State Aquatic Nuisance Species (ANS) Program Summary for Colorado Legislators per SB 08-226

Colorado Parks and Wildlife
January 2018

The Colorado Parks and Wildlife's (CPW) Aquatic Nuisance Species (ANS) Program has met the challenge of protecting the state's water resources and infrastructure from the establishment of harmful ANS. On a positive note, in January 2017, CPW de-listed Pueblo Reservoir State Park after five years of no detections and began the year as a negative state. However, by August quagga mussel veligers were detected at Green Mountain Reservoir. No further detections of veligers or adult mussels have been seen after repeated sampling.

The 2016 Supreme Court decision on severance tax has left the ANS Program with little revenue to operate in the future. See page 11 for the operating and financial statement.


Quagga mussels covering the shoreline at Lake Mead in Nevada

While western states such as Kansas, Oklahoma, Texas, South Dakota and Arizona, do not have mandatory ANS programs, and continue to become highly infested with zebra or quagga mussels, Colorado has prevented the introduction of these awful invasive species due to the diligent efforts of watercraft inspection and decontamination staff, as well as monitoring, education and enforcement actions.

In 2017, CPW intercepted a record number of infested watercraft from out of state and decontaminated them prior to allowing them into state waters. CPW's ANS Program, along with their partners, is critical to maintaining opportunities for recreation, preserving natural resources and protecting water supply and delivery infrastructure for municipal, industrial and agricultural use.

Prior to the July 1, 2011 merger of the former Division of Wildlife (CDOW) and Colorado State Parks (Parks), the two ANS Programs operated independently per SB08-226. For the purpose of this report, the activities occurring from 2008-2011 are attributed to the former CDOW and Parks agencies independently. Activities from 2012-2017 are attributed to CPW.

Background and Legal Authority

Zebra and quagga mussel larvae (veligers) were identified in eight reservoirs in Colorado in 2008 as a result of a sampling effort conducted by the CDOW, in partnership with Parks, the U.S. Fish & Wildlife and the U.S. Bureau of Reclamation. Zebra mussels, and their close relative quagga mussels, are highly invasive aquatic species that negatively impact plankton communities, fisheries, and water based recreation; in addition to threatening our water storage and distribution systems for municipal, industrial and agricultural use.

The State Aquatic Nuisance Species (ANS) Act was signed into law May 2008. The Act defines ANS as exotic or nonnative aquatic wildlife or any plant species that have been determined to pose a significant threat to the aquatic resources or water infrastructure of the state. It makes it illegal to possess, import, export, ship, transport, release, plant, place, or cause an ANS to be released. The Act allocated funding to ANS programs in both the former CDOW and Parks. It provides authority for CPW to certify individuals as authorized agents qualified peace officers to inspect, and if necessary, decontaminate or quarantine watercraft for ANS. It also provides authority for trained authorized agents to inspect and decontaminate watercraft for ANS.

The Parks Board passed regulations required by the Act on February 20, 2009. The rules require mandatory watercraft inspection, and if necessary, decontamination of all boats coming in from out of state, leaving known positive waters in Colorado, and those boats entering high-risk water where inspections and decontaminations are required by the managing agency. The rules set the standard for watercraft inspection, decontamination, impoundment, sampling, monitoring, identification and reporting. The regulations were updated in 2015 to exempt paddle boards from mandatory inspections, to reflect best management practices for decontamination, and to update organizational structure resulting from the merger of parks and wildlife.

On January 11, 2017, the Parks and Wildlife Commission updated the ANS regulations once more by de-listing *Daphnia lumholtzi* (waterflea) from the prohibited ANS and aquatic species lists, as well as to require boat operators to clean, drain and dry their watercraft in between launching. Additional changes include the requirement for boat operators to remove all plants and water drain plugs from watercraft, and to prohibit the overland transport of vessels and other floating devices (watercraft) with drain plugs in place and plants on board. These regulations are consistent with those of other states and are recommended by the Western Regional Panel's Building Consensus in the West effort and a Western Association of Fish and Wildlife Agencies Resolution passed in July 2016.

The CPW Invasive Species Coordinator began on July 1, 2008. The CDOW internally reallocated resources to create a fulltime position to coordinate invasive species activities statewide. The Invasive Species Coordinator oversees implementation of the State Zebra and Quagga Mussel Management Plan (ZQM Plan), along with a variety of other invasive species management duties, such as noxious weed and forest pest coordination. The backbone of the ZQM Plan includes containment and prevention through watercraft inspection and decontamination, sampling and monitoring, education/outreach, communications and information, and applied research.

CPW provides ANS support to all waters of the state, and to all inspection stations, regardless of jurisdiction. Services provided include site-specific planning, training/certification, watercraft inspection and decontamination, quality control assessments, data collection development and support, law enforcement support, educational materials, workshops and conferences, sampling/monitoring, laboratory analysis, ANS identification and cost-share opportunities.

The ANS Act authorized 7 FTE to State Parks for ANS. One FTE was designated the ANS Program Coordinator for Parks. This position was moved to the Aquatic Section in the merged CPW Invasive Species Program. Parks hired 6 additional full-time employees to oversee watercraft inspection, decontamination and education at select Parks. Only 4 Parks FTE remain active today, as the other positions have been abolished per budget reductions.

Program Goal

The goal of the ANS Program is to protect the state's natural resources, outdoor recreation and water supply systems through prevention of new introductions and reduce the spread of costly invasive species, specifically ANS such as zebra or quagga mussels, in Colorado.

Zebra and Quagga Mussels

There are no positive waters for zebra or quagga mussels in the state. In August 2017, Green Mountain Reservoir was listed as suspect for quagga mussels due to a veliger detection by the USBOR. There has never been an adult zebra or quagga mussel found in Colorado.

Previous Detections of Zebra and Quagga Mussels in Colorado

- Pueblo Reservoir State Park tested positive for zebra or quagga mussel larvae (veligers) in 2007, 2008, 2009 and 2011.
- Granby Reservoir, Grand Lake, Shadow Mountain Reservoir, Willow Creek Reservoir, Tarryall Reservoir and Jumbo Reservoir all tested positive for one zebra or quagga mussel veliger in 2008. There have been no verified detections at any of these waters since 2008.
- Blue Mesa Reservoir tested positive for eDNA (quagga mussel) in 2009, 2011 and 2012 by the U.S. Bureau of Reclamation.
- Green Mountain Reservoir tested positive for quagga mussel larvae (veligers) in August, 2017.

De-Listing Positive Waters:

Colorado adopted the western regional standards for listing and de-listing water bodies for zebra and quagga mussels, as documented in the *Western Regional Panel's Building Consensus in the West Committee's* August 2013 Denver meeting summary document.

Lake Pueblo was de-listed in January 2017 following five years of negative results. Colorado de-listed Granby, Grand Lake, Shadow Mountain, Willow Creek, Tarryall, Jumbo and Blue Mesa in January 2014.

Additional Aquatic Nuisance Species in Colorado

- Eurasian watermilfoil (EWM) – Known to many Front Range locations, Navajo Reservoir, and the Rio Grande. The Colorado Dept. of Agriculture requires management per the State Weed Act and Rules.
- New Zealand Mudsnails (NZMS) – First detected in Colorado in 2004. Snails continue to be found in new locations annually, including recent detections in the Gunnison River, Fourmile Canyon Creek, Monument Lake and Uncompahgre River.
- Rusty Crayfish – There are four known locations statewide. Regulation prohibits the live transport from positive locations, in addition to all waters west of the Continental Divide where there are no native crayfish. There were no new detections of rusty crayfish in 2017.
- Waterflea (*Daphnia lumholtzi*) – First detected by CPW in Colorado in 2013 and now known to be present in 31 Colorado water bodies and Pueblo Hatchery. Of those, three were discovered in 2017. The Colorado Parks and Wildlife Commission removed this species from the ANS list in both the Wildlife Chapter 0 and Parks Chapter 8 Regulations on January 11, 2017 at the recommendation of the Colorado Fish Health Board and CPW staff.

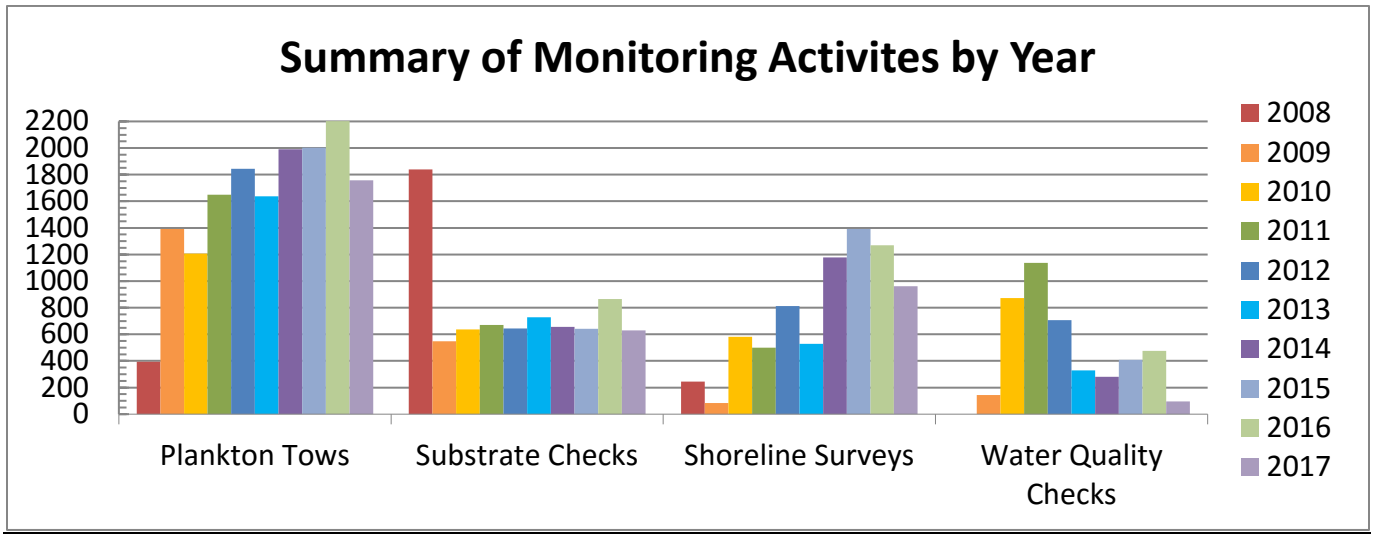
2017 Program Activities:

Sampling/Monitoring

Due to budget shortfalls from the lack of severance tax, the ANS sampling and monitoring program and ANS laboratory was greatly reduced in 2017. The sampling teams did not perform monitoring for ANS other than zebra and quagga mussels and did not document plants, mollusks or crayfish during sampling visits. The frequency and quantity of sampling events on lakes and reservoirs was reduced. There was also no population monitoring of known locations or surveys on flowing waters (streams or rivers). CPW intends to resume full monitoring in 2018.

CPW has sampled 584 "at-risk" waters for aquatic invasive species over the last ten years. It was through this sampling program that invasive mussel veligers were first detected in Colorado. While CPW ANS staff has historically monitored the state's public waters for numerous invasive plants and animal species, the focus of sampling is on early detection of zebra and quagga mussels. As such, the state follows a three-tier sampling protocol targeting the three life cycles of the zebra or quagga mussel: (1) conducting plankton tows to find the veligers, (2) deploy and check substrates to find the juvenile "settlers" or attached adult mussels and (3) conduct surveys along the shoreline and existing structures for settled juveniles or attached adult mussels. The state requires three steps to identify, verify and confirm identification of zebra or quagga mussel veligers (1) visual analysis of plankton tows using a cross-polarized light microscope (2) DNA verification utilizing polymerase chain reaction [PCR] and (3) DNA confirmation utilizing gene sequencing to confirm genus and species.

In 2017, crews sampled 167 standing and approximately 5 flowing waters statewide. In addition to the sampling efforts performed by CPW, the National Park Service contributed 45 plankton samples. A summary of the sampling efforts can be seen in the graph below



Watercraft Inspection and Decontamination (WID)

CPW coordinates the vast network of WID stations that are operated by CPW, the National Park Service, Larimer County, various municipalities and private industry locations including businesses, concessioners, marinas, clubs and private lakes. In total, the state has collectively performed over **4 million inspections** and **77,756 decontaminations** since 2008.

Per the State ANS Regulations, trailered watercraft must submit to an inspection, and decontamination if needed, prior to entrance in Colorado's waters following boating out of state or boating on a positive or suspect water. Boaters are also required to submit to an inspection prior to entering a water body where inspections are required by the managing agency. All persons performing inspections and/or decontaminations in Colorado must be certified by CPW.

CPW and their partners taught 58 watercraft inspection and decontamination certification courses in 2017including an online re-certification program for experienced inspectors and decontaminators, for a total of 760 trainings since the program's inception. In addition to the online course for experienced staff, the Invasive Species Program within CPW also maintained two other new specialized courses for trainers and advanced decontamination. CPW certified 685 individuals this year, for a total of 6,436 certifications since the training program began in 2009. Both the training and the inspections focus on educating the boaters.

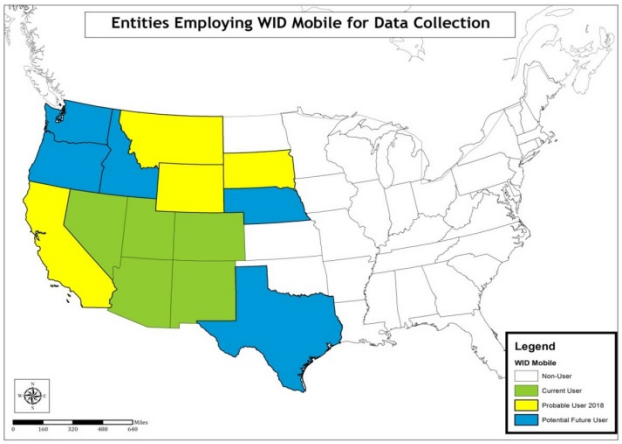
In 2017, CPW authorized 73 locations to perform watercraft inspection and decontamination. Of those, Green Mountain Reservoir was operated as a containment operation for quagga mussels after their detection in August and 9 locations operated as other ANS containment. The focus of the containment program is to inspect watercraft leaving the lakes/reservoirs to prevent boats from moving ANS overland into currently uninfested areas.

Sixty-two locations operated as prevention locations. Prevention locations are those that are negative for all ANS or are not located at a waterbody (e.g. offices or marine dealers). A total of **472,759 inspections and 14,904 decontaminations** were performed in Colorado in 2017. There continues to be a large increase in the number of decontaminations performed as a direct result of CPW adapting to mitigate new threats. New invasions in neighboring states, such as Lake Powell, continue to increase the workload in Colorado to keep mussels out!

Research publications indicate zebra or quagga mussel veligers can survive up to 27 days in standing water on watercraft which increased the need to decontaminate parts of watercraft which can't be drained (e.g. ballast tanks).

Another factor increasing Colorado's need for decontamination is the increase in mussel infested waters in other states. In the last year, Arizona, Texas, Oklahoma, Kansas, Montana and California, and other eastern states had new waters infested with zebra or quagga mussels because of the lack of mandatory prevention WID programs. These new infestations in other states illustrate the importance of Colorado's successful program to continue protecting our waters and infrastructure from invasion.

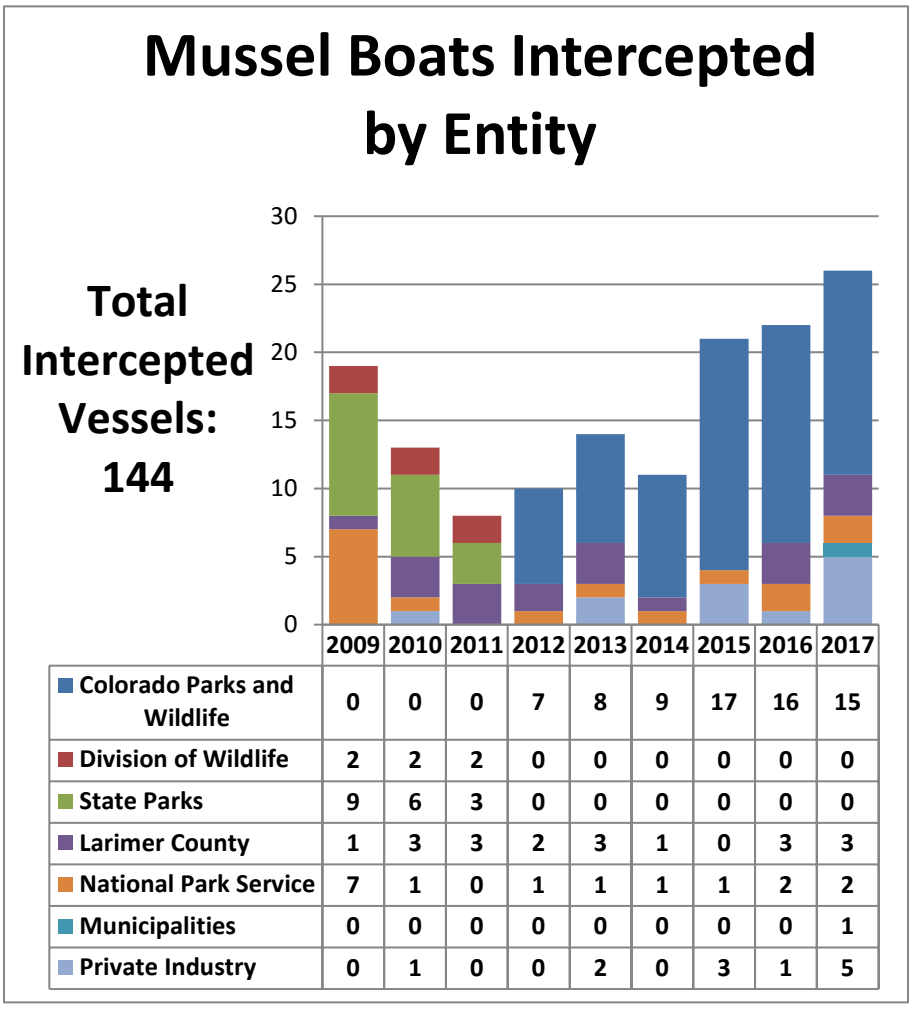
Lastly, waters in close proximity to, or positive for, other ANS such as New Zealand mudsnails or Eurasian watermilfoil, perform more decontamination to limit their spread within state. CPW and their partners revised mandatory standing water decontamination triggers in 2012 to reduce the threat of invasion from viable zebra or quagga mussel veligers living in standing water, to protect against watercraft coming from other state's infested waters, and to reduce the spread of other invasive species.



CPW successfully continued utilizing the WID Mobile data collection system at 50 authorized locations within the state of Colorado. This application is compatible on all iOS and Android devices which greatly reduces the effective cost of operating mobile data collection on boat ramps across the state, and reduces costs for data entry. It also provides for much greater reliability in data collected in the field at inspection stations.

Colorado continues to lead the way in mobile data collection at a regional and national level. New Mexico has been using the Colorado system since 2014 and Utah since 2015. In 2016, the CPW Invasive Species program, with the help of a grant from U.S. Fish & Wildlife Service through the *Quagga Zebra Action Plan for Western Waters* (WRP, 2010), deployed a western regional version of the mobile data collection system for WID stations. In 2017, Arizona, Nevada, and several groups within the state of California joined New Mexico,Utah and the

Lake Tahoe Regional Planning Agency in employing WID Mobile as their primary form of data collection. With the benefits of regional data sharing proving to be abundant, the states of Arizona, Nevada and Utah have been using the Colorado developed data collection system to send out notices of watercraft leaving their infested waters. This increased timely communication has directly increased the number of infested watercraft being intercepted within the western region. Many more states and agencies, such as NPS waters, are anticipated to join in 2018 and it is expected that all western states and potentially Canadian provinces will be using this system and sharing data by 2019. As user numbers continue to increase, this sytem will continue to improve communications amongst jurisdictions and assist watercraft inspectors in assessing the risk of watercraft intending to launch at their water body!



	2009	2010	2011	2012	2013	2014	2015	2016	2017
Colorado Parks and Wildlife	0	0	0	7	8	9	17	16	15
Division of Wildlife	2	2	2	0	0	0	0	0	0
State Parks	9	6	3	0	0	0	0	0	0
Larimer County	1	3	3	2	3	1	0	3	3
National Park Service	7	1	0	1	1	1	1	2	2
Municipalities	0	0	0	0	0	0	0	0	1
Private Industry	0	1	0	0	2	0	3	1	5

Mussel Boat Interceptions

This year the state intercepted more watercraft infested with zebra or qugga mussels than ever before! All watercraft were fully decontaminated prior to being allowed into Colorado's waters. A total of 144 boats with attached adult zebra or quagga mussels were intercepted coming into Colorado's waters from out of state at watercraft inspection and decontamination stations since 2009.

Infested vessels were intercepted at Blue Mesa, Boulder Marine, Boulder Reservoir, Boyd Lake, Canon Marine, Carter, Cherry Creek, Chatfield, Crawford, Denver CPW Office, Dillon, Eleven Mile, Frisco Bay Marina, Granby, Grand Lake, Grand Junction CPW Office, Great Lakes Marine, Highline, Horsetooth, Jackson, Lathrop, McPhee, Navajo, North Sterling, Pueblo, Ridgway, Roadside (SW Colorado), Shadow Mountain, Spinney Mountain, Stagecoach, Steamboat Lake, Strontia Springs, Taylor Park, Turquoise, Vallecito and Williams Fork.

The infested vessels were coming from Arizona, California, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Michigan, Minnesota, Mississippi, Missouri, New York, Nevada, Oklahoma, Ohio, Texas, Utah and Wisconsin. The majority of the intercepted vessels were coming from Arizona, Lake Powell, the Great Lakes, or Mississippi River states. All boats were fully decontaminated to ensure all mussels were dead, and no mussels were visibly attached to the vessel.

WID Quality Control

The CPW Quality Control and Field Support Team perform quality control evaluations annually at all state certified watercraft inspection and decontamination stations to ensure that standard procedures are being followed, per regulatory requirements. The team also ensures that stations were stocked with educational materials and provides on the job training to inspectors and supervisors.

The quality control program was not implemented in 2017 due to budget shortfalls from the lack of severance tax. CPW hopes to resume quality control in 2018 as required in CPW regulation and regional standards for WIDS.

Protocol Development for Watercraft Inspection and Decontamination

To ensure the protection of the state's waters and the validity of the state certification program, CPW has strict field protocols and training regiments since the program's inception. All watercraft inspection and decontamination staff in Colorado attends the same training and adheres to the same protocols. Development and implementation of effective standardized protocols is a priority. Many other states base their procedures and training programs off Colorado's numerous publications.

In 2014, the Western Regional Panel on ANS and the 100th Meridian Initiative adopted the Colorado training program as the regional standard for certification of boat inspectors and decontaminators. The student and trainer's curriculum, as well as field procedures, have been adapted for other states and was published in early 2015 and updated again in January 2017. The CPW training program is being taught nationally, as it has been proven to protect waters against ANS.

Information and Outreach

CPW and partner agencies have implemented a comprehensive, multi-faceted, Invasive Species public education campaign. The cooperative effort focuses on boaters and anglers primarily to prevent the spread of ANS utilizing a variety of mediums, including billboards, boat ramp signage, brochures, and staffing tradeshow and expo booths to convey this message.

The Invasive Species Program launched a series of new webpages in 2016 focused on the program's activities, how CPW's customers can help to stop the spread of both terrestrial and aquatic invaders, and providing awareness as to the mandatory regulations in place for watercraft.

Along with ANS, the invasive species program within CPW has been conducting information, education and outreach efforts for terrestrial and aquatic plants (noxious weeds), animals, insect and disease invasive species for a number of years. Accomplishments include distribution of tens of thousands of printed rack cards, brochures, handouts, DVDs, posters and signs at offices, boat ramps and water-access points. In addition, we have implemented an aggressive media relations campaign, using press releases and conducting web-based, radio, print and television interviews. CPW staff hosted numerous outreach seminars to boating and angling groups, marine dealers, HOAs, watershed groups, basin roundtables, ditch companies, municipal water managers and providers, schools and youth educational opportunities.

These efforts were stopped for the 2017 calendar year due to budget shorfalls. CPW hopes to continue the educational and informational efforts again in 2018.

Other ANS of Concern

Rusty Crayfish

Due to budget shortfalls, rusty crayfish control, monitoring and management have been suspended in 2017. CPW hopes to continue again in 2018.

Rusty Crayfish

There were no new detections of Rusty Crayfish in 2016. Rusty crayfish is an invasive species that was first discovered in 2009 in a main-stem impoundment of the Yampa River and at two river locations between Stagecoach Reservoir and Steamboat Springs. The CDOW conducted extensive surveys statewide and detected a population in Sanchez Reservoir State Wildlife Area in 2010 and Stagecoach State Park in 2011.

Populations have been managed through manual removal of adult rusty crayfish from 2010-2015 to reduce the reproducing population in the reservoirs and limit impacts to native communities and users. In 2016, CPW staff monitored the Yampa River's population and determined the manual removal was successful, as very few rusty crayfish were found in the river. While they are still abundant in the reservoirs, trapping and monitoring is recommended to continue.

CPW implemented regulations passed by the Wildlife Commission in November 2010 in which all crayfish caught west of the Continental Divide must now be immediately killed and taken into possession, or immediately returned to the water from which they were taken. There are no crayfish native to the Western Slope. The same restriction applies to Sanchez Reservoir on the Eastern Plains due to the invasive rusty crayfish.

Rusty crayfish are native to the Ohio River Basin and have expanded their native range to include several U.S. states and Ontario, Canada. They colonize lakes, rivers, and streams throughout North America. They are more aggressive than native crayfish, better able to avoid fish predation, and can harm native fish populations by eating their eggs and young. They can displace native crayfish and hybridize with them. They graze on and eliminate aquatic plant populations that provide necessary habitat and food source for native fish and waterfowl.

New Zealand Mudsnail (NZMS)

NZMS was confirmed in numerous new locations in 2017 including the Gunnison River, Fourmile Canyon Creek, Monument Lake and Uncompahgre River.

New Zealand Mudsnail

All known populations were being monitored annually prior to 2017. Due to budget shortages, CPW did not monitor known locations of NZMS this past year and struggled to respond and verify the new reports mentioned above.

Previously, the NZMS was detected in Chatfield Reservoir State Park, during an aquatic noxious weed survey for Eurasian watermilfoil, in 2015. There were detections from 2010-2013 in Fountain Creek in Colorado Springs, Spinney Mountain State Park, Eleven Mile State Park, Delaney Buttes State Wildlife Area, College Lake at CSU in Fort Collins, and Dry Creek within the City of Boulder.

The tiny invasive snail was first found in Colorado in 2004 in Boulder Creek, the South Platte River below Eleven Mile dam and the Green River in Dinosaur National Monument. There were no detections from 2005-2009.

These animals are accidentally transported and moved primarily by anglers. They hide in the mud on the bottom of boots and equipment. There is no viable method for control of these very small, asexual animals. CPW places

a strong emphasis on angler education providing wader brushes and instructional rack cards to anglers. The only way to stop the spread of these tiny invaders is through educating anglers to clean their waders and gear in between each and every use!

Aquatic Noxious Weed Coordination

CPW has been the lead agency on aquatic noxious weed mapping and education, in close partnership with the Colorado Department of Agriculture's (CDA) Noxious Weed Program. A few distinct CPW efforts are summarized below.


An EWM weed mat

Eurasian watermilfoil (EWM)

The Invasive Species Program has coordinated EWM management statewide since 2005. A detailed Geographic Information System (GIS) database of EWM locations and control efforts was developed and is maintained by CPW. The database is updated annually. CPW has actively controlled EWM with herbicide treatments at Lathrop State Park, St. Vrain State Park, and Chatfield State Park since their detections.

There was only one herbicide treatment for milfoil in a State Park in 2017 due to budget restrictions. All statewide mapping, monitoring and control efforts were stopped. CPW intends to resume in 2018.

Not only is CPW concerned about the fisheries and ecological impacts from this noxious weed, it also poses a safety hazard to swimmers due to its dense structure that can cause people to get tangled and result in fatal drownings. It also creates dense mats that provide ideal habitat for mosquitos which carry Wesst Nile Virus. EWM stops and slows the flow of water for agricultural and industrial use. Finally, EWM changes the water chemistry causing taste and odor problems for drinking water.

Purple Loosestrife

Due to budget restrictions, CPW did not participate in the management of this program in 2017 and handed over its duties entirely to CDA.


Purple Loosestrife

Beginning in 1993, the CDOW has been the lead coordinator on the Denver metro purple loosestrife management effort. The goal of the program is to make sure that purple loosestrife is controlled to protect waterfowl habitat and maintain in-stream flow. Approximately 31 cities and counties, public agencies, private landowners and private entities are involved. For example, Parks aggressively controls purple loosestrife at Cherry Creek with spraying and hand pulling small plants and seed head cutting on larger plants and continues to shrink the population there.

Regional Participation

CPW provides regional and national leadership on efforts to stop the spread of zebra and quagga mussels and other ANS, including:

- Chair of the Western Regional Panel on Aquatic Nuisance Species
- Chair of the Western Invasive Species Coordinating Effort
- Chair of the Communications, Education and Outreach Committee for the Federal ANS Task Force
- Chair of the Western Association of Fish and Wildlife Agencies' Invasive Species Committee
- Member of the Association of Fish and Wildlife Agencies' Invasive Species Committee

Operating and Financial Statement

The Colorado Supreme Court decision related to severance taxes in 2016 significantly reduced funding available for the ANS program. CPW has been hosting stakeholder meetings since July 2016 seeking funding from partner agencies to provide dollars for the 2017 boating season and the long term implementation of the ANS Program. The stakeholder's group has grown to 134 individuals from 74 entities, including Senator Michael Bennet and Senator Cory Gardner's offices.

CPW utilized reserve dollars in the ANS fund to pay for the 2016 boating season. In 2017, CPW allocated other agency funds, USFWS motorboat access grant dollars and over $1M in partnership grants, contracts and donations to fund the season. Several waters, including Harvey Gap and Mancos were not funded and were closed to trailered motorized boating as a result. Other waters, such as Barr Lake and Paonia, funded their entire season with donations. All WID site budgets were reduced and implementation was challenging.

CPW intends to fund the 2018 boating season with dollars transferred into the ANS Fund by SB17-259 combined with agency dollars and fund raising from partners. CPW supports the Mussel Free Colorado Act to secure a long term source of revenue for implementation of the program in 2019 and the future.

Senate Bill 08-226 created the Division of Wildlife Aquatic Nuisance Species fund within the state treasury and authorized a funding of $3,917,244 in FY 08-09 towards the prevention, containment and eradication of aquatic nuisance species in state waters. This funding was a mix of $1,250,000 wildlife cash combined with $2,667,244 of funding from the operational account of the severance tax (Tier II). SB 08-226 appropriated $1,304,544 of severance tax funding for the state fiscal year commencing July 1, 2009 and for every state fiscal year thereafter. The CDOW did not receive appropriated funding prior to July 1, 2008, so expenditures made for the 2008 Boating Season, prior to July 1, 2008 were paid for out of wildlife cash.

Permanent CDOW staff time spent on aquatic nuisance species work was paid for with wildlife cash, including the Invasive Species Coordinator, from 2008-2013. As of July 1, 2013, the Invasive Species Coordinator and other CPW FTE are being paid out of the ANS Fund to reduce cash expenditures. This has increased agency expenditures within the ANS funds by approximately $400,000 annually.

Senate Bill 08-226 also created the Colorado State Parks Aquatic Nuisance Species fund within the state treasury and authorized funding from Severance Tax (Tier II) in FY 08-09 of $3,289,392. For FY 09 and beyond the Parks are funded at $2,701,461. SB 08-226 authorized seven ANS FTE in Parks. In 2011, two FTE were eliminated and in 2012, one more of these FTE were eliminated. Only four FTE remain active today.
Below is a summary of CPW's ANS Fund and cash expenditures for the last four fiscal years.

Funding Source	FY12-13	FY13-14	FY14-15	FY15-16	FY 16-17
Parks ANS Fund	$1,976,874.41	$2,628,232.88	$2,642,082.46	$2,984,935.68	$3,152,588.66
Wildlife ANS Fund	$2,167,550.53	$1,799,940.39	$1,794,138.54	$2,019,594.88	$1,047,490.74
CPW Cash	$212,095.87	$29,506.51	$3,765.19	$121.07	$246,853.81
Total:	**$4,356,520.81**	**$4,457,679.78**	**$4,439,986.19**	**$5,004,651.63**	**$4,446,933.21**

CPW has leveraged SB08-226 funds with outside partners in order to maintain the ANS Program at its current level and provide the services Coloradan's have come to expect. CPW continues to work with federal partners for financial and operational support of the ANS Program. The following table details new agreements for 2017. These are multi-year and may be accounted for over several fiscal years.

INCOMING SOURCE	FOR	2017 AMOUNT
Aurora Water	Spinney	$ 32,000
Barr Milton Watershed	Barr	$ 5,000
Colorado Lakes and Reservoir Management Association	Barr	$ 1,000
Colorado Marine Dealers Assoication	ANS Program Statewide Support	$ 9,010
Colorado Springs Utilities	Rampart	$ 22,580
Denver Water	Eleven Mile, Antero, Williams Fork	$ 300,000
Dolores Water Conservancy District	McPhee	$ 43,750
Mount Sopris Rec Riders	Paonia	$ 4,000
Northern Water	Larimer County	$ 100,000
Northern Water	Grand Lake, Granby Reservoir and Shadow Mountain Reservoir	$ 130,000
Pueblo Board of Water Works	Clear Creek	$ 40,000
Pine River Irrigation District	Vallecito	$ 10,500
Sedgwich County	Jumbo	$ 10,000
USFS - Regional Office	Taylor Park, Green Mountain, Grand County	$ 100,000
USFS – San Juan National Forest	McPhee	$ 21,875
USFWS – Quagga Zebra Action Plan	Regional WID Database	$ 117,720
	TOTAL:	**$ 947,435**

It is important to recognize that while CPW provides sampling, monitoring, and laboratory analysis for all waters of the state; and provides training, quality control, signs, education, outreach, and many other support services for all WID stations in Colorado, the following municipal reservoirs' WID stations are funded by the municipalities themselves: Arvada, Aurora, Bear Creek, Boulder, Quincy, and Standley Lake. Denver Water provides funding to the Dillon and Frisco marinas for the WID station at Dillon Reservoir. The Colorado River Water Conservancy District provides funding to the Wolford Marina and Campgrounds to operate the WID station at Wolford Reservoir. Reudi Water and Power is the main funding source, along with other partners, for the WID station at Ruedi Reservoir. Finally, the WID stations at Twin and Turquoise Reservoirs are funded by a partnership effort between Colorado Spring Utilities, Aurora Water, Pueblo Board of Water Works and the Pike National Forest.

CPW no longer has contingency plans to respond to new zebra or quagga mussel, or other ANS, detection. The cost of operations at a major recreational water body following infestation could double in order to implement containment measures. The future risk of infestation could be moderate if more monitoring is conducted and other agencies within Colorado and surrounding states put in place mandatory programs to prevent the spread of zebra and quagga mussels.