fewer pleasure boaters (69.2%) knew of the mussels or that boats were a potential dispersal mechanism (30.9%). Jet ski operators (44.7%) had little or no knowledge about the mussels or their transport (19.2%).

The majority of fishermen interviewed were not using live aquatic baits. Most had some type of live well on board, and a small number planned to bring fish home in lake water.

"Drying out" periods between boat uses averaged eight days, with fishing boats averaging seven days and jet skis, four days. In contrast, boaters were more optimistic as to when the boat would be used next, averaging two days. With few exceptions, boats were kept on trailers at home.

Boats that had been or were expected to be used on another waterbody on the same day were relatively few in number and predominantly jet skis. Multiple daily uses occurred between the three lakes only. Most of the boats had been previously used on the lake of the interview location, or on one of the other two lakes targeted by the survey. Just over 5% of the boats had been previously used out-of-state, the majority in New York, which has zebra mussels. Some of these boats had been used a day or two before in New York, but only one of the four waterbodies named (Hudson River) has confirmed zebra mussel populations. Although the number of out-of-state boaters interviewed was small, 62 fishing derby permits for these lakes were issued to non-residents, emphasizing the amount of interstate boat traffic.

Introduction

Like most of the continental United States, Connecticut faces the strong possibility of an invasion by non-indigenous freshwater mollusks, *Dreissena polymorpha* and *D. bugensis*, known collectively as zebra mussels. The mussels' ability to adapt physiologically, coupled with inadvertent human dispersal, predispose these species to become widely distributed in North America, with potentially serious economic and ecological consequences (Ludyanskiy *et. al.*, 1993). In particular, the mussels create tremendous and costly problems for users of raw fresh water, particularly power and water utilities, industries, lakeside and riverside residents, fishermen and boaters. Estimates by the U.S. Fish and Wildlife Service put the invasion pricetag at $5 billion by the year 2000 in the Great Lakes region alone.

Two physiological aspects of these mussels--a planktonic larval stage and the capability to produce strong elastic threads (byssal threads) for attaching to firm surfaces--characterize a biofouling organism of a magnitude never before experienced in North American fresh waters, overshadowing even the fouling problems caused by the non-native freshwater Asian clam, *Corbicula fluminea*. As noted by Ludyanskiy *et. al.* (1993), it has become rapidly apparent that most hard substrates are an open niche in North American freshwater ecosystems, and the zebra mussels are capitalizing on these openings.

Since the initial discovery of zebra mussels in 1988, and the confirmation of a second species in 1992, the range of the mussels has expanded rapidly. Reviewing all potential dispersal methods, scientists predicted that transient boat activity between waterbodies and states would be the primary overland transport mechanism, carrying mussels or mussel larvae in live wells or bait buckets, on boat hulls and among aquatic weeds caught on boat propellers, ropes, and trailers. It has become apparent that the mussels are spreading more rapidly throughout the major riverine systems, aided by currents, and large boat and barge traffic, than they are spreading overland. The spread to inland lakes continues, but at a slower rate than expected.

For Connecticut, with the exception of the Connecticut River, which does support interstate barge traffic, the most probable method of introduction of the mussels will be via transient fishing or pleasure boats. Fishermen, in particular, are prone to move their boats around from waterbody to waterbody and from state to state, following tournaments and good fishing opportunities. Boater education will play an important role in slowing the spread of zebra mussels to inland lakes and rivers not traveled by commercial traffic. The more precautions these individuals take, the slower the overland spread of the mussels will be.

Once introduced to a waterbody, there is no guarantee that the mussels will survive and reproduce. Even if they do become established, the population size is dependent on how hospitable the environment is to them. Not every lake will support zebra mussels to the extent of causing major problems. Zebra mussels have certain environmental constraints (Table 1). In particular, calcium ion content, pH and water temperature are critical, as well as adequate supplies of plankton for food. As knowledge about the species of *Dreissena* currently inhabiting the United States and Canada increases, and as the species adapt physiologically, these environmental parameters are changing, evolving, and expanding. Areas originally perceived as "very low probability" may indeed eventually support mussel populations.

Neary and Leach (1992) used calcium ion concentrations and pH to predict which Ontario lakes might be suitable habitats for zebra mussels, using three categories. Survival was "unlikely" if

Table 1. *Zebra mussel colonization potential based on environmental parameters. The terms "high," "low," "average," and "unlikely" refer to the probability of finding zebra mussels colonizing under these conditions (Tippet and Miller, 1993).*

	High	Average	Low	Unlikely
Salinity, ppt	0 - 1	1 - 4	4 - 10	10 - 35
Water Temperature, °C	17 - 25	25 - 27	15 - 17	< 15 > 27
pH	7.4 - 8.5	7.0 - 7.4 8.5 - 9.0	6.5 - 7.0	< 6.5 > 9.0
Calcium, ppm	25 - 125	20 - 25	12 - 20	< 12
Turbidity, cm (Secchi disk depth)	40 - 200	20 - 30	10 - 20 200 - 250	< 10 > 250
Dissolved Oxygen, ppm	8 - 10	6 - 8	4 - 6	< 4
Water velocity, m/s	0.5 - 0.7	0.1 - 0.5 0.7 - 1.0	1.0 - 2.0	> 2.0
Substrate	rock, wood, gravel	sand with shells	silted sand	mud

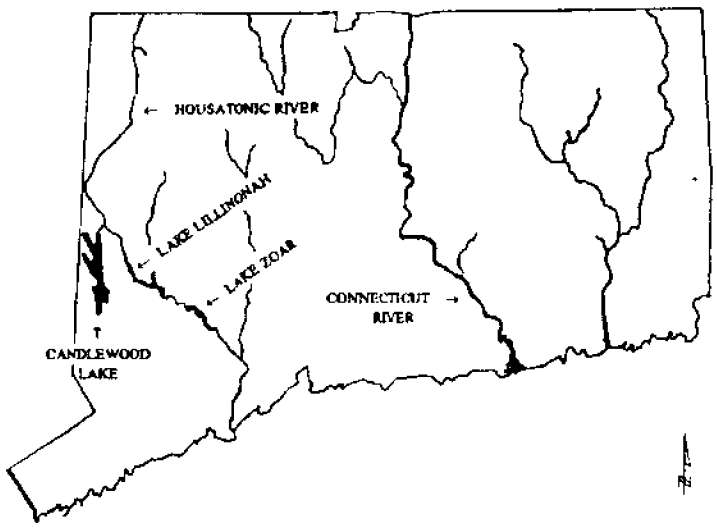
pH was less than 7.4 and calcium ion concentration less than 12 mg/L. Survival was "possible" with calcium ranges between 12 and 20 mg/L and pH >7.4. Survival was "probable", with waters with calcium concentrations greater than 20 mg/L. Murray *et. al.* (1993) adopted this scheme to classify Connecticut's fresh waters into zones of potential zebra mussel threat, using water chemistry data and focusing on the calcium ion concentration of surface waters. The Housatonic River drainage system in western Connecticut, which runs along a marble valley, is considered to be the primary "high risk" area. The risk diminishes eastward across the state, as the waters become softer, albeit not uniformly.

The report also notes that the Connecticut River may serve as the easternmost boundary for mussels in the state, with calcium ion concentrations of 10-12 mg/L. However, the Connecticut River currently supports a thriving introduced population of the Asian clam, *Corbicula fluminea*, which also requires calcium for shell formation. Some scientists believe that wherever *Corbicula* or other species of freshwater mollusks are found, zebra mussels could also survive (McMahon, pers. comm., 1992).

Boater Survey

Environmental suitability is not the only measure of the risk an inland waterbody faces from zebra mussels. Another measure is the likelihood of introduction--naturally via currents or human-induced, such as by transient boat activity. To begin to assess the contribution of boat traffic to "high risk" waterbodies, the Connecticut Sea Grant Marine Advisory Program hired an intern during the summer of 1993 to conduct interviews with fishermen and boaters using three popular lakes within the Housatonic River drainage system--Candlewood Lake, Lake Lillinonah and Lake Zoar (Figure 1). Candlewood Lake, the largest lake in Connecticut, is a man-made lake, drawing water from the Housatonic River via an aqueduct. The latter two lakes are part of the Housatonic River proper, with boundaries formed by hydroelectric dams. All three lakes have calcium ion concentrations (mg/l) greater than 17 and pH levels around 7.5.

Figure 1. *Location of three target lakes in western Connecticut.*



The interview questions were developed with the assistance of Ladd Johnson (Research Associate, Williams College-Mystic Seaport). Together with James Carlton (Director, Maritime Studies Program, Williams College) and Paul Marangelo (Research Associate, Williams College), Johnson has conducted similar but more extensive studies of the role transient boating activity plays in spreading zebra mussels to inland lakes in Michigan (Johnson and Carlton, 1993;

Marangelo *et. al.*, 1994). Johnson's input was sought to develop a similar series of questions for use in Connecticut.

The purpose of the interviews was to determine the level of awareness boaters using these lakes had of zebra mussels, and to determine their boat usage patterns--how frequently the boats were used, where and when they were last used, and where and when they would next be used. In addition, those individuals identified as fishermen were asked questions regarding the source of any live bait used, and in what manner would any "keepers" be brought home (Appendix 1). The results of these interviews help clarify the risks of inadvertent mussel introduction by boats to these waters and determine the effectiveness of the on-going public outreach and education programs in Connecticut and other states in terms of reaching one of the primary target audiences.

An undergraduate student, Eileen Rohmer, conducted interviews at seven boat ramps on the three lakes between mid-June and mid-August, primarily on evenings and weekends (Figure 1; Appendix 2). Boaters were interviewed as they arrived, departed or refueled. In addition to surveying the ramp users, Rohmer also passed out zebra mussel alert cards and information on how boaters can minimize the possibility of transporting zebra mussels from infested waters to uninfested waters.

Results

A. General Information

During the two month survey period, Rohmer conducted 325 interviews at seven ramps on three lakes. Table 2 shows the distribution of interviews among the lakes. Survey participants were about evenly divided between arriving and departing the lake, with a small number, predominantly personal watercraft (jet skis) refueling (Table 3).

The majority of boaters interviewed had motor boats, distinguished from obvious fishing boats, sailboats, personal watercraft or other watercraft (party barge) (Table 4). When asked about their primary activity that day, the breakdown results were slightly different (Table 5). The majority

Table 2. *Distribution of interviews among three western Connecticut lakes: Candlewood Lake, Lake Lillinonah and Lake Zoar.*

Location of Interviews	No.
Candlewood Lake	139
Lake Lillinonah	123
Lake Zoar	63
TOTAL	325

were using their boats solely for pleasure. If a respondent indicated both fishing and pleasure, the response was coded as "fishing." A very small number of boats were out for test rides for repairs or potential customers.

Average boat length was 18 feet, with a range of 13 to 30 feet. The average number of hours spent (or expected to be spent) on the water was four hours, with a range of one to ten hours. Personal watercraft (jet skis) were used on the water an average of two hours at a time, but often were used more than once, and sometimes on more than one lake, on the same day (Table 6).

Table 3. *Status of participants during interview. N = 307.*

Status	No.
Arriving	141
Departing	152
Refueling	14

Table 4. *Breakdown of interviews by boat category. N = 325.*

Boat Category	No.
Fishing Boat	87
Motor Boat	187
Pers. Watercraft (jet skis)	47
Sailboat	3
Other (party barge)	1

Table 5. *Breakdown of interviews by primary boating activity.*

Primary Activity	No.
Fishing	96
Pleasure	225
Test Purchase	3
Test Repair	1

Table 6. *Breakdown of mean hours on water by boat category, with range in parentheses.*

Boat Category	Mean Hours on Water
Total Interviewed	4 (1-10)
Fishing Boats	4 (2-9)
Motor Boats	4 (1-10)
Personal Water Craft (Jet Skis)	2 (2-3)

B. Zebra Mussel Awareness

Survey participants were asked two questions about zebra mussels:

1. "Have you heard of zebra mussels?" and
2. "Do you know that boats are one possible way mussels can be spread from waterbody to waterbody?" (This second question was actually posed by Rohmer as: "Do you think your craft could spread zebra mussels?")

The overall results indicated that 73% of those interviewed had heard of zebra mussels and 41% thought their boat was a potential mechanism for dispersal of the mussels. Table 7 shows the breakdown of responses to the two questions, by boat category, which was done to see if any boater category had a greater awareness of zebra mussels than the others. (These calculations use the 87 boats identified as fishing boats, rather than the 96 individuals who indicated their primary activity was fishing.)

Table 7. *Breakdown of responses by boat type to two questions posed:*
(1) "Have you heard of zebra mussels?" and
(2) "Do you think your craft could spread zebra mussels from one waterbody to another?"
Number of participants: 325

RESPONSE	YES / YES	YES / NO	NO / NO
Fishing Boats	66 (75.9%)	17 (19.5%)	4 (4.6%)
Motor Boats	58 (31.0%)	72 (38.5%)	57 (30.5%)
Sailboats	1 (33.3%)	2 (66.7%)	---
Pers. Watercraft*	9 (19.2%)	12 (25.5%)	26 (55.3%)
Other**	---	1 (100%)	---

*jet skis ** party barge

The results show that 95.4% of the individuals identified with fishing boats were aware of the mussels and 75.9% also knew about the potential for transport by boats. Less than 5% of the fishermen interviewed knew nothing about zebra mussels.

Of those individuals identified with motor boats, 69.5% had heard of zebra mussels, but only 31.0% knew that boats are a possible means of dispersal. A similar percentage of boaters (30.5%) knew nothing about zebra mussels.

With regard to the personal watercraft (jet ski) operators, 44.7% had heard of zebra mussels, but less than 20% knew that boats were a dispersal mechanism. More than half of those interviewed knew nothing about zebra mussels.

Table 8 shows that by summarizing the "yes" responses to the two questions, it is readily apparent that public outreach and education efforts targeting anglers have been more effective or thorough than those targeting pleasure boaters. These responses indicate a need to reach out to all Connecticut boaters and operators of personal watercraft such as jet skis, to ensure that they too get the message about zebra mussels and other nuisance aquatic species.

Respondents were asked at the end of the interview if they had been previously interviewed by Rohmer. Fourteen (4.3%) were repeat interviews. Looking at the data sheets indicating a repeat interview and examining the responses to the first two questions about zebra mussels,

Table 8. *A summary of the "yes" responses to two questions posed about zebra mussels.*

Summary of "YES" Responses	Aware of zebra mussels	Aware of possible boat transport
Fishing Boats	83 (95.4%)	66 (75.9%)
Other Craft	155 (65.1%)	68 (28.6%)
Motor Boats	130 (69.5%)	57 (30.5%)*
Sailboats	3 (100%)	---
Jet Skis	21 (44.7%)	9 (19.2%)
Party Barge	1 (100%)	---

only two respondents indicated that they had never heard of zebra mussels or did not know that boats could transport the mussels around, information they should have received from Rohmer during the first interview. Since the interviews were anonymous, it was not possible to match up a repeat interview with a first interview, to see if the answers to the first two questions changed.

C. Fishing

The responses to these questions were based on the interviewees indicating that their primary activity was fishing (96), rather than the number of boats identified by the interviewer as an obvious fishing boat (87).

Because of the potential for transporting zebra mussel veligers in live wells, bait buckets or bait water, specific questions were addressed to those 96 individuals that had been fishing or planned to do so. When asked whether or not live bait--specifically minnows or crayfish--had been used, 12 anglers (14.6%) were using minnows and two were using crayfish. The rest either were using artificial baits or other non-aquatic type of bait, or the information was unavailable. When asked about the source of the live baits, nine said the minnows came from local bait shops, two brought them in from out-of-state and one response was missing. For the crayfish, one lot came from a local bait shop and the others were caught locally by the individuals themselves. In other words, 71.4% was purchased at a local bait shop, and 14.3% was brought in from out-of-state.

The anglers were asked: if they caught fish that day, were they planning to bring fish home with them. Only 14 said yes, the remainder either did not plan to keep any fish or did not know (because they were just launching). Of the 14 who said yes, nine planned to take the fish home in lake water, while five would not. Of those that did not know if they would keep any fish, five would bring any fish home in lake water and the remainder either would not (five) or again, did not know (seven).

Individuals associated with any boat other than a personal watercraft were asked if their boat had a storage compartment for fish, and 94 of the 279 eligible respondents indicated that their boat had some storage compartment. Unfortunately, the question was not worded as well as it could have been, because there is no way of knowing if the storage compartments were all built in, as the question intended, or if some of the responses included portable bait buckets or aerated systems.

D. Boat Usage Patterns

One of the keys to incidental transport of zebra mussels and/or veligers from waterbody to waterbody by boat is the time period between uses--does a boat move from lake to lake one day to the next, or is there generally a "drying out" period between uses? A series of questions were asked to determine when and where a boat was last used, where and how the boat is typically stored and when and where the boat is expected to be used next. Common perceptions are that fishermen following tournaments may fish, for example, in the Hudson River one day and Candlewood Lake the next day. The responses to these questions provide a clearer picture of boat use practices, although they may not be entirely representative, since Rohmer did not interview fishing tournament participants specifically.

Table 9 shows the breakdown of responses by identified boat type to the questions "When was the last time boat was used?" in days and "When is the next time the boat is expected to be used?" in days. In the case where the responses was the same day as the interview, the number of days was indicated as "0".

Most people (313) had some idea of the last time their boat was used and on average, it was eight days prior to the interview, but ranged from earlier that same day to 45 days before. Fishing trips tended to run about seven days apart, while pleasure trips ten days apart, on average. The jet skis were used more frequently, in action four days prior to the interview on average. Four individuals had not used their boat since the 1992 boating season, the interview date being their first time out during 1993.

Far fewer people (50) had some idea of when they planned to use their boat next. On average, it was in about two days, with a range of same day to seven days hence. Breaking the responses out by boat type, fishing and motor boats were expected to be used generally within three days, while jet skis were expected to be used the next day.

The difference between the average number of days since the last use and the expected average time span before the next use is six days. It appears that people are more optimistic about how frequently they will use their boats than they actually do. If the responses in June and August are compared, the average number of days since the boat was last used remains at eight days for both months. However, the response for the next planned use averaged four days in June and two days in August. All but five of the boaters interviewed kept their boats on trailers, and all but eight kept their boats at home.

Five of those interviewed had used their boat or personal watercraft previously on the day of the interview. Three boats (two motor, one fishing) had come to Lillinonah from Candlewood and two jet skis had been moved from Lillinonah to Zoar on the same day.

When asked if they planned to use their boat on a different lake on the same day, 287 said "no," 28 did not know and nine said "yes." All of the movements were to one of the three lakes where the interviews were being conducted--Candlewood, Lillinonah and Zoar. There appears to be a lot of movement between the three lakes, which are relatively close to one another. This observation was confirmed by the responses to the following question.

A breakdown of the 315 responses to the question "Where was the boat last used?" indicated that 85.4% of the boats had been previously used on one of the three target lakes, and that 62.8% were the same lake as where the interview was being conducted. Similarly, when asked "Where will the boat be used next?", of the 111 responses, 91% were for one of the three target lakes and 78.2% were expected to used at the same lake that the interview was being conducted.

Table 9. *Breakdown of responses to question "When do you plan to use your boat next?" Mean number of days given, with range in days in parentheses. The response "0" indicates planned use on same day as interview.*

Boat Category	Last Boat Use (Days)			Estimated Next Use (Days)		
TOTAL	8	(0 - 45)	[N = 313]	2	(0 - 7)	[N = 50]
Fishing Boats	7	(0 - 30)	[N = 83]	3	(1 - 7)	[N = 13]
Motor Boats	10	(0 - 45)	[N = 179]	3	(0 - 7)	[N = 20]
Sailboats	22	(6 - 30)	[N = 3]	---		
Pers. Watercraft (jet skis)	4	(0 - 14)	[N = 47]	1	(0 - 2)	[N = 17]

No. of individuals that did not know next use: 276
No. of individuals who last used boat in 1992: 4

Fifteen individuals (4.8%) had used their boat last on another Connecticut lake or pond (eight different waterbodies in all, Bantam Lake being the most popular). Seventeen (5.4%) had been previously used out of state (New York, New Hampshire or Massachusetts) and fourteen (4.4%) had last been used in Long Island Sound.

Since to date, no zebra mussels have been found in either Massachusetts or New Hampshire, only the New York boat trips were used in the following calculation, particularly since eight of the boats had last been used in the Hudson River, which does have zebra mussels. The other three waterbodies in New York were Lake Carmel, Lake George and Peach Lake. No zebra mussels have been found in any of these lakes to date (O'Neill, pers. comm., 1993).

Table 10 focuses on the boats last used in New York state. While only a few boaters interviewed (5.2%) came from out-of-state, the responses indicate that only a day or a few days may pass before a boat is trailered to Connecticut, increasing the risk of zebra mussel survival, and therefore, introduction, if appropriate precautions are not taken. Of the three target lakes, Candlewood Lake received the boat traffic with one to three days prior use. While the Connecticut Department of Environmental Protection (DEP) does not keep track of the number of out-of-state boats launched at Connecticut state ramps, it does keep records of fishing derby permits that are issued (CT DEP, 1993). During 1993, 166 permits were issued for these three lakes, 99 for Candlewood Lake alone. Of these permits, 62 were issued to individuals living in states other than Connecticut.

Of the responses to the question "Where next" other than for the target lakes, seven planned to use a Connecticut lake (six to Bantam Lake), and three expected to return to New York waters.

Appendix 2 shows a distribution of the interviews, by date, lake and ramp location.

Table 10. *Number of days since boat on Connecticut lake was last used in New York waters.*

No. of boats last used in NY	Days since use
1	1
1	2
1	3
3	6
2	7
1	8
5	14

Conclusions

Based on the results of 325 interviews during 1993, it appears that fishermen in general are more knowledgeable about zebra mussels and the potential role boats play in dispersing the mussels, while pleasure boat and jet ski operators need more directed educational programs on zebra mussels. Boats tend to have a "drying out" period of about eight days on average, and most are kept on trailers at home.

The majority of fishermen interviewed were not using live aquatic baits, while those that were using minnows or crayfish had a variety of sources for them. The bait (minnows) that are sold in Connecticut bait shops come from two distributors in Massachusetts, who receive their supplies from baitfish farms in Arkansas. Based on the way these fish are raised in spring-fed ponds or well water, they can be considered free of the risk of zebra mussel contamination (Hyatt, pers. comm., 1993). Most boats identified as fishing boats had some sort of live well, although whether these "wells" were part of the boat or portable remains unclear.

The interview results combined with the number of fishing derby permits issued by the Connecticut DEP for these lakes confirm that there is a significant amount of interstate boat traffic, some coming from areas with zebra mussels and some involving no "drying out" period between boat uses.

It is also apparent that there is a lot of movement between these three interconnected lakes by boaters, sometimes on the same day. While the risk of introduction for these lakes may be somewhat lessened by the average "drying out" period between boat uses, it is not enough to remove these lakes from the category of "high risk" of introduction.

A follow-up to this survey--something that really should have been done in concert with the interviews--would be to examine boats entering and departing the lakes for signs of aquatic vegetation on propellers, trailers, and other boat equipment. This would have been feasible with more manpower; however, with just one interviewer, it was more important to talk with as many boaters as possible.

More comprehensive studies have been conducted in Michigan (Johnson and Carlton, 1993; Marangelo *et. al.*, 1994), documenting not only boat use patterns, but also examining exiting trailered boats for signs of mussels. Mussel monitoring programs were also initiated on a series of inland Michigan lakes. The researchers concluded that trailered boats are indeed viable dispersal mechanisms for all life stages of zebra mussels, and that precautionary measures should be taken by boat owners to minimize the possibility of contributing to the rapid spread of the mussels throughout the continental United States, particularly to inland lakes and waterways.

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Appendix 1.

RECREATIONAL VESSEL SURVEY

Date: _____ Interviewer: _____ Location: _____ _____

Arriving or Departing Boat Type: FB MB SB Other __ ____

1. Have you heard of zebra mussels? YES NO (If no, give brief explanation)

2. Do you know that boats are one possible way mussels can be spread from waterbody to waterbody? YES NO

3. How long will you be (were you) on the water today? _____ hours

4. What is the boat length? _____ FT

5. What is/was your primary activity today? FISH PLEASURE TESTING REPAIRING

(IF FISHING) Are you using minnows or crayfish as bait? NO MINNOW CRAYFISH

(IF YES) Where did the bait and the water it is in come from?
LOCAL BAIT SHOP OUT OF STATE OTHER _____

(IF FISHING) Will you take any fish home with you? YES NO DON'T KNOW

(IF YES) Will you take them home in lake water? YES NO DON'T KNOW

6. Does this boat have a storage compartment for bait or fish? YES NO

7. Have you used this boat earlier today on any other lake or river? YES NO

(IF YES) Which lake or river was that? _____

8. Will you use this boat on any other lake or river today? YES NO DON'T KNOW

(IF YES) Which lake or river? _____

9. Where did you last use this boat? _____

10. When did you last use this boat? _____days

11. Where is your home? _____

12. Do you keep your boat at home? YES NO

(IF NO): in what town or city is your boat stored? _____

13. Is the boat stored in the WATER or on its TRAILER?

(IF WATER) On what lake or river is it stored? _____

14. When do you plan to use your boat next? _____ days DK

15. Where do you plan to use your boat next? HERE DK _____

16. Have you been interviewed for this survey earlier this year? YES NO

Appendix 2.

June 1993

Sunday	Monday	Tuesday	Wed	Thurs	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13 C - 1	14 C - 1	15	16 C - 1	17 Z - 1	18	19 L - 1
20 L - 1	21	22 L - 2	23	24 C - 1	25	26
27	28 Z - 2	29 Z - 1	30 Z - 1			

C - Candlewood Lake
- 1 - Squantz Cove State Boat Ramp
- 2 - Lattins Landing State Boat Ramp

L - Lake Lillinonah
- 1 - Newtown Town Boat Ramp
- 2 - Bridgewater State Boat Ramp
- 3 - Pond Brook State Boat Ramp

Z - Lake Zoar
- 1 - Southbury State Boat Ramp
- 2 - Monroe Town Boat Ramp

JULY 1993

Sunday	Monday	Tuesday	Wed	Thurs	Friday	Saturday
				1 Z - 1	2 Z - 1	3 L - 1
4 L - 2	5 C - 2	6	7	8	9	10 L - 3
11 C - 2	12	13 C - 1	14	15 Z - 1	16 L - 1, 3	17 C - 2
18	19	20	21	22	23	24 C - 2
25 L - 2	26	27 L - 2; Z - 1	28 Z - 1	29 Z - 1	30 C - 1	31 L - 1

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- 2 - Monroe Town Boat Ramp

AUGUST 1993

Sunday	Monday	Tuesday	Wed	Thurs	Friday	Saturday
1	2 C - 2	3	4	5	6	7 C - 2
8 L - 1	9	10	11	12	13	14 L - 2
15	16 C - 1	17 Z - 1	18	19 Z - 1	20	21 C - 2
22	23	24	25	26	27	28
29	30	31				

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