

Missouri Department of Conservation

**Missouri Non-Native Aquatic Species
and Watercraft Survey, October 2009**

Timothy J. Banek and Shelly N. Colatskie



March 2011

This project was funded by the U.S. Fish and Wildlife Service Aquatic Nuisance Species (ANS) Task Force Grant, the Mississippi River Basin Panel and the Missouri Department of Conservation (MDC).

Thanks to MDC's Resource Science Division staff Martha McCrary, Julie Fleming and Ron Reitz for their support in conducting the survey and analyzing the data and to Shelly Colatskie for her assistance in compiling this report.

Abstract

Four thousand thirty-eight (4,038) completed surveys were returned from the 10,000 registered boaters that were mailed a 24-question survey to determine their knowledge and habits related to non-native aquatic species (NNAS) (Appendix A). In October 2009, as many as three separate mailings were made to each recipient, which likely accounted for achieving an excellent response rate. Except for the higher profile species, boat owners generally knew little about NNAS. However, most boat owners recognized that it was very important to prevent the spread of zebra mussels and Asian carp. The top four sources for information about NNAS were reported to be: the *Missouri Conservationist* magazine; newspapers, magazines or newsletter articles; television news, programs or public service announcements; and signs at a boat launch or marina, respectively. A sense of personal responsibility; the *Missouri Conservationist* magazine; a desire to keep non-native aquatic species out of our lakes or streams; and signs at boat launches or marinas, respectively were reported as being very effective in getting boat owners to take steps to prevent the spread of NNAS. Bass boats were the boat type most often moved between waters and the majority of the bass boats were in the water one day or less before being moved. Although boats were transported as far away as Alaska, Florida and California, the most common out-of-state destinations for boat movements were to Illinois, Arkansas and Oklahoma. Nearly half of boat owners took precautions to prevent transporting NNAS to other locations. The most common response for not taking precautions was "I don't know exactly what I'm supposed to do". Forty percent of boat owners that used live bait either always or sometimes release their unused bait, while 60 percent never released live bait. Recreational boating and angling were the activities that were most often enjoyed by boat owners and half of the respondents were willing to donate to better manage NNAS. Survey participants consisted of mostly males older than 30. Many participants provided comments and recommendations. Several indicated that more public information and education about NNAS should be included in the *Missouri Conservationist* and in news articles. Signs, billboards, and inspections were suggested as tools that should be used for NNAS education.

Methods

Ten thousand registered Missouri boat owners were sent a 24-question survey (Appendix A) by U.S. Postal mail to determine their attitudes and knowledge about non-native aquatic species (NNAS). Twenty-two boat types were grouped into five major groups. Two thousand boat owners were randomly selected from each of the five boat type groupings. To prevent boater owners from receiving survey materials after they returned a survey, each piece of mail was printed with an assigned serial number. In October 2009, the first survey was mailed enclosed with a cover letter and a postage paid return envelope. About one week to ten days later a postcard reminder was sent to boat owners that had not returned the survey. After an

additional period of about ten days the third and final mailing was completed by sending the survey enclosed with another cover letter and postage paid return envelope for the final opportunity for the boat owner to complete and return the survey. All the survey data were entered into Microsoft Access and queries were developed for each question. Responses to each question were analyzed and figures showing the results were constructed (Appendix B).

Results

Out of the 10,000 surveys sent, 934 were undeliverable and 4,038 were completed and returned resulting in an excellent 45% response rate. Sixty surveys were unusable because the serial numbers had been removed. Therefore, 3,978 surveys were used for the survey analysis. Thirty-two additional surveys were returned much later and were not included in the analysis.

Except for the higher profile NNAS species, the survey showed that boat owners surveyed did not know much about NNAS. Fifty-eight and 47% of respondents knew at least a moderate amount about zebra mussels and Asian carp, respectively. The vast majority of boat owners that responded were not aware of the other NNAS included on the survey form (Appendix B, Q-1a-1h).

Most boat owners indicated that it was very important to take precautions to prevent the spread of zebra mussels and Asian carp, 74% and 60%, respectively. Only 39% reported that it was very important to take precautions to prevent the spread of the Chinese mystery snails. While only 32% of those surveyed knew anything about northern snakeheads, 57% of boat owners believed that it was very or somewhat important to take precautions to prevent their spread. Less than 1% reported that it was not at all important to take precautions in preventing the spread of NNAS; however, many people did not know whether it was important or not (Appendix B, Q-2a-2h).

The top communications media that Missouri boat owners received information about NNAS issues were: the *Missouri Conservationist* magazine (70%); newspapers, other magazines and newsletters (64 %); television news, programs and public service announcements (50%); and signs and information posted at the boat ramps (47%). Surprisingly, only 16% of boat owners relied on the internet for information about NNAS. Fishing contests, derbies and regattas were the least important for providing NNAS information (Appendix B, Q-3). The *Missouri Conservationist* was mentioned most as being the best source for NNAS information for watercraft owners; followed by newspapers, magazines, or newsletters; television news and public service announcements; and signs provided at boat launches or marinas (Appendix B, Q-4).

A desire to keep NNAS out of our lakes and streams was the top choice out of a list of 17 items for being very effective at influencing boaters to take steps to prevent the spread of NNAS. Articles in the *Missouri Conservationist* were second, followed by a sense of personal responsibility, and signs at boat launches or marinas. When asked to choose the top four items of those that respondents considered very effective, the *Missouri Conservationist* was selected as the most effective, followed by a sense of personal responsibility, a desire to keep NNAS out of our waterways and signs at boat launches, respectively. It is interesting that more boat owners surveyed didn't consider law enforcement and fines to be very effective in preventing boat owners from spreading NNAS (Appendix B, Q-5 & Q-6). Also, it is remarkable that, even though there were no aquatic nuisance species billboards in place in Missouri during 2009, more respondents reported them as being at least somewhat effective in getting boaters to take steps to prevent the spread of NNAS than the Internet.

Eighty-three percent of respondents used their watercraft during the 2009 boating season and 35% moved their watercraft between waters (Appendix B, Q-8 & Q-9a). As one would expect, bass boats were the boat type most often moved between waters (Appendix B, Q-9b). The lengths of time a watercraft was in the water before being moved were: one day or less (69%), two to four days (18%), five to 14 days (6%), 15 to 30 days (3%) and more than 30 days (4%) (Appendix B, Q-10). For the boat owners that moved their watercraft between waters the number one length of time that the boat was out of the water before launching in another water body was five to 14 days (43%) followed by 15 to 30 days (24%), more than 30 days (18%), two to four days (8%) and one day or less (5%) (Appendix B, Q-11).

Of the 1,152 boat owners that indicated they moved their watercraft between bodies of water, 30% reported that they moved the watercraft out-of-state to places including Alaska, California, Florida and Texas (Appendix B, Q-12a). The most common out-of-state destinations for those transporting their watercraft outside Missouri during 2009 were Illinois, Arkansas and Oklahoma, 87, 83 and 51 responses, respectively (Appendix B, Q-12c). Private lakes were the destination for over 300 boat moves in Missouri, followed by 189 moves to Lake of the Ozarks, which is infested with zebra mussels (Appendix B, Q-13). Forty-nine percent of boat owners reported that they took precautions to prevent transporting NNAS from one waterbody to another, while 39% didn't take precautions and 11% reported that they took precautions some of the time (Appendix B, Q-14a). The reasons given by boat owners that did not take precautions were: I don't know exactly what I'm supposed to do (36%); I didn't know there were steps to take (29%); boat washing equipment was not readily available (16%); other (11%); and I don't believe non-native aquatic species are a problem (1%). Of interest is that less than 1% answered that they didn't take precautions, because they did not have time (Appendix B, Q-14b). Thirty-six percent of the respondents indicated that they did not boat on waters that contained NNAS, while 31% knew they boated on waters containing NNAS. However, 32% of

the respondents didn't know if they boated on waters that contained NNAS (Appendix B, Q-15a). When respondents that knew waters that they boated on contained NNAS were asked how they knew, the number one response was signs or brochures at boat ramps, followed nearly equally by heard about it from a friend or relative and media sources. Responses in the "other" category included direct observation of zebra mussels or Asian carp, as well as the *Missouri Conservationist* magazine (Appendix B, Q-15b).

Seventy-three percent of participants that boated on waters that contained NNAS reported that they are very likely to take precautions to prevent spreading NNAS in the future, while only 3% indicated that it is not very likely or not at all likely that they will take precautions. Another 4% reported that they never boat on infested waters (Appendix B, Q-16). Slightly more than half (54%) of boat owners conducted a visual inspection of boats and equipment for aquatic plants and animals when removing their boats from the water, while 90% reported that they almost always drained the water from boats, live wells, bilge and bait buckets. Excluding the respondents that didn't use live bait, forty percent either almost always or sometimes released their unwanted bait into the water when finished fishing, while 60% never released live bait. Although 57% of respondents almost always removed plants from their watercraft, only 25% of the participants almost always rinsed their boat after use (Appendix B, Q-17a,b,c,d,f & g).

Only 7% of participants indicated that NNAS affected their recreational experience during 2009, while 75% reported that their experience was not affected and 15% did not know if their recreational experience was affected (Appendix B, Q-18). Many respondents offered numerous comments about NNAS. The majority of them were reports of jumping Asian carp and the hazards they represent, as well as the effects that zebra mussels have on Missouri's aquatic communities.

Respondents were equally split between willing to donate and not willing to donate to help support NNAS management. Next to no amount, \$10.00 was the most often reported amount that boat owners were willing to donate to better manage NNAS (Appendix B, Q-19).

Recreational boating (69%) and angling (61%) were the activities that were most often enjoyed by Missouri watercraft owners in 2009 (Appendix B, Q-20). Nearly 2,000 participants commented on what they do with live bait when finished fishing. Many anglers are taking the appropriate actions, while others are still releasing live bait. Many participants also provided general comments and recommendations. Several indicated that they would like to see more public information and education concerning NNAS in publications, the *Missouri Conservationist*, news articles, billboards, signs and inspections.

It is obvious that older Missourians dominate boat ownership in Missouri. Less than 1 percent of the participants were younger than age 18, 2% were ages 18 - 29, 38% were ages 30 to 54,

30% ages 55-65 and 29% were age 65 or older (Appendix B, Q-22). Only 10% of the boats owned in Missouri are owned by females and just 5% of the respondents had any involvement with NNAS. Involvement with NNAS included 27% and 17% of respondents observing Asian carp and zebra mussels, respectively. Five Missouri Department of Conservation employees, three United States Army Corps of Engineers employees and four other governmental employees returned the survey (Appendix B, Q-23 & 24).

APPENDIX A

Missouri Non-Native Aquatic Species

And

Watercraft Survey Form

MISSOURI NON-NATIVE AQUATIC SPECIES

08283



AND WATERCRAFT SURVEY

A Survey by the Missouri
Department of Conservation

*Please check the box that corresponds to the answer closest to your opinion or situation.
ALL INDIVIDUAL RESPONSES ARE VOLUNTARY AND WILL BE KEPT CONFIDENTIAL.*

- 1) **NON-NATIVE AQUATIC SPECIES** are plants or animals that enter places where they have not always lived. How much information have you heard or read about each of the **NON-NATIVE AQUATIC SPECIES** listed below? (check one box for each)

	A Large Amount	A Moderate Amount	A Small Amount	None
Zebra/Quagga Mussels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eurasian Watermilfoil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purple Loosestrife	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asian Carp (bighead, grass, silver, and black)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Hyacinth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rusty Crayfish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chinese Mystery Snail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Northern Snakehead	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 2) **In your opinion, how important is it that boaters and anglers take precautions to prevent the spread of each of the following NON-NATIVE AQUATIC SPECIES?** (check one box for each)

	Very Important	Somewhat Important	Not Very Important	Not at all Important	Don't Know
Zebra/Quagga Mussels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eurasian Watermilfoil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purple Loosestrife	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Asian Carp (bighead, grass, silver, and black)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Hyacinth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rusty Crayfish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chinese Mystery Snail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Northern Snakehead	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) Have you heard of or read about **NON-NATIVE AQUATIC SPECIES** from any of the following sources?
 (Please check all that apply)

	Yes	No	Don't Know
1. Newspaper, magazine, or newsletter articles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Missouri Conservationist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Television news, programs, or public service announcements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Radio, news, programs, or public service announcements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Billboards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Internet Websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. An educational exhibit or display	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Fishing contests, derbies, or sailboat regattas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Booth at a sport show, fishing show, or similar event	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Fishing or boating regulation summaries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Signs or information provided at a boat launch or marina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. A fishing, boating sporting or environmental organization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Brochures, species identification cards, fact sheets, or other printed materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4) Of the sources of information that you responded "Yes" to in question 3, which were your **BEST** sources of information about **NON-NATIVE AQUATIC SPECIES**? (Write the number of up to four items you selected in the boxes provided below)

--	--	--	--

5) How effective would each of the following be in getting YOU to take steps to prevent the spread of NON-NATIVE AQUATIC SPECIES? (Mark one box for each item). In the last column, please tell us which ones ALREADY led you to take action. (Check Yes or No for each item.)

	Very Effective	Somewhat Effective	Not Effective	This already led me to take action	
1. Talking with friends or acquaintances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. A sense of personal responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. A desire to keep NON-NATIVE AQUATIC SPECIES out of our lakes or streams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4. Laws and fines to prevent the transport of NON-NATIVE AQUATIC SPECIES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Law enforcement checks on the road or at boat launches to catch violators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
6. Television news, programs, or public service announcements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
7. Radio news, programs, or public service announcements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
8. Billboards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
9. Magazine or newsletter articles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
10. Missouri Conservationist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
11. Internet Websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
12. Fishing or boating regulation summaries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
13. Brochures, species identification cards, fact sheets or other printed materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
14. Signs at boat launches or marinas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
15. Inspection-education programs on roads or at boat launches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
16. Videos or other presentations to boating, lake, and sporting associations or clubs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
17. Radio broadcasts with frequency displayed on highway signs (such as 1610 AM)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

6) Of the items you said would be "VERY EFFECTIVE" in question 5, which items would be MOST effective in getting you to take steps to prevent the spread of NON-NATIVE AQUATIC SPECIES? (Write the number of up to four items you select in the boxes provided below)

The next questions are about your recreational use of watercraft during the 2009 boating season. Your answers will help us determine the movement of watercraft between waterbodies. For the purpose of this survey, WATERCRAFT are defined as duck boats, sailboats, personal watercraft (jet skis), fishing boats, and recreational watercraft.

7) How many of each of the following types of watercraft do you own?

Boat Type	Number Owned	Boat Type	Number Owned
Pontoon	_____	Cruiser	_____
Bass Boat	_____	Day Cruiser	_____
Run-a-boat	_____	Jetski/Wetbike	_____
Houseboat	_____	Utility	_____
Sailboat	_____	Deckboat	_____

8) Did you use your watercraft during the 2009 boating season?

Yes

No → If you did NOT use your watercraft during the 2009 boating season, skip to question #18.

9) Did you move your watercraft between waterbodies during the 2009 boating season, either yourself (by pickup truck, trailer, car, etc.) or utilizing a commercial service?

Yes, Which watercraft from above did you move MOST OFTEN? _____

No → If NO, skip to question #18.

10) For the watercraft that you moved MOST OFTEN in 2009, about how long was the boat typically IN the water before you moved it to a different waterbody? Do NOT include time on a boat lift

One day or less

2 to 4 days

5 to 14 days

15 to 30 days

More than 30 days

11) For the watercraft that you moved MOST OFTEN in 2009, about how long was the boat typically OUT OF the water before launching in a different waterbody? Do NOT include time on a boat lift.

- One day or less
- 2 to 4 days
- 5 to 14 days
- 15 to 30 days
- More than 30 days

12) For ANY watercraft, during the 2009 boating season, did you move it to waters OUTSIDE Missouri?

- Yes → If Yes, how many different times?
- No



(Please list the other _____
states or provinces _____
that you launched in) _____

13) In 2009, when you moved your boat, what waters did you move it FROM and TO? Please list the three most common trips (include in-state and out-of-state trips). In the third column, indicate if you returned to your home lake or launched in another waterbody (please name the waterbody).

FROM	TO	FROM
<i>Example: Table Rock Lake</i>	<i>Example: Lake of the Ozarks</i>	<i>Example: Table Rock Lake</i>
_____	_____	_____
_____	_____	_____
_____	_____	_____

14) Before you transport the watercraft, do you take any special steps to prevent the transport of NON-NATIVE AQUATIC SPECIES from one body of water to another?

- Yes
- No → If No, check all that apply
- Sometimes
- I don't believe it will prevent the eventual spread of NON-NATIVE AQUATIC SPECIES
- I don't have time
- I don't know exactly what I'm supposed to do
- I didn't know there were special steps to take
- I don't believe NON-NATIVE AQUATIC SPECIES are a problem
- Boat washing equipment was not readily available
- Other (please specify) _____

15) During 2009, did you boat on waters that you knew contained **NON-NATIVE AQUATIC SPECIES** listed in Question 1 on the front page?

- | | | | |
|--------------------------|--|--------------------------|--|
| <input type="checkbox"/> | Yes → If Yes, how did you know?
(check all that apply) | <input type="checkbox"/> | Sign or poster at boat launch or marina |
| <input type="checkbox"/> | No | <input type="checkbox"/> | Brochure, fact sheet or flyer |
| <input type="checkbox"/> | Don't Know | <input type="checkbox"/> | Fishing, boating, or waterfowl regulation pamphlet |
| | | <input type="checkbox"/> | Internet Website |
| | | <input type="checkbox"/> | Watercraft educator/inspector |
| | | <input type="checkbox"/> | Media sources (newspaper, radio, TV) |
| | | <input type="checkbox"/> | Heard about it from a friend or relative |
| | | <input type="checkbox"/> | Other (please specify) _____ |

16) If you do boat on infested waters, how likely is it that **YOU** will take precautions in the future to prevent the spread of **NON-NATIVE AQUATIC SPECIES** between bodies of water?
(Please remember that your answers are confidential)

- Very likely
- Somewhat likely
- Not very likely
- Not at all likely
- I never boat on infested waters

17) After removing your watercraft from the water, how often do you do the following? (check one box for each)

	Almost Always	Sometimes	Never	Does Not Apply
Conduct visual inspection of boats and equipment for aquatic plants and animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drain water from boats, including live wells, bilge and bait buckets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Release unwanted live bait into the water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Remove aquatic plants and animals from boats and equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flush motor's cooling system with tap water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rinse boat with high pressure and/or hot water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow boat to dry for at least five days	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18) Have NON-NATIVE AQUATIC SPECIES affected your recreational experience during the 2009 boating season?

- Yes → If Yes, what is the most important effect NON-NATIVE AQUATIC SPECIES have had on you?
- No
- Don't Know

Comments:

19) How much would you be willing to contribute annually to help support NON-NATIVE AQUATIC SPECIES management? (check one box)

- \$0
- \$1
- \$5
- \$10
- More than \$20

20) Do you use your watercraft for the following activities? (check all that apply)

- Angling
- Tournament Fishing
- Recreational Boating
(skiing, tubing, sightseeing, etc.)
- Hunting
(boat blinds or transportation to hunting areas)

If you use your watercraft for angling or tournament fishing, do you use live bait? If so, what do you do with the extra bait at the end of your trip? (Please comment below)

21) What recommendations or other comments would you like to make about the spread of
NON-NATIVE AQUATIC SPECIES in Missouri waters? *(Please comment below)*

Finally, we need to collect some information about you for statistical purposes only.

22) Your Age:

- Younger than 18
- 18 to 29
- 30 to 54
- 55 to 65
- Older than 65

23) What is your gender?

- Male
- Female

24) Do you have any involvement with NON-NATIVE AQUATIC SPECIES issues and/or activities?

- Yes → If Yes, please specify _____
- No

If you would like more information on NON-NATIVE AQUATIC SPECIES, please visit the sites below:

<http://www.mdc.mo.gov/nathis/exotic/zebra>

or

<http://www.protectyourwaters.com>

Thank you very much for your time and cooperation. To return this questionnaire, simply fold and place it in the enclosed postage-paid envelope.

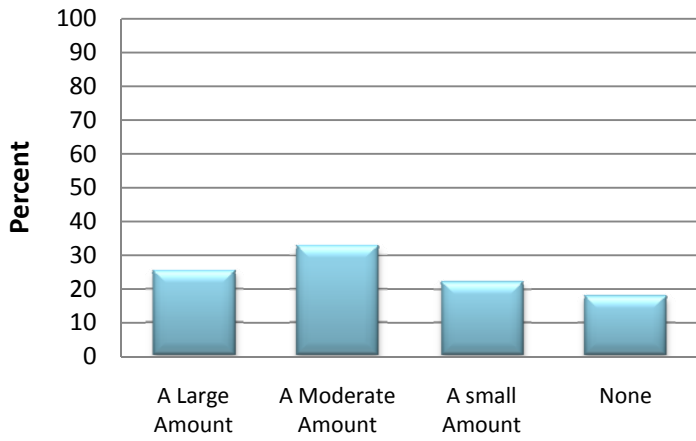
APPENDIX B

Missouri Non-Native Aquatic Species

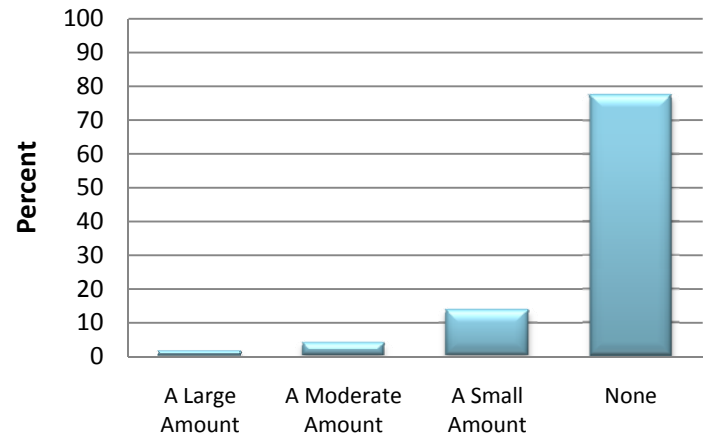
And

Watercraft Survey Figures

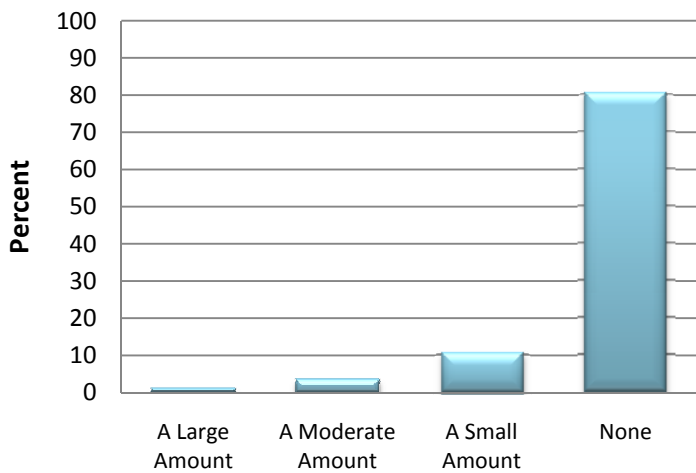
Q1a: Knowledge of Zebra/Quagga Mussels



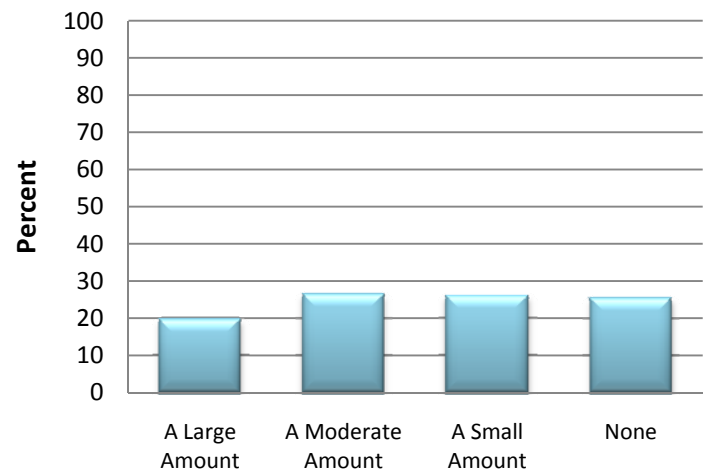
Q1b: Knowledge of Eurasian Watermilfoil



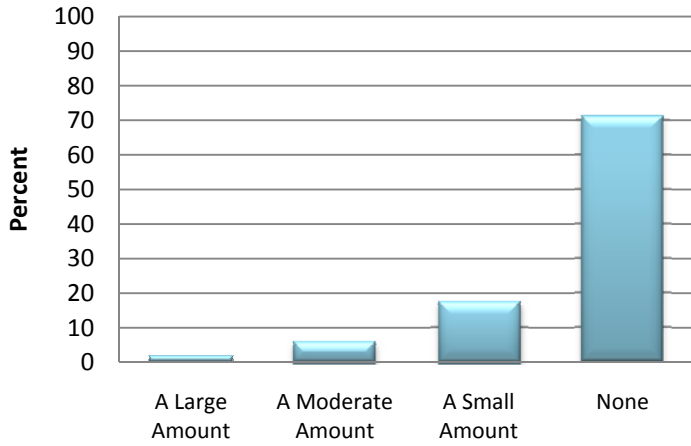
Q1c: Knowledge of Purple Loosestrife



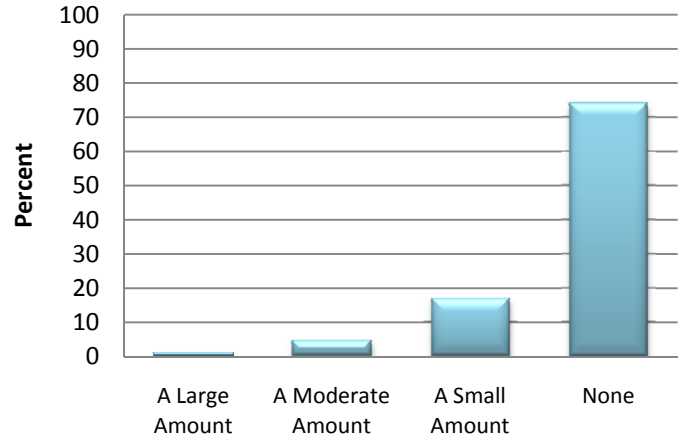
Q1d: Knowledge of Asian Carp



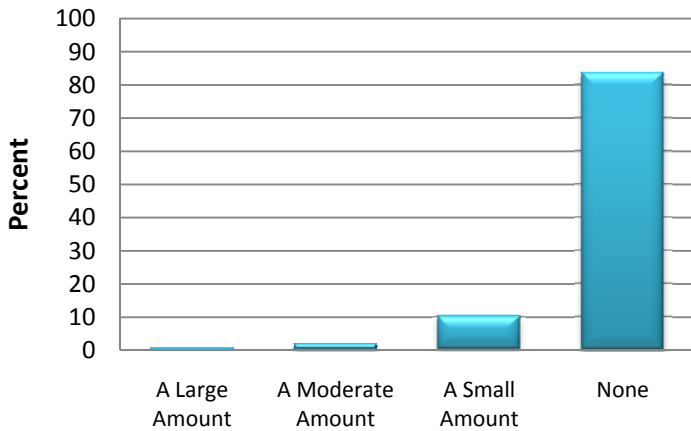
Q1e: Knowledge of Water Hyacinth



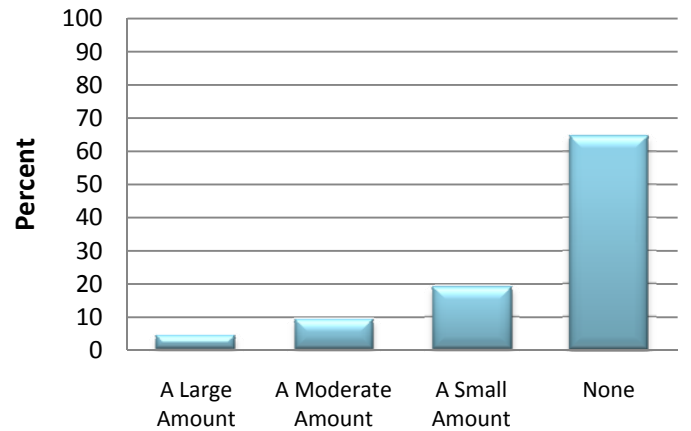
Q1f: Knowledge of Rusty Crayfish



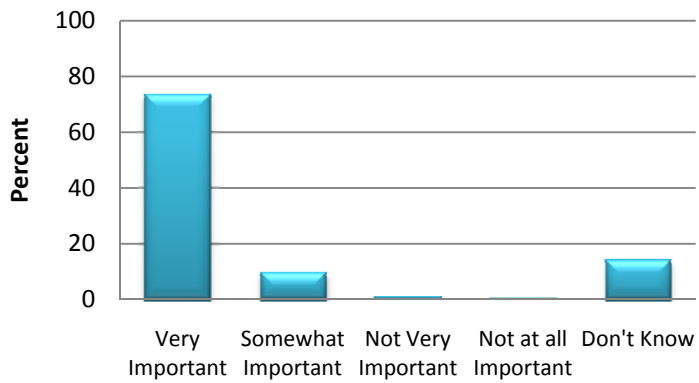
Q1g: Knowledge of Chinese Mystery Snails



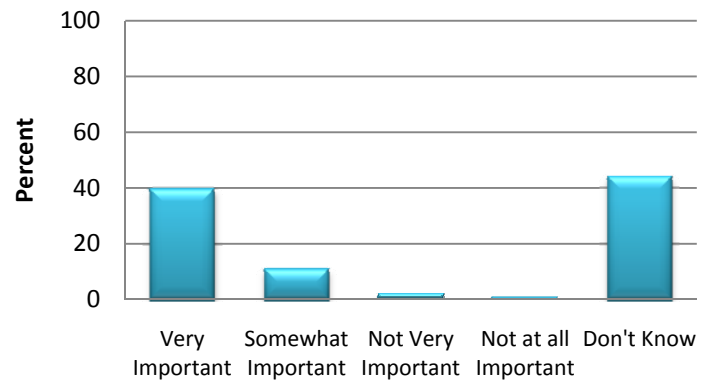
Q1h: Knowledge of Northern Snakehead



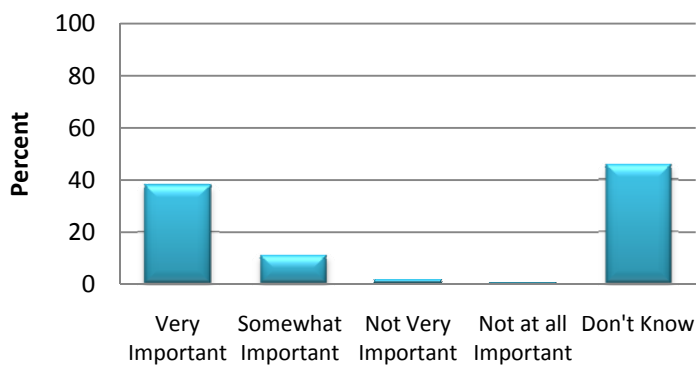
Q2a: Importance that Boaters Prevent Spreading Zebra/Quagga Mussels



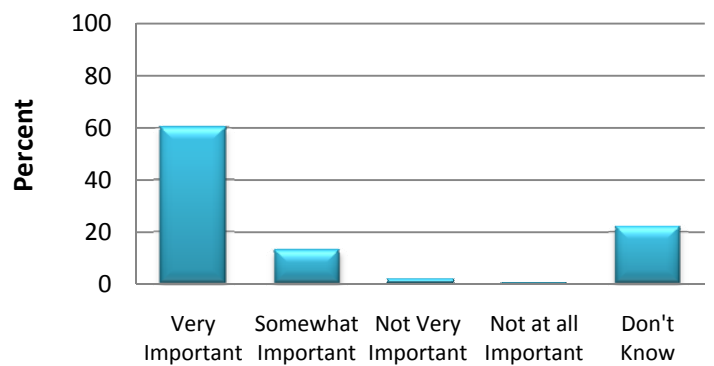
Q2b: Importance that Boaters Prevent Spreading Eurasian Watermilfoil



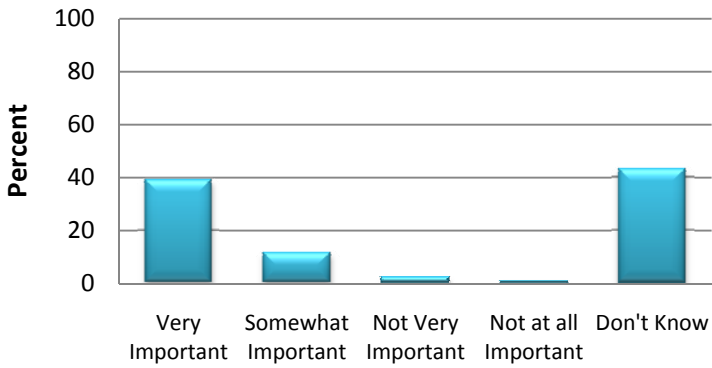
Q2c: Importance that Boaters Prevent Spreading Purple Loosestrife



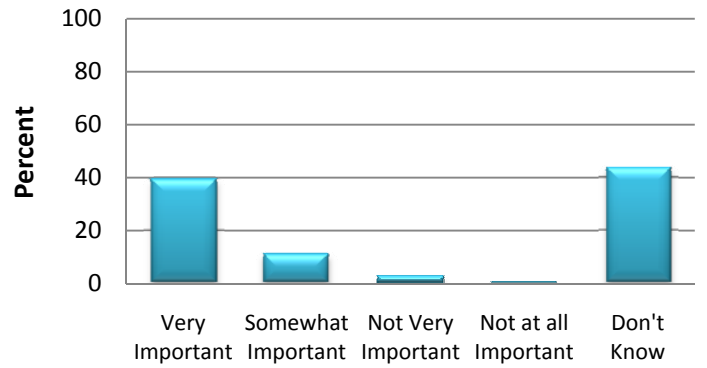
Q2d: Importance that Boaters Prevent Spreading Asian Carp



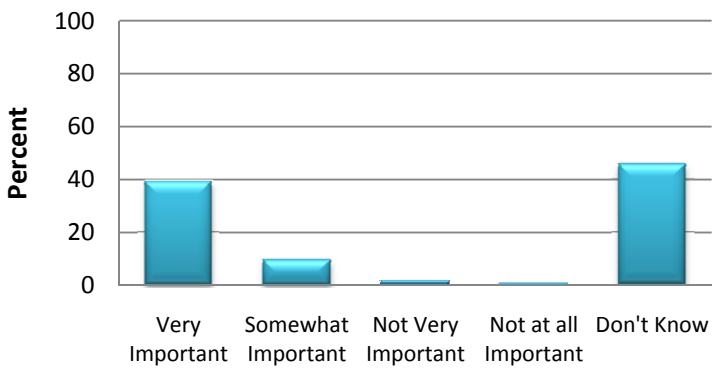
Q2e: Importance that Boaters Prevent Spreading Water Hacinth



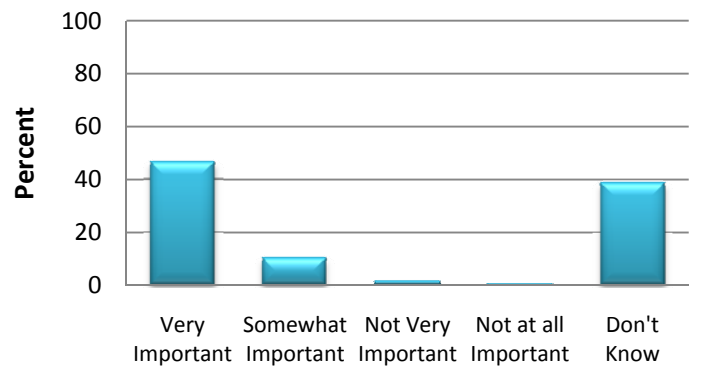
Q2f: Importance that Boaters Prevent Spreading Rusty Crayfish



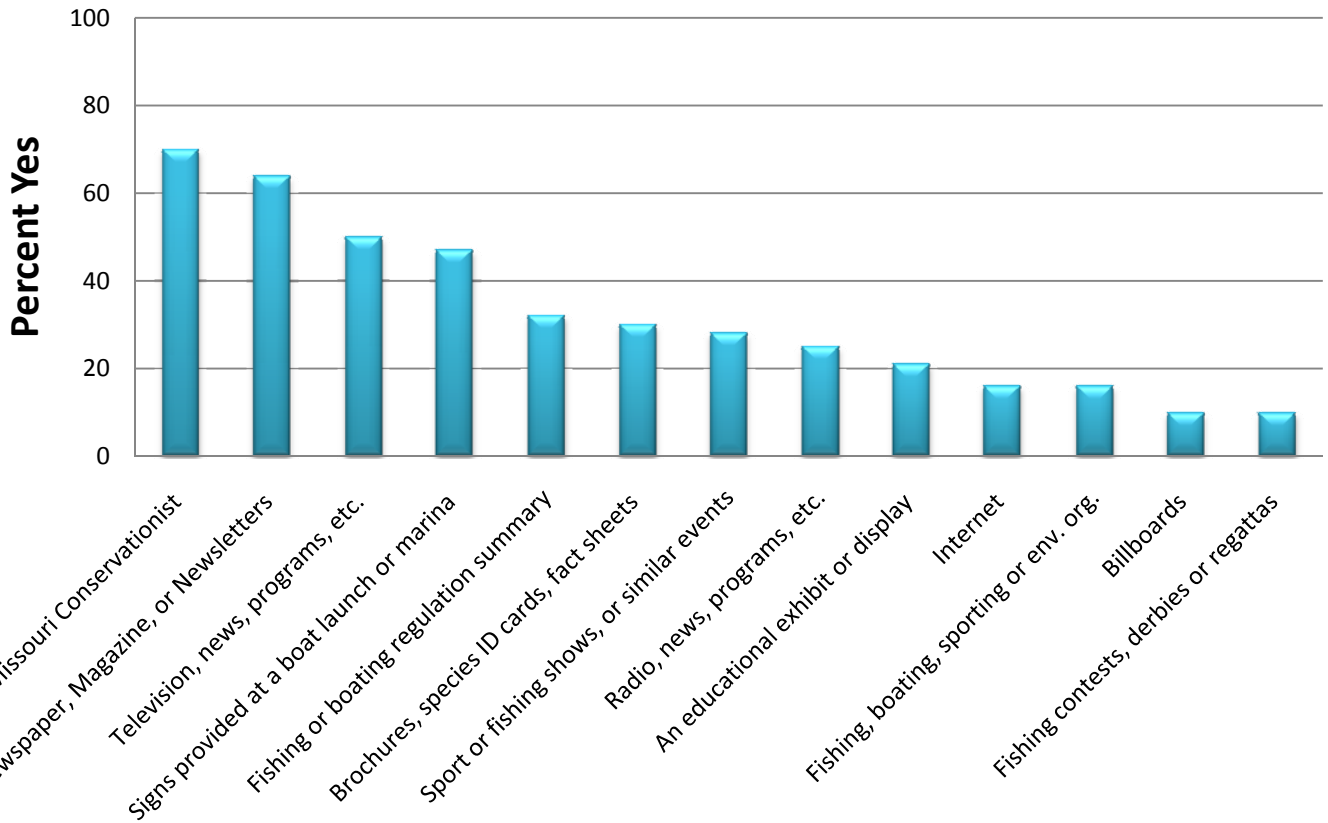
Q2g: Importance that Boaters Prevent Spreading Chinese Mystry Snails



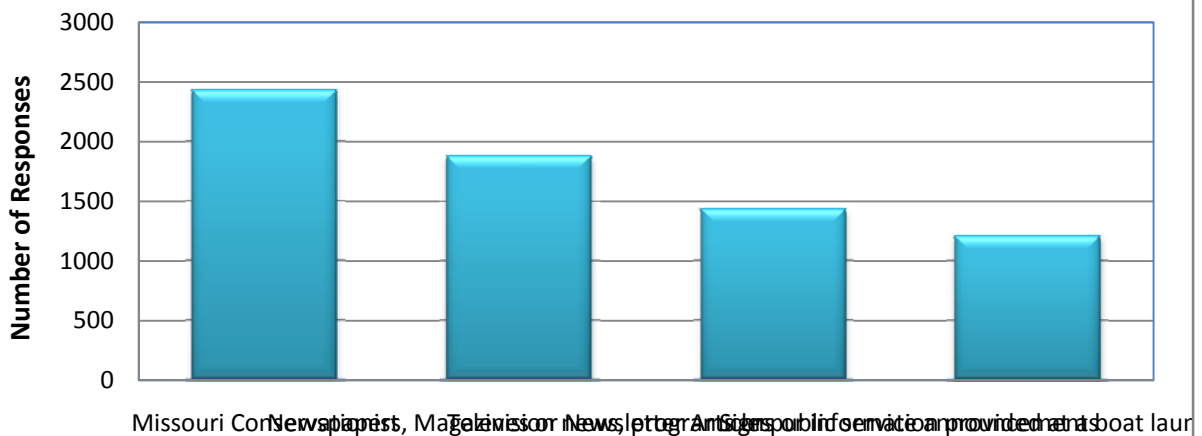
Q2h: Importance that Boaters Prevent Spreading Northern Snakehead



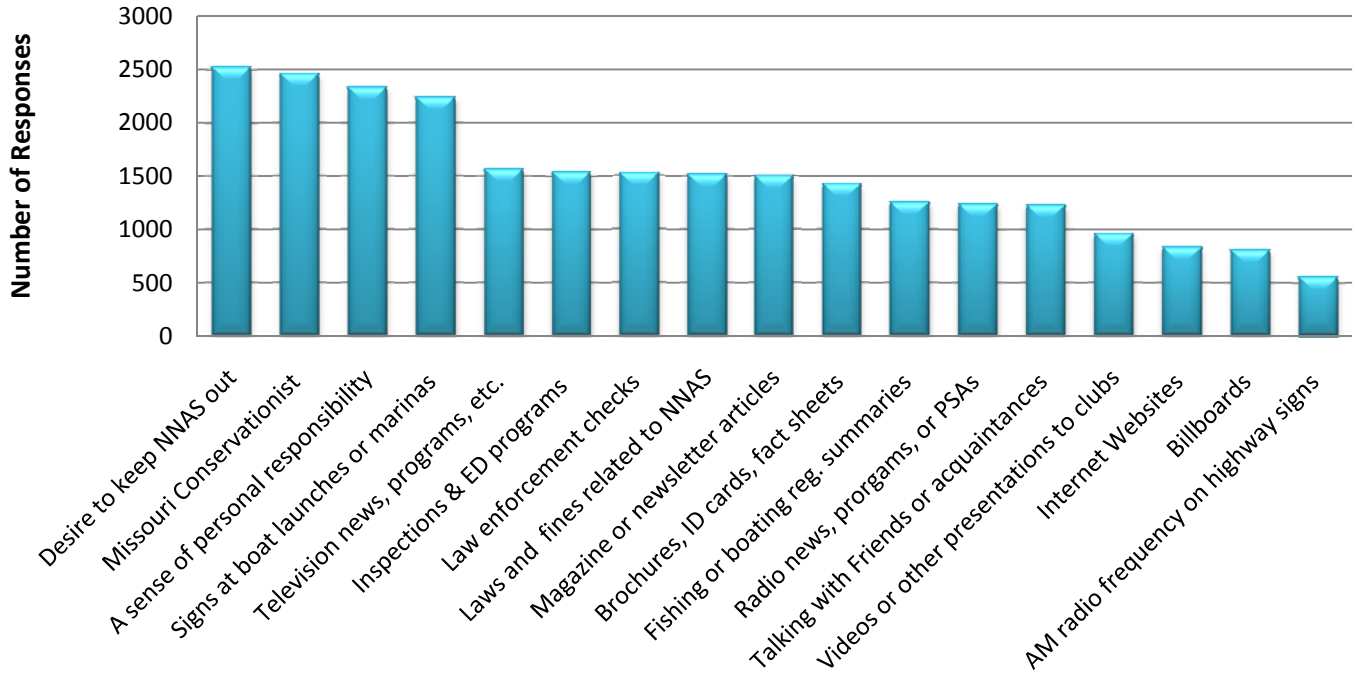
Q3: Sources that Boat Owners have heard or read about Non-Native Aquatic Species (Percent that responded yes)



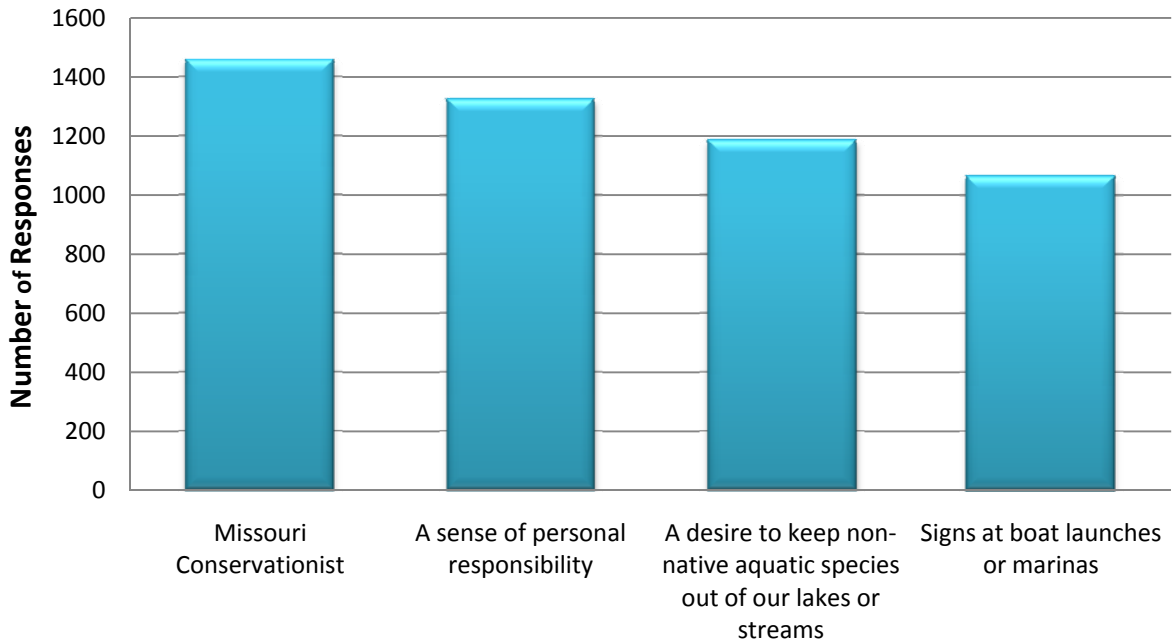
Q4: Top Four Source of Non-Native Aquatic Species Information

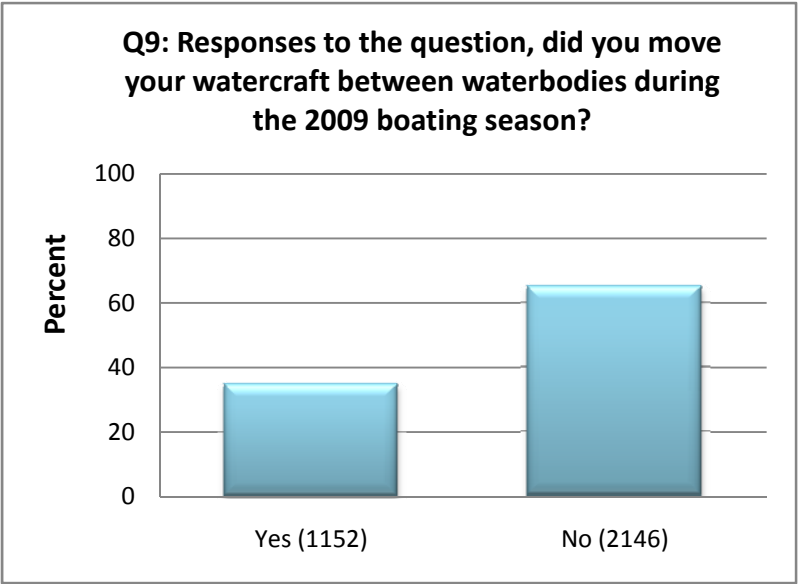
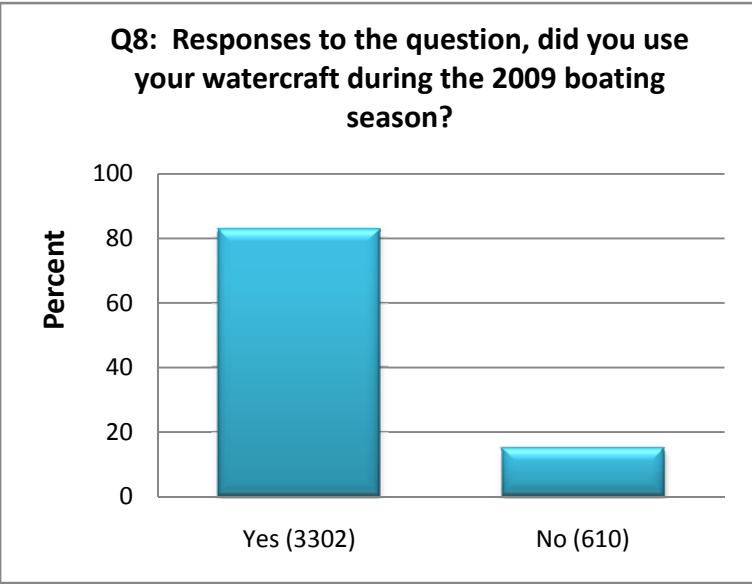
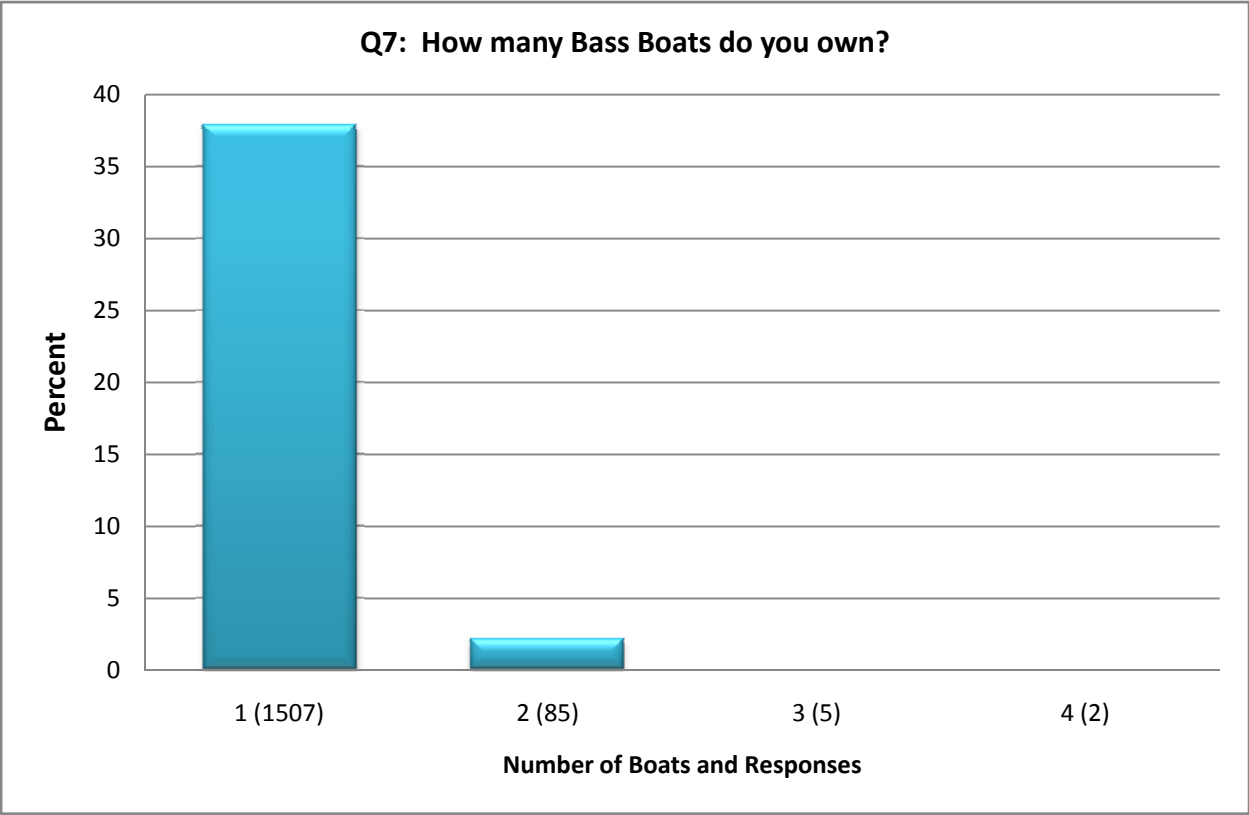


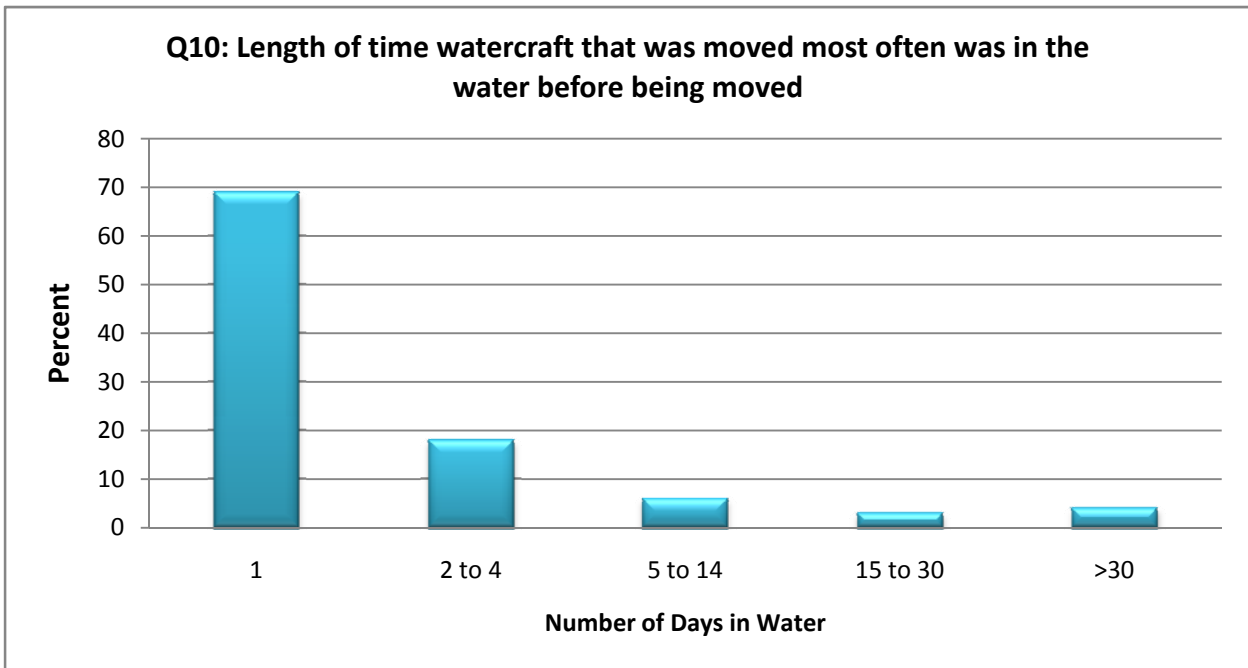
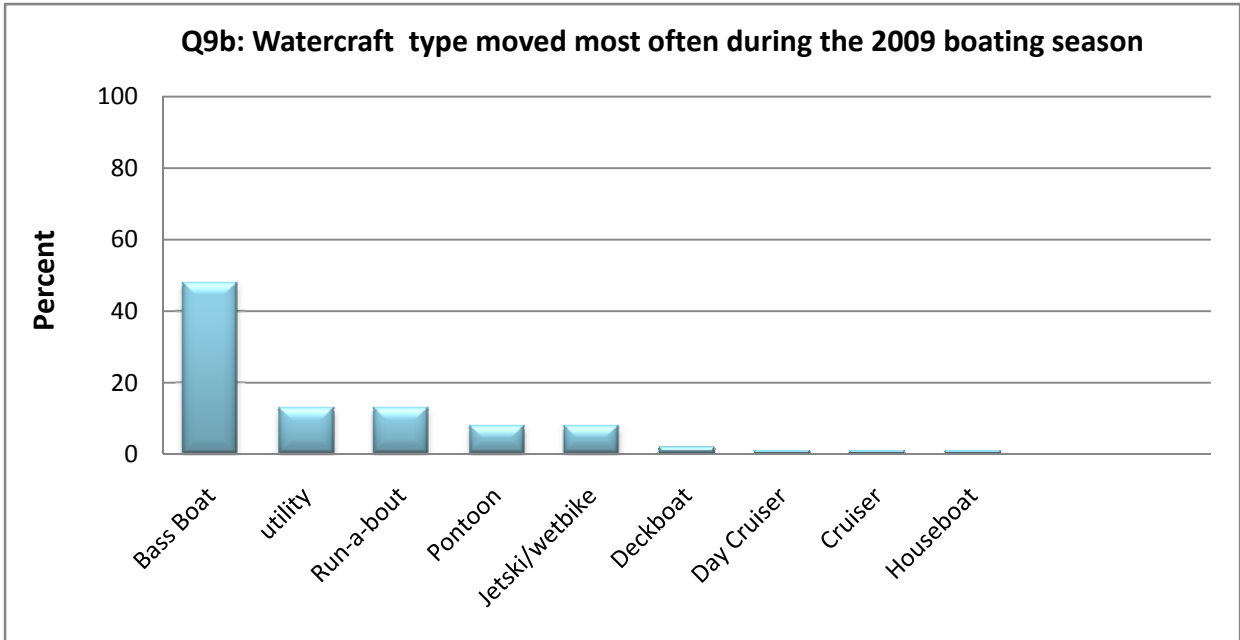
Q5: Very Effective ways to get boat owners to take steps to prevent the spread of Non-Native Aquatic Species



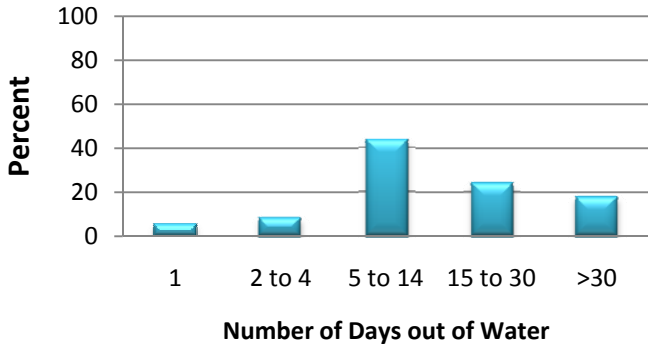
Q6: Top four most effective ways in getting boat owners to take steps to prevent the spread of Non-Native Aquatic Species



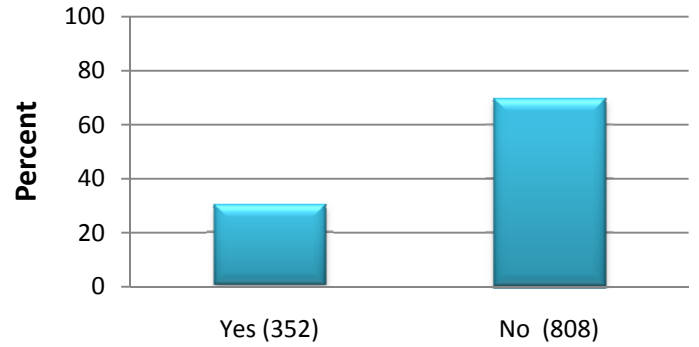




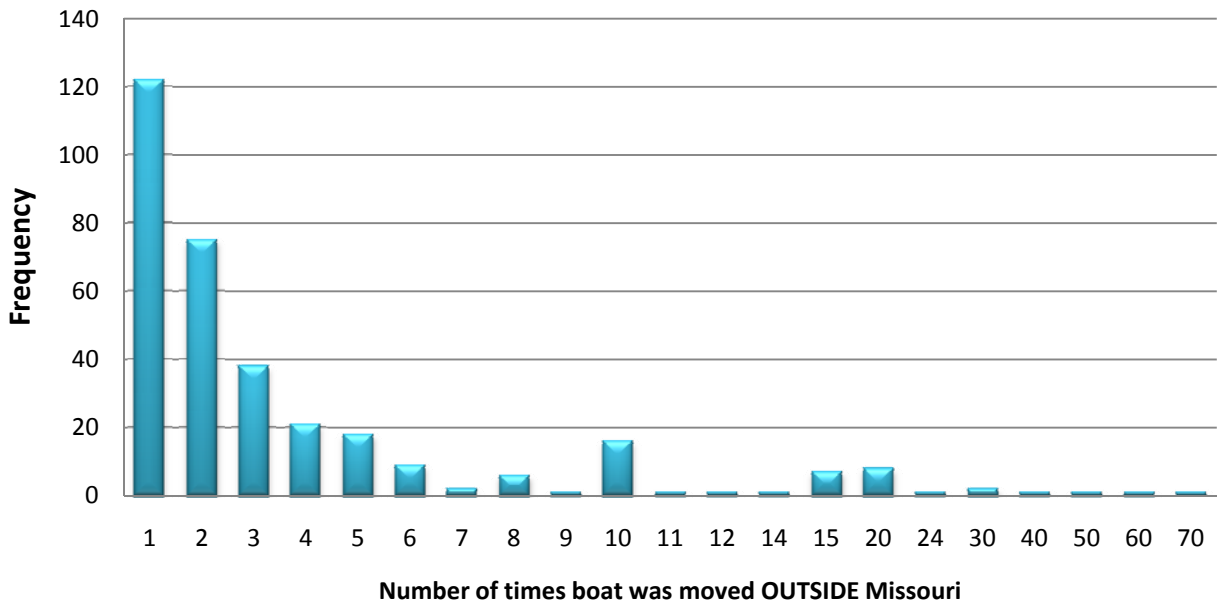
Q11: Length of time most often moved watercraft was out of the water before being launched in a different waterbody



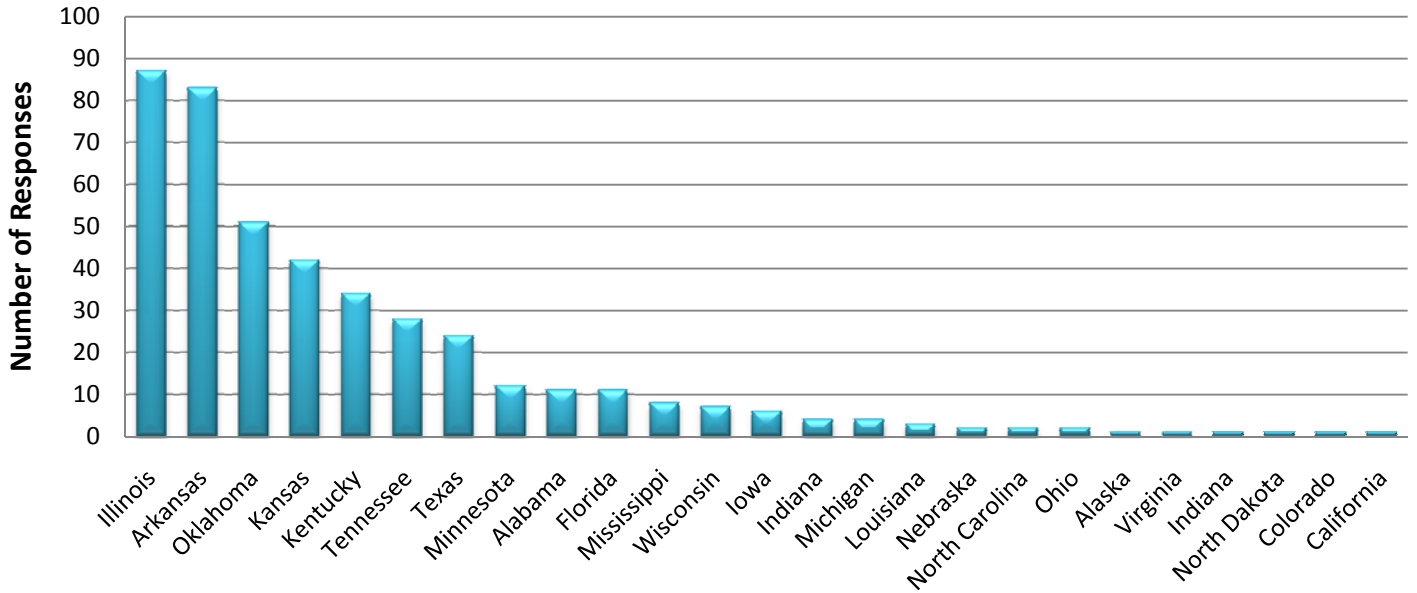
Q12a: Responses to the question, did you move your Watercraft outside of Missouri in 2009?



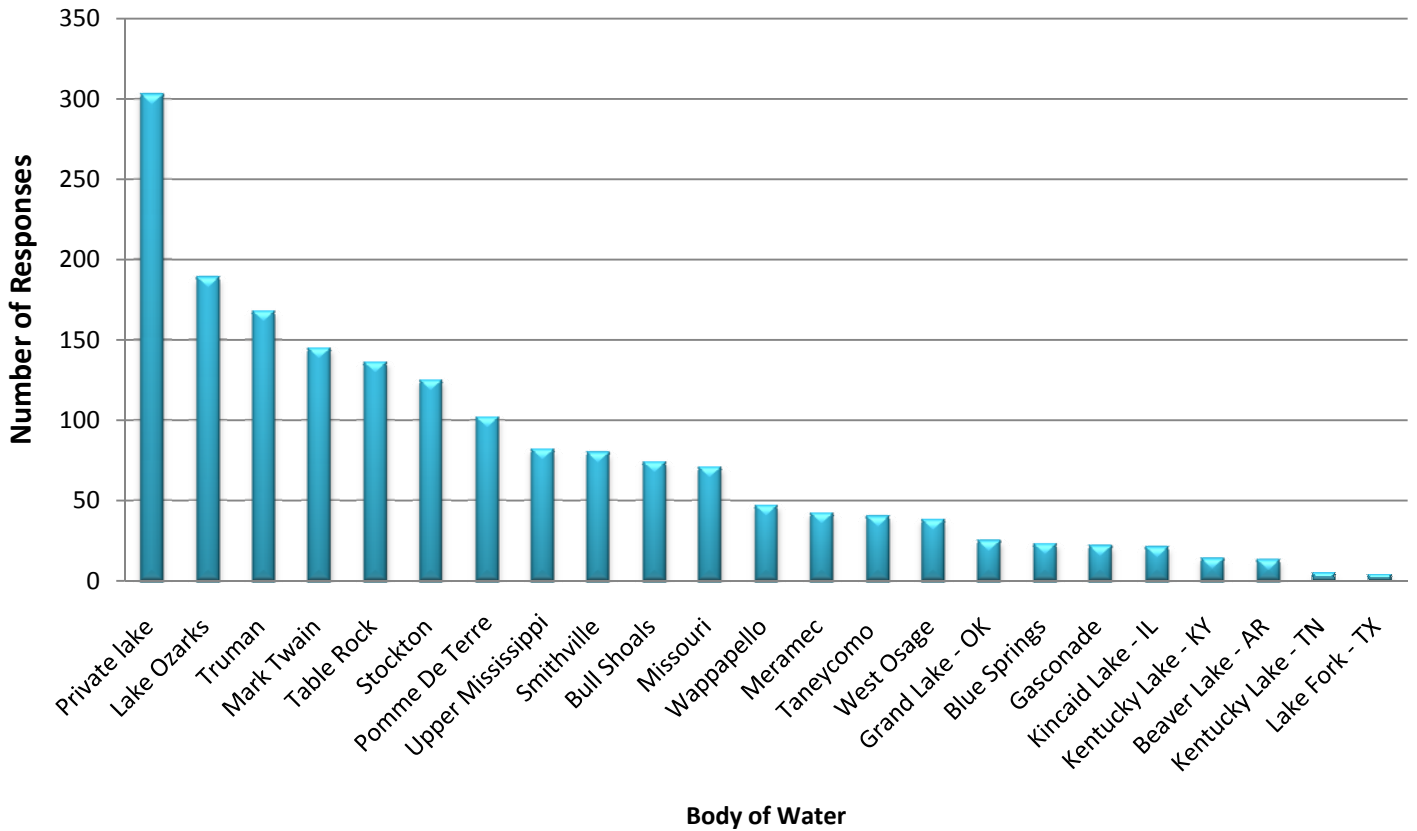
Q12b: Number of times watercraft was moved outside Missouri and how many different times it was moved during 2009



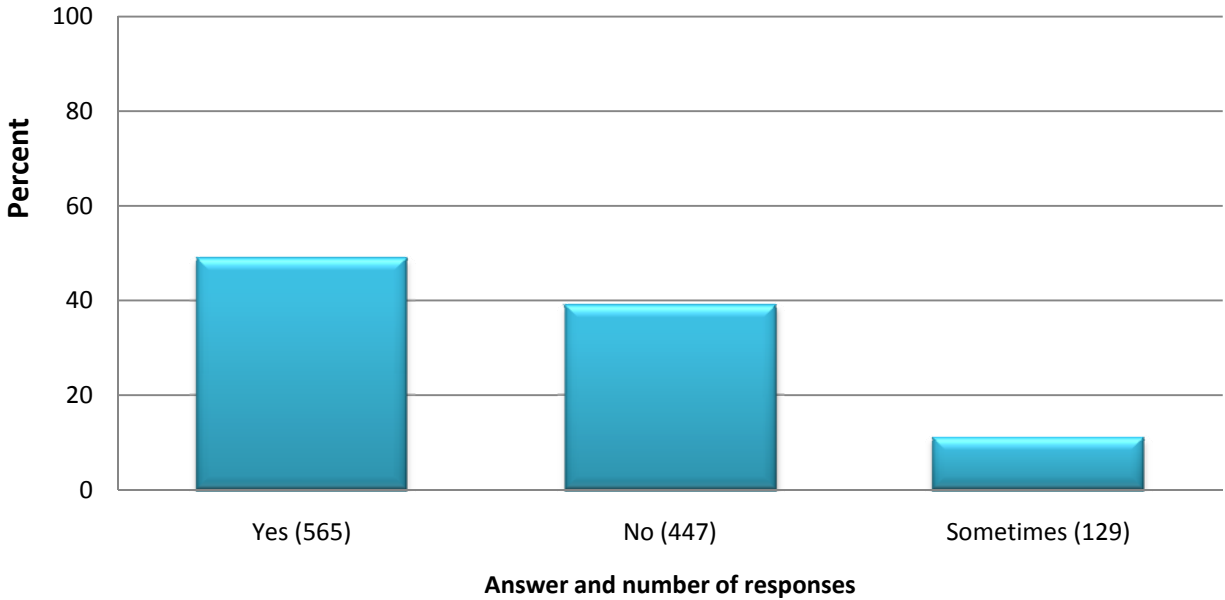
Q12c: Destination states for Missouri watercraft



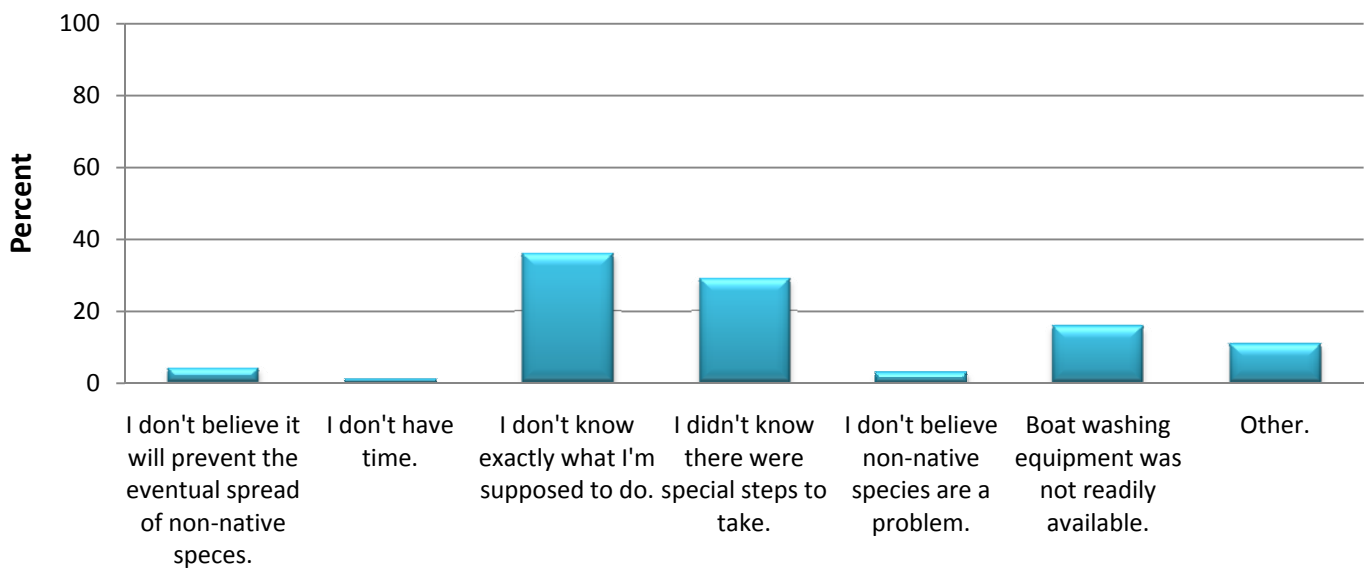
Q13: Destination waterbodies for transported Missouri watercraft

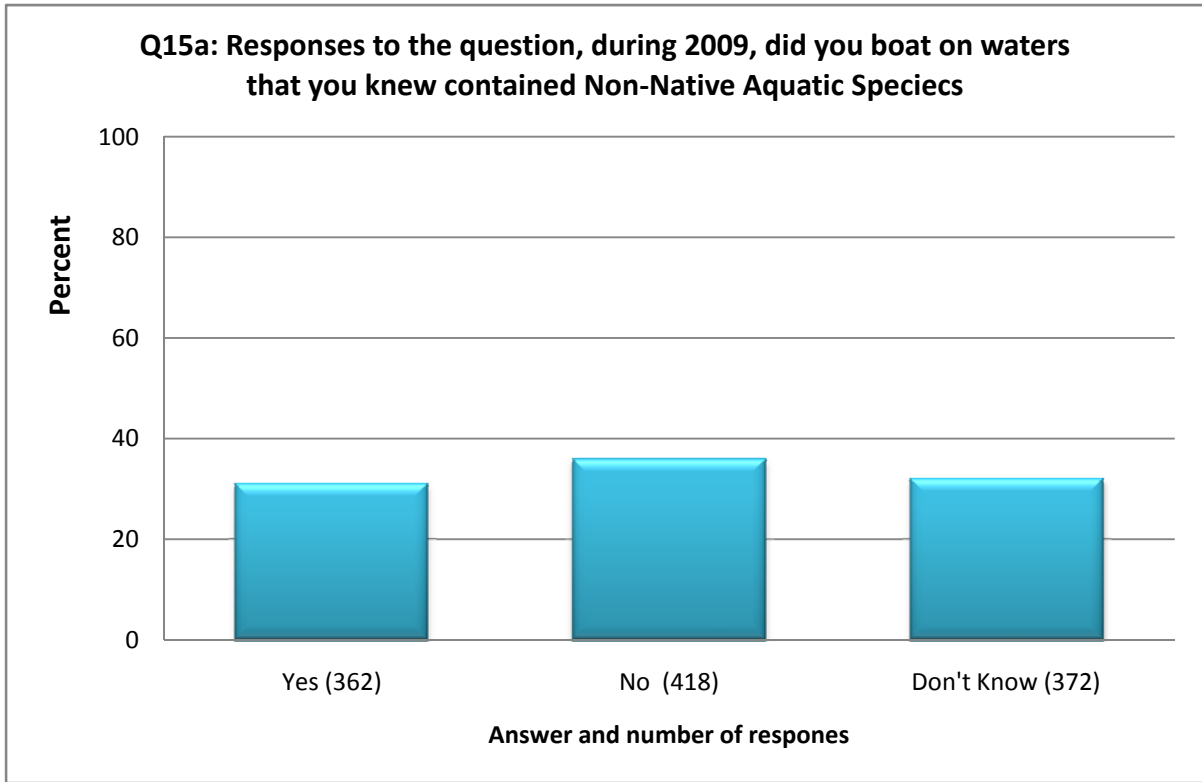


Q14a: Responses to the question, do you take any special steps to prevent the transport of Non-Native Aquatic Species

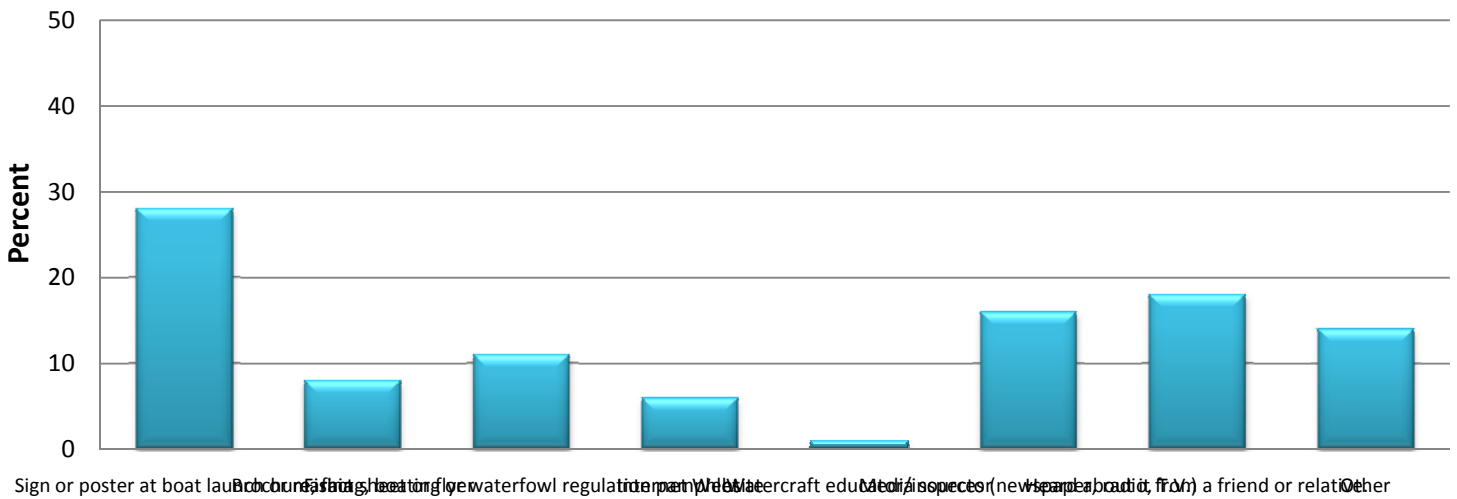


14b: Reasons why watercraft owners don't take precautions to prevent spreading NNAS

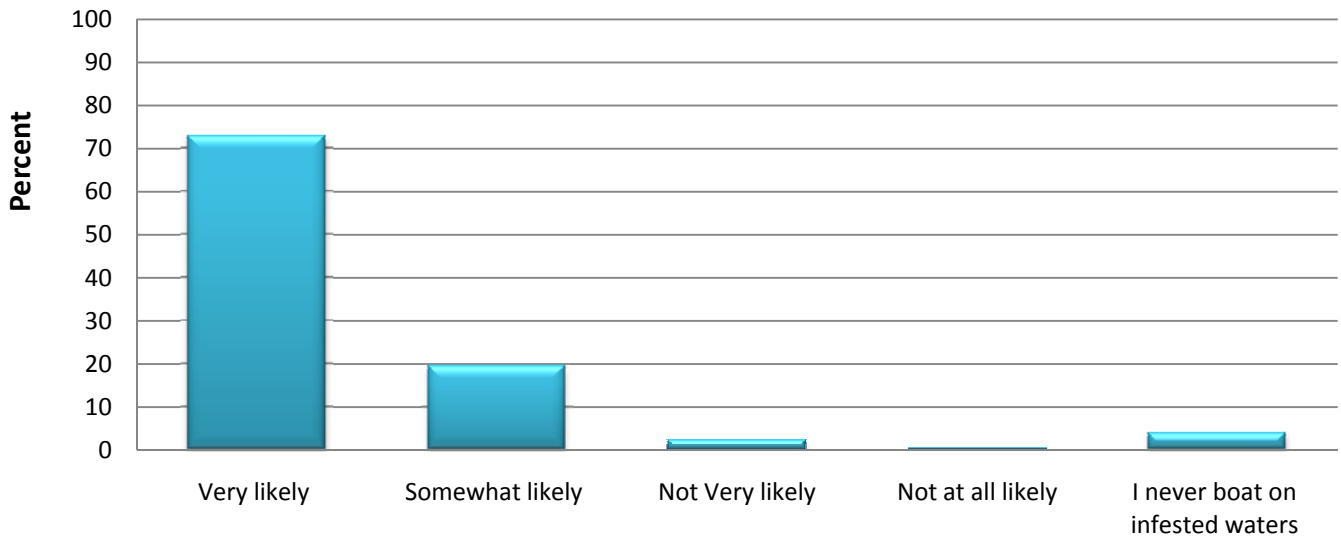




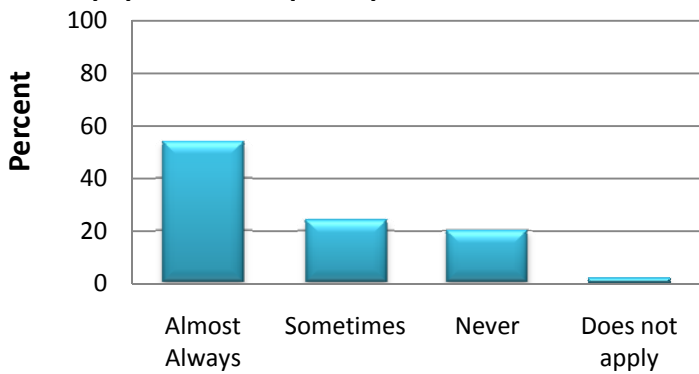
Q15b: Responses to the question, If you boated on waters infested with NNAS during 2009, how did you know?



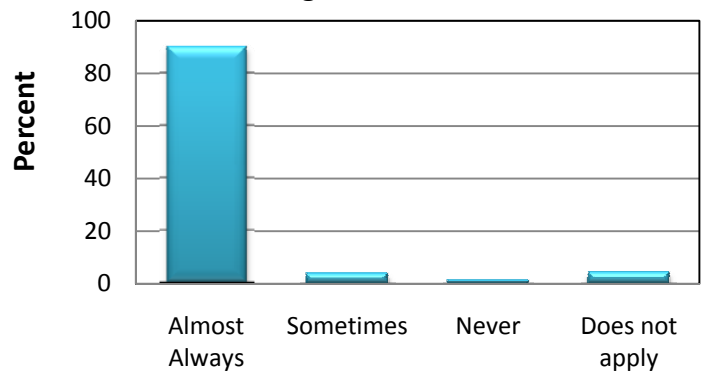
Q16: Responses to question, if you do boat on infested waters, how likely is it that you will take precautions in the future to prevent the spread of NNAS between bodies of water?



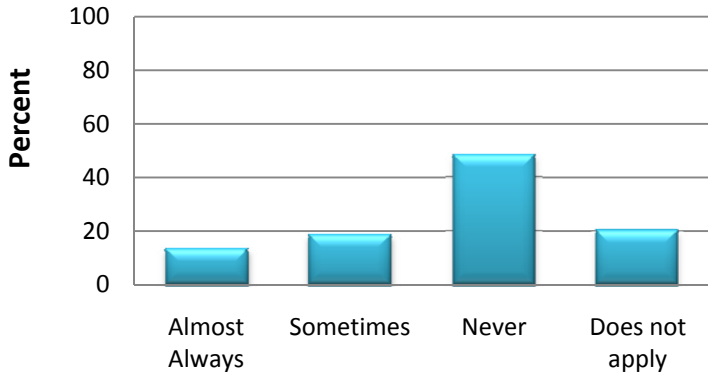
Q17a: Responses to question, how often do you visually inspect your boat and equipment for aquatic plants and animals?



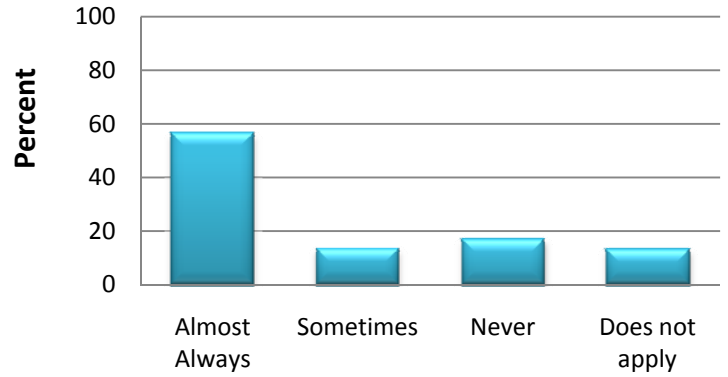
Q17b: Responses to question, how often do you drain water from your boat, including live wells, bilge and bait buckets?



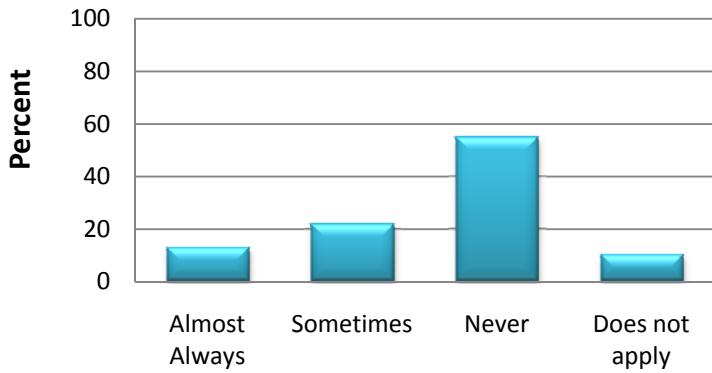
Q17c: Responses to question, how often do you release unwanted bait into the water?



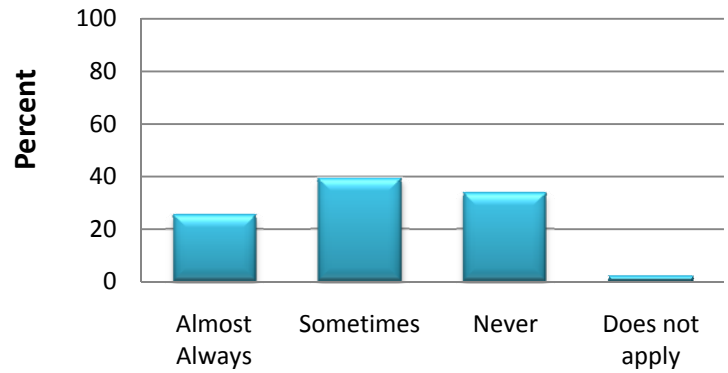
Q17d: Responses to question, how often do you remove aquatic plants and animals from your boat and equipment?



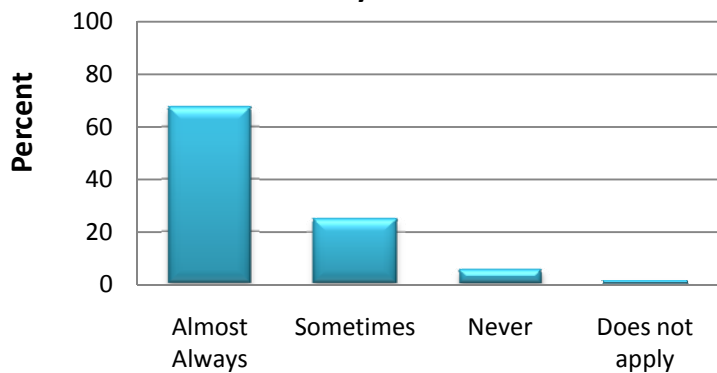
Q17e: Responses to question, how often do you flush motor cooling system ?



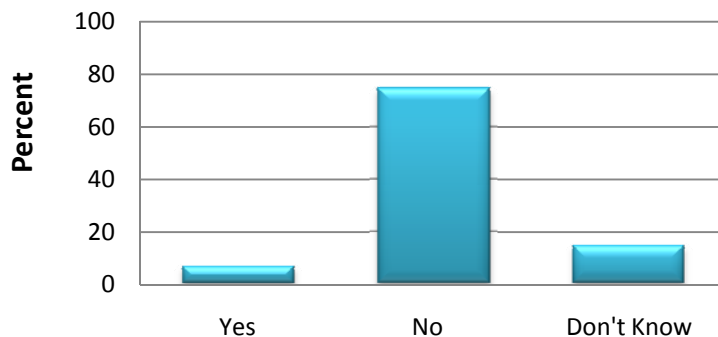
Q17f: Responses to question, how often do you rinse your boat with high pressure or hot water?



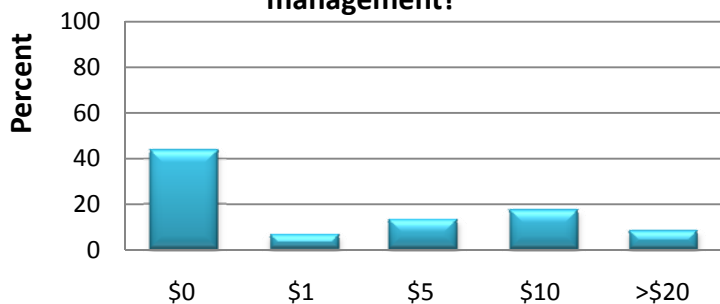
Q17g: Responses to question, how often do you allow your boat to dry for at least five days?



Q18: Responses to question, did NNAS affect your recreational experience during 2009?



Q19: Responses to question, how much would you be willing to contribute annually to help support Non-Native Aquatic Species management?



Q20: Activities watercraft were used for in 2009

