2014 Aquatic Invasive Species Monitoring and Results

Introduction

Aquatic invasive species (AIS) are any non-native organisms determined by the Commission to pose a significant threat to water recourses, or causes harm when introduced into an ecosystem, as stated in the 2010 Wyoming Aquatic Invasive Species Act. Also known as aquatic nuisance species, AIS include fish, amphibians, mollusks, crustaceans, plants, and pathogens.

Quagga (*Dreissena bugensis)* and zebra (*Dreissena polymorpha)* mussels are AIS that have far-reaching negative impacts on natural resources, water infrastructure, recreation, and can be attributed to significant economic loss. As of December 2014, neither species have been found in any Wyoming waters. However, several bordering states including Nebraska, Colorado, and Utah have documented the presence of these mussels in their waters. Sampling methods detect the presence of mussels, as well as any other AIS that may be present.

Sampling and monitoring is an important component of Wyoming's AIS program with a focus on early detection of AIS to allow for rapid response plans to be implemented. Regular monitoring is conducted statewide throughout the year and continues to be more extensive each year. Post-detection sampling and monitoring provides insight into population persistence and impacts on the ecosystem, infrastructure, and human use of those waters.

Methods

In 2014, plankton tows were conducted to sample for the larval form (veligers) of invasive mussels. Plankton tow monitoring was conducted on 65 Wyoming lakes and reservoirs (Table 1). Collected samples were sent to the Bureau of Reclamation Lab in Colorado or the Montana Fish, Wildlife and Parks Lab (MTFWP) in Montana 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.

Shoreline and stream surveys were conducted to sample for invasive plants, mollusks, and crustaceans. Shoreline surveys were conducted at 158 locations on 77 Wyoming streams, rivers, reservoirs and lakes in 2014 (Figure 1). Collected specimens were sent to the MTFWP lab for identification.

Results

No Dreissenid mussels were detected by plankton tow monitoring or shoreline surveys in 2014 (Table 1). Plant and shoreline surveys detected previously unknown AIS populations in 2014. New Zealand mud snails were discovered in Lake Cameahwait and Curly leaf pondweed in the Shoshone River.

Table 1. Plankton tow and shoreline sampling results for Wyoming waters in 2014.

Water	Zebra/Quagga Mussels	Other Invasive Species
Lakes and Reservoirs		
Alcova Reservoir	Negative	None
Beartooth Lake	Negative	None
Beck Lake	Negative	None
Big Horn Lake	Negative	None
Big Sandy Reservoir	Negative	None
Boulder Lake	Negative	None
Boysen Reservoir	Negative	Curly Pondweed
Burnt Lake	Negative	None
Buffalo Bill Reservoir	Negative	None
Crystal Reservoir	Negative	None
Deaver Reservoir	Negative	None
East Newton Lake	Negative	None
Flaming Gorge Reservoir	Negative	None
Fontenelle Reservoir	Negative	None
Fremont Lake	Negative	None
Gelatt Lake	Negative	None
Glendo Reservoir	Negative	None
Granite Reservoir	Negative	None
Grayrocks Reservoir	Negative	None
Guernsey Reservoir	Negative	None
Halfmoon Lake	Negative	None
Harrington Reservoir	Negative	None
Hawk Springs Reservoir	Negative	None
High Savery Reservoir	Negative	None
Hog Park Reservoir	Negative	None
Island Lake	Negative	None
Jackson Lake	Negative	None
Jenny Lake	Negative	None
Jim Bridger Pond	Negative	None
Keyhole Reservoir	Negative	Curly Pondweed
Lake DeSmet	Negative	Curly pondweed
Lake Hattie	Negative	None
Lake Owen	Negative	None
Lewis Lake	Negative	None
Lower Green River Lake	Negative	None
Lower Slide Lake	Negative	None
Lower Sunshine Reservoir	Negative	None
Meadowlark Lake	Negative	None
Meeks Cabin Reservoir	Negative	None
Middle Piney Lake	Negative	None
Naughton Plant Pond	Negative	None
New Fork Lake	Negative	None
Ocean Lake	Negative	None
Palisades Reservoir	Negative	None
Pathfinder Reservoir	Negative	None
Pilot Butte Reservoir	Negative	None
Rob Roy Reservoir	Negative	None
Saratoga Lake	Negative	None
Seminoe Reservoir	Negative	None
Sibley Lake	Negative	None
Soda Lake	Negative	None

Water	Zebra/Quagga Mussels	Other Invasive Species
Lakes and Reservoirs		
String Lake	Negative	None
Sulphur Creek Reservoir	Negative	None
Tie Hack Reservoir	Negative	None
Twin Buttes Reservoir	Negative	None
Upper North Crow Reservoir	Negative	None
Upper Sunshine Reservoir	Negative	None
Viva Naughton Reservoir	Negative	None
Wardell Reservoir	Negative	None
West Newton Lake	Negative	None
Wheatland Reservoir #1	Negative	None
Wheatland Reservoir #3	Negative	None
Willow Lake	Negative	None
Woodruff Narrows Reservoir	Negative	None
Yellowstone Lake	Negative	None
Streams and Rivers		
Bear River	Not Tested	None
Gray Reef	Not Tested	None
Green River	Not Tested	None
Greys River	Not Tested	None
Hoback River	Not Tested	None
Laramie River	Not Tested	Asian Clam
New Fork River	Not Tested	None
North Platte River	Not Tested	None
Polecat Creek	Not Tested	New Zealand mudsnail
Salt River	Not Tested	None
Shoshone River	Not Tested	Curly Pondweed
Snake River	Not Tested	None

Existing Aquatic Invasive Species in Wyoming

Monitoring of existing populations of invasive species in Wyoming is conducted annually to monitor known populations of Asian clam, brook stickleback, curly pondweed, New Zealand mudsnails, and Rusty crayfish.

Asian clams: Asian clams (*Corbicula fluminea*) were first detected in the Laramie River in 2011. Asian clams were found at Tunnel Road, Monolith and Jelm access points to the river. In 2013, surveys found the highest concentration of Asian clam at Monolith, as far away from the access as ½ mile upstream. Additionally, Asian clams were observed at the Tunnel Road Bridge. Asian clam was 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. No additional populations were detected in 2014. Asian clam distribution in Wyoming is shown below (Figure 2).

Brook stickleback: Regulation changes in 2013 classified the brook stickleback *(Culaea inconstans*) as an AIS. The current distribution in Wyoming is shown below (Figure 3). No additional monitoring was conducted in 2014.

Curly pondweed: Curly Pondweed (*Potamogeton crispus)* was first found in Wyoming in 2011 in Lake DeSmet. It has subsequently been found in additional waters including Keyhole and Boysen Reservoirs. Curly pondweed has also been 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. The known distribution of Curly pondweed in Wyoming is shown below (Figure 4).

New Zealand mudSnails (NZMS): A historic poulation of New Zealand mudsnails (*Potamopyrgus antipodarum)* was sampled in Polecat Creek in 2014, a population of NZMS near the Grassy Lake Road Bridge was still present and specimens were collected. A new population of NZMS was detected in Lake Cameahwait northwest of the town of Shoshoni in 2014. Current distributions of NZMS populations in Wyoming are shown below (Figure 5).

Rusty crayfish: In 2012, Rusty crayfish (*Orconectes rusticus*) were detected once again in Wagonhound Creek, a tributary to the North Platte River. This location was treated for rusty crayfish in 2006 and believed to have been eradicated. Regional fisheries biologists surveyed the creek in 2012 and 2013 to determine the true distribution of Rusty crayfish in the stream; the stream was treated once again in August 2013 in an effort to control the population. In 2014, the North Platte River was sampled for crayfish above and below the confluence with Wagonhound Creek and no crayfish were detected. The current distribution of Rusty crayfish in Wyoming is shown below (Figure 6).

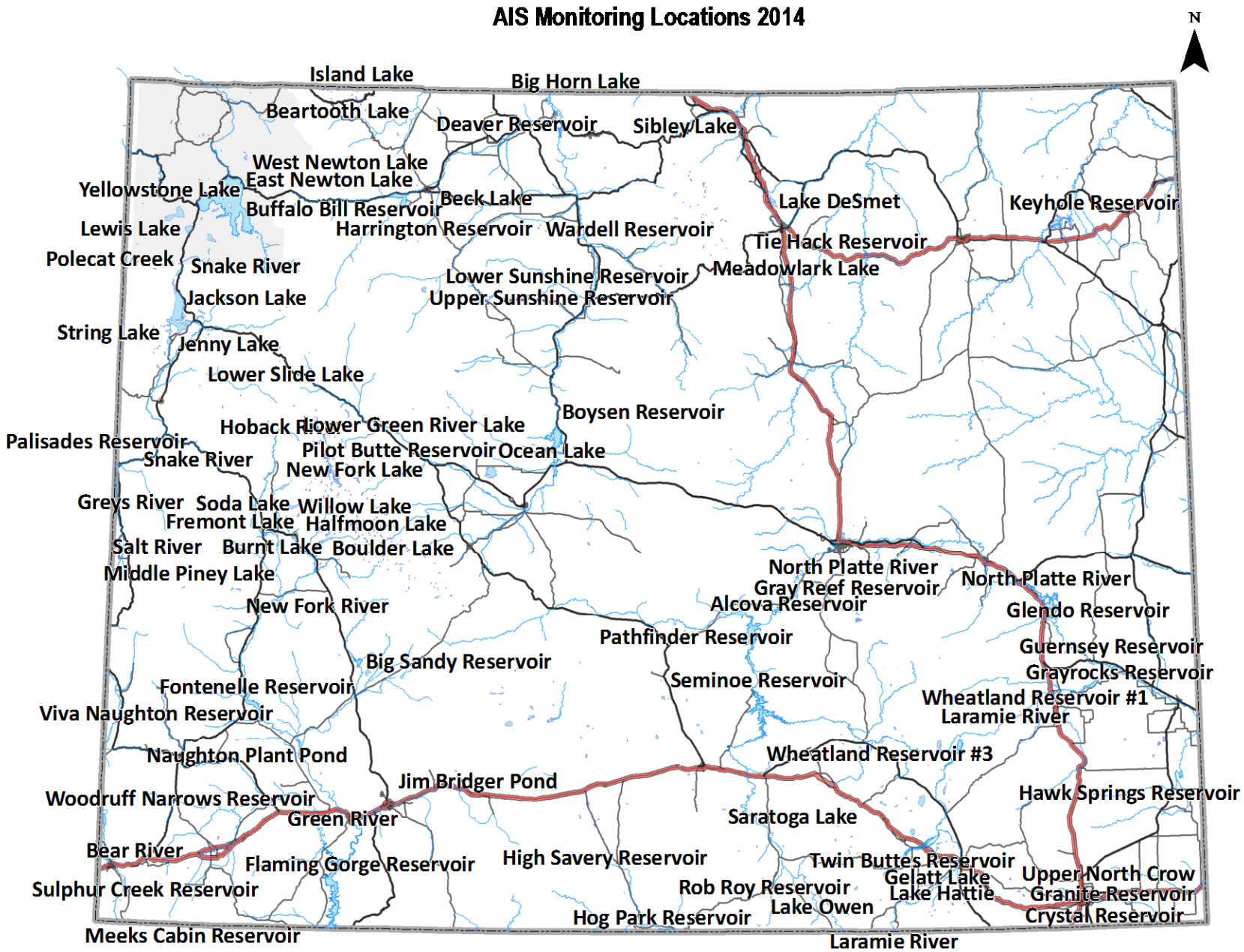

Figure 1. AIS monitoring locations in 2014.

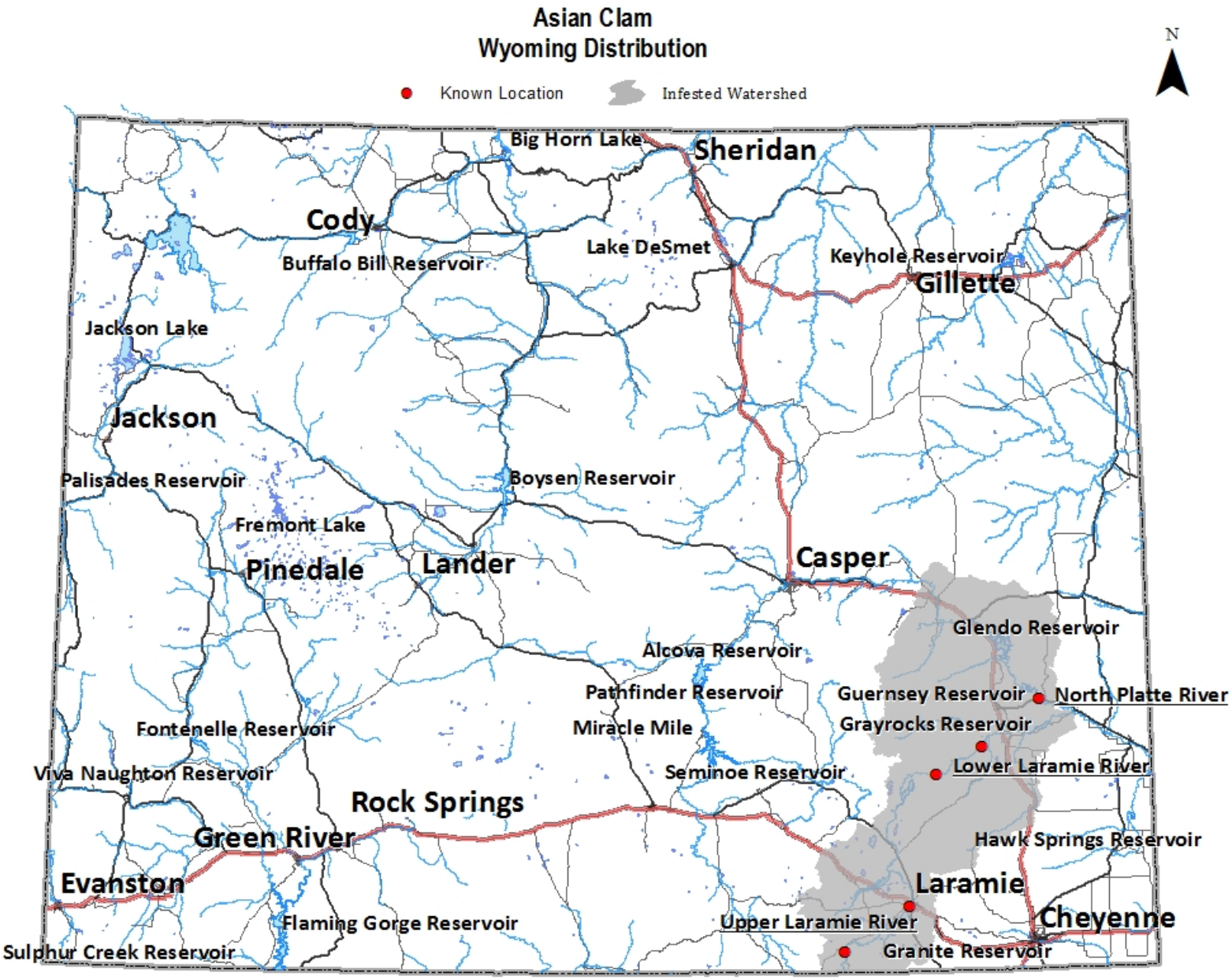

Figure 2. Asian clam distribution in Wyoming.

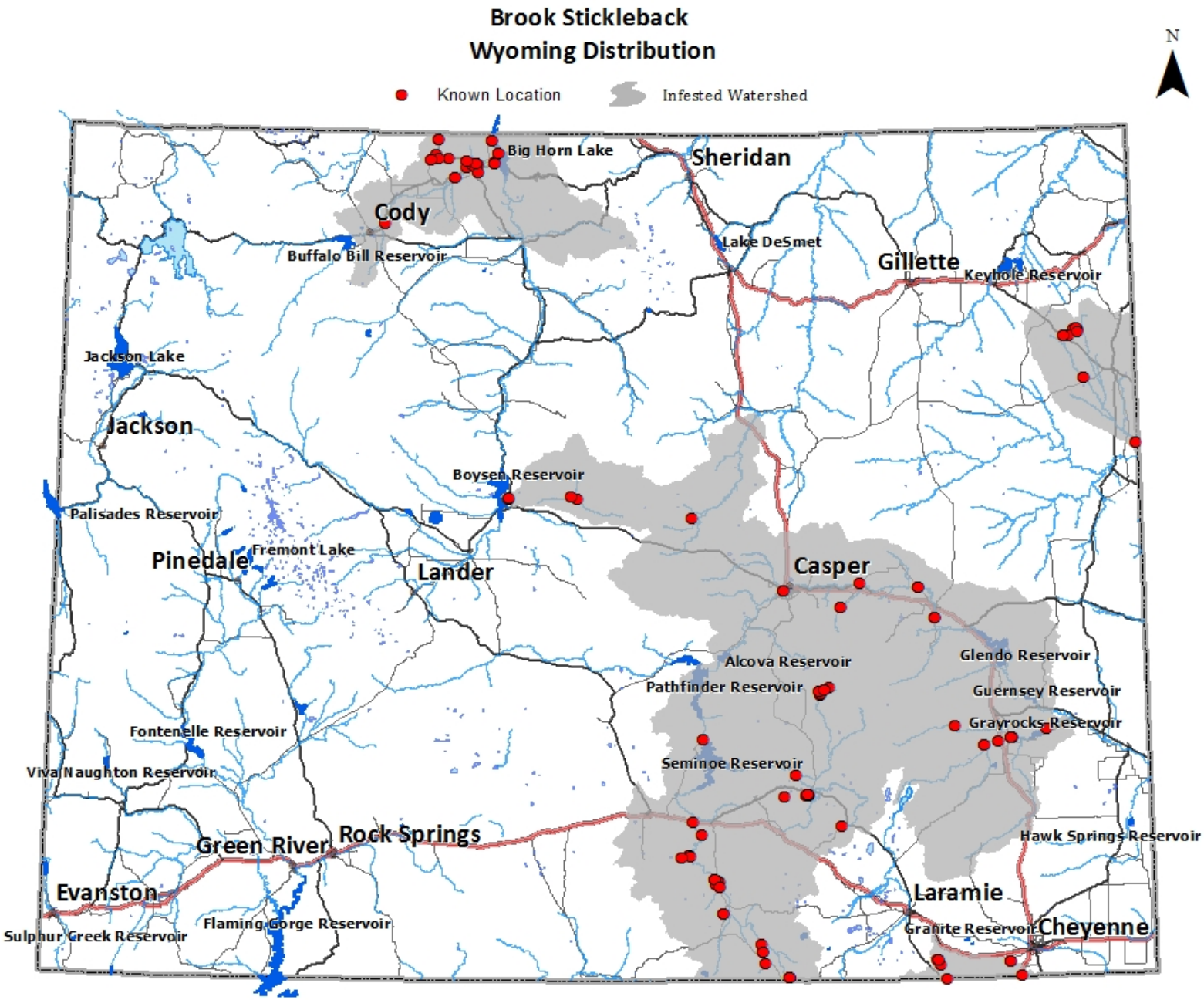

Figure 3. Brook stickleback distribution in Wyoming.

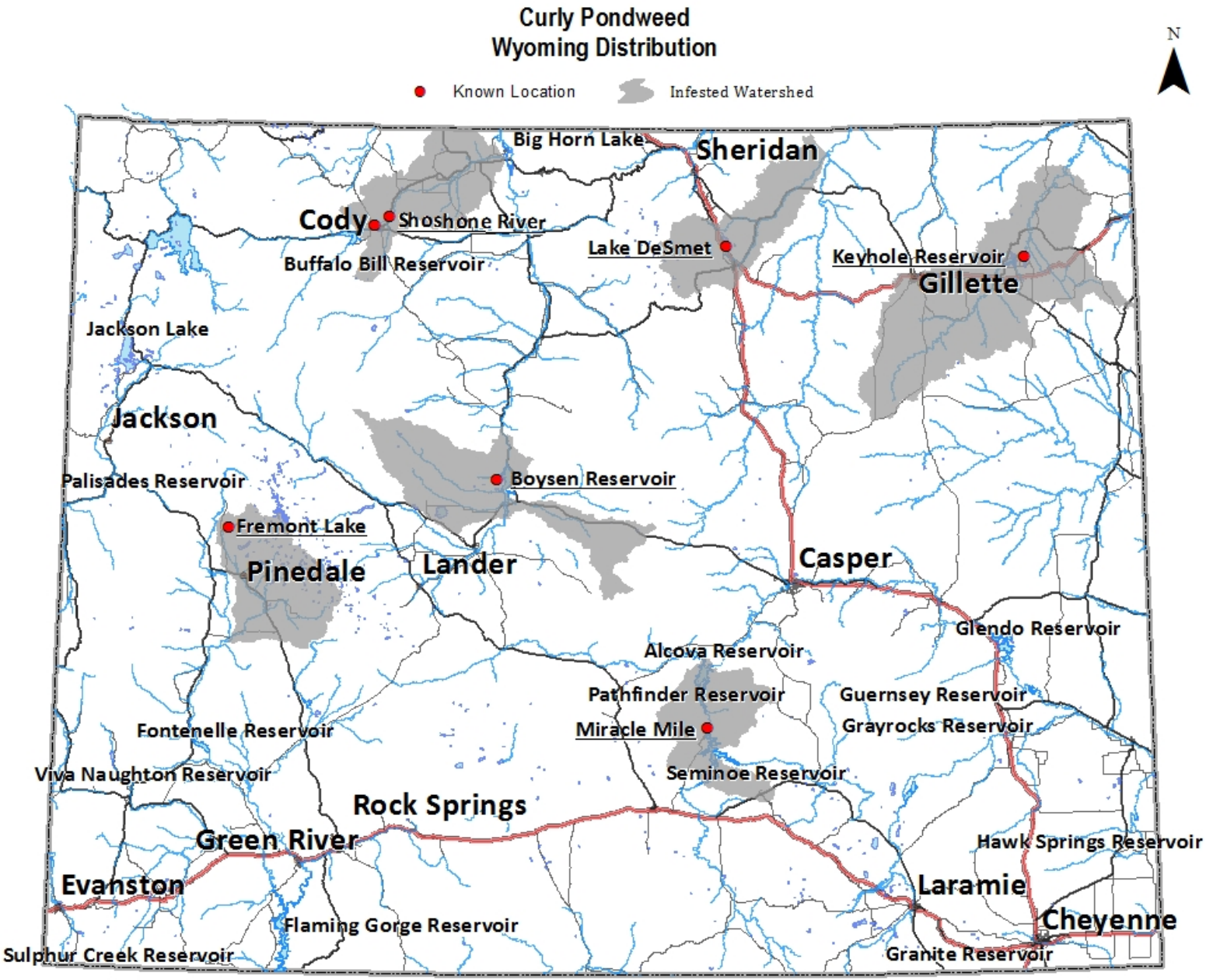

Figure 4. Curly pondweed distribution in Wyoming.

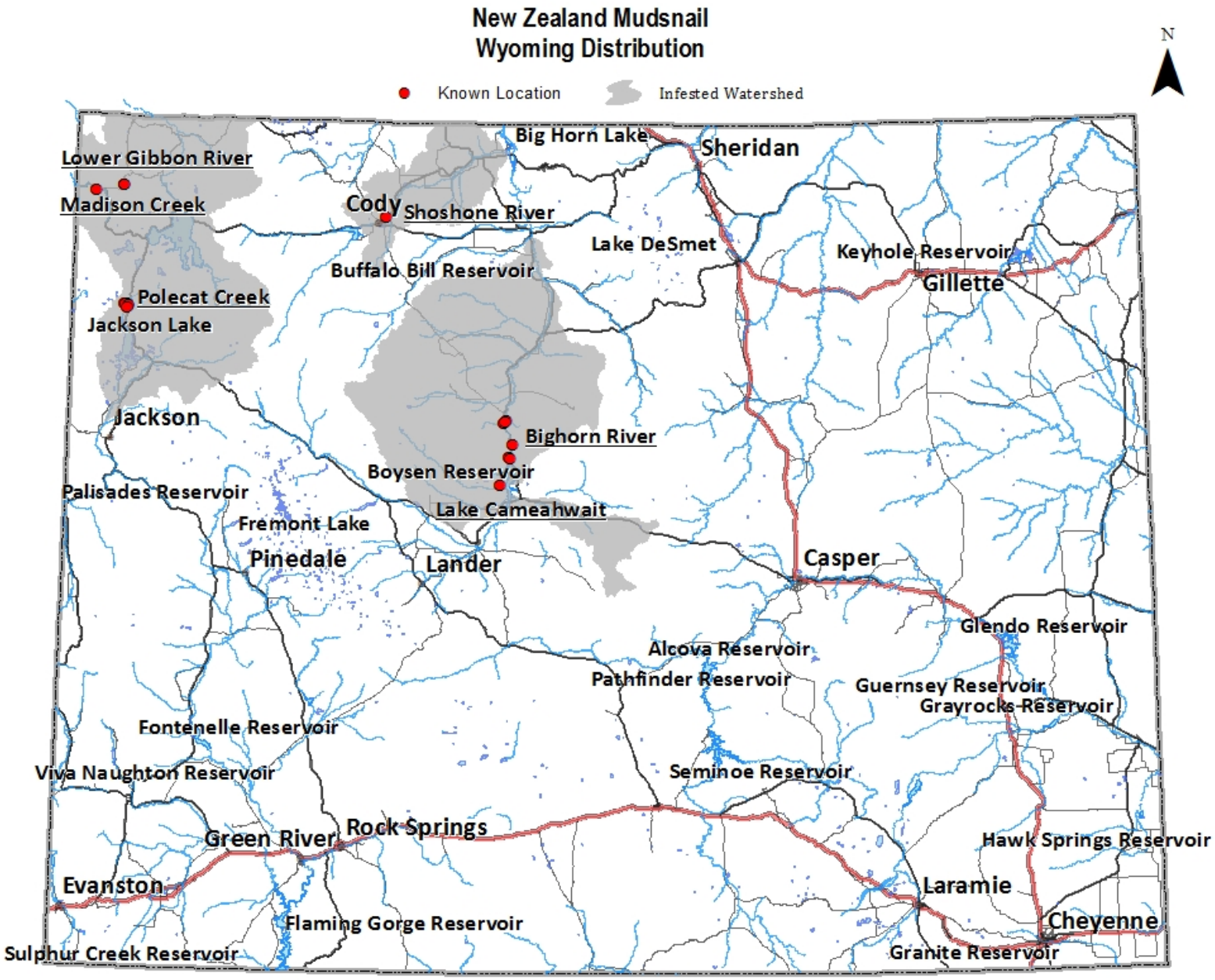

Figure 5. New Zealand mudsnail distribution in Wyoming.

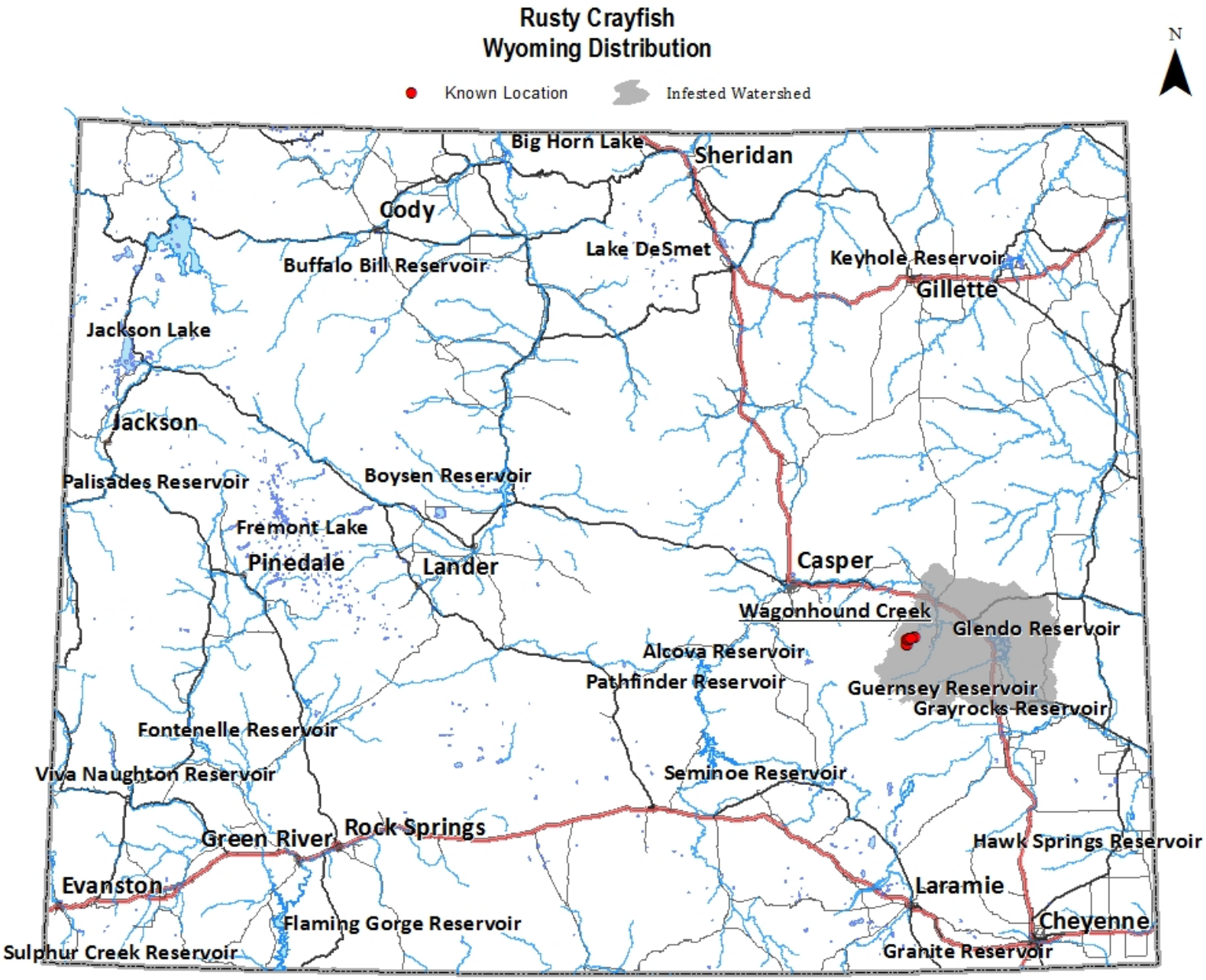

Figure 6. Rusty crayfish distribution in Wyoming.