

Upper Piru Creek Wild Trout Management Plan

2012-2017

State of California

Department of Fish and Game

Heritage and Wild Trout Program

South Coast Region



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2012

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Executive summary

California Fish and Game Code (Chapter 7.2, Section 1726.4 (a)) states that “it is the intent of the Legislature that the department [specifically, the California Department of Fish and Game (CDFG) Heritage and Wild Trout Program (HWTP)], in administering its existing [heritage and] wild trout program, shall conduct a biological and physical inventory of all California trout streams and lakes to determine the most suitable angling regulations for each stream or lake. The department shall determine for each stream or lake whether it should be managed as a wild trout fishery, or whether its management should involve the planting of native trout species to supplement wild trout populations.” Section 1726.4 (a) additionally states that “biological and physical inventories prepared for each stream, stream system, or lake shall include an assessment of the resource status, threats to the continued well-being of the fishery resource, the potential for fishery resource development, and recommendations, including necessary changes in the allowed take of trout, for the development of each stream or lake to its full capacity as a fishery.”

Furthermore, California Fish and Game Code (Chapter 7.2, Section 1727e) requires that the CDFG “shall prepare and complete management plans for all wild trout waters not more than three years following their initial designation by the commission, and to update the management plan every five years following completion of the initial management plan.” For clarification, wild trout waters as stated above represent waters that have been formally designated by the California Fish and Game Commission as Heritage and/or Wild Trout Waters.

Wild Trout Waters are those that support self-sustaining trout populations, are aesthetically pleasing and environmentally productive, provide adequate catch rates in terms of numbers or size of trout, and are open to public angling. Wild Trout Waters may not be stocked with catchable-sized hatchery trout. Heritage Trout Waters are a sub-set of Wild Trout Waters that highlight wild populations of native California trout found within their historic drainages.

In an effort to comply with existing policy and mandates, the HWTP has prepared a fishery management plan (FMP) for upper Piru Creek. This FMP is intended largely as an operations guide for internal planning purposes to communicate management direction to the public, other agencies, and trout angling organizations. This FMP is intended to provide direction and list actions necessary to sustain the recreational fishery for the benefit and enjoyment of the angling public. However, actions associated with this FMP are initiated independently, thus any environmental review/permits needed to implement the actions are separate from the FMP itself.

Resource status

Area description

Piru Creek (Ventura and Los Angeles counties), tributary to the Santa Clara River, is located approximately 30 miles northwest of Los Angeles, CA (Figure 1). It originates in the Transverse Range and Techachapi Mountains near Mount Pinos and San Guillermo Mountain at elevations ranging from 7000 to 8800 feet. From the headwaters, Piru

Creek flows southeast for an estimated 39 miles, drains a watershed of approximately 198 square miles, and empties into Pyramid Lake; the portion upstream of Pyramid Lake is commonly referred to as upper Piru Creek (Figure 2). The majority of the watershed resides within the Los Padres National Forest (LPNF) with portions of the creek and tributaries flowing through the Chumash and Sespe Wilderness areas.

Piru Creek, including all tributaries, upstream of Pyramid Lake (Ventura and Los Angeles counties) was designated as a Heritage and Wild Trout Water in 2008 (Figure 1). This designation is at the watershed level and includes approximately 69 miles of perennial stream habitat.

Land ownership/administration

- | | |
|--|---|
| <input checked="" type="checkbox"/> United States Forest Service | <input type="checkbox"/> State Parks |
| <input type="checkbox"/> Bureau of Land Management | <input type="checkbox"/> National Parks |
| <input type="checkbox"/> Fish and Game | <input checked="" type="checkbox"/> Private |
| <input type="checkbox"/> Other | |

Public access

- | | |
|--|--|
| <input checked="" type="checkbox"/> Roadside | <input checked="" type="checkbox"/> Remote/hike-in |
| <input type="checkbox"/> Boat | |

Designations

- | | |
|--|--|
| <input checked="" type="checkbox"/> Wild Trout Water | <input checked="" type="checkbox"/> Heritage Trout Water |
| <input type="checkbox"/> Federal Wild and Scenic River | <input checked="" type="checkbox"/> Wilderness |
| <input checked="" type="checkbox"/> Other- Critical habitat for <i>Bufo californicus</i> and <i>Rana draytonii</i> | |

Area maps

Figure 1. Vicinity map of upper Piru Creek watershed

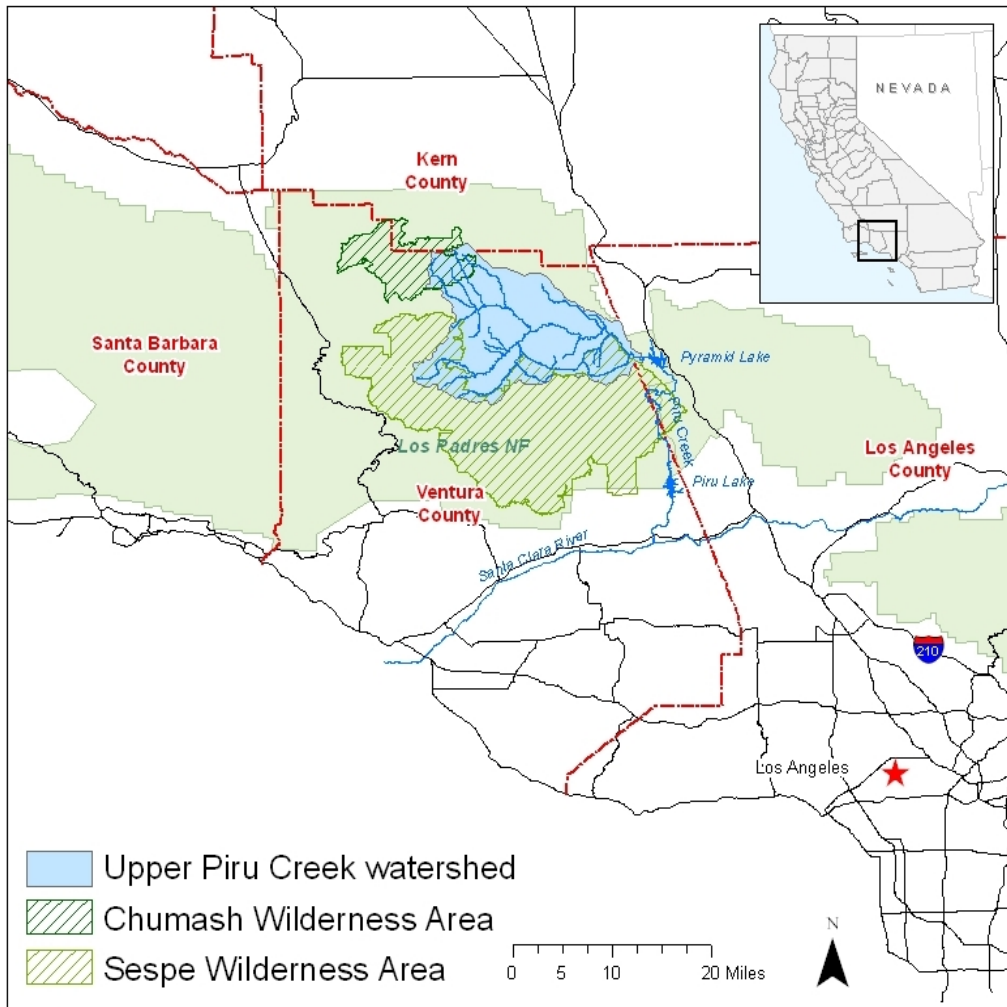
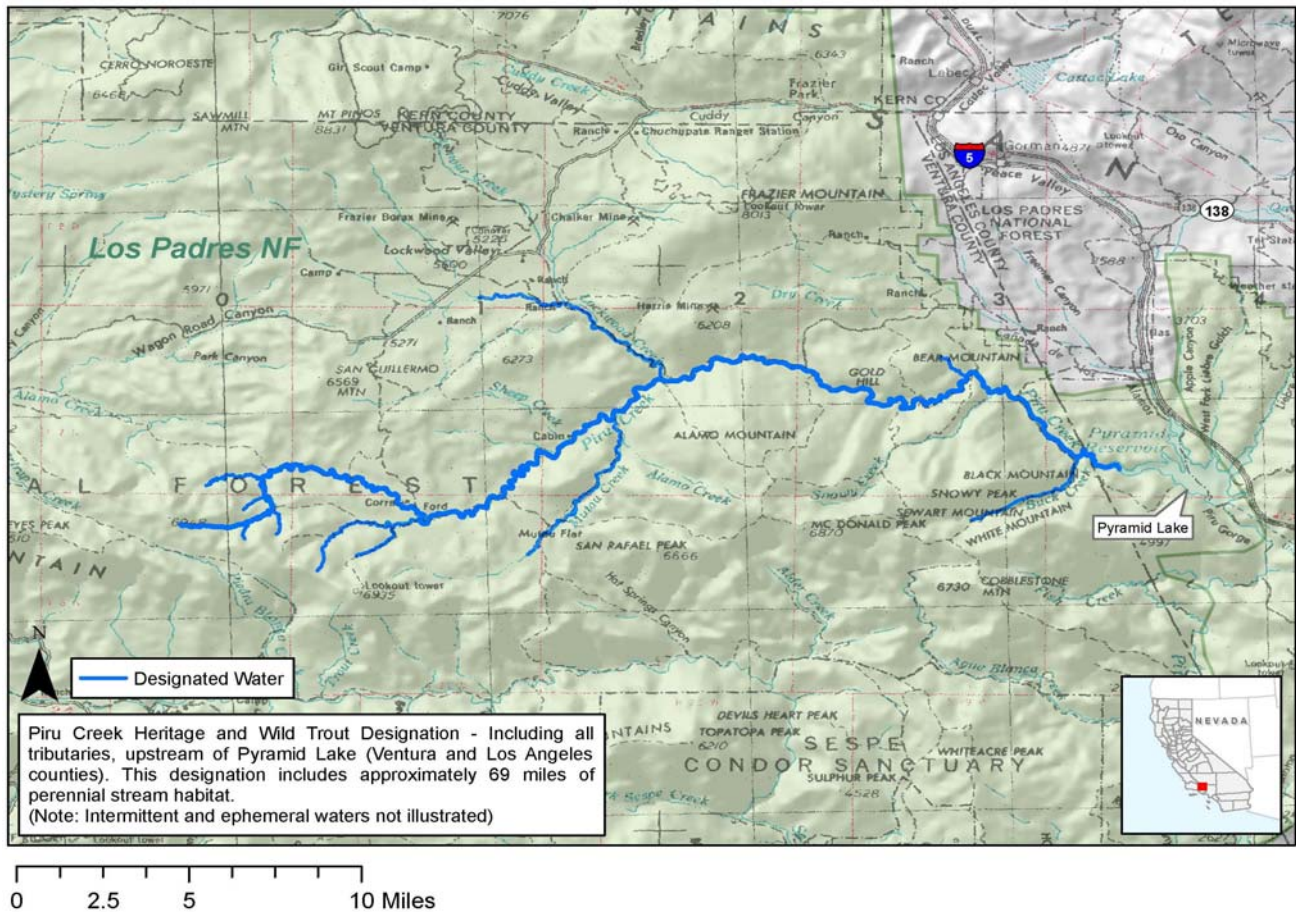


Figure 2. Map of upper Piru Creek Heritage and Wild Trout-designated reach



Fishery description

The Santa Clara River and Piru Creek watersheds are within the native range of coastal rainbow trout (*Oncorhynchus mykiss irideus*) and historically included both anadromous and resident life history forms. Prior to the creation of Santa Felicia Dam at Lake Piru in 1955, Piru Creek was a major steelhead spawning tributary in the Santa Clara River system. Upper Piru Creek is designated as a Heritage and Wild Trout Water providing anglers an opportunity to fish for native trout in their native drainage. Prior to 1979, the CDFG stocked rainbow trout in portions of the upper Piru Creek watershed including tributaries (Titus et al. 2011); however, recent genetic analysis of trout captured in upper Piru Creek shows that these fish appear to share little ancestry with hatchery strains (Clemento et al. 2008 and Girman et al. 2006).

Upper Piru Creek is a fast-action fishery (greater than two fish per hour). Trophy-sized trout (greater than 18 inches) are generally absent, although larger-sized adfluvial fish have been observed in the system. Non-native fishes have been observed in the portion of upper Piru Creek downstream of the United States Geologic Survey (USGS) gaging station located near the confluence with Piru and

Buck creeks (Figure 3). This gaging station and the associated instream structure may act as a barrier to upstream fish migration of non-native fishes, however anglers have reported catching largemouth bass (*Microterus salmoides*) in the vicinity of the Hardluck Campground on upper Piru Creek. The weir at the gaging station is a barrier to upstream migration for non-native fishes under most flow conditions. Piru Creek is designated as critical habitat for the southwest arroyo toad (*Bufo californicus*; Department of the Interior, 2011) and California red-legged frog (*Rana draytonii*; Department of the Interior, 2010). The latter species has not been observed upstream of Lake Piru to date.

Figure 3. Photograph of USGS gaging station near confluence of Piru and Buck creeks



The upper Piru Creek watershed flows through mid-elevation sandstone canyons and is prone to landslides and locally high erosion rates. Combination of high relief, unstable soils, limited vegetative cover, and abundant wildfires can lead to locally high sediment yields. Vegetation includes chaparral and forested lands. Deeper pool habitat is limited to higher gradient (> 4%) areas and is typically correlated with in-stream boulder scour. The majority of trout spawning occurs in perennial tributaries including Lockwood, Seymour, Buck, Snowy, Mutau, and Alamo creeks. In addition to spawning habitat, perennial tributaries play a critical role in providing summering habitat for fish, thermal refuge, and cold-water influence to the main-stem Piru Creek.

Water source(s)

Spring

Rain

Snow

Tailwater

Gradient

Low (< 2%)

Medium (2-4%)

High (>4%)

N/A

Fish species

Common name	Scientific name	Native (Y/N)	Listing status
coastal rainbow trout	<i>Oncorhynchus mykiss irideus</i>	Y	-
striped bass	<i>Morone saxatilis</i>	N	-
channel catfish	<i>Ictalurus punctatus</i>	N	-
largemouth bass	<i>Micropterus salmoides</i>	N	-
green sunfish	<i>Lepomis cyanellus</i>	N	-

Other aquatic species

Common name	Scientific name	Native (Y/N)	Listing status
southwest arroyo toad	<i>Bufo californicus</i>	Y	Federally Endangered; CA Species of Concern
California red-legged frog	<i>Rana draytonii</i>	Y	Federally Threatened; CA Species of Concern
western pond turtle	<i>Clemmys marmorata pallida</i>	Y	CA Species of Concern
two-striped garter snake	<i>Thamnophis hammondi</i>	Y	CA Species of Concern
American bullfrog	<i>Rana catesbeiana</i>	N	-
tree frog	<i>Hyla sp.</i>	Y	-

Fisheries and habitat assessments

Water	Number of sections surveyed	Year(s)	Survey type	Reference data/summary report
Piru Creek	7	1996-2007	Electroshock depletion	Appendix 1/Weaver and Mehalick 2007
Piru Creek	n/a	2001-2002	Spawning study/redd count	Bloom 2002
Piru Creek	n/a	2001-2002	Age and growth study/scale analysis	Bloom 2002
Piru Creek	26	1996-2008	Direct observation snorkel	Appendix 2/Weaver and Mehalick 2007
Lockwood Creek	5	1996-2007	Electroshock depletion	Appendix 1/Weaver and Mehalick 2007
Lockwood Creek	23	2005-2007	Direct observation snorkel	Appendix 2/Weaver and Mehalick 2007
Buck Creek	11	2007-2008	Direct observation snorkel	Appendix 2/Weaver and Mehalick 2007 and 2008
Snowy Creek	15	2007-2008	Direct observation snorkel	Appendix 2/Weaver and Mehalick 2007 and 2008
Alamo Creek	3	2008	Direct observation snorkel	Appendix 2/Weaver and Mehalick 2008
Mutau Creek	4	2008	Direct observation snorkel	Appendix 2/Weaver and Mehalick 2008

Angler survey data

Water	Date range	Survey type	Reference data/summary report
Piru Creek	1996	Creel census	Ally 1997
Piru Creek	2001-2011	Angler survey box (ASB)	Appendix 3
Lockwood Creek	2001-2011	Angler survey box (ASB)	Appendix 3

Angling regulations

Piru Creek and tributaries upstream of Pyramid Lake are open to fishing all year with a daily bag and possession limit of two fish. Only artificial lures with barbless hooks may be used.

Known stressors

Barriers (human created)

Roads

Off-highway vehicle use

- Mining
- Development
- Grazing
- Fire
- Sedimentation
- Instream flow-seasonal flooding
- High water temperatures
- Invasive species

Management

Goals and objectives

- Fast action (average annual catch rates \geq 2 fish/hour)
- Trophy (trout \geq 18 inches)
- Heritage trout
- Other

Monitoring recommendations

Water	Date range (month/year)	Survey type	Survey interval
Piru Creek	All	Angler survey box	Annually
Lockwood Creek	All	Angler survey box	Annually
Piru Creek	Jun/2019	Electroshock depletion	10 years
Lockwood Creek	Jun/2019	Electroshock depletion	10 years
Piru Creek and tributaries	Jun/2019	Direct observation snorkel	10 years
Piru Creek	Spring	Monitor fish passage upstream of USGS gage	Annually

Angling regulations

Current angling regulations for upper Piru Creek and tributaries were proposed and adopted to provide protection for the trout population while maintaining management goals and objectives. The CDFG shall monitor the fishery along with angler satisfaction and preferences to guide and direct any future regulatory changes if warranted. Regulations will be used in an adaptive manner to optimize

angler opportunities in conjunction with management goals and objectives outlined in the FMP.

Addressing stressors

The LPNF is a major year-round recreation area serving southern California and includes diverse recreational opportunities. Recreation, land use, and fire suppression are managed by the USFS as identified in the LPNF Land Management Plan (USDA 2005). This plan identifies management goals that include maintaining developed and dispersed recreation facilities and trails, managing vegetation and forest health to maintain healthy stores of native conifers and to reduce fuel loading, and managing river corridors to preserve wild and scenic river qualities and sensitive riparian habitat. The CDFG should collaborate with the LPNF to monitor existing land use practices and potential stressors to the wild trout fishery including off-highway vehicle use, illegal fishing activities, cattle grazing allotments, and mining activities. If stressors are determined to negatively affect the fishery, the CDFG should further collaborate with the LPNF to mitigate impacts and assess habitat enhancement projects. Various land use practices outside the USFS boundaries also need to be monitored and assessed for potential impacts to the fishery. Communication with private land owner(s) should be initiated regarding riparian fencing, water quality, range degradation, and potential for restoration projects. The USFS, local landowners, local citizen groups, and conservation groups should be integrated into the process to enhance awareness for stakeholders throughout the watershed.

Habitat quality and quantity varies seasonally and may be limited during extended dry periods and/or during peak runoff. These phenomena may impact trout abundance depending on the timing, duration, and magnitude of the event(s). Water temperature is a critical limiting factor for trout during the summer and fall periods and is compounded during low water years and extended periods of drought. Summer daytime water temperatures in Piru Creek can reach 30 °C (Ally 2004). Coldwater springs and tributaries within the watershed including Lockwood, Alamo, Cedar, Seymour, Mutau, Snowy, and Buck creeks provide thermal refuge and an influx of cold water to the main-stem which is essential for over-summer survivorship. If extended drought conditions exist, the CDFG should monitor water temperatures, habitat quality and quantity, and fish distribution and abundance.

Due to the climate, elevation, and gradient of the watershed, high flows in late winter and early spring can dramatically influence the hydrograph, streambank erosion, and sedimentation rates. Sedimentary rock dominates the geologic composition of the drainage and the upper Piru Creek watershed is prone to landslides and locally high erosion rates. Large accumulations of sediment primarily in the form of sand (<.08") limit available instream cover, pool depth, food resources, and spawning habitat. Excess sediment may also limit the abundance and diversity of aquatic macroinvertebrates. The majority of sediment deposition is located in low to medium gradient (< 4%) areas of the creek. These areas consequently have low trout densities, low macroinvertebrate density and diversity, and low to minimal available spawning habitat. Sedimentation rates can be increased temporally due to the frequency of forest fires in upper Piru Creek and

surrounding watersheds. Watershed impacts after a fire and subsequent rain event(s) in the upper Piru Creek watershed are likely to be extensive. The highly erosive nature of the watershed combined with an increase in fine sediment associated with post-burn runoff may lead to greater than normal amounts of mobilized sediment. Additional sediment generated by a fire will compound sediment deposition issues in low gradient (< 4%) areas. Instream habitat for fish in these areas may be highly degraded due to changes in temperature and channel morphology, erosion of stream banks, destruction of riparian vegetation, and decreased water quality. Stream discharge and groundwater storage may also be influenced by fire where newly exposed hydrophobic soils shed water rather than allowing for water infiltration. In the event of catastrophic forest fire and/or flooding in the upper Piru Creek watershed, the CDFG should monitor potential impacts to the fishery and habitat and evaluate the need for habitat restoration projects including but not limited to bank stabilization, riparian enhancement, and/or removal of fine sediment.

Upper Piru Creek is predominantly a resident trout fishery, although adfluvial coastal rainbow trout from Pyramid Lake have been observed utilizing upper Piru Creek for spawning. Currently, the USGS gaging station weir, located downstream of the confluence of Buck and Piru creeks (upstream of Pyramid Lake), acts a flow-dependant barrier to upstream migration of fishes. Typically, this gaging station acts a barrier to non-game (non-native) fishes while allowing passage of adfluvial coastal rainbow trout. The ability of this weir to act as a barrier to non-native fishes benefits both native trout and Southwestern arroyo toad populations. In addition, maintaining genetic diversity and variable life history forms of coastal rainbow trout in this system may be important at the metapopulation level, especially following periods of unfavorable environmental conditions (i.e. adfluvial trout would most likely play an essential role in re-populating the fishery after severe drought conditions). The portion of Piru Creek upstream of the weir should be evaluated on a semi-annual basis via direct observation snorkel surveys to determine species composition to monitor passage of non-game fishes above the USGS gaging station. The Hardluck road crossing should also be evaluated to monitor passage of non-native fishes. In addition, the angler survey box at Hardluck Campground should be analyzed annually to determine whether anglers are catching larger-size adfluvial coastal rainbow trout in this portion of the creek.

Three wet road crossings (Arizona style) exist in the watershed that may act as barriers to upstream fish migration. These are located on Seymour Creek, approximately one mile upstream of the confluence with Lockwood Creek (Forest Road 8N12), Piru Creek at Hardluck (Forest Road 8N24), and Piru Creek at Gold Hill (Forest Road 8N01). These crossings should be evaluated to determine if they impede fish passage.

Adaptive strategies

This FMP provides guidance and management direction for wild trout resources in the upper Piru Creek watershed. These management recommendations are based on existing conditions and should be used in accordance with updated information

over time. Long-term monitoring of the fishery and associated angler preferences should play a critical role in future management prescriptions. Any changes to the prescribed management goals and objectives should be based on updated quantifiable data, stakeholder input, HWTP Policy (Bloom and Weaver 2008), the Strategic Plan for Trout Management (Hopelain and Pert 2003), and collaborative (CDFG Headquarter and Regional) HWTP review. The upper Piru Creek watershed has federally listed species occupying both instream and riparian areas. These areas have some associated off-road and/or vehicle access restrictions, however angler access to and within Piru Creek and tributaries is not restricted. Any future public access and closure related issues will need to be evaluated in relation to current fisheries management goals (along with the designation) in collaboration with the USFS.

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Appendix 1. Upper Piru Creek watershed electroshock depletion data 1996-2007

Water	Section number	Year	Section length (ft)	Section average width (ft)	coastal rainbow trout			
					Number of fish captured	Section average weight (g)	Estimated biomass (lb/acre)	Estimated density (fish/mi)
Piru Creek	10	1996	266	3.5	11	37.0	45.79	238
		2000	268	16.7	0	0.0	0.00	0
	11	1996	410	21.0	17	45.9	9.72	244
	12	1996	388	17.9	60	43.6	36.76	830
		2000	402	21.8	20	43.0	9.42	263
		2005	440	25.9	25	74.0	16.77	324
	2007	430	19.9	30	91.5	30.78	368	
Lockwood Creek	1	1996	285	10.5	63	47.2	104.49	1278
		1999	356	8.9	136	75.0	70.05	2062
		2000	356	14.2	11	98.0	24.09	193
		2007	356	6.8	101	47.5	199.15	1572
	2	1997	448	8.0	72	42.9	83.89	860

Appendix 2. Upper Piru Creek watershed direct observation snorkel survey data 1996-2008

Piru Creek 1996 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
Pool #2	100.0	22.3	1.5	5	2	0	0	0	7
Pool #3	54.0	30.3	----	0	9	5	1	0	15
Pool #4	75.0	26.0	----	4	4	7	1	0	16
Pool #5	100.0	33.6	1.5	15	11	8	0	0	34
Pool #6	64.0	26.0	1.5	10	12	14	1	0	37
Pool #7	66.0	13.6	2.0	5	4	2	0	0	11
Pool #8	30.0	14.6	1.5	0	2	2	0	0	4
Pool #9	100.0	44.6	1.5	3	6	9	0	0	18
Pool #10	22.0	4.0	4.0	1	0	3	0	0	4
Pool #11	75.0	13.0	0.5	0	0	1	0	0	1
Pool #12	64.0	17.5	1.5	0	2	7	0	0	9
Section 3	403.0	27.8	----	9	14	4	0	0	27
Total	1153.0	n/a	n/a	52	66	62	3	0	183
Estimated density (coastal rainbow trout per mile) =								838	

Piru Creek 2005 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
1HL	350.0	40.0	0.8	1	8	6	0	0	15
2HL	315.0	31.0	0.9	5	3	1	0	0	9
3HL	300.0	27.0	0.8	60	10	18	0	0	88
1A	440.0	25.9	0.7	0	0	5	0	0	5
2A	364.0	20.5	0.6	0	0	6	0	0	6
3A	320.0	22.2	0.8	2	0	6	0	0	8
Total	2089.0	n/a	n/a	68	21	42	0	0	117
Estimated density (coastal rainbow trout per mile) =								296	

Lockwood Creek 2005 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
105	328.1	8.5	1.4	23	3	0	0	0	26
205	328.1	12.0	0.8	22	15	3	0	0	40
305	328.1	7.5	1.7	6	15	4	0	0	25
405	340.0	7.5	1.2	22	10	3	0	0	35
505	-----	6.8	1.7	17	0	5	0	0	22
605	315.0	7.1	0.8	1	3	0	0	0	4
705	300.0	10.2	0.9	8	4	4	0	0	16
805	320.0	6.5	0.8	17	2	4	0	0	23
Total	1324.2	n/a	n/a	116	52	23	0	0	126
Estimated density (coastal rainbow trout per mile) =								502	

Lockwood Creek 2007 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
107	106.8	7.5	0.5	2	0	0	0	0	2
207	134.0	7.5	0.8	5	8	1	0	0	14
307	62.5	6.5	0.9	7	5	1	0	0	13
407	119.0	8.5	0.6	22	6	1	0	0	29
507	94.0	9.0	0.5	3	3	8	0	0	14
607	187.0	10.0	0.4	3	4	12	1	0	20
707	91.0	6.0	1.5	3	3	9	1	0	16
807	135.0	17.5	0.4	3	0	1	0	0	4
2007	343.0	4.5	1.0	2	24	6	1	0	33
2107	155.0	3.0	1.5	6	25	3	1	0	35
2207	197.0	3.5	1.0	64	10	8	1	0	83
2307	99.0	4.0	1.5	12	18	4	1	0	35
2407	86.0	11.5	1.3	25	25	15	1	0	66
2507	95.0	8.0	2.5	9	13	1	2	0	25
2607	157.0	6.5	0.5	12	56	1	2	0	71
Total	2061.3	n/a	n/a	178	200	71	11	0	460
Estimated density (coastal rainbow trout per mile) =								1178	

Buck Creek 2007 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
107	89.9	5.2	0.5	4	26	1	0	0	31
207	63.0	5.5	0.5	5	15	2	0	0	22
307	57.0	6.2	1.0	3	16	1	0	0	20
407	65.0	6.2	0.3	4	18	0	0	0	22
507	66.0	6.5	1.0	11	20	1	0	0	32
607	11.0	1.5	1.5	0	3	0	0	0	3
707	59.0	6.7	1.5	2	11	2	0	0	15
Total	410.9	n/a	n/a	29	109	7	0	0	145
Estimated density (coastal rainbow trout per mile) =								1863	

Snowy Creek 2007 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
107	55.0	13.0	2.5	0	0	0	0	0	0
207	26.0	25.0	5.0	0	0	0	0	0	0
307	17.5	8.0	2.0	8	0	1	0	0	9
407	28.4	15.0	2.3	0	0	0	0	0	0
507	55.0	3.5	0.4	0	0	0	0	0	0
607	35.0	9.5	1.6	0	0	0	0	0	0
707	17.7	11.0	4.0	0	0	0	0	0	0
807	15.8	14.5	3.5	0	0	0	0	0	0
907	22.2	4.0	0.6	0	0	0	0	0	0
1007	25.5	6.5	1.4	0	0	0	0	0	0
Total	298.1	n/a	n/a	8	0	1	0	0	9
Estimated density (coastal rainbow trout per mile) =								159	

Piru Creek 2008 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
108	148.6	26.3	0.4	0	7	0	0	0	7
208	178.0	12.9	0.5	0	12	10	1	0	23
308	186.0	19.9	0.4	0	5	3	0	0	8
408	256.7	16.3	0.4	0	2	0	0	0	2
508	215.8	16.1	0.5	0	2	1	0	0	3
608	121.0	22.2	0.7	0	12	4	1	0	17
708	30.3	9.5	1.7	0	0	1	0	0	1
808	75.0	11.8	0.7	0	15	0	0	0	15
Total	1211.4	n/a	n/a	0	55	19	2	0	76
Estimated density (coastal rainbow trout per mile) =								331	

Buck Creek 2008 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
808	25.0	20.0	2.1	0	11	3	0	0	14
908	300.0	10.6	0.4	0	31	1	0	0	32
1008	200.0	11.0	0.6	0	41	3	0	0	44
1108	18.0	12.0	1.1	0	6	2	0	0	8
Total	543.0	n/a	n/a	0	89	9	0	0	98
Estimated density (coastal rainbow trout per mile) =								953	

Snowy Creek 2008 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
108	30.0	4.0	1.0	0	0	0	0	0	0
208	22.0	5.0	1.5	0	0	0	0	0	0
308	19.0	5.5	1.0	0	0	0	0	0	0
408	42.0	5.5	1.8	0	0	0	0	0	0
508	49.0	12.0	4.0	0	0	0	0	0	0
Total	162.0	n/a	n/a	0	0	0	0	0	0
Estimated density (coastal rainbow trout per mile) =								0	

Alamo Creek 2008 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
108	30.0	15.2	1.6	9	15	0	0	0	24
208	93.4	9.1	0.5	8	37	2	0	0	47
308	66.0	7.9	0.3	5	19	0	0	0	24
Total	189.4	n/a	n/a	22	71	2	0	0	95
Estimated density (coastal rainbow trout per mile) =								2648	

Mutau Creek 2008 direct observation survey data

Section number	Section length (ft)	Average wetted width (ft)	Average water depth (ft)	Number of coastal rainbow trout observed					Total
				Young of year	Small < 6"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large ≥ 18"	
108	95.0	8.8	0.3	0	0	2	0	0	2
208	93.0	7.0	0.4	0	2	2	0	0	4
308	153.5	9.4	0.3	5	4	3	0	0	12
408	84.7	11.2	0.2	8	0	1	0	0	9
Total	426.2	n/a	n/a	13	6	8	0	0	27
Estimated density (coastal rainbow trout per mile) =								334	

Appendix 3. Upper Piru Creek watershed ASB data 2001-2011 for Lockwood Creek, Piru Creek at Hardluck Campground, and Piru Creek at Gold Hill

Piru Creek watershed 2001-2011

Year	Number of forms analyzed	Total effort reported (hours)	Number of coastal rainbow trout reported caught	Average catch per unit effort (fish/hour)
2001	41	164.00	350	2.4
2002	56	206.50	659	3.3
2003	78	286.25	850	3.1
2004	76	318.50	673	2.5
2005	24	78.25	166	2.7
2006	19	56.00	230	4.4
2007	21	78.75	244	3.3
2008	26	86.25	150	2.0
2009	2	5.00	16	4.3
2010	11	50.50	120	2.8
2011	23	75.50	109	1.8

Appendix 4. Upper Piru Creek watershed ASB data 2001-2011 for Lockwood Creek, Piru Creek at Hardluck Campground, and Piru Creek at Gold Hill

