



Aquatic Invasive Species (AIS) Team Efforts at Lake Mead NRA FY2016 Highlights

- Partnerships
- Research
- Outreach and Education





Lake Mead NRA - Overview

2 states (NV and AZ)

1.5 million acres

2 Reservoirs

Mead: 156,800 SA

Mohave: 30,800 SA

7.2 million visitors (FY15)

3,000 – 5,000 boats
in a weekend

3,500 slipped/moored boats



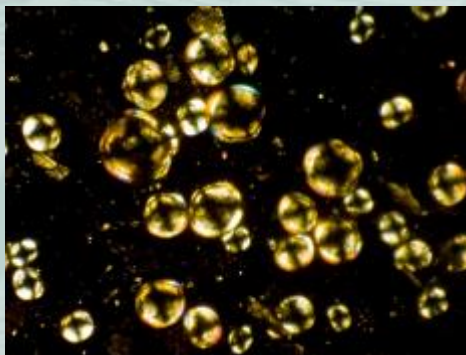


Partnerships

- Nevada Dept. Of Wildlife (NDOW)
- AZ Game & Fish Department (AZGFD)
- Great Basin Institute (GBI)
- Coordination with NPS Park Units and Regions
- Other Federal Agencies
- State, Municipal, University, and NGO partners

Research

- Veliger Sampling (Interagency)
- Interagency Monitoring Action Plan (IMAP)
on-going monitoring of soft and hard substrates
and ecosystem (ongoing since Sept. 2009)
- Targeted work on BMPs for treatment
effectiveness





Outboard Engine Veliger Transport Viability

- Develop repeatable methodology to evaluate the density of viable veligers in outboard engine cooling systems.
- Determine the number of potential veligers in a subset of common outboard engines

Settled Quagga Mussel Desiccation

- Contribute data nationwide Dreissenid desiccation work being currently in progress
- Contribute to Dreissenid mussel quarantine table refinements



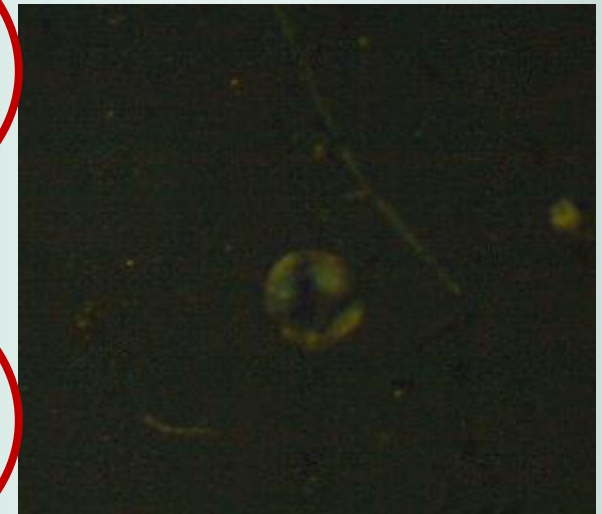
Outboard Engine Veliger Transport Viability



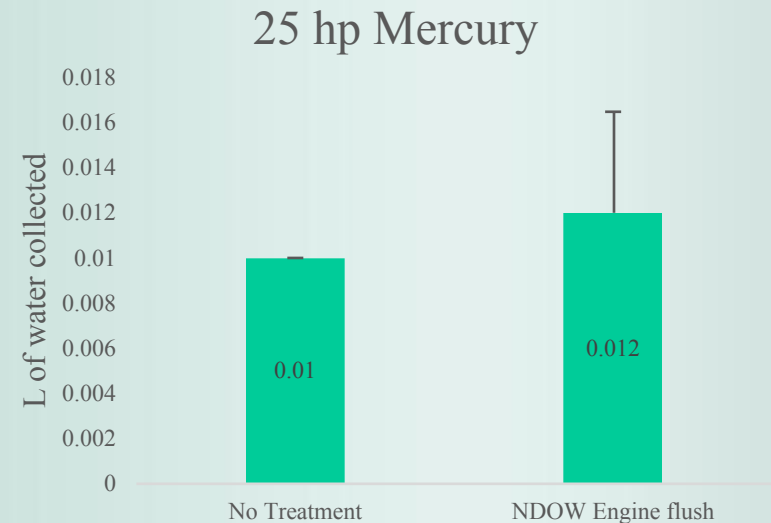
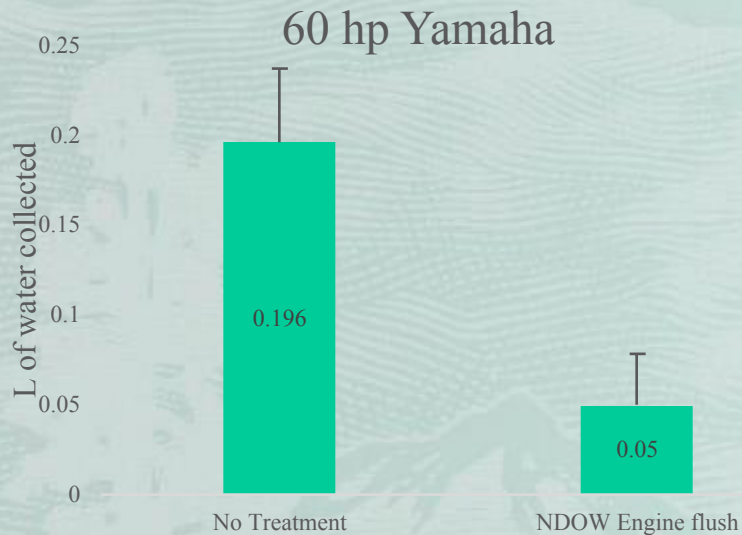


Outboard Engine Veliger Transport Results

Engine	Treatment	Mean Volume of Water L	# of Viable Veligers	Density Viable Veligers #/L
60 hp Yamaha	*Control	96.298	99	1.03
	No treatment	0.196	0	0
	NDOW Engine flush	0.050	0	0
25 hp Mercury	*Control	139.241	137	0.98
	No treatment	10.00	0	0
	NDOW Engine flush	12.5	0	0

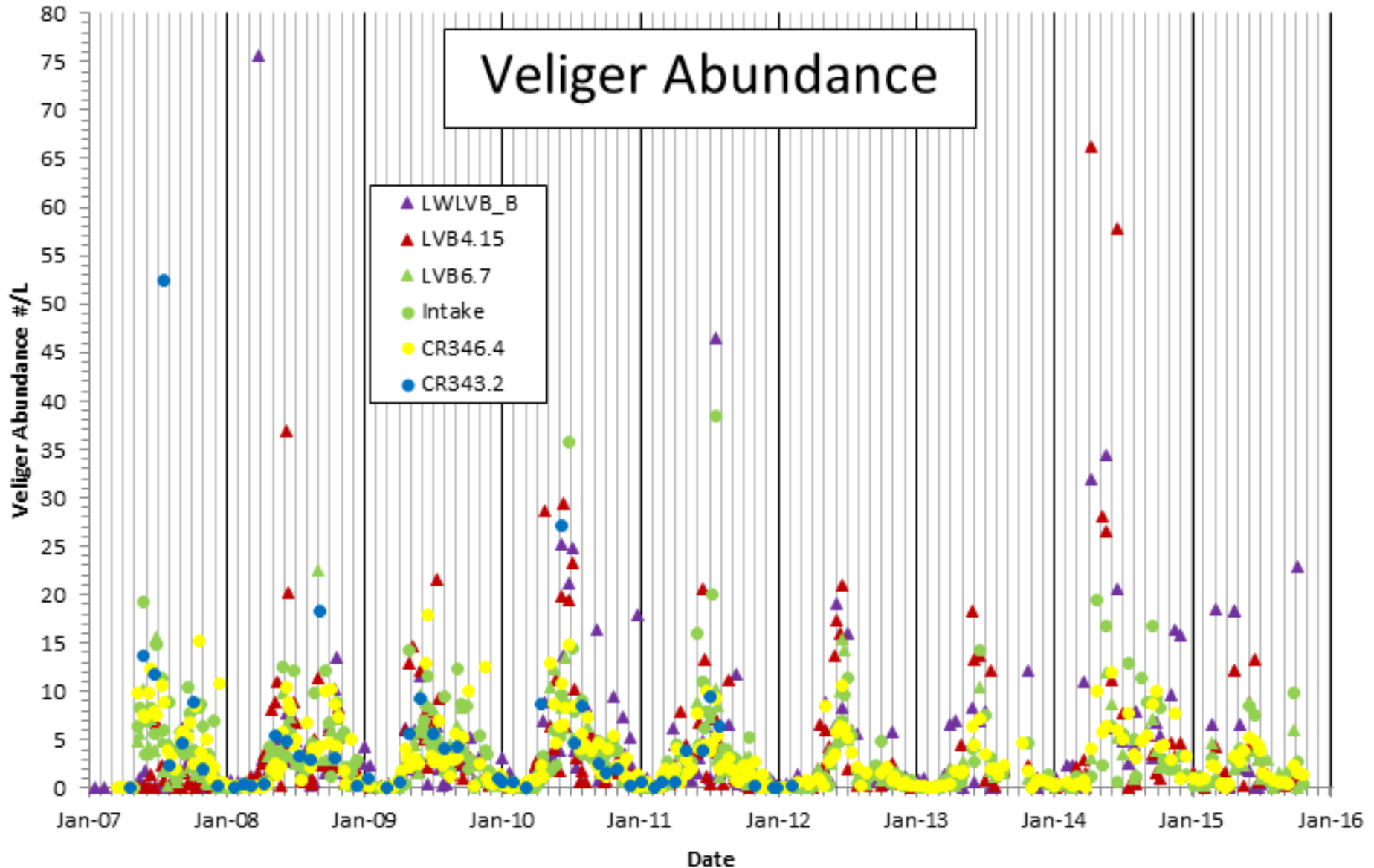


Outboard Engine Veliger Transport Results





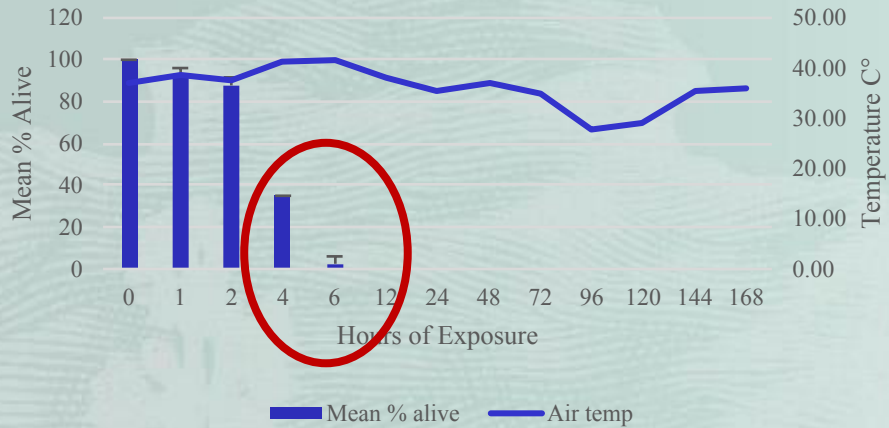
Monthly Veliger Abundance Data



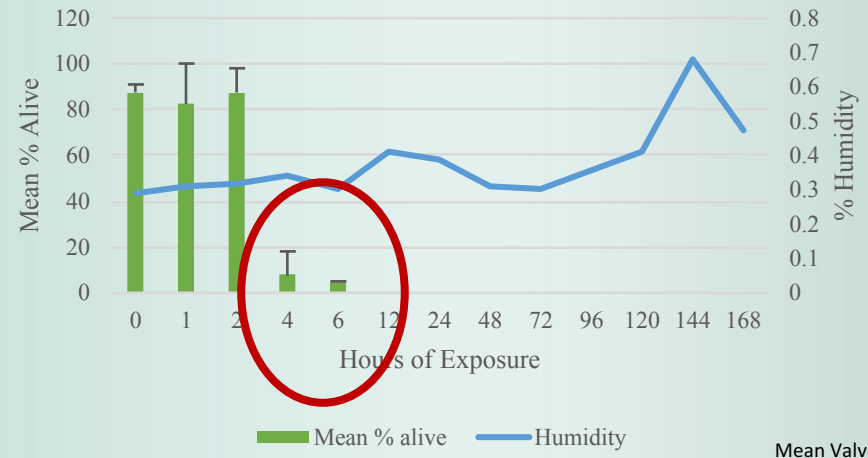
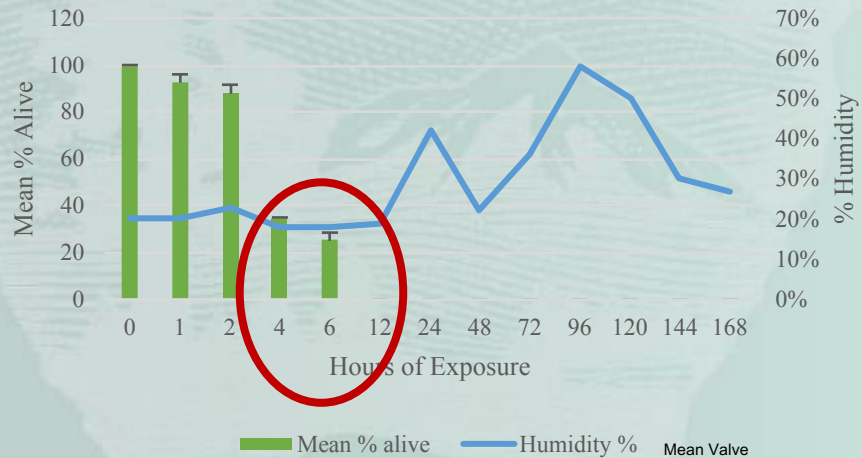
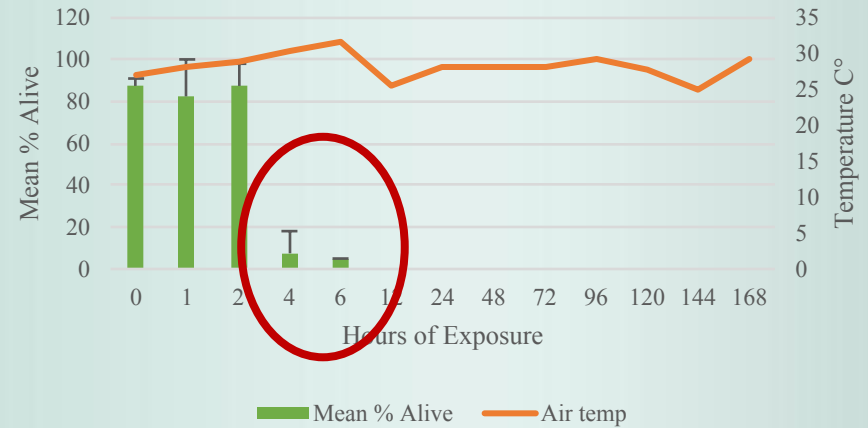




June



September



Mean Valve
Length 17.64
mm

Mean Valve
Length



Research Conclusions

- Established reproducible methods to assess veliger content of outboard engines
- Very little raw water appears to be present in sampled engine types
- At Lake Mead National Recreation Area, in June and September 2016, adult quagga mussels desiccate and die within 6 – 8 hours of atmospheric exposure



Future Research Needs

- Test a wider variety of engine manufactures and types
- Test larger and more complex engines
- Use of flowcam/staining protocol to assess viability
- Desiccation experiments are needed to be conducted in other climates and throughout different seasons



2016 AIS Outreach & Education Team





AIS On-Ramp Outreach & Education

FY2016 AIS Team Accomplishments

- Covered 7 authorized ramp access areas
- Contacted 34,870 visitor contacts on launch ramps
- 15 weekends, 44 days on ramps

FY2015 AIS Team Accomplishments

- Covered 8 authorized ramp access areas
- Contacted 33,879 visitor contacts on launch ramps
- 16 weekends, 50 days on ramps

Note: Team accomplishments on the launch ramps only



AIS Off-Ramp Outreach & Education

FY2016 AIS Team Accomplishments

- Conducted 44 education-based programs, contacting 2,138 participants (in and out of the park)
- Participated in 10 special events, contacting 1,190 participants (in and out of the park)

FY2015 AIS Team Accomplishments

- Conducted 10 education programs, contacting 643 participants
- Participated in 9 special events, contacting 818 participants (in and out of the park)

Note: Other outreach and education activities and contacts, outside of launch ramp efforts



2016 AIS Outreach & Education

Lake Mead Science Symposium (Feb 2016)
(Education, IMAP Research)

ASLO (June 2016)
(Interagency Special Session open to the public, on the complexities of AIS management)

Lake Mead Interagency AIS Workgroup
(on-going coordination efforts since 2007)

Western Regional Panel
(Association of Western states, and federal partners)

LakeLine Magazine Publication (December 2016)

Local news, partner agency meetings, publications



Thank You

