UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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MEMORANDUM

Date: May 11, 2005
From: Michelle McClure, Tom Cooney and the Interior Columbia Technical Recovery Team
To: NMFS NW Regional Office, Co-managers and other interested parties
Subject: Updated population delineation in the interior Columbia Basin

Introduction

The Interior Columbia Technical Recovery Team released its draft document, delineating extant populations of listed ESUs of salmon and steelhead with in the Interior Columbia Basin in July 2003 (IC-TRT 2003). This memo provides an update of changes to that population structure. We release this update for use in the local recovery planning process. A complete technical document that includes details of supporting analyses is anticipated to be released in the late summer or early fall of 2005. The early release of this memo will allow recovery planners to incorporate these changes to population structure appropriately in their recovery plans. We include here a brief description of general changes to our population delineation that span ESUs, descriptions of particular changes to populations within each ESU, and a list of all populations with supporting statistics. This update memorandum, as well as supporting maps in both PDF and GIS-compatible format can be downloaded at http://www.nwfsc.noaa.gov/trt/trt_columbia.htm. If other maps are needed, please contact Michelle McClure (michelle.mcclure@noaa.gov).

General Changes and Considerations for all ESUs

The vast majority of changes that will be included in our final population identification document are changes that provide clarity and consistency, rather than changes to the definition of extant populations. For example, we will include standardized genetic analyses across all ESUs, rather than relying on previously conducted analyses as we did for some ESUs in our first draft. We will also include a more thorough discussion of recent advances in our understanding of the interaction between resident and anadromous fish in *O. mykiss* populations, and general considerations for including both life history types in a single population. Recent work in several geographic regions indicates that there can be substantial interbreeding between sympatric anadromous and resident *O. mykiss* (Pearsons et al. 1998, Ruzycki et al. 2003). (There are also indications that one life history form can give rise to the other, although the ultimate success of the offspring may vary (Ruzycki et al. 2003, Thrower et al. 2004)). This suggests that generally

resident fish should be included in the TRT-delineated populations of *O. mykiss,* unless local information indicates they should be regarded separately. [Note that general considerations for treating resident and anadromous forms with respect to viability have recently been released by the Independent Science Advisory Board (ISAB 2005).]

In this memorandum, we detail several specific changes to our population delineation effort. The most significant change we have made is to focus more clearly on historical population definition, and to develop likely population boundaries in areas that were historically occupied, but that are no longer occupied. We used an analysis of the likely intrinsic potential of stream segments throughout historically accessible areas. Our delineation of historical populations is intended to provide a general hypothesis of likely historical ESU structure rather than precise designations of population boundaries. The second change we have made across ESUs is to slightly modify the lower reaches of some populations to reflect better our understanding of salmon and steelhead use of these areas and to apply consistently our "rule of thumb" that includes areas not capable of supporting an independent population with the nearest upstream population.

Finally, we continue to use the term "Major Population Group" or MPG to refer to groups of populations that are geographically and genetically cohesive. These MPGs are a level of organization between demographically-independent populations and ESUs. The Willamette/Lower Columbia TRT defines similar subunits that they refer to as "strata;" however, their strata include consideration of life history as well as geography, and do not include detected genetic similarity. Because of this differences in definition and consequent differences in viability criteria at above-population levels, we do not use the same terms. However, in each case these subunits within an ESU serve as a mechanism to describe ESU-level spatial structure and diversity.

Specific changes are detailed below. Steelhead populations are shown in figures 1 and 2. Stream-type chinook populations are shown in figures 3 and 4. Ocean-type chinook populations are shown in figure 5 and sockeye populations are shown in figure 6. Steelhead and chinook populations, their MPG and ESU designations and size statistics are shown in Tables 1 and 2; sockeye populations and associated statistics are shown in Table 3.

I. Steelhead trout (*Oncorhynchus mykiss*)

Mid-Columbia Steelhead

Within the Mid-Columbia Steelhead ESU, we have made the following changes:

- **Deschutes River – Eastside and Deschutes River –Westside populations.** We designated two populations in the Deschutes River drainage: one occupying the eastside tributaries and the other occupying the west-side tributaries. However, we did not in our original document consider areas above Pelton and Round Butte dams that were historically used (or likely used) by anadromous *O. mykiss*. These

populations now include areas that historically supported steelhead but are currently rendered inaccessible by these dams. The Deschutes-Eastside population now includes Willow Creek and its tributaries; the Deschutes-Westside population now includes Squaw Creek and any historically used portions of the Metolius River.

- **Willow Creek.** Willow Creek (tributary to the Columbia, upstream of the John Day River) was not designated in any way in our original document. Anecdotal information, our analysis of intrinsic potential and a qualitative comparison of habitat likely available historically in this drainage with currently occupied habitat suggest that this area likely supported anadromous *O. mykiss*, and had sufficient habitat quantity to support an independent population. Willow Creek is now designated as an independent population; we include it in the Walla Walla/Umatilla MPG based on a consideration of distance, ecoregion and habitat attributes (temperature, precipitation and elevation).
- **Satus and Toppenish Creeks.** In our original draft, we designated Satus and Toppenish Creeks as a single population with significant substructure. This designation was made on the basis of two lines of evidence. First, while genetically differentiated, much of the difference between allozyme samples from the two locations was due to fixation at several loci in the Toppenish samples. This pattern is consistent with a bottleneck in a portion of the population (such a bottleneck is supported by demographic information). Thus, the observed genetic differentiation could be the result of isolation between the two regions or be an artifact of low returns to Toppenish Creek in the 1980s. Second, we understood that the lower reaches of the two creeks were likely connected in anastomosing channels that could have supported spawning. We received multiple comments about this designation, and have since learned that the lower reaches of these two creeks, while likely anastomosing, cut through fine sediments deposited by the Missoula floods (Norman et al. 2004), making them unsuitable for spawning. This separates areas of likely spawning in the two tributaries by over 90 km. Thus, we now designate two populations: Satus Creek and Toppenish Creek.
- **Historically occupied but currently inaccessible populations.** On the basis of our analysis of intrinsic potential, landscape characteristics including basin size and historical accounts, we designated one additional, extirpated or historical population of *O. mykiss* in the Crooked River.

Snake River Steelhead

We made few changes to the Snake River steelhead ESU, except those related to population identification in historically accessible areas.

- **Hells Canyon tributaries**. In our 2003 document, we identified steelhead-supporting tributaries to Hells Canyon as an unaffiliated population likely dependent historically on upstream populations. We have now linked these small tributaries to likely spawning concentrations in Wildhorse Creek and Powder River. The Hells Canyon tributary region is now designated as a component of

the Wildhorse-Powder population, and belongs to the Hells Canyon MPG. Remaining populations in the Hells Canyon MPG have been extirpated.

- **Historically occupied but currently inaccessible populations.** We have designated 15 populations in four MPGs in areas currently blocked by the Hells Canyon dam complex and other upstream dams. These populations are listed in Table 2 and shown in Figure 2. We considered the possibility that some of these upstream populations might have historically belonged to a different ESU, but found that geographic (distance), historical accounts of migration and spawn timing and habitat (ecoregional) information did not provide any congruent picture of potential ESU delineations. We did find substantial differences between the upper-most and lower-most areas in the basin, but no clear division between these regions. We will discuss this possibility more thoroughly in our final draft.

Upper Columbia steelhead

Population structure within the Upper Columbia steelhead ESU has been modified as follows:

- **Crab Creek.** We did not consider the Crab Creek drainage in our 2003 report. Crab Creek currently has relatively abundant resident *O. mykiss* at higher elevations, and anadromous *O. mykiss* of uncertain origin in an irrigation waste-way. Historically, this drainage appears to have had sufficient habitat quantity to support an independent population and is sufficiently isolated from other populations to suggest that demographic interactions were minimal. However, even historically, this drainage was likely ephemeral, restricting anadromous access to particular times of year or even to particular years. A series of small tributaries to the Columbia in which steelhead are currently present extend from Crab Creek to the Wenatchee; few such tributaries exist between Crab Creek and the Yakima. Crab Creek is quite different with respect to ecoregion from other populations in the Upper Columbia or Mid-Columbia ESUs. We consider Crab Creek an independent population of the Wenatchee-Methow MPG within the Upper Columbia steelhead ESU. We recognize that the resident component of this population is likely more dominant and critical to the long-term persistence of this population.
- **Historically occupied but currently inaccessible populations**. We have designated six populations in two additional MPGs in areas historically occupied, but now blocked by Chief Joseph and Grand Coulee dams. Historical accounts describing occupancy of the Pend Oreille River are conflicting; we are undertaking further investigation to assess the possibility that upstream areas in the Pend Oreille might have been included in an historical population.

II. Chinook salmon (*Oncorhynchus tshawytscha*)

Snake River spring/summer chinook.

We made few changes to the Snake River spring/summer chinook ESU, except those related to population identification in historically accessible areas and MPG designation.

- **MPG designation**. We designated Chamberlain Creek and the Little Salmon River populations as unaffiliated areas in our 2003 draft. We have now included them in MPGs on the basis of geographic proximity. Chamberlain Creek falls within the Middle Fork Salmon MPG; and the Little Salmon River falls within the South Fork Salmon MPG.
- **Clearwater River.** We identified eleven likely historical populations in two MPGs in the Clearwater River. The Clearwater basin was blocked to chinook passage by the Lewiston Dam in the 1920s. Fish currently in this basin have been re-stocked from Rapid River and other hatchery stocks not considered at the time of listing to be part of the ESU.
- **Historically occupied but currently inaccessible populations.** We identified five MPGs with a total of 25 populations in the areas currently blocked by the Hells Canyon dam complex and other upstream dams. We considered the possibility that some of these upstream populations might have historically belonged to a different ESU, but found that geographic (distance), historical accounts of migration and spawn timing and habitat (ecoregional) information did not provide any congruent picture of potential ESU delineations. We did find substantial differences between the upper-most and lower-most areas in the basin, but no clear division between these regions. We will discuss this possibility more thoroughly in our final draft.

Upper Columbia spring chinook

We have made the following changes to the Upper Columbia chinook ESU:

- **Okanogan River**. In our 2003 draft, we included ambiguous language about the status of Okanogan River chinook. We now designate the Okanogan as an historical population of the Upper Columbia spring chinook ESU. While the quantity of habitat available for stream-type chinook in this tributary was likely small, it does fall within the range of previously designated populations. In addition, spawning areas in this tributary are sufficiently well-separated from other potential spawning reaches to suggest that demographic exchange between this tributary and other areas was likely minimal. This population is regarded as extirpated. Chinook salmon have been historically documented above Lake Osoyoos. If these were stream-type spring chinook, it is possible that there was an additional population in the Okanogan River. Available information does not allow us to make this determination.

- **Historically occupied but currently inaccessible populations**. We have designated six populations in two MPGs in areas historically occupied, but now blocked by Chief Joseph and Grand Coulee dams.

Snake River fall chinook

We now designate three historical populations of ocean-type, fall chinook in the Snake River basin. Lack of robust historical distribution data made these population designations particularly challenging. We relied on historical accounts and qualitative assessments of river morphology to delineate populations.

- **Lower Snake River mainstem**. This population is currently extant, and extends from Hells Canyon to the confluence of the Snake and Columbia Rivers, including the lower reaches of tributaries to the Snake River. While this area is currently being utilized by Snake River fall chinook, it is not highlighted as an area of high production in historical accounts. We consider it likely that this population was historically substantially smaller than other populations in the ESU.
- **Marsing Reach**. This population extends from Swan Falls to Hells Canyon. Hells Canyon was noted as an area of lesser quality for fall chinook and serves as the break between this population and the Lower Snake population. The Marsing Reach is noted as an area of particularly high production historically.
- **Salmon Falls**. This population extends from Swan Falls to Shoshone Falls. The area below American Falls has been noted as an area of high production historically. Shoshone Falls was an impassable barrier to anadromous fishes, and thus is the upper boundary of this population. There is an area of less suitable habitat above Swan Falls that serves as a break between this population and the Marsing Reach population.

III. Sockeye salmon (*Oncorhynchus nerka*)

Snake River sockeye

As with other ESUs, we considered more thoroughly the likely historical population structure of Snake River sockeye.

- **Populations within the Stanley Lakes basin**. In our 2003 document, we designated a single population (Redfish Lake) based on current distribution. However, historically within the Stanley Lakes basin, at least five lakes contained anadromous sockeye. In addition, two more lakes – Little Redfish and Hell Roaring Lakes -- currently contain resident kokanee. (Mullan 1986) believes this to indicate that sockeye once used these areas as well; however, both these lakes are very small and may not have been large enough to support an independent population. We designate at least three historical populations within the Stanley Lakes Basin: Redfish Lake (including Little Redfish) , Alturas Lake, and Stanley Lake. The Redfish Lake sockeye population includes both anadromous sockeye

and residualized sockeye that spawn synchronously with the anadromous fish. In addition, two more lakes -- Pettit Lake and Yellowbelly Lake -- may have supported independent populations. However, currently available information does not allow us to determine with certainty their likely status. We therefore regard them as potential populations. We are undertaking further investigation to assess the likelihood that these two lakes might have supported additional independent populations and will discuss this more thoroughly in our final document. All these lakes would fall within the Snake River sockeye ESU.

- **Populations outside the Stanley Lakes basin**. In addition, three other lakes or groups of lakes in the Snake River drainage supported sockeye populations: Warm Lake (one lake in the South Fork Salmon drainage); Payette, Upper Payette and Little Payette Lakes (Payette River drainage); and Wallowa Lake (Grande Ronde drainage). The distance between these lakes or groups of lakes is consistent with observed distances between extant ESUs of lake-spawning sockeye, suggesting that each of these groups would likely have been separate MPGs and may have been separate ESUs.

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Table 1. Steelhead (*O. mykiss*) populations, MPG and ESU designations and size statistics within the interior Columbia basin.

1. Middle Columbia Steelhead					
ID	Population Name	Label	Basin Area (1000 acres/1000 km2)	Stream kilometers	
				Wtd. Km	Total
MC Steelhead ESU					
MPG:	*Cascade Eastern Slope Tributaries*		*7101 (28.7)*	*3490.3*	*16483*
1	White Salmon River	MCWSA-s	338 (1.4)	193.9	562
2	Klickitat River	MCKLI-s	885 (3.6)	677.2	2554
3	Fifteen Mile Creek	MCFIF-s	351 (1.4)	353.3	1253
4	Deschutes West	DRWST-s	1497(6.1)	781.6	3999
5	Deschutes East	DREST-s	961 (3.9)	440.1	2669
6	Crooked River	DRCRO-s	2924 (11.8)	1044.2	5037
12	Rock Creek	MCROC-s	145 (0.6)	95.5	410
MPG:	*John Day River*		*5134 (20.8)*	*3090.5*	*15033*
7	John Day River lower mainstem tribs	JDLMT-s	2436 (9.9)	1295.7	6801
8	North Fork John Day River	JDNFJ-s	1183 (4.8)	907.8	3696
9	Middle Fork John Day River	JDMFJ-s	507 (2.1)	366.5	1589
10	South Fork John Day River	JDSFJ-s	388 (1.6)	113.4	1177
11	John Day upper mainstem	JDUMA-s	621 (2.5)	407.1	1770
MPG:	*Walla Walla and Umatilla Rivers*		*4568 (18.5)*	*2441.6*	*10722*
13	Willow Creek	MCWIL-s	762 (3.1)	400.5	2011
14	Umatilla River	MCUMA-s	2584 (10.5)	1152.4	5158
15	Walla Walla River	WWMAI-s	738 (3.0)	545.8	2111
16	Touchet River	WWTOU-s	484 (2.0)	342.9	1441
MPG:	*Yakima River Group*		*3765 (15.2)*	*2150.2*	*10046*
17	Satus Creek	YRSAT-s	1047 (4.2)	395.6	2521
	Toppenish Creek	YRTOP-s	381 (1.5)	205.9	826
18	Naches River	YRNAC-s	967 (3.9)	602.1	2774
19	Yakima River upper mainstem	YRUMA-s	1369 (5.5)	946.6	3925
2. Snake River Steelhead					
ID	Population Name	Label	Basin Area (1000 acres/1000 km2)	Stream kilometers	
				Wtd. Km	Total
SR Steelhead ESU					
MPG:	*Lower Snake*		*1415 (5.7)*	*753.8*	*4709*
1	Tucannon River	SNTUC-s	598 (2.4)	306.5	1933
2	Asotin Creek	SNASO-s	817 (3.3)	447.3	2777
MPG:	*Grande Ronde River*		*2781 (11.3)*	*1992.4*	*7648*
3	Grande Ronde lower mainstem	GRLMT-s	771 (3.1)	423.8	2220
4	Joseph Creek	GRJOS-s	353 (1.4)	253.4	984
5	Wallowa River	GRWAL-s	610 (2.5)	368.6	1427
6	Grand Ronde upper mainstem	GRUMA-s	1047 (4.2)	946.6	3018
MPG:	*Clearwater River*		*6007 (24.3)*	*3118.9*	*11009*
7	Clearwater lower mainstem	CRLMA-s	1692 (6.8)	742.9	2426
8	North Fork Clearwater	CRNFC-s	1560 (6.3)	1017.9	3165
9	Lolo Creek	CRLOL-s	155 (0.6)	122.4	373
10	Lochsa River	CRLOC-s	756 (3.1)	355.2	1368
11	Selway River	CRSEL-s	1287 (5.2)	551.6	2339
12	South Fork Clearwater	CRSFC-s	557 (2.3)	328.9	1339

ID	Population Name	Label	Basin Area (1000 acres/1000 km2)	Stream kilometers	
				Wtd. Km	Total
MPG:	*Salmon River*		*9043 (36.6)*	*3744.7*	*15166*
13	Little Salmon and Rapid Rivers	SRLSR-s	1071 (4.3)	267.7	2215
14	Chamberlain Creek	SRCHA-s	1007 (4.1)	280.8	1900
15	South Fork Salmon River	SFMAI-s	680 (2.8)	289.1	1283
16	Secesh River	SFSEC-s	159 (0.6)	122.5	334
17	Panther Creek	SRPAN-s	636 (2.6)	240.5	1059
18	Big, Camas, and Loon Creeks	MFBIG-s	1108 (4.5)	481.2	1941
19	Middle Fk Salmon River Upper Mainstem	MFUMA-s	732 (3.0)	499.6	1476
20	North Fork Salmon River	SRNFS-s	309 (1.3)	112.7	533
21	Lemhi River	SRLEM-s	942 (3.8)	413.0	1194
22	Pahsimeroi River	SRPAH-s	848 (3.4)	281.8	930
23	East Fork Salmon River	SREFS-s	815 (3.3)	299.8	946
24	Salmon River upper mainstem	SRUMA-s	736 (3.0)	456.0	1354
MPG:	*Imnaha River*		*545 (2.2)*	*377.5*	*1524*
25	Imnaha River	*IRMAI-s	545 (2.2)	377.5	1524
MPG:	*Hells Canyon*		*6746 (16.4)*	*2996.6*	*11434*
26	Hells Canyon	SNHCT-s	771 (3.1)	410.5	2317
27	Powder River	USPOW-s	1164 (4.7)	984.8	3799
28	Burnt River	USBUR-s	850 (3.4)	620.5	2959
29	Weiser River	USWEI-s	1269 (5.1)	980.8	2359
MPG:	*Payette/Boise*		*4630 (18.7)*	*2968.3*	*9924*
30	Lower Payette	PRLMT-s	670 (2.7)	424.5	1142
31	North Fork Payette	PRUMA-s	753 (3.0)	498.3	1383
32	South Fork Payette	PRSFP-s	762 (3.1)	707.9	1717
35	Boise River	USBOI-s	2692 (16.0)	1337.7	5682
MPG:	*Malheur/Owyhee*		*10123 (41)*	*3812.5*	*32737*
33	Lower Malheur	MRLMT-s	1498 (6.1)	503.9	5384
34	Upper Malheur	MRUMA-s	1554 (6.3)	1052.7	4959
36	Lower Owyhee River	ORLMT-s	3406 (13.8)	1032	12321
37	Upper Owyhee River	ORUMA-s	3665 (14.8)	1223.9	10073
MPG:	*Bruneau and Salmon Falls*		*7624 (30.9)*	*2475.5*	*11279*
38	Bruneau River	USBRU-s	3668 (14.8)	1150.7	7353
39	Canyon Creek	USCAN-s	935 (3.8)	332.3	976
40	Salmon Falls/Rock Cr	USSAF-s	3021 (12.2)	992.5	2950

3. Upper Columbia Steelhead

ID	Population Name	Label	Basin Area (1000 acres/1000 km2)	Stream kilometers	
				Wtd. Km	Total
UC Steelhead ESU					
MPG:	*Wenatchee-Methow*		*9980 (40.4)*	*2985.1*	*16635*
1	Crab Creek	UCCRC-s	3337 (13.5)	586.5	4158
2	Wenatchee	UCWEN-s	1991 (8.1)	600.8	3994
3	Entiat	UCENT-s	328 (1.3)	126.9	1037
4	Methow	UCMET-s	1220 (4.9)	415.2	3568
5	Okanogan River	UCOKA-s	3104 (12.6)	1255.7	8036

ID	Population Name	Label	Basin Area (1000 acres/1000 km2)	Stream kilometers	
				Wtd. Km	Total
MPG:	Kettle/Colville River		5428 (22)	2053.2	13463
6	Sanpoil River	ACSAN-s	1512 (6.1)	407.7	2868
9	Kettle/Colville River	ACKET-s	1100 (4.5)	628.7	2653
10	Pend Oreille	ACPEN-s	732 (3.0)	120.4	2123
11	Kootenay River	ACKOO-s	2083 (8.4)	896.4	5819
MPG:	Spokane River		1698 (6.9)	926.3	4469
7	Spokane River	SPMAI-s	1256 (5.1)	681.3	3219
8	Hangman Creek	SPHAN-s	443 (1.9)	245.0	1249

Table 2. Chinook salmon (*O. tshawytscha*) populations, MPG and ESU designations and size statistics within the interior Columbia basin.

1. Snake River Spring-Summer Chinook					
ID	Population Name	Label	Basin Area (1000 acres/1000 km2)	Stream kilometers	
				Wtd. Km	Total
SRSS ESU					
MPG:	*Lower Snake*		*531 (2.1)*	*128.1*	*1821*
1	Tucannon River	SNTUC	322 (1.3)	103.5	1074
2	Asotin Creek	SNASO	209 (0.8)	24.6	747
MPG:	*Grande Ronde/Imnaha Rivers*		*2198 (8.9)*	*713.4*	*5980*
3	Wenaha River	GRWEN	189 (0.8)	55.9	547
4	Lostine River	GRLOS	458 (1.9)	148.8	1036
5	Minam River	GRMIN	153 (0.6)	64.2	390
6	Catherine Creek	GRCAT	313 (1.3)	133.3	686
7	Grande Ronde River upper mainstem	GRUMA	480 (1.9)	168.2	1654
8	Imnaha River mainstem	IRMAI	326 (1.3)	84.3	933
9	Big Sheep Creek	IRBSH	219 (0.9)	42.6	591
10	Lookinglass Creek	GRLOO	61 (0.2)	16.0	143
MPG:	*S Fk Salmon River*		*2011 (8.1)*	*241.7*	*3871*
11	Little Salmon River	SRLSR	674 (2.7)	47.0	1351
12	South Fork Salmon River mainstem	SFMAI	909 (3.7)	99.6	1711
13	Secesh River	SFSEC	159 (0.6)	58.0	334
14	East Fork South Fork Salmon River	SFEFS	270 (1.1)	37.0	475
MPG:	*Middle Fk Salmon River*		*2591 (10.5)*	*443.1*	*4855*
15	Chamberlain Creek	SRCHA	521 (2.1)	65.6	1014
16	Middle Fork Salmon River below Indian Creek	MFLMA	556 (2.2)	54.9	1023
17	Big Creek	MFBIG	381 (1.5)	69.0	712
18	Camas Creek	MFCAM	255 (1.0)	26.8	401
19	Loon Creek	MFLOO	227 (0.9)	24.3	405
20	Middle Fork Salmon River above Indian Creek	MFUMA	402 (1.6)	83.6	806
21	Sulphur Creek	MFSUL	33 (0.1)	13.7	65
22	Bear Valley Creek	MFBEA	123 (0.5)	64.9	225
23	Marsh Creek	MFMAR	94 (0.4)	40.3	204
MPG:	*Upper Salmon River*		*4056 (16.4)*	*731.8*	*5592*
24	North Fork Salmon River	SRNFS	309 (1.3)	34.8	533
25	Lemhi River	SRLEM	942 (3.8)	174.8	1194
26	Salmon River lower mainstem below Redfish Lake	SRLMA	1078 (4.4)	131.9	1529
27	Pahsimeroi River	SRPAH	532 (2.2)	125.6	471
28	East Fork Salmon River	SREFS	352 (1.4)	50.1	440
29	Yankee Fork	SRYFS	122 (0.5)	31.8	213
30	Valley Creek	SRVAL	93 (0.4)	47.5	202
31	Salmon River upper mainstem above Redfish Lake	SRUMA	223 (0.9)	97.9	375
32	Panther Creek	SRPAN	406 (1.6)	37.5	635

ID	Population Name	Label	Basin Area (1000 acres/1000 km2)	Stream kilometers	
				Wtd. Km	Total
MPG:	*Dry Clearwater (lower)*		*1965 (8.0)*	*346.6*	*3267*
33	Lapwai/Big Canyon Creeks	CRLAP	528 (2.1)	89.0	661
34	Potlatch River	CRPOT	381 (1.5)	94.6	641
38	Lawyer Creek	SCLAW	481 (1.9)	53.0	594
39	Upper S. Fork Clearwater	SCUMA	574 (2.3)	110.0	1371
MPG:	*Wet Clearwater (upper)*		*4042 (16.4)*	*815.8*	*7743*
35	Lower N. Fork Clearwater	NCLMA	624 (2.5)	154.3	1211
36	Upper N. Fork Clearwater	NCUMA	940 (3.8)	239.5	1957
37	Lolo Creek	CRLOL	381 (1.5)	94.1	760
40	Lochsa River	CRLOC	810 (3.3)	147.9	1476
41	Meadow Creek	SEMEA	294 (1.2)	37.9	554
42	Moose Creek	SEMOO	363 (1.5)	51.2	644
43	Upper Selway River	SEUMA	630 (2.5)	90.9	1141
MPG:	*Middle Snake (Pine to Weiser)*		*3180 (12.9)*	*650.5*	*8753*
44	Pine Creek	USPIN	194 (0.8)	35.2	522
45	Wildhorse Creek	USWIH	113 (0.5)	16.1	300
46	Eagle Creek	PREAG	185 (0.8)	29.8	545
47	Powder River	PRMAI	908 (3.7)	195.1	3057
48	Burnt River	USBUR	704 (2.8)	119.7	2524
49	Crane Creek /lower Weiser	WILMT	334 (1.4)	91.7	454
50	Little Weiser	WILIT	352 (1.4)	82.5	634
51	Upper Weiser	WIUMA	390 (1.6)	79.8	717
MPG:	*Payette/Boise*		*5146 (20.8)*	*2054.3*	*30023*
52	Big/Little Willow Creeks	PAWIL	222 (0.9)	67.0	358
53	Squaw Creek	PASQU	387 (1.6)	78.4	634
54	South Fork Payette	PASFP	921 (3.7)	142.6	2025
55	North Fork Payette	PANFP	594 (2.4)	217.5	1076
59	Boise	USBOI	2692 (10.9)	479.6	5420
MPG:	*Malheur*		*3022 (12.2)*	*534.6*	*10255*
56	Willow Cr./lower Malheur	MRLMT	1054 (4.3)	154.9	3651
57	North Fork Malheur	MRNFM	751 (3.0)	130.0	2663
58	Upper Malheur	MRUMA	1217 (4.9)	249.7	3941
MPG:	*Owyhee*		*7071 (28.6)*	*874.2*	*22393*
60	Lower Owyhee	ORLMT	3133 (12.7)	351.1	11179
61	Little Owyhee	ORLIT	1376 (5.6)	146.1	5107
62	S. Fk. Owyhee	ORSFO	1179 (4.8)	197.7	4190
63	Upper Owyhee	ORUMA	1383 (5.6)	179.2	1918
MPG:	*Upper Snake (Snake tribs to Rock Cr.)*		*7273 (29.4)*	*866.2*	*11007*
64	Canyon Creek	USCAN	3156 (12.8)	358.6	6086
65	Lower Bruneau	BRLMT	976 (3.9)	108.2	1032
66	Upper Bruneau	BRUMA	1189 (4.8)	82.9	1681
67	Salmon Falls	USSAF	1610 (6.5)	269.3	1826
68	Rock Creek (Upper Salmon)	USROC	342 (1.4)	47.2	382

2. Upper Columbia Spring Chinook

ID	Population Name	Label	Basin Area (1000 acres/1000 km2)	Stream kilometers	
				Wtd. Km	Total
UC Spring Chinook ESU					
MPG:	*Wenatchee-Methow*		*5311 (21.5)*	*746.2*	*14605*
1	Wenatchee River	UCWEN	850 (3.4)	232.5	2421
2	Entiat River	UCENT	268 (1.1)	47.1	832
3	Methow River	UCMET	1167 (4.7)	176.5	3444
4	Okanogan River	UCOKA	3027 (12.2)	290.1	7908
MPG:	*Kettle/Colville*		*4185 (16.9)*	*334.5*	*11179*
5	Sanpoil River	ACSAN	621 (2.5)	93.6	1551
6	Kettle/Colville	ACKET	1100 (4.5)	112.7	2654
7	Kootenay River	ACKOO	2464 (10.0)	128.2	6974
MPG:	*Spokane*		*1698 (6.9)*	*409.1*	*4469*
8	Spokane River	SPMAI	1256 (5.1)	281.2	3219
9	Hangman Creek	SPHAN	443 (1.8)	127.9	1249

3. Snake River Fall Chinook

ID	Population Name	Stream Km			
MPG:	*SR Fall Chinook TOTAL*	*1432.5*			
1	Lower Mainstem (Extant)	819.7	mouth of Snake, + other accessible tributaries		
2	Marsing Reach	353	Hell's Canyon to Swan Falls		
	Salmon Falls	259.8	Swan Falls to Shoshone Falls		

Table 3. Sockeye salmon (*O. nerka*) populations and size statistics within the interior Columbia basin.

Sockeye				
ID	Population Name	Label	Lake Basin Area (acres/km2)	Lake Area (acres/km2)
Wallowa Lake -- Grande Ronde drainage			*32399 (131.1)*	*1503 (6.1)*
1	Wallowa Lake		32399 (131.1)	1503 (6.1)
Warm Lake -- South Fork Salmon drainage			*5832 (23.6)*	*412 (1.7)*
2	Warm Lake		5832 (23.6)	412 (1.7)
Snake River ESU			*66605 (269.5)*	*3223 (13)*
3	Stanley Lake		9713 (39.3)	176 (0.7)
4	Little Redfish Lake		1090 (4.4)	64 (0.3)
5	*Redfish Lake*		17413 (70.5)	1512 (6.1)
6	Hell Roaring Lake		5117 (20.7)	60 (0.2)
7	Yellowbelly Lake		7535 (30.5)	195 (0.8)
8	*Petit Lake*		6826 (27.6)	391 (1.6)
9	*Alturas Lake*		18911 (76.5)	825 (3.3)
Payette Lakes -- Payette River drainage			*158689 (636.8)*	*6728 (27.2)*
10	Payette Lake		92511 (374.4)	4987 (20.2)
11	Upper Payette Lake		27082 (109.6)	302 (1.2)
12	Little Payette Lake		39096 (152.8)	1439 (5.8)