

# Wyoming Aquatic Invasive Species 2018 Program Summary



## PERSONNEL

AIS personnel in 2018 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, 4 U.S. Fish and Wildlife Service funded, 3 U.S. Forest Service funded).

## OUTREACH AND EDUCATION

Outreach was focused in regions throughout the state with AIS information at local events, fairs, and in schools. Statewide outreach events included the boater appreciation raffle, and the Expo event in Casper.

In 2018, 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 1,309 entries in the raffle survey; of those 694 unique individuals entered the raffle. Although fewer people entered the raffle as in previous years (827 individuals in 2017), the responses were very similar regarding satisfaction with inspections.

The overall experience by boaters at watercraft check stations was positive with 94.3% indicating they were either very satisfied (80.4%) or satisfied (13.9%). Satisfaction with the timeliness of inspections was also high, with 94.5% of boaters very satisfied (82.7%) or satisfied (11.8%) with the amount of time required for inspection. The majority of respondents (70.5%) waited less than 5 minutes for an inspection with only 1 response indicating a wait time over 30 minutes. Lastly, boaters rated the professionalism of inspectors high with 95.1% of boaters very satisfied (82.4%) or satisfied (12.8%). The majority of boaters (72.9%) responding to the survey had purchased a 2018 AIS decal at the time of inspection. Raffle respondents were mostly Wyoming residents (47.9%), followed by residents of Utah (19.1%), Colorado (17.4%), Montana (6.1%), and Nebraska (2.4%). Boaters who responded to the raffle survey were from 29 different states and one Canadian province (Alberta).

## TRAINING

A total of 23 watercraft inspection and decontamination trainings were conducted in 14 different locations throughout the state. In total, 208 individuals were certified at a course, bringing the total number of inspectors since 2010 to over 1,500. Private individuals were again encouraged to become AIS inspectors and to offer services to the boating public as certified inspection locations. Seventeen (17) locations were authorized as certified inspection locations and many others were certified as private authorized inspectors; 47 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 2018. 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 2018, 55 FEID inspectors were certified from 13 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 47,164 watercraft inspections were conducted over 210 days, resulting in 21,036 individual boaters being contacted at all check stations. A total of 3,909 high risk inspections were conducted and 462 watercraft required decontamination (Table 1). The majority of decontaminations (67.5%) were performed on watercraft with standing water in the motor.



Sixteen 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 Powell, UT/AZ (5 watercraft); unspecified waters in Michigan (3); Lake Michigan (2); Hardy Dam Pond, MI (1); Milford Reservoir, KS (1); and unspecified waters in Ohio (1); Chicago area (1); Maryland (1); and the Great Lakes area (1). These watercraft were destined for Flaming Gorge Reservoir, UT/WY (6 watercraft); Washington state waters (4); Oregon state waters (2); California state waters (2); Alcova Reservoir, WY (1); and Alaska state waters (1).

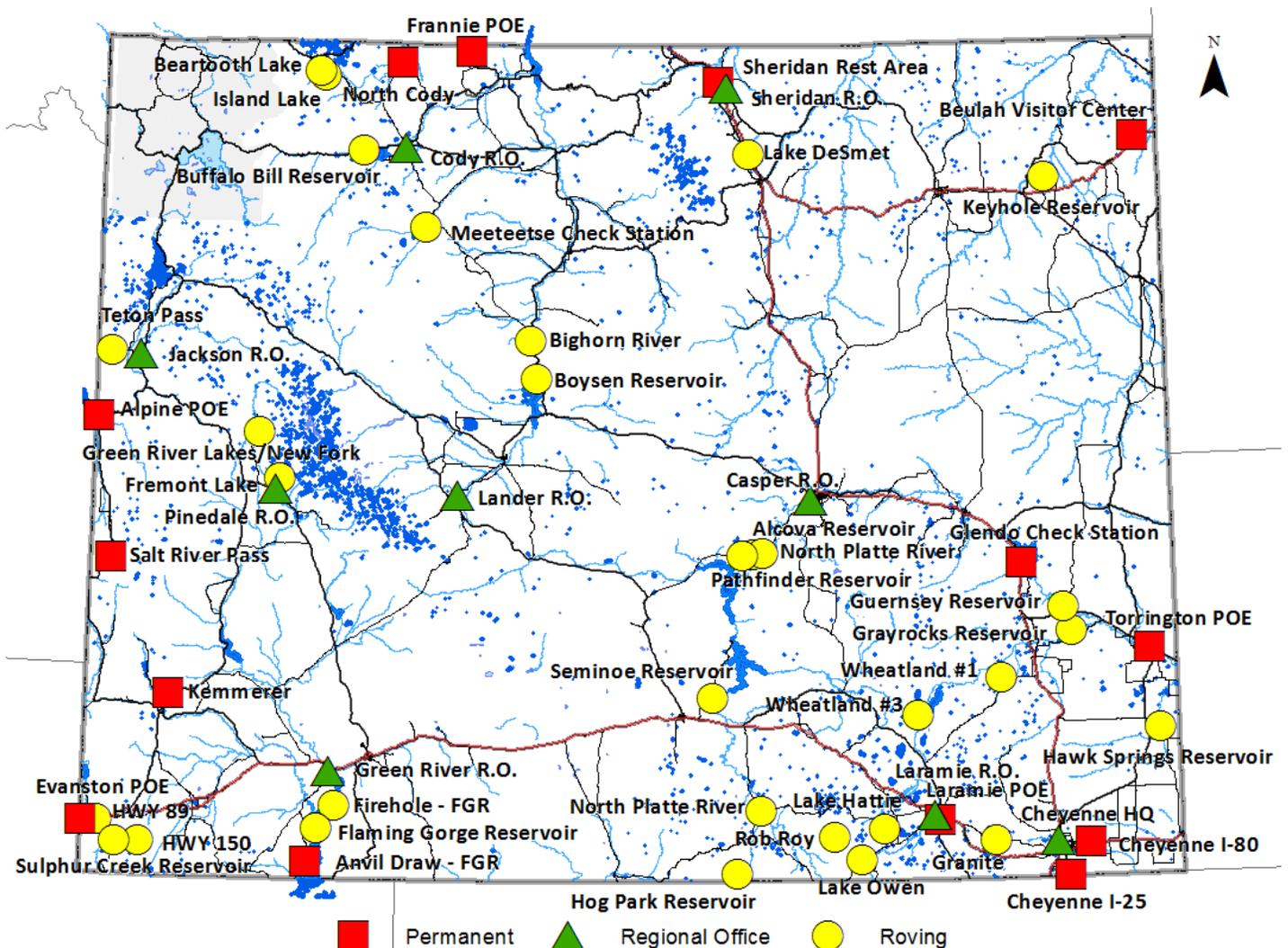


Figure 1. Location of watercraft inspections conducted during 2018 at waters (yellow circle), borders (red square), and regional offices (green triangle).

The greatest number of inspections were conducted at the Evanston I-80 check station (11,728), followed by Cheyenne I-25 (4,325), Glendo Reservoir (4,150), Laramie 287 (2,858), Anvil Draw (2,819), and Alpine POE (2,611; Figure 2). The highest inspection activity per hour occurred from 11:00am to 1:00pm and the busiest days of the week were Friday (23.2%) and Saturday (21.6%). The highest inspection activity occurred prior to the July 4<sup>th</sup> holiday (Figure 3). Total hours spent conducting watercraft inspections at all check stations and regional offices was about 31,340 hours, for a statewide average of 1.5 inspections per hour. Inspection rate (inspections/hour) ranged from 0.1 at Lake Owen to 4.5 at Evanston Hwy 89 (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 2018.

Check Station	Total Inspections	Percent Sealed	High Risk Inspections	Percent High Risk	Decons	Inspection Hours	Inspection Frequency
<i>CASPER</i>							
Alcova Res.	469	1.3%	3	0.6%	0	203	2.3
Casper Office	109	2.8%	27	24.8%	3	----	----
Glendo Res.	4,150	19.6%	68	1.6%	20	1,353	3.1
Guernsey Res.	93	0%	1	1.1%	0	65	1.4
Gray Reef Res.	332	1.2%	2	0.3%	2	197	1.7
Pathfinder Res.	389	1.0%	3	0.8%	0	175	2.2
Seminole Res.	89	2.2%	3	3.4%	1	99	0.9
Torrington POE	1,052	6.9%	87	8.3%	6	1,655	0.6
<i>CODY/LANDER</i>							
Cody Office	1	0%	0	0%	0	----	----
Bighorn River	5	0%	0	0%	0	----	----
Boysen Res.	107	0%	0	0%	0	140	0.8
Frannie POE	1,421	10.1%	61	4.3%	7	1,607	0.9
Meeteetse	29	3.4%	0	0%	0	22	1.3
North Cody	491	3.7%	34	6.9%	0	1,596	0.3
<i>GREEN RIVER</i>							
Anvil Draw-FGR	2,819	9.5%	34	1.2%	5	2,456	1.1
Evanston Hwy 89	45	0%	0	0%	0	10	4.5
Evanston POE	11,728	0.1%	1,23	10.5%	153	4,933	2.4
Flaming Gorge Res.	1,700	3.4%	16	0.9%	2	1,125	1.5
Green River Office	60	5.0%	18	30%	7	----	----
Kemmerer	1,301	21.6%	23	1.8%	1	842	1.5
Sulphur Creek	51	0%	0	0%	0	----	----
<i>JACKSON/PINEDALE</i>							
Alpine POE	2,611	0.1%	142	5.4%	6	1,790	1.5
Fremont Lake	1,291	0.2%	16	1.2%	0	423	3.1
Jackson Office	63	0%	17	27.0%	2	----	----
Pinedale Office	52	0%	9	17.3%	0	----	----
Salt River Pass	684	0%	26	3.8%	3	730	0.9
Teton Pass	443	0%	29	6.5%	0	206	2.2
Upper Green Bndry	84	0%	6	7.1%	0	50	1.7

Check Station	Total Inspections	Percent Sealed	High Risk Inspections	Percent High Risk	Decons	Inspection Hours	Inspection Frequency
<b>LARAMIE/CHEYENNE</b>							
Cheyenne Office	119	0%	26	21.8%	0	----	----
Cheyenne I-25	4,325	6.5%	329	7.6%	58	2,826	1.5
Cheyenne I-80 POE	1,702	1.0%	671	39.4%	69	1,698	1.0
Granite Res.	209	1.9%	3	1.4%	1	108	1.9
Grayrocks Res.	484	11.0%	5	1.0%	0	168	2.9
Hawk Spring Res.	39	2.6%	0	0%	0	48	0.8
Hog Park Res.	3	0%	0	0%	0	10	0.3
Lake Hattie	44	11.4%	0	0%	0	48	0.9
Lake Owen	1	0%	0	0%	0	11	0.1
Laramie POE	2,858	3.7%	261	9.1%	64	2,257	1.3
Laramie Office	62	3.2%	9	14.5%	0	----	----
Rob Roy Reservoir	107	0%	2	1.9%	0	107	1.0
North Platte River	41	0%	1	2.4%	0	18	2.3
Wheatland #1 Res.	7	0%	0	0%	0	15	0.5
Wheatland #3 Res.	48	0%	0	0%	0	53	0.9
<b>SHERIDAN</b>							
Beulah Visitor	1,222	0.6%	496	40.6%	38	1,739	0.7
Keyhole Res.	1,798	1.8%	32	1.8%	6	905	2.0
Lake DeSmet	196	3.1%	0	0%	0	158	1.2
Sheridan Office	8	0%	1	12.5%	0	----	----
Sheridan Rest Area	2,024	6.2%	208	10.3%	8	1,494	1.4
Private Inspectors	198	0.5%	4	2.0%	0	----	----
<b>TOTAL</b>	<b>47,164</b>	<b>5.0%</b>	<b>3,909</b>	<b>8.3%</b>	<b>462</b>	<b>31,340</b>	<b>1.5</b>

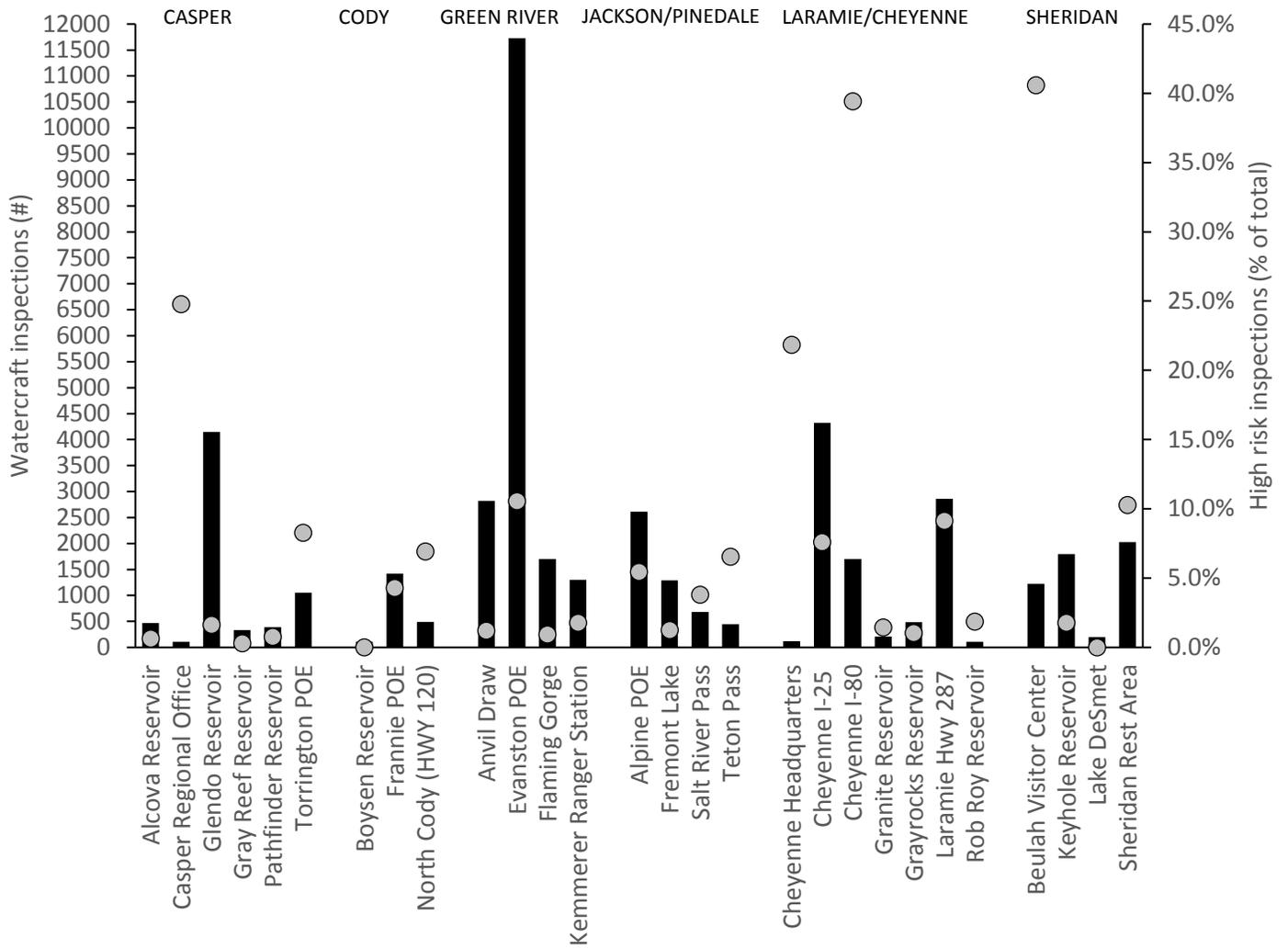


Figure 2. Total watercraft inspections (black bar) and high risk inspections as a percent of the total (gray circle) by check station during 2018. Locations with fewer than 100 inspections are not included in the graph and are referenced in Table 1.

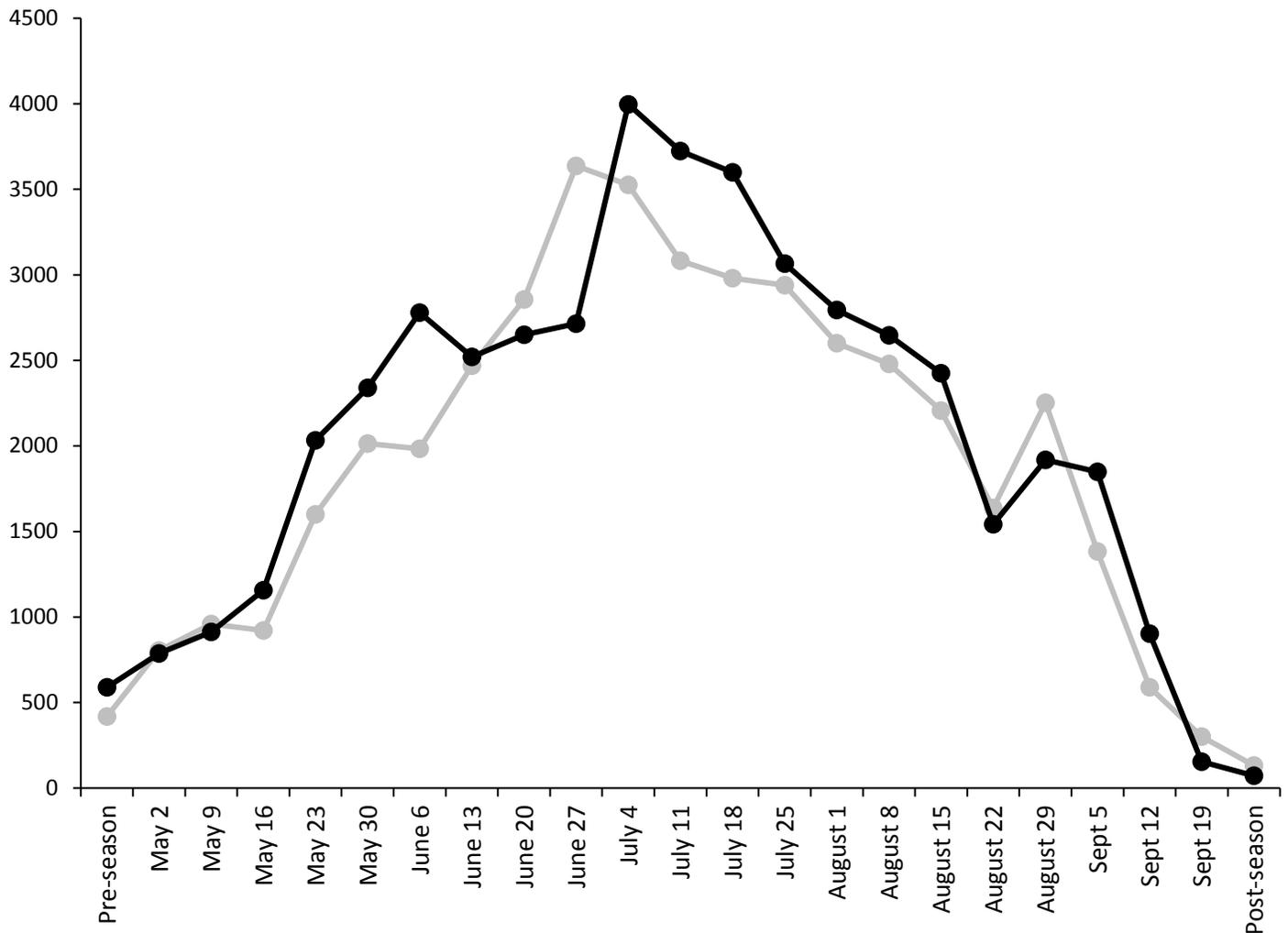


Figure 3. Weekly watercraft inspection totals at all waters during 2018 (black line) and 2010 through 2017 average (gray line), including pre-season (prior to May 2) and post-season (after September 19) inspections.

A total of 2,338 watercraft (5.0% 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. Due to complications with a new database used in 2018, decal compliance could not be calculated; this issue has been fixed and decal compliance will be calculated in the future. In 2018, boaters were required to remove bilge plugs after boating and to travel with bilge plugs out during transport in Wyoming. Of watercraft inspected, 79.1% had bilge plugs out upon inspection at check stations.

The majority of watercraft at the inspection station were motorized (69.0%), with lesser non-motorized use (31.0%). The majority of motorized watercraft were outboard (32.8%), followed by inboard/outboard (19.4%), personal watercraft (7.7%), inboard (7.0%), and jet boats (2.0%). 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 (26.0%), Colorado (17.8%), Montana (3.7%), Idaho (3.4%), and California (1.6%; Figure 4). Watercraft were registered in 49 states (none were registered in Hawaii), six Canadian provinces (Alberta, British Columbia, Manitoba, Ontario, Quebec, Saskatchewan), and in Mexico. Of all registered watercraft through the inspection station, 73.1% were inspected one-time, whereas 26.9% were repeat boaters who had been through an inspection station more than one time during the season. The greatest number of repeat visits was an Arizona registered watercraft that had been through two different check stations (Glendo, Torrington) during the season on 22 different days.



## MONITORING

Monitoring was conducted at 315 sites on 92 total waters in 2018 including 60 lakes or reservoirs and 32 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.

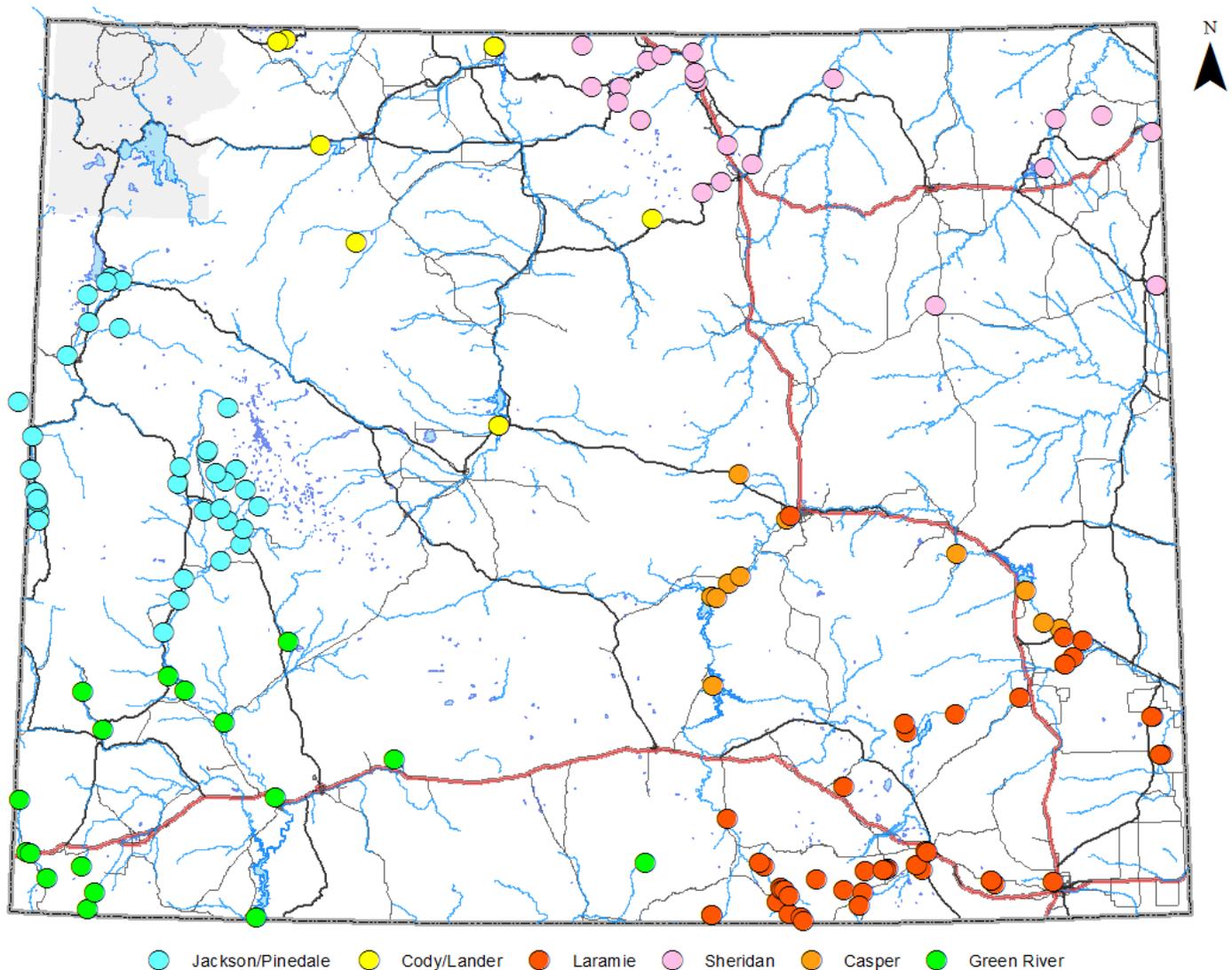


Figure 5. Map of 2018 monitoring locations in each sampling region.

No zebra or quagga mussels were detected by plankton tow monitoring or shoreline surveys in 2018. Current AIS populations in Wyoming include New Zealand mudsnails, Asian clam, rusty crayfish, and curly pondweed. New populations of New Zealand mudsnails were found in the Salt River and the North Platte River and Asian clam further spread to Horse Creek in 2018 (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 are present in Guernsey Reservoir and the North Platte River downstream, in the Ft. Laramie canal, and in Horse Creek. Intensive sampling in the Laramie River did not find any Asian clam specimens in 2018, making it highly likely that this species is not currently found there and old records were native clams misidentified as Asian clam. Asian clams also occur in Keyhole Reservoir.

Brook stickleback are currently widespread throughout Wyoming's warmer water streams. Monitoring in 2018 found the species in the Encampment River, where they had been previously documented. A University of Wyoming graduate project in 2019 will look to better determine the extent of brook stickleback in Wyoming and their potential impacts on native nongame fishes.

Curly Pondweed is present in waters dispersed throughout the state including Lake DeSmet and Keyhole Reservoir, Boysen Reservoir, the Shoshone River, and the North Platte River at the Miracle Mile stretch between Kortez Dam and Pathfinder Reservoir.

New Zealand mudsnails are currently found in Polecat Creek, Salt River, Bighorn River, Shoshone River, Lake Cameahwait, and the North Platte River at Cardwell and Gray Reef access areas.

Rusty crayfish were first found in Wagonhound Creek, a North Platte River tributary, in 2006. Several eradication efforts have been conducted since that time. Sampling in 2018 in lower Wagonhound Creek did not find any evidence of rusty crayfish nor have they have not been documented in the North Platte River near the confluence with the creek.

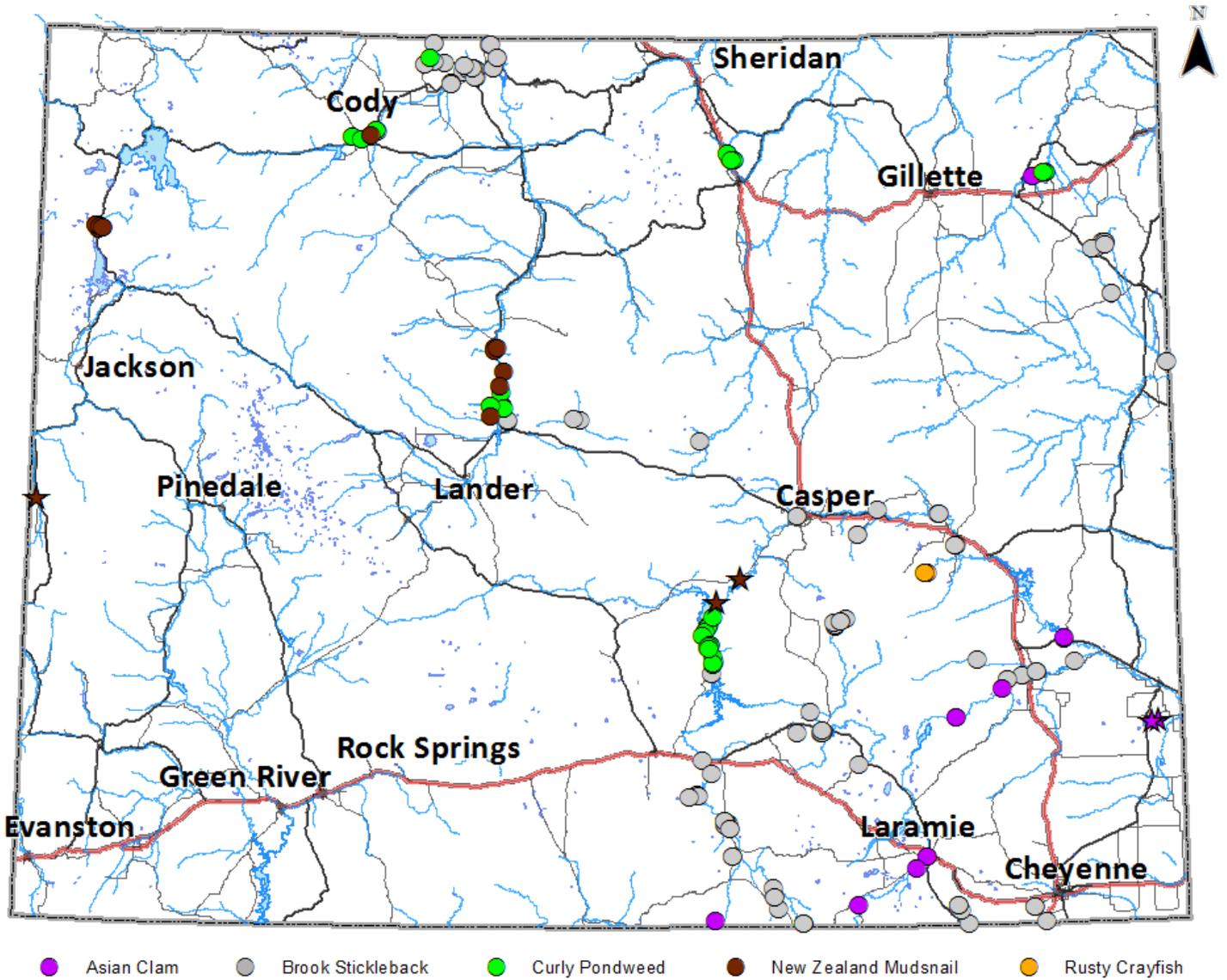


Figure 6. Distribution of aquatic invasive species populations in Wyoming as of 2018. Stars indicate new occurrences in 2018.

## FUNDING

The Wyoming AIS program is funded through Game and Fish license sales, federal grants from partners (U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Forest Service) 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 license fee monies used to fund the AIS program. The total AIS program budget for fiscal year 2019 was \$1.3 million.

In 2018, a total of 46,644 decals were sold resulting in receipt of \$682,230 (Table 2). Of the resident motorized decals sold, 5,842 (\$175,260) were three-year decals. From 2017 to 2018, number of decals sold increased by 1,574. However, the increased decals purchased were non-motorized while motorized decal sales decreased, resulting in an overall decrease in sales of \$25,420.

Table 2. Type, count, and monies generated from AIS decals sold in 2018 compared to 2017.

Decal type	Count		Sales	
	2017	2018	2017	2018
Resident Motorized	15,316	13,953	\$301,780	\$256,370
Resident Non-motorized	14,808	17,120	\$74,040	\$85,600
Nonresident Motorized	7,176	7,113	\$215,280	\$213,390
Nonresident Non-motorized	7,770	8,458	\$116,550	\$126,870
<b>TOTAL</b>	<b>45,070</b>	<b>46,644</b>	<b>\$707,650</b>	<b>\$682,230</b>