



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



Colorado Parks and Wildlife January 2014

The Colorado Parks and Wildlife's (CPW) Aquatic Nuisance Species (ANS) Program has concluded a full year as a merged statewide program. 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. Over the last two years, the program has phased in integration including staff functions, program services, protocols and procedures, and field implementation. The annual watercraft inspector survey provides evidence of successful merger implementation, in that 100% of respondents said the ANS Program was being implemented consistently across jurisdictions in 2013. This is the first time inspectors answered unanimously positive.

For the purpose of this report, the activities occurring from 2008-2011 are attributed to the former CDOW and Parks agencies independently. Activities occurring in 2012 and 2013 boating seasons are attributed to CPW.

Background

Zebra and/or quagga mussel larvae (veliger) were identified in eight reservoirs in Colorado in 2008 as a result of a multi-year statewide sampling effort conducted by the CDOW, in partnership with Parks, the U.S. Fish & Wildlife Service 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 supply.

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 qualified peace officers to inspect, and if necessary, decontaminate or quarantine watercraft for ANS. It also provides authority for CPW 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 a 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 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, 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. As provided for in the ANS Act, Parks hired 6 additional full-time employees to oversee watercraft inspection, decontamination and education at select Parks. Three FTE remain active today, as the other positions have been abolished per agency budget reductions.

Program Goal

The goal of the 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.

Current Status 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 quagga mussel eDNA in 2009, 2011 and 2012 by the U.S. Bureau of Reclamation.

De-Listing Positive Waters in 2014

Colorado intends to adopt 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 Effort's* August 2013 Denver meeting summary document. In doing so, Colorado will de-list Granby, Grand Lake, Shadow Mountain, Willow Creek, Tarryall, Jumbo and Blue Mesa in 2014. Therefore, the only positive water for quagga mussel veligers in Colorado will be Pueblo Reservoir. There are no positive waters for zebra mussels in Colorado as of 2014.

Additional Aquatic Nuisance Species in Colorado

- New Zealand Mudsnails (NZMS) – First detected in Colorado in 2004. Angler education campaign is in place to minimize spread. Snails continue to be found in new locations annually. In 2013, they were discovered in Fountain Creek in Colorado Springs.
- Rusty Crayfish – Three known locations are being mechanically controlled through removal efforts. Regulation prohibits the live transport from known locations. Education and information is ongoing. There were no new detections of rusty crayfish in 2013.
- Waterflea (*Daphnia lumholtzi*) – First detected by CPW in Colorado in 2013 in five reservoirs and Pueblo Hatchery. CPW is currently reviewing past records to determine relative statewide distribution, and working with the Fish Health Board to evaluate this species.
- Eurasian watermilfoil (EWM) – Known to many Front Range locations and the Rio Grande. The Colorado Dept. of Agriculture requires management per the State Weed Act. Currently EWM is controlled with herbicides at a few Parks and other locations. Watercraft inspection and decontamination containment programs are in place at a few Parks.

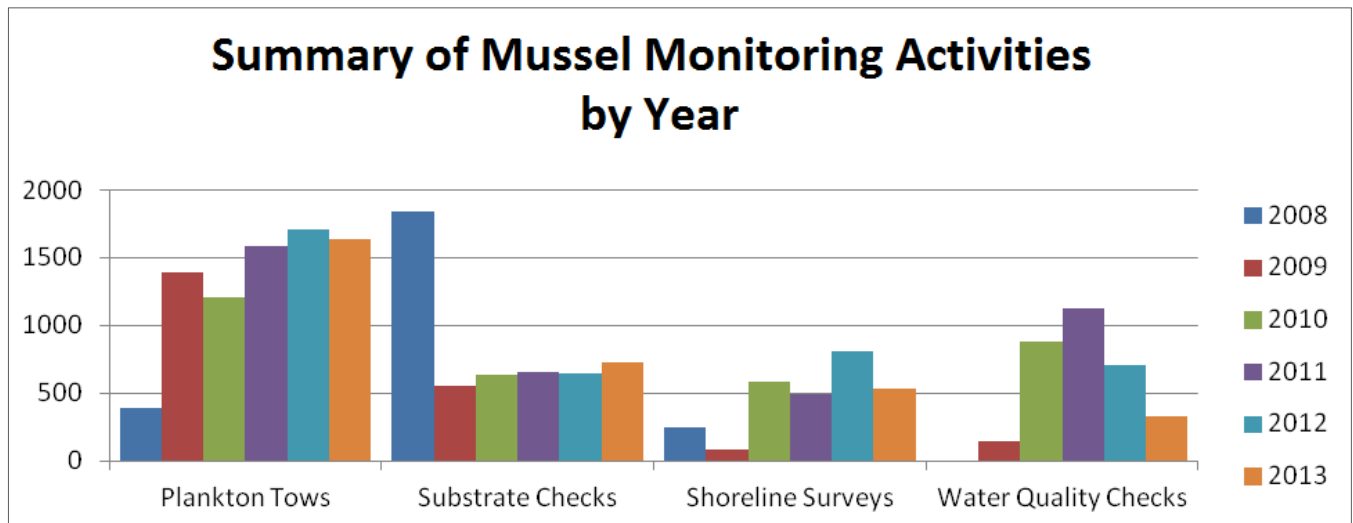
2013 Program Activities:

Sampling/Monitoring

CPW has sampled 401 “at-risk” waters for aquatic invasive species over the last eight years. It was through this sampling program that invasive mussel veligers were first detected in Colorado.

CPW staff monitors the state’s public waters for numerous invasive plants and animal species, although 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 2013, crews sampled 167 standing and approximately 11 flowing waters statewide. Two of these standing waters were inventoried for aquatic plants. In addition to the sampling efforts performed by Colorado Parks and Wildlife, partner agencies contributed 69 plankton tow samples, including the National Park Service (63) and US Bureau of Reclamation (6). A summary of the sampling efforts by Colorado Parks and Wildlife can be seen in the graph below. Plankton tows and substrate checks remained consistent with previous years. Shoreline surveys returned to annual averages in 2013, following a spike in 2012 due to known ANS population mapping. Water quality checks were reduced in 2013 due to a change in protocol to maximize sampling efficiencies.



CPW has completed the development of an online ANS sampling and monitoring database. The system allows tracking a sample from collection to final identification, including the results from microscopy, PCR testing, and gene sequencing. This database also enables us to better communicate with our partners and reservoir owners/managers regarding our efforts specific to their water bodies.

New Risk Assessment in 2014

As described above, CPW’s comprehensive early detection strategy provides for monitoring of the state’s public waters for invasive species. Field implementation of sampling and monitoring (e.g. frequency and quantity of monitoring), in addition to resource allocation for watercraft inspection and decontamination is largely based on a 2008 risk assessment, which identified 168 total lakes and reservoirs divided into 19 very high risk waters, 17 high risk waters, 58 medium risk waters, and 64 low risk waters.

Updating the original risk assessment includes a two-part analysis consisting of the risk of an invasive mussel introduction from watercraft (the likelihood mussels could be introduced to a specific reservoir or lake) and risk of establishment (the likelihood invasive mussels could survive and reproduce at a specific reservoir or lake).

Over time, the state has collected data through both the watercraft inspection and decontamination program, and from sampling and monitoring, which provides information for analysis that was not previously available at the program’s inception. For example, in 2008 the state had very little data on boater demographics to determine the risk of invasion from watercraft. Following the CPW merger, we now have a complete set of statewide watercraft inspection data for 2012 and 2013. Another example is that the mussel habitat suitability score was based on calcium alone because other parameters were not available. Water quality experts at the Colorado Division of Public Health and the Environment are processing samples collected by CPW ANS staff and providing analytical expertise for the risk of establishment.

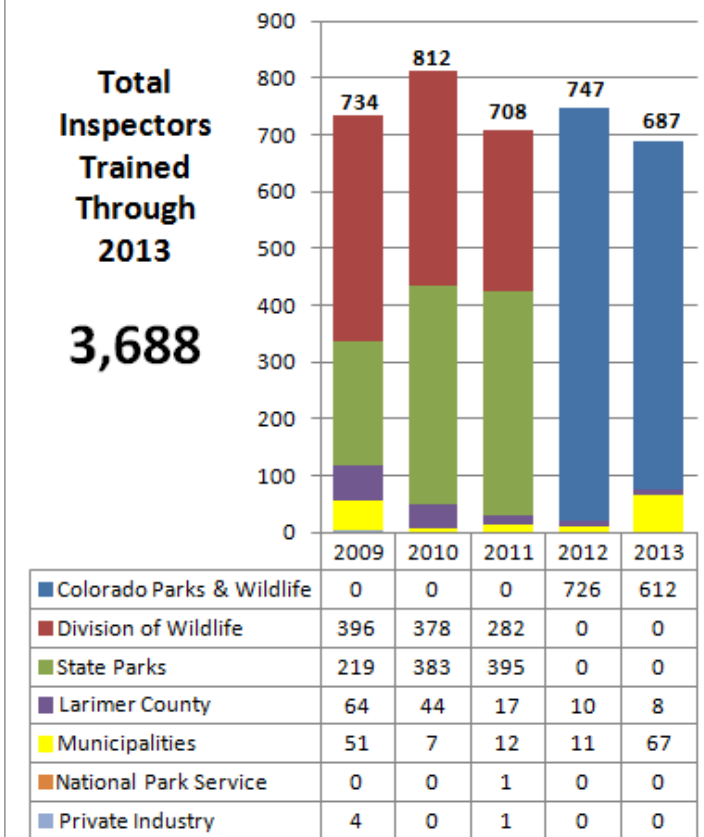
The need for an updated risk assessment is clear in order to prioritize resource allocations based on the best available science as a fully merged statewide program in 2014 and beyond. The data also has value that reaches beyond the invasive species program. The boater demographic and water quality data could prove useful for other CPW efforts, and could illuminate avenues to service the agency’s mission at a broader level in the future.

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 **2 million inspections** and **21,000 decontaminations** since 2008.

Per 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.

Number of Inspectors Trained By Entity



CPW and their partners taught 56 watercraft inspection and decontamination certification courses in 2013. CPW certified 687 individuals, for a total of 3,688 certifications since the training program began in 2009. Both the training and the inspections focus on educating boaters to clean, drain and dry.

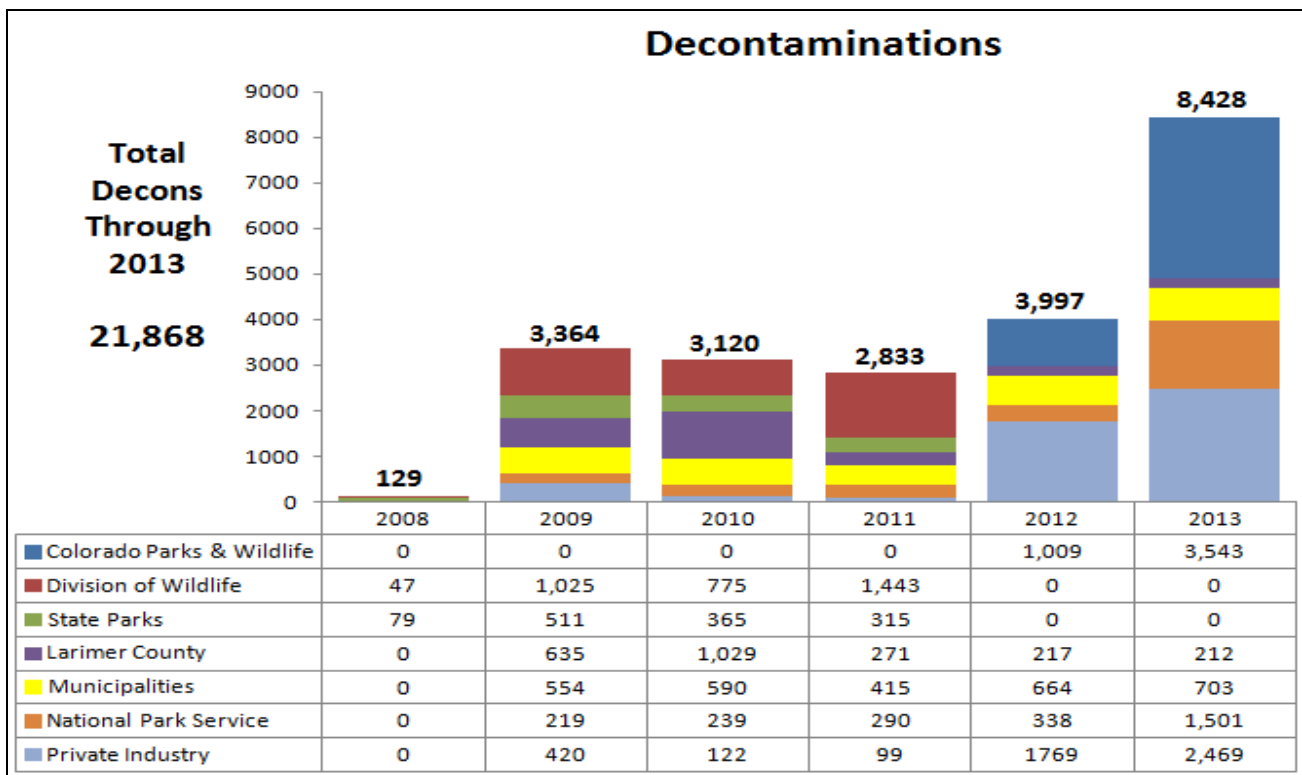
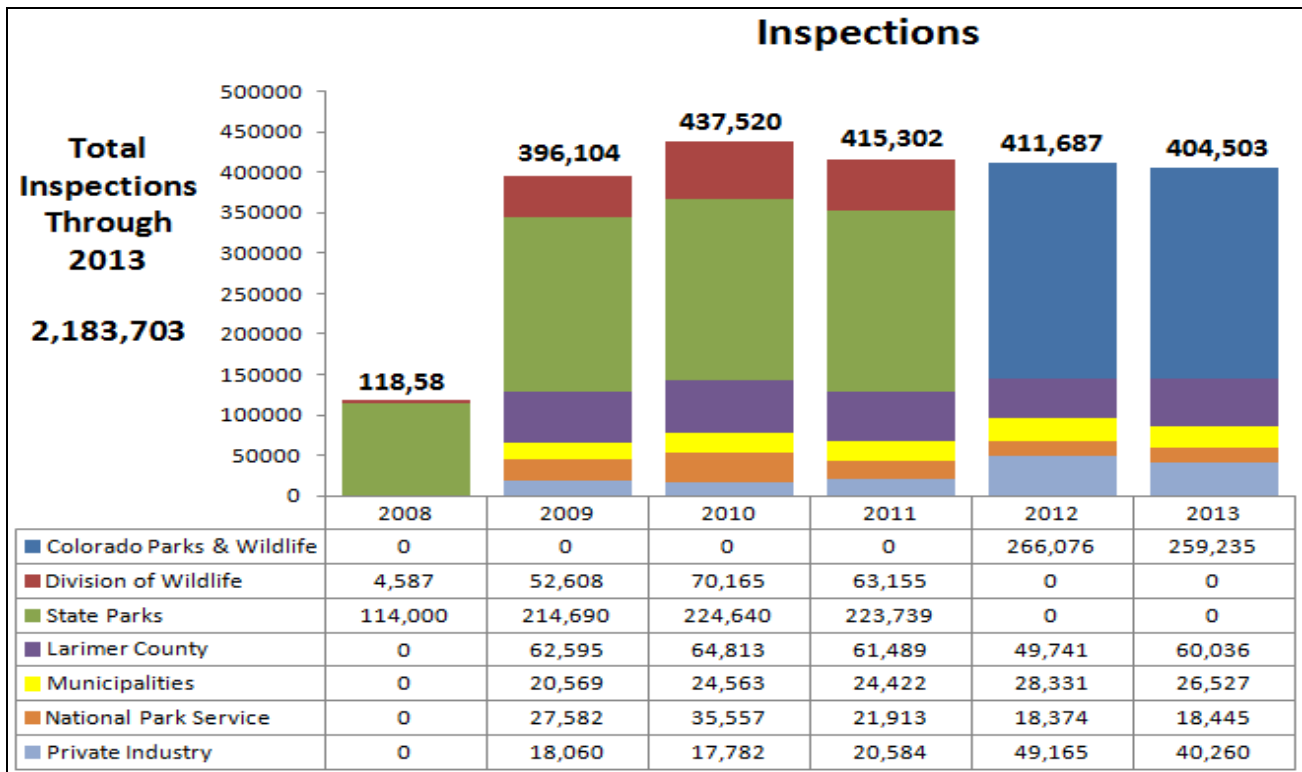
A total of 72 locations were authorized to perform watercraft inspection and decontamination in 2013. Of the 72 total stations, eight locations were containment operations at positive or suspect waters for zebra or quagga mussels. The focus of the containment programs is to inspect watercraft leaving the lakes/reservoirs to prevent boats from moving mussels or other ANS overland from positive waters into currently uninfested areas. CPW manages the containment program at Pueblo Reservoir. The CPW ANS Program contracted the containment procedures at the federally managed impoundments in Grand County (Granby Reservoir, Shadow Mountain, and Willow Creek and Grand Lake) to private industry in 2012. The CPW ANS Program directly supervises field operations at two positive State Wildlife Areas (Tarryall Reservoir and Jumbo Reservoir), along with two other negative State Wildlife Areas. The CPW and the National Park Service jointly implement both prevention and containment protocols at suspect Blue Mesa Reservoir. De-listed waters in 2014 will maintain WIDs focused on prevention in the future. In addition to zebra/quagga mussel containment, four locations (Eleven Mile State Park, Spinney Mountain State Park, Lathrop State Park and Standley Lake) implemented containment protocols due to infestations of an aquatic weed, Eurasian watermilfoil, NZMS, or both.

The other 60 authorized locations were implemented to prevent the introduction of mussels into currently uninfested waters, including boat ramps on lakes and reservoirs, and off-water locations such as at CPW offices and private industry locations. Prevention stations focus on inspecting watercraft prior to entering an uninfested water to prevent a new invasive species from being introduced. The prevention stations are operated by a variety of entities, including the CPW, Larimer County, private concessioners, municipalities, marinas, private clubs, and marine dealers.

Number of Authorized Locations by Entity						
Entity Type	2008	2009	2010	2011	2012	2013
Colorado Parks & Wildlife	-	-	-	-	41	40
State Parks	24	28	28	28	-	-
Division of Wildlife	5	160*	19	19	-	-
Larimer County	0	2	2	2	2	2
Municipalities	3	7	11	9	6	6
National Park Service	0	1	1	1	1	1
Private Industry	3	11	51	30	21	23
Total:	35	209	112	89	71	72

**CDOW piloted roving watercraft inspection and decontamination crews that operated mobile WID stations at low and medium risk waters in 2009, which was not continued in subsequent years.*

A total of **404,503** inspections and **8,428** decontaminations were performed in Colorado in 2013. A summary of annual inspection numbers and a summary of inspections and decontamination performed by entity type each year can be found on the next page.



There was a large increase in the number of decontaminations performed in 2013 as a direct result of CPW adapting to mitigate new threats. Recent research publications indicate zebra or quagga mussel veligers can survive up to 27 days in standing water on watercraft. Another factor increasing Colorado’s need for decontamination is the increase in mussel infested waters in other states, including Lake Powell and several northern Texas State Parks and reservoirs. Lastly, waters in close proximity to, or positive for, NZMS or EWM infestations perform more decontaminations to limit their spread in state. CPW and their partners revised mandatory standing water decontamination triggers in 2013 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.

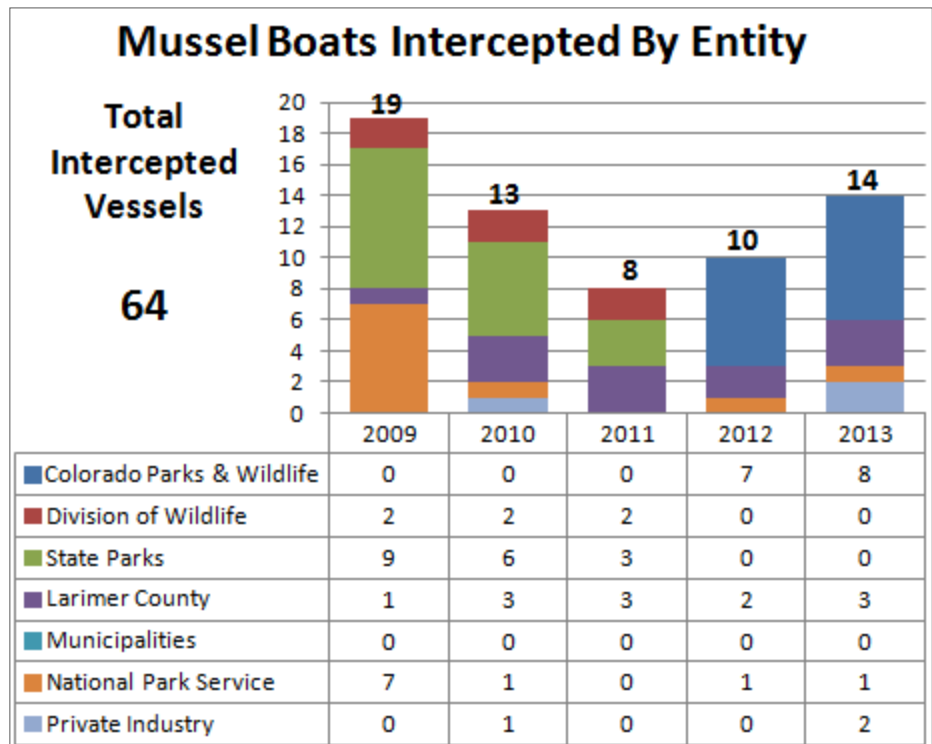
Over the last two years, a pilot project was conducted with the goal of providing a mechanism for electronic data collection at boat inspection and decontamination systems. In 2012, the ANS Utility Data Collection System was deployed successfully statewide. By collecting boat inspection records electronically and not on paper logs (as was the method at most sites), the ANS Program anticipates saving money currently being spent on data entry technicians to type the data into a database and gain great efficiencies on busy boat ramps.

For 2013, the data collection system was deployed at 45 unique inspection stations at 28 reservoirs across the state and collected 337,329 inspection records successfully (83% of total inspections). The ANS Utility Data Collector system was expanded to positive and suspect waters, and additional high use prevention sites. It is being retooled over the winter to address hardware, software and support challenges. CPW has initiated the move to full-time professional hardware and software support through an existing technical services contract. The retool and support move will position the CPW ANS Data Collector program to improve inspection data collection statewide by taking advantage of the many recent improvements in hardware and software.

Mussel Boat Interceptions

A total of 64 boats with attached adult zebra or quagga mussels have been 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, Canyon Marine, Carter, Cherry Creek, Chatfield, Crawford, Denver CPW Office, Dillon, Eleven Mile, Grand Junction CPW Office, Highline, Horsetooth, Jackson, Lathrop, Martin, Navajo, Pueblo, Ridgway, Shadow Mountain, Taylor Park, Turquoise, Vallecito and Williams Fork. The infested vessels were coming from

Arizona, California, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, New York, Nevada, Oklahoma, Ohio, Texas and Wisconsin. The majority of the intercepted vessels were coming from the Great Lakes, the Mississippi River, or Arizona (Lake Pleasant or Lake



Havasu). These boats were fully decontaminated to ensure all mussels were dead, and no mussels were 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 and stations are adequately stocked with educational materials and proper signage. The team also provides on the job training to inspectors and supervisors. In 2013, CPW conducted 97 undercover evaluations at WID stations. CPW also called 26 state, local and federal offices, private businesses and inspection stations to assess the quality of telephone customer service with respect to ANS. The quality control program will continue in 2014 with secret shopper evaluations, announced evaluations, on the job training and customer service evaluations.

Piloting Multi-State Reciprocity for WID Stations

Colorado intends to pilot reciprocity with Wyoming and New Mexico in 2014. Through the *Western Regional Panel's Building Consensus Effort*, the 19 western states have been engaged in defining standard language and protocols for watercraft inspection and decontamination programs in the Western USA, along with data sharing, sampling, and education. Colorado, Wyoming and New Mexico intend to accept each other's ANS boat seals and receipts in 2014, providing that inspectors be trained alike, follow the same field procedures, and are held to the same quality control standard. Colorado is also working with the Pacific States Marine Fisheries Commission (PSMFC) and 100th Meridian Initiative to standardize the watercraft inspection and decontamination train the trainer program throughout the West to further facilitate reciprocity. The pilot will be evaluated to potentially broaden reciprocity throughout the West in future years.

Protocol Development for Watercraft Inspection and Decontamination

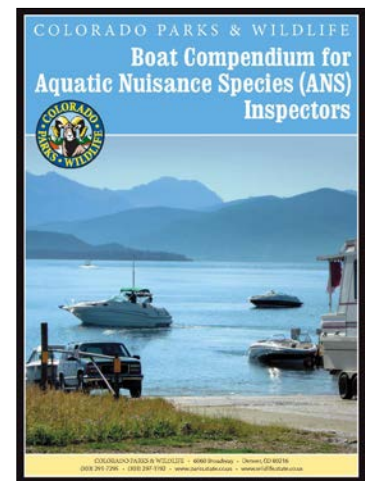
To ensure the protection of the state's waters and the validity of the state certification program, CPW implemented and has maintained strict field protocols and training regiments since the program's inception. All watercraft inspection and decontamination staff in Colorado attends the same training 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.

Information and Outreach

Beginning in 2008, the CDOW, Parks and partner agencies developed a comprehensive, multi-faceted, public-education campaign to inform boaters and anglers about zebra and quagga mussels and how to prevent the further spread of these harmful species and other ANS in Colorado's waterways.

Over the last five years, the cooperative effort utilized a variety of mediums, including billboards, boat ramp signage, ANS brochures, agency Web pages, and staffing tradeshow and expo booths to convey this message. 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.

In 2014, the priority for education and information will focus on the nursery and pet industry with the goal of reducing invasive species sold in Colorado to reduce the risk those invaders will escape or be dumped into native



ecosystems or wildlands. The CPW Invasive Species Program is also striving to incorporate prevention messaging for terrestrial invasive species, such as noxious weeds or forest pests, into educational and information items for sportsmen and outdoor recreationists.

State Fish Hatchery Program and Aquatic Biologists

To date, no zebra or quagga mussels have been identified in any Colorado hatchery, including the hatchery at Pueblo Reservoir. However, proactive measures have been put in place statewide to protect hatcheries and state waters from an invasive species introduction. Those measures include annual fish health inspections, hazardous analysis and critical control point plans (HACCP), trainings and workshops. Hatcheries are monitored for ANS.

Statewide preventative measures also include implementation of standardized disinfection protocols for wild spawn, fish transfers and egg transfers. Through a contract with the Bureau of Reclamation, the CDOW explored methodologies for disinfection for fish being transported from Pueblo Fish Hatchery. In addition, specialized trailer units have been constructed for all wild fish spawning operations to ensure no ANS are transported.

Aquatic biologists should be certified inspectors and decontaminators. All biologists have access to a watercraft decontamination unit to clean boats, gear and equipment in between each use. When hot water decontamination units are not available, they have alternate methods, including freezing, drying and disinfectants, available to decontaminate gear and equipment in between each and every use.

Research

CPW is actively engaged in research projects related to invasive species management. The current project underway is being conducted by the University of Nevada Reno and is funded through a partnership with the PSMFC, USFWS, Tahoe Regional Planning Agency, California Department of Fish and Wildlife and the Water Sports Industry Association. This project includes the testing of a filter that could potentially eliminate the movement of ANS in recreational ballast tanks. If successful, the filters would eliminate the need for decontamination of these systems to kill microscopic zebra or quagga mussel veligers in standing water, which would greatly increase the efficacy of WID stations and reduce operational costs. The initial phases are nearing completion and a report is expected soon.

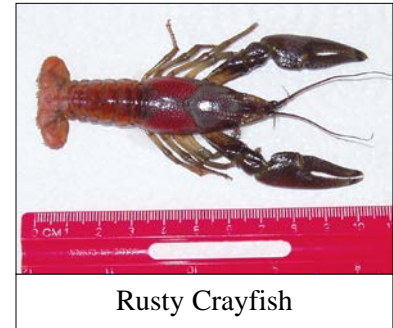
Completed projects include:

- A boater choice model and risk assessment for the movement of zebra or quagga mussels in Colorado. Colorado State University. January 2014.
- Economic Analysis of Invasive Species in Colorado; Focus on Noxious Weeds. Colorado State University. December 2013.
- A risk assessment of recreational boating traffic and aquatic nuisance species (*Dreissena* mussel) invasion to lakes, rivers and reservoirs of the Western United States. Western Regional Panel and University of California Davis. March 2011.
- Potential Zebra and Quagga Mussel Control Studies: Focus on Boat Decontamination of Interior Compartments. Colorado State University. May 2011.
- A Cost-Benefit Analysis of Prevention Management for Zebra and Quagga Mussels in the Colorado Big-Thompson Project. Colorado State University. July 2010.
- Statewide Risk Analysis and Modeling of *Dreissena* Mussels. University of Toledo. September 2010.
- Colorado State Parks Risk Analysis and Modeling of *Dreissena* Mussels. University of Toledo. September 2010.
- Assessment of Quagga Mussel Veliger Treatments for Pueblo State Fish Hatchery Transport. Reclamation. October 2010.

Other ANS of Concern

Rusty Crayfish

Rusty crayfish are an invasive species that was first found in Colorado in 2009. They 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.



Rusty Crayfish

Rusty crayfish are known to the Catamount Reservoir, Stagecoach Reservoir State Park and the Yampa River which connects them, in addition to Sanchez Reservoir State Wildlife Area. Populations have been managed through manual removal of adult rusty crayfish to reduce the reproducing population in the reservoirs and limit impacts to native communities and users.

The Director issued an Emergency Administrative Restriction: Crayfish Collection Closure for Sanchez Reservoir, which restricts the taking of a live crayfish from Sanchez. CPW implemented regulations passed by the Wildlife Commission in November 2010, in an effort to stop the spread of ANS and diseases. Those regulations included substantive changes to further prohibit the transport and use of live baitfish, which now must be used in the same body of water from which they were taken, except for those fish captured within the Lower Arkansas River Basin (below Pueblo), which may be transported and used in other counties within that area. In addition, 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 found there in 2010.

New Zealand Mudsail

New Zealand mudsnails (NZMS) are small aquatic snails native to fresh waters of New Zealand. NZMS compete with native invertebrates, including mollusks, for space and food resources, reducing native invertebrate prey for fish. They are not a viable food source themselves, because they have the ability to pass through a fish gut unharmed resulting in sportfish with low weights and lengths in NZMS infested waters. NZMS are all females that reproduce asexually and create a layer of biomass that completely changes the benthic ecosystem. NZMS are spread primarily by humans by hitchhiking in mud on the bottom of boots or waders, or on pet's paws. They can survive up to 50 days on a damp surface giving them ample time to be transferred from one body of water to another.



New Zealand Mudsail

NZMS was discovered in one new location in 2013: Fountain Creek in Colorado Springs. In 2012, they were discovered in Spinney Mountain State Park, similar to the previous year's detection in neighboring Eleven Mile Reservoir State Park. In 2011, they were also found in East Delaney Buttes State Wildlife Area and College Lake, CSU, Fort Collins. In 2010, they were discovered at the nearby South Delaney Buttes State Wildlife Area, and two sites within the City of Boulder along Dry Creek. The



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.

All known populations were mapped in 2012-2013 and long term monitoring processes were put into place for future impact analysis. There is no viable method for control of these very small animals. CPW placed a strong emphasis on angler education in the past year providing wader brushes and instructional rack cards to anglers via Wildlife Manager and Park Staff contacts. The only way to stop the spread of these tiny invaders is through educating anglers to clean their waders in between each and every use!

Aquatic Weed Coordination

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

Eurasian watermilfoil (EWM)

The ANS program has coordinated EWM management since 2005. A detailed Geographic Information System (GIS) database of EWM locations and control efforts was developed and is maintained by CPW and was updated in 2013 following the detailed mapping of two infested reservoirs and all known populations in flowing water systems. CPW is actively controlling EWM with herbicide treatments at Lathrop State Park, St. Vrain State Park, and Chatfield State Park.



An EWM weed mat

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 controlled 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. The CPW and CDA share the responsibilities for the continuance of this program.



Purple Loosestrife

Clean Water Act – National Pollution Discharge Elimination System (NPDES) Permit:

Colorado Parks and Wildlife manage invasive species, noxious weeds, aquatic nuisance species and pests statewide, some of which require applications of aquatic herbicides, pesticides or aerial sprays of forest pests. This includes but is not limited to the following species: Eurasian watermilfoil, purple loosestrife, tamarisk and mosquitoes. Locations where treatments may occur are State Parks, State Wildlife Areas, State Fish Units (hatcheries) or Administrative Areas (offices).

The 6th Circuit Court of Appeals changed the definition of “point source pollutants” in the Clean Water Act (CWA) to now include pesticide applications (including herbicides) under the NPDES permit program. The new state and federal NPDES permits now cover CPW pesticide applications, including herbicide applications. Compliance with these permit requirements are now necessary to continue legal pesticide applications.

It is the intent of Colorado Parks and Wildlife (CPW) to comply with NPDES. Given the magnitude of the agency and the lands or waters managed by CPW throughout the state (approximately 1,515,000 land acres and 313,733 surface acres of water) this management plan does not address site-specific applications and treatments. This plan includes all aquatic and forest pests currently found in Colorado. However, there is not sufficient mapping on

properties to know if these species are or are not located on CPW properties, and if so, the treatment will be at the discretion of local field operations staff based on state laws and resources available for treatment. The specifics of individual pesticide applications on CPW properties are stored on field data sheets. Applicators and/or decision makers enter the field data into a Pesticide / Herbicide Application Database on the internal shared CPW intranet.

CPW filed its Certificate of Compliance with the Colorado Department of Public Health and Environment (CDPHE) state permit on June 30, 2013 for all applications performed between November 4, 2011 and July 1, 2013. For applications on CPW properties, CPW fits the state permit definition of a decision maker and in some cases CPW is also funding the treatment and performing the application, regardless of property ownership. CPW participated in all stakeholder meetings held by CDPHE in 2013 and will continue to further permit development for the most efficient implementation possible.

CPW did not file with the U.S. Environmental Protection Agency (EPA) for federal land applications that are under a management agreement with CPW. The reason for this is that in those cases, CPW met the permit definition for a decision maker and applicator. In the event that those federal agency property owners, with whom CPW has management agreements, provide direction to CPW that we should be filing a Notice of Intent with the EPA, the CPW Pesticide / Herbicide Application Database can be queried to provide relevant application records.

Regional Participation

CPW is involved in several regional 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
- Member 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

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. As of July 1, 2013, the Invasive Species Coordinator is now being paid out of the Parks ANS Fund.

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. In 2011, Parks ANS funding was reduced by \$400,000 to \$2,301,461. 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. Four FTE remain active in 2014.

Total annual expenditures for both the Parks ANS Fund and Wildlife ANS Fund, including incoming grants and cost-share agreements, are detailed on the next page.

	FY08-09	FY09-10	FY10-11	FY11-12	FY12-13	FY13-14 (YTD)
Parks ANS Fund	\$ 1,788,659.94	\$ 2,121,143.56	\$ 2,086,473.34	\$ 2,053,169.76	\$ 1,962,920.48	\$1,327,223.58
Wildlife ANS Fund	\$ 1,364,171.91	\$ 1,872,538.14	\$ 1,705,518.61	\$ 1,830,887.77	\$ 2,167,550.53	\$1,013,816.99
Total:	\$ 3,152,831.85	\$ 3,993,681.70	\$ 3,791,991.95	\$ 3,884,057.53	\$ 4,130,471.01	\$ 2,341,040.57

CPW has leveraged SB08-226 funds with federal and local grants in order to maintain the ANS Program at its current level and provide the services Coloradan’s have come to expect. Federal grants have been mostly eliminated and there are few local grant funds remaining. The following table details the sources of CPW’s grant and cost share funds towards ANS in FY1213.

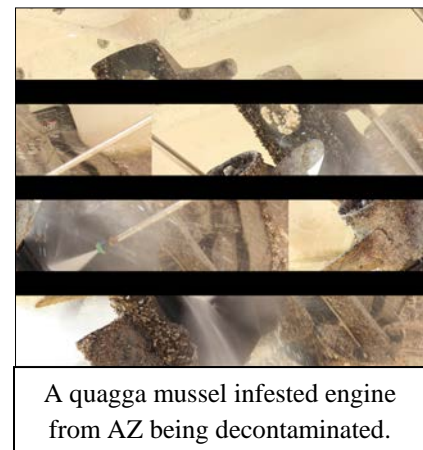
Partner Agency	Direct Contribution
Denver Water	\$200,000.00
US Army Corp of Engineers	\$4,000.00
US Forest Service	\$246,576.59
Total:	\$446,576.59

The figures in the following table represent in-kind contributions of partners directly to jointly implemented WID stations, and not funds coming into CPW or being spent directly by CPW.

Partner Agency	In Kind Contribution
Larimer County	\$143,856.00
US National Park Service (NPS)	*\$325,000.00
Total:	\$468,856.00

**Estimate based on historical average of NPS contribution at Blue Mesa Reservoir.*

CPW is planning to retain budget carryover between fiscal years, as permitted in the ANS Act, because the boating season and some projects span two fiscal years. Federal contributions and grants continue to decline or evaporate. CPW has contingency plans to respond to new zebra or quagga mussel detections in new waters during the middle of a boating season. 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 moderate if more monitoring is conducted and other agencies within Colorado and surrounding states put in place programs to prevent the spread of zebra and quagga mussels.



A quagga mussel infested engine from AZ being decontaminated.