

Wyoming Aquatic Invasive Species 2017 Program Summary



PERSONNEL

AIS personnel in 2017 included one permanent coordinator, five 12-month AWEC Regional AIS Specialists, three 9-month AWEC Regional AIS Specialists, and 45 seasonal technicians (38 general funded and 4 U.S. Fish and Wildlife Service funded, 3 U.S. Forest Service funded).

OUTREACH AND EDUCATION

Outreach was focused in the regions throughout the state with AIS information at local events, fairs, and in schools. Additional outreach was conducted to inform out of state boaters visiting Wyoming for the August solar eclipse about AIS regulations and requirements.



In 2017, the boater appreciation raffle was again conducted with the goals of thanking boaters for cooperation with watercraft inspections, increasing compliance with watercraft stopping at check stations by incentivizing the inspections, and gathering information from boaters about the inspection process. Information on raffle entry details was included on the back of the watercraft inspection receipt given to boaters after an inspection. Boaters entered the survey online where they were asked a series of questions about their inspection experience. There were a total of 1,715 entries in the raffle survey; of those 827 unique individuals entered the raffle.

The overall experience by boaters at watercraft check stations was positive with 94.7% indicating they were either very satisfied (82.9%) or satisfied (11.8%). Satisfaction with the timeliness of inspections was also high, with 95.0% of boaters very satisfied (83.1%) or satisfied (12.0%) with the amount of time required for inspection. Lastly, boaters rated the professionalism of inspectors high with 96.0% of boaters very satisfied (84.5%) or satisfied (11.4%). The majority of boaters (74.8%) responding to the survey had purchased a 2017 AIS decal. Raffle respondents were mostly Wyoming residents (50.7%), followed by residents of Utah (21.8%), Colorado (13.4%), Montana (4.9%), and Nebraska (1.8%). Boaters who responded to the raffle survey were from 33 different states.

TRAINING

A total of 22 watercraft inspection and decontamination trainings were conducted in 15 different locations throughout the state. A total of 138 individuals were certified at a course in 2017, bringing the total number of inspectors since 2010 to over 1,450. Private individuals were again encouraged to become AIS inspectors and to offer services to the boating public as certified inspection locations. Sixteen (16) locations were authorized as certified inspection locations and many others were certified as private authorized inspectors; 41 of which allowed their information to be given out to the public online to contact for watercraft inspections.

The Fire Equipment Inspection and Decontamination (FEID) manual and online training course were revised in 2017. This joint effort of the Bureau of Land Management, U.S. Forest Service, State Forestry, and Wyoming Game and Fish Department equips fire equipment operators with the tools and certification necessary to inspect equipment for AIS prior to use in Wyoming. In 2017, 41 FEID inspectors were certified from 21 different field offices.

WATERCRAFT INSPECTIONS

Watercraft check stations were operated from April 29 through September 17 at fourteen permanent check stations at port of entries (POE), rest areas, and other border locations to intercept watercraft entering the state (Figure 1). Roving crews also conducted inspections at waters on a rotating basis. A total of 46,164 watercraft inspections were conducted over 212 days, resulting in 28,438 individual boaters being contacted at all check stations. A total of 3,659 high risk inspections were conducted and 706 watercraft required decontamination (Table 1). The majority of decontaminations (75%) were performed on watercraft with standing water in the motor.



Nine watercraft were intercepted with suspected zebra or quagga mussels attached and were completely decontaminated; on all watercraft the suspect AIS were determined to be dead and not viable. Suspect mussel infested watercraft originated from Lake Michigan, WI (2 watercraft); Lake Winnebago, WI (1); Lake St. Clair, MI (1); Lake Minnetonka, MN (1); Lake Powell, UT (1); Milford Lake, KS (1); and unnamed positive waters in Illinois (1) and Wisconsin (1). These watercraft were destined for Lake DeSmet, WY (2); Alcova Reservoir, WY (1); Pacific Ocean (1), Washington (1); and four unknown waters.

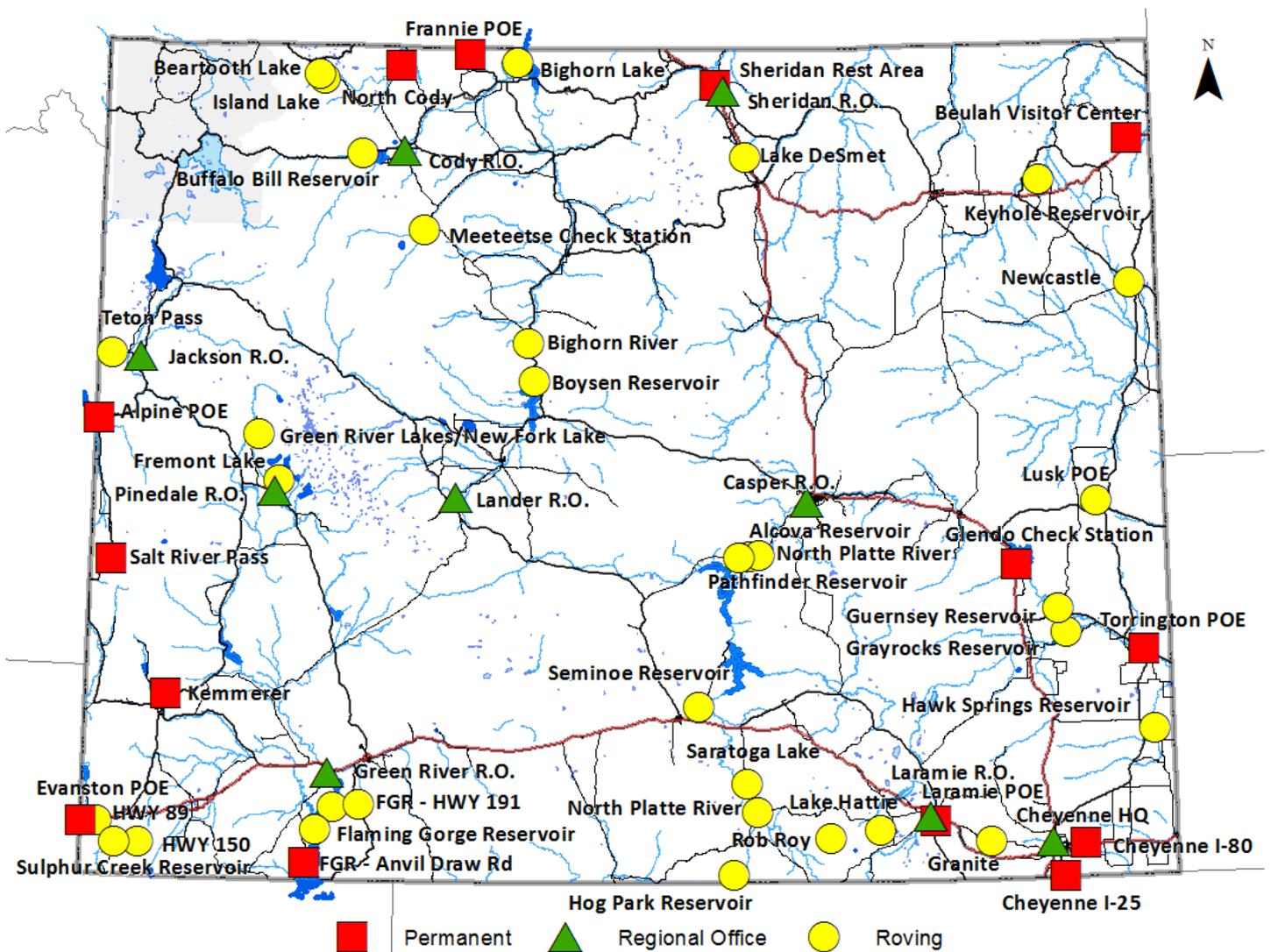


Figure 1. Location of watercraft inspections conducted during 2017 at waters (yellow circle), borders (red square), and regional offices (green triangle).

The greatest number of inspections were conducted at the Evanston I-80 check station (10,539), followed by Glendo Reservoir (5,005), Cheyenne I-25 (4,131), Anvil Draw-Flaming Gorge Reservoir (3,035), and Alpine POE (32,715; Figure 2). The highest inspection activity per hour occurred from 10:00am to 12:00pm and the busiest days of the week were Saturday (23%) and Friday (22%). The highest inspection activity occurred prior to the July 4th holiday (Figure 3). Total hours spent conducting watercraft inspections at all check stations and regional offices was about 36,406 hours, for a statewide average of 1.3 inspections per hour. Inspection rate (inspections/hour) ranged from <0.1 at the Newcastle check station to 3.8 at Alcova Reservoir (Table 1).

Table 1. Total inspections, percent of boats already sealed at time of inspection, high risk inspections, percent of total inspection that were high risk, decontaminations, inspection hours and inspection frequency (inspections per hour) at check stations in 2017.

Check Station	Total Inspections	Percent Sealed	High Risk Inspections	Percent High Risk	Decons	Inspection Hours	Inspection Frequency
<i>CASPER</i>							
Alcova Reservoir	1,504	2.1%	6	0.4%	1	393	3.8
Casper Reg.	252	1.6%	38	15.1%	9	203	1.2
Glendo	5,005	21.2%	41	0.8%	16	1,626	3.1
Guernsey	22	36.4%	0	0.0%	0	24	0.9
Lusk POE	17	0.0%	6	35.3%	1	69	0.2
North Platte	359	3.1%	1	0.3%	0	216	1.7
Pathfinder	564	3.9%	4	0.7%	0	209	2.7
Seminole	62	1.6%	0	0.0%	0	102	0.6
Torrington POE	977	11.4%	76	7.8%	9	1,676	0.6
<i>CODY/LANDER</i>							
Cody Office	24	8.3%	2	8.3%	1	66	0.4
Beartooth Lakes	44	2.4%	2	6.3%	0	93	0.5
Bighorn River	4	0.0%	0	0.0%	0	2	2.0
Boysen	218	2.3%	0	0.0%	1	222	1.0
Buffalo Bill	5	20.0%	0	0.0%	0	6	0.8
Frannie POE	1,067	7.6%	24	2.2%	2	1,753	0.6
Meeteetse	62	4.8%	1	1.6%	0	45	1.4
North Cody	809	3.3%	31	3.8%	1	1,688	0.5
<i>GREEN RIVER</i>							
Anvil Draw-FGR	3,035	5.0%	39	1.3%	6	2,460	1.2
Evanston Hwy	54	1.9%	0	0.0%	0	65	0.8
Evanston Hwy	20	5.0%	0	0.0%	0	84	0.2
Evanston POE	10,539	1.5%	1,21	11.5%	430	5,250	2.0
Flaming Gorge	1,392	2.9%	36	2.6%	0	1,166	1.2
Green River	61	0.0%	11	18.0%	5	81	0.8
Kemmerer	1,414	16.7%	32	2.3%	0	846	1.7
Sulphur Creek	74	2.7%	2	2.7%	0	104	0.7

Check Station	Total Inspections	Percent Sealed	High Risk Inspection	Percent High Risk	Decons	Inspection Hours	Inspection Frequency
<i>JACKSON/PINEDALE</i>							
Alpine POE	2,715	1.3%	48	1.8%	4	1,891	1.4
Fremont Lake	197	3.0%	7	3.6%	0	249	0.8
Grand Teton NP-	36	0.0%	0	0.0%	0	14	2.6
Green River	88	----	2	2.2%	0	27	3.6
Jackson Reg.	79	0.0%	5	6.3%	3	120	0.7
New Fork Lake	4	0.0%	0	0.0%	0	16	0.3
Pinedale Reg.	78	3.8%	13	16.7%	1	69	1.1
Salt River Pass	850	21.3%	47	5.5%	5	890	1.0
Teton Pass	26	0.0%	0	0.0%	0	100	0.3
<i>LARAMIE/CHEYENNE</i>							
Cheyenne Office	88	21.6%	12	13.6%	0	---	---
Cheyenne I-25	4,131	28.1%	331	8.0%		3,675	1.1
Cheyenne I-80 POE	1,388	3.7%	768	55.3%	53	2,374	0.6
Granite Reservoir	230	7.4%	2	0.9%		165	1.4
Grayrocks	471	4.5%	4	0.8%		473	1.0
Hawk Spring	109	2.8%	1	0.9%	0	104	1.0
Hog Park Reservoir	2	0.0%	0	0.0%	0	12	0.2
Lake Hattie	46	0.0%	0	0.0%	0	60	0.8
Laramie POE	2,452	12.8%	281	11.5%	14	2,337	1.0
Saratoga Lake	3	0.0%	0	0.0%	0	---	---
<i>SHERIDAN</i>							
Beulah Visitor	1,376	0.9%	427	31.0%	55	2,308	0.6
Keyhole Reservoir	1,691	1.4%	25	1.5%	8	993	1.7
Lake DeSmet	702	1.6%	8	1.1%	0	354	2.0
Newcastle	5	0.0%	1	20.0%	0	58	0.1
Sheridan Office	17	---	2	11.8%	2	49	0.4
Sheridan Rest Area	1,796	7.3%	113	6.3%	9	1,619	1.1
Total	46,164	8.6%	3,659	7.9%	706	36,406	1.3

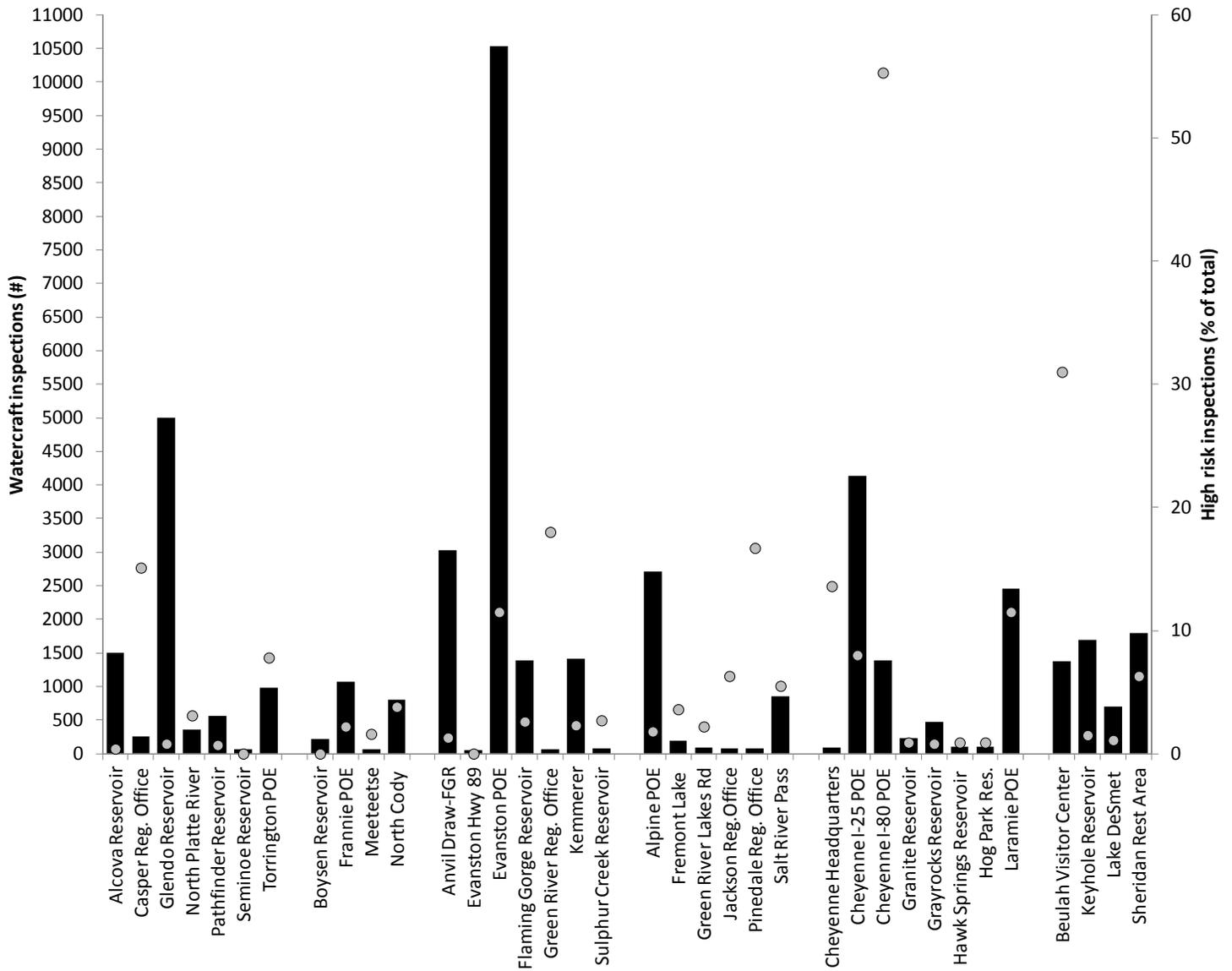


Figure 2. Total watercraft inspections (black bar) and high risk inspections as a percent of the total (gray circle) by check station during 2017. Locations with fewer than 50 inspections are not included in the graph and are referenced in Table 1.

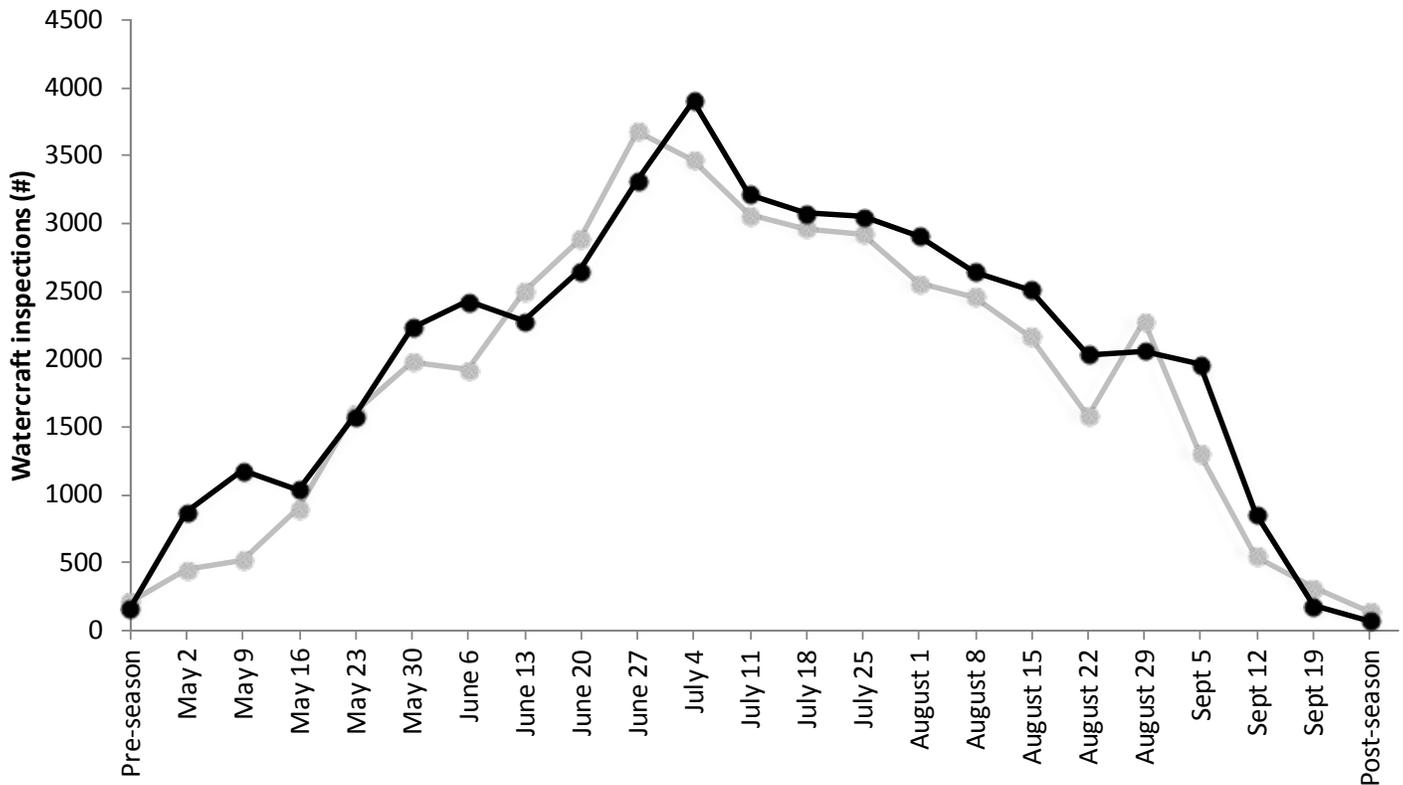


Figure 3. Weekly watercraft inspection totals at all waters during 2017 (black line) and 2010 through 2016 average (gray line), including pre-season (prior to May 2) and post-season (after September 19) inspections.

A total of 3,954 watercraft (8.6% of the total) entered a check station with an intact seal, indicating the watercraft had been previously inspected. All watercraft must display an aquatic invasive species decal prior to launch in Wyoming waters. A total of 9,586 (29.6%) of watercraft next launching in Wyoming did not have a valid AIS decal at the time of inspection.

The majority of watercraft at the inspection station were motorized (70.3%), with lesser non-motorized use (29.7%). The majority of motorized watercraft were outboard (33.2%), followed by inboard/outboard (20.4%), personal watercraft (8.2%), inboard (6.3%), and jet boats (2.1%). Based on registration state of inspected watercraft or trailer, inspection of resident boats (37.7%) was much lower than non-resident boats (62.3%). The majority of nonresident use came from watercraft registered in Utah (25.0%), Colorado (18.1%), Montana (4.0%), Idaho (3.1%), and California (1.7%; Figure 4). Watercraft were registered in 49 states (none were registered in Hawaii), five Canadian provinces (Alberta, British Columbia, Ontario, Quebec, Saskatchewan), and in Australia, Denmark, Ecuador, France, Japan, New Zealand, Sweden, Switzerland, and the United Kingdom. Of all registered watercraft through the inspection station, 71.5% were inspected one-time, whereas 28.5% were repeat boaters who had been through an inspection station more than one time during the season. The greatest number of repeat visits was a California registered watercraft that had been through three different check stations (Evanston, Glendo, Torrington) during the season on 14 different days.

When boaters were asked where their destination (next water) was going to be the majority (70.3%) indicated they were planning to launch in Wyoming. The top ten destination waters included Flaming Gorge Reservoir, WY/UT (22.5%); Glendo Reservoir (15.2%); Bear Lake, ID/UT (5.0%); Keyhole Reservoir, WY (4.9%); Alcova Reservoir, WY (4.1%); Snake River, WY/ID (3.6%); Grayrocks Reservoir, WY (3.2%); the Green River, WY/UT (2.4%), aLake DeSmet, WY (2.3%), and Big Horn Lake, WY/MT (2.1%);. A small percentage of boaters (1.1%) indicated they would be visiting a suspect/positive water next with the majority visiting Angostura Reservoir, SD or Lake Powell, UT/AZ.

MONITORING

Monitoring was conducted at 361 sites on 77 total waters in 2017 including 65 lakes or reservoirs and 12 streams or rivers (Figure 5). Plankton tows and water quality surveys were conducted at sites to detect larval (veliger) mussels and to document temperature, pH, dissolved oxygen, conductivity, water clarity, calcium and hardness. Shoreline surveys were conducted to detect juvenile and adult mussels, crayfish, clams, snails, and aquatic plants.

Plankton tow samples are sent to the Bureau of Reclamation Lab in Colorado or the Montana Fish, Wildlife and Parks Lab (MTFWP) to be analyzed by cross-polarized light microscopy. If a positive or a suspected positive result occurred from microscopy, the samples are sent to an independent lab for DNA analysis. Specimens detected during shoreline surveys are analyzed by the Colorado Wildlife and Parks Animal Health Lab and plant samples are identified by the MTFWP Aquatic Plant Specialist.

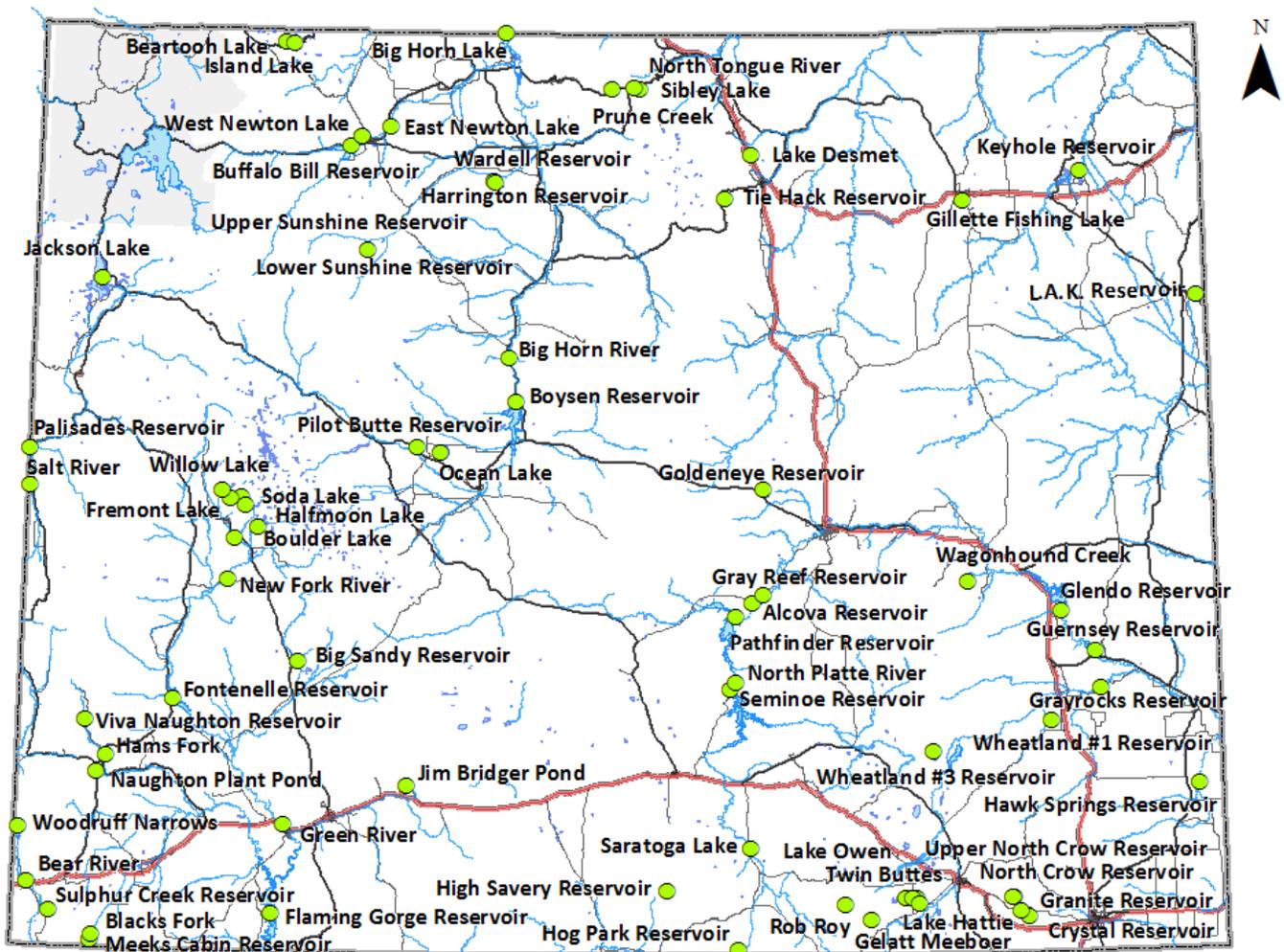


Figure 5. Map of 2017 monitoring locations.

No zebra or quagga mussels were detected by plankton tow monitoring or shoreline surveys in 2017. Current AIS populations in Wyoming include New Zealand mudsnails, Asian clam, rusty crayfish, and curly pondweed. New populations of Asian clam were found in Keyhole Reservoir in 2017 (Figure 6).

Existing Aquatic Invasive Species in Wyoming

Sampling of existing populations of invasive species in Wyoming is conducted annually to monitor known populations and determine whether populations have spread.

Asian clams were first detected in the Laramie River in 2011. Asian clams were found at Tunnel Road, Monolith and Jelm access points to the river (Figure 6). In 2013, surveys found the highest concentration of Asian clam at Monolith, as far away from the access as one-half mile upstream. Additionally, Asian clams were observed at the Tunnel Road Bridge. Asian clams were also detected in the main stem of the North Platte River in 2013, downstream from Guernsey Reservoir. Asian clam shells were found near Optimist Park access point, however, no live clams were found there and the shells were sparsely distributed. Asian clam were found in Keyhole Reservoir, and Guernsey Reservoir just upstream of the dam, in 2017.

Brook stickleback are currently widespread throughout Wyoming's warmer water streams (Figure 6). No additional monitoring was conducted in 2017.

Curly Pondweed was first found in Wyoming in 2011 in Lake DeSmet (Table 2). It was subsequently found in additional waters including Keyhole and Boysen reservoirs. Curly pondweed was also detected in the North Platte River between Kortez Reservoir and Pathfinder Reservoir, a section of river called the Miracle Mile, and at New Fork Lake at the constriction between upper and lower New Fork Lake. Curly pondweed was detected in the Shoshone River for the first time in 2014 (Figure 6).

New Zealand mudsnails were first found in the Snake River in 1999. This population still persists, and populations have since been found in Polecat Creek, Bighorn River, Shoshone River, and Lake Cameahwait (Figure 6).

Rusty crayfish were first found in Wagonhound Creek, a North Platte River tributary, in 2006. Several eradication efforts have been conducted since that time. The North Platte River was sampled for crayfish above and below the confluence with Wagonhound Creek in 2014 and no crayfish were detected. Sampling in 2016 near the North Platte River confluence did not find any evidence of rusty crayfish (Figure 6).

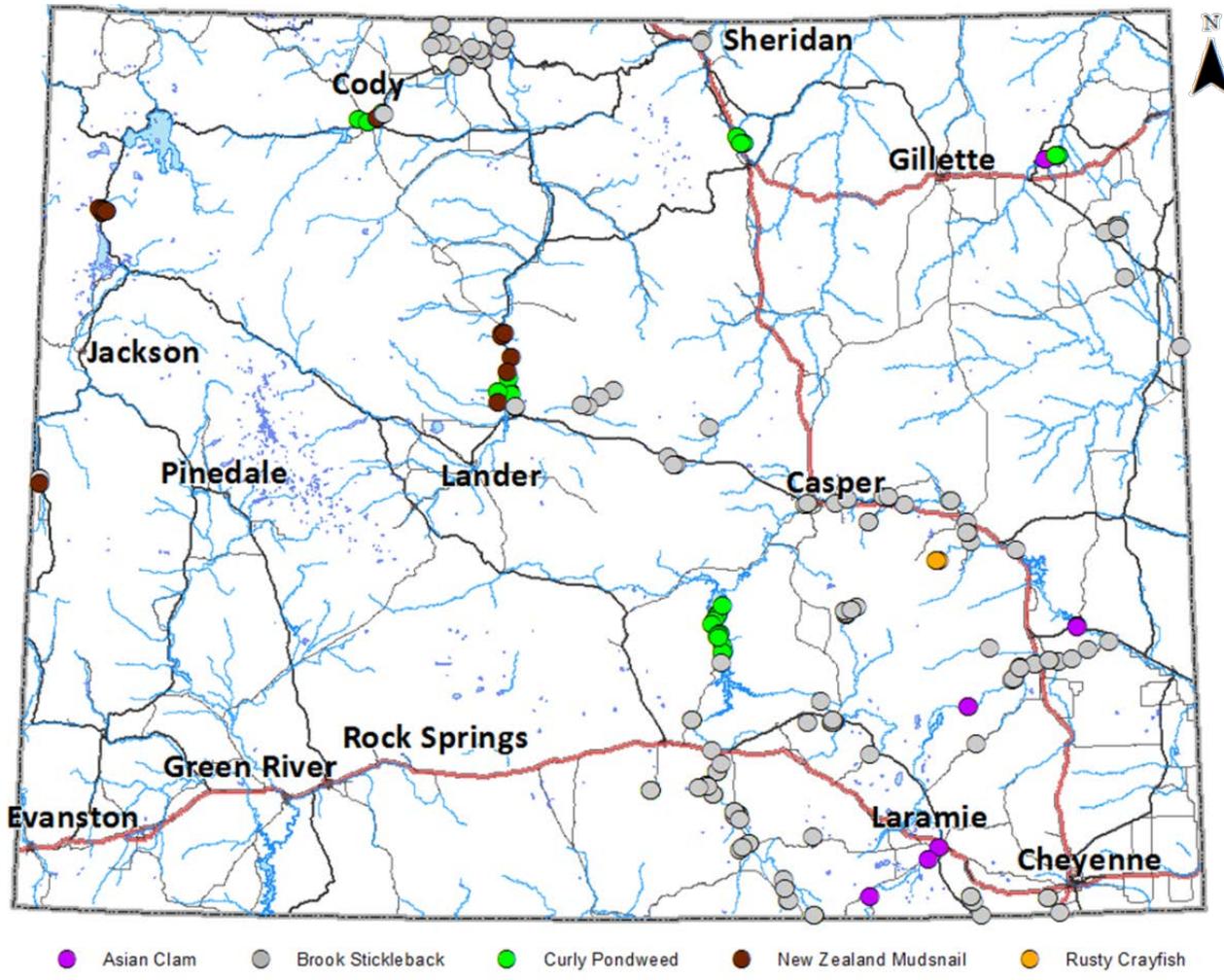


Figure 6. Distribution of aquatic invasive species populations in Wyoming as of 2017.

FUNDING

The Wyoming AIS program is funded through Game and Fish license sales and from monies generated from the sale of the mandatory AIS decal required of all watercraft before launch. Decal revenues are used to offset the amount of money license fees. The total AIS program budget for fiscal year 2018 was \$1.3 million.

In 2017, a total of 45,070 decals were sold resulting in receipt of \$707,650 (Table 2). Of the resident motorized decals sold, 7,431 (\$222,930) were three-year decals. Sales of resident and nonresident, non-motorized decals increased from 2016 (Table 2). From 2016 to 2017, number of decals sold increase by 1,792 resulting in an increase in sales of \$41,170.

Table 2. Type, count, and monies generated from AIS decals sold in 2017 compared to 2016.

Decal type	Count		Sales	
	2017	2016	2017	2016
Resident Motorized	15,316	15,634	\$301,780	\$275,960
Resident Non-motorized	14,808	13,379	\$74,040	\$66,895
Nonresident Motorized	7,176	7,274	\$215,280	\$218,220
Nonresident Non-motorized	7,770	6,991	\$116,550	\$104,865
TOTAL	45,070	43,278	\$707,650	\$665,940

