



AGFD Aquatic Invasive Species Program

Fishing/Outreach Survey, 2013 Report

Location: Bartlett Lake and Lake Pleasant, Maricopa County, Arizona; Lake Havasu, Mohave County, Arizona.

Date: February 2013 to September 2013 (Labor Day)

Personnel: Shay Richardson (AIS Technician), Steve Skiba (AIS Intern), Ashley Bortz (AIS Intern), Ashley McCleney (AIS Intern), Kami Silverwood (AIS Specialist)

Objectives:

- I. To determine the fishing/catch habits of anglers at Bartlett Lake, Lake Havasu and Lake Pleasant.
- II. To determine the percentage of the boating public's awareness of the AGFD "Don't Move a Mussel – Now it's the Law" (DMAM) outreach campaign, such that where/how did they hear of the DMAM message and what they are doing to proactively stop the spread, by Arizona law and rule.
- III. "Pull the Plug" surveys
 - A. To determine the percentage of the boating public's effort to abide by Arizona law/rule to remove any watercraft/boat plugs before leaving the vicinity of an infested water body.

Materials:

- "Aquatic Invasive Species (AIS) program angling and boating survey" form
- "Don't Move a Mussel- Now it's the Law" brochures.
- "Aquatic Invasive Species (AIS) programs spot check survey-pulling plug" form
- Binoculars

Methods:

Using the AIS program angling and boating survey, employees would briefly talk with watercraft users at the boat ramp. The boat ramps were selected daily at random. The angling portion of the survey was to see if the boaters had been fishing that day, how many people were fishing in their party, if they used bait or lures while fishing, and what fish species they caught and how many. Next, they were asked if they had heard about the quagga mussel and if they had heard or seen the 'Stop Aquatic Hitchhikers' or the 'Don't Move a Mussel-Now it's the Law' messages. If they had heard or seen either of the messages, they were then asked where they had heard

or seen the message. Their options were as follows: radio announcement, billboard, TV, info signs at lake, or other. The last question asked was what they were doing to prevent transporting quagga mussels. Their options were as follows: clean/wiped down my boat, drain the boat and pulled the plug, let my boat sit and dry for about a week, complete decontamination of my boat, including hot water pressure washing, hot water flush engines cooling system and all compartments, and let dry for about a week, or other.

Using an AIS program spot check survey (“Pulling their boat plugs”), AGFD Interns would sit and watch watercraft owners/transporters leaving the vicinity of an infested water body. If needed, employees would use binoculars to determine if the plug was pulled prior to any boater leaving the boat ramp area. These boat ramps were selected daily and semi-randomly according to the most boat traffic.

Conclusions:

A total of 140 surveys were done at **Bartlett Lake**. The data showed 20% of boaters had been fishing, with vast majority of anglers using lures as they did bait. Anglers identified mainly catching largemouth bass at Bartlett, with the total number of each species caught as follows; 95 largemouth/smallmouth bass, 2 crappie, 10 bluegill or other sunfish, and 3 catfish. Data showed that 89% had heard of quagga mussels, 67% had heard or seen the ‘Stop Aquatic Hitchhikers’ message, and 91% had heard or seen the ‘Don’t Move a Mussel’ message. Of these boaters who had heard or seen the ‘Don’t Move a Mussel’ message, our results showed the following means of recognition to be the following: 4% radio, 1% billboard, 0% TV, 95% info signs at lake, and 13% other (majority from personal communication). The results of boaters self inspection and preventing transportation were as follows; 79% cleaned/wiped down boat, 86% pulled the drain plug, 82% let boat sit a week, 3% did complete decontaminations, <1% did other, in which they said they used vinegar, and 12% did nothing or refused to answer.

A total of 598 surveys were done at **Lake Havasu**. The data showed 14% of boaters had been fishing, almost half of anglers said they used bait as they did both lures and bait together. Anglers mainly catching striped bass, largemouth/smallmouth bass, and sunfish at Havasu, with a total number of each species caught as follows; 137 largemouth/smallmouth bass, 71 striped bass, 12 yellow/white bass, 44 redear sunfish, 132 bluegill or other sunfish, 24 catfish, and 11 shad. Data showed that 95% of the boaters surveyed had heard of quagga mussels, 51% had heard or seen the ‘Stop Aquatic Hitchhikers’ message, and 89% had heard or seen the ‘Don’t Move a mussel’ message. Of these boaters who had heard or seen the ‘Don’t Move a Mussel’ message, our results showed the following means of recognition to be the following: 3% radio, 10% billboard, <1% TV, 72% info signs at lake, and 21% other (majority by personal communication). The results of boaters self inspection and preventing transportation were as

follows; 82% cleaned boat/wiped down boat, 65% pulled the drain plug, 14% let boat sit a week, 1% did complete decontaminations, 3% did other, in which vast majority said they used vinegar, and 16% did nothing or refused to answer.

A total of 237 surveys were done at **Lake Pleasant**. The data showed 8% of boaters had been fishing, with more anglers using lures (42%) as opposed to bait (26%). Anglers identified mainly catching striped bass, largemouth/smallmouth bass at Pleasant, with the total number of each species caught as follows; 34 striped bass, 6 yellow/white bass, 48 largemouth/smallmouth bass, 10 bluegill or other sunfish, and 7 catfish. Data showed that 86% had heard of quagga mussels, 61% had heard or seen the 'Stop Aquatic Hitchhikers' message, and 83% had heard or seen the 'Don't Move a Mussel' message. Of these boaters who had heard or seen the 'Don't Move a Mussel' message, our results showed the following means of recognition to be the following: 2% radio, 1% billboard, 2% TV, 94% info signs at lake, and 14% other (majority from personal communication). The results of boaters self inspection and preventing transportation were as follows; 80% cleaned/wiped down boat, 89% pulled the drain plug, 71% let boat sit a week, 2% did complete decontaminations, 3% did other, in which vast majority said they used vinegar, and 5% did nothing or refused to answer.

A total of 975 surveys were completed for **all three of these lakes**. The data showed out of the 13% of boaters that had been fishing, both lures and bait together (30%) were preferred over bait alone (21%) with lures alone (35%) being preferred the most . In total, most anglers of these three lakes identified catching mainly striped bass, largemouth/smallmouth bass, and bluegill or other sunfish, with the total number of each fish species caught as follows; 105 striped bass, 20 yellow/white bass, 280 largemouth/smallmouth bass, 2 crappie, 44 red ear sunfish, 152 bluegill or other sunfish, 34 catfish and 11 shad. When we asked the 975 surveyed if they had heard of the quagga mussel 92% said yes. When asked if they had heard or seen the 'Stop Aquatic Hitchhiker' message, 56% said yes. We then asked if they had heard or seen the 'Don't Move a Mussel' message and 88% said yes. Of these boaters who had heard or seen the 'Don't Move a Mussel' message, our results showed the following means of recognition to be the following: 3% radio, 7% billboards, 1% TV, 81% info signs at lake, 18% other (e.g. personal communication, state check stations). The last questions asked of the boat owner concerning self inspection and preventing transportation of aquatic invasive species were as follows: 81% cleaned their boat, 74% pulled the drain plug, 38% let boat sit a week, 2% did complete decontaminations, 3% did other, in which vast majority said they used vinegar, and 12% did nothing or refused to answer.

During our “Pull the Plug” survey, results showed the following:

Bartlett Lake - A total of 216 boats were observed leaving this lake. The data showed that 29% of watercraft owners/transporters did not pull the plug before leaving the vicinity. Bartlett Lake is not an infested lake as this time but was included in this study survey.

Lake Havasu - A total of 1741 boats were observed leaving this lake. The data showed that 40% of watercraft owners/transporters did not pull the plug before leaving the vicinity.

Lake Pleasant - A total of 513 boats were observed leaving this lake. The data showed that 38% of watercraft owners/transporters did not pull the plug before leaving the vicinity.

GRAND TOTAL - 2470 boats were observed leaving all three lakes total. The data showed that 39% of watercraft owners/transporters did not pull the plug before leaving the vicinity.

Recommendations:

The results show that boater awareness of the quagga mussels and other aquatic invasive species has increased through outreach and education since 2011 and 2012 but efforts still need to continue to close the gap. Signs at the lake, radio announcements, and billboards along the Colorado River have proven to be valuable tools for passive outreach to the boating public and should continue with consideration of expanding efforts. Personal on the ground at the boat ramps is still the best form of outreach and education, but with limited personal, not all lakes and launch ramps can be covered during the boating season. Explaining what ‘Don’t Move a Mussel-Now It’s the Law’ means and the protocols/methods watercraft users can employ to help prevent the spread of invasive species are fundamental to our outreach and public information education efforts. Specific future recommendations include:

1. There is an apparent need for “feet-on-the-ground” personal communication and training at all affected waters to enhance the current outreach and education that is currently being done regarding Arizona aquatic invasive species laws and rules on proper, required decontamination protocols when leaving the vicinity of an affected water body (AIS Director’s Orders 1, 2, and 3).
2. Develop and implement a widespread “Don’t Move a Mussel – Now It’s the Law” outreach campaign on the lower Colorado River, specifically Havasu, that focuses on required “Pull the Plug” rules and decontamination protocols.

3. Lake Havasu appeared to have a large increase in aquatic vegetation growth during the summer of 2013 and watercraft users were observed leaving the vicinity with attached vegetation. This survey shows that, in general, watercraft users are not following proper clean, drain and dry procedures when leaving the vicinity of an affected water body. Increased presence at the boat ramps, especially from law enforcement personnel, may be needed to assist in public acceptance and future compliance.
4. In addition, due to low data results from anglers at Lakes Bartlett, Pleasant and Havasu, the 2014 surveys should be dispersed throughout the day and launch locations to maximize angling data.

Data:

Bartlett Lake Results - Total Surveys = 140

(Un-infested water in 2013)

| Fishing | Yes | No | Bait | Lure | Both |
|---------------------------------|------------|-----------|-------------|-------------|-------------|
| Did you go fishing today? | 20% | 80% | | | |
| Did you use bait, lure or both? | | | 4% | 68% | 4% |

| Type of Fish caught | How many? |
|------------------------------|------------------|
| striped bass | 0 |
| yellow/white bass | 2 |
| largemouth/smallmouth bass | 95 |
| crappie | 2 |
| rainbow trout or other trout | 0 |
| red ear sunfish | 0 |
| bluegill or other sunfish | 10 |
| Other = catfish | 3 |

| Knowledge about invasive mussels ? | Yes | No |
|---|------------|-----------|
| Ever heard of QM? | 89% | 11% |
| Heard/Seen 'SAH' message? | 67% | 33% |
| Heard/Seen 'DMAM' message? | 91% | 9% |

| How did you hear about message? | Yes | No |
|--|------------|-----------|
| Radio | 4% | 96% |
| Billboard | 1% | 99% |
| TV | 0% | 100% |
| Info signs at Lake | 95% | 5% |
| Other | 13% | 87% |

| | | |
|---|----|-----|
| Don't Know (e.g. personal communication-AZGFD) | 5% | 95% |
|---|----|-----|

| How they prevented transport?? | Yes | No |
|---------------------------------------|------------|-----------|
| Clean boat | 79% | 21% |
| Pulled the drain plug | 86% | 14% |
| Let sit for week | 82% | 18% |
| Complete decon | 3% | 97% |
| Other (e.g. use vinegar) | 1% | 99% |
| Did nothing/refused to answer | 12% | 88% |

Lake Havasu Results – Total surveys = 598

(Infested water in 2013)

| Fishing | Yes | No | Bait | Lure | Both |
|---------------------------------|------------|-----------|-------------|-------------|-------------|
| Did you go fishing today? | 14% | 86% | | | |
| Did you use bait, lure or both? | | | 48% | 0% | 43% |

| Type of Fish caught | How many? |
|------------------------------|------------------|
| striped bass | 71 |
| yellow/white bass | 12 |
| largemouth/smallmouth bass | 137 |
| crappie | 0 |
| rainbow trout or other trout | 0 |
| red ear sunfish | 44 |
| bluegill or other sunfish | 132 |
| Other = catfish | 24 |
| Other = shad | 11 |

| Know ledge about invasive mussels? | Yes | No |
|---|------------|-----------|
| Ever heard of QM? | 95% | 5% |
| Heard/Seen 'SAH' message? | 51% | 49% |
| Heard/Seen 'DMAM' message? | 89% | 11% |

| How did you hear about message? | Yes | No |
|--|------------|-----------|
| Radio | 3% | 97% |
| Billboard | 10% | 90% |
| TV | 1% | 99% |
| Info signs at Lake | 72% | 28% |

| | | |
|---|-----|-----|
| Other | 21% | 79% |
| Don't Know (e.g. personal communication) | 18% | 82% |

| How they prevented transport? | Yes | No |
|--------------------------------------|------------|-----------|
| Clean boat | 82% | 18% |
| Pulled the drain plug | 65% | 35% |
| Let sit for week | 14% | 86% |
| Complete decon | 1% | 99% |
| Other (e.g. use vinegar) | 3% | 97% |
| Do nothing/refused to answer | 16% | 84% |

Lake Pleasant Results – total surveys = 237

(Infested water in 2013)

| Fishing | Yes | No | Bait | Lure | Both |
|---------------------------------|------------|-----------|-------------|-------------|-------------|
| Did you go fishing today? | 8% | 92% | | | |
| Did you use bait, lure or both? | | | 26% | 42% | 11% |

| Type of Fish caught | How many? |
|------------------------------|------------------|
| striped bass | 34 |
| yellow/white bass | 6 |
| largemouth/smallmouth bass | 48 |
| crappie | 0 |
| rainbow trout or other trout | 0 |
| red ear sunfish | 0 |
| bluegill or other sunfish | 10 |
| Other = catfish | 7 |

| Knowledge about invasive mussels ? | Yes | No |
|---|------------|-----------|
| Ever heard of QM? | 86% | 16% |
| Heard/ Seen 'SAH' message? | 61% | 39% |
| Heard/Seen 'DMAM' message? | 83% | 17% |

| How did you hear about message? | Yes | No |
|--|------------|-----------|
| Radio | 2% | 98% |
| Billboard | 1% | 99% |
| TV | 2% | 98% |
| Info signs at Lake | 94% | 6% |
| Other | 14% | 86% |

| | | |
|---|----|-----|
| Don't Know (e.g. personal communication, check stations) | 5% | 95% |
|---|----|-----|

| How they prevented transport | Yes | No |
|-------------------------------------|------------|-----------|
| Clean boat | 80% | 20% |
| Pulled the drain plug | 89% | 11% |
| Let sit for week | 71% | 29% |
| Complete decon | 2% | 98% |
| Other (e.g. use vinegar) | 3% | 97% |
| Do nothing/refused to answer | 5% | 95% |

Total Results - all 3 lakes (Havasu, Pleasant and Bartlett) - Total surveys = 975

| Fishing | Yes | No | Bait | Lure | Both |
|---------------------------------|------------|-----------|-------------|-------------|-------------|
| Did you go fishing today? | 13% | 87% | | | |
| Did you use bait, lure or both? | | | 35% | 21% | 30% |

| Type of Fish caught | How many? |
|--|------------------|
| striped bass | 105 |
| yellow/white bass | 20 |
| largemouth/smallmouth bass | 280 |
| crappie | 2 |
| rainbow trout or other trout | 0 |
| red ear sunfish | 44 |
| bluegill or other sunfish | 152 |
| Other; channel catfish = 34, shad = 11 | |

| Know about Quagga Mussel ? | Yes | No |
|-----------------------------------|------------|-----------|
| Ever heard of QM? | 92% | 8% |
| Heard/Seen 'SAH' message? | 56% | 44% |
| Heard/Seen 'DMAM' message? | 88% | 12% |

| How did you hear about message? | Yes | No |
|--|------------|-----------|
| Radio | 3% | 97% |
| Billboard | 7% | 93% |
| TV | 1% | 99% |
| Info signs at Lake | 81% | 19% |
| Other | 18% | 82% |
| Don't know (e.g. AzGFD, state check stations) | 1% | 99% |

| Prevent transporting | Yes | No |
|------------------------------|------------|-----------|
| Clean/wiped down boat | 81% | 19% |
| Pulled the drain plug | 74% | 26% |
| Let sit for week | 38% | 62% |
| Complete decon | 2% | 98% |
| Other | 3% | 97% |
| Do nothing/Refused to answer | 12% | 89% |

Pull the Plug Survey Results from February 2013 to September 2013 (Labor Day)

Bartlett Lake; boats observed/surveyed = 216

Pulled plug Yes = 153 (71%) No = 63 (29%)

Lake Havasu; boats observed/surveyed = 1741

Pulled plug Yes = 1042 (60%) No = 694 (40%)

Lake Pleasant; boats observed/surveyed = 513

Pulled plug Yes = 317 (62%) No = 196 (38%)