

DROUGHT RELATED FISH RESCUE OPERATIONS in 2014



California Department of Fish and Wildlife



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Introduction

On January 17, 2014, Governor Brown declared a state of emergency due to prolonged drought conditions and directed state agencies to take all necessary actions in response to the drought. In the same year, Senate Bill 103 appropriated \$2.3 million for drought related activities. The California Department of Fish and Wildlife (the Department) was responsible for evaluating and managing the impacts of drought on fish and wildlife throughout the state. Drying waterbodies are one of the primary ways in which fish are negatively impacted during a drought.

To manage the impacts of drought, the Department performed fish rescues and relocations of imperiled fishes. Departmental Bulletin 2013-04 defines fish rescue as “an action taken to remove finfish from habitat which is or will soon become unsuitable and relocating those fish either to more suitable habitat, an interim holding facility, or a permanent artificial environment”. In response to the drought, the Department also developed a decision-making tool to guide the assessment of drought related risks to fish populations and evaluate rescue options for at-risk populations. Waters containing state or federally listed species, native species, or species of special concern, where drought was likely to severely impact habitat, were identified as potential locations for fish rescue. Rescued fish were preferentially relocated to suitable habitat within the same water, same watershed, documented historic range, suitable habitat outside their documented historic range, and to refuge facilities. Rescues were only approved if they did not pose a substantial genetic or biological threat. Additionally, relocations had to be logistically feasible and consistent with the Department rescue policy and operational guidelines.

Once a population was identified as needing rescue, staff were mobilized to collect and transport fish to pre-determined locations. Fish were captured using a variety of techniques, dictated by the conditions of each rescue. These methods included beach seining, electrofishing, and dip netting. Similarly, fish were transported using a variety of methods that depended on the logistics of each translocation. In some cases, fish were moved using five-gallon buckets, while other rescues utilized transport trucks. The following report summarizes drought related fish rescue operations in 2014 highlighting results from each CDFW Region.

In 2014, a total of 270 drought related rescues took place in throughout the state (Figure 1, Table 1). Most of the rescues occurred in Northern Region (44%) and Central Region (44%) (Table 1). A total of 155,425 fish were rescued representing 31 different taxa (Table 2). Most fish rescued were in Northern Region (90%), followed by North Central Region (7%), Central Region 4 (3%), and Bay Delta and South Coast Region with less than 1% of all fish rescued.



Figure 1. Map of California counties color coded and separated into California Department of Fish and Wildlife Regions.

Northern Region

In 2014, rescues took place on Antelope, Battle, Browns, Cold, Deer, Dibble, Edson, French, Indian, Kidder, Mill, Moosehead, Parks, Patterson, Reeds, Shackelford, Sheephaven, Swamp and West Weaver creeks. In addition, the Sacramento, Scott and Shasta rivers also required fish rescue operations. One of the most noteworthy rescues took place on tributaries of the Scott River (Figure 2) and Shasta River, where approximately 116,000 juvenile Coho Salmon were rescued. Most of the Coho Salmon were moved to watersheds with more suitable habitat, but a small number were also taken to Irongate Hatchery.

Backwater areas of the Sacramento River also started to dry up requiring multiple fish rescues. Another significant operation took place on Edson, Moose, Sheephaven and Swamp creeks to rescue 1,275 McCloud River Redband Trout (Figure 3). Captured Redband Trout were moved upstream within the same watershed as well as to tributaries in nearby watersheds with suitable habitat. Fish collected from Edson and Swamp creeks were taken to Mount Shasta Fish Hatchery. 228 Goose Lake Redband Trout were also rescued out of Cold Creek and relocated to suitable upstream habitat.



Figure 2. Scott River Rescue of Coho Salmon, July 10, 2014, Siskiyou County, CA



Figure 3. McCloud River Redband Trout at Mt. Shasta Hatchery rescued from Edson Creek, Siskiyou County, on January 14, 2014

North Central Region

The North Central Region conducted seven rescues on three watersheds in two counties (Table 2). The most noteworthy rescues took place on Adobe Creek (Figure 4) and Dayle Creek where 1,969 threatened Clear Lake Hitch were captured and relocated to Clear Lake. Drought conditions on the Little Truckee River also necessitated a fish rescue to save several native fish species including Mountain Whitefish, Paiute Sculpin, and Tui Chub. All fish captured were relocated to suitable habitat in the Truckee River.



Figure 3. Department of Fish and Wildlife Staff Conducting Adobe Creek Clear Lake Hitch Rescue in Lake County on June 9, 2014

Bay Delta Region

The lack of rain in 2014 threatened fish species in several watersheds in the Bay Delta Region. There were seven rescues in four watersheds spanning four counties in 2014 (Table 2). Rescues took place within the Redwood Creek and Pena Creek watersheds, which hold small numbers of Coho Salmon. A total of 186 Coho Salmon were captured and taken to Warm Springs Hatchery. Those fish were reared at the hatchery until conditions improved.

Another important rescue took place at Jewel Lake in Contra Costa County. Drought conditions had reduced the available habitat and dissolved oxygen was approaching a harmful level for a genetically distinct population of Sacramento Perch. CDFW, in collaboration with East Bay Regional Park District, performed two rescues at Jewel Lake. A total of 178 Sacramento Perch were captured and relocated to holding ponds at Gray Lodge Wildlife Area.

The Central Region performed 100 rescues on the Carmel River in Monterey County and 18 rescues on the Merced River in Merced County. A total of 62 adult steelhead were captured on both rivers and taken to Merced River Hatchery. 793 steelhead smolts and 3,011 young of the year were rescued on the Carmel River. These fish were relocated to suitable habitat in the lower river, lagoon, and Pacific Ocean.

South Coast Region

The South Coast Region conducted 18 rescues on 8 watersheds in three different counties (Table 2). Rescues took place on Arroyo Hondo, Hilton, Montecito, North Fork

Matilija, Santa Paula and Sisar creeks. Steelhead were the predominant species rescued—a total of 4 adults and 527 juveniles were captured. Most of the steelhead were relocated within the same watershed, but the fish captured in Hilton Creek were released into the Santa Ynez River. Another noteworthy rescue took place on the Santa Clara River where 569 endangered Unarmored Three-spine Stickleback had to be removed from a section of the river that was drying up. Those fish were released into more favorable habitat in San Francisquito Creek in Santa Clara and San Mateo Counties.

Table 1. The number of drought-related fish rescues in 2014 by county, water, and month for a) Northern Region, b) North Central Region, c) Bay Delta Region, d) Central Region (CR), and e) South Coast Region (SC).

a) Northern Region

County	Water	Month: Jan	Month: Feb	Month: Mar	Month: Apr	Month: May	Month: Jun	Month: Jul	Month: Aug	Month: Sep	Month: Oct	Month: Nov	Month: Dec	Total
Modoc	Cold Creek							3						3
Shasta	Battle Creek												1	1
Shasta	Sacramento River									3	1	3		7
Siskiyou	Edson Creek								2					2
Siskiyou	French Creek							1						1
Siskiyou	Kidder Creek					4								4
Siskiyou	Moosehead Creek								1	1				2
Siskiyou	Parks Creek						1							1
Siskiyou	Patterson Creek					3								3
Siskiyou	Scott River						15	30	9					54

County	Water	Month: Jan	Month: Feb	Month: Mar	Month: Apr	Month: May	Month: Jun	Month: Jul	Month: Aug	Month: Sep	Month: Oct	Month: Nov	Month: Dec	Total
Siskiyou	Shackleford Creek						5	7						12
Siskiyou	Shasta River					1								1
Siskiyou	Sheepheaven Creek						1		3					4
Siskiyou	Swamp Creek								1	1				2
Tehama	Antelope Creek			2	1	2								5
Tehama	Deer Creek			1							1			2
Tehama	Dibble Creek				4									4
Tehama	Mill Creek					1	1	1						3
Tehama	Reeds Creek				2									2
Tehama	Sacramento River								1	2		1		4
Trinity	Browns Creek							1						1
Trinity	Indian Creek									1				1

County	Water	Month: Jan	Month: Feb	Month: Mar	Month: Apr	Month: May	Month: Jun	Month: Jul	Month: Aug	Month: Sep	Month: Oct	Month: Nov	Month: Dec	Total
Trinity	West Weaver Creek								1					1

b) North Central Region

County	Water	Month: Jan	Month: Feb	Month: Mar	Month: Apr	Month: May	Month: Jun	Month: Jul	Month: Aug	Month: Sep	Month: Oct	Month: Nov	Month: Dec	Total
Lake	Adobe Creek			2		1	1	1						3
Lake	Dayle Creek						2							2
Nevada	Little Truckee River							1						1
Alameda	Jewel Lake								2					2
Marin	Redwood Creek								3					3

c) Bay-Delta Region

County	Water	Month: Jan	Month: Feb	Month: Mar	Month: Apr	Month: May	Month: Jun	Month: Jul	Month: Aug	Month: Sep	Month: Oct	Month: Nov	Month: Dec	Total
San Mateo	Pescadero Lagoon						1							1
Sonoma	Pena Cree							1						1

County	Water	Month: Jan	Month: Feb	Month: Mar	Month: Apr	Month: May	Month: Jun	Month: Jul	Month: Aug	Month: Sep	Month: Oct	Month: Nov	Month: Dec	Total
Ventura	North Fork Matilija Creek								1	1				2
Ventura	Santa Paula Creek									2				2
Ventura	Sisar Creek						1			1				2

Table 2. Count of fish taxa rescued by region in 2014. Life-stage was recorded for salmonid species—(J) indicates juvenile and (A) indicates adult.

Taxa Common Name	Life stage	Region 1	Region 2	Region 3	Region 4	Region 5	Total
late fall Chinook Salmon	A	6					6
Spring-run Chinook Salmon	A	8					8
Winter-run Chinook Salmon	J	265					265
fall-run Chinook Salmon	A	7					7
Fall-run Chinook Salmon	J	2,372					2,372
Coho Salmon	J	116,298		186			116,484
steelhead (sea run Rainbow Trout)	A	20		1	62	4	87
steelhead (sea run Rainbow Trout)	J	17,296			3,804	527	21,627
Rainbow Trout					41	108	149
Brown Trout			50				50
McCloud R. Redband Trout		1,275					1,275
Goose Lake Redband Trout		228					228
Speckled Dace		54					54
Pit Sculpin		95					95
Riffle Sculpin		10					10
Paiute Sculpin			20				20

Taxa Common Name	Life stage	Region 1	Region 2	Region 3	Region 4	Region 5	Total
Sculpin (spp.)		6	96				102
Sacramento Sucker		131	4,191				4,322
Sucker (spp.)		11					11
Lamprey spp.	A	69					69
Hardhead		177					177
Sacramento Pikeminnow		200					200
Three -spine Stickleback (Unarmored)						569	569
Three-spine Stickleback (Armored)		1,002	4,014				5,016
Mountain Whitefish			25				25
Clear Lake Hitch			1,969				1,969
Sacramento Perch				178			178
Tui Chub			4				4
Lahontan Redside			1				1
Smallmouth Bass		2					2
Green Sunfish		1					1
Bluegill		1					1
California Roach		13					13

Taxa Common Name	Life stage	Region 1	Region 2	Region 3	Region 4	Region 5	Total
Western Mosquitofish		108					108
GRAND TOTAL		139,655	1,037	365	3,907	1,208	155,505