DROUGHT RELATED FISH RESCUE OPERATIONS in 2016

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 2016 highlighting results from each CDFW Region.

In 2016, 135 drought related fish rescues occurred in all CDFW Regions, except the North Central and Marine Regions (Figure 1, Table 1). The majority of rescues occurred in Northern Region (53 %), followed by Central Region (26%), South Coast Region (17%), Bay Delta Region (3%), and Inland Deserts Region 6 (1%). A total of 30,182 fish were rescued representing 19 different taxa (Table 2). The majority of fish rescued were also from the Northern Region (86%) followed by South Coast Region (6%), Bay Delta Region (5%), and Central Region (3%).

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

Northern Region

77% of the rescues in the Northern Region occurred on the Sacramento River where receding back-water areas and side channels stranded a wide variety of fish species (Table 2). All Sacramento River strains of juvenile Chinook Salmon were encountered with the majority composed of fall and late-fall run fish (Figure 2). Four spring-run and a single winter-run Chinook Salmon were also rescued. Threatened steelhead were also rescued in the Sacramento River as well as in Antelope, Baker, Canyon Hollow, Shackleford and Sulphur Creeks.

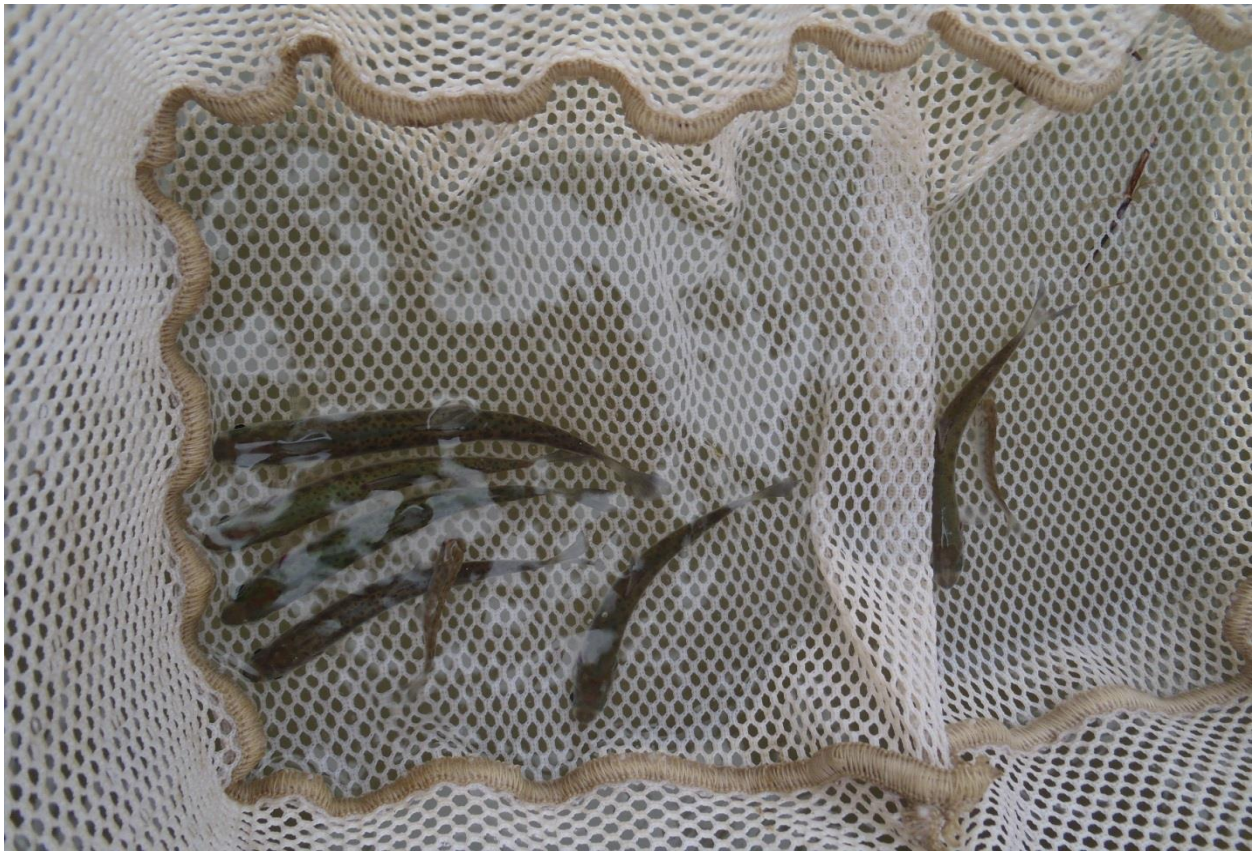

Figure 2. Dip-net holding Winter, Spring and Late -Run Chinook Salmon rescued from the Sacramento River.

North Central Region

In 2016, the North Central Region did not conduct any drought related rescues. Department staff did conduct fish rescues related to flooding in the Tisdale and Yolo Bypasses (not reported here).

Bay Delta Region

The most important rescues in the Bay Delta Region took place on Cheda, Porter and Wine Creeks, where a total of 321 endangered Coho Salmon were rescued. The Coho were translocated to Dry Creek, Lagunitas Creek, and the Russian River. 54 young of the year Coho Salmon were taken to Warm Springs Hatchery to rear and released once conditions improved. Department staff also captured 1,082 threatened steelhead during these rescue operations. The steelhead were released into Dry Creek, Lagunitas Creek, and the Russian River.

Central Region

The Central Region performed 35 rescues on the Carmel River and Hitchcock Creek in Monterey County (Figure 3,Table 1). A total of 857 juvenile steelhead were captured. 344 fish were taken to the Carmel River Fish Facility for captive rearing, while 433 were released into suitable habitat in the upper reaches of the Carmel River. The remaining 16 fish were released into Las Garzas Creek. Another important rescue took place on Volcanic Creek in Tulare County where 52 California Golden Trout were rescued and taken to the American River Hatchery.

Figure 3. Fish Rescue on the Carmel River

South Coast Region

The South Coast Region completed 23 rescues in seven watersheds. Unarmored three-spine stickleback was the predominant species rescued in this region totaling 1,771 fish. They were found stranded in Soledad Canyon Creek and were relocated to suitable habitat further upstream in the watershed. 44 juvenile steelhead were captured from Hilton, San Ysidro, Sisar, and Topanga creeks (Figure 4). All steelhead were relocated into suitable habitat within the same watersheds from which they were collected. In addition, two Prickly Sculpin were rescued from the Santa Ynez River in Santa Barbara County and released in the Santa Ynez River at the Stilling Basin.

Figure 4. Staff Electroshocking San Ysidro Creek

Inland Deserts Region

The Inland Desert Region is normally a very dry area with only a few watersheds that have water year-round. In 2016, only one creek required a drought-related fish rescue. In June, Department staff rescued 153 resident Rainbow Trout from Coldwater Canyon Creek in Riverside County. The trout were taken Mojave Hatchery and later returned to Coldwater Canyon Creek once conditions improved.

Table 1. The number of drought-related fish rescues in 2016 by county, water, and month for a) Northern Region, b) Bay Delta Region, c) Central Region, d) South Coast Region, and e) Inland Deserts Region

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
Humb-oldt	Baker Creek								1					1
Shasta	Canyon Hollow				2									2
Shasta	Sacramento River	5	8	10	6									29
Shasta	Sulphur Creek				2									2
Siskiyo u	Shackleford Creek							6						6
Teham-a	Antelope Creek				1	2								3
Teham-a	Deer Creek						2							2
Teham-a	Sacramento River	4	8	5	9									26

b) 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
Marin	Cheda Creek						1							1
Sonoma	Adobe Creek						1							2
Sonoma	Porter Creek							1						29
Sonoma	Wine Creek						1							2

c) 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
Monterey	Carmel River						10	17	5	1				33
Monterey	Hitchcock Creek					2								2
Tulare	Volcanic Creek										1			1

d) South Coast 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
Los Angeles	Soledad Canyon Creek					4					1			5
Los Angeles	Topanga Creek								1		2			3
Santa Barbara	Hilton Creek							2						2
Santa Barbara	Jameson Lake								3					3
Santa Barbara	San Ysidro Creek										1			1
Santa Barbara	Santa Ynez River						5		1		2			8
Ventura	Sisar Creek										1			1

e) Inland Deserts 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
Riverside	Coldwater Canyon Creek						1							1

Table 2. Count of fish taxa rescued by Region in 2016. 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	Region 6	TOTAL
late fall-run Chinook Salmon	J	2,220						**2,220**
fall-run Chinook Salmon	J	6,389						**6,389**
spring-run Chinook Salmon	J	1						**1**
winter-run Chinook Salmon	J	4						**4**
Coho Salmon	J	291		321				**612**
Steelhead (sea-run Rainbow Trout)	A	116						**116**
Steelhead (sea-run Rainbow Trout)	J	14,497		1,082	857	44		**16,480**
Rainbow Trout		1				1	153	**155**
California Golden Trout					52			**52**
Prickly Sculpin		4				2		**6**
Riffle Sculpin		5						**5**
Sacramento Pikeminnow		216						**216**
Sacramento Sucker		337						**337**
Golden Shiner		7						**7**
Hardhead		53						**53**
Tule Perch		9						**9**
Western Mosquitofish		390						**390**
California Roach		29						**29**
Bluegill		14						**14**
Smallmouth Bass		19						**19**
Largemouth Bass		11						**11**
Three-spine Stickleback (Armored)		1,286						**1,286**
Three-spine Stickleback (Unarmored)						1,771		**1,771**
GRAND TOTAL		25,899	0	1,403	909	1,818	153	**30,264**