



Drought Status Update #17

July 2, 2015

Note: This material is intended for, and contains elements of special interest to, WDFW agency staff. Non-agency readers or anyone having questions about the context, clarity, or content for items in this update should contact the author, WDFW Drought Coordinator Teresa Scott at (360) 902-2713 teresa.scott@dfw.wa.gov

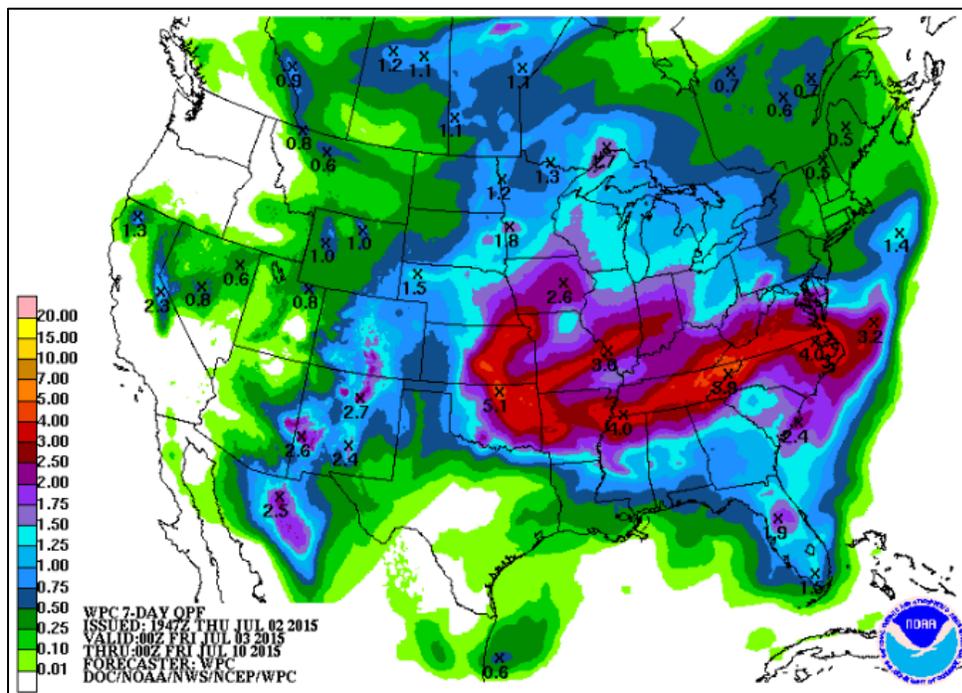
Today’s edition will be significantly shorter than normal in honor of the holiday – full content is intended to be restored next week. In summary, drought conditions in Washington for fish and wildlife include high air temperature, warmer stream temperatures, dropping flows, warming hatchery water supplies, and ultra-flammable wildlife (and people) habitats. The good news is that drought funds have been appropriated and WDFW is now able to implement the responses we have been planning this spring.

For a real wake-up call on drought conditions, in case temperatures for the past week (plus the fires) haven’t caught your attention, check out the [NWS Spokane Drought Information Statement \(created June 26th\)](#) . This statement is a follow up to the [NWS Seattle Drought Information Statement \(created May 22nd\)](#) and the [NWS Boise Drought Information Statement \(created June 3rd\)](#) – they all include technical information about weather and climate, stream flows, and water supply.

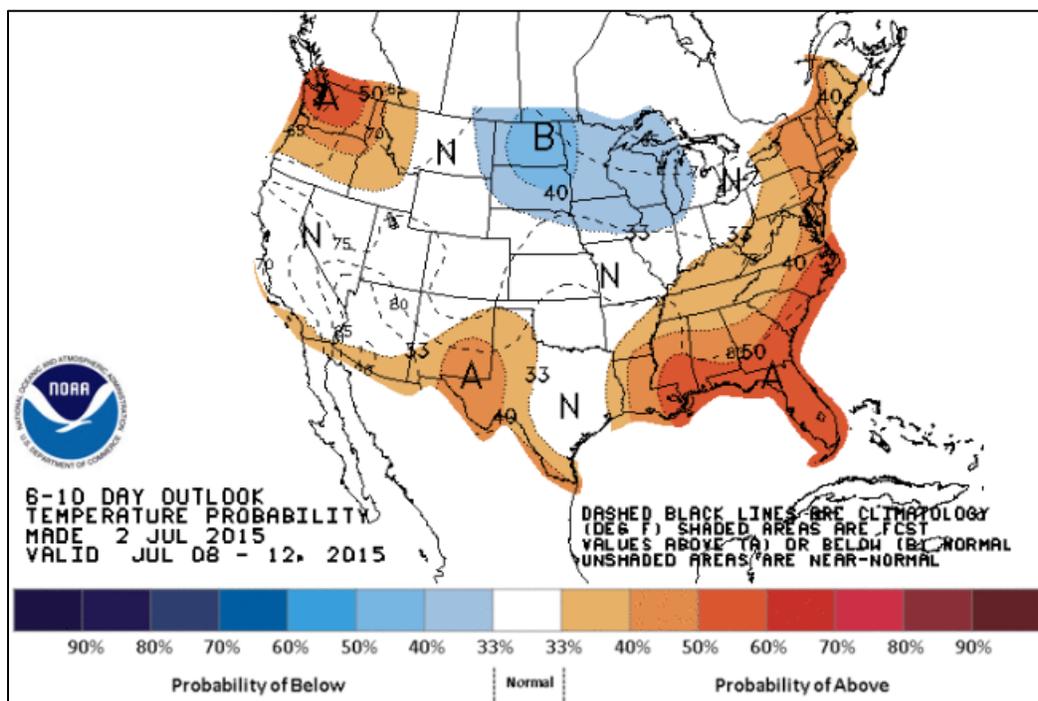
Attached is the weekly update by the Office of the State Climatologist, which eloquently summarizes this past week’s conditions and milestones.

Temperature and Precipitation Forecasts

No precipitation is expected in Washington during the next seven days ([below](#)).



The temperature outlook ([below](#)) is for above-normal temperatures throughout Washington for the next 6-to-10 days.



Federal Drought Status

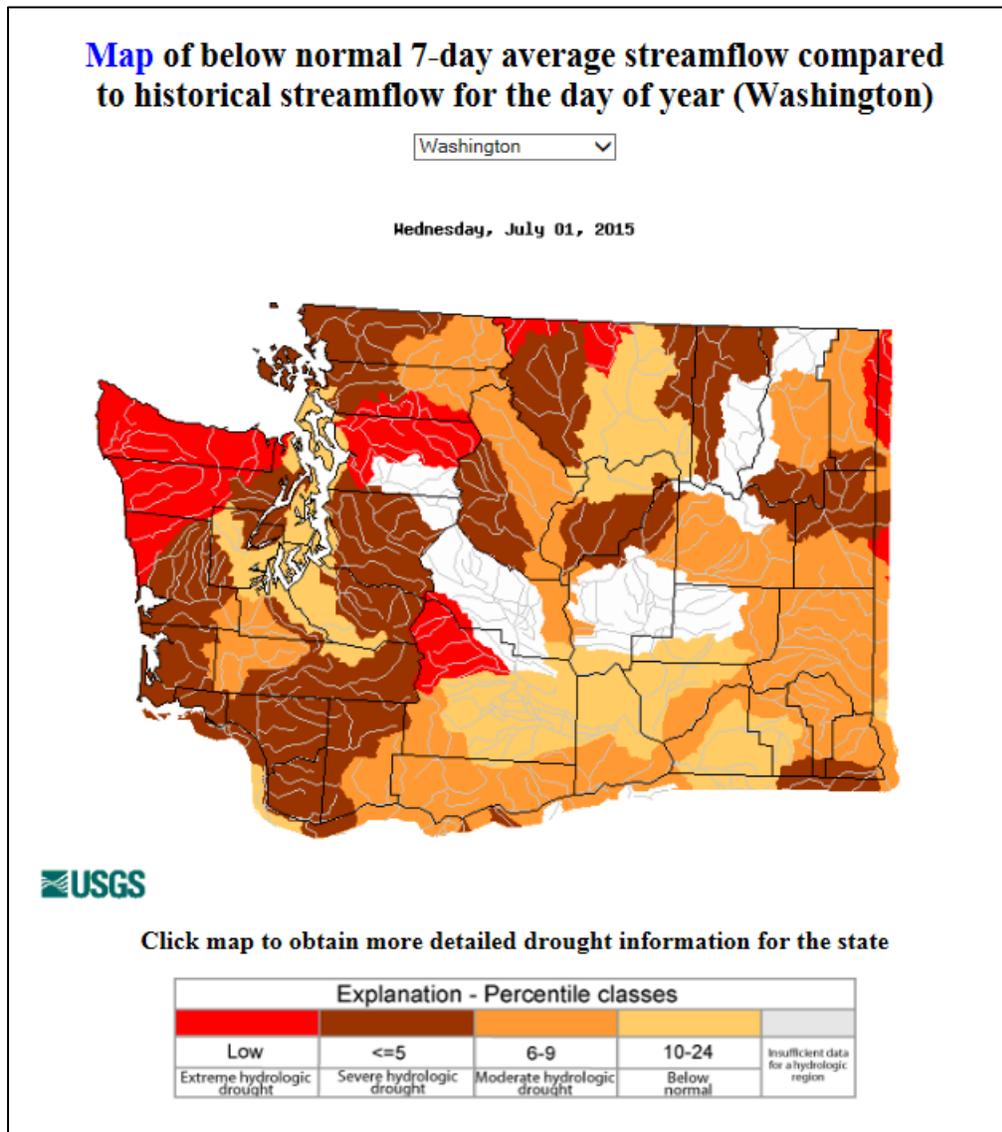
Area	Status	Federal designation
Northwest Olympic Coast	Week 2 at “Severe Drought”	In 6 weeks
South Central	Week 10 at “Severe Drought”	Asotin, Benton, Columbia, Garfield, Klickitat, Walla Walla Counties declared June 24 Chelan, Douglas, Grant, King, Pierce, Whitman, and Yakima counties declared July 1
Northeast	Week 7 at “Severe Drought”	In 1 week
Columbia Basin	Week 2 at “Moderate Drought”	
Everything else	“Moderate Drought”	

The [U.S. Drought Portal](#) provides the weekly drought status for the nation. Seven new counties were added to the list under federal drought status this week. A federal drought designation is automatic for any county when D2 (severe drought) conditions exist for eight weeks in a row. A

Secretarial disaster designation makes farm operators in designated counties eligible to be considered for certain assistance from the Farm Service Agency. Federal designation and all the associated activities are coordinated through [Washington Department of Agriculture](#); information distinguishing state-declared and federal drought designations, and the effect of federal designations, are available on the Ag web site.

Stream Flows

For the state as a whole, the figure showing [stream gauges with below normal streamflow](#) for 7 days or more is a little less dramatic than in previous weeks. Most of the state’s stream flows are some level below normal (“average”), with a couple of areas within normal ranges.



Hydrograph Sampler

Hydrograph Sampler Charts will (hopefully) be back in next week’s update. See the end of this document for links to our favorite sites.

Selected Washington Streamflows Table

The table gives a quick visual reference for daily flows as a percent of normal for this date in the historic record. The first column shows the gauge location, the second column shows today's stream flow readings, the third column shows today's flows as a percentage of average flows for this date throughout the period of record, column four shows the (previous) minimum flow for this date, and the fifth column shows in what year that minimum occurred.

Twenty of our select set of 43 locations set record lows on July 2, 2015. Low flow records are occurring less frequently as we move into the traditional low-flow periods for Washington streams. [Statewide streamflows](#) are available from USGS.

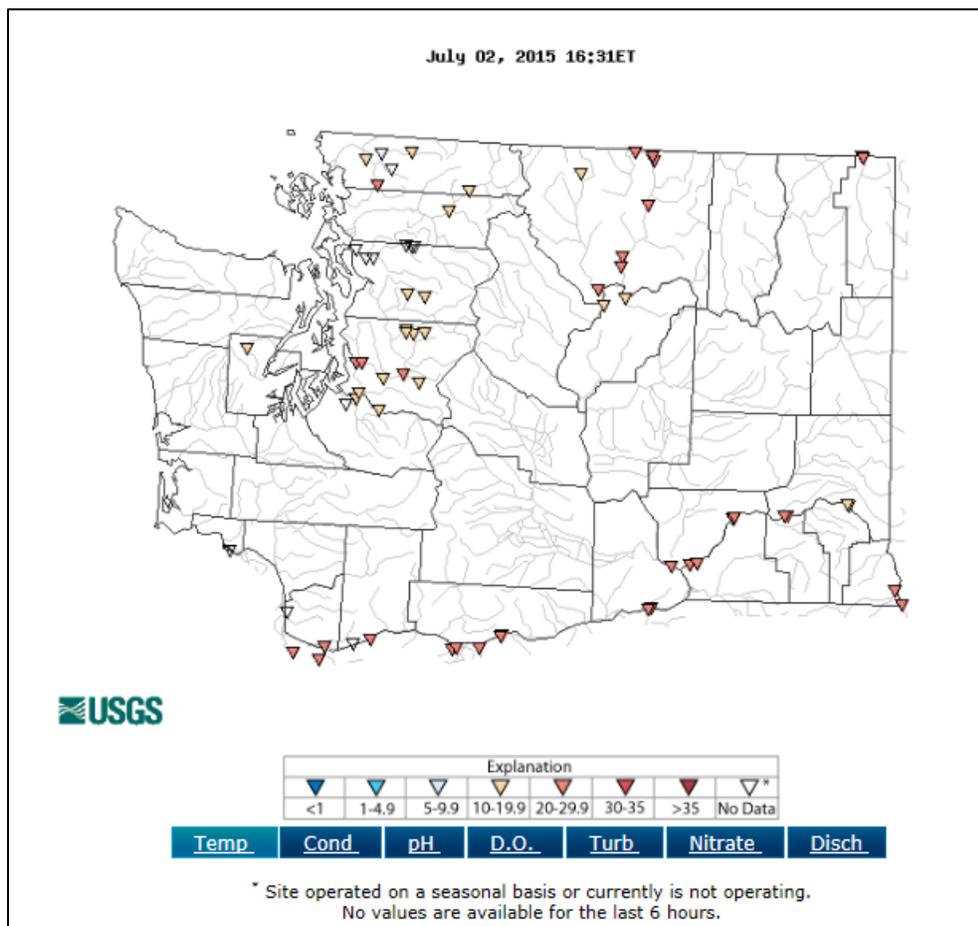
Selected Washington Streamflows July 2, 2015	Today's Flow (cfs)	Percent of average for this date in the record	Min Flow (cfs)	Year of min flow
MF NOOKSACK RIVER NEAR DEMING, WA	329	50%	185	1970
NOOKSACK RIVER AT FERNDALE, WA	1,950	47%	2,200	1970
SKAGIT RIVER NEAR CONCRETE, WA	12,200	55%	9,980	1970
SAUK RIVER AT DARRINGTON, WA	799	22%	1,060	1926
CASCADE RIVER AT MARBLEMOUNT, WA	906	32%	1,450	2009
NF STILLAGUAMISH RIVER NEAR ARLINGTON, WA	248	21%	327	1940
SNOQUALMIE RIVER NEAR CARNATION, WA	636	19%	1,010	1940
SKYKOMISH RIVER NEAR GOLD BAR, WA	516	10%	1,200	1992
ISSAQUAH CREEK NEAR MOUTH NEAR ISSAQUAH, WA	27	48%	25	2004
CEDAR RIVER BELOW DIVERSION NEAR LANDSBURG, WA	186	54%	114	1992
CEDAR RIVER AT RENTON, WA	221	49%	30	1962
BIG SOOS CREEK ABOVE HATCHERY NEAR AUBURN, WA	8	14%	28	1995
GREEN RIVER NEAR AUBURN, WA	258	36%	261	1992
SOUTH PRAIRIE CREEK AT SOUTH PRAIRIE, WA	35	20%	56	1995
PUYALLUP RIVER AT PUYALLUP, WA	2,080	55%	1,570	1962
NISQUALLY RIVER AT MCKENNA, WA	544	75%	41	1962
DESCHUTES RIVER NEAR RAINIER, WA	37	53%	37	2003
NF SKOKOMISH R BL STAIRCASE RAPIDS	61	13%	132	1926
DUNGENESS RIVER NEAR SEQUIM, WA	157	26%	222	1926
HOKO RIVER NEAR SEKIU, WA	16	21%	20	1995
CALAWAH RIVER NEAR FORKS, WA	72	26%	73	1995
HOH RIVER AT US HIGHWAY 101 NEAR FORKS, WA	1,020	55%	1,080	2009
SATSOP RIVER NEAR SATSOP, WA	265	49%	315	1951
CHEHALIS RIVER NEAR GRAND MOUND, WA	193	34%	212	1951
NASELLE RIVER NEAR NASELLE, WA	32	30%	40	1951
COWLITZ RIVER BELOW MAYFIELD DAM, WA	4,810	83%	1,480	1968
COWLITZ RIVER AT PACKWOOD, WA	663	27%	620	1992

LEWIS RIVER AT ARIEL, WA	2,370	93%	103	1931
WHITE SALMON RIVER NEAR UNDERWOOD, WA	596	57%	477	1977
KLICKITAT RIVER ABOVE WEST FORK NEAR GLENWOOD, WA	103	24%	114	1977
WALLA WALLA RIVER NEAR TOUCHET, WA	15	16%	9	1973
TUCANNON RIVER NEAR STARBUCK, WA	45	38%	40	1930
GRANDE RONDE RIVER AT TROY, OR	786	21%	676	1977
YAKIMA RIVER AT KIONA, WA	1,550	54%	598	1994
AMERICAN RIVER NEAR NILE, WA	48	11%	95	1977
CRAB CREEK AT IRBY, WA	4	18%	2	1990
WENATCHEE RIVER AT PLAIN, WA	1,320	27%	1,170	2005
METHOW RIVER NEAR PATEROS, WA	1,050	29%	796	1977
OKANOGAN RIVER AT MALOTT, WA	1,860	29%	1,760	1987
OKANOGAN RIVER AT OROVILLE, WA	318	32%	85	1987
SPOKANE RIVER AT SPOKANE, WA	872	16%	1,430	1987
COLVILLE RIVER AT KETTLE FALLS, WA	53	22%	26	1977
PEND OREILLE RIVER BELOW BOX CANYON	19,200	41%	8,340	1977

Real-Time Water Temperature from USGS and Ecology

Water temperatures are increasing statewide. [USGS temperature stations in Washington](#) provides water temperature for stations having that feature (below). Temperatures above 20 degrees C are occurring at several locations across the state. Columbia and Snake River mainstem forebay temperatures are exceeding 20 degrees C at most sites. Water temperature on the Willamette at Willamette Falls have exceeded 80 degrees F this week.

Hal Beecher and Teresa Scott met with Mark Munn, Stream Ecologist with USGS, about expanding real time water temperature monitoring and ways the agencies can work together to improve availability of water temperature information to WDFW decisionmaking. This type of cooperation is also a topic being explored by supporters of the National Integrated Drought Information System, which collates data from multiple sources to provide geographically-specific drought information portals. It has become acutely obvious here in Washington that drought-response decisions can't be based on flow alone, though flows are certainly key. Normal flows at higher-than-normal temperatures can take management conversations in a whole different direction – we need to improve the tools available to help us make those decisions.



Ecology's [Flow Monitoring Network](#) provides air and water temperature monitoring at several Ecology and Co-op stations. There are a number of stations of interest, so follow the link and check it out.

Data for the Lake Washington Ship Canal can be found [here](#).

Drought Impacts to Fish and Wildlife

North Puget Sound

Skagit River Hydro -- Brock Applegate reports that Skagit River is flowing around 3,500 cubic feet per second (cfs) at Marblemount. If Seattle City Light lowered the river to 3,000 cfs, two steelhead redds would dewater. The next redds will dewater at 2,500 cfs and lower. Seattle City Light has declared that the Skagit River flows remain in good shape. Seattle City Light Power Management does not see a need to reduce flows for now, so all they will protect all redds. They will provide an updated flow prediction after they run the model again soon. Seattle City Light will reach the reservoir elevation of 1598 ft. at Ross Lake on Canada Day (July 1) despite the low snowpack.

Central & South Puget Sound

KING COUNTY RIVER AND CREEK FLOW AND TEMPERATURE SUMMARY FOR WEEK OF 6/22-6/28

King County staff members Jim Simmonds and Curtis DeGasperi are our newest guest correspondents providing the following information:

- 13 out of 15 rivers with over 15 years of flow data and real-time data delivery had the lowest flows ever recorded for the week.
- Snoqualmie is below instream flow rule
- Green is below second diversion water rights and intermediate of first diversion water rights
- Cedar is at normal minimum flow
- 11 out of 21 creeks with over 15 years of flow data and real-time data delivery had the lowest flows ever recorded for the week
- 2 out of 10 rivers/streams with over 15 years of temperature data and real-time data delivery had the highest temperatures ever recorded for the week

River Flow Summary

Status	Regulated Rivers*	Unregulated Rivers
Lowest flow ever for week	Green at Auburn	Skykomish near Gold Bar Tolt (mainstem near Carnation, N Fork, S Fork above reservoir near Index) Snoqualmie (mainstem at Carnation, S Fork, M Fork, N Fork) Raging Cedar above reservoir Sammamish at 116 th White above Mud Mountain
Below typical flow for week	Cedar at Renton	
Typical flow for week	S Fork Tolt below reservoir	

*Data for White River at Auburn downstream of Mud Mountain Dam only available since 10/1/2007

Creek Flow Summary*

Status	WRIA 8 (Lake Washington)	WRIA 9 (Green)	WRIA 10 (Puyallup)
Lowest flow ever for week	Issaquah, Juanita, Rock, Taylor (Selleck), Thornton	Covington, Judd, Little Soos, Soos, Soosette	Boise
Lower flow for week than during 90% of other years	Bear	Des Moines	
Below typical flow for week	Mercer, Lyon	Jenkins	
Typical flow for week	Laughing Jacobs McAleer	Crisp, Springbrook, Mill (Kent)	

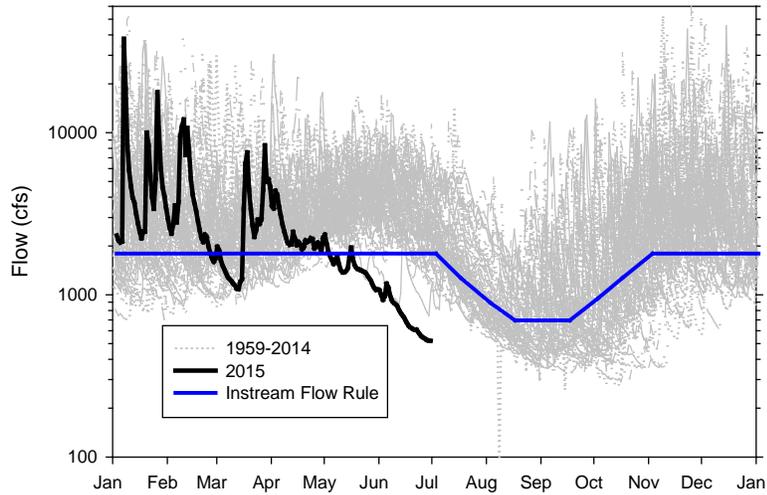
*No creeks in WRIA 7 have 15 years of flow data and real-time data delivery

River and Creek Temperature Summary

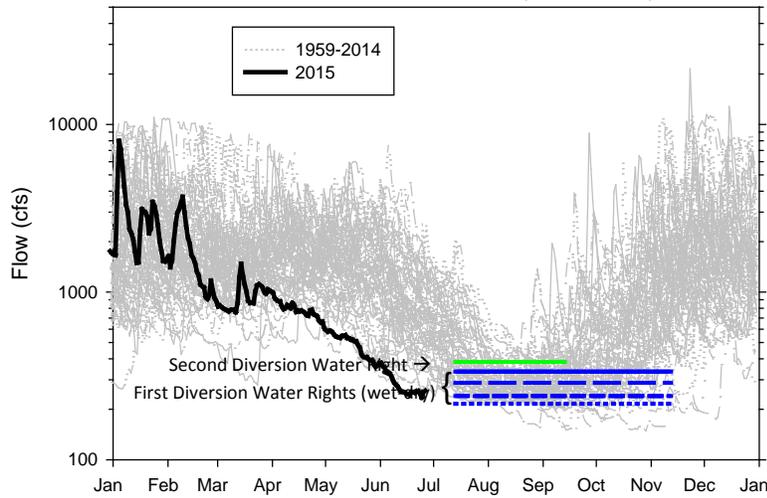
Status	River/Creek
Highest temperatures ever for week	S Fork Tolt (Index and Carnation) Cedar (Cedar Falls and Renton)

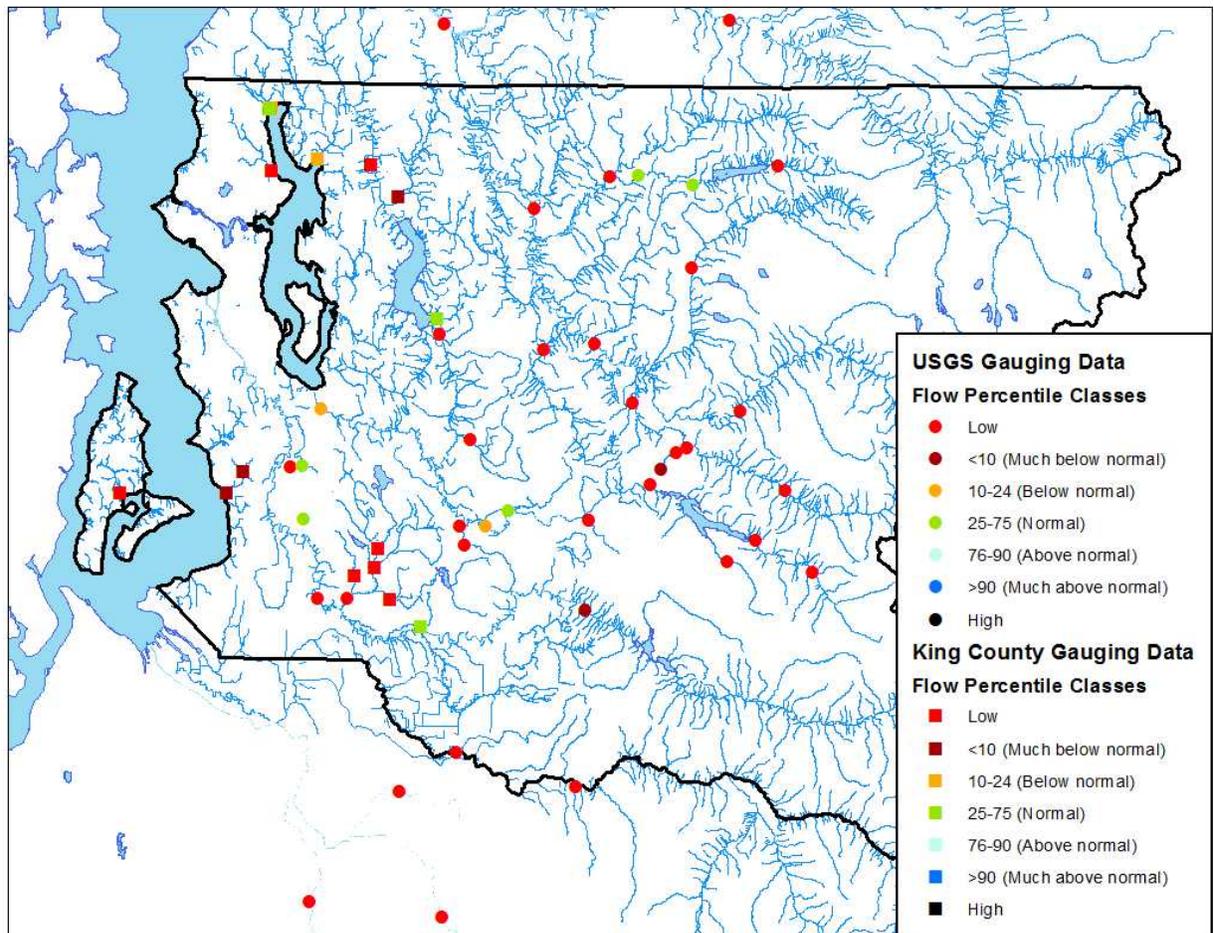
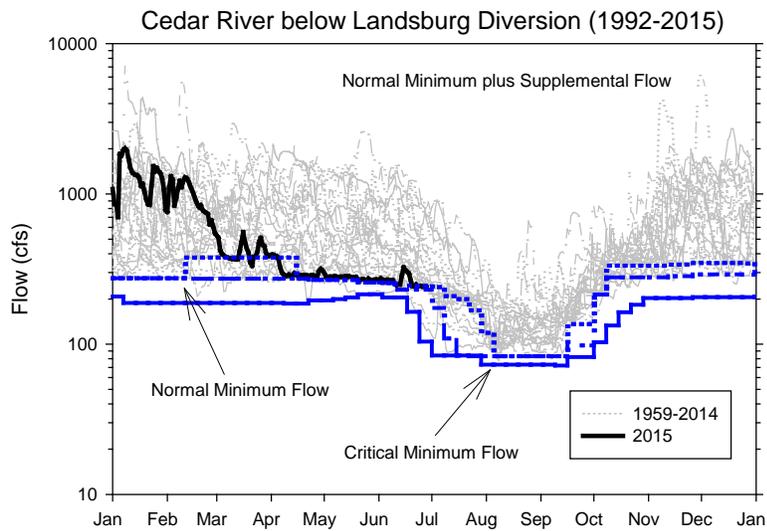
Temperatures for week higher than during 90% of other years	None this week
Higher than typical temperatures for week	None this week
Typical temperatures for week	Sammamish, Laughing Jacobs Cr, Bear Cr, Little Soos Cr, Judd Cr, Jenkins Cr
Lower than typical temperatures for week	Crisp and Covington Creeks

Snoqualmie near Snoqualmie (1959-2015)



Green River near Auburn (1959-2015)





Southwest Washington

Kalama River: John Weinheimer and others in Region 5 have alerted Drought Central to a blockage at the Kalama River mouth that will likely prevent returning fish from entering the river and reaching hatchery facilities. This is a persistent blockage that is being considered for emergency action this year because flows are so low.

South Central Washington & Columbia Basin

Snake & Columbia Rivers

Joe Hymer from R5 sends us this update on Columbia River summer chinook and sockeye:

Summer Chinook

- Adult summer Chinook passage at Bonneville Dam during June 16-29 totals 53,197 fish.
- It's the 2nd largest total to-date (record is 70,920 adults in 1957).
- Passage is typically 50% complete by June 29.
- The preseason forecast was for a Columbia River return of 73,000 adults.
- The Technical Advisory Committee (TAC) began weekly stock status reviews for the summer season on Monday June 29. TAC upgraded the summer Chinook forecasted return to 85,000 adults.
- If the upgraded TAC forecast is correct, this year's summer Chinook return would be the second largest on record since at least 1980 (record is 89,500 adults in 2002).

Sockeye

- Sockeye passage at Bonneville Dam through June 29 totals 339,816 fish.
- It's also the 2nd largest total count to-date (record is 364,849 fish in 2012).
- Passage is typically 50% complete by June 25.
- The preseason forecast was for a Columbia River return of 394,000 adults.
- The Technical Advisory Committee (TAC) began weekly stock status reviews for the summer season on Monday June 29. TAC upgraded the sockeye return to 450,000 adults.
- If the upgraded TAC forecast is correct, it would be the 3rd largest return to the mouth of the Columbia since at least 1938 (record was set just last year with 645,140 fish).

BONUS FACTOID - Water temperatures at Bonneville Dam

- Water temperature in the Bonneville Dam forebay was nearly 71 degrees yesterday.
- It's the hottest temperature to-date since at least 1950.
- The recent 10-year average on June 28 is 63 degrees.

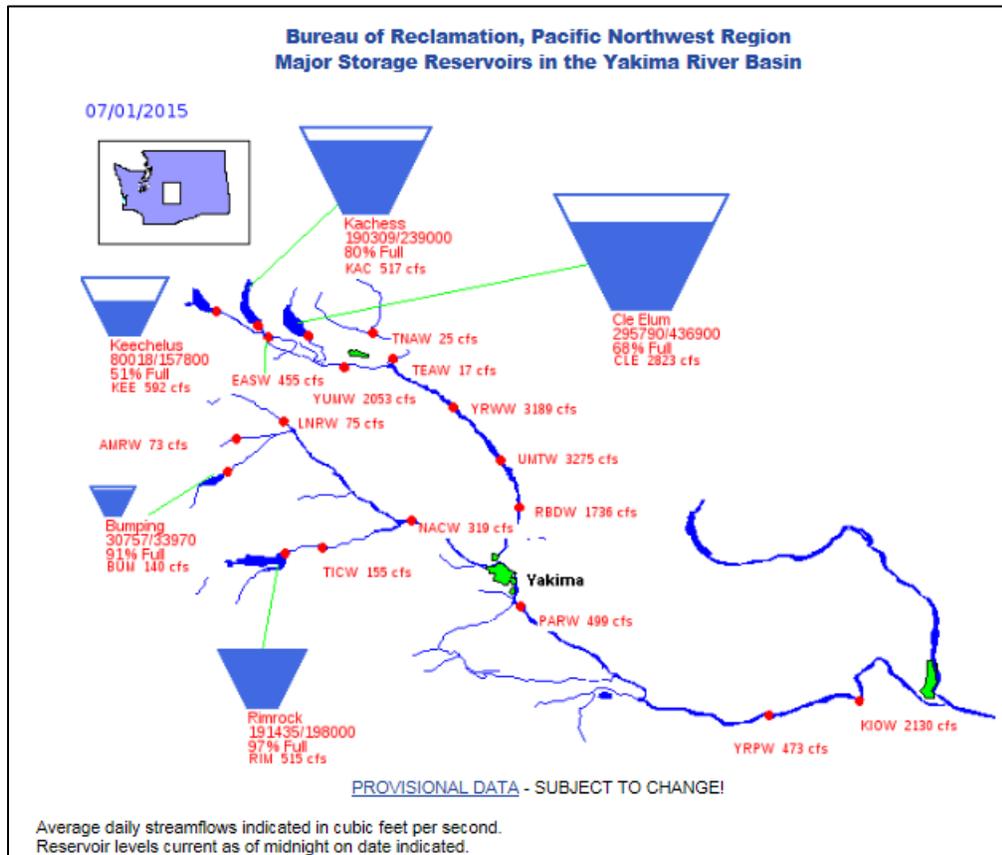
Federal Columbia River Power System (FCRPS) Technical Management Team's (TMT) Washington member (WDFW's own) Charlie Morrill shared information from BPA about requests BPA is receiving from outside the region for extra power generation. The flow and spill management plans for the FCRPS include provisions for implementing a "power emergency" that subordinates fish operations such as spill criteria. The "[Power Emergency](#)" protocols have been in place since 2008, and the current overall plan was last updated in 2013. BPA requires entities requesting additional power to exhaust alternatives before they would "qualify" for power from BPA. When those criteria are satisfied and emergency power generation is implemented, that implementation follows a regimented sequence of spill curtailment and increased generation at the various dams.

While not exactly a user-friendly site, more information about the TMT, the annual FCRPS Water Management Plan (WMP), and fish operations can be found at the Corps-hosted TMT

web site. Check [here](#) under “documents” for the WMP, and browse the rest of the site for other interesting FCRPS information. The Power Emergency information is appendix 1 to the WMP.

Yakima

The [Reclamation Teacup Diagram](#) (below) for Yakima Basin shows Lake Keechelus volume down to 51%, Cle Elum down to 68%, and Kachess holding at 80%. Bumping is drawing now – it’s at 91% of full – but Rimrock is still essentially full. Overall storage is 87% of average. Inflow to the five reservoirs is 26% of average, releases from all five reservoirs are 95% of average, and major canal diversions are 79% of average for July 2.



WDFW Headquarters Drought Response Activity

Let ‘em Pass Signs: Let ‘em Pass signs shipped this week to regional offices and selected other locations. WDFW also provided signs to State Parks and DNR. Once WDFW has distributed signs we will be offering them to local groups for posting. Anyone interested in more signs or having a volunteer lined up to distribute signs should contact Drought Coordinator Scott.

Report your observations - Please remain vigilant, and report looming, suspected, or real-time blockages or stranded fish to your regional program manager AND to Drought Coordinator Teresa Scott at teresa.scott@dfw.wa.gov. Stay tuned for a centralized reporting mechanism on the Habitat Program Sharepoint site.

Drought-related fishery closures

Yesterday, the Grande Ronde River became Washington's second official low-flow/high-temperature fishing closure. The Grand Ronde closes Sunday evening. On June 17, Sol Duc River near the Sol Duc Hatchery became our first low-flow-related closure of the season.

Fish in hatcheries:

This week's hatchery discussions included concern over water temperatures at hatcheries where coho salmon are waiting to be marked. WDFW's marking protocols prohibit marking fish when temperatures are too high. Alternatives are being considered, including the possibility of testing the use of portable chillers such as those being used at some California hatcheries – a costly solution in a high-stakes situation!

News Clips

[Warming Northwest Rivers Raise Risk Of Fish Kills](#)

KUOW - June 27, 2015

[The good, bad and ugly of summer's heat](#)

The News Tribune - June 27, 2015

[Stream Temps Already High — In June. On The Westsides.](#)

NW Sportsman - June 29, 2015

[End of June drought report in a word: bleak](#)

Spokesman Review - June 30, 2015

[Fish fighting for survival with drought](#)

Yakima Herald Republic - June 30, 2015

[Snow Drought Saps Washington State's Economy](#)

Morningstar/Wall Street Journal - July 01, 2015

[Drought reduces hydroelectric output](#)

Capital Press - July 02, 2015

[Drought relief comes to some farmers - Temporary water transfer permit approved from Anacortes to some irrigation districts](#)

Skagit Valley Herald – July 2, 2015

Links

[Ecology's "Washington Drought 2015"](#)

Office of the State Climatologist now offers a [weekly drought update for Washington State](#). State departments of [Health](#) and [Agriculture](#) have posted drought web pages.

NOAA National Integrated Drought Information System is sponsoring a [Pacific Northwest Drought Portal](#)

NOAA [El Nino Portal](#)

Monthly and Seasonal climate outlooks are continuously updated and available at [NOAA's Climate Prediction Center](#)

[Northwest River Forecast Center Water Supply](#)

USGS [Real time stream data for Washington](#)

U.S. Army Corps of Engineers [Seattle District Reservoir Control Center](#)

For Further Information:

Drought talking points, powerpoint presentations, images, and other drought-related resources are available to staff on the "S" drive.

Contact WDFW Drought Coordinator Teresa Scott at teresa.scott@dfw.wa.gov or (360) 902-2713 with questions and suggestions.

Hydrograph Sampler Charts - Streamwatch (Real Time Flows USGS)

Apologies for the lack of hydrographs this week. In place of the charts, here are the links for each of the usually-reported gauges:

Stilly	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12167000
Issaquah	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12121600
Dungeness	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12048000
Hoko	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12043300
Calawah	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12043000
Skookumchuck	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12025700
Naselle	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12010000
Speelyai	http://waterdata.usgs.gov/wa/nwis/uv?site_no=14219800
Klickitat	http://waterdata.usgs.gov/wa/nwis/uv?site_no=14107000
Walla Walla	http://waterdata.usgs.gov/wa/nwis/uv?site_no=14018500
Methow	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12447383
Okanogan	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12447200
Colville	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12409000
Kettle	http://waterdata.usgs.gov/wa/nwis/uv?site_no=12401500