

Appendix G: Glossary and List of Abbreviations

Abbreviations and Acronyms

The following are is a list of selected acronyms and abbreviations used throughout the plan.

5	ACOE	-U.S. Army Corps of Engineers
	ACS	-Aquatic Conservation Strategy
	Af	-Acre Feet
	ARWC	-Applegate River Watershed Council
10	AWQMP	-Aquatic Water Quality Management Plan
	BCWC	-Bear Creek Watershed Council
	BLM	-Bureau of Land Management
	BMPs	-Best Management Practice
	BO	-Biological Opinion
15	BOF	-California Board of Forestry
	BOR	-Bureau of Reclamation
	BRT	-Biological review teams
	CAP	-Conservation Action Planning
	CBI	-Center for Biological Integrity
20	CCC	-California Coastal Conservancy
	CCC	-California Conservation Corps
	CDF	-California Department of Forestry and Fire Protection
	CDFG	-California Department of Fish and Game
	CDWR	-California Department of Water Resources
25	CEQA	-California Environmental Quality Act
	CESA	-California Endangered Species Act
	CFGC	-California Fish and Game Commission
	CFPAD	-California Fish Passage Assessment Database
	CFPR	-California Forest Practice Rules
30	CFR	-Code of Federal Regulations
	Ck-	-Creek
	CMP	-Coastal Management Plan
	COE	-U.S. Army Corps of Engineers
	CRMP	-Coordinated Resources Management Planning
35	CRP	-Conservation Reserve Program
	CPUE	-Catch Per Unit Effort
	CRT	-California Statewide Coho Salmon Recovery Team
	CSLC	-California State Lands Commission
	CWA	-Federal - Clean Water Act
40	DBH	-diameter at breast height
	DEQ	-U.S. Department of Environmental Quality
	DOI	-U.S. - Department of Interior
	DPS	-Distinct Population Segment
	DWR	-Department of Water Resources
45	ECWC	-Euchre Creek Watershed Council
	EPA	-U.S. Environmental Protection Agency

	EPT	-Ephemoptera, Plecoptera Tricoptera
	ERWIG	-Eel River Watershed Improvement Group
	ESA	-Federal Endangered Species Act
	ESU	-Evolutionarily Significant Unit
5	FEMA	-Federal Emergency Management Agency
	FEMAT	-Forest Ecosystem Management Assessment Team
	FERC	-Federal Energy Regulatory Commission
	FGC	-Fish and Game Code
	FIRI	-Farm Irrigation Rating Index Model
10	FLIR	-Forward-Looking Infrared
	FMEP	-Fishery Management and Evaluation Plan
	FMP	-Fishery Management Plan
	FR	-Federal Register
	FWS	-U.S. Fish and Wildlife Service
15	FMEP	-Fishery Management Evaluation Plan
	GDRC	-Green Diamond Resource Company
	GIS	-Geographic Information System
	GWEB	-Governors Watershed Enhancement Board
	HBHRC	-Humboldt Bay Harbor, Recreation, and Conservation District
20	HBMWD	-Humboldt Bay Municipal Water District
	HBWAC	-Humboldt Bay Watershed Action Council
	HCP	-Habitat Conservation Plan
	HCRC	-Humboldt County Resource Conservation District
	HCWC	-Hunter Creek Watershed Council
25	HGMPS	-Hatchery and Genetic Management Plan
	HRC	-Humboldt Redwood Company
	HSRG	-Hatchery Scientific Review Group
	HSA	-Hydrologic Sub Area
	HU	-Hydrologic Unit
30	HUC	-Hydrologic Unit Code
	IBI	-Index of Biological Integrity
	IGH	-Iron Gate Hatchery
	IMST	-Independent Multidisciplinary Science Team
	IP	-Intrinsic Potential
35	IPCC	-International Panel on Climate Change
	ISAB	-Independent Scientific Advisory Board
	IVWC	-Illinois Valley Watershed Council
	KNF	-Klamath National Forest
	KRIS	-Klamath River Information System
40	LRMP	-Land and Resource Management Plan
	LRWC	-Lower Rogue Watershed Council
	LSR	-Late Successional Reserve
	LW	-large wood
	LWD	-Large Woody Debris
45	MKWC	-Middle Klamath Watershed Council
	MOU	-Memorandum of Understanding

	MRC	-Mendocino Redwood Company
	MRWC	-Middle Rogue Watershed Council
	MSA	-Magnuson-Stevens Fishery Conservation and Management Act
	MWAT	-Mean Weekly Average Temperature
5	MWMT	-Mean Weekly Mean Temperature
	NA	-Not Applicable
	NAS	-National Academy of Science
	NCIRWMP	-North Coast Integrated Regional Water Management Plan
	NCRC	-Northern California Resources Center
10	NCRWQB	-North Coast Regional Quality Control Board
	NCWAP	-North Coast Watershed Assessment Program
	NCWQCB	-North Coast Water Quality Control Board
	NMFS	-National Marine Fisheries Service
	NFP	-Northwest Forest Plan
15	NOAA	-National Oceanic and Atmospheric Administration
	NOI	-Notice of Intent
	NRC	-National Research Council
	NRCS	-Natural Resources Conservation Service
	NRS	-Natural Resources Services
20	NTU	-Nepheoloemetric Turbidity Unit
	NWFP	-Northwest Forest Plan
	NWFSC	-Northwest Fisheries Science Center
	ODA	-Oregon Department of Agriculture
	ODEQ	-Oregon Department of Environmental Quality
25	ODF	-Oregon Department of Forestry
	ODFW	-Oregon Department of Fish and Wildlife
	ODOT	-Oregon Department of Transportation
	OFPA	-Oregon Forest Practices Act
	OFPR	-Oregon Forest Practice Rules
30	OWEB	-Oregon Watershed Enhancement Board
	OWRD	-Oregon Water Rights Division
	PALCO	-Pacific Lumber Company
	PCFWWRA	-Pacific Coast Fish, Wildlife and Wetlands Restoration Association
	PCJV	-Pacific Coast Joint Venture
35	PCSRF	-Pacific Coastal Salmon Recovery Fund
	PDO	-Pacific Decadal Oscillation
	PFMC	-Pacific Fisheries Management Council
	PRWC	-Pistol River Watershed Council
	PWA	-Pacific Watershed Associates
40	RCAA	-Redwood Community Action Agency
	RCD	-Resource Conservation District
	RHS	-Rural Human Services
	RM	-River mile
	RMZ	-Riparian Management Zone
45	RNSP	-Redwood National and State Parks
	RRCC	-Rogue River Coordinating Council

	RWQCB	-California - Regional Water Quality Control Board
	SCWC	-South Coast Watershed Council
	SFP	-Sanctuary Forest Program
	SMA	-Streamside Management Area
5	SMZ	-Streamside Management Zone
	SONCC	-Southern Oregon/Northern California Coast Coho
	SRA	-Smith River Alliance
	SRAC	-Smith River Advisory Council
	SRAFAP	-Smith River Anadromous Fish Action Plan
10	SRCSD	-Smith River Community Services District
	SRNF	-Six Rivers National Forest
	SRRC	-Salmon River Restoration Council
	SSRT	-Shasta-Scott Recovery Team
	SVRCD	-Shasta Valley Resource Conservation District
15	SWFSC	-Southwest Fisheries Science Center
	SWRCB	-California - State Water Resources Control Board
	TEPA	-Tribal Environmental Protection Agency
	TMDL	-Total Maximum Daily Load
	TNC	-The Nature Conservancy
20	TIA	-Total Impervious Area
	TRH	-Trinity River Hatchery
	TRRP	-Trinity River Restoration Program
	TRT	-Technical Recovery Team
	USDA	-United States Department of Agriculture
25	USDI	-United States Department of Interior
	USEPA	-United States Environmental Protection Agency
	USFS	-United States Forest Service
	USFWS	-United States Fish and Wildlife Service
	USGS	-United States Geological Survey
30	VSP	-Viable Salmonid Population
	WOPI	-Wells Ocean Productivity Index
	WOPR	-Western Oregon Plan Revision
	WRWC	-Winchuck River Watershed Council
	WWG	-Willits Watershed Group
35	YOY	-Young of the Year

Glossary

abundance: The number of individuals in a population or subpopulation.

5 **anadromous:** Species that migrate as juveniles from freshwater to saltwater and then return as adults to spawn in freshwater (e.g., salmon).

anthropogenic: Of, relating to, or resulting from the influence of human beings on nature (Webster 2001).

10 **artificial propagation:** Any assistance provided by man in the reproduction of salmon. This assistance includes, but is not limited to, spawning and rearing in hatcheries, stock transfers, creation of spawning habitat, egg bank programs, captive breeding broodstock programs, and cryopreservation (Hard et al. 1992).

15 **basin:** Area of land where surface water converges to a single point, usually the exit of the basin, where the waters join another water body. Examples of basins are the Eel River basin, Rogue River basin, and Klamath-Trinity River basin. The basin is the largest classification unit in a hierarchical drainage system adopted by NMFS for the SONCC coho salmon recovery plan. This hierarchical drainage system is made up of basins (largest scale), sub-basins (intermediate scale), and watersheds (smallest scale). See also *sub-basin* and *watershed*.

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biological review team (BRT): The team of scientists from the National Marine Fisheries Service formed to conduct a status review.

25 **broad-sense recovery:** Goal of having populations of naturally produced salmon sufficiently abundant, productive, and diverse (in terms of life history and geographic distribution) that the ESU/DPS as a whole (a) will be self-sustaining, and (b) will provide significant ecological, cultural, and economic benefits (ODFW and NMFS 2011). This goal is consistent with ESA delisting, but is designed to achieve a level of performance for the ESUs and constituent population that is far more robust than that needed to remove the ESU from ESA protection (ODFW and NMFS 2011).

30 **captive broodstock program:** A form of artificial propagation involving the collection of individuals or gametes from a natural population and rearing of these individuals to maturity in captivity (Hard et al. 1992).

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carrying capacity: The maximum population of a species that an area or specific ecosystem can support indefinitely without deterioration of the character and quality of the resource (NOAA 2006).

40 **confluence:** A flowing together of two or more streams.

critical habitat: The specific areas within the geographical area occupied by the listed species at the time it is listed in accordance with the provisions of the ESA, on which are found those physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection; and specific areas outside the

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geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species (ESA of 1973, as amended, 16 U.S.C. §1531 et seq.).

5 **delist:** When an ESA-listed species is removed from the list of species protected under the ESA.

delisting criteria: Criteria used to determine whether an ESA-listed species no longer needs the protections of the ESA and may be delisted.

10 **dependent population:** Populations that rely upon immigration from surrounding populations to persist. Without these inputs, Dependent Populations would have a lower likelihood of persisting over 100 years (Williams et al. 2006).

15 **depensation:** The effect where a decrease in spawning stock leads to reduced survival or production of eggs through either (1) increased predation per egg given constant predator pressure, or (2) the "Allee effect" (the positive relationship between population density and the reproduction and survival of individuals) with reduced likelihood of finding a mate (Liermann and Hilborn 2001).

20 **diversity:** All the genetic and phenotypic (life history, behavioral, and morphological) variation within a population (NOAA 2006). Diversity includes diversity of (potential) selective environments, diversity of phenotypes, including life history types, and diversity of genetic variation, both neutral and selected (Williams et al. 2006).

25 **diversity stratum:** Groups of populations that span the diversity and distribution that currently exists or historically existed within the ESU (Williams et al. 2006). Diversity, broadly defined, was the basis for delineating these groups (Williams et al. 2006).

30 **domestication selection:** Natural selection operating on a population during artificial propagation that encourages adaptation to the hatchery environment at the expense of adaptation to the natural environment (Hard et al. 1992).

35 **El Niño:** A warming of the ocean surface off the western coast of South America that occurs every 4 to 12 years when upwelling of cold, nutrient-rich water does not occur. It causes die-offs of plankton and fish and affects Pacific jet stream winds, altering storm tracks and creating unusual weather patterns in various parts of the world (NOAA 2006).

40 **ephemeral population:** Populations which have a substantial likelihood of going extinct within a 100-year time period in isolation, and do not receive sufficient immigration to affect this likelihood. Habitats that support such populations are expected to be occupied only for relatively short periods of time, and rarely at high densities (Williams et al. 2006).

45 **estuary:** A coastal ecological ecosystem that is partially enclosed, receives freshwater input from land, and has a horizontal fresh-salt salinity gradient; the average salinity of estuarine waters is defined as being 30 practical salinity units (PSU) for at least 1 month per year (NOAA 2006).

extant: Not destroyed or lost (Webster 2001).

5 **extinction:** In evolutionary biology, the failure of groups of organisms of varying size and inclusiveness (e.g., local geographic or temporally-defined groups to species) to have surviving descendants.

10 **extinction risk:** The probability that a given population will become extinct within 100 years. Low probability of extinction is arbitrarily defined for this purpose as 5 percent over 100 years (Williams et al. 2006).

15 **functionally independent population:** Populations with a high likelihood of persisting in isolation over a 100-year time scale, which are not substantially altered by exchanges of individuals with other populations (Williams et al. 2006).

20 **hatchery:** Salmon hatcheries typically spawn adults in captivity and raise the resulting progeny in fresh water for release into the natural environment. In some cases, fertilized eggs are out-planted (usually in “hatch-boxes”), but it is more common to release fry (young juveniles) or smolts (juveniles that are physiologically prepared to undergo the migration into salt water). The fish are released either at the hatchery (on-station release) or away from the hatchery (off-station release). Releases may also be classified as within basin (occurring within the river basin in which the hatchery is located or the stock originated from) or out-of-basin (occurring in a river basin other than that in which the hatchery is located or the stock originated from). The broodstock of some hatcheries is based on adults that return to the hatchery each year; others rely on fish or eggs from other hatcheries, or capture adults in the wild each year (Hard et al. 1992).

25 **hatchery fish:** Fish that have spent some portion of their lives, usually their early lives, in a hatchery.

30 **hatchery-origin fish:** See *hatchery fish*.

35 **independent population:** A group of fish of the same species that spawns in a particular lake or stream at a particular season and which, to a substantial degree, does not interbreed with fish from any other group spawning in a different place or in the same place at a different season (Williams et al. 2008). Also see “potentially independent population” and “functionally independent population”.

40 **Intrinsic Potential:** The potential of the landscape to support a population. The Intrinsic Potential of a watershed or stream reach, is used to evaluate the likelihood of the area to support fish, and is used when population characteristics are unknown (Williams et al. 2006).

45 **jacks:** Male salmon that return from the ocean to spawn one or more years before full-sized adults return. For coho salmon in California, Oregon, Washington, and southern British Columbia, jacks are 2 years old, having spent only 6 months in the ocean, in contrast to adults, which are 3 years old after spending 1½ years in the ocean (NOAA 2006).

- large woody debris:** Any large piece of woody material that intrudes into a stream channel, whose smallest diameter is greater than 10cm, and whose length is greater than 1 m.
- 5 **limiting factor:** An environmental factor that limits the growth or activities of an organism or that restricts the size of a population or its geographical range.
- listed species:** Any species of fish, wildlife or plant which has been determined to be endangered or threatened under the ESA.
- 10 **natural fish:** See *wild fish*.
- natural-origin fish:** See *wild fish*.
- 15 **phenotype:** The observable physical or biochemical characteristics of an organism, as determined by both genetic makeup and environmental influences.
- pinniped:** Carnivorous aquatic mammals that include the seals, walrus, and similar animals having finlike flippers as organs of locomotion.
- 20 **population:** A group of individuals of the same species that live in the same place at the same time and exhibit some level of reproductive isolation from other such groups. In some contexts, a randomly mating group of individuals that is reproductively isolated from other groups is considered a population. A population may consist of a single isolated run or more than one connected run. Synonymous with *stock* (McElhany et al. 2000).
- 25 **population size:** The number of adults in a population.
- potentially independent population:** Populations with a high likelihood of persisting in isolation over a 100-year time scale, but which are too strongly influenced by immigration from other populations to exhibit independent dynamics (Williams et al. 2006).
- 30 **productivity:** The population growth rate, measured as the spawner-to-spawner ratio (returns per spawner or recruits per spawner).
- 35 **recovery:** The reestablishment or rehabilitation of a threatened or endangered species to a self-sustaining level in its natural ecosystem (NOAA 2006).
- recovery domain:** The geographic area for which a Technical Recovery Team is responsible.
- 40 **recovery plan:** Under the ESA, a document identifying actions needed to improve the status of a species or ESU to the point that it no longer requires protection (*Hard et al. 1992*).
- 45 **recovery supplementation:** Short-term artificial propagation designed to reduce the risk of extinction of a small or chaotically fluctuating recovering population in its natural habitat by temporarily increasing population size using recovery hatchery fish, while maintaining available genetic diversity and avoiding genetic change in the natural and hatchery populations.

- refugia:** An area where special environment circumstances occur, enabling individuals to survive in specific life stages.
- 5 **riparian area:** An area with distinctive soils and vegetation between a stream or other body of water and the adjacent upland. It includes wetlands and those portions of floodplains and valley bottoms that support riparian vegetation (Belsky et al. 1999).
- 10 **riparian vegetation:** Vegetation growing on or near the banks of a stream or other body of water in soils that exhibit some wetness characteristics during some portion of the growing season (Welsch 1991).
- 15 **self-sustaining population:** A population that perpetuates itself without human intervention, without chronic decline, and in its natural ecosystem, at sufficient levels that listing under the California Endangered Species Act (CESA) is not warranted (Hard et al. 1992).
- spatial structure:** The spatial distribution of individuals in a population.
- 20 **spawner surveys:** Spawner surveys utilize counts of live fish, redds (nests dug by females in which they deposit their eggs) and fish carcasses to estimate spawner abundance and identify habitat being used by spawning fish. Annual surveys can be used to compare the relative magnitude of spawning activity between years.
- 25 **species:** A fundamental category of taxonomic classification, ranking below a genus or subgenus and consisting of related organisms capable of interbreeding.
- 30 **stochastic:** The term is used to describe natural events or processes that are random. Examples include environmental conditions such as rainfall, runoff, and storms, or life-cycle events, such as survival or fecundity rates.
- stock:** See *population*.
- 35 **stress:** An attribute of the ecology of a conservation target [life stage of coho salmon for this plan] that is impaired directly or indirectly by human activities (TNC 2003). A stress is a degraded condition or “symptom” of a conservation target that results from a threat (TNC 2003).
- 40 **sub-basin:** Area of land draining into a stream or river within a large basin. Examples of sub-basins are the Middle Klamath River, the Upper Mainstem Eel River, the Lower Rogue River, and the South Fork Trinity River. The sub-basin is the intermediate classification in a hierarchical drainage system adopted by NMFS for the SONCC coho salmon recovery plan. This hierarchical drainage system is made up of basins (largest scale), sub-basins (intermediate scale), and watersheds (smallest scale). See also *basin* and *watershed*.
- 45 **take:** To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct to a Federally listed species (ESA of 1973, as amended, 16 U.S.C. §1531 et seq.).

technical recovery team (TRT): The team of scientists from NMFS and other entities formed to develop biological viability criteria for listed Evolutionarily Significant Units (ESUs) that will be considered in setting recovery goals (Williams et al. 2006).

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threat: Activities or processes that have caused, are causing, or may cause a stress (TNC 2003).

threatened species: Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (ESA, as amended, 16 U.S.C. §1531 et seq.).

10

viability: The likelihood that a population will sustain itself over a 100-year time frame (McElhany et al. 2000).

viable salmonid population: An independent population of any Pacific salmonid (genus *Oncorhynchus*) that has a negligible risk of extinction due to threats for demographic variation (random or directional), local environmental variation, and genetic diversity changes (random or directional) over a 100-year time frame (McElhany et al. 2000).

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watershed: Area of land draining into a stream or river within a basin or sub-basin. The watershed is the smallest classification in a hierarchical drainage system adopted by NMFS for the SONCC coho salmon recovery plan. This hierarchical drainage system is made up of basins (largest scale), sub-basins (intermediate scale), and watersheds (smallest scale). See also *basin* and *sub-basin*.

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wild fish: Fish that are offspring of parents that spawned in the wild. Wild fish spend their entire lives in the natural environment.

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