

Colorado Department of Natural Resources

Species Conservation Trust Fund

2016 Annual Report to the General Assembly

Species Conservation Trust Fund

The Colorado General Assembly created the Species Conservation Trust Fund (SCTF) in 1998 through the passage of HB 98-1006. This legislation provides ongoing funding to implement cooperative agreements, recovery programs, and other programs designed to meet Colorado's obligations under the Endangered Species Act (ESA). The Fund is also intended to promote practices designed to conserve species currently listed as threatened or endangered under state law, recover or protect candidate species in order to avoid the need to list those species under the state or federal ESA, and improve the scientific understanding governing federal or state species listing and delisting.

Statute (24-33-111 (3), C.R.S.) directs the Executive Director of the Colorado Department of Natural Resources (DNR) to report to the General Assembly on the progress and status of activities undertaken to conserve and recover Colorado's native species. This report covers activity from 2014 through 2016 and includes a summary of appropriations, select outcomes, and a full list of project accomplishments that have occurred during these years.

Summary of SCTF 2014-2016 Appropriations

Two divisions in DNR nominate projects to be funded through the SCTF, Colorado Parks and Wildlife (CPW) and the Colorado Water Conservation Board (CWCB). Projects are then approved by the Parks and Wildlife Commission and the Colorado Water Conservation Board before receiving final approval from the General Assembly through the annual SCTF authorization bill.

Since 2014, \$8.1 million has been appropriated to Colorado Parks and Wildlife (CPW) for 47 projects (61% of the total funding amount), \$4.7 million has been appropriated to Colorado Water Conservation Board (CWCB) for 9 projects (35% of the total funding amount) and \$500 thousand has been appropriated for a joint project between the divisions (4% of the total funding amount). These funds were appropriated under Senate Bill 14-188 and House Bills 15-1277 and 16-1458. The funding appropriated to CPW has been allocated to research and habitat improvements for numerous species including: prairie dogs, greater and Gunnison sage-grouse, a variety of native fish species, sharp-tailed grouse, lesser prairie chicken, white-tailed ptarmigan, a variety of reptiles, Canadian lynx, bats, boreal toad, black-footed ferret and the New Mexico Jumping Mouse. CWCB's funding has been allocated to projects related to the Upper Colorado River Recovery Implementation Program, fish passage, native fish habitat restoration, selenium management, instream flow acquisition, and native fish conservation.

The vast majority of funding from the SCTF has been allocated to habitat improvement (63%) and research (30%), with the remainder funding habitat improvement projects working with landowners (5%), infrastructure improvement (1.6%), and planning (less than 1%). Projects often benefit a wide variety of species. For example, habitat improvement projects geared at one species often improve conditions for a variety of species that occupy the area. Therefore, it is difficult to accurately determine which species have received the greatest amount of funding from the program. However, current project efforts geared towards specific species include the greater sage-grouse (\$2.0 million, or 11% of the total) and Gunnison sage-grouse (\$1.0, or 5% of the total). A variety of projects aimed at recovering and improving habitat for native fish species across the state total \$2.5 million (13.5%).

Selected Project Outcomes

Since its inception, the SCTF has funded a wide array of important conservation projects. The following highlights some of the key accomplishments from the past three years, and the following table provides a more comprehensive picture of outcomes from SCTF projects during that period.

- Facilitated progress on the Platte River Recovery Implementation Plan, including implementation of a water action plan that reduces shortage of target flows by 12,059 acre-feet/yr., and including the protection of more than 12,000 acres of land habitat for target bird species.
- The Upper Colorado Recovery Implementation Program facilitated increased flows through critical endangered fish habitat in late summer, including provisions for over 16,825 AF annually from water users and additional variable amounts from federal reservoirs.
- Expedited Section 7 consultations for Colorado River users for a total of 1224 projects since 1988.
- Expedited Section 7 consultations for Colorado water users in the San Juan basin for a total of 310 projects since 1992.
- Expedited Section 7 consultations for Colorado water users in the Platte River basin for a total of 124 projects since 2007.
- Development and implementation of preventive plague control in Gunnison's prairie dog populations as a species conservation tool (which contributed to the federal government's decision not to list the species under the ESA).
- Provide vital baseline data on bat species that do not use caves or mines for habitat, prior to expected spread of White-nose Syndrome to Colorado and better inform the decision-making process.
- Increase the amount of suitable habitat for several populations of greater sage-grouse in Colorado and increase the number and stability of populations in these areas.
- Completed habitat improvement projects on private land in lesser prairie chicken habitat totaling 20,280 acres.

- Provide valuable insights for optimizing the design of fish passage structures at obstacles that block upstream movement for fishes, such as water diversions and whitewater parks.
- Restore cutthroat trout to historic habitat, to date all or part of eight restoration projects funded by SCTF.
- Prioritize habitat restoration and fish passage at diversion structures for special status fish species impacted by the 2013 floods.
- Performed surveys, monitoring, and research for federally listed or potentially listed plant species to inform federal listing decisions. Most recently, rare plant work has focused on Plant Species of Greatest Conservation Need outlined in the State Wildlife Action Plan.
- Recent GIS and field inventory work has led to the identification of habitat occupied by federal and state listed species, as well as SWAP species of greatest conservation need on state parks and the monitoring of these populations.

**Species Conservation Trust Fund
Summary of Projects and Outcomes
2014-2016**

Colorado Parks and Wildlife (list does not include projects completed prior to 2014)

Project	Purpose	Outcomes	Year(s) Authorized	Total Appropriated
Sage-grouse Habitat Enhancement- Pinyon Juniper Encroachment Removal	To treat the most critical Greater Sage-grouse (GrSG) areas that have been encroached by pinyon-juniper woodlands in order to restore functional GrSG habitat.	Successful completion of this project will increase the amount of suitable habitat for several populations of GrSG in Colorado and provide for an increase in the number and stability of GrSG in these areas, decreasing the likelihood that the species will be listed under the Endangered Species Act. The conservation actions that were achieved through this project between 2008 and 2015 constituted a significant portion of the beneficial actions that CPW was able to demonstrate when reporting GrSG conservation progress to the USFWS.	08-09 09-10 10-11 11-12 12-13	\$1,512,359
Greater Sage-grouse and Columbian Sharp-tailed Grouse Habitat Enhancement/Restoration of Agricultural Lands and Improved Pastures	To increase available habitat for Greater Sage-grouse (GrSG) and Columbian sharp-tailed grouse (CSTG) in sites that were historically converted to agriculture by applying restoration techniques aimed at recreating natural shrubland communities.	This project is intended to apply habitat restoration practices to approximately 2500 acres of current or former agricultural areas in GrSG and CSTF habitat, with particular focus on areas within Moffat, Rio Blanco and/or Routt counties. Successful completion of this project will increase the amount of suitable habitat for GrSG and CSTF in northwestern Colorado and provide for an increase in the number and stability of GrSG and CSTG in these areas, decreasing the likelihood that the species will be listed under the Endangered Species Act. The conservation actions that were achieved through this project between 2008 and 2015 constituted a significant portion of the beneficial actions that CPW was able to demonstrate when reporting GrSG conservation progress to the USFWS.	08-09	\$500,000

Lesser Prairie Chicken Habitat Improvement	The objective of this project is to enhance, improve and establish habitat for lesser-prairie chickens on private lands in SE Colorado.	Incentives are provided to private landowners that improve habitat for LEPC on their lands in SE Colorado. To date, habitat projects have been completed impacting 20,280 acres of habitat. Projects include new grass establishment, CRP enhancement, forb interseeding and rangeland lek grazing enclosures.	08-09 11-12 12-13	\$400,000
Native Seed Production for Sagebrush Habitat Restoration	CPW has constructed a seed warehouse facility in Delta with the intent of increasing the use of native and locally adapted seeds in wildlife habitat restoration projects on CPW, BLM, USFS and private lands.	We will continue to purchase approximately 1000lbs of contract grown forb seed and continue our support for the development of additional plant species by the UP Plant Program for use in restoration work. Our focus is shifting from production to planting the new species we have brought to market. With the addition of new Mule Deer Strategy projects, we are not meeting the demand for the new forb seed. However, federal partners are stepping up to support increased seed production. In the coming FY we anticipate applying the new species on approximate 1-2,000 acres per year.	09-10 10-11 11-12 12-13 14-15 15-16 16-17	\$1,300,000
GuSG CCAA (Candidate Conservation Agreement with Assurances)	To provide participating landowners with assurances from the U.S. Fish and Wildlife Service (USFWS) that future land use restrictions will not be imposed on enrolled lands, should the species be listed.	SCTF funds from the Gunnison Sage-grouse Candidate Conservation Agreement with Assurances (GuSG CCAA) project were used in 2015 to assess habitat conditions for Gunnison sage-grouse on 15 enrolled properties. Fifty-two Rangeland Health Assessments (RHAs) and 65 vegetation transects were conducted by a private contractor and CPW personnel. This work helps fulfill monitoring requirements identified in the programmatic CCAA between CPW and the U.S. Fish and Wildlife Service.	08-09 10-11 11-12 12-13	\$1,000,000

Columbian Sharp-tailed Grouse Demographics and Response to Habitat Treatments	Obtain contemporary information on demographic rates and evaluate demographic response of CSTG to habitat enhancements.	A master's thesis and manuscripts for publication will be completed. Measures of the demographic effects of habitat treatments in CRP will be obtained and used for future conservation planning and programs for CSTG.	08-09 09-10 10-11 11-12	\$506,288
Mammal and Breeding Bird Response to Epidemic Bark Beetle Outbreak in Colorado	This project will examine the impacts of beetle infestations (>4 million acres statewide) on mammal and breeding bird communities inhabiting the subalpine zone in Colorado.	Due to funding source requirements, sampling for mammals species will focus on snowshoe hares and red squirrels (primary prey for Canada lynx); avian species of concern that will be sampled include Williamson's sapsucker and olive-sided flycatcher, among others. In addition to species of conservation concern, big game species distributions and management implications will also be addressed. Remote cameras, audio surveys for avian species, and habitat characteristics of beetle-killed regions will be applied to inform future management actions and limited conservation dollars to species negatively influenced by this large scale change to Colorado's subalpine forest communities.	09-10 10-11 11-12 12-13 13-14	\$895,000
Native Vegetation Restoration in Relation to Rainfall Patterns	To experimentally evaluate the effectiveness of soil treatment methods in controlling cheatgrass during restoration of native vegetation under different simulated rainfall patterns.	Expected outcomes are management recommendations for using soil treatment methods in various precipitation zones, a dissertation, and associated scientific publications.	13-14	\$100,000
New Mexico Jumping Mouse Distribution Survey	Develop a better understanding of the status, distribution and habitat characteristics of this species in southwest Colorado	A better understanding of this species will improve management and better inform the listing process to avoid regulatory prescriptions which may not contribute to the recovery of the species.	13-14	\$66,000
Implementation of State-wide Non-invasive	Develop and implement an efficient, cost effective and statistically rigorous protocol	A long term trend in habitat occupancy will be the ultimate outcome of this project. It is a much less expensive way to monitor a population than	13-14	\$200,000

Canada lynx Monitoring Protocol	to monitor the status of the reintroduced Canada lynx population in Colorado.	other more invasive techniques (i.e. telemetry/mark-recapture techniques.)		
Implementation of Rangewide Black-tailed Prairie Dog Survey Protocol	Implement the revised rangewide survey protocol for black-tailed prairie dogs (BTPD) in Colorado.	To maintain the 5-year interval for BTPD surveys as agreed to in the Multi-State Conservation Plan for the Black-tailed Prairie Dog in the United States. The conservation strategies included in this plan played a key role in the USFWS's "not warranted for listing decision" for the BTPD. CPW was due to monitor BTPD again in 2012-2013.	13-14	\$200,000
Private Lands Biologist	To provide support for the Lamar Farm Bill biologist position	Implementation of NRCS programs to benefit LEPC on private lands in SE Colorado. These positions serve as a one stop resource for producers and are tasked with helping deliver both farm bill programs and the CPW Lesser prairie chicken habitat improvement program. Maintaining these positions allow for increased capacity for delivery of wildlife centric projects in southeast Colorado. Program Accomplishments: We have partnered with two positions using these funds, the private land farm bill biologist and a partnership range ecologist position in Lamar. These positions have performed conservation planning and implemented projects impacting 40,709 acres during this reporting period and 131,549 acres over the term of this SCTF allocation.	14-15	\$138,000
Lesser Prairie-Chicken Research and Range Wide Plan Implementation	To better understand how to address the declining LEPC population.	CPW will gain knowledge that will be used to better inform recommendations made to landowners, state and local NRCS employees, the Farm Service Agency, USFS, energy developers and others. CPW will have a much greater understanding of how future LEPC habitat projects impact prairie-chicken habitat and the birds themselves. CPW will have a better sense	14-15	\$100,000

		of which habitat practices are best when trying to improve LEPC habitat. CPW will be able to have a better sense of where to focus LEPC conservation efforts. CPW will further develop positive relationships with the landowners whose properties harbor LEPC.		
Reptile Monitoring	This project will develop and test standardized survey methods to monitor potential impacts of environmental change on the distributions of reptiles (similar to the Breeding Bird Survey and North American Amphibian Monitoring Program).	Information gathered from this proposed work will be important for assessing the status of reptile species in Colorado. The study design employed here will provide a framework from which to build a long-term, landscape-scale monitoring program for reptiles. This baseline of detection/non-detection data will be used to improve both estimates of species distributions and our understanding of potential threats to reptiles in the Great Plains. Results will be used to guide recommendations for continued monitoring of reptiles and identification of areas likely important for reptile conservation.	14-15 15-16	\$235,000
Plague Control	To develop, apply, and evaluate tools (e.g., dusting, oral vaccination) and strategies for preventively managing plague on a landscape level as needed for species conservation purposes.	The importance of preventive plague control in montane Gunnison's prairie dog conservation is clear. Therefore, CPW is in the process of institutionalizing this work to assure long-term application of annual control measures. We also will continue to develop and refine tools and strategies for plague monitoring and management, and will work to assess and improve ongoing plague control efforts within an adaptive management framework. Our agency's approach to developing and implementing plague control as a species conservation tool will likely serve as a national model.	09-10 10-11 11-12 12-13 13-14	\$1,850,000
Plague Management Gunnison's Prairie Dog	To fund ongoing work to adaptively monitor and preventively manage plague on a	Treat at least 2,000 acres of occupied Gunnison's prairie dog habitat annually & demonstrate colony persistence & growth in treated areas.	14-15 15-16 16-17	\$375,000

	landscape level via annual dusting of Gunnison's prairie dog colonies.			
Bat White-Nose Syndrome Surveillance and Response	To develop important baseline information on native bat species, a vital foundation for later efforts to develop an effective conservation plan, protect important habitat, and assess the impact of management efforts.	The proposed project will provide vital baseline occupancy rates for bat species that do not use caves or mines for hibernacula. The results, findings and new techniques developed through the projects will benefit native bat species by providing vital baseline information, prior to the expected spread of White-nose Syndrome to Colorado, and better inform the decision-making process related to these species.	11-12 12-13 14-15 15-16 16-17	\$300,000
SCTF 15 ESA Management	To provide support for CPW's work relating to the management of federal listings		14-15	\$300,000
Gunnison Sage-grouse Source Sink Modeling	To develop and use rigorous analytical techniques to examine spatial use patterns of Gunnison sage-grouse in the Gunnison Basin	This project will complete planned analyses on Gunnison sage-grouse spatial distribution and movements throughout the Gunnison Basin. It will result in at least one peer-reviewed scientific publication, and provide information useful to future conservation planning for Gunnison sage-grouse in the Gunnison Basin Population.	15-16	\$55,000
Black-footed Ferret Monitoring	To improve and monitor the success of Black-footed Ferret reintroductions on private lands in Colorado, through plague management and surveys	The proposed project will collect data on the success of current and future ferret populations in Colorado, manage plague at release sites through dusting and/or SPV deployment, and identify more efficient survey methodologies	15-16	\$260,000
Plague Management-Soapstone Black-footed Ferret	To explore cost-effective approaches for preventively managing plague in black-tailed prairie dog colonies to support black-footed ferret reintroduction.	Treat at least 2,000 acres of occupied prairie dog habitat annually & demonstrate colony persistence & growth in treated areas, as well as sustained black-footed ferret persistence.	15-16 16-17	\$175,000
Raptor Database Evaluation	To review and update the statewide raptor nest database, develop models of raptor distribution and demography using the	At least one peer-reviewed scientific publication, and a report with recommendations for future	15-16 16-17	\$90,000

	database, and develop recommendations for future raptor monitoring protocols.	raptor monitoring protocols for CPW and its partners.		
White-tailed Ptarmigan Range-wide Assessment	To determine the status of White-tailed Ptarmigan in Colorado and map occupied range.	Information gathered from this research will be used to develop a long-term enhanced monitoring program for assessing WTPT populations and provide information regarding the species for the USFWS 12-month status review.	11-12 15-16	\$466,000
Oral Plague Vaccine for Black-footed Ferret	To examine apparent safety and potential efficacy of oral vaccines to prevent plague in reintroduced black-footed ferrets.	Test and compare available candidate oral vaccines in captive black-footed ferrets.	15-16 16-17	\$151,150
Identification of Potential Barriers to Eastern Plains Fishes	To identify river segments without thermal or physical barriers where declining eastern plains species might be reintroduced to prevent federal listing.	An ongoing contract is established with Colorado State University. Distribution maps and a database containing barrier, temperature, and flow data have been created. Over 25,000 fish have been tagged and tracked. Several reports are in progress. A manuscript titled "Evidence for litho-pelagic spawning of non-adhesive eggs by Flathead Chub <i>Platygobio gracilis</i> " has been submitted to Journal of Fish and Wildlife Management.	08-09 09-10 10-11 12-13	\$377,231
Development of Plains Fish Monitoring Protocols	To evaluate and test the validity of more efficient sampling methods for locating populations of native eastern plains fish populations.	A sampling protocol was developed and several hundred sample sites have been surveyed. Multiple reports have been completed, including one titled Evaluating the success of Arkansas darter translocations in southeastern Colorado, a peer reviewed publication titled Evaluating the success of Arkansas darter translocations in Colorado: an Occupancy sampling approach in the Transactions of the American Fisheries Society, and a second peer reviewed paper titled Accounting for imperfect detection in Hill numbers for biodiversity studies published in Methods in Ecology and Evolution.	08-09 09-10 10-11 11-12 12-13	\$536,295

Monitoring Impacts of Irrigation Recharge on South Platte Native Fish Populations	To determine if water diverted from the main stem South Platte River during spring runoff to recharge basins will benefit native eastern plains fish populations. Several species are of conservation concern.	Results indicate that groundwater flows return to the river faster than would be beneficial for late fall in-stream needs. The amount of water returning to the river is not sufficient to impact native plains fish. Master's Thesis entitled "Effects of conjunctive use on streamflow at the Tamarack State Wildlife Area, Northeastern Colorado" has been provided to CPW.	08-09 09-10	\$250,058
Management of Fish Passages	To improve and evaluate fish passages construction methods to allow upstream and downstream migration for native fish populations. This work also contains evaluations related to in-stream whitewater park structures.	This study has provided valuable insights for optimizing the design of fish passage structures at obstacles that block upstream movement for fishes, such as at water diversions and whitewater parks. Results from this study have been used to develop standard fish swim performance criteria for native fish, validate experimental fishways using live fish, determine the barrier potential of diversions and whitewater parks to native fish, develop new whitewater park designs that do not impede upstream fish passage, and develop new methods for evaluating fish passage at diversions and whitewater parks. Collectively, results from this study will help guide management efforts related to the conservation of imperiled native species in the Colorado Front Range.	08-09 09-10 10-11 11-12 12-13	\$567,849
Native CO Fish Research in Western CO	To conduct population surveys where current information is lacking on distribution of native three-species (roundtail chub, flannelmouth sucker and bluehead sucker) in western Colorado streams and rivers. These species are of federal concern.	Ascertain present distribution of the three species; assess genetic purity and diversity; the three species remain unlisted as threatened or endangered at the federal level.	11-12 12-13 13-14	\$346,500
Three Species Genetics and Inventory in Northwestern Colorado	This study focuses on understanding the genetic diversity of roundtail chub, flannelmouth sucker and bluehead sucker	Evaluate distribution of genetic variability, in order to determine number and sources of broodstocks necessary for reintroduction and/or	09-10 11-12 12-13	\$510,000

	within Colorado, as it relates to potential population supplementation or re-establishment	augmentation of existing populations. Evaluation reintroduction / augmentation potential and success, in conjunction with non-native fish control, to restore native sucker populations. The long-term goal of this project is to execute reintroductions of these species to secure populations and extend their distribution into a greater portion of their historic range. Genetic analyses have been completed and a manuscript on distribution of genetic variation is in preparation. Broodstocks and successful culture techniques have been developed for two species (roundtail chub and bluehead sucker), and efforts to develop a broodstock continue for the third (flannelmouth sucker). Stocked fish are PIT tagged when feasible, and antennas (portable and fixed) have been deployed to monitor their survival and movement	13-14 14-15 15-16	
Cutthroat Trout Stream Habitat/Population Reclamation	To restore native cutthroat trout populations primarily through the construction of in-stream barriers to isolate and protect cutthroat trout from invasion by trout from downstream sources, and chemical reclamation projects to remove nonnative trout populations.	Restore cutthroat trout to as many miles of historic habitat as can be accomplished; complete at least one project per year; avert federal listing of native cutthroat trout under the ESA.	09-10 10-11 12-13 14-15 15-16	\$740,000
Tamarisk Removal	To enable removal of tamarisk and other invasive vegetation and re-vegetation with native riparian plant species.	Projects result in improved wildlife habitat and overall ecosystem functioning.	11-12	\$99,999
Boreal Toad Reintroduction Site Identification	To identify candidate locations suitable for boreal toad reintroduction.	CPW surveyed sites for boreal toads, and collected eDNA samples. Sites included known breeding ponds, and sites without observed toads where occupancy modeling predicted presence. An eDNA assay was developed and shown to be reliable by ground-truthing using the known-occupied sites. Three years' of sample	13-14 14-15 15-16	\$288,000

		collection and analysis have been completed, and a manuscript is in preparation comparing eDNA detection efficacy with that of visual encounter surveys. The conclusions of this manuscript and related reports will direct follow-up field work to continue to refine and evaluate eDNA survey methods.		
NASRF Project	To increase CPW's ability to rear native fish species in captivity at the CPW Native Species Hatchery.	CPW has begun replacing obsolete infrastructure that was failing and/or had exceeded its life expectancy. These upgrades are necessary to safeguard current production and prepare for additional capacity through water reuse.	13-14	\$454,000
Aquatic Disease Research- Characterizing Gill Lice Interactions with Salmonid Populations in Colorado	To determine impacts of gill lice and other pathogens on trout populations in Colorado.	An assessment of the current status of gill lice infestations in cutthroat trout and mountain whitefish populations; an evaluation of threats presented by gill lice to cutthroat trout and mountain whitefish populations; a description of potential management strategies to protect cutthroat trout and mountain whitefish populations of conservation concern. An annual report will be prepared each study year with the most recent gill lice distribution map, results from the field sampling and tank experiments, and potential management strategies based on the interpretation of the cumulative results. Data indicate spatial variation in the parasite and field and lab exposures suggest that cutthroat are somewhat less susceptible to the parasite than rainbow trout. Lab data indicate that the free-living form of the parasite is longer lived than reported elsewhere.	12-13 13-14 14-15	\$396,000
Eastern Plains Fish Sampling Analysis	To conduct data analysis on archived fish sampling data collected during eastern plains native fish surveys.	Data summary has been completed in the South Platte River basin and initial analyses have been completed. Data summary in the Arkansas River basin began in early 2015.	13-14	\$130,000

Flood-Related Species Redistribution	To determine the effects of the September 2013 floods on distribution and abundance of special status plains fish species, thereby informing flood recovery and prioritizing stream restoration efforts.	Fish surveys were completed in four Front Range watersheds. Data generated from this work are already being used to prioritize habitat restoration and fish passage at diversion structures.	14-15 15-16 16-17	\$220,000
Common Shiner Genetics	To determine if isolated populations of Common Shiner are genetically distinct, in order to identify suitable stocks to use for common shiner reintroduction projects.	Tissue samples were collected and analyzed; it was determined that an extant population is a suitable broodstock to supply individuals for reintroduction efforts.	14-15	\$8,326
Endocrine Study	To obtain information on the effects of endocrine disruptors in water supplies on sex ratios and reproductive failure in native fish populations.	The field portion of the study indicates landscape level variation in exogenous estrogenic exposure. This gives insight into the areas that could be of concern relative to exposure. Lab and field data indicate that wild fish may be mitigating the effects of exposure.	14-15	\$125,000
Native Cutthroat Trout Genetics	Use a variety of modern molecular methods to inform management of native cutthroat trout in Colorado by evaluating lineage, purity and heritage of untested native cutthroat trout populations.	Samples from 46 populations were analyzed with up to six different genetic tests. Eleven populations harbored pure native cutthroat trout.	14-15 15-16 16-17	\$60,000
Three Species Research-Nonnative Sucker Removal	Assess removal of non-native and hybrid adult suckers from a tributary spawning run in the Gunnison River basin as a tool to enhance genetic purity of larval population and ensure persistence of the native suckers (flannelmouth sucker and bluehead sucker).	Provide management strategies for curtailing hybridization and allowing for more pure native sucker progeny to recruit to the Gunnison River population; the three species remain unlisted as threatened or endangered at the Federal level.	14-15	\$199,000
Cutthroat Trout Morphological Diversity	Discovery of the native trout of the South Platte basin in a single population outside of Colorado Springs has launched a large-scale recovery effort for what is believed to be	Complete morphological assessments on Cutthroat Trout specimens housed at the Harvard and Smithsonian museums to determine	15-16	\$34,000

	<p>the true Greenback Cutthroat Trout - Colorado's state fish. While the genetic signature of these fish matches those from 120 year old museum specimens, whether these fish are good representatives of what inhabited the South Platte basin historically will likely drive how broadly the U. S. Fish and Wildlife Service will seek to restore them, or if genetic rescue should be attempted.</p>	<p>if morphological diversity that remains on the landscape represents what was there historically.</p>		
Native Salmonid Spawn & Culture	<p>Develop improved procedures for acquiring native Salmonid eggs from wild sources</p>	<p>Refined methods for extending milt, disinfecting eggs, and tagging adult Cutthroat Trout to assist with maximizing genetic diversity in progeny (spawn martyring)</p>	<p>15-16 16-17</p>	<p>\$51,105</p>
Hatchery Environment Enhancement	<p>To evaluate the effects of hatchery environment enhancement, including cover, flow, and diurnal changes in temperature on the ability of Arkansas darters to avoid an esocid predator.</p>	<p>The goal of this study is to determine if hatchery environment enhancement can better prepare Arkansas darters for the conditions they will encounter after being stocked as well as increase their post-stocking survival through predator evasion. The enhancement strategies that increase predator evasion of Arkansas darters in the lab will be implemented and tested on a larger scale at the CPW Native Aquatic Species Restoration Facility.</p>	<p>15-16 16-17</p>	<p>\$172,500</p>
Statewide Rare Plant Conservation Program	<p>This project implements a rare plant conservation program for Colorado. The focus is on evaluating, monitoring, protecting and researching the rarest plant species in the state with the aim of effectively conserving these species and reducing their need for federal listing.</p>	<p>Performed surveys, monitoring, and research for federally listed or potentially listed plant species to inform federal listing decisions. Most recently, rare plant work has focused on Plant Species of Greatest Conservation Need outlined in the State Wildlife Action Plan. Specific projects have included the establishment of long-term quantitative monitoring of several petitioned plant species, development of Best Management Practices for rare plants, development of an online rare plant guide for use by citizens</p>	<p>10-11 12-13 13-14 14-15</p>	<p>\$1,750,000 Budget shared with Species Conservation Inventory & Planning on CPW Properties</p>

		statewide, and habitat protection & improvement for several federally listed species. Support provided to landowners and managers across the state to address threats to rare plants and help implement conservation actions.		
Species Conservation Inventory and Planning on CPW Properties	To collect information on species presence, location, and habitats used on CPW properties, specifically State Parks, in order to provide agency land managers with the information they need to support the conservation and stewardship of rare & sensitive animal and plant species on CPW properties; and to enable CPW to implement resource stewardship practices that minimize and mitigate possible management influences on species and their habitats while conserving rare species and reduce the need for federal listing.	Recent GIS and field inventory work has led to the identification of habitat occupied by federal and state listed species, as well as SWAP species of greatest conservation need on state parks and the monitoring of these populations. Direct observations and remote inventory techniques have identified the presence and breeding of rare avian, mammalian, plant, and herptile species on state parks. Reports inform CPW land managers of management considerations in regards to their specific properties and the species and habitats located on those properties, recommendations for improvement of population numbers and species habitat, and protocols for species monitoring.	10-11 12-13 13-14 14-15	
CPW TOTAL				\$18,453,535

Colorado Water Conservation Board				
Project	Purpose	Outcomes	Year(s) Authorized	Total Appropriated
San Juan River Recovery Implementation Program (SJ RIP) Funding	To fund capital, operation and maintenance activities for the SJ RIP, which is a collaborative conservation partnership working to recover two threatened and endangered species (Colorado pikeminnow and razorback sucker) in the San Juan River and its tributaries in Colorado, New Mexico and Utah, while allowing water development to proceed in accordance with state and federal laws and interstate compacts.	Increased range for native fish through construction of fish passages around large diversion structures, improved operation of Navajo Reservoir to better meet program-identified flow goals, and improved research and monitoring. A major benefit of the SJ RIP is expedited ESA consultations for water users in the San Juan basin. Since 1992, SJ RIP has resulted in 310 expedited ESA Section 7 Consultations for approximately 218,000 AF of depletions in Colorado. Increase in wild spawning of razorback sucker. Increase in survival rates of yearling Colorado pikeminnow.	02-03	1,560,000
Platte River Recovery Implementation Program (PR RIP) Funding	To fund the operation of the PR RIP and to expand, repair and operate Tamarack and related projects in accordance with Colorado's obligations to PR RIP. The goal of the PR RIP is to enhance, restore, and protect habitat for the whooping crane, least tern, piping plover, and pallid sturgeon. The existence of PR RIP allows water use and development to continue in Colorado.	PR RIP implementation of the PR RIP Water Action Plan currently results in an average of 12,059 acre-feet per year of shortage reduction to target flows. Colorado's operation of the Tamarack and related projects result in an average of 4,427 acre-feet of retimed annual accretions and an average of 7,859 acre-feet per year of shortage reduction to target flows. PR RIP resulted in 124 expedited ESA Section 7 consultations for Platte River water users in Colorado.	03-04 06-07 07-08 08-09 10-11 11-12	\$18,889,395
Upper Colorado Recovery Implementation Program (UC RIP) Funding	To fund a wide variety of projects in support of the UC RIP, a collaborative conservation partnership working to recover threatened and endangered fish species in the Colorado River and its tributaries, while allowing water development to proceed in accordance with state and federal laws and interstate compacts.	Since 1988, UC RIP has provided expedited ESA Section 7 Consultations for 1224 projects with an estimated 2.12 million acre-feet of existing and future depletions within Colorado. Increased range for native fish through construction of fish passages around large diversion structures. Increased spring peak flows to improve spawning. Increased flows through critical habitat in late summer, including provision of over 16,825 AF annually from water users and additional variable amounts from federal reservoirs. Improvements to irrigation systems are providing additional streamflow through critical habitat. Increased efforts to control populations of certain problematic non-native fish species in critical recovery area,	10-11 11-12 12-13 14-15	\$4,000,000

		including installation of net to avoid lake populations entering stream below reservoir.		
Native Fish Conservation	Construction of the new Relief Ditch Diversion Dam reduces entrainment in the canal of both native and sport fish species and provide better access for fish to migrate upriver by reconnecting currently fragmented habitat. Installation of designed fish passage over the Owens Hall diversion dam allows state listed species to pass over the 8-foot high structure.	In addition to both projects benefiting fish species, the Relief Ditch reconstruction will reduce annual costs and improve water delivery efficiency for irrigators. Additionally, commercial and private boaters will experience safer passage. Hunters, anglers and wildlife will all benefit from an improved river corridor environment.	12-13	\$1,000,000
Instream Flow Acquisitions	For acquiring water for instream flows to preserve or improve the natural environment of species that are listed as threatened or endangered under federal or state law, are candidate species or are likely to become candidate species.	Preserving and improving habitat of candidate species will contribute to preventing listing of such species. Preserving and improving habitat of endangered and threatened species increases the effectiveness of recovery programs and other efforts to benefit species.	13-14 15-16	\$1,000,000
Selenium Management Plan	To reduce selenium loading from irrigation runoff and other local sources as part of US Fish and Wildlife Service Programmatic Biological Opinion. Activities to be funded include research, monitoring, evaluation, and selenium reduction methods such as further lining of canals and piping of laterals.	The monitoring and evaluation programs put into place by the Gunnison Selenium Management Program are demonstrating the positive impact of selenium reduction methods to the Gunnison River. Expenditures include support for local conservation district staff support, ecosystem modeling, and various methods of water quality sampling.	13-14 14-15 15-16	\$1,500,000
Native Fish Passage Design and Construction at Flood-affected Diversions	Design, install, and monitor fish passage structures at strategic flood-affected diversion structures on the South Platte River.	Modeled and designed fish passage through the flood-damaged Meadow Park Whitewater Park diversion in Lyons, Colorado. This ultimately helps improve connectivity and population persistence for native fish species such as the cutthroat, brown, and rainbow trout on the St. Vrain River.	14-15	\$500,000
CWCB TOTAL				\$28,449,395