Attachment #4: SR Spring Chinook GIS Layer Methods

Memorandum November 15, 2021

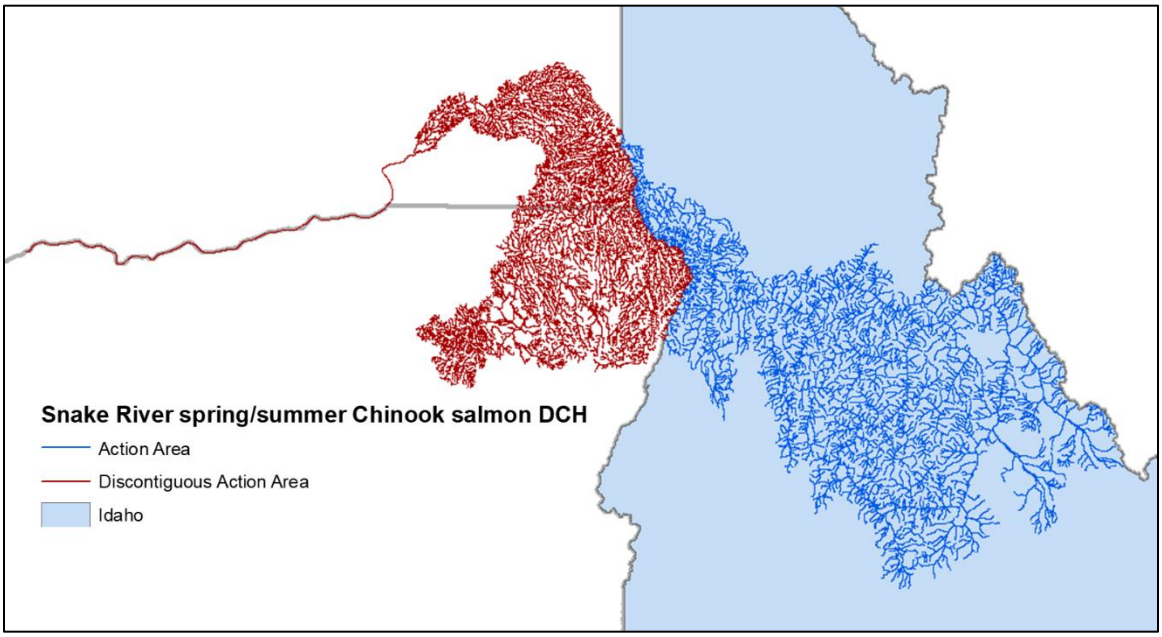
To: Rochelle Labiosa, R10 USEPA

From: Peter Leinenbach, R10 USEPA

Subject: Estimating Snake River spring/summer Chinook salmon DCH based on methods presented in a March 4, 2021 email from Johnna Sandow at NOAA

Results

Figure 1. Designated Snake River spring/summer Chinook salmon DCH based on methods presented in a March 4, 2021 email from Johnna Sandow at NOAA.



Methods

Methods outlined below are based on actions requested in a March 4, 2021 email from Johnna Sandow at NOAA which described steps to calculate the critical habitat distribution for the Snake River spring/summer Chinook salmon ESU. Specifically, the 3/4/2021 email outlined the following steps: 1) Obtain the Interior Columbia Basin intrinsic potential (IP) habitat layer; and then 2) select stream segments within the IP stream layer described within 64 FR 57399 (1999). It was proposed in the memo that this "would be a reasonable approach to "mapping" DCH for the Snake River spring/summer Chinook salmon species." A copy of this email is presented in Appendix A of this memo. Subsequently following two review iterations of the created layer developed from these instructions, Bill Lind at NOAA recommended in a 10/29/2021 email that the third draft of this layer can be used in subsequent assessments (see Appendix B)

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Specific methods used are described below -

- Obtained a 2016 copy of the Intrinsic Potential Layer originally obtained from NOAA as part of a previous "Idaho Mixing Zone" assessment/review. Specifically, downloaded this GIS shapefile from the folder named "Intrinsic Potential" (IP) on Mark Jankowski's USEPA OneDrive account and saved this file to the desktop harddrive for subsequent processing in ArcGIS. This shapefile is named "icb200ms" and was created by Damon Holzer (NMFS, Seattle) in 2007.
- Based on the provided description within 64 FR 57399 on spring/summer Chinook distributions, selected from the IP shapefile layer all mainstem Columbia River reaches downstream from the confluence with the Snake River (Note – the IP layer only extends downstream to the Bonneville Dam), and all rivers and streams located within Snake River basin, excluding streams upstream of the Hell Canyon Dam and Napias Creek Falls. These selected streams were saved as a new shapefile.
- Determine if the segments within the shapefile created in the previous step are located inside or outside of the Idaho State boundary add this information into the shapefile's VAT.
- Because the IP shapefile is segmented at 200 feet intervals, the resulting shapefile takes a lot of memory (350+ MB) and it not possible to email. The 200' segmentation is a refinement of the LLID segmentation of the original topology (In other words, they segmented the original unique identifier (i.e., LLID but called FeatName in the VAT) for the stream layer into 200' segments) and because the additional information included in these 200' segments are not used in this assessment, the shapefile segments were dissolved based on the LLID and resulted in a much smaller file (12 MB). The information/results associated with this assessment were the same between these two datasets.

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Appendix A – Copy of March 4th Email

From: Johnna Sandow - NOAA Federal <johnna.sandow@noaa.gov>
Sent: Thursday, March 04, 2021 1:10 PM
To: Labiosa, Rochelle <labiosa.rochelle@epa.gov>; Herger, Lillian <Herger.Lillian@epa.gov>; Jason Pappani <jason.pappani@deq.idaho.gov>; Christofferson, Cara E <cara_christofferson@fws.gov>; Macchio, Lisa <Macchio.Lisa@epa.gov>; michelle.dale@deq.idaho.gov; Grafe, Cyndi <Grafe.Cyndi@epa.gov>
Cc: Johnna.Sandow@noaa.gov
Subject: Snake River spring/summer Chinook salmon DCH

Rochelle:

The purpose of this email is to relay the designated critical habitat language for the Snake River spring/summer Chinook salmon ESU. I also went ahead and added my thoughts using intrinsic potential layer as a proxy for designated critical habitat (with some modifications). Hopefully this email will be sufficient for your records and obviates the need for you to send me an email request. :-)

Snake River spring/summer Chinook salmon DCH was originally designated in 1993 (58 FR 68543). The designation was subsequently revised in 1999; and is defined in 64 FR 57399 as follows:

"Snake River Spring/Summer Chinook Salmon (Oncorhynchus tshawytscha). Geographic Boundaries. Critical habitat is designated to include the Columbia River from a straight line connecting the west end of the Clatsop jetty (south jetty, Oregon side) and the west end of the Peacock jetty (north jetty, Washington side) and including all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and Snake Rivers; all Snake River reaches from the confluence of the Columbia River upstream to Hells Canyon Dam. Critical habitat also includes river reaches presently or historically accessible (except reaches above impassable natural falls (including Napias Creek Falls) and Dworshak and Hells Canyon Dams) to Snake River spring/summer chinook salmon in the following hydrologic units: Hells Canyon, Imnaha, Lemhi, Little Salmon, Lower Grande Ronde, Lower Middle Fork Salmon, Lower Salmon, Lower Snake-Asotin, Lower Snake-Tucannon, Middle Salmon-Chamberlain, Middle Salmon-Panther, Pahsimeroi, South Fork Salmon, Upper Middle Fork Salmon, Upper Grande Ronde, Upper Salmon, Wallowa. Critical habitat borders on or passes through the following counties in Oregon: Baker, Clatsop, Columbia, Gillium, Hood River, Morrow, Multnomah, Sherman, Umatilla, Union, Wallowa, Wasco; the following counties in Washington: Asotin, Benton, Clark, Columbia, Cowlitz, Franklin, Garfield, Klickitat, Pacific, Skamania, Wahkiakum, Walla, Whitman; and the following counties in Idaho: Adams, Blaine, Custer, Idaho, Lemhi, Lewis, Nez Perce, Valley."

Because Snake River spring/summer Chinook salmon includes river reaches "presently or historically accessible," NMFS does not have a GIS layer of DCH for this species like we have for other species (e.g., Snake River Basin steelhead). One layer that could be used is the Interior Columbia Basin intrinsic potential habitat layer that you already have. This layer could be clipped to include the reaches described above along with reaches within the HUCs described above. I think that would be a reasonable approach to "mapping" DCH for the Snake River spring/summer Chinook salmon species. It would be beneficial for the BA to recognize there are limitations to this approach, but that it is the best approach we have to date.

Please let me know if you have any questions.

Johnna Sandow
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Appendix B – Copy of October 29th Email

From: Bill Lind - NOAA Federal <bill.lind@noaa.gov>
Sent: Friday, October 29, 2021 10:20 AM
To: Labiosa, Rochelle <labiosa.rochelle@epa.gov>
Subject: Re: Spr/Sum Chinook CH - alternative format KMZ

Thanks Rochelle. Yes, that works just fine. Looks like things look pretty good too. I think you're good to go with this layer.

On Fri, Oct 29, 2021 at 11:14 AM Labiosa, Rochelle <labiosa.rochelle@epa.gov> wrote:

Hi Bill - attached is the draft spr/sum CH V3 shapefile in KMZ format - you should be able to upload into google earth for example. Please let me know if this does/does not work for you.

Rochelle

Rochelle Labiosa, Ph.D. (She/Her/Hers)

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