

# *Coordinated Assessments Data Exchange Standard*

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Prepared by:

Pacific States Marine Fisheries Commission  
StreamNet Project

for

Pacific Northwest Coordinated Assessments Data Exchange Standard Development Team

## List of "indicators" described in this document

This document contains data structures for sharing information about several "high level indicators". You can use the table below to find which data table in the document contains the indicator of interest to you.

Indicator	Rearing Type	Description	Table
Spawner abundance	Natural origin	Number of natural origin fish that actually spawn, not necessarily the number of fish returning to a spawning area.	NOSA (A1)
Presmolt abundance	Natural origin	Number of natural origin juvenile fish in a population. Usually late summer parr, but may be any time and stage.	PresmoltAbundance (A6)
Number of outmigrants	Natural origin	Number of fish passing a defined point as they migrate downstream.	JuvenileOutmigrants (A4)
Smolt to adult return rate (percentage)	Natural origin	100 X the point estimate of the number of returning natural origin adults, divided by the point estimate of the number of smolts that produced those returning adults.	SAR (A2)
Recruits per spawner: adults	Natural origin	Recruit per spawner ratios are specific to the locations and seasons described in each record of data. The number of "recruits" can be defined at any life stage.	RperS (A3)
Recruits per spawner: juveniles	Natural origin		
Proportionate natural influence (PNI) of integrated natural / hatchery populations		Estimate of the relative selection pressure of the natural environment in an integrated natural / hatchery population.	PNI (B2)

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## I. Introduction

This document contains the Coordinated Assessments Data Exchange Standard. It includes 1) the names and purposes of tables, 2) relationships among tables, and 3) the names, purposes, and properties of fields within tables. This data exchange standard was created by Pacific Northwest United States representatives from state and federal and tribal fisheries management and regulatory agencies, private consultants, and federal funding agencies.

This document has three main divisions: this introduction; the descriptions of the data tables; and appendices. Sections within the data tables division describe tables that have a common theme: the first section contains the tables for indicators meant to characterize the status of naturally-spawning fish populations; the second section contains the tables meant to characterize the success of hatchery programs and the status of hatchery populations.

The tables in this document represent data tables in a computer file. The tables in this document are comprised of 4 columns. *Field Name* is the name of the field in the data table. Underlined field names indicate primary key designations; multiple underlined field names indicate a multi-field key. The word "unique" in parentheses under a field name indicates that each value in that field must be unique within the table: that is, the field cannot have duplicate values. *Field Description* is a brief definition or description of the field. The descriptions in the *Field Description* column are the most important part of the tables in this document. *Data Type* specifies the field's Microsoft Access 2010 data type; the number after a "Text" data type indicates the maximum width of the entry, in characters, for that field. *Codes/Conventions* provides lookup codes, business rules, or other information applicable to the field.

Required fields are indicated by **bold red font** in the *Field Name* and *Data Type* columns. If the Field Name and Data Type are ***bold and red and italicized***, then whether the field is required varies according to other entries in the record -- refer to the *Field Description* column for business rules on when the field is required.

The data types listed in the tables' *Data Type* column are Microsoft Access 2010 data types. Appendix G contains details regarding these data types.

For help understanding the data tables or this document, contact Mike Banach with Pacific States Marine Fisheries Commission (503-595-3152; Mike\_Banach@psmfc.org).

## II. Data Tables

### Section A: Indicators for Populations of Natural Origin Fishes

In all tables, "natural origin" fish are those resulting from spawning in the natural environment, while "hatchery origin" fish are those resulting from spawning in a hatchery. Whether the parents were natural origin, hatchery origin, or a mix does not matter.

#### A1. NOSA Table

This table stores information concerning natural origin spawner abundance (NOSA) and natural origin escapement. NOSA refers to the number of live natural origin fish available to participate in natural spawning during the spawning period. Escapement refers to the number of natural origin fish returning to spawn that pass upstream of a specified location during a specified time period.

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Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table		
<b>Fields for defining a unique record</b>					
<b>ID</b> (unique)	Value used by computer to identify a record.	<b>Text 36</b>	This value is a globally unique identifier (GUID) exactly 36 characters long. <ul style="list-style-type: none"> <li>• When submitting a new record you may include this value or leave it blank. If you include this value then it will be used by the central system. If you leave it blank then a value will be created for you, and it will be sent back to your system where it must be incorporated.</li> <li>• When updating or deleting records this value must be included.</li> </ul>		
<b>CommonName</b>	Common name of the taxon of fish.	<b>Text 50</b>	Enter the name of the taxon here, even if taxon name is included in the name of the population. Select from the following:	<ul style="list-style-type: none"> <li>• Bull trout</li> <li>• Chinook salmon</li> <li>• Chum salmon</li> <li>• Coho salmon</li> <li>• Sockeye salmon</li> <li>• Steelhead</li> </ul>	Additional species may be added in the future: refer to <a href="http://old.streamnet.org/SpeciesInFW.html">http://old.streamnet.org/SpeciesInFW.html</a> for common names.
<b>Run</b>	Run of fish.	<b>Text 20</b>	Enter the name of the run here, even if run name is included in the name of the population. Entries in this field are not recognized as taxonomic divisions. Select from the following: [ <i>Do not include comments in brackets.</i> ]	<ul style="list-style-type: none"> <li>• Spring</li> <li>• Summer</li> <li>• Fall</li> <li>• Late fall</li> <li>• Winter</li> <li>• Spring/summer</li> </ul>	<ul style="list-style-type: none"> <li>• Both summer &amp; winter</li> <li>• Early</li> <li>• Late</li> <li>• Both early &amp; late</li> <li>• N/A [<i>For species without recognized runs. For example, bull trout.</i>]</li> </ul>
RecoveryDomain	Name of the "recovery domain," as defined by the NMFS Northwest Region, in which the population falls geographically.	Text 255	Five recovery domains have been defined by NMFS in Washington, Oregon, and Idaho. Select the appropriate one from this list:	<ul style="list-style-type: none"> <li>• Puget Sound</li> <li>• Willamette/Lower Columbia</li> <li>• Interior Columbia</li> <li>• Oregon Coast</li> <li>• Southern Oregon/Northern California Coast</li> </ul>	Further information about recovery domains can be found at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .
ESU_DPS	For populations listed under the federal ESA, this is the name of a defined Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS) as defined by NMFS Northwest Region or by USFWS. For non-listed populations this is the DPS or other name.	Text 255	Enter the name of the ESU or DPS here. Entries in this field are taxonomic divisions defined by NMFS or USFWS, and may be at the species, subspecies, or finer scale. ESUs of salmon north of California are listed at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .		

Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table
MajorPopGroup	Name of "major population group" (MPG) or "stratum" as defined by the NMFS Northwest Region, in which the population falls.	Text 255	The term "stratum" is used in the Willamette/Lower Columbia Recovery Domain, while "major population group" is used in other areas. The term "stratum" includes life history considerations as well as geographic criteria, while MPGs are defined geographically. See Appendix C for the list of MPGs / strata.
<b>PopID</b>	Code for the population(s) of fish represented by this record.	<b>Integer</b>	See Appendix C for the list of population codes. See Appendix E if you need a code for a population (or superpopulation) not already in the list.
CBFWApopName	Population name as defined by CBFWA for subbasin planning purposes, from subbasin plans and agencies.	Text 255	This may include non-listed populations, or cases where geographic area does not match a defined population of a listed species. See Appendix D for the list of these population names.  Fill this field even when a population's geographic extent coincides with NWR name for a listed population.
CommonPopName	Population name used by local biologists.	Text 255	Often this is simply the name of the population(s) as written on the original time series spreadsheets.
<b>PopFit</b>	Categorization of how well the geographic extent of the NOSA/escapement estimate corresponds to the geographic definition of the population.	<b>Text 8</b>	This value must be "Multiple" if PopID represents a superpopulation. <u>Acceptable values:</u> [Do not include comments in brackets.] <ul style="list-style-type: none"> <li>• Same [Estimate represents one entire population, the whole population, and nothing but the population.]</li> <li>• Portion [Estimate represents a portion of one population. (Describe in PopFitNotes field.)]</li> <li>• Multiple [Estimate is from more than one population. (Describe in PopFitNotes field.)]</li> </ul>
<b>PopFitNotes</b>	Text description of how well the NOSA/escapement value corresponds to the defined population, and why the data are not at the scale of a single population.	<b>Memo</b>	This field is required if the PopFit field is "Portion" or "Multiple". If the PopFit field is "Portion" or "Multiple", describe the lack of correspondence between the defined population and the fish for which the NOSA/escapement estimate was made. Also state <i>why</i> this scale of data was used to represent the population instead of true population-scale data. (Examples: "Data not available at exact scale of this population."; "Data at this scale best represent the population.")
<b>EstimateType</b>	Whether the values in the NOSAIJ / NOSAEJ fields are classified as spawner abundance or escapement.  See the NOSA/Escapement Decision Tree (Appendix F) for guidance in determining NOSA vs. escapement.	<b>Text 10</b>	<u>Acceptable values:</u> [Do not include comments in brackets.] <ul style="list-style-type: none"> <li>• NOSA [The number of live natural origin fish available to participate in natural spawning during the spawning period.]</li> <li>• Escapement [The number of natural origin fish returning to spawn that pass upstream of a specified location during a specified time period. Includes fish harvested / pre-spawn mortalities that occurred after passing the specified location.]</li> </ul> If "Escapement" is chosen then the EscapementLong, EscapementLat, EscapementTiming, and NOBroodStockRemoved fields are required.
<b>WaterBody</b>	For NOSA estimates (when EstimateType = "NOSA"), the name of the body of water associated with the time series.  For escapement estimates (when EstimateType = "Escapement") the specific location of the estimate, which may include weirs, fish ladders, PIT tag detectors, sonar installations, or other sites. Escapement is the number of fish passing upstream of this location	<b>Text 255</b>	For NOSA estimates this may be any of the following: <ul style="list-style-type: none"> <li>• the name of a fluvial water body.</li> <li>• the name of an impounded fluvial water body (reservoir).</li> <li>• the name of a lentic water body.</li> <li>• a description of multiple water bodies if appropriate for the time series.</li> </ul> For escapement estimates include the stream name(s) and, if applicable, specific site names. For example, the Shipherd Falls fish ladder on the Wind River you could enter "Wind River at Shipherd Falls".
<b>EscapementLong</b>	For escapement estimates, longitude of the location specified in the WaterBody field in decimal degrees (not degrees-minutes-seconds). Calculated using NAD83/WGS84 datum.	<b>Single</b>	This is a negative number. Use three digits left of the decimal point and four digits to the right of the decimal point. For example, if WaterBody = "Wind River at Shipherd Falls" enter "-121.8050".  Required if EstimateType = "Escapement". Must be null if EstimateType = "NOSA".
<b>EscapementLat</b>	For escapement estimates, latitude of the location specified in the WaterBody field in decimal degrees (not degrees-minutes-seconds). Calculated using NAD83/WGS84 datum.	<b>Single</b>	Use two digits left of the decimal point and four digits to the right of the decimal point. For example, if WaterBody = "Wind River at Shipherd Falls" enter "45.7371".  Required if EstimateType = "Escapement". Must be null if EstimateType = "NOSA".

Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table
<b>SpawningYear</b>	The four-digit year in which spawning of this species (and run where appropriate) began.	<b>Integer</b>	In cases where an unusual population begins spawning uncharacteristically early (before January 1 for spring spawners) or late (after December 31 for fall spawners) for the species (and perhaps run), assign the year based on the majority of populations of this species/run in order to be consistent for all members of the spawning cohort. For example, most coho spawn in fall but a few populations do not begin spawning until after Jan. 1. The spawning year assigned for these unusual populations would match the other populations that spawned in the fall, even though these particular populations did not begin spawning until after December 31.
<b>EscapementTiming</b>	Specific time period for an escapement estimate, in terms of months of the year. May be the start and end months of sampling, or the first and last months of fish observations.	<b>Text 7</b>	Use 3-character month abbreviations separated by a hyphen. Ignore calendar years. Examples: <ul style="list-style-type: none"> <li>• Mar-Jun</li> <li>• Nov-Feb</li> </ul> Required if EstimateType = "Escapement". Must be null if EstimateType = "NOSA".
<b>ContactAgency</b>	Agency, tribe, or other entity, or person responsible for these data that is the best contact for questions that may arise about this data record.	<b>Text 255</b>	<p>Entries in this field must precisely match a name in the StreamNet agency list. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• Columbia River Inter-Tribal Fish Commission</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Tribes and Bands of the Yakama Nation</li> <li>• Confederated Tribes of the Umatilla Indian Reservation</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> <li>• Fish Passage Center</li> <li>• Idaho Department of Fish and Game</li> <li>• Nez Perce Tribe</li> <li>• Northwest Indian Fisheries Commission</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Quantitative Consultants, Inc.</li> <li>• Shoshone-Bannock Tribes</li> <li>• Spokane Tribe of Indians</li> <li>• U.S. Fish and Wildlife Service</li> <li>• Washington Department of Fish and Wildlife</li> </ul>
<b>MethodNumber</b>	<p>This field represents the method(s) used to calculate the values in the "Indicators" and "Metrics" sections.</p> <p>This field is used in conjunction with the ContactAgency field. See the Codes/Conventions column for details.</p>	<b>Byte</b>	<p>This field, along with the "ContactAgency" field above, identifies which entity calculated the values in the record and which (set of) methods were used to calculate them. These fields allow for multiple entries for the same population and year. Thus, it is possible to share values that are based on different assumptions.</p> <p>If only one set of methods is used to calculate the values for all years for a population, enter "1" for all records. Even if methods changed, you can enter "1" for all records if there is always only one record per year for a population.</p> <p>If more than one set of methods is used to calculate final values over a range of years for a population, use this field to indicate which records are meant to go together. For example, if method 1 was used to calculate values for 1960 through 1994, and method 2 was used to calculate values for 1980 through 2013, then there will be more than one record for the years 1980 through 1994. In such cases you would enter "1" for records that result from the 1960-1994 method, and "2" for records that result from the 1980-2013 method. Similarly, if 3 different methods are proposed in an area for the same years, then use "1" and "2" and "3" to indicate which records belong together. This lets a data user know which records belong together.</p> <p>When more than one record exists for a population X year combination, it is up to biologists using the data to select the value of most use when conducting their day to day business. The ContactAgency and MethodNumber fields allow for this.</p>
<b>BestValue</b>	<p>A declaration of whether the ContactAgency considers this record to be their approved best estimate for this combination of <u>PopID</u> and <u>SpawningYear</u>.</p> <p>When a ContactAgency provides &gt;1 record for that combination each record will have a different value in the MethodNumber field. "Yes" in this BestValue field indicates this record contains the indicator value the agency recognizes as their best estimate.</p>	<b>Text 13</b>	<p><u>Acceptable values:</u> [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Yes [The entity (tribe, state agency, etc.) that created this record recognizes it as their approved best estimate.]</li> <li>• No [Not recognized as the best estimate provided by that entity.]</li> <li>• Not specified</li> </ul> <p>Notes regarding the combination of fields specified in the "Field Description" column:</p> <ol style="list-style-type: none"> <li>1. When only one record exists for the combination, BestValue generally should be "Yes".</li> <li>2. It is acceptable for all alternatives to have "No". "Yes" can be used a maximum of once per agency for the combination.</li> <li>3. Different contact agencies can each specify "Yes" for the same combination.</li> </ol>

Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table
<b>Indicators</b>			
<b><i>NOSAIJ</i></b>	<p>The point estimate for NOSA or <u>natural origin</u> escapement, including jacks.</p> <p>See the EstimateType field for definitions of NOSA and escapement.</p> <p>Includes "adults" and jacks, all of natural origin. "Natural origin" means the fish's parents spawned in the wild.</p>	<b><i>Single</i></b>	<p>Provide whole numbers only, not decimal values. This field is required if the NOSAEJ field is null and NullRecord = "No".</p> <p>For populations for which "jacks" are not recognized, enter the NOSA estimate in this field. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).</p> <p>The statistical approach used to generate the estimate should be thoroughly explained in the methods referenced in the MethodDocumentation field.</p>
NOSAIJLowerLimit	The lower limit of the confidence interval for the NOSAIJ field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
NOSAIJUpperLimit	The upper limit of the confidence interval for the NOSAIJ field.	Single	Minimum value = 0.
NOSAIJAlpha	The significance level for the NOSAIJ confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
<b><i>NOSAEJ</i></b>	<p>The point estimate for NOSA or <u>natural origin</u> escapement, excluding jacks.</p> <p>See the EstimateType field for definitions of NOSA and escapement.</p> <p>Includes only "adults" of natural origin, excluding jacks. "Natural origin" means the fish's parents spawned in the wild.</p>	<b><i>Single</i></b>	<p>Provide whole numbers only, not decimal values. This field is required if the NOSAIJ field is null and NullRecord = "No".</p> <p>For populations for which "jacks" are not recognized, leave this field blank. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).</p> <p>The statistical approach used to generate the estimate should be thoroughly explained in the methods referenced in the MethodDocumentation field.</p>
NOSAEJLowerLimit	The lower limit of the confidence interval for the NOSAEJ field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
NOSAEJUpperLimit	The upper limit of the confidence interval for the NOSAEJ field.	Single	Minimum value = 0.
NOSAEJAlpha	The significance level for the NOSAEJ confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".



Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table
NOBroodStockRemoved	<p>When EstimateType = "NOSA", this field is the number of natural origin fish (adults plus jacks) that were prevented from participating in natural spawning because they were taken for use as hatchery broodstock.</p> <p>When EstimateType = "Escapement", this field is the number of natural origin fish (adults plus jacks) that were prevented from passing upstream of the site specified in the WaterBody field because they were taken for use as hatchery broodstock.</p>	Single	<p>Provide whole numbers only, not decimal values. This value reflects fish taken for hatchery use. If it is known that no broodstock were taken it is preferable to enter "0" in this field rather than leaving it null.</p> <p>The value in this field is additive to the NOSA/Escapement estimate.</p> <p><b>NOSA example:</b>  EstimateType = "NOSA".  NOSAIJ = 450 indicates 450 fish were able to participate in spawning.  NOBroodStockRemoved = 50 indicates an additional 50 fish were taken as broodstock rather than being allowed to spawn naturally. Details should be explained in the Methods citation.  Therefore the total available to participate in natural spawning is 450.</p> <p><b>Escapement example:</b>  EstimateType = "Escapement".  NOSAIJ = 450 indicates 450 fish were <u>passed above</u> a dam.  NOBroodStockRemoved = 50 indicates an additional 50 fish were taken as broodstock rather than being passed above the dam. Details should be explained in the Methods citation.  Therefore the total <u>arriving at</u> the escapement estimate location is 500, while the number passing the escapement estimate location is 450.</p>
<b>Metrics supporting the "Indicators" fields above</b>			
<i>Note: These "metrics" fields were not modified when escapement estimates were explicitly added to this table in version 20200715. Potential changes to these fields need to be considered in a future version.</i>			
pHOSij	Point estimate for the proportion of fish spawning naturally, including jacks, that are <u>hatchery origin</u> fish.	Single	<p>Express these values as numbers from zero to one, with three digits to the right of the decimal point.</p> <p>For populations for which "jacks" are not recognized, enter the pHOS estimate in this field. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).</p>
pHOSijLowerLimit	The lower limit of the confidence interval for the pHOSij field.	Single	Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
pHOSijUpperLimit	The upper limit of the confidence interval for the pHOSij field.	Single	Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is more than 1.0 you <u>may</u> report 1.0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits.
pHOSijAlpha	The significance level for the pHOSij confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
pHOSej	Point estimate for the proportion of fish spawning naturally, excluding jacks, that are <u>hatchery origin</u> fish.	Single	<p>Express these values as numbers from zero to one, with three digits to the right of the decimal point.</p> <p>For populations for which "jacks" are not recognized, leave this field blank.</p>
pHOSejLowerLimit	The lower limit of the confidence interval for the pHOSej field.	Single	Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
pHOSejUpperLimit	The upper limit of the confidence interval for the pHOSej field.	Single	Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is more than 1.0 you <u>may</u> report 1.0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits.
pHOSejAlpha	The significance level for the pHOSej confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
NOSJF	The point estimate for the <u>natural origin</u> spawners jack fraction.	Single	Proportion of natural origin spawners that are jacks. Express these values as numbers from zero to one, with three digits to the right of the decimal point.
NOSJFLowerLimit	The lower limit of the confidence interval for the NOSJF field.	Single	Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).

Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table
NOSJFUpperLimit	The upper limit of the confidence interval for the NOSJF field.	Single	Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is more than 1.0 you <u>may</u> report 1.0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits.
NOSJFAlpha	The significance level for the NOSJF confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
HOSJF	The point estimate for the <u>hatchery origin</u> spawners jack fraction.	Single	Proportion of hatchery origin spawners that are jacks. Express these values as numbers from zero to one, with three digits to the right of the decimal point.
TSAIJ	The point estimate for total spawner abundance, including jacks.	Single	Estimated total number of fish contributing to spawning in a particular year. Includes both natural origin and hatchery origin returns, and adult and jack age classes. Provide whole numbers only, not decimal values.  For populations for which "jacks" are not recognized, enter the TSA estimate in this field. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).
TSAIJLowerLimit	The lower limit of the confidence interval for the TSAIJ field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
TSAIJUpperLimit	The upper limit of the confidence interval for the TSAIJ field.	Single	Minimum value = 0.
TSAIJAlpha	The significance level for the TSAIJ confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
TSAEJ	The point estimate for total spawner abundance, excluding jacks.	Single	Estimated total number of fish contributing to spawning in a particular year. Includes both natural origin and hatchery origin returns, for adult age classes excluding jacks. Provide whole numbers only, not decimal values.  For populations for which "jacks" are not recognized, leave this field blank.
TSAEJLowerLimit	The lower limit of the confidence interval for the TSAEJ field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
TSAEJUpperLimit	The upper limit of the confidence interval for the TSAEJ field.	Single	Minimum value = 0.
TSAEJAlpha	The significance level for the TSAEJ confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".

Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table
<b>Age determination</b>			
Age2Prop	The proportion of <u>natural origin</u> fish that were age 2 (brood year +2).	Single	<p>Values must be between 0 and 1. Express with 3 digits to the right of the decimal point.</p> <p>Ages in this table are based on the year spawning occurred, not necessarily the year eggs hatched, so care must be taken in reporting ages.</p> <p>Assigning age can be complicated based on the life history (generally, salmon return and spawn in one year but hatch in the next, steelhead spawn and hatch in the same year). Make sure these details are accounted for in assigning ages.</p> <p>The age distribution numbers reported here must meet three criteria. If these criteria are not met then do not report ages.</p> <ol style="list-style-type: none"> <li>These age fields contain proportions by age for the natural origin fish. They are not the numbers of fish actually aged, nor are they the expanded numbers for a population. Consider this scenario: <ul style="list-style-type: none"> <li>10,000 fish spawn (as reported in the NOSAIJ field)</li> <li>500 fish were aged</li> <li>After age analysis is completed it is determined that 1% of the fish (meaning 100 of the 10,000) were age 2.</li> <li>In this case the value in this field should be 0.01 (100/10,000) not 100, 500, or 10,000. Nor is it 0.2 (100/500).</li> </ul> </li> <li>The values of the Age2Prop through Age11PlusProp fields must sum to <math>1.00 \pm 0.01</math>.</li> <li>The age distribution must be derived only from the natural origin fish of the specific population this record represents.</li> </ol> <p>Therefore, do not include age data that are derived in part or in whole from any other group of fish.</p> <p>The age information may represent the exact group of spawning fish indicated in the NOSAIJ field, or a somewhat different group of fish. For example, the ages may represent the population as the fish passed a dam on their way to the spawning areas. Whatever may be the case, ensure this information is included in the protocol and method documentation section below.</p>
Age2PropLowerLimit	The lower limit of the confidence interval for the Age2Prop field.	Single	<p>The associated alpha value is in the AgePropAlpha field, which is found below after the fields for age 11+.</p> <p>Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).</p>
Age2PropUpperLimit	The upper limit of the confidence interval for the Age2Prop field.	Single	<p>See the Codes/Conventions for the Age2PropLowerLimit field.</p> <p>Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is more than 1.0 you <u>may</u> report 1.0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits.</p>
Age3Prop	The proportion of <u>natural origin</u> fish that were age 3 (brood year +3).	Single	See the Codes/Conventions column for the Age2Prop field.
Age3PropLowerLimit	The lower limit of the confidence interval for the Age3Prop field.	Single	See the Codes/Conventions for the Age2PropLowerLimit field.
Age3PropUpperLimit	The upper limit of the confidence interval for the Age3Prop field.	Single	See the Codes/Conventions for the Age2PropUpperLimit field.
Age4Prop	The proportion of <u>natural origin</u> fish that were age 4 (brood year +4).	Single	See the Codes/Conventions column for the Age2Prop field.
Age4PropLowerLimit	The lower limit of the confidence interval for the Age4Prop field.	Single	See the Codes/Conventions for the Age2PropLowerLimit field.
Age4PropUpperLimit	The upper limit of the confidence interval for the Age4Prop field.	Single	See the Codes/Conventions for the Age2PropUpperLimit field.
Age5Prop	The proportion of <u>natural origin</u> fish that were age 5 (brood year +5).	Single	See the Codes/Conventions column for the Age2Prop field.
Age5PropLowerLimit	The lower limit of the confidence interval for the Age5Prop field.	Single	See the Codes/Conventions for the Age2PropLowerLimit field.

Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table
Age5PropUpperLimit	The upper limit of the confidence interval for the Age5Prop field.	Single	See the Codes/Conventions for the Age2PropUpperLimit field.
Age6Prop	The proportion of <u>natural origin</u> fish that were age 6 (brood year +6).	Single	See the Codes/Conventions column for the Age2Prop field.
Age6PropLowerLimit	The lower limit of the confidence interval for the Age6Prop field.	Single	See the Codes/Conventions for the Age2PropLowerLimit field.
Age6PropUpperLimit	The upper limit of the confidence interval for the Age6Prop field.	Single	See the Codes/Conventions for the Age2PropUpperLimit field.
Age7Prop	The proportion of <u>natural origin</u> fish that were age 7 (brood year +7).	Single	See the Codes/Conventions column for the Age2Prop field.
Age7PropLowerLimit	The lower limit of the confidence interval for the Age7Prop field.	Single	See the Codes/Conventions for the Age2PropLowerLimit field.
Age7PropUpperLimit	The upper limit of the confidence interval for the Age7Prop field.	Single	See the Codes/Conventions for the Age2PropUpperLimit field.
Age8Prop	The proportion of <u>natural origin</u> fish that were age 8 (brood year +8).	Single	See the Codes/Conventions column for the Age2Prop field.
Age8PropLowerLimit	The lower limit of the confidence interval for the Age8Prop field.	Single	See the Codes/Conventions for the Age2PropLowerLimit field.
Age8PropUpperLimit	The upper limit of the confidence interval for the Age8Prop field.	Single	See the Codes/Conventions for the Age2PropUpperLimit field.
Age9Prop	The proportion of <u>natural origin</u> fish that were age 9 (brood year +9).	Single	See the Codes/Conventions column for the Age2Prop field.
Age9PropLowerLimit	The lower limit of the confidence interval for the Age9Prop field.	Single	See the Codes/Conventions for the Age2PropLowerLimit field.
Age9PropUpperLimit	The upper limit of the confidence interval for the Age9Prop field.	Single	See the Codes/Conventions for the Age2PropUpperLimit field.
Age10Prop	The proportion of <u>natural origin</u> fish that were age 10 (brood year +10).	Single	See the Codes/Conventions column for the Age2Prop field.
Age10PropLowerLimit	The lower limit of the confidence interval for the Age10Prop field.	Single	See the Codes/Conventions for the Age2PropLowerLimit field.
Age10PropUpperLimit	The upper limit of the confidence interval for the Age10Prop field.	Single	See the Codes/Conventions for the Age2PropUpperLimit field.
Age11PlusProp	The proportion of <u>natural origin</u> fish that were age 11 (brood year +11) or older.	Single	See the Codes/Conventions column for the Age2Prop field.
Age11PlusPropLowerLimit	The lower limit of the confidence interval for the Age11PlusProp field.	Single	See the Codes/Conventions for the Age2PropLowerLimit field.
Age11PlusPropUpperLimit	The upper limit of the confidence interval for the Age11PlusProp field.	Single	See the Codes/Conventions for the Age2PropUpperLimit field.
AgePropAlpha	The significance level for the Age_x_Prop confidence intervals, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
<b>Protocol and method documentation</b>			
ProtMethName	The name(s) of all protocols and associated data collection and data analysis methods used to calculate the indicator estimate.	Memo	Provide title of protocol and name(s) of relevant methods used.  Documentation should describe the study design (including spatial, temporal, response and inference designs), annual implementation notes on variations from routine step by step procedures or design criteria, also known as survey design, description of field methodology and analytical approach.

Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table
<b>ProtMethURL</b>	URL(s) for published protocols and methods describing the methodology and documenting the derivation of the indicator. If published in MonitoringMethods.org, this link will provide access to study design information and all methods associated with the protocol.	<b>Memo</b>	Required if ProtMethDocumentation is null. Provide URL(s) to source documentation of methodology. For MonitoringMethods.org provide link to the protocol. Methods documentation should include survey design, description of field methodology and analytical approach. URL links may be to online methods documentation resources like MonitoringMethods.org, other online resources, or online literature.  If methodology is unchanged from a previous year, use the previous link references. If methodology changed for this estimate, provide a new link.
<b>ProtMethDocumentation</b>	Citation or documentation that describes the protocol and/or method(s) listed in the ProtMethName field. Include references not documented in MonitoringMethods.org, such as reports, journal articles or other publications that describe the survey design, field methodology and analytical approach used to derive the indicator estimate.	<b>Memo</b>	Required if ProtMethURL is null. Provide a citation(s) to documentation of the methodology used. This may be in the form of reports, journal articles, or other publications that describe the study design (including spatial, temporal, response and inference designs), variations from routine step by step procedures or design criteria, description of field methodology and analytical approach. If the methodology is not yet published, either insert here, or describe in a separate document and make it available online (provide the URL). Leave this field blank if methodology is described in MonitoringMethods.org.  Note: If there is no link to a cited document online, provide a copy of the document to the StreamNet Library (streamnetlibrary.org). The library will scan the document and provide a URL. Post the URL in the ProtMethURL field.  If methodology is unchanged from a previous year, use the previous link or reference citation. If methodology changed, provide a new link or reference citation.
MethodAdjustments	Minor adjustments to a method in a given year that are not described in the method citations above but are important.	Memo*	Give a brief description of changes or adjustments to a standard method if they are NOT described in the methods documentation already provided. If multiple documentation sources are cited, be sure to indicate which method from which document was adjusted.  In MonitoringMethods.org, documentation of changes or adjustments to methods or protocols can be described in the Implementation Notes section of each published method or protocol.
OtherDataSources	The ContactAgency field identifies an organization involved in calculating the values in this record. This "OtherDataSources" field identifies additional organizations that provided data or expertise to calculate the indicator(s), metric(s), or age distribution for this record.	Text 255	List all the organizations that provided data used to calculate the values for this record. Entries must meet the requirements as defined in the ContactAgency field. If more than one, separate the entries with the bar character " ".  This field is for ADDITIONAL organizations. Do not include the organization identified in the ContactAgency field.
<b>Comments about the data</b>			
<b>Comments</b>	Any issues, problems, questions about this indicator that were not already captured in other places.	<b>Memo*</b>	If possible, it is useful to briefly explain any null "metrics" or "age" fields. Required if NullRecord = "Yes", to explain why the indicators are not available.
<b>Supporting information</b>			
<b>NullRecord</b>	In some years data may not be collected and so indicator values cannot be calculated. For example, high muddy water or wildfires can prevent redd counts that indicator values are based on. This field is used to indicate that indicator values do not exist because the data do not exist to calculate them.	<b>Text 3</b>	Normally "No". A value of "Yes" in this field is a positive statement that the data do not exist to calculate the <u>indicator</u> for the population and time period specified. Metric data and age data may still exist when NullRecord = "Yes".  The value of including this field is so that missing data are explicitly accounted for rather than being a perpetually open question that is repeatedly researched. Including these "null" records allows for better data display on the web site, and you are encouraged to create them for years with both earlier and later non-null data. Explain in the Comments field why the indicator cannot be calculated.

Field Name	Field Description	Data Type	Codes/Conventions for NOSA Table
<b>DataStatus</b>	Status of the data in the current record.	<b>Text 255</b>	Acceptable values: [Do not include comments in brackets.] <ul style="list-style-type: none"> <li>• Draft [Values in this record are preliminary and have not been thoroughly reviewed.]</li> <li>• Reviewed [Values in this record have been reviewed but are not yet approved as "final".]</li> <li>• Final [Values in this record have been thoroughly reviewed and are considered "final".]</li> </ul>
IndicatorLocation	Where this indicator is maintained at the source.	Memo	If online, provide URL(s).
MetricLocation	Where the supporting metrics are maintained at the source.	Memo	If online, provide URL(s).
MeasureLocation	Where the measurements are maintained that were used for these calculations.	Memo	If online, provide URL(s).
<b>ContactPersonFirst</b>	First name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPersonLast</b>	Last name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPhone</b>	Phone number of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	Preferred format is "123-456-7890". If an extension is included, preferred format is "123-456-7890 ext. 34".
<b>ContactEmail</b>	Email address of person who is the best contact for questions that may arise about this data record.	<b>Text 50</b>	
MetaComments	Comments regarding the supporting information.	Memo*	
<b>Fields needed by people programming the Exchange Network</b>			
If you are a programmer or database manager, refer to Appendix A for additional fields that are part of this table but are not listed here.			

## A2. SAR Table

This table stores information concerning smolt to adult return rates (SAR). Smolt to adult return rates are specific to the smolt and adult locations described in each row of data.

(Back to Table of Contents)

Field Name	Field Description	Data Type	Codes/Conventions for SAR Table
<b>Fields for defining a unique record</b>			
<b>ID</b> (unique)	Value used by computer to identify a record.	<b>Text 36</b>	This value is a globally unique identifier (GUID) exactly 36 characters long. <ul style="list-style-type: none"> <li>• When submitting a new record you may include this value or leave it blank. If you include this value then it will be used by the central system. If you leave it blank then a value will be created for you, and it will be sent back to your system where it must be incorporated.</li> <li>• When updating or deleting records this value must be included.</li> </ul>
<b>CommonName</b>	Common name of the taxon of fish.	<b>Text 50</b>	Enter the name of the taxon here, even if taxon name is included in the name of the population. Select from the following: <ul style="list-style-type: none"> <li>• Bull trout</li> <li>• Chinook salmon</li> <li>• Chum salmon</li> <li>• Coho salmon</li> <li>• Sockeye salmon</li> <li>• Steelhead</li> </ul> Additional species may be added in the future: refer to <a href="http://old.streamnet.org/SpeciesInFW.html">http://old.streamnet.org/SpeciesInFW.html</a> for common names.
<b>Run</b>	Run of fish.	<b>Text 20</b>	Enter the name of the run here, even if run name is included in the name of the population. Entries in this field are not recognized as taxonomic divisions. Select from the following: [Do not include comments in brackets.] <ul style="list-style-type: none"> <li>• Spring</li> <li>• Summer</li> <li>• Fall</li> <li>• Late fall</li> <li>• Winter</li> <li>• Spring/summer</li> </ul> <ul style="list-style-type: none"> <li>• Both summer &amp; winter</li> <li>• Early</li> <li>• Late</li> <li>• Both early &amp; late</li> <li>• N/A [For species without recognized runs. For example, bull trout.]</li> </ul>

Field Name	Field Description	Data Type	Codes/Conventions for SAR Table	
RecoveryDomain	Name of the "recovery domain," as defined by the NMFS Northwest Region, in which the population falls geographically.	Text 255	Five recovery domains have been defined by NMFS in Washington, Oregon, and Idaho. Select the appropriate one from this list:	<ul style="list-style-type: none"> <li>• Puget Sound</li> <li>• Willamette/Lower Columbia</li> <li>• Interior Columbia</li> <li>• Oregon Coast</li> <li>• Southern Oregon/Northern California Coast</li> </ul>
ESU_DPS	For populations listed under the federal ESA, this is the name of a defined Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS) as defined by NMFS Northwest Region or by USFWS. For non-listed populations this is the DPS or other name.	Text 255	Enter the name of the ESU or DPS here. Entries in this field are taxonomic divisions defined by NMFS or USFWS, and may be at the species, subspecies, or finer scale. ESUs of salmon north of California are listed at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .	
MajorPopGroup	Name of "major population group" (MPG) or "stratum" as defined by the NMFS Northwest Region, in which the population falls.	Text 255	The term "stratum" is used in the Willamette/Lower Columbia Recovery Domain, while "major population group" is used in other areas. The term "stratum" includes life history considerations as well as geographic criteria, while MPGs are defined geographically. See Appendix C for the list of MPGs / strata.	
<b>PopID</b>	Code for the population(s) of fish represented by this record.	<b>Integer</b>	See Appendix C for the list of population codes. See Appendix E if you need a code for a population (or superpopulation) not already in the list.	
CBFWApopName	Population name as defined by CBFWA for subbasin planning purposes, from subbasin plans and agencies.	Text 255	This may include non-listed populations, or cases where geographic area does not match a defined population of a listed species. See Appendix D for the list of these population names.  Fill this field even when a population's geographic extent coincides with NWR name for a listed population.	
CommonPopName	Population name used by local biologists.	Text 255	Often this is simply the name of the population(s) as written on the original time series spreadsheets.	
<b>PopFit</b>	Categorization of how well the geographic extent of the SAR estimate corresponds to the geographic definition of the population.	<b>Text 8</b>	This value must be "Multiple" if PopID represents a superpopulation. <u>Acceptable values:</u> [Do not include comments in brackets.] <ul style="list-style-type: none"> <li>• Same [Estimate represents one entire population, the whole population, and nothing but the population.]</li> <li>• Portion [Estimate represents a portion of one population. (Describe in PopFitNotes field.)]</li> <li>• Multiple [Estimate is from more than one population. (Describe in PopFitNotes field.)]</li> </ul>	
<b>PopFitNotes</b>	Text description of how well the SAR value corresponds to the defined population, and why the data are not at the scale of a single population.	<b>Memo</b>	This field is required if the PopFit field is "Portion" or "Multiple". If the PopFit field is "Portion" or "Multiple", describe the lack of correspondence between the defined population and the fish for which the SAR estimate was made. Also state <i>why</i> this scale of data was used to represent the population instead of true population-scale data. (Examples: "Data not available at exact scale of this population."; "Data at this scale best represent the population.")	
<b>SmoltLocation</b>	The specific named location(s) for where the smolt abundance numbers were determined.	<b>Text 255</b>	This may be any of the following: <ul style="list-style-type: none"> <li>• the name(s) of a fluvial water body(ies)</li> <li>• the name of an impounded fluvial water body (reservoir)</li> </ul>	<ul style="list-style-type: none"> <li>• the name of a lentic water body</li> <li>• the name of a dam, or weir, or trap, etc.</li> </ul>
<b>SmoltDef</b>	How the number of smolts is defined.	<b>Text 255</b>	<u>Acceptable values:</u> <ul style="list-style-type: none"> <li>• Number of smolts marked</li> <li>• Smolts outmigrating past a point</li> </ul>	<ul style="list-style-type: none"> <li>• Smolts outmigrating past multiple points</li> <li>• Juveniles leaving tributary mouth</li> <li>• Juveniles leaving population boundary</li> </ul>
SmoltLocPTcode	PTAGIS code for the location where smolts were enumerated.	Text 255	There should be a PTAGIS code for most locations where smolts were trapped. Provide that code, or multiple codes if smolts were trapped at multiple locations for this population.	
<b>AdultLocation</b>	The specific named location(s) for where the adult abundance numbers were determined.	<b>Text 255</b>	This may be any of the following: <ul style="list-style-type: none"> <li>• the name(s) of a fluvial water body(ies)</li> <li>• the name of an impounded fluvial water body (reservoir)</li> </ul>	<ul style="list-style-type: none"> <li>• the name of a lentic water body</li> <li>• the name of a dam, or weir, or trap, etc.</li> </ul>

Field Name	Field Description	Data Type	Codes/Conventions for SAR Table
<b>ReturnDef</b>	How "return" is defined for this SAR estimate.	<b>Text 255</b>	<p>Acceptable values: <i>[Do not include comments in brackets.]</i></p> <ul style="list-style-type: none"> <li>• Fish surviving to adulthood <i>[Potential returners before ocean harvest]</i></li> <li>• Returns to a dam <i>[Fish returning to a dam before removing broodstock or other removals at the dam]</i></li> <li>• Returns to mouth <i>[Includes all fish that returned before any removals or mortalities, in the tributaries. Appropriate to use only if the mouth does not define the population]</i></li> <li>• Returns to population boundary <i>[Includes all fish that returned to the population boundary before any removals or mortalities, in the tributaries]</i></li> <li>• Returns to spawning ground <i>[Fish in river available to spawn after removals, but before pre-spawn mortality, in the tributaries]</i></li> <li>• Returns to a weir <i>[Fish returning to weir before removing broodstock or other removals at the weir, in the tributaries]</i></li> <li>• Returns to a PIT tag array</li> <li>• Estimated number of spawners <i>[Fish available after all removals and pre-spawn mortality, in the tributaries (i.e., NOSA)]</i></li> <li>• Number of marked adult fish captured</li> <li>• Adult fish migrating to/past a point(s)</li> </ul>
<b>SARtype</b>	The type of return estimate, in terms of what fish are included in the estimate of total returns. See Codes/Conventions column for details.	<b>Text 255</b>	<p>Acceptable values:</p> <ul style="list-style-type: none"> <li>• Including jacks</li> <li>• Excluding jacks</li> <li>• Jacks only</li> <li>• Females only</li> </ul>
ScopeOfInference	Description of what this SAR represents: the specific population(s); specific ESU/DPS(s); specific MPG(s); etc. represented.	Text 255	Identify the specific population(s), ESU(s), etc. that apply. Don't enter "ESU" or "MPG" or "Population", but instead the specific ESU(s) or MPG(s) or population(s) represented, such as "Scappoose Creek population" or "All populations above Lower Granite Dam" or other appropriate entry.
<b>OutmigrationYear</b>	The four-digit year for which this SAR is calculated, defined as the year the group migrated to sea.	<b>Integer</b>	Year in which the fish migrated to the ocean. This is often not the same as brood year.
<b>ContactAgency</b>	Agency, tribe, or other entity, or person responsible for these data that is the best contact for questions that may arise about this data record.	<b>Text 255</b>	<p>Entries in this field must precisely match a name in the StreamNet agency list. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• Columbia River Inter-Tribal Fish Commission</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Tribes and Bands of the Yakama Nation</li> <li>• Confederated Tribes of the Umatilla Indian Reservation</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> <li>• Fish Passage Center</li> <li>• Idaho Department of Fish and Game</li> <li>• Nez Perce Tribe</li> <li>• Northwest Indian Fisheries Commission</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Quantitative Consultants, Inc.</li> <li>• Shoshone-Bannock Tribes</li> <li>• Spokane Tribe of Indians</li> <li>• U.S. Fish and Wildlife Service</li> <li>• Washington Department of Fish and Wildlife</li> </ul>



Field Name	Field Description	Data Type	Codes/Conventions for SAR Table
<b>MethodNumber</b>	<p>This field represents the method(s) used to calculate the values in the "Indicators" and "Metrics" sections.</p> <p>This field is used in conjunction with the ContactAgency field. See the Codes/Conventions column for details.</p>	<b>Byte</b>	<p>This field, along with the "ContactAgency" field above, identifies which entity calculated the values in the record and which (set of) methods were used to calculate them. These fields allow for multiple entries for the same population and year. Thus, it is possible to share values that are based on different assumptions.</p> <p>If only one set of methods is used to calculate the values for all years for a population, enter "1" for all records. Even if methods changed, you can enter "1" for all records if there is always only one record per year for a population.</p> <p>If more than one set of methods is used to calculate final values over a range of years for a population, use this field to indicate which records are meant to go together. For example, if method 1 was used to calculate values for 1960 through 1994, and method 2 was used to calculate values for 1980 through 2013, then there will be more than one record for the years 1980 through 1994. In such cases you would enter "1" for records that result from the 1960-1994 method, and "2" for records that result from the 1980-2013 method. Similarly, if 3 different methods are proposed in an area for the same years, then use "1" and "2" and "3" to indicate which records belong together. This lets a data user know which records belong together.</p> <p>When more than one record exists for a population X year combination, it is up to biologists using the data to select the value of most use when conducting their day to day business. The ContactAgency and MethodNumber fields allow for this.</p>
<b>BestValue</b>	<p>A declaration of whether the ContactAgency considers this record to be their approved best estimate for this combination of <u>PopID</u>, <u>SmoltLocation</u>, <u>SmoltDef</u>, <u>AdultLocation</u>, <u>ReturnDef</u>, <u>SARtype</u>, and <u>OutmigrationYear</u>.</p> <p>When a ContactAgency provides &gt;1 record for that combination each record will have a different value in the MethodNumber field. "Yes" in this BestValue field indicates this record contains the indicator value the agency recognizes as their best estimate.</p>	<b>Text 13</b>	<p><b>Acceptable values:</b> [<i>Do not include comments in brackets.</i>]</p> <ul style="list-style-type: none"> <li>• Yes [<i>The entity (tribe, state agency, etc.) that created this record recognizes it as their approved best estimate.</i>]</li> <li>• No [<i>Not recognized as the best estimate provided by that entity.</i>]</li> <li>• Not specified</li> </ul> <p>Notes regarding the combination of fields specified in the "Field Description" column:</p> <ol style="list-style-type: none"> <li>1. When only one record exists for the combination, BestValue generally should be "Yes". ("Should be", but not "must be".)</li> <li>2. It is acceptable for all alternatives to have "No". "Yes" can be used a maximum of once per agency for the combination.</li> <li>3. Different contact agencies can each specify "Yes" for the same combination.</li> </ol>
<b>Indicators</b>			
<b>SAR</b>	The point estimate for smolt-to-adult return rate, calculated as 100 X the point estimate of the number of returning natural origin adults, divided by the point estimate of the number of smolts that produced those returning adults.	<b>Single</b>	<p>Required if NullRecord = "No". Express these values as percentages (numbers from zero to one hundred), with two digits to the right of the decimal point. Examples: .020 = 2.00, .0015 = 0.15.</p> <p>This field holds a numeric value only -- the percent sign is implied but not included.</p> <p>Do NOT include repeat spawners in the number of adult returns. (A fish only returns once from smolting; subsequent returns are not appropriate for inclusion in smolt-to-adult estimates because they head to sea as adults on subsequent trips and thus are not exposed to the same suite of mortality factors.)</p>
SARLowerLimit	The lower limit of the confidence interval for the SAR field.	Single	<p>This field holds a numeric value only -- the percent sign is implied but not included.</p> <p>Minimum value = 0 and maximum = 100. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).</p>
SARUpperLimit	The upper limit of the confidence interval for the SAR field.	Single	<p>This field holds a numeric value only -- the percent sign is implied but not included.</p> <p>Minimum value = 0 and maximum = 100. If the calculated lower limit of the confidence interval is more than 100 you <u>may</u> report 100 in this field, but we suggest you consider statistical options that prevent values outside of possible limits.</p>
SARAlpha	The significance level for the SAR confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".

Field Name	Field Description	Data Type	Codes/Conventions for SAR Table	
ReturnsMissing	This field indicates whether any adult return years for this out-migration year were missing.	Text 3	<p>Acceptable values: <i>[Do not include comments in brackets.]</i></p> <ul style="list-style-type: none"> <li>• Yes <i>[Years were missing.]</i></li> <li>• No <i>[No years missing; return estimates were complete.]</i></li> </ul> <p>If some years were missing, describe how that gap was addressed under ReturnsMissingExplanation</p>	
ReturnsMissingExplanation	If some return data are not accounted for in the SAR estimate, explain the gap.	Memo	Describe how any gap in return years was addressed: Filled in with an interpolated estimate, ignored, etc.	
<b>RearingType</b>	The rearing type (origin; production type) of the fish represented by this record.	<b>Text 8</b>	<p>Acceptable values: <i>[Do not include comments in brackets.]</i></p> <ul style="list-style-type: none"> <li>• Natural</li> <li>• Mixed <i>[Known to include both hatchery and natural origin fish]</i></li> <li>• Unknown <i>[None of the above can be confidently applied]</i></li> </ul>	[Note: Disagreement exists re: is this an "indicator" (attribute along w/ SAR value), or if it should be part of the key for the table. If indicator then only one record/pop/year; if in key then >1 record/pop/yr is possible. To start we'll have it in the key to allow flexibility in the data. If that causes trouble we'll address it at that time.]
<b>Metrics supporting the "Indicators" fields above</b>				
TSO	Total smolt outmigration. Point estimate of the number of smolts for this outmigration year, or the number of marked smolts used to calculate the SAR.	Single	This should be the denominator in the return rate calculation, with all previous losses (handling mortality, tag loss estimate, etc.) already taken out. The Methods citation should address how this was done. Provide whole numbers only, not decimal values.	
TSOLowerLimit	The lower limit of the confidence interval for the TSO field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).	
TSOUpperLimit	The upper limit of the confidence interval for the TSO field.	Single	Minimum value = 0.	
TSOAlpha	The significance level for the TSO confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".	
TAR	Total adult return. Point estimate of the number of adults returning <u>for the first time</u> from the indicated outmigration year, or the group of marked smolts (as appropriate), to match the outmigrants in the TSO field.	Single	<p>For iteroparous species such as steelhead, include only those adults returning to spawn for the first time. (Failure to do so will result in some adults being counted twice for returns purposes.)</p> <p>Provide whole numbers only, not decimal values.</p>	
TARLowerLimit	The lower limit of the confidence interval for the TAR field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).	
TARUpperLimit	The upper limit of the confidence interval for the TAR field.	Single	Minimum value = 0.	
TARAlpha	The significance level for the TAR confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".	
HarvestAdj	<p>How was the return adjusted to account for harvest? (Are harvested fish included in the estimate of number of adults?)</p> <ul style="list-style-type: none"> <li>• "Ocean" means fish harvested in the ocean.</li> <li>• "Mainstem" means fish harvested in the mainstem Columbia River, including the estuary. Do not indicate "mainstem" for populations outside the Columbia Basin.</li> <li>• "Tributaries" means streams other than the mainstem Columbia River.</li> </ul>	Text 35	<p>Acceptable values: <i>[Do not include comments in brackets.]</i></p> <ul style="list-style-type: none"> <li>• Ocean <i>[Value in the TAR field was adjusted for harvest in the ocean, but not in the mainstem and not in tributaries.]</i></li> <li>• Ocean and mainstem <i>[Value in the TAR field was adjusted for harvest in the ocean and mainstem, but not in tributaries.]</i></li> <li>• Ocean and mainstem and tributaries <i>[Value in the TAR field was adjusted for harvest in the ocean, mainstem, and tributaries.]</i></li> <li>• Ocean and tributaries <i>[Value in the TAR field was adjusted for harvest in the ocean and tributaries.]</i></li> <li>• Mainstem <i>[Value in the TAR field was adjusted for harvest in the mainstem but not in tributaries.]</i></li> <li>• Mainstem and tributaries <i>[Value in the TAR field was adjusted for harvest in both the mainstem and tributaries.]</i></li> <li>• Tributaries <i>[Value in the TAR field was adjusted for harvest in tributaries but not in the mainstem.]</i></li> <li>• Not adjusted <i>[Value in the TAR field was not adjusted for harvest.]</i></li> </ul>	

Field Name	Field Description	Data Type	Codes/Conventions for SAR Table
OceanHarvest	The estimated number of fish from the smolt group indicated in the TSO field that were harvested in the ocean. The value of the SARtype field determines whether females, males, and jacks are included here.	Single	This field is for harvests in the ocean, which is defined as not including the estuary. Provide this estimate ONLY if it was used to adjust the return/recruit estimate to add back harvested fish. Provide whole numbers only, not decimal values.  This may or may not include indirect fishery impacts, and these details should be explained in the Methods citation. This harvest value reflects fish harvested from the indicated natural origin group.
MainstemHarvest	The estimated number of fish from the smolt group indicated in the TSO field that were harvested in the mainstem (including the estuary). The value of the SARtype field determines whether females, males, and jacks are included here.  This field is for use in the Columbia Basin only.	Single	This field is only for harvests in the mainstem and estuary, which is defined as all rivers below the tributary(ies). Provide this estimate ONLY if it was used to adjust the return/recruit estimate to add back harvested fish. Provide whole numbers only, not decimal values.  This harvest value reflects fish harvested from the indicated smolt group -- they may be all natural origin, all hatchery origin, or mixed origin, as indicated by the RearingType field. This may or may not include indirect fishery impacts, and these details should be explained in the Methods citation.
TribHarvest	The estimated number of fish from the smolt group indicated in the TSO field that were harvested in tributaries. The value of the SARtype field determines whether females, males, and jacks are included here.	Single	"Tributaries" is defined as the tributary(ies) the population resides in. Because "mainstem" refers only to the Columbia River, estuary harvest is included here for coastal and Puget Sound populations rather than as part of mainstem harvest. Provide this estimate ONLY if it was used to adjust the return/recruit estimate to add back harvested fish. Provide whole numbers only, not decimal values.  This harvest value reflects fish harvested from the indicated smolt group -- they may be all natural origin, all hatchery origin, or mixed origin, as indicated by the RearingType field. This may or may not include indirect fishery impacts, and these details should be explained in the Methods citation.
BroodStockRemoved	The number of additional fish that would have returned from the smolt group indicated in the TSO field, had there not been removal of fish for use as broodstock in a hatchery. The value of the SARtype field determines whether females, males, and jacks are included here.	Single	This value reflects fish taken for hatchery use from the indicated smolt group -- they may be all natural origin, all hatchery origin, or mixed origin, as indicated by the RearingType field. Details should be explained in the Methods citation.  Provide whole numbers only, not decimal values.
<b>Protocol and method documentation</b>			
ProtMethName	The name(s) of all protocols and associated data collection and data analysis methods used to calculate the indicator estimate.	Memo	Provide title of protocol and name(s) of relevant methods used.  Documentation should describe the study design (including spatial, temporal, response and inference designs), annual implementation notes on variations from routine step by step procedures or design criteria, also known as survey design, description of field methodology and analytical approach.
<i>ProtMethURL</i>	URL(s) for published protocols and methods describing the methodology and documenting the derivation of the indicator. If published in MonitoringMethods.org, this link will provide access to study design information and all methods associated with the protocol.	<i>Memo</i>	Required if ProtMethDocumentation is null. Provide URL(s) to source documentation of methodology. For MonitoringMethods.org provide link to the protocol. Methods documentation should include survey design, description of field methodology and analytical approach. URL links may be to online methods documentation resources like MonitoringMethods.org, other online resources, or online literature.  If methodology is unchanged from a previous year, use the previous link references. If methodology changed for this estimate, provide a new link.

Field Name	Field Description	Data Type	Codes/Conventions for SAR Table
<b>ProtMethDocumentation</b>	Citation or documentation that describes the protocol and/or method(s) listed in the ProtMethName field. Include references not documented in MonitoringMethods.org, such as reports, journal articles or other publications that describe the survey design, field methodology and analytical approach used to derive the indicator estimate.	<b>Memo</b>	<p>Required if ProtMethURL is null. Provide a citation(s) to documentation of the methodology used. This may be in the form of reports, journal articles, or other publications that describe the study design (including spatial, temporal, response and inference designs), variations from routine step by step procedures or design criteria, description of field methodology and analytical approach. If the methodology is not yet published, either insert here, or describe in a separate document and make it available online (provide the URL). Leave this field blank if methodology is described in MonitoringMethods.org.</p> <p>Note: If there is no link to a cited document online, provide a copy of the document to the StreamNet Library (streamnetlibrary.org). The library will scan the document and provide a URL. Post the URL in the ProtMethURL field.</p> <p>If methodology is unchanged from a previous year, use the previous link or reference citation. If methodology changed, provide a new link or reference citation.</p>
MethodAdjustments	Minor adjustments to a method in a given year that are not described in the method citations above but are important.	Memo*	<p>Give a brief description of changes or adjustments to a standard method if they are NOT described in the methods documentation already provided. If multiple documentation sources are cited, be sure to indicate which method from which document was adjusted.</p> <p>In MonitoringMethods.org, documentation of changes or adjustments to methods or protocols can be described in the Implementation Notes section of each published method or protocol.</p>
OtherDataSources	The ContactAgency field identifies an organization involved in calculating the values in this record. This "OtherDataSources" field identifies additional organizations that provided data or expertise to calculate the indicator(s), metric(s), or age distribution for this record.	Text 255	<p>List all the organizations that provided data used to calculate the values for this record. Entries must meet the requirements as defined in the ContactAgency field. If more than one, separate the entries with the bar character " ".</p> <p>This field is for ADDITIONAL organizations. Do not include the organization identified in the ContactAgency field.</p>
<b>Comments about the data</b>			
<b>Comments</b>	Any issues, problems, questions about this indicator that were not already captured in other places.	<b>Memo*</b>	<p>If possible, it is useful to briefly explain any null "metrics" or "age" fields. Required if NullRecord = "Yes", to explain why the indicators are not available.</p>
<b>Supporting information</b>			
<b>NullRecord</b>	In some years data may not be collected and so indicator values cannot be calculated. For example, high muddy water or wildfires can prevent redd counts that indicator values are based on. This field is used to indicate that indicator values do not exist because the data do not exist to calculate them.	<b>Text 3</b>	<p>Normally "No". A value of "Yes" in this field is a positive statement that the data do not exist to calculate the <u>indicator</u> for the population and time period specified. Metric data and age data may still exist when NullRecord = "Yes".</p> <p>The value of including this field is so that missing data are explicitly accounted for rather than being a perpetually open question that is repeatedly researched. Including these "null" records allows for better data display on the web site, and you are encouraged to create them for years with both earlier and later non-null data. Explain in the Comments field why the indicator cannot be calculated.</p>
<b>DataStatus</b>	Status of the data in the current record.	<b>Text 255</b>	<p>Acceptable values: [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Draft [Values in this record are preliminary and have not been thoroughly reviewed.]</li> <li>• Reviewed [Values in this record have been reviewed but are not yet approved as "final".]</li> <li>• Final [Values in this record have been thoroughly reviewed and are considered "final".]</li> </ul>
IndicatorLocation	Where this indicator is maintained at the source.	Memo	If online, provide URL(s).
MetricLocation	Where the supporting metrics are maintained at the source.	Memo	If online, provide URL(s).
MeasureLocation	Where the measurements are maintained that were used for these calculations.	Memo	If online, provide URL(s).

Field Name	Field Description	Data Type	Codes/Conventions for SAR Table
<b>ContactPersonFirst</b>	First name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPersonLast</b>	Last name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPhone</b>	Phone number of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	Preferred format is "123-456-7890". If an extension is included, preferred format is "123-456-7890 ext. 34".
<b>ContactEmail</b>	Email address of person who is the best contact for questions that may arise about this data record.	<b>Text 50</b>	
MetaComments	Comments regarding the supporting information.	Memo*	
<b>Fields needed by people programming the Exchange Network</b>			
If you are a programmer or database manager, refer to Appendix A for additional fields that are part of this table but are not listed here.			

### A3. RperS Table

This table stores information concerning recruits per spawner (R/S). Recruit per spawner ratios are specific to the locations described in each record of data. This table can include the number of juvenile or adult recruits as measures, or full life cycle productivity. That is, "recruit" can be defined at any life stage.

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Field Name	Field Description	Data Type	Codes/Conventions for RperS Table
<b>Fields for defining a unique record</b>			
<b>ID (unique)</b>	Value used by computer to identify a record.	<b>Text 36</b>	This value is a globally unique identifier (GUID) exactly 36 characters long. <ul style="list-style-type: none"> <li>When submitting a new record you may include this value or leave it blank. If you include this value then it will be used by the central system. If you leave it blank then a value will be created for you, and it will be sent back to your system where it must be incorporated.</li> <li>When updating or deleting records this value must be included.</li> </ul>
<b>CommonName</b>	Common name of the taxon of fish.	<b>Text 50</b>	Enter the name of the taxon here, even if taxon name is included in the name of the population. Select from the following: <ul style="list-style-type: none"> <li>Bull trout</li> <li>Chinook salmon</li> <li>Chum salmon</li> <li>Coho salmon</li> <li>Sockeye salmon</li> <li>Steelhead</li> </ul> Additional species may be added in the future: refer to <a href="http://old.streamnet.org/SpeciesInFW.html">http://old.streamnet.org/SpeciesInFW.html</a> for common names.
<b>Run</b>	Run of fish.	<b>Text 20</b>	Enter the name of the run here, even if run name is included in the name of the population. Entries in this field are not recognized as taxonomic divisions. Select from the following: [ <i>Do not include comments in brackets.</i> ] <ul style="list-style-type: none"> <li>Spring</li> <li>Summer</li> <li>Fall</li> <li>Late fall</li> <li>Winter</li> <li>Spring/summer</li> </ul> <ul style="list-style-type: none"> <li>Both summer &amp; winter</li> <li>Early</li> <li>Late</li> <li>Both early &amp; late</li> <li>N/A [<i>For species without recognized runs. For example, bull trout.</i>]</li> </ul>
RecoveryDomain	Name of the "recovery domain," as defined by the NMFS Northwest Region, in which the population falls geographically.	Text 255	Five recovery domains have been defined by NMFS in Washington, Oregon, and Idaho. Select the appropriate one from this list: <ul style="list-style-type: none"> <li>Puget Sound</li> <li>Willamette/Lower Columbia</li> <li>Interior Columbia</li> <li>Oregon Coast</li> <li>Southern Oregon/Northern California Coast</li> </ul> Further information about recovery domains can be found at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .

Field Name	Field Description	Data Type	Codes/Conventions for RperS Table
ESU_DPS	For populations listed under the federal ESA, this is the name of a defined Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS) as defined by NMFS Northwest Region or by USFWS. For non-listed populations this is the DPS or other name.	Text 255	Enter the name of the ESU or DPS here. Entries in this field are taxonomic divisions defined by NMFS or USFWS, and may be at the species, subspecies, or finer scale. ESUs of salmon north of California are listed at <a href="https://web.archive.org/web/*http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*http://www.nwfsc.noaa.gov/trt/</a> .
MajorPopGroup	Name of "major population group" (MPG) or "stratum" as defined by the NMFS Northwest Region, in which the population falls.	Text 255	The term "stratum" is used in the Willamette/Lower Columbia Recovery Domain, while "major population group" is used in other areas. The term "stratum" includes life history considerations as well as geographic criteria, while MPGs are defined geographically. See Appendix C for the list of MPGs / strata.
<b>PopID</b>	Code for the population(s) of fish represented by this record.	<b>Integer</b>	See Appendix C for the list of population codes. See Appendix E if you need a code for a population (or superpopulation) not already in the list.
CBFWApopName	Population name as defined by CBFWA for subbasin planning purposes, from subbasin plans and agencies.	Text 255	This may include non-listed populations, or cases where geographic area does not match a defined population of a listed species. See Appendix D for the list of these population names.  Fill this field even when a population's geographic extent coincides with NWR name for a listed population.
CommonPopName	Population name used by local biologists.	Text 255	Often this is simply the name of the population(s) as written on the original time series spreadsheets.
<b>PopFit</b>	Categorization of how well the geographic extent of the recruits per spawner estimate corresponds to the geographic definition of the population.	<b>Text 8</b>	This value must be "Multiple" if PopID represents a superpopulation. <b>Acceptable values:</b> [Do not include comments in brackets.] <ul style="list-style-type: none"> <li>• Same [Estimate represents one entire population, the whole population, and nothing but the population.]</li> <li>• Portion [Estimate represents a portion of one population. (Describe in PopFitNotes field.)]</li> <li>• Multiple [Estimate is from more than one population. (Describe in PopFitNotes field.)]</li> </ul>
<b>PopFitNotes</b>	Text description of how well the recruits per spawner value corresponds to the defined population, and why the data are not at the scale of a single population.	<b>Memo</b>	This field is required if the PopFit field is "Portion" or "Multiple". If the PopFit field is "Portion" or "Multiple", describe the lack of correspondence between the defined population and the fish for which the recruits per spawner estimate was made. Also state <i>why</i> this scale of data was used to represent the population instead of true population-scale data. (Examples: "Data not available at exact scale of this population."; "Data at this scale best represent the population.")
<b>SpawnerLocation</b>	The specific named location(s) for where the spawner abundance numbers were determined.	<b>Text 255</b>	This may be any of the following: <ul style="list-style-type: none"> <li>• the name(s) of a fluvial water body(ies)</li> <li>• the name(s) of a lentic water body(ies)</li> <li>• a description of multiple water bodies if appropriate for the time series.</li> </ul>
<b>RecruitLocation</b>	The specific named location(s) for where the recruit abundance numbers were determined.	<b>Text 255</b>	This field describes the location where the abundance of recruits is determined, and may be any of the following: <ul style="list-style-type: none"> <li>• the name(s) of a fluvial water body(ies)</li> <li>• the name(s) of a lentic water body(ies)</li> <li>• a name of a dam or other location where fish numbers can be estimated</li> <li>• other, as appropriate.</li> </ul>

Field Name	Field Description	Data Type	Codes/Conventions for RperS Table	
<b>RecruitDef</b>	How "recruit" is defined for this R/S estimate.	<b>Text 255</b>	<p>Acceptable values: <i>[Do not include comments in brackets.]</i></p> <p>For juvenile recruits:</p> <ul style="list-style-type: none"> <li>• Parr</li> <li>• Juveniles migrating past a point(s)</li> <li>• Juveniles leaving population boundary</li> </ul> <p>For adult recruits:</p> <ul style="list-style-type: none"> <li>• Fish surviving to adulthood <i>[Potential returners before ocean harvest]</i></li> <li>• Returns to a dam <i>[Fish returning to a dam before removing broodstock or other removals at the dam]</i></li> <li>• Returns to mouth <i>[Includes all fish that returned before any removals or mortalities, in the tributaries. Appropriate to use only if the mouth does not define the population]</i></li> <li>• Returns to population boundary <i>[Includes all fish that returned to the population boundary before any removals or mortalities, in the tributaries]</i></li> <li>• Returns to spawning ground <i>[Fish in river available to spawn after removals, but before pre-spawn mortality, in the tributaries]</i></li> <li>• Returns to a weir <i>[Fish returning to weir before removing broodstock or other removals at the weir, in the tributaries]</i></li> <li>• Returns to a PIT tag array</li> <li>• Estimated number of spawners <i>[Fish available after all removals and pre-spawn mortality, in the tributaries (i.e., NOSA)]</i></li> <li>• Number of marked adult fish captured</li> <li>• Adult fish migrating to/past a point(s)</li> </ul> <p>If more than one type of estimate is done for one brood year for a population, the estimates go in separate data records.</p>	
<b>BroodYear</b>	The four-digit brood year for which the recruit per spawner ratio is calculated. Same as "spawning year" for the parent generation.	<b>Integer</b>	<p>This field is used to tie juvenile 'recruits' or adult returns (over multiple return years) to a specific spawning year. This is the year in which spawning of this species (and run where appropriate) began.</p> <p>In cases where an unusual population begins spawning uncharacteristically early (before January 1 for spring spawners) or late (after December 31 for fall spawners) for the species (and perhaps run), assign the year based on the majority of populations of this species/run in order to be consistent for all members of the spawning cohort. For example, most coho spawn in fall but a few populations do not begin spawning until after Jan. 1. The brood year assigned for these unusual populations would match the other populations that spawned in the fall, even though these particular populations did not begin spawning until after December 31.</p>	
<b>RperStyle</b>	The type of recruit per spawner estimate, in terms of what fish are included in the estimates of number of spawners and number of recruits.	<b>Text 255</b>	<p>Acceptable values: <i>[Do not include comments in brackets.]</i></p> <p>For adult to adult R/S estimates:</p> <ul style="list-style-type: none"> <li>• Total recruits per total spawners <i>[Including jacks]</i></li> <li>• Adult recruits per adult spawners <i>[Excluding jacks]</i></li> <li>• Female recruits per female spawners <i>[All males excluded]</i></li> </ul> <p>For R/S estimates for juvenile 'recruits':</p> <ul style="list-style-type: none"> <li>• Parr per total spawners <i>[Including jacks]</i></li> </ul>	<ul style="list-style-type: none"> <li>• Smolts per total spawners <i>[Including jacks]</i></li> <li>• Parr per adult spawners <i>[Excluding jacks]</i></li> <li>• Smolts per adult spawners <i>[Excluding jacks]</i></li> <li>• Parr per female spawners <i>[Includes female parents only]</i></li> <li>• Smolts per female spawners <i>[Includes female parents only]</i></li> </ul> <p>If more than one type of estimate is done for one brood year for a population, the estimates go in separate data records.</p>



Field Name	Field Description	Data Type	Codes/Conventions for RperS Table
<b>ContactAgency</b>	Agency, tribe, or other entity, or person responsible for these data that is the best contact for questions that may arise about this data record.	<b>Text 255</b>	<p>Entries in this field must precisely match a name in the StreamNet agency list. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• Columbia River Inter-Tribal Fish Commission</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Tribes and Bands of the Yakama Nation</li> <li>• Confederated Tribes of the Umatilla Indian Reservation</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> </ul> <ul style="list-style-type: none"> <li>• Fish Passage Center</li> <li>• Idaho Department of Fish and Game</li> <li>• Nez Perce Tribe</li> <li>• Northwest Indian Fisheries Commission</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Quantitative Consultants, Inc.</li> <li>• Shoshone-Bannock Tribes</li> <li>• Spokane Tribe of Indians</li> <li>• U.S. Fish and Wildlife Service</li> <li>• Washington Department of Fish and Wildlife</li> </ul>
<b>MethodNumber</b>	<p>This field represents the method(s) used to calculate the values in the "Indicators" and "Metrics" sections.</p> <p>This field is used in conjunction with the ContactAgency field. See the Codes/Conventions column for details.</p>	<b>Byte</b>	<p>This field, along with the "ContactAgency" field above, identifies which entity calculated the values in the record and which (set of) methods were used to calculate them. These fields allow for multiple entries for the same population and year. Thus, it is possible to share values that are based on different assumptions.</p> <p>If only one set of methods is used to calculate the values for all years for a population, enter "1" for all records. Even if methods changed, you can enter "1" for all records if there is always only one record per year for a population.</p> <p>If more than one set of methods is used to calculate final values over a range of years for a population, use this field to indicate which records are meant to go together. For example, if method 1 was used to calculate values for 1960 through 1994, and method 2 was used to calculate values for 1980 through 2013, then there will be more than one record for the years 1980 through 1994. In such cases you would enter "1" for records that result from the 1960-1994 method, and "2" for records that result from the 1980-2013 method. Similarly, if 3 different methods are proposed in an area for the same years, then use "1" and "2" and "3" to indicate which records belong together. This lets a data user know which records belong together.</p> <p>When more than one record exists for a population X year combination, it is up to biologists using the data to select the value of most use when conducting their day to day business. The ContactAgency and MethodNumber fields allow for this.</p>
<b>BestValue</b>	<p>A declaration of whether the ContactAgency considers this record to be their approved best estimate for this combination of <u>PopID</u>, <u>SpawnerLocation</u>, <u>RecruitLocation</u>, <u>RecruitDef</u>, <u>RperStype</u>, and <u>BroodYear</u>.</p> <p>When a ContactAgency provides &gt;1 record for that combination each record will have a different value in the MethodNumber field. "Yes" in this BestValue field indicates this record contains the indicator value the agency recognizes as their best estimate.</p>	<b>Text 13</b>	<p><u>Acceptable values:</u> [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Yes [The entity (tribe, state agency, etc.) that created this record recognizes it as their approved best estimate.]</li> <li>• No [Not recognized as the best estimate provided by that entity.]</li> <li>• Not specified</li> </ul> <p>Notes regarding the combination of fields specified in the "Field Description" column:</p> <ol style="list-style-type: none"> <li>1. When only one record exists for the combination, BestValue generally should be "Yes". ("Should be", but not "must be".)</li> <li>2. It is acceptable for all alternatives to have "No". "Yes" can be used a maximum of once per agency for the combination.</li> <li>3. Different contact agencies can each specify "Yes" for the same combination.</li> </ol>
<b>Indicators</b>			
<b>RperS</b>	The point estimate for the ratio of recruits from the designated brood year and RperStype, divided by the number of parent spawners responsible for that brood year. Straight ratio calculation, not a log/natural log transformation.	<b>Single</b>	<p>Required if NullRecord = "No".</p> <p>For iteroparous species such as steelhead, adult recruits should include all fish from the brood year that return to spawn, including repeat spawners, since repeat spawners add to the productivity of the population.</p> <p>For juvenile recruits, the total of all of the target life stage from the brood year. For some species and life stages, these may recruit in multiple years.</p>
RperSLowerLimit	The lower limit of the confidence interval for the RperS field.	Single	<p>Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).</p>



Field Name	Field Description	Data Type	Codes/Conventions for RperS Table
RperUpperLimit	The upper limit of the confidence interval for the RperS field.	Single	Minimum value = 0.
RperAlpha	The significance level for the RperS confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
<b>Metrics supporting the "Indicators" fields above</b>			
TotalSpawners	Point estimate for the total number of parent spawners, both natural and hatchery origin, that produced the brood year this record reflects.  The number in this field reflects the RperStype field above. That is, if this record is for total spawners then this number will be the total number of spawners; if this record is for females to females, then this number will be only the female spawners.	Single	Provide whole numbers only, not decimal values.
TotalSpawnersLowerLimit	The lower limit of the confidence interval for the TotalSpawners field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
TotalSpawnersUpperLimit	The upper limit of the confidence interval for the TotalSpawners field.	Single	Minimum value = 0.
TotalSpawnersAlpha	The significance level for the TotalSpawners confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
HatcherySpawners	Point estimate for the number of parent spawners of hatchery origin that contributed to the brood year this record reflects.  This number is the hatchery portion of the TotalSpawners field.	Single	Provide whole numbers only, not decimal values.
HatcherySpawnersLowerLimit	The lower limit of the confidence interval for the HatcherySpawners field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
HatcherySpawnersUpperLimit	The upper limit of the confidence interval for the HatcherySpawners field.	Single	Minimum value = 0.
HatcherySpawnersAlpha	The significance level for the HatcherySpawners confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
Recruits	Point estimate for the total number of <u>natural origin</u> recruits from the indicated combination of species, run, population, spawner location, recruit location, brood year, and RperStype.	Single	This is the sum of returns by juvenile life stage or age group as specified in the RperStype field. This is the number of fish recruited to the location indicated in the RecruitLocation field. Adult recruits should include all fish from the brood year that return to spawn, including repeat spawners, since repeat spawners add to the productivity of the population. Provide whole numbers only, not decimal values.
RecruitsLowerLimit	The lower limit of the confidence interval for the Recruits field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
RecruitsUpperLimit	The upper limit of the confidence interval for the Recruits field.	Single	Minimum value = 0.
RecruitsAlpha	The significance level for the Recruits confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".

Field Name	Field Description	Data Type	Codes/Conventions for RperS Table
RecruitsMissing	<p>This field indicates whether any recruits for this brood year were missing.</p> <p>This field and the next are intended mainly for adult recruits data. An example where this field may be useful for juvenile fish is if an outmigration estimate is done only for spring-migrating fish, but it's known that some fish out-migrate during fall or winter. If such R/S estimates are done, then these fields would be helpful for juveniles also.</p>	Text 3	<p>Indicate if recruit estimates for any year were missing. If so, indicate in this field, and explain how the gap was addressed in the RecruitsMissingExplanation field and in the Methods citation.</p> <p><u>Acceptable values:</u> [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Yes [Years were missing.]</li> <li>• No [No years missing; recruit estimates were complete.]</li> </ul> <p>If some years were missing, describe how that gap was addressed under RecruitsMissingExplanation.</p>
<b>RecruitsMissingExplanation</b>	If some recruits data are not accounted for in the RperS estimate, explain the gap.	<b>Memo</b>	<p>Explain how any gaps in returns from this year class were addressed (estimated to fill in, ignored, etc.). Required if RecruitsMissing = "Yes". Must be null if RecruitsMissing = "No".</p>
HarvestAdj	<p>For adult returns, how was the return adjusted to account for harvest? (Are harvested fish included in the estimate of number of recruits?)</p> <ul style="list-style-type: none"> <li>• "Ocean" means fish harvested in the ocean.</li> <li>• "Mainstem" means fish harvested in the mainstem Columbia River, including the estuary. Do not indicate "mainstem" for populations outside the Columbia Basin.</li> <li>• "Tributaries" means streams other than the mainstem Columbia River.</li> </ul>	Text 35	<p><u>Acceptable values:</u> [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Ocean [Value in the Recruits field was adjusted for harvest in the ocean, but not in the mainstem and not in tributaries.]</li> <li>• Ocean and mainstem [Value in the Recruits field was adjusted for harvest in the ocean and mainstem, but not in tributaries.]</li> <li>• Ocean and mainstem and tributaries [Value in the Recruits field was adjusted for harvest in the ocean, mainstem, and tributaries.]</li> <li>• Ocean and tributaries [Value in the Recruits field was adjusted for harvest in the ocean and tributaries.]</li> <li>• Mainstem [Value in the Recruits field was adjusted for harvest in the mainstem but not in tributaries.]</li> <li>• Mainstem and tributaries [Value in the Recruits field was adjusted for harvest in both the mainstem and tributaries.]</li> <li>• Tributaries [Value in the Recruits field was adjusted for harvest in tributaries but not in the mainstem.]</li> <li>• Not adjusted [Value in the Recruits field was not adjusted for harvest.]</li> </ul>
OceanHarvest	The estimated number of adults and jacks from the recruit group indicated in the Recruits field that were harvested in the ocean.	Single	<p>This field is for harvests in the ocean, which is defined as not including the estuary. Provide this estimate ONLY if it was used to adjust the return/recruit estimate to add back harvested fish. Provide whole numbers only, not decimal values.</p> <p>This may or may not include indirect fishery impacts, and these details should be explained in the Methods citation. This harvest value reflects fish harvested from the indicated natural origin group. Leave blank for juvenile recruits.</p>
MainstemHarvest	The estimated number of adults and jacks from the recruit group indicated in the Recruits field that were harvested in the mainstem (including the estuary).	Single	<p>This field is only for harvests in the mainstem and estuary, which is defined as all rivers below the tributary(ies) defining the population. Provide this estimate ONLY if it was used to adjust the return/recruit estimate to add back harvested fish. Provide whole numbers only, not decimal values.</p> <p>This may or may not include indirect fishery impacts, and these details should be explained in the Methods citation. This harvest value reflects fish harvested from the indicated natural origin group. Leave blank for juvenile recruits.</p>
TribHarvest	The estimated number of adults and jacks from the recruit group indicated in the Recruits field that were harvested in tributaries.	Single	<p>"Tributaries" is defined as the tributary(ies) the population resides in. Because "mainstem" refers only to the Columbia River, estuary harvest is included here for coastal and Puget Sound populations rather than as part of mainstem harvest. Provide this estimate ONLY if it was used to adjust the return/recruit estimate to add back harvested fish. Provide whole numbers only, not decimal values.</p> <p>This may or may not include indirect fishery impacts, and these details should be explained in the Methods citation. This harvest value reflects fish harvested from the indicated natural origin group. Leave blank for juvenile recruits.</p>
NOBroodStockRemoved	The number of additional recruits that would have returned had there not been removal of fish from this brood year for use as broodstock in a hatchery.	Single	<p>Details should be explained in the Methods citation.</p> <p>Provide whole numbers only, not decimal values.</p>

Field Name	Field Description	Data Type	Codes/Conventions for RperS Table
<b>Age determination</b>			
<b>Juvenile Recruits:</b>			
YOY	Total number of juvenile recruits (parr or smolts) at age 0 (brood year +0).	Single	Number of juvenile recruits (parr or smolts as listed in Type field). Provide whole numbers only, not decimal values.  Ages in this table are based on the year spawning occurred, not necessarily the year eggs hatched, so care must be taken in reporting ages.  Assigning age can be complicated based on the life history (generally, salmon return and spawn in one year but hatch in the next, steelhead spawn and hatch in the same year). Make sure these details are accounted for in assigning ages. [ Note - This means we would never refer to age 0 salmon, because they hatch in the year after the eggs are laid, but for steelhead and other spring spawners YOY (age 0) is a valid age we would expect to see. ]
Age1Juvs	Total number of juvenile recruits (parr or smolts) at age 1 (brood year +1).	Single	See the Codes/Conventions for the YOY field.
Age2Juvs	Total number of juvenile recruits at age 2 (brood year +2).	Single	See the Codes/Conventions for the YOY field.
Age3Juvs	Total number of juvenile recruits at age 3 (brood year +3).	Single	See the Codes/Conventions for the YOY field.
Age4PlusJuvs	Total number of juvenile recruits at age 4 (brood year +4) or older.	Single	See the Codes/Conventions for the YOY field.
<b>Adult Recruits:</b>			
Age2Adults	Total number of adult recruits that recruited at age 2 (brood year +2).	Single	Ages in this table are based on the year spawning occurred, not necessarily the year they hatched, so care must be taken in assigning returning fish to a brood year. Assigning returning fish to a brood year can be complicated based on the life history (generally, salmon return and spawn in one year but hatch in the next, steelhead spawn and hatch in the same year). Make sure these details are accounted for in assigning returns to a year class. Adult recruits should include all fish from the brood year that return to spawn, including repeat spawners, since repeat spawners add to the productivity of the population. Provide whole numbers only, not decimal values.
Age3Adults	Total number of adult recruits that recruited at age 3 (brood year +3).	Single	See the Codes/Conventions column for the Age2Adults field.
Age4Adults	Total number of adult recruits that recruited at age 4 (brood year +4).	Single	See the Codes/Conventions column for the Age2Adults field.
Age5Adults	Total number of adult recruits that recruited at age 5 (brood year +5).	Single	See the Codes/Conventions column for the Age2Adults field.
Age6Adults	Total number of adult recruits that recruited at age 6 (brood year +6).	Single	See the Codes/Conventions column for the Age2Adults field.
Age7Adults	Total number of adult recruits that recruited at age 7 (brood year +7).	Single	See the Codes/Conventions column for the Age2Adults field.
Age8Adults	Total number of adult recruits that recruited at age 8 (brood year +8).	Single	See the Codes/Conventions column for the Age2Adults field.
Age9Adults	Total number of adult recruits that recruited at age 9 (brood year +9).	Single	See the Codes/Conventions column for the Age2Adults field.
Age10Adults	Total number of adult recruits that recruited at age 10 (brood year +10).	Single	See the Codes/Conventions column for the Age2Adults field.
Age11PlusAdults	Total number of adult recruits that recruited at age 11 (brood year +11) or older.	Single	See the Codes/Conventions column for the Age2Adults field.

Field Name	Field Description	Data Type	Codes/Conventions for RperS Table
<b>Protocol and method documentation</b>			
ProtMethName	The name(s) of all protocols and associated data collection and data analysis methods used to calculate the indicator estimate.	Memo	Provide title(s) of protocol and name(s) of relevant methods used.  Documentation should describe the study design (including spatial, temporal, response and inference designs), annual implementation notes on variations from routine step by step procedures or design criteria, also known as survey design, description of field methodology and analytical approach.
<i>ProtMethURL</i>	URL(s) for published protocols and methods describing the methodology and documenting the derivation of the indicator. If published in MonitoringMethods.org, this link will provide access to study design information and all methods associated with the protocol	<i>Memo</i>	Required if ProtMethDocumentation is null. Provide URL(s) to source documentation of methodology. For MonitoringMethods.org provide link to the protocol. Methods documentation should include survey design, description of field methodology and analytical approach. URL links may be to online methods documentation resources like MonitoringMethods.org, other online resources, or online literature.  If methodology is unchanged from a previous year, use the previous link references. If methodology changed for this estimate, provide a new link.
<i>ProtMethDocumentation</i>	Citation or documentation that describes the protocol and/or method(s) listed in the ProtMethName field. Include references not documented in MonitoringMethods.org, such as reports, journal articles or other publications that describe the survey design, field methodology and analytical approach used to derive the indicator estimate.	<i>Memo</i>	Required if ProtMethURL is null. Provide a citation(s) to documentation of the methodology used. This may be in the form of reports, journal articles, or other publications that describe the study design (including spatial, temporal, response and inference designs), variations from routine step by step procedures or design criteria, description of field methodology and analytical approach. If the methodology is not yet published, either insert here, or describe in a separate document and make it available online (provide the URL). Leave this field blank if methodology is described in MonitoringMethods.org.  Note: If there is no link to a cited document online, provide a copy of the document to the StreamNet Library (streamnetlibrary.org). The library will scan the document and provide a URL. Post the URL in the ProtMethURL field.  If methodology is unchanged from a previous year, use the previous link or reference citation. If methodology changed, provide a new link or reference citation.
MethodAdjustments	Minor adjustments to a method in a given year that are not described in the method citations above but are important.	Memo*	Give a brief description of changes or adjustments to a standard method if they are NOT described in the methods documentation already provided. If multiple documentation sources are cited, be sure to indicate which method from which document was adjusted.  In MonitoringMethods.org, documentation of changes or adjustments to methods or protocols can be described in the Implementation Notes section of each published method or protocol.
OtherDataSources	The ContactAgency field identifies an organization involved in calculating the values in this record. This "OtherDataSources" field identifies additional organizations that provided data or expertise to calculate the indicator(s), metric(s), or age distribution for this record.	Text 255	List all the organizations that provided data used to calculate the values for this record. Entries must meet the requirements as defined in the ContactAgency field. If more than one, separate the entries with the bar character " ".  This field is for ADDITIONAL organizations. Do not include the organization identified in the ContactAgency field.
<b>Comments about the data</b>			
<i>Comments</i>	Any issues, problems, questions about this indicator that were not already captured in other places.	<i>Memo*</i>	If possible, it is useful to briefly explain any null "metrics" or "age" fields. Required if NullRecord = "Yes", to explain why the indicators are not available.

Field Name	Field Description	Data Type	Codes/Conventions for RperS Table
<b>Supporting information</b>			
<b>NullRecord</b>	In some years data may not be collected and so indicator values cannot be calculated. For example, high muddy water or wildfires can prevent redd counts that indicator values are based on. This field is used to indicate that indicator values do not exist because the data do not exist to calculate them.	<b>Text 3</b>	Normally "No". A value of "Yes" in this field is a positive statement that the data do not exist to calculate the <u>indicator</u> for the population and time period specified. Metric data and age data may still exist when NullRecord = "Yes".  The value of including this field is so that missing data are explicitly accounted for rather than being a perpetually open question that is repeatedly researched. Including these "null" records allows for better data display on the web site, and you are encouraged to create them for years with both earlier and later non-null data. Explain in the Comments field why the indicator cannot be calculated.
<b>DataStatus</b>	Status of the data in the current record.	<b>Text 255</b>	Acceptable values: <i>[Do not include comments in brackets.]</i> <ul style="list-style-type: none"> <li>• Draft <i>[Values in this record are preliminary and have not been thoroughly reviewed.]</i></li> <li>• Reviewed <i>[Values in this record have been reviewed but are not yet approved as "final".]</i></li> <li>• Final <i>[Values in this record have been thoroughly reviewed and are considered "final".]</i></li> </ul>
IndicatorLocation	Where this indicator is maintained at the source.	Memo	If online, provide URL(s).
MetricLocation	Where the supporting metrics are maintained at the source.	Memo	If online, provide URL(s).
MeasureLocation	Where the measurements are maintained that were used for these calculations.	Memo	If online, provide URL(s).
<b>ContactPersonFirst</b>	First name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPersonLast</b>	Last name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPhone</b>	Phone number of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	Preferred format is "123-456-7890". If an extension is included, preferred format is "123-456-7890 ext. 34".
<b>ContactEmail</b>	Email address of person who is the best contact for questions that may arise about this data record.	<b>Text 50</b>	
MetaComments	Comments regarding the supporting information.	Memo*	
<b>Fields needed by people programming the Exchange Network</b>			
If you are a programmer or database manager, refer to Appendix A for additional fields that are part of this table but are not listed here.			

### A4.1. JuvenileOutmigrants Table

This table stores information concerning the number of natural origin juvenile outmigrants to the location defined in each data record. The definition of "juvenile outmigrant" varies by species, run, and geographic area.

[\(Down to JuvenileOutmigrantsDetail table\)](#) [\(Back to Table of Contents\)](#)

Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrants Table
<b>Fields for defining a unique record</b>			
<b>ID (unique)</b>	Value used by computer to identify a record.	<b>Text 36</b>	This value is a globally unique identifier (GUID) exactly 36 characters long. <ul style="list-style-type: none"> <li>• When submitting a new record you may include this value or leave it blank. If you include this value then it will be used by the central system. If you leave it blank then a value will be created for you, and it will be sent back to your system where it must be incorporated.</li> <li>• When updating or deleting records this value must be included.</li> </ul>

Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrants Table		
<b>CommonName</b>	Common name of the taxon of fish.	<b>Text 50</b>	Enter the name of the taxon here, even if taxon name is included in the name of the population. Select from the following:	<ul style="list-style-type: none"> <li>• Bull trout</li> <li>• Chinook salmon</li> <li>• Chum salmon</li> <li>• Coho salmon</li> <li>• Sockeye salmon</li> <li>• Steelhead</li> </ul>	Additional species may be added in the future: refer to <a href="http://old.streamnet.org/SpeciesInFW.html">http://old.streamnet.org/SpeciesInFW.html</a> for common names.
<b>Run</b>	Run of fish.	<b>Text 20</b>	Enter the name of the run here, even if run name is included in the name of the population. Entries in this field are not recognized as taxonomic divisions. Select from the following: <i>[Do not include comments in brackets.]</i>	<ul style="list-style-type: none"> <li>• Spring</li> <li>• Summer</li> <li>• Fall</li> <li>• Late fall</li> <li>• Winter</li> <li>• Spring/summer</li> </ul>	<ul style="list-style-type: none"> <li>• Both summer &amp; winter</li> <li>• Early</li> <li>• Late</li> <li>• Both early &amp; late</li> <li>• N/A <i>[For species without recognized runs. For example, bull trout.]</i></li> </ul>
RecoveryDomain	Name of the "recovery domain," as defined by the NMFS Northwest Region, in which the population falls geographically.	Text 255	Five recovery domains have been defined by NMFS in Washington, Oregon, and Idaho. Select the appropriate one from this list:	<ul style="list-style-type: none"> <li>• Puget Sound</li> <li>• Willamette/Lower Columbia</li> <li>• Interior Columbia</li> <li>• Oregon Coast</li> <li>• Southern Oregon/Northern California Coast</li> </ul>	Further information about recovery domains can be found at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .
ESU_DPS	For populations listed under the federal ESA, this is the name of a defined Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS) as defined by NMFS Northwest Region or by USFWS. For non-listed populations this is the DPS or other name.	Text 255	Enter the name of the ESU or DPS here. Entries in this field are taxonomic divisions defined by NMFS or USFWS, and may be at the species, subspecies, or finer scale. ESUs of salmon north of California are listed at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .		
MajorPopGroup	Name of "major population group" (MPG) or "stratum" as defined by the NMFS Northwest Region, in which the population falls. Enter "N/A" if not applicable.	Text 255	The term "stratum" is used in the Willamette/Lower Columbia Recovery Domain, while "major population group" is used in other areas. The term "stratum" includes life history considerations as well as geographic criteria, while MPGs are defined geographically. See Appendix B for the list of MPGs / strata.		
<b>PopID</b>	Code for the population(s) of fish represented by this record.	<b>Integer</b>	See Appendix C for the list of population codes. See Appendix E if you need a code for a population (or superpopulation) not already in the list.		
CBFWApopName	Population name as defined by CBFWA for subbasin planning purposes, from subbasin plans and agencies.	Text 255	This may include non-listed populations, or cases where geographic area does not match a defined population of a listed species. See Appendix C for the list of these population names.  Fill this field even when a population's geographic extent coincides with NWR name for a listed population.		
CommonPopName	Population name used by local biologists.	Text 255	Often this is simply the name of the population(s) as written on the original time series spreadsheets.		
<b>PopFit</b>	Categorization of how well the geographic extent of the juvenile outmigrants estimate corresponds to the geographic definition of the population.	<b>Text 8</b>	This value must be "Multiple" if PopID represents a superpopulation. <u>Acceptable values:</u> <i>[Do not include comments in brackets.]</i> <ul style="list-style-type: none"> <li>• Same <i>[Estimate represents one entire population, the whole population, and nothing but the population.]</i></li> <li>• Portion <i>[Estimate represents a portion of one population. (Describe in PopFitNotes field.)]</i></li> <li>• Multiple <i>[Estimate is from more than one population. (Describe in PopFitNotes field.)]</i></li> </ul>		
<b>PopFitNotes</b>	Text description of how well the juvenile outmigrants value corresponds to the defined population, and why the data are not at the scale of a single population.	<b>Memo</b>	This field is required if the PopFit field is "Portion" or "Multiple". If the PopFit field is "Portion" or "Multiple", describe the lack of correspondence between the defined population and the fish for which the juvenile outmigrants estimate was made. Also state <i>why</i> this scale of data was used to represent the population instead of true population-scale data. (Examples: "Data not available at exact scale of this population."; "Data at this scale best represent the population.")		

Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrants Table
<b>SmoltEqLocation</b>	The specific location(s) for where the smolt equivalent abundance numbers were determined.	<b>Text 255</b>	<p>This may be any of the following:</p> <ul style="list-style-type: none"> <li>• the name of a fluvial water body and text description of where on that stream or river (river mile preferred, but river kilometer, lat/long, or other characterization allowable).</li> <li>• the name of an impounded fluvial water body (reservoir) and description of where on that reservoir.</li> <li>• the name of a lentic water body, and description of where on that lake.</li> <li>• a description of multiple water bodies if appropriate for the time series, with descriptions of specific locations.</li> <li>• the name of a dam.</li> </ul>
SmoltEqLocPTcode	PTAGIS code for the SmoltEqLocation field.	Text 255	There should be a PTAGIS code for most locations where smolt equivalents are estimated. Provide that code if available. Provide multiple codes if smolt equivalents were determined by summing estimates at multiple locations for this population.
<b>OutmigrationYear</b>	The four-digit year of the spring/summer in which outmigration of this species occurred.	<b>Integer</b>	Juvenile anadromous fishes generally migrate to the ocean in the spring. However, a significant portion of the migration may occur in the fall or winter before, or continue into summer. Enter here the year of the spring migration even if the migration begins earlier.
<b>ContactAgency</b>	Agency, tribe, or other entity, or person responsible for these data that is the best contact for questions that may arise about this data record.	<b>Text 255</b>	<p>Entries in this field must precisely match a name in the StreamNet agency list. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• Columbia River Inter-Tribal Fish Commission</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Tribes and Bands of the Yakama Nation</li> <li>• Confederated Tribes of the Umatilla Indian Reservation</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> <li>• Fish Passage Center</li> <li>• Idaho Department of Fish and Game</li> <li>• Nez Perce Tribe</li> <li>• Northwest Indian Fisheries Commission</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Quantitative Consultants, Inc.</li> <li>• Shoshone-Bannock Tribes</li> <li>• Spokane Tribe of Indians</li> <li>• U.S. Fish and Wildlife Service</li> <li>• Washington Department of Fish and Wildlife</li> </ul>
<b>MethodNumber</b>	This field represents the method(s) used to calculate the values in the "Indicators" and "Metrics" sections.	<b>Byte</b>	<p>This field, along with the "ContactAgency" field above, identifies which entity calculated the values in the record and which (set of) methods were used to calculate them. These fields allow for multiple entries for the same population and year. Thus, it is possible to share values that are based on different assumptions, or for different locations, life stages, etc.</p> <p>If only one set of methods is used to calculate the values for all years for a population, enter "1" for all records. Even if methods changed, you can enter "1" for all records if there is always only one record per year for a population.</p> <p>If more than one set of methods is used to calculate final values over a range of years for a population, use this field to indicate which records are meant to go together. For example, if method 1 was used to calculate values for 1960 through 1994, and method 2 was used to calculate values for 1980 through 2013, then there will be more than one record for the years 1980 through 1994. In such cases you would enter "1" for records that result from the 1960-1994 method, and "2" for records that result from the 1980-2013 method. Similarly, if 3 different methods are proposed in an area for the same years, then use "1" and "2" and "3" to indicate which records belong together. This lets a data user know which records belong together.</p> <p>When more than one record exists for a population X year combination, it is up to biologists using the data to select the value of most use when conducting their day to day business. The ContactAgency and MethodNumber fields allow for this.</p>
<b>BestValue</b>	<p>A declaration of whether the ContactAgency considers this record to be their approved best estimate for this combination of <u>PopID</u> and <u>OutmigrationYear</u>.</p> <p>When a ContactAgency provides &gt;1 record for that combination each record will have a different value in the MethodNumber field. "Yes" in this BestValue field indicates this record contains the indicator value the agency recognizes as their best estimate.</p>	<b>Text 13</b>	<p><u>Acceptable values:</u> [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Yes [The entity (tribe, state agency, etc.) that created this record recognizes it as their approved best estimate.]</li> <li>• No [Not recognized as the best estimate provided by that entity.]</li> <li>• Not specified</li> </ul> <p>Notes regarding the combination of fields specified in the "Field Description" column:</p> <ol style="list-style-type: none"> <li>1. When only one record exists for the combination, BestValue generally should be "Yes". ("Should be", but not "must be".)</li> <li>2. It is acceptable for all alternatives to have "No". "Yes" can be used a maximum of once per agency for the combination.</li> <li>3. Different contact agencies can each specify "Yes" for the same combination.</li> </ol>



Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrants Table
<b>Indicators</b>			
<i>TotalNatural</i>	<p>The point estimate, to the location defined in the SmoltEqLocation field, of:</p> <ul style="list-style-type: none"> <li>• the number of spring/summer smolt equivalents for <ul style="list-style-type: none"> <li>○ bull trout</li> <li>○ coastal cutthroat trout</li> <li>○ coho salmon</li> <li>○ east-side spring/summer (stream-type) Chinook salmon</li> <li>○ steelhead;</li> </ul> </li> <li>• the total number of outmigrants of all types for <ul style="list-style-type: none"> <li>○ fall Chinook salmon</li> <li>○ lower Columbia spring Chinook salmon</li> <li>○ upper Columbia summer Chinook salmon</li> <li>○ Willamette spring Chinook salmon;</li> </ul> </li> <li>• the number of smolts for <ul style="list-style-type: none"> <li>○ chum salmon</li> <li>○ pink salmon</li> <li>○ sockeye salmon.</li> </ul> </li> </ul>	<i>Single</i>	<p>Required if NullRecord = "No".</p> <p>Estimated total number of natural origin fish that outmigrated in a particular year. "Natural origin" means the fish's parents spawned in the wild. The statistical approach used to generate the estimate should be thoroughly explained in the methods referenced in the MethodDocumentation field.</p> <p>Provide whole numbers only, not decimal values.</p>
TotalNaturalLowerLimit	The lower limit of the confidence interval for the TotalNatural field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).
TotalNaturalUpperLimit	The upper limit of the confidence interval for the TotalNatural field.	Single	Minimum value = 0.
TotalNaturalAlpha	The significance level for the TotalNatural confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".



Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrants Table
<b>Metrics supporting the "Indicators" fields above can be found in the JuvenileOutmigrantDetail table (below), which is a child of this table.</b>			
<b>Age determination</b>			
Age0Prop	The proportion of natural origin fish that were age 0 (brood year +0).	Single	<p>Values must be between 0 and 1. Express with 3 digits to the right of the decimal point.</p> <p>Ages in this table are based on the year spawning occurred, not necessarily the year eggs hatched, so care must be taken in reporting ages.</p> <p>Assigning age can be complicated based on the life history (generally, salmon return and spawn in one year but hatch in the next, steelhead spawn and hatch in the same year). Make sure these details are accounted for in assigning ages. [ Note – This means we would never refer to age 0 salmon, because they hatch in the year after the eggs are laid, but for steelhead and other spring spawners age 0 is a valid age we would expect to see. ]</p> <p>The age distribution numbers reported here must meet three criteria. If these criteria are not met then do not report ages.</p> <ol style="list-style-type: none"> <li>These age fields contain proportions by age for the natural origin fish. They are not the numbers of fish actually aged, nor are they the expanded numbers for a population. Consider this scenario: <ul style="list-style-type: none"> <li>The juvenile outmigrants estimate is 100,000 fish (as reported in the TotalNatural field)</li> <li>500 fish were aged</li> <li>After age analysis is completed it is determined that 45% of the fish (meaning 45,000 of the 100,000) were age 0.</li> <li>In this case the value in this field should be 0.45 (45,000/100,000) not 45,000, 500, or 100,000.</li> </ul> </li> <li>The values of the Age0Prop through Age4PlusProp fields must sum to <math>1.00 \pm 0.02</math>.</li> <li>The age distribution must be derived only from the natural origin fish of the specific population and year this record represents. Therefore, do not include age data that are derived in part or in whole from any other group of fish.</li> </ol> <p>The age information may represent the exact group of fish indicated in the Abundance field, or a somewhat different group of fish. For example, the ages may have been taken from a geographic or temporal subset of the population. Whatever may be the case, ensure this information is included in the protocol and method documentation section below.</p>
Age0PropLowerLimit	The lower limit of the confidence interval for the Age0Prop field.	Single	<p>Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).</p> <p>The associated alpha value is in the AgePropAlpha field, which is found below after the fields for age 4+.</p>
Age0PropUpperLimit	The upper limit of the confidence interval for the Age0Prop field.	Single	<p>Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is more than 1.0 you <u>may</u> report 1.0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits.</p>
Age1Prop	The proportion of natural origin fish that were age 1 (brood year +1).	Single	See the Codes/Conventions column for the Age0Prop field.
Age1PropLowerLimit	The lower limit of the confidence interval for the Age1Prop field.	Single	See the Codes/Conventions for the Age0PropLowerLimit field.
Age1PropUpperLimit	The upper limit of the confidence interval for the Age1Prop field.	Single	See the Codes/Conventions for the Age0PropUpperLimit field.
Age2Prop	The proportion of natural origin fish that were age 2 (brood year +2).	Single	See the Codes/Conventions column for the Age0Prop field.
Age2PropLowerLimit	The lower limit of the confidence interval for the Age2Prop field.	Single	See the Codes/Conventions for the Age0PropLowerLimit field.
Age2PropUpperLimit	The upper limit of the confidence interval for the Age2Prop field.	Single	See the Codes/Conventions for the Age0PropUpperLimit field.

Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrants Table
Age3Prop	The proportion of natural origin fish that were age 3 (brood year +3).	Single	See the Codes/Conventions column for the Age0Prop field.
Age3PropLowerLimit	The lower limit of the confidence interval for the Age3Prop field.	Single	See the Codes/Conventions for the Age0PropLowerLimit field.
Age3PropUpperLimit	The upper limit of the confidence interval for the Age3Prop field.	Single	See the Codes/Conventions for the Age0PropUpperLimit field.
Age4PlusProp	The proportion of natural origin fish that were age 4 or higher (brood year +4) or older.	Single	See the Codes/Conventions column for the Age0Prop field.
Age4PlusPropLowerLimit	The lower limit of the confidence interval for the Age4PlusProp field.	Single	See the Codes/Conventions for the Age0PropLowerLimit field.
Age4PlusPropUpperLimit	The upper limit of the confidence interval for the Age4PlusProp field.	Single	See the Codes/Conventions for the Age0PropUpperLimit field.
AgePropAlpha	The significance level for the Age_x_Prop confidence intervals, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
<b>Protocol and method documentation</b>			
ProtMethName	The name(s) of all protocols and associated data collection and data analysis methods used to calculate the indicator estimate.	Memo	Provide title of protocol and name(s) of relevant methods used.  Documentation should describe the study design (including spatial, temporal, response and inference designs), annual implementation notes on variations from routine step by step procedures or design criteria, also known as survey design, description of field methodology and analytical approach.
<i>ProtMethURL</i>	URL(s) for published protocols and methods describing the methodology and documenting the derivation of the indicator. If published in MonitoringMethods.org, this link will provide access to study design information and all methods associated with the protocol.	<i>Memo</i>	Required if ProtMethDocumentation is null. Provide URL(s) to source documentation of methodology. For MonitoringMethods.org provide link to the protocol. Methods documentation should include survey design, description of field methodology and analytical approach. URL links may be to online methods documentation resources like MonitoringMethods.org, other online resources, or online literature.  If methodology is unchanged from a previous year, use the previous link references. If methodology changed for this estimate, provide a new link.
<i>ProtMethDocumentation</i>	Citation or documentation that describes the protocol and/or method(s) listed in the ProtMethName field. Include references not documented in MonitoringMethods.org, such as reports, journal articles or other publications that describe the survey design, field methodology and analytical approach used to derive the indicator estimate.	<i>Memo</i>	Required if ProtMethURL is null. Provide a citation(s) to documentation of the methodology used. This may be in the form of reports, journal articles, or other publications that describe the study design (including spatial, temporal, response and inference designs), variations from routine step by step procedures or design criteria, description of field methodology and analytical approach. If the methodology is not yet published, either insert here, or describe in a separate document and make it available online (provide the URL). Leave this field blank if methodology is described in MonitoringMethods.org.  Note: If there is no link to a cited document online, provide a copy of the document to the StreamNet Library (streamnetlibrary.org). The library will scan the document and provide a URL. Post the URL in the ProtMethURL field.  If methodology is unchanged from a previous year, use the previous link or reference citation. If methodology changed, provide a new link or reference citation.
MethodAdjustments	Minor adjustments to a method in a given year that are not described in the method citations above but are important.	Memo*	Give a brief description of changes or adjustments to a standard method if they are NOT described in the methods documentation already provided. If multiple documentation sources are cited, be sure to indicate which method from which document was adjusted.  In MonitoringMethods.org, documentation of changes or adjustments to methods or protocols can be described in the Implementation Notes section of each published method or protocol.

Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrants Table
OtherDataSources	The ContactAgency field identifies an organization involved in calculating the values in this record. This "OtherDataSources" field identifies additional organizations that provided data or expertise to calculate the indicator(s), metric(s), or age distribution for this record.	Text 255	List all the organizations that provided data used to calculate the values for this record. Entries must meet the requirements as defined in the ContactAgency field. If more than one, separate the entries with the bar character " ".  This field is for ADDITIONAL organizations. Do not include the organization identified in the ContactAgency field.
<b>Comments about the data</b>			
<b>Comments</b>	Any issues, problems, questions about this indicator that were not already captured in other places.	<b>Memo*</b>	If possible, it is useful to briefly explain any null "metrics" or "age" fields. Required if NullRecord = "Yes", to explain why the indicators are not available.
<b>Supporting information</b>			
<b>NullRecord</b>	In some years data may not be collected and so indicator values cannot be calculated. For example, high muddy water or wildfires can prevent redd counts that indicator values are based on. This field is used to indicate that indicator values do not exist because the data do not exist to calculate them.	<b>Text 3</b>	Normally "No". A value of "Yes" in this field is a positive statement that the data do not exist to calculate the <u>indicator</u> for the population and time period specified. Metric data and age data may still exist when NullRecord = "Yes".  The value of including this field is so that missing data are explicitly accounted for rather than being a perpetually open question that is repeatedly researched. Including these "null" records allows for better data display on the web site, and you are encouraged to create them for years with both earlier and later non-null data. Explain in the Comments field why the indicator cannot be calculated.
<b>DataStatus</b>	Status of the data in the current record.	<b>Text 255</b>	<u>Acceptable values:</u> [Do not include comments in brackets.] <ul style="list-style-type: none"> <li>• Draft [Values in this record are preliminary and have not been thoroughly reviewed.]</li> <li>• Reviewed [Values in this record have been reviewed but are not yet approved as "final".]</li> <li>• Final [Values in this record have been thoroughly reviewed and are considered "final".]</li> </ul>
IndicatorLocation	Where this indicator is maintained at the source.	Memo	If online, provide URL(s).
<b>ContactPersonFirst</b>	First name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPersonLast</b>	Last name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPhone</b>	Phone number of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	Preferred format is "123-456-7890". If an extension is included, preferred format is "123-456-7890 ext. 34".
<b>ContactEmail</b>	Email address of person who is the best contact for questions that may arise about this data record.	<b>Text 50</b>	
MetaComments	Comments regarding the supporting information.	Memo*	
<b>Fields needed by people programming the Exchange Network</b>			
If you are a programmer or database manager, refer to Appendix A for additional fields that are part of this table but are not listed here.			

## A4.2. JuvenileOutmigrantsDetail Table

This table is a child of the JuvenileOutmigrants table. It stores metrics (outmigrant numbers) specific to the trapping site(s) and life stages used to calculate the juvenile outmigrant estimates captured in the JuvenileOutmigrants table.

(Back to JuvenileOutmigrants table) (Back to Table of Contents)

Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrantsDetail Table								
<b>Fields for defining a unique record</b>											
<b>ID</b> (unique)	Value used by computer to identify a record.	<b>Text 36</b>	This value is a globally unique identifier (GUID) exactly 36 characters long. <ul style="list-style-type: none"> <li>• When submitting a new record you may include this value or leave it blank. If you include this value then it will be used by the central system. If you leave it blank then a value will be created for you, and it will be sent back to your system where it must be incorporated.</li> <li>• When updating or deleting records this value must be included.</li> </ul>								
<b>Fields for linking to parent table</b>											
<b>JuvenileOutmigrantsID</b>	Foreign key used to identify the parent record in the JuvenileOutmigrants table.	<b>Text 36</b>	The ID of the parent record is a 36 character GUID. That GUID preferably is supplied by the data provider; if it is not then the GUID returned by StreamNet when the parent record is loaded must be applied to both the JuvenileOutmigrants table and its child records in this table.								
<b>Metrics supporting the "Indicators" fields in the JuvenileOutmigrants table</b>											
<b>Location</b>	The specific location (trapping site) where abundance numbers were determined.	<b>Text 255</b>	This may be any of the following: <ul style="list-style-type: none"> <li>• the name of a fluvial water body and text description of where on that stream or river (river mile preferred, but river kilometer, lat/long, or other characterization allowable).</li> <li>• the name of an impounded fluvial water body (reservoir) and description of where on that reservoir.</li> <li>• the name of a lentic water body, and description of where on that lake.</li> <li>• the name of a dam.</li> </ul>								
LocPTcode	PTAGIS code for the Location field.	Text 255	There should be a PTAGIS code for most locations where smolts were trapped. Provide that code if available for the trapping site represented by this record.								
<b>LifeStage</b>	Life stage the record represents.	<b>Text 11</b>	This field is required if NullRecord = "No". <u>Acceptable values:</u> use one of the following sets of values, depending on the fish. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;">           For           <ul style="list-style-type: none"> <li>• Lower Columbia spring Chinook</li> </ul>           use the following:           <ul style="list-style-type: none"> <li>○ Subyearling</li> <li>○ Yearling</li> </ul> </td> <td style="width: 33%; vertical-align: top;">           For           <ul style="list-style-type: none"> <li>• Fall Chinook</li> <li>• Willamette spring Chinook</li> </ul>           use the following:           <ul style="list-style-type: none"> <li>○ Fry</li> <li>○ Subyearling</li> <li>○ Yearling</li> </ul> </td> <td style="width: 33%; vertical-align: top;">           For           <ul style="list-style-type: none"> <li>• Coho</li> <li>• East-side spring/summer (stream-type) Chinook</li> <li>• Steelhead</li> </ul>           use the following:           <ul style="list-style-type: none"> <li>○ Fry</li> <li>○ Parr</li> <li>○ Presmolt</li> <li>○ Smolt</li> </ul> </td> </tr> <tr> <td style="vertical-align: top;">           For           <ul style="list-style-type: none"> <li>• Upper Columbia summer Chinook</li> </ul>           use the following:           <ul style="list-style-type: none"> <li>○ Fry</li> <li>○ Subyearling</li> </ul> </td> <td style="vertical-align: top;">           For           <ul style="list-style-type: none"> <li>• Chum</li> <li>• Pink</li> <li>• Sockeye</li> </ul>           use the following:           <ul style="list-style-type: none"> <li>○ Smolt</li> </ul> </td> <td style="vertical-align: top;">           The suite of life stages to report are not yet determined for bull trout, coastal cutthroat trout, and any other species not explicitly listed here.         </td> </tr> </table>			For <ul style="list-style-type: none"> <li>• Lower Columbia spring Chinook</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Subyearling</li> <li>○ Yearling</li> </ul>	For <ul style="list-style-type: none"> <li>• Fall Chinook</li> <li>• Willamette spring Chinook</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Fry</li> <li>○ Subyearling</li> <li>○ Yearling</li> </ul>	For <ul style="list-style-type: none"> <li>• Coho</li> <li>• East-side spring/summer (stream-type) Chinook</li> <li>• Steelhead</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Fry</li> <li>○ Parr</li> <li>○ Presmolt</li> <li>○ Smolt</li> </ul>	For <ul style="list-style-type: none"> <li>• Upper Columbia summer Chinook</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Fry</li> <li>○ Subyearling</li> </ul>	For <ul style="list-style-type: none"> <li>• Chum</li> <li>• Pink</li> <li>• Sockeye</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Smolt</li> </ul>	The suite of life stages to report are not yet determined for bull trout, coastal cutthroat trout, and any other species not explicitly listed here.
For <ul style="list-style-type: none"> <li>• Lower Columbia spring Chinook</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Subyearling</li> <li>○ Yearling</li> </ul>	For <ul style="list-style-type: none"> <li>• Fall Chinook</li> <li>• Willamette spring Chinook</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Fry</li> <li>○ Subyearling</li> <li>○ Yearling</li> </ul>	For <ul style="list-style-type: none"> <li>• Coho</li> <li>• East-side spring/summer (stream-type) Chinook</li> <li>• Steelhead</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Fry</li> <li>○ Parr</li> <li>○ Presmolt</li> <li>○ Smolt</li> </ul>									
For <ul style="list-style-type: none"> <li>• Upper Columbia summer Chinook</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Fry</li> <li>○ Subyearling</li> </ul>	For <ul style="list-style-type: none"> <li>• Chum</li> <li>• Pink</li> <li>• Sockeye</li> </ul> use the following: <ul style="list-style-type: none"> <li>○ Smolt</li> </ul>	The suite of life stages to report are not yet determined for bull trout, coastal cutthroat trout, and any other species not explicitly listed here.									

Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrantsDetail Table	
<b>TotalNatural</b>	The point estimate for the number of natural origin fish of the indicated life stage passing the indicated location.	<b>Single</b>	This field is required if NullRecord = "No". Estimated number of natural origin smolts that outmigrated in a particular year. Provide whole numbers only, not decimal values. The statistical approach used to generate the estimate should be thoroughly explained in the methods referenced in the MethodDocumentation field.	
TotalNaturalLowerLimit	The lower limit of the confidence interval for the TotalNatural field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).	
TotalNaturalUpperLimit	The upper limit of the confidence interval for the TotalNatural field.	Single	Minimum value = 0.	
TotalNaturalAlpha	The significance level for the TotalNatural confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".	
<b>SurvivalRate</b>	The point estimate for the survival rate of fish from the life stage and trapping site indicated by the LifeStage and Location fields of this table to the smolt equivalent estimation site indicated by the SmoltEqLocation in the JuvenileOutmigrants table.	<b>Single</b>	This field is required if NullRecord = "No". Express as a proportion from 0 to 1.  The Location field of this table tells where abundance numbers were determined for a specific trapping site and life stage. The SmoltEqLocation field of the JuvenileOutmigrants table (this table's parent table) tells the location for which the number of smolt equivalents was estimated. In cases where Location=SmoltEqLocation and LifeStage="Smolt", this value will equal "1" because the data (TotalNatural field) already indicate the number of smolts at the smolt equivalent location.	
SurvivalRateLowerLimit	The lower limit of the confidence interval for the SurvivalRate field.	Single	Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).	
SurvivalRateUpperLimit	The upper limit of the confidence interval for the SurvivalRate field.	Single	Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is more than 1.0 you <u>may</u> report 1.0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits.	
SurvivalRateAlpha	The significance level for the SurvivalRate confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".	
<b>ContactAgency</b>	Agency, tribe, or other entity, or person responsible for these data that is the best contact for questions that may arise about this data record.	<b>Text 255</b>	<p>Entries in this field must precisely match a name in the StreamNet agency list. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• Columbia River Inter-Tribal Fish Commission</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Tribes and Bands of the Yakama Nation</li> <li>• Confederated Tribes of the Umatilla Indian Reservation</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> </ul>	<ul style="list-style-type: none"> <li>• Fish Passage Center</li> <li>• Idaho Department of Fish and Game</li> <li>• Nez Perce Tribe</li> <li>• Northwest Indian Fisheries Commission</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Quantitative Consultants, Inc.</li> <li>• Shoshone-Bannock Tribes</li> <li>• Spokane Tribe of Indians</li> <li>• U.S. Fish and Wildlife Service</li> <li>• Washington Department of Fish and Wildlife</li> </ul>
<b>Comments about the metrics data</b>				
<b>Comments</b>	Any issues, problems, questions about this record that were not already captured in other places.	<b>Memo*</b>	If possible, it is useful to briefly explain any null "metrics" or "age" fields. Required if NullRecord = "Yes", to explain why the indicators are not available.	
<b>Supporting information</b>				
JMXID	PRODUCTION_ESTIMATE_ID value from the JMX system that corresponds to this record.	Text 36	This value lets this table refer to the corresponding record in the WDFW/NWIFC Juvenile Migrant Exchange (JMX) and thus allows for easy access to detailed data for the record.	

Field Name	Field Description	Data Type	Codes/Conventions for JuvenileOutmigrantsDetail Table
<b>NullRecord</b>	In some years data may not be collected and so a value cannot be calculated. For example, high muddy water or wildfires can prevent redd counts. This field is used to indicate that a record does not exist because the data do not exist to calculate it.	<b>Text 3</b>	Normally "No". A value of "Yes" in this field is a positive statement that the data do not exist to calculate the <u>metric</u> for the population X location X life stage X time period specified.  The value of including this field is so that missing data are explicitly accounted for rather than being a perpetually open question that is repeatedly researched. Including these "null" records allows for better data display on the web site, and you are encouraged to create them for years with both earlier and later non-null data. Explain in the Comments field why the metric cannot be calculated.
MetricLocation	Where this supporting metric is maintained at the source.	Memo	If online, provide URL(s).
MeasureLocation	Where the measurements are maintained that were used to calculate this metric.	Memo	If online, provide URL(s).
<b>Fields needed by people programming the Exchange Network</b>			
If you are a programmer or database manager, refer to Appendix A for additional fields that are part of this table but are not listed here.			

## A5. PresmoltAbundance Table

This table stores information concerning natural origin presmolt abundance. "Presmolt abundance" is the total number of fish estimated for the population and time frame (year and months) indicated by each record. Most commonly these records will represent parr numbers estimated for late summer, but other times may be entered, and all presmolt life stages are included in these estimates. (Back to Table of Contents)

Field Name	Field Description	Data Type	Codes/Conventions for PresmoltAbundance Table
<b>Fields for defining a unique record</b>			
<b>ID</b> (unique)	Value used by computer to identify a record.	<b>Text 36</b>	This value is a globally unique identifier (GUID) exactly 36 characters long. <ul style="list-style-type: none"> <li>When submitting a new record you may include this value or leave it blank. If you include this value then it will be used by the central system. If you leave it blank then a value will be created for you, and it will be sent back to your system where it must be incorporated.</li> <li>When updating or deleting records this value must be included.</li> </ul>
<b>CommonName</b>	Common name of the taxon of fish.	<b>Text 50</b>	Enter the name of the taxon here, even if taxon name is included in the name of the population. Select from the following: <ul style="list-style-type: none"> <li>Bull trout</li> <li>Chinook salmon</li> <li>Chum salmon</li> <li>Coho salmon</li> <li>Sockeye salmon</li> <li>Steelhead</li> </ul> Additional species may be added in the future: refer to <a href="http://old.streamnet.org/SpeciesInFW.html">http://old.streamnet.org/SpeciesInFW.html</a> for common names.
<b>Run</b>	Run of fish.	<b>Text 20</b>	Enter the name of the run here, even if run name is included in the name of the population. Entries in this field are not recognized as taxonomic divisions. Select from the following: [ <i>Do not include comments in brackets.</i> ] <ul style="list-style-type: none"> <li>Spring</li> <li>Summer</li> <li>Fall</li> <li>Late fall</li> <li>Winter</li> <li>Spring/summer</li> </ul> <ul style="list-style-type: none"> <li>Both summer &amp; winter</li> <li>Early</li> <li>Late</li> <li>Both early &amp; late</li> <li>N/A [<i>For species without recognized runs. For example, bull trout.</i>]</li> </ul>

Field Name	Field Description	Data Type	Codes/Conventions for Presmolt Abundance Table		
RecoveryDomain	Name of the "recovery domain," as defined by the NMFS Northwest Region, in which the population falls geographically.	Text 255	Five recovery domains have been defined by NMFS in Washington, Oregon, and Idaho. Select the appropriate one from this list:	<ul style="list-style-type: none"> <li>• Puget Sound</li> <li>• Willamette/Lower Columbia</li> <li>• Interior Columbia</li> <li>• Oregon Coast</li> <li>• Southern Oregon/Northern California Coast</li> </ul>	Further information about recovery domains can be found at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .
ESU_DPS	For populations listed under the federal ESA, this is the name of a defined Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS) as defined by NMFS Northwest Region or by USFWS. For non-listed populations this is the DPS or other name.	Text 255	Enter the name of the ESU or DPS here. Entries in this field are taxonomic divisions defined by NMFS or USFWS, and may be at the species, subspecies, or finer scale. ESUs of salmon north of California are listed at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .		
MajorPopGroup	Name of "major population group" (MPG) or "stratum" as defined by the NMFS Northwest Region, in which the population falls.	Text 255	The term "stratum" is used in the Willamette/Lower Columbia Recovery Domain, while "major population group" is used in other areas. The term "stratum" includes life history considerations as well as geographic criteria, while MPGs are defined geographically. See Appendix C for the list of MPGs / strata.		
<b>PopID</b>	Code for the population(s) of fish represented by this record.	<b>Integer</b>	See Appendix C for the list of population codes. See Appendix E if you need a code for a population (or superpopulation) not already in the list.		
CBFWApopName	Population name as defined by CBFWA for subbasin planning purposes, from subbasin plans and agencies.	Text 255	This may include non-listed populations, or cases where geographic area does not match a defined population of a listed species. See Appendix D for the list of these population names.  Fill this field even when a population's geographic extent coincides with NWR name for a listed population.		
CommonPopName	Population name used by local biologists.	Text 255	Often this is simply the name of the population(s) as written on the original time series spreadsheets.		
<b>PopFit</b>	Categorization of how well the geographic extent of the abundance estimate corresponds to the geographic definition of the population.	<b>Text 8</b>	This value must be "Multiple" if PopID represents a superpopulation. <u>Acceptable values:</u> [Do not include comments in brackets.] <ul style="list-style-type: none"> <li>• Same [Estimate represents one entire population, the whole population, and nothing but the population.]</li> <li>• Portion [Estimate represents a portion of one population. (Describe in PopFitNotes field.)]</li> <li>• Multiple [Estimate is from more than one population. (Describe in PopFitNotes field.)]</li> </ul>		
<b>PopFitNotes</b>	Text description of how well the natural origin spawner abundance value corresponds to the defined population, and why the data are not at the scale of a single population.	<b>Memo</b>	This field is required if the PopFit field is "Portion" or "Multiple". If the PopFit field is "Portion" or "Multiple", describe the lack of correspondence between the defined population and the fish for which the abundance estimate was made. Also state <i>why</i> this scale of data was used to represent the population instead of true population-scale data. (Examples: "Data not available at exact scale of this population."; "Data at this scale best represent the population.")		
<b>WaterBody</b>	Name of the body of water associated with the time series.	<b>Text 255</b>	This may be any of the following: <ul style="list-style-type: none"> <li>• the name of a fluvial water body.</li> <li>• the name of an impounded fluvial water body (reservoir).</li> <li>• the name of a lentic water body.</li> <li>• a description of multiple water bodies if appropriate for the time series.</li> </ul>		
<b>SurveyYear</b>	The four-digit year represented.	<b>Integer</b>			
<b>StartMonth</b>	The month presmolt sampling started.	<b>Text 9</b>	Enter full name of month, correctly spelled.		
<b>EndMonth</b>	The month presmolt sampling ended.	<b>Text 9</b>	Enter full name of month, correctly spelled.		



Field Name	Field Description	Data Type	Codes/Conventions for PresmoltAbundance Table	
<b>ContactAgency</b>	Agency, tribe, or other entity, or person responsible for these data that is the best contact for questions that may arise about this data record.	<b>Text 255</b>	<p>Entries in this field must precisely match a name in the StreamNet agency list. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• Columbia River Inter-Tribal Fish Commission</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Tribes and Bands of the Yakama Nation</li> <li>• Confederated Tribes of the Umatilla Indian Reservation</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> </ul>	<ul style="list-style-type: none"> <li>• Fish Passage Center</li> <li>• Idaho Department of Fish and Game</li> <li>• Nez Perce Tribe</li> <li>• Northwest Indian Fisheries Commission</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Quantitative Consultants, Inc.</li> <li>• Shoshone-Bannock Tribes</li> <li>• Spokane Tribe of Indians</li> <li>• U.S. Fish and Wildlife Service</li> <li>• Washington Department of Fish and Wildlife</li> </ul>
<b>MethodNumber</b>	<p>This field represents the method(s) used to calculate the values in the "Indicators" and "Metrics" sections.</p> <p>This field is used in conjunction with the ContactAgency field. See the Codes/Conventions column for details.</p>	<b>Byte</b>	<p>This field, along with the "ContactAgency" field above, identifies which entity calculated the values in the record and which (set of) methods were used to calculate them. These fields allow for multiple entries for the same population and year. Thus, it is possible to share values that are based on different assumptions.</p> <p>If only one set of methods is used to calculate the values for all years for a population, enter "1" for all records. Even if methods changed, you can enter "1" for all records if there is always only one record per year for a population.</p> <p>If more than one set of methods is used to calculate final values over a range of years for a population, use this field to indicate which records are meant to go together. For example, if method 1 was used to calculate values for 1960 through 1994, and method 2 was used to calculate values for 1980 through 2013, then there will be more than one record for the years 1980 through 1994. In such cases you would enter "1" for records that result from the 1960-1994 method, and "2" for records that result from the 1980-2013 method. Similarly, if 3 different methods are proposed in an area for the same years, then use "1" and "2" and "3" to indicate which records belong together. This lets a data user know which records belong together.</p> <p>When more than one record exists for a population X year combination, it is up to biologists using the data to select the value of most use when conducting their day to day business. The ContactAgency and MethodNumber fields allow for this.</p>	
<b>BestValue</b>	<p>A declaration of whether the ContactAgency considers this record to be their approved best estimate for this combination of <u>PopID</u> and <u>SurveyYear</u>.</p> <p>When a ContactAgency provides &gt;1 record for that combination each record will have a different value in the MethodNumber field. "Yes" in this BestValue field indicates this record contains the indicator value the agency recognizes as their best estimate.</p>	<b>Text 13</b>	<p><u>Acceptable values:</u> [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Yes [The entity (tribe, state agency, etc.) that created this record recognizes it as their approved best estimate.]</li> <li>• No [Not recognized as the best estimate provided by that entity.]</li> <li>• Not specified</li> </ul> <p>Notes regarding the combination of fields specified in the "Field Description" column:</p> <ol style="list-style-type: none"> <li>1. When only one record exists for the combination, BestValue generally should be "Yes". ("Should be", but not "must be".)</li> <li>2. It is acceptable for all alternatives to have "No". "Yes" can be used a maximum of once per agency for the combination.</li> <li>3. Different contact agencies can each specify "Yes" for the same combination.</li> </ol>	



Field Name	Field Description	Data Type	Codes/Conventions for Presmolt Abundance Table	
<b>General Approach</b>	The general class of method(s) used to make the abundance estimate.	<b>Text 255</b>	Acceptable values: <ul style="list-style-type: none"> <li>• Snorkeling</li> <li>• Mark/recapture estimate</li> <li>• Removal estimate</li> <li>• Presmolt tagging with downmigrant trap recapture</li> <li>• Down-migrant trapping</li> <li>• Not applicable</li> </ul> (Contact Mike Banach at 503-595-3152 if you need to add to this list.)	Because there are no dedicated "metric" fields in this table, if you wish to include metric-level information then put the following in the MethodAdjustments field: <ul style="list-style-type: none"> <li>• For mark/recapture estimates include number of reaches sampled, total number of reaches, reach lengths, total survey length/area by habitat type, total length/area expanded to by habitat type, and density (by habitat type).</li> <li>• For presmolt tagging with downmigrant trap recaptures include parr to smolt survival rate &amp; smolt abundance (to back-calculate summer parr numbers), number of parr marked, and number recaptured.</li> <li>• For down-migrant trapping, include total number captured and overall trapping efficiency weighted by trapping period, if available.</li> </ul>
<b>Indicators</b>				
<b>Abundance</b>	The point estimate for <u>natural origin</u> presmolt abundance.	<b>Single</b>	Required if NullRecord = "No". Estimated number of natural origin presmolts for the particular year (date?) indicated. "Natural origin" means the fish's parents spawned in the wild. Provide whole numbers only, not decimal values. The statistical approach used to generate the estimate should be thoroughly explained in the methods referenced in the MethodDocumentation field.	
AbundanceLowerLimit	The lower limit of the confidence interval for the Abundance field.	Single	Minimum value = 0. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).	
AbundanceUpperLimit	The upper limit of the confidence interval for the Abundance field.	Single	Minimum value = 0.	
AbundanceAlpha	The significance level for the Abundance confidence interval, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".	
<b>Metrics supporting the "Indicators" fields above</b>				
Because of the diversity of ways in which presmolt numbers may be determined, there is not a common set of fields to act as "Metrics" for this data type. Therefore, at least initially, there are no "metrics" fields in this table.				

Field Name	Field Description	Data Type	Codes/Conventions for PresmoltAbundance Table
<b>Age determination</b>			
Age0Prop	The proportion of natural origin fish that were age 0 (brood year +0).	Single	<p>Values must be between 0 and 1. Express with 3 digits to the right of the decimal point.</p> <p>Ages in this table are based on the year spawning occurred, not necessarily the year eggs hatched, so care must be taken in reporting ages.</p> <p>Assigning age can be complicated based on the life history (generally, salmon return and spawn in one year but hatch in the next, steelhead spawn and hatch in the same year). Make sure these details are accounted for in assigning ages. [ Note – This means we would never refer to age 0 salmon, because they hatch in the year after the eggs are laid, but for steelhead and other spring spawners age 0 is a valid age we would expect to see. ]</p> <p>The age distribution numbers reported here must meet three criteria. If these criteria are not met then do not report ages.</p> <ol style="list-style-type: none"> <li>These age fields contain proportions by age for the natural origin fish. They are not the numbers of fish actually aged, nor are they the expanded numbers for a population. Consider this scenario: <ol style="list-style-type: none"> <li>The presmolt number estimate is 100,000 fish (as reported in the Abundance field)</li> <li>500 fish were aged</li> <li>After age analysis is completed it is determined that 45% of the fish (meaning 45,000 of the 100,000) were age 0.</li> <li>In this case the value in this field should be 0.45 (45,000/100,000) not 45,000, 500, or 100,000.</li> </ol> </li> <li>The values of the Age0Prop through Age4PlusProp fields must sum to <math>1.00 \pm 0.01</math>.</li> <li>The age distribution must be derived only from the natural origin fish of the specific population and year this record represents. Therefore, do not include age data that are derived in part or in whole from any other group of fish.</li> </ol> <p>The age information may represent the exact group of fish indicated in the Abundance field, or a somewhat different group of fish. For example, the ages may have been taken from a geographic or temporal subset of the population. Whatever may be the case, ensure this information is included in the protocol and method documentation section below.</p>
Age0PropLowerLimit	The lower limit of the confidence interval for the Age2Prop field.	Single	<p>The associated alpha value is in the AgePropAlpha field, which is found below after the fields for age 4+.</p> <p>Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is less than zero you <u>may</u> report 0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits (these include non-normal distributions, transformations, and/or bootstrapping approaches).</p>
Age0PropUpperLimit	The upper limit of the confidence interval for the Age2Prop field.	Single	<p>Minimum value = 0 and maximum = 1. If the calculated lower limit of the confidence interval is more than 1.0 you <u>may</u> report 1.0 in this field, but we suggest you consider statistical options that prevent values outside of possible limits.</p>
Age1Prop	The proportion of <u>natural origin</u> fish that were age 2 (brood year +1).	Single	See the Codes/Conventions column for the Age0Prop field.
Age1PropLowerLimit	The lower limit of the confidence interval for the Age2Prop field.	Single	See the Codes/Conventions for the Age0PropLowerLimit field.
Age1PropUpperLimit	The upper limit of the confidence interval for the Age2Prop field.	Single	See the Codes/Conventions for the Age0PropUpperLimit field.
Age2Prop	The proportion of <u>natural origin</u> fish that were age 2 (brood year +2).	Single	See the Codes/Conventions column for the Age0Prop field.
Age2PropLowerLimit	The lower limit of the confidence interval for the Age2Prop field.	Single	See the Codes/Conventions for the Age0PropLowerLimit field.
Age2PropUpperLimit	The upper limit of the confidence interval for the Age2Prop field.	Single	See the Codes/Conventions for the Age0PropUpperLimit field.
Age3Prop	The proportion of <u>natural origin</u> fish that were age 3 (brood year +3).	Single	See the Codes/Conventions column for the Age0Prop field.

Field Name	Field Description	Data Type	Codes/Conventions for PresmoltAbundance Table
Age3PropLowerLimit	The lower limit of the confidence interval for the Age3Prop field.	Single	See the Codes/Conventions for the Age0PropLowerLimit field.
Age3PropUpperLimit	The upper limit of the confidence interval for the Age3Prop field.	Single	See the Codes/Conventions for the Age0PropUpperLimit field.
Age4PlusProp	The proportion of <u>natural origin</u> fish that were age 4 or higher (brood year +4) or older.	Single	See the Codes/Conventions column for the Age0Prop field.
Age4PlusPropLowerLimit	The lower limit of the confidence interval for the Age4PlusProp field.	Single	See the Codes/Conventions for the Age0PropLowerLimit field.
Age4PlusPropUpperLimit	The upper limit of the confidence interval for the Age4PlusProp field.	Single	See the Codes/Conventions for the Age0PropUpperLimit field.
AgePropAlpha	The significance level for the Age_x_Prop confidence intervals, expressed as alpha.	Single	Express these values as alpha values. For example, for the 95% confidence limits enter "0.05" in this field, not "95".
<b>Protocol and method documentation</b>			
ProtMethName	The name(s) of all protocols and associated data collection and data analysis methods used to calculate the indicator estimate.	Memo	Provide title of protocol and name(s) of relevant methods used.  Documentation should describe the study design (including spatial, temporal, response and inference designs), annual implementation notes on variations from routine step by step procedures or design criteria, also known as survey design, description of field methodology and analytical approach.
<i>ProtMethURL</i>	URL(s) for published protocols and methods describing the methodology and documenting the derivation of the indicator. If published in MonitoringMethods.org, this link will provide access to study design information and all methods associated with the protocol.	<i>Memo</i>	Required if ProtMethDocumentation is null. Provide URL(s) to source documentation of methodology. For MonitoringMethods.org provide link to the protocol. Methods documentation should include survey design, description of field methodology and analytical approach. URL links may be to online methods documentation resources like MonitoringMethods.org, other online resources, or online literature.  If methodology is unchanged from a previous year, use the previous link references. If methodology changed for this estimate, provide a new link.
<i>ProtMethDocumentation</i>	Citation or documentation that describes the protocol and/or method(s) listed in the ProtMethName field. Include references not documented in MonitoringMethods.org, such as reports, journal articles or other publications that describe the survey design, field methodology and analytical approach used to derive the indicator estimate.	<i>Memo</i>	Required if ProtMethURL is null. Provide a citation(s) to documentation of the methodology used. This may be in the form of reports, journal articles, or other publications that describe the study design (including spatial, temporal, response and inference designs), variations from routine step by step procedures or design criteria, description of field methodology and analytical approach. If the methodology is not yet published, either insert here, or describe in a separate document and make it available online (provide the URL). Leave this field blank if methodology is described in MonitoringMethods.org.  Note: If there is no link to a cited document online, provide a copy of the document to the StreamNet Library (streamnetlibrary.org). The library will scan the document and provide a URL. Post the URL in the ProtMethURL field.  If methodology is unchanged from a previous year, use the previous link or reference citation. If methodology changed, provide a new link or reference citation.

Field Name	Field Description	Data Type	Codes/Conventions for PresmoltAbundance Table
MethodAdjustments	Minor adjustments to a method in a given year that are not described in the method citations above but are important.	Memo*	<p>Be sure to include information specified in the MethodAdjustments field, as appropriate.</p> <p>Give a brief description of changes or adjustments to a standard method if they are NOT described in the methods documentation already provided. If multiple documentation sources are cited, be sure to indicate which method from which document was adjusted.</p> <p>In MonitoringMethods.org, documentation of changes or adjustments to methods or protocols can be described in the Implementation Notes section of each published method or protocol.</p> <p>In this table, because there are no dedicated fields for metrics, this MethodAdjustments field can be used to display metric-level data. If you choose to do so, be aware that these metric-level data will be visible to all in the online query system. See note in the GeneralApproach field above.</p>
OtherDataSources	The ContactAgency field identifies an organization involved in calculating the values in this record. This "OtherDataSources" field identifies additional organizations that provided data or expertise to calculate the indicator(s), metric(s), or age distribution for this record.	Text 255	<p>List all the organizations that provided data used to calculate the values for this record. Entries must meet the requirements as defined in the ContactAgency field. If more than one, separate the entries with the bar character " ".</p> <p>This field is for ADDITIONAL organizations. Do not include the organization identified in the ContactAgency field.</p>
<b>Comments about the data</b>			
<b>Comments</b>	Any issues, problems, questions about this indicator that were not already captured in other places.	<b>Memo*</b>	<p>If possible, it is useful to briefly explain any null "metrics" or "age" fields. Required if NullRecord = "Yes", to explain why the indicators are not available.</p>
<b>Supporting information</b>			
<b>NullRecord</b>	In some years data may not be collected and so indicator values cannot be calculated. For example, high muddy water or wildfires can prevent redd counts that indicator values are based on. This field is used to indicate that indicator values do not exist because the data do not exist to calculate them.	<b>Text 3</b>	<p>Normally "No". A value of "Yes" in this field is a positive statement that the data do not exist to calculate the <u>indicator</u> for the population and time period specified. Metric data and age data may still exist when NullRecord = "Yes".</p> <p>The value of including this field is so that missing data are explicitly accounted for rather than being a perpetually open question that is repeatedly researched. Including these "null" records allows for better data display on the web site, and you are encouraged to create them for years with both earlier and later non-null data. Explain in the Comments field why the indicator cannot be calculated.</p>
<b>DataStatus</b>	Status of the data in the current record.	<b>Text 255</b>	<p><b>Acceptable values:</b> [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Draft [Values in this record are preliminary and have not been thoroughly reviewed.]</li> <li>• Reviewed [Values in this record have been reviewed but are not yet approved as "final".]</li> <li>• Final [Values in this record have been thoroughly reviewed and are considered "final".]</li> </ul>
IndicatorLocation	Where this indicator is maintained at the source.	Memo	If online, provide URL(s).
MetricLocation	Where the supporting metrics are maintained at the source.	Memo	If online, provide URL(s).
MeasureLocation	Where the measurements are maintained that were used for these calculations.	Memo	If online, provide URL(s).
<b>ContactPersonFirst</b>	First name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPersonLast</b>	Last name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPhone</b>	Phone number of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	<p>Preferred format is "123-456-7890". If an extension is included, preferred format is "123-456-7890 ext. 34".</p>

Field Name	Field Description	Data Type	Codes/Conventions for PresmoltAbundance Table
ContactEmail	Email address of person who is the best contact for questions that may arise about this data record.	Text 50	
MetaComments	Comments regarding the supporting information.	Memo*	
<b>Fields needed by people programming the Exchange Network</b>			
If you are a programmer or database manager, refer to Appendix A for additional fields that are part of this table but are not listed here.			

## Section B: Indicators for Hatchery Programs and Populations of Hatchery Origin Fishes

### B1. PNI Table

This table stores information about proportionate natural influence (PNI) of supplementation hatcheries, which is an estimate of the relative selection pressure of the natural environment on an integrated natural / hatchery population.

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Field Name	Field Description	Data Type	Codes/Conventions for PNI Table		
<b>Fields for defining a unique record</b>					
<b>ID</b> (unique)	Value used by computer to identify a record.	<b>Text 36</b>	<p>This value is a globally unique identifier (GUID) exactly 36 characters long.</p> <ul style="list-style-type: none"> <li>• When submitting a new record you may include this value or leave it blank. If you include this value then it will be used by the central system. If you leave it blank then a value will be created for you, and it will be sent back to your system where it must be incorporated.</li> <li>• When updating or deleting records this value must be included.</li> </ul>		
<b>CommonName</b>	Common name of the taxon of fish.	<b>Text 50</b>	Enter the name of the taxon here, even if taxon name is included in the name of the population. Select from the following:	<ul style="list-style-type: none"> <li>• Bull trout</li> <li>• Chinook salmon</li> <li>• Chum salmon</li> <li>• Coho salmon</li> <li>• Sockeye salmon</li> <li>• Steelhead</li> </ul>	Additional species may be added in the future: refer to <a href="http://old.streamnet.org/SpeciesInFW.html">http://old.streamnet.org/SpeciesInFW.html</a> for common names.
<b>Run</b>	Run of fish.	<b>Text 20</b>	Enter the name of the run here, even if run name is included in the name of the population. Entries in this field are not recognized as taxonomic divisions. Select from the following: [Do not include comments in brackets.]	<ul style="list-style-type: none"> <li>• Spring</li> <li>• Summer</li> <li>• Fall</li> <li>• Late fall</li> <li>• Winter</li> <li>• Spring/summer</li> </ul>	<ul style="list-style-type: none"> <li>• Both summer &amp; winter</li> <li>• Early</li> <li>• Late</li> <li>• Both early &amp; late</li> <li>• N/A [For species without recognized runs. For example, bull trout.]</li> </ul>
RecoveryDomain	Name of the "recovery domain," as defined by the NMFS Northwest Region, in which the population falls geographically.	Text 255	Five recovery domains have been defined by NMFS in Washington, Oregon, and Idaho. Select the appropriate one from this list:	<ul style="list-style-type: none"> <li>• Puget Sound</li> <li>• Willamette/Lower Columbia</li> <li>• Interior Columbia</li> <li>• Oregon Coast</li> <li>• Southern Oregon/Northern California Coast</li> </ul>	Further information about recovery domains can be found at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .
ESU_DPS	For populations listed under the federal ESA, this is the name of a defined Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS) as defined by NMFS Northwest Region or by USFWS in which the population falls geographically. For non-listed populations this is the DPS or other name.	Text 255	Enter the name of the ESU or DPS here. Entries in this field are taxonomic divisions defined by NMFS or USFWS, and may be at the species, subspecies, or finer scale. ESUs of salmon north of California are listed at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .		
MajorPopGroup	Name of "major population group" (MPG) or "stratum" as defined by the NMFS Northwest Region, in which the population falls geographically.	Text 255	The term "stratum" is used in the Willamette/Lower Columbia Recovery Domain, while "major population group" is used in other areas. The term "stratum" includes life history considerations as well as geographic criteria, while MPGs are defined geographically. See Appendix C for the list of MPGs / strata.		
<b>PopID</b>	Code for the population(s) of fish represented by this record.	<b>Integer</b>	See Appendix C for the list of population codes. See Appendix E if you need a code for a population (or superpopulation) not already in the list.		

Field Name	Field Description	Data Type	Codes/Conventions for PNI Table
ESAListed	Flag indicating whether the hatchery fish are part of the ESU or DPS in which it falls geographically.	Text 3	<p>Acceptable values:</p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul> <p>If you are unsure about a particular hatchery stock's inclusion in an ESU/DPS, information can be found at <a href="https://www.federalregister.gov/articles/2014/04/14/2014-08347/endangered-and-threatened-wildlife-final-rule-to-revise-the-code-of-federal-regulations-for-species">https://www.federalregister.gov/articles/2014/04/14/2014-08347/endangered-and-threatened-wildlife-final-rule-to-revise-the-code-of-federal-regulations-for-species</a>.</p>
CBFWApopName	Population name as defined by CBFWA for subbasin planning purposes, from subbasin plans and agencies.	Text 255	<p>This may include non-listed populations, or cases where geographic area does not match a defined population of a listed species. See Appendix D for the list of these population names.</p> <p>Fill this field even when a population's geographic extent coincides with NWR name for a listed population.</p>
CommonPopName	Population name used by local biologists.	Text 255	Often this is simply the name of the population(s) as written on the original time series spreadsheets.
<b>PopFit</b>	Categorization of how well the geographic extent of the PNI estimate corresponds to the geographic definition of the population.	<b>Text 8</b>	<p>This value must be "Multiple" if PopID represents a superpopulation.</p> <p>Acceptable values: <i>[Do not include comments in brackets.]</i></p> <ul style="list-style-type: none"> <li>• Same <i>[Estimate represents one entire population, the whole population, and nothing but the population.]</i></li> <li>• Portion <i>[Estimate represents a portion of one population. (Describe in PopFitNotes field.)]</i></li> <li>• Multiple <i>[Estimate is from more than one population. (Describe in PopFitNotes field.)]</i></li> </ul>
<b>PopFitNotes</b>	Text description of how well the PNI value corresponds to the defined population, and why the data are not at the scale of a single population.	<b>Memo</b>	<p>This field is required if the PopFit field is "Portion" or "Multiple".</p> <p>If the PopFit field is "Portion" or "Multiple", describe the lack of correspondence between the defined population and the fish for which the hatchery spawners estimate was made. Also state <i>why</i> this scale of data was used to represent the population instead of true population-scale data. (Examples: "Data not available at exact scale of this population."; "Data at this scale best represent the population.")</p>
HatcheryProgramName	Hatchery program this record describes.	Text 255	
HatcheryStockName	Stock of hatchery fish this record describes.	Text 255	
Hatchery	Name of the hatchery or hatchery complex associated with the time series.	Text 255	<p>This may be any of the following:</p> <ul style="list-style-type: none"> <li>• the name of a hatchery.</li> <li>• the name of a hatchery complex.</li> <li>• the names of multiple hatcheries if appropriate for the time series. (Providing alphabetically is preferred.)</li> </ul> <p>To allow for easy sorting, it is preferable to use hatchery names as listed in the StreamNet database at <a href="http://q.streamnet.org/Request.cfm?cmd=BuildPicklist&amp;NewQuery=BuildCriteria&amp;PicklistItem=Hatchery">http://q.streamnet.org/Request.cfm?cmd=BuildPicklist&amp;NewQuery=BuildCriteria&amp;PicklistItem=Hatchery</a>.</p>
HatcheryProgramType	Purpose of the hatchery program this record represents.	Text 40	<p>Acceptable values for this field are taken from the "Implementation and Compliance Monitoring" section of Appendix C in Beasley, C.A., et al. 2008. Recommendations for broad scale monitoring to evaluate the effects of hatchery supplementation on the fitness of natural salmon and steelhead populations. Final report of the Ad hoc supplementation monitoring and evaluation workgroup. Available at <a href="http://old.streamnet.org/CoordinatedAssessments/AHSWG-2008-FinalReport.pdf">http://old.streamnet.org/CoordinatedAssessments/AHSWG-2008-FinalReport.pdf</a>. Descriptions (in italics) are derived from the entire document as necessary. <i>[Do not include comments in brackets.]</i></p> <ul style="list-style-type: none"> <li>• Segregated harvest augmentation <i>[Purpose is to provide for harvest while attempting to keep hatchery origin fish from spawning in the wild with natural origin fish.]</i></li> <li>• Integrated supplementation <i>[Purpose is to rebuild abundance of depressed naturally-spawning populations. Hatchery origin and natural origin fish are intentionally encouraged to interbreed in the hatchery and in the natural environment.]</i></li> <li>• Integrated supplementation/mitigation <i>[Like "integrated supplementation" program, but with added purpose of providing for harvest to mitigate for loss of harvest opportunities.]</i></li> <li>• Conservation <i>[This hatchery program type was listed in Appendix C of Beasley et al. 2008, but the document did not provide any definition or description of this program type.]</i></li> </ul>
<b>SpawningYear</b>	The four-digit year in which spawning of this species (and run where appropriate) began.	<b>Integer</b>	<p>In cases where an unusual population is spawned uncharacteristically early (before January 1 for spring spawners) or late (after December 31 for fall spawners) for the species (and perhaps run), assign the year based on the majority of populations of this species/run in order to be consistent for all members of the spawning cohort. For example, most coho spawn in fall but a few populations do not begin spawning until after Jan. 1. The spawning year assigned for these unusual populations would match the other populations that spawned in the fall, even though these particular populations did not begin spawning until after December 31.</p>

Field Name	Field Description	Data Type	Codes/Conventions for PNI Table	
<b>ContactAgency</b>	Agency, tribe, or other entity, or person responsible for these data that is the best contact for questions that may arise about this data record.	<b>Text 255</b>	<p>Entries in this field must precisely match a name in the StreamNet agency list. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• Columbia River Inter-Tribal Fish Commission</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Tribes and Bands of the Yakama Nation</li> <li>• Confederated Tribes of the Umatilla Indian Reservation</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> </ul>	<ul style="list-style-type: none"> <li>• Fish Passage Center</li> <li>• Idaho Department of Fish and Game</li> <li>• Nez Perce Tribe</li> <li>• Northwest Indian Fisheries Commission</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Quantitative Consultants, Inc.</li> <li>• Shoshone-Bannock Tribes</li> <li>• Spokane Tribe of Indians</li> <li>• U.S. Fish and Wildlife Service</li> <li>• Washington Department of Fish and Wildlife</li> </ul>
<b>MethodNumber</b>	<p>This field represents the method(s) used to calculate the values in the "Indicators" and "Metrics" sections.</p> <p>This field is used in conjunction with the ContactAgency field. See the Codes/Conventions column for details.</p>	<b>Byte</b>	<p>This field, along with the "ContactAgency" field above, identifies which entity calculated the values in the record and which (set of) methods were used to calculate them. These fields allow for multiple entries for the same population and year. Thus, it is possible to share values that are based on different assumptions.</p> <p>If only one set of methods is used to calculate the values for all years for a population, enter "1" for all records. Even if methods changed, you can enter "1" for all records if there is always only one record per year for a population.</p> <p>If more than one set of methods is used to calculate final values over a range of years for a population, use this field to indicate which records are meant to go together. For example, if method 1 was used to calculate values for 1960 through 1994, and method 2 was used to calculate values for 1980 through 2013, then there will be more than one record for the years 1980 through 1994. In such cases you would enter "1" for records that result from the 1960-1994 method, and "2" for records that result from the 1980-2013 method. Similarly, if 3 different methods are proposed in an area for the same years, then use "1" and "2" and "3" to indicate which records belong together. This lets a data user know which records belong together.</p> <p>When more than one record exists for a population X year combination, it is up to biologists using the data to select the value of most use when conducting their day to day business. The ContactAgency and MethodNumber fields allow for this.</p>	
<b>BestValue</b>	<p>A declaration of whether the ContactAgency considers this record to be their approved best estimate for this combination of <u>PopID</u> and <u>SpawningYear</u>.</p> <p>When a ContactAgency provides &gt;1 record for that combination each record will have a different value in the MethodNumber field. "Yes" in this BestValue field indicates this record contains the indicator value the agency recognizes as their best estimate.</p>	<b>Text 13</b>	<p><u>Acceptable values:</u> [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Yes [The entity (tribe, state agency, etc.) that created this record recognizes it as their approved best estimate.]</li> <li>• No [Not recognized as the best estimate provided by that entity.]</li> <li>• Not specified</li> </ul> <p>Notes regarding the combination of fields specified in the "Field Description" column:</p> <ol style="list-style-type: none"> <li>1. When only one record exists for the combination, BestValue generally should be "Yes". ("Should be", but not "must be".)</li> <li>2. It is acceptable for all alternatives to have "No". "Yes" can be used a maximum of once per agency for the combination.</li> <li>3. Different contact agencies can each specify "Yes" for the same combination.</li> </ol>	



Field Name	Field Description	Data Type	Codes/Conventions for PNI Table
<b>Indicators</b>			
<b><i>PNIIJ</i></b>	Proportionate natural influence index, calculated as  $\text{pNOB}/(\text{pNOB} + \text{pHOS})$ where: <ul style="list-style-type: none"> <li>• pNOB = proportion of broodstock actually spawned in a hatchery that are <u>natural origin</u> fish.</li> <li>• pHOS = proportion of fish spawning naturally that are <u>hatchery origin</u> fish.</li> </ul> Include jacks when calculating this value. (See 'broodstock' in Glossary.)	<b><i>Single</i></b>	Required if the PNIEJ field is null and NullRecord = "No". This is equation 11 from Appendix A of Hatchery Scientific Review Group. 2009. Columbia River Hatchery Reform System-Wide Report. 278 pp. plus appendices. Available from <a href="http://www.hatcheryreform.us">http://www.hatcheryreform.us</a> .  When calculating PNI, do not weight contribution of jacks according to differential reproductive success in the hatchery or the wild. Rather, weight all fish equally based on numbers that spawned.  Express these values as numbers from zero to one, with three digits to the right of the decimal point.  For populations for which "jacks" are not recognized, enter the PNI estimate in this field. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).
<b><i>PNIEJ</i></b>	Proportionate natural influence index, calculated as  $\text{pNOB}/(\text{pNOB} + \text{pHOS})$ where: <ul style="list-style-type: none"> <li>• pNOB = proportion of broodstock actually spawned in a hatchery that are <u>natural origin</u> fish.</li> <li>• pHOS = proportion of fish spawning naturally that are <u>hatchery origin</u> fish.</li> </ul> Exclude jacks when calculating this value.	<b><i>Single</i></b>	Required if the PNIIJ field is null and NullRecord = "No". This is equation 11 from Appendix A of Hatchery Scientific Review Group. 2009. Columbia River Hatchery Reform System-Wide Report. 278 pp. plus appendices. Available from <a href="http://www.hatcheryreform.us">http://www.hatcheryreform.us</a> .  Because jacks are not included in this value, the issue of weighting jack contributions is not applicable to this field.  Express these values as numbers from zero to one, with three digits to the right of the decimal point.  For populations for which "jacks" are not recognized, leave this field blank. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).
<b>Metrics supporting the "Indicators" fields above</b>			
HOSIJH	The number of <u>hatchery origin</u> fish spawned in the hatchery, including jacks. (This is the same value reported in HOSIJ field of the draft HatcherySpawning table.)	Single	"Hatchery origin" means the fish's parents were spawned in captivity rather than spawning naturally in the wild. Provide whole numbers only, not decimal values. For populations for which "jacks" are not recognized, enter the HOS-H estimate in this field. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).
NOSIJH	The number of <u>natural origin</u> fish spawned in the hatchery, including jacks. (This is the same value reported in NOSIJ field of the draft HatcherySpawning table.)	Single	This value reflects natural origin fish taken and spawned in the hatchery as part of the year's egg take operations. "Natural origin" means the fish's parents spawned in the wild. Provide whole numbers only, not decimal values. For populations for which "jacks" are not recognized, enter the NOS-H estimate in this field. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).
NOSAIJ	The point estimate for <u>natural origin</u> spawner abundance, including jacks, spawning in the wild. (This is the same value reported in NOSAIJ field of the NOSA table for the population and year specified for the current record.)	Single	Estimated number of natural origin spawners contributing to spawning in the wild in a particular year. "Spawners" includes jacks. "Natural origin" means the fish's parents spawned in the wild. The statistical approach used to generate the estimate should be thoroughly explained in the methods referenced in the MethodDocumentation field. Provide whole numbers only, not decimal values. For populations for which "jacks" are not recognized, enter the NOSA estimate in this field. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).
HOSAIJ	The point estimate for <u>hatchery origin</u> spawner abundance, including jacks, spawning in the wild.	Single	Estimated number of hatchery origin spawners contributing to spawning in the wild in a particular year. "Spawners" includes jacks. "Hatchery origin" means the fish's parents were spawned in captivity. The statistical approach used to generate the estimate should be thoroughly explained in the methods referenced in the MethodDocumentation field. Provide whole numbers only, not decimal values. For populations for which "jacks" are not recognized, enter the HOSA estimate in this field. The only species for which jacks are recognized are Chinook salmon, coho salmon, chum salmon (rarely), and winter steelhead (rarely).

Field Name	Field Description	Data Type	Codes/Conventions for PNI Table
HOSEJH	The number of <u>hatchery origin</u> fish spawned in the hatchery, excluding jacks. (This is the same value reported in HOSEJ field of the draft HatcherySpawning table.)	Single	"Hatchery origin" means the fish's parents were spawned in captivity rather than spawning naturally in the wild. Provide whole numbers only, not decimal values.  For populations for which "jacks" are not recognized, leave this field blank.
NOSEJH	The number of <u>natural origin</u> fish spawned in the hatchery, excluding jacks. (This is the same value reported in NOSEJ field of the draft HatcherySpawning table.)	Single	This value reflects natural origin fish taken and spawned in the hatchery as part of the year's egg take operations. "Natural origin" means the fish's parents spawned in the wild. Provide whole numbers only, not decimal values.  For populations for which "jacks" are not recognized, leave this field blank.
NOSAEJ	The point estimate for <u>natural origin</u> spawner abundance, excluding jacks, spawning in the wild. (This is the same value reported in NOSAEJ field of the NOSA table for the population and year specified for the current record.)	Single	Estimated number of natural origin spawners contributing to spawning in the wild in a particular year. "Spawners" does not include jacks. "Natural origin" means the fish's parents spawned in the wild. The statistical approach used to generate the estimate should be thoroughly explained in the methods referenced in the MethodDocumentation field. Provide whole numbers only, not decimal values.  For populations for which "jacks" are not recognized, leave this field blank.
HOSAEJ	The point estimate for <u>hatchery origin</u> spawner abundance, excluding jacks, spawning in the wild.	Single	Estimated number of hatchery origin spawners contributing to spawning in the wild in a particular year. "Spawners" does not include jacks. "Hatchery origin" means the fish's parents were spawned in captivity. The statistical approach used to generate the estimate should be thoroughly explained in the methods referenced in the MethodDocumentation field. Provide whole numbers only, not decimal values.  For populations for which "jacks" are not recognized, leave this field blank.
<b>Protocol and method documentation</b>			
ProtMethName	The name(s) of all protocols and associated data collection and data analysis methods used to calculate the indicator estimate.	Memo	Provide title of protocol and name(s) of relevant methods used.  Documentation should describe the study design (including spatial, temporal, response and inference designs), annual implementation notes on variations from routine step by step procedures or design criteria, also known as survey design, description of field methodology and analytical approach.
<i>ProtMethURL</i>	URL(s) for published protocols and methods describing the methodology and documenting the derivation of the indicator. If published in MonitoringMethods.org, this link will provide access to study design information and all methods associated with the protocol.	<i>Memo</i>	Required if ProtMethDocumentation is null. Provide URL(s) to source documentation of methodology. For MonitoringMethods.org provide link to the protocol. Methods documentation should include survey design, description of field methodology and analytical approach. URL links may be to online methods documentation resources like MonitoringMethods.org, other online resources, or online literature.  If methodology is unchanged from a previous year, use the previous link references. If methodology changed for this estimate, provide a new link.
<i>ProtMethDocumentation</i>	Citation or documentation that describes the protocol and/or method(s) listed in the ProtMethName field. Include references not documented in MonitoringMethods.org, such as reports, journal articles or other publications that describe the survey design, field methodology and analytical approach used to derive the indicator estimate.	<i>Memo</i>	Required if ProtMethURL is null. Provide a citation(s) to documentation of the methodology used. This may be in the form of reports, journal articles, or other publications that describe the study design (including spatial, temporal, response and inference designs), variations from routine step by step procedures or design criteria, description of field methodology and analytical approach. If the methodology is not yet published, either insert here, or describe in a separate document and make it available online (provide the URL). Leave this field blank if methodology is described in MonitoringMethods.org.  Note: If there is no link to a cited document online, provide a copy of the document to the StreamNet Library (streamnetlibrary.org). The library will scan the document and provide a URL. Post the URL in the ProtMethURL field.  If methodology is unchanged from a previous year, use the previous link or reference citation. If methodology changed, provide a new link or reference citation.

Field Name	Field Description	Data Type	Codes/Conventions for PNI Table
MethodAdjustments	Minor adjustments to a method in a given year that are not described in the method citations above but are important.	Memo*	Give a brief description of changes or adjustments to a standard method if they are NOT described in the methods documentation already provided. If multiple documentation sources are cited, be sure to indicate which method from which document was adjusted.  In MonitoringMethods.org, documentation of changes or adjustments to methods or protocols can be described in the Implementation Notes section of each published method or protocol.
OtherDataSources	The ContactAgency field identifies an organization involved in calculating the values in this record. This "OtherDataSources" field identifies additional organizations that provided data or expertise to calculate the indicator(s), metric(s), or age distribution for this record.	Text 255	List all the organizations that provided data used to calculate the values for this record. Entries must meet the requirements as defined in the ContactAgency field. If more than one, separate the entries with the bar character " ".  This field is for ADDITIONAL organizations. Do not include the organization identified in the ContactAgency field.
<b>Comments about the data</b>			
<b>Comments</b>	Any issues, problems, questions about this indicator that were not already captured in other places.	<b>Memo*</b>	If possible, it is useful to briefly explain any null "metrics" or "age" fields. Required if NullRecord = "Yes", to explain why the indicators are not available.
<b>Supporting information</b>			
<b>NullRecord</b>	In some years data may not be collected and so indicator values cannot be calculated. For example, high muddy water or wildfires can prevent redd counts that indicator values are based on. This field is used to indicate that indicator values do not exist because the data do not exist to calculate them.	<b>Text 3</b>	Normally "No". A value of "Yes" in this field is a positive statement that the data do not exist to calculate the <u>indicator</u> for the population and time period specified. Metric data and age data may still exist when NullRecord = "Yes".  The value of including this field is so that missing data are explicitly accounted for rather than being a perpetually open question that is repeatedly researched. Including these "null" records allows for better data display on the web site, and you are encouraged to create them for years with both earlier and later non-null data. Explain in the Comments field why the indicator cannot be calculated.
<b>DataStatus</b>	Status of the data in the current record.	<b>Text 255</b>	<u>Acceptable values:</u> [Do not include comments in brackets.] <ul style="list-style-type: none"> <li>• Draft [Values in this record are preliminary and have not been thoroughly reviewed.]</li> <li>• Reviewed [Values in this record have been reviewed but are not yet approved as "final".]</li> <li>• Final [Values in this record have been thoroughly reviewed and are considered "final".]</li> </ul>
IndicatorLocation	Where this indicator is maintained at the source.	Memo	If online, provide URL(s).
MetricLocation	Where the supporting metrics are maintained at the source.	Memo	If online, provide URL(s).
MeasureLocation	Where the measurements are maintained that were used for these calculations.	Memo	If online, provide URL(s).
<b>ContactPersonFirst</b>	First name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPersonLast</b>	Last name of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	
<b>ContactPhone</b>	Phone number of person who is the best contact for questions that may arise about this data record.	<b>Text 30</b>	Preferred format is "123-456-7890". If an extension is included, preferred format is "123-456-7890 ext. 34".
<b>ContactEmail</b>	Email address of person who is the best contact for questions that may arise about this data record.	<b>Text 50</b>	
MetaComments	Comments regarding the supporting information.	Memo*	
<b>Fields needed by people programming the Exchange Network</b>			
If you are a programmer or database manager, refer to Appendix A for additional fields that are part of this table but are not listed here.			

### III. Appendices

#### Appendix A. Fields included in every data table by reference

The fields shown in this appendix are included in all data tables of sections A and B of this document. (But not the Populations or SuperPopulations tables.) These fields are for use by the programmers implementing the Exchange Network system; everyone else can ignore them. In the interest of saving space in the document, easing editing of this document, and keeping these fields out of the way of people who don't need to see them, these fields are included here by reference rather than being shown in every table above. At this time none of these fields are required except the "SubmitAgency" and "Publish" fields.

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Field Name	Field Description	Data Type	Codes/Conventions	
<b>Fields needed by people programming the Exchange Network</b>				
<b>SubmitAgency</b>	<p>Initials or acronym for the agency, tribe, or other entity, or name of person, that sent this record of data to the exchange network node at StreamNet.</p> <p>Note that it is possible for one entity to share data with another, and that second entity sends the record to the exchange network node. For example, the Shoshone-Bannock Tribes may send data to IDFG, who in turn sends those data to the exchange network. In such a case the Sho-Ban Tribes would be identified as the contact agency for the data, but the "SubmitAgency" would be IDFG.</p>	<b>Text 15</b>	<p>Entries in this field must precisely match a name in the Acronym field of the StreamNet agency list unless it is for an individual. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• CRITFC = Columbia River Inter-Tribal Fish Commission</li> <li>• Colville Tribes = Confederated Tribes of the Colville Reservation</li> <li>• YN = Confederated Tribes and Bands of the Yakama Nation</li> <li>• CTUIR = Confederated Tribes of the Umatilla Indian Reservation</li> </ul>	<ul style="list-style-type: none"> <li>• CTWSIR = Confederated Tribes of the Warm Springs Reservation of Oregon</li> <li>• Biomark = Biomark, Inc.</li> <li>• FPC = Fish Passage Center</li> <li>• IDFG = Idaho Department of Fish and Game</li> <li>• NPT = Nez Perce Tribe</li> <li>• NWIFC = Northwest Indian Fisheries Commission</li> <li>• ODFW = Oregon Department of Fish and Wildlife</li> <li>• QCI = Quantitative Consultants, Inc.</li> <li>• SBT = Shoshone-Bannock Tribes</li> <li>• STOI = Spokane Tribe of Indians</li> <li>• USFWS = U.S. Fish and Wildlife Service</li> <li>• WDFW = Washington Department of Fish and Wildlife</li> </ul>
RefID	The unique StreamNet reference ID number that identifies the source document or database from which the record was obtained.	Long int	<p>Not applicable = 98</p> <p>Pre-Data Exchange - 0 - 1,000</p> <p>WDFW = 10,000-19,999; 100,000-199,999</p> <p>CRITFC = 20,000-29,999; 200,000-299,999</p> <p>CCT = 299,001-299,999</p> <p>USFWS = 30,000-39,999; 300,000-399,999</p>	<p>IDFG = 40,000-49,999; 400,000-499,999</p> <p>ODFW = 50,000-59,999; 500,000-599,999</p> <p>PSMFC = 60,000-69,999; 600,000-699,999</p> <p>MFWP = 70,000-89,999; 700,000-799,999</p> <p>CDFG = 90,000-99,999; 800,000-899,999</p>
UpdDate	The date and time that the record was created or updated. For data obtained in electronic format from another source it can reflect the date and time of data capture or of conversion to Coordinated Assessment/StreamNet standards.	Datetime	This can be the time a record was created, or the last time it was edited. This field tells the end user when the record was last modified at the source organization.	
DataEntry	Compiler's name.	Text 50	The name of the person who entered the record.	
DataEntryNotes	Notes about this record by the compiler identified in the "DataEntry" field.	Memo*	Notes for the compiler to reference field office, contact, or any other information.	
CompilerRecordID	Agency record ID maintained by the data submitter.	Text 36	This field can be used in any way the compiler may find helpful. For example, it can be used to create a link between the Coordinated Assessments exchange network and an internal system such as ODFW's Salmon Tracker.	

Field Name	Field Description	Data Type	Codes/Conventions
<b>Publish</b>	Yes/no value indicating whether this record should be shared freely with all public users via the Exchange Network. If "No" then the record can only be accessed by using the apikey that created it.	<b>Text 3</b>	Acceptable values: <i>[Do not include comments in brackets.]</i> <ul style="list-style-type: none"> <li>• Yes <i>[Record will be shared with public via Exchange Network.]</i></li> <li>• No <i>[Record will <u>not</u> be shared with public via Exchange Network.]</i></li> </ul> Setting this value to "No" lets you test your systems and avoid having such test records be output on the public system.

## Appendix B. Glossary

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Terms in this list are defined in the following way for use in this document.

**Broodstock:** Fish set aside for spawning in a hatchery setting.

NOTE 1: Broodstock may be fish raised in a hatchery their entire lives ('captive broodstock'), fish released to grow that returned to spawn ('hatchery broodstock' for salmon and steelhead), and/or fish obtained from natural populations ('natural broodstock' or 'wild broodstock'). In hatchery jargon "hatchery broodstock" refers only to fish of hatchery origin.

NOTE 2: Broodstock selection and spawning can be complicated. Often, not all returning fish will be part of the broodstock. Also, broodstock may be brought in from other hatcheries or from natural populations. Further, in many cases not all of the identified broodstock will be spawned due to pre-spawning mortality, broodstock set-aside in excess of spawning needs, skewed sex ratio, selection of individuals, and other factors. In a simple case where only returning salmon are selected as broodstock, the broodstock is usually a subset of the total return, and the hatchery spawners are usually a subset of the broodstock.

## Appendix C. Recovery Domains, Species, ESUs, MPGs, and Populations Defined by NMFS and NPCC/CBFWA/CRITFC

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The tables in the main portion of this document ask that the species common name, run, evolutionarily significant unit (ESU), recovery domain, major population groups (MPG), and fish population code be provided whenever possible and appropriate. The current list of ESUs and MPGs defined by NMFS, along with population names and population codes, can be found at <http://www.streamnet.org/ca-populations>.

MPGs are groups of populations intermediate in scope between individual populations and ESUs. MPGs are sometimes called "strata" in the Willamette/Lower Columbia recovery domain and "geographic regions" in the Puget Sound recovery area. Further information about MPGs can be found at the Northwest Fisheries Science Center web site.

## **Appendix D. Names of Populations Defined by NPCC / CBFWA / CRITFC (from Subbasin Planning)**

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Listed below in hierarchical order are the names of fish populations used by NPCC for subbasin planning. This list was developed by CBFWA and CRITFC from the subbasin plans. The names shown were provided by David Graves of CRITFC on September 26, 2012. Geographic representations of the populations can be found at <http://fishery.critfc.org/FiSci/FishUnitsIntroMap.htm>.

### **Chinook salmon**

- **Fall**

- Big Creek Fall Chinook
- Clackamas River Fall Chinook
- Clatskanie River Fall Chinook
- Clearwater River Fall Chinook
- Columbia Upper Gorge Tributaries Fall Chinook
- Coweeman River Fall Chinook
- Deschutes River Fall Chinook
- Elochoman River Fall Chinook
- Grande Ronde River Fall Chinook
- Grays River Fall Chinook
- Hanford Reach Fall Chinook
- Hood River Fall Chinook
- Imnaha River Fall Chinook
- Kalama River Fall Chinook
- Klickitat River Fall Chinook
- Lewis River Early Fall Chinook
- Lewis River Late Fall Chinook
- Lower Columbia Gorge Tributaries Fall Chinook
- Lower Cowlitz River Fall Chinook
- Lower Snake River Fall Chinook
- Lower Yakima River Fall Chinook
- Mill Creek Fall Chinook
- Rock Creek Fall Chinook
- Salmon Creek Early Fall Chinook
- Sandy River Early Fall Chinook
- Scappoose Creek Fall Chinook
- Snake Hell's Canyon Fall Chinook
- Toutle River Fall Chinook
- Tucannon River Fall Chinook
- Umatilla River Fall Chinook
- Upper Cowlitz River Fall Chinook
- Washougal River Fall Chinook

- White Salmon Bright Fall Chinook
- White Salmon Tule Fall Chinook
- Youngs Bay Fall Chinook

- **Spring**

- American River Spring Chinook
- Calapooia River Spring Chinook
- Catherine Creek Spring Chinook
- Cispus River Spring Chinook
- Clackamas River Spring Chinook
- East Fork Salmon River Spring Chinook
- Entiat River Spring Chinook
- Granite Creek John Day Spring Chinook
- Hood River Spring Chinook
- Kalama River Spring Chinook
- Klickitat River Spring Chinook
- Lewis River Spring Chinook
- Little White Salmon River Spring Chinook
- Lolo Creek Spring Chinook
- Lookingglass Creek Spring Chinook
- Malheur River Spring Chinook
- McKenzie River Spring Chinook
- Methow River Spring Chinook
- Middle Fork John Day Spring Chinook
- Middle Fork Willamette River Spring Chinook
- Minam River Spring Chinook
- Molalla/Pudding River Spring Chinook
- Naches River Spring Chinook
- North Fork John Day Spring Chinook
- North Santiam River Spring Chinook
- Okanogan River Spring Chinook
- Potlatch River Spring Chinook
- Sandy River Spring Chinook
- Shitike Creek Spring Chinook
- South Santiam River Spring Chinook
- Tilton River Spring Chinook

- Toutle River Spring Chinook
- Umatilla River Spring Chinook
- Upper Cowlitz River Spring Chinook
- Upper Grande Ronde Spring Chinook
- Upper John Day Spring Chinook
- Upper Yakima River Spring Chinook
- Walla Walla Spring Chinook
- Wallowa - Lostine River Spring Chinook
- Warm Springs River Spring Chinook
- Wenatchee River Spring Chinook
- White Salmon Spring Chinook
- Wind River Spring Chinook
- **Spring/summer**
  - Asotin Creek Spring/Summer Chinook
  - Bear Valley Creek Spring/Summer Chinook
  - Big Creek Spring/Summer Chinook
  - Big Sheep Creek Spring/Summer Chinook
  - Camas Creek Spring/Summer Chinook
  - Chamberlain Creek Spring/Summer Chinook
  - East Fork South Fork Salmon River Spring/Summer Chinook
  - Imnaha River Mainstem Spring/Summer Chinook
  - Lapwai/Big Canyon Spring/Summer Chinook
  - Lawyer Creek Spring/Summer Chinook
  - Lemhi River Spring/Summer Chinook
  - Little Salmon River Spring/Summer Chinook
  - Lochsa River Spring/Summer Chinook
  - Loon Creek Spring/Summer Chinook
  - Lower North Fork Clearwater River Spring/Summer Chinook
  - Marsh Creek Spring/Summer Chinook
  - Meadow Creek Spring/Summer Chinook
  - Middle Fork Salmon River above Indian Creek Spring/Summer Chinook
  - Middle Fork Salmon River below Indian Creek Spring/Summer Chinook
  - Moose Creek Spring/Summer Chinook
  - North Fork Salmon River Spring/Summer Chinook
  - Pahsimeroi River Spring/Summer Chinook
  - Panther Creek Spring/Summer Chinook
  - Salmon River Lower Mainstem below Redfish Lake Spring/Summer Chinook
  - Salmon River Upper Mainstem above Redfish Lake Spring/Summer Chinook
  - Secesh River Spring/Summer Chinook
  - South Fork Salmon River Spring/Summer Chinook
  - Sulphur Creek Spring/Summer Chinook
  - Tucannon River Spring/Summer Chinook
  - Upper North Fork Clearwater River Spring/Summer Chinook
  - Upper Selway River Spring/Summer Chinook
  - Upper South Fork Clearwater River Spring/Summer Chinook

- Valley Creek Spring/Summer Chinook
- Wenaha River Spring/Summer Chinook
- Yankee Fork Spring/Summer Chinook

## Chum salmon

- **Fall**
  - Cowlitz River Fall Chum
- **(No run indicated)**
  - Big Creek Chum
  - Clackamas River Chum
  - Clatskanie River Chum
  - Cowlitz River Summer Chum
  - Elochoman River Chum
  - Grays/Chinook Rivers Chum
  - Kalama River Chum
  - Lewis River Chum
  - Lower Columbia Gorge Tributaries Chum
  - Lower Columbia Mainstem Chum
  - Mill Creek Chum
  - Sandy River Chum
  - Scappoose Creek Chum
  - Upper Gorge Tributaries Chum
  - Washougal River Chum
  - Youngs Bay Chum

## Coho salmon

- **(No run indicated)**
  - Big Creek Coho
  - Cispus River Coho
  - Clackamas River Coho
  - Clatskanie River Coho
  - Coweeman River Coho
  - East Fork Lewis River Coho
  - Elochoman Coho
  - Entiat River Coho
  - Fifteenmile Creek Coho
  - Grays/Chinook Rivers Coho
  - Hood River Coho
  - Kalama River Coho
  - Lower Columbia Gorge Tributaries Coho
  - Lower Cowlitz River Coho
  - Mill Creek Coho
  - Molalla/Pudding River Coho

- North Fork Lewis River Coho
- North Fork Toutle River Coho
- North Santiam River Coho
- Salmon Creek Coho
- Sandy River Coho
- Scappoose Creek Coho
- South Fork Toutle River Coho
- Tilton River Coho
- Umatilla River Coho
- Upper Cowlitz River Coho
- Washougal River Coho
- Wenatchee River Coho
- White Salmon Coho
- Youngs Bay Coho

## Kokanee

- **(No run indicated)**
  - Bumping Lake Kokanee
  - Cle elum Lake Kokanee
  - Coeur d'Alene Lake Kokanee
  - Crab Creek Kokanee
  - Crane Prairie Reservoir Kokanee
  - Kachess Lake Kokanee
  - Keechelus Lake Kokanee
  - Lake Billy Chinook Kokanee
  - Lake Chelan Kokanee
  - Lake Osoyoos Kokanee
  - Lake Pend Oreille Kokanee
  - Lake Wenatchee Kokanee
  - Paulina Lake Kokanee
  - Payette Lake Kokanee
  - Priest Lake Kokanee
  - Rimrock Lake Kokanee
  - San Poil River Kokanee
  - Spokane River Kokanee
  - Suttle Lake Kokanee
  - Upper Columbia River Kokanee
  - Wallowa Lake Kokanee
  - Wickiup Reservoir Kokanee

## Sockeye salmon

- **(No run indicated)**
  - Okanogan River Sockeye
  - Snake River (Redfish Lake) Sockeye Salmon
  - Snake River Sockeye (Stanley, Petit, Alturas, other lakes)
  - Wenatchee River Sockeye
  - Yakima River Sockeye

## Steelhead

- **Summer**
  - Asotin Creek Summer Steelhead
  - Burnt River Summer Steelhead
  - Chamberlain Creek Summer Steelhead
  - Clearwater River Lower Mainstem Summer Steelhead
  - Crab Creek Summer Steelhead
  - Deschutes Crooked River Summer Steelhead
  - Deschutes River Eastside Tributaries Summer Steelhead
  - Deschutes River Westside Tributaries Summer Steelhead
  - East Fork Lewis River Summer Steelhead
  - East Fork Salmon River Summer Steelhead
  - Entiat River Summer Steelhead
  - Hood River Summer Steelhead
  - Imnaha River Summer Steelhead
  - Joseph Creek Summer Steelhead
  - Kalama River Summer Steelhead
  - Klickitat River Summer Steelhead
  - Lemhi River Summer Steelhead
  - Little and Lower Salmon River Summer Steelhead
  - Lochsa River Summer Steelhead
  - Lolo Creek Summer Steelhead
  - Lower Grande Ronde Summer Steelhead
  - Lower John Day Summer Steelhead
  - Lower Malheur River Summer Steelhead
  - Lower Middle Fork Salmon River Summer Steelhead
  - Lower Owyhee River Summer Steelhead
  - Methow River Summer Steelhead
  - Middle Fork John Day Summer Steelhead
  - Naches River Summer Steelhead
  - North Fork Clearwater River Summer Steelhead
  - North Fork John Day Summer Steelhead
  - North Fork Lewis River Summer Steelhead
  - North Fork Salmon River Summer Steelhead
  - Okanogan River Summer Steelhead
  - Pahsimeroi River Summer Steelhead



- Panther Creek Summer Steelhead
- Powder River Summer Steelhead
- Rock Creek Summer Steelhead
- Salmon River Upper Mainstem Summer Steelhead
- Sandy River Summer Steelhead
- Satus Creek Summer Steelhead
- Secesh River Summer Steelhead
- Selway River Summer Steelhead
- Snake Hells Canyon Summer Steelhead
- South Fork Clearwater River Summer Steelhead
- South Fork John Day Summer Steelhead
- South Fork Salmon River Summer Steelhead
- Topenish Creek Summer Steelhead
- Touchet River Summer Steelhead
- Tucannon River Summer Steelhead
- Umatilla River Summer Steelhead
- Upper Grande Ronde Summer Steelhead
- Upper John Day Summer Steelhead
- Upper Malheur River Summer Steelhead
- Upper Middle Fork Salmon River Summer Steelhead
- Upper Owyhee River Summer Steelhead
- Upper Yakima River Summer Steelhead
- Walla Walla River Summer Steelhead
- Wallowa River Summer Steelhead
- Washougal River Summer Steelhead
- Wenatchee River Summer Steelhead
- White Salmon River Steelhead
- Willow Creek Summer Steelhead
- Wind River Summer Steelhead
- **Winter**
  - Big Creek Winter Steelhead
  - Calapooia River Winter Steelhead
- Cispus River Winter Steelhead
- Clackamas River Winter Steelhead
- Clatskanie River Winter Steelhead
- Columbia Gorge Tributaries Winter Steelhead
- Coweeman River Winter Steelhead
- East Fork Lewis River Winter Steelhead
- Elochoman Winter Steelhead
- Fifteenmile Subbasin Winter Steelhead
- Grays River Winter Steelhead
- Hood River Winter Steelhead
- Kalama River Winter Steelhead
- Klickitat River Winter Steelhead
- Lower Cowlitz River Winter Steelhead
- Middle Fork Willamette River Winter Steelhead
- Mill Creek Winter Steelhead
- Molalla/Pudding River Winter Steelhead
- North Fork Lewis River Winter Steelhead
- North Fork Toutle River Winter Steelhead
- North Santiam River Winter Steelhead
- Salmon Creek Winter Steelhead
- Sandy River Winter Steelhead
- Scappoose Creek Winter Steelhead
- South Fork Toutle River Winter Steelhead
- South Santiam River Winter Steelhead
- Tilton River Winter Steelhead
- Upper Columbia Gorge Tributaries Winter Steelhead
- Upper Cowlitz River Winter Steelhead
- Washougal River Winter Steelhead
- Willamette Westside Tributaries Winter Steelhead
- Youngs Bay Winter Steelhead

## **Appendix E. Defining New Populations and "Superpopulations"**

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To add a new population or a new "superpopulation" (a collection of populations) for use in the main HLI tables, contact StreamNet at [project@streamnet.org](mailto:project@streamnet.org) or 503-595-3100. The following steps, more or less, will be followed. Because we want to avoid duplicates and other data problems, new populations cannot be submitted using the API.

### **To add a new population:**

- 1) Fill out a record for Table E1 (Populations) as fully as possible for each new population. Leave the ID field blank for now.
  - a) Along with the table, a geographic description (preferably in GIS format) for each population must be included. The RecordNote field can be used instead if a text description suffices.
  - b) If the population is listed in the CRITFC "population crosswalk" at <http://www.critfc.org/fish-and-watersheds/fishery-science/data-resources-for-scientists/columbia-basin-salmon-and-steelhead-crosswalk-project/>, specify the name from the crosswalk in the RecordNote field. Doing this will satisfy the requirement under step 1a.
- 2) Submit the new record(s) to StreamNet ([project@streamnet.org](mailto:project@streamnet.org)) and request an ID assignment for each population. Submit them as early as you can to allow spatial data QC work at StreamNet.
- 3) StreamNet will provide you with an ID for each population.

### **To add a new superpopulation (a collection of populations):**

- 1) Use the directions above to get an ID for each population that is a component of the superpopulation, if necessary.
- 2) Fill out a record for Table E1 (Populations) as fully as possible for each new superpopulation. Leave the ID field blank for now.
  - a) Put the superpopulation's name in the CommonPopName field.
  - b) No geographic descriptions or GIS data are required for superpopulations.
- 3) StreamNet will provide you with an ID for each superpopulation (but you can temporarily use 1, 2, 3, etc. if defining more than one superpopulation).
- 4) Fill out records in Table E2 (SuperPopulations) for each superpopulation.
  - a) All fields are required except PopFitNotes, which is required only if PopFit = "Portion".
  - b) There will be one record in SuperPopulations for each component population.
    - i) For example, if a superpopulation consists of populations with ID values of 1 and 3 and 7, then there will be 3 records in the SuperPopulations table.
    - ii) All 3 records for the superpopulation will have the same SuperPopID, which is the ID provided in step 3.

**Table E1. Populations Table**

This table stores information about populations and superpopulations. Also included is who requested each record be added. At least one of the fields that indicates a population name must be filled in.

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Field Name	Field Description	Data Type	Codes/Conventions for Populations Table		
ID	StreamNet-defined code for the population (or superpopulation) of fish represented by this record.	Integer	Must be null when submitting a new record.		
PopTypeID	Code for whether the record is for a single population or a superpopulation.	Byte	1 = Population 2 = Superpopulation		
CommonName	Common name of the taxon of fish.	Text 50	Enter the name of the taxon here, even if taxon name is included in the name of the population. Select from the following:	<ul style="list-style-type: none"> <li>• Bull trout</li> <li>• Chinook salmon</li> <li>• Chum salmon</li> <li>• Coho salmon</li> <li>• Sockeye salmon</li> <li>• Steelhead</li> </ul>	Additional species may be added in the future: refer to <a href="http://old.streamnet.org/SpeciesInFW.html">http://old.streamnet.org/SpeciesInFW.html</a> for common names.
Run	Run(s) of fish.	Text 20	Enter the name of the run here, even if run name is included in the name of the population. Entries in this field are not recognized as taxonomic divisions. Select from the following: [ <i>Do not include comments in brackets.</i> ]	<ul style="list-style-type: none"> <li>• Spring</li> <li>• Summer</li> <li>• Fall</li> <li>• Late fall</li> <li>• Winter</li> <li>• Spring/summer</li> </ul>	<ul style="list-style-type: none"> <li>• Both summer &amp; winter</li> <li>• Early</li> <li>• Late</li> <li>• Both early &amp; late</li> <li>• N/A [<i>For species without recognized runs. For example, bull trout.</i>]</li> </ul>
RecoveryDomain	Name of the "recovery domain," as defined by the NMFS Northwest Region, in which the population falls geographically.	Text 255	Five recovery domains have been defined by NMFS in Washington, Oregon, and Idaho. Select the appropriate one from this list:	<ul style="list-style-type: none"> <li>• Puget Sound</li> <li>• Willamette/Lower Columbia</li> <li>• Interior Columbia</li> <li>• Oregon Coast</li> <li>• Southern Oregon/Northern California Coast</li> </ul>	Further information about recovery domains can be found at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .
ESU_DPS	For populations listed under the federal ESA, this is the name of a defined Evolutionarily Significant Unit (ESU) or Distinct Population Segment (DPS) as defined by NMFS Northwest Region or by USFWS. For non-listed populations this is the DPS or other name.	Text 255	Enter the name of the ESU or DPS here. Entries in this field are taxonomic divisions defined by NMFS or USFWS, and may be at the species, subspecies, or finer scale. ESUs of salmon north of California are listed at <a href="https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/">https://web.archive.org/web/*/http://www.nwfsc.noaa.gov/trt/</a> .		
MajorPopGroup	Name of "major population group" (MPG) or "stratum" as defined by the NMFS Northwest Region, in which the population falls.	Text 255	The term "stratum" is used in the Willamette/Lower Columbia Recovery Domain, while "major population group" is used in other areas. The term "stratum" includes life history considerations as well as geographic criteria, while MPGs are defined geographically. See Appendix C for the list of MPGs / strata.		
CBFWApopName	Population name as defined by CBFWA for subbasin planning purposes, from subbasin plans and agencies.	Text 255	This may include non-listed populations, or cases where geographic area does not match a defined population of a listed species. See Appendix D for the list of these population names.  Fill this field even when a population's geographic extent coincides with NWR name for a listed population.		
CommonPopName	Population name(s) used by local biologists.	Text 255	Often this is simply the name of the population(s) as written on the original time series spreadsheets.		

Field Name	Field Description	Data Type	Codes/Conventions for Populations Table	
<b>ContactAgency</b>	Agency, tribe, or other entity that requested this population be added to the list.	<b>Text 255</b>	<p>Entries in this field must precisely match a name in the StreamNet agency list. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• Columbia River Inter-Tribal Fish Commission</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Tribes and Bands of the Yakama Nation</li> <li>• Confederated Tribes of the Umatilla Indian Reservation</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> </ul>	<ul style="list-style-type: none"> <li>• Fish Passage Center</li> <li>• Idaho Department of Fish and Game</li> <li>• Nez Perce Tribe</li> <li>• Northwest Indian Fisheries Commission</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Quantitative Consultants, Inc.</li> <li>• Shoshone-Bannock Tribes</li> <li>• Spokane Tribe of Indians</li> <li>• U.S. Fish and Wildlife Service</li> <li>• Washington Department of Fish and Wildlife</li> </ul>
RecordNote	Information about the record.	Text 255		
UpdDate	The date and time that the record was created or updated. For data obtained in electronic format from another source it can reflect the date and time of data capture or of conversion to Coordinated Assessment/StreamNet standards.	Datetime	This can be the time a record was created, or the last time it was edited. This field tells the end user when the record was last modified at the source organization.	

## Table E2. SuperPopulations Table

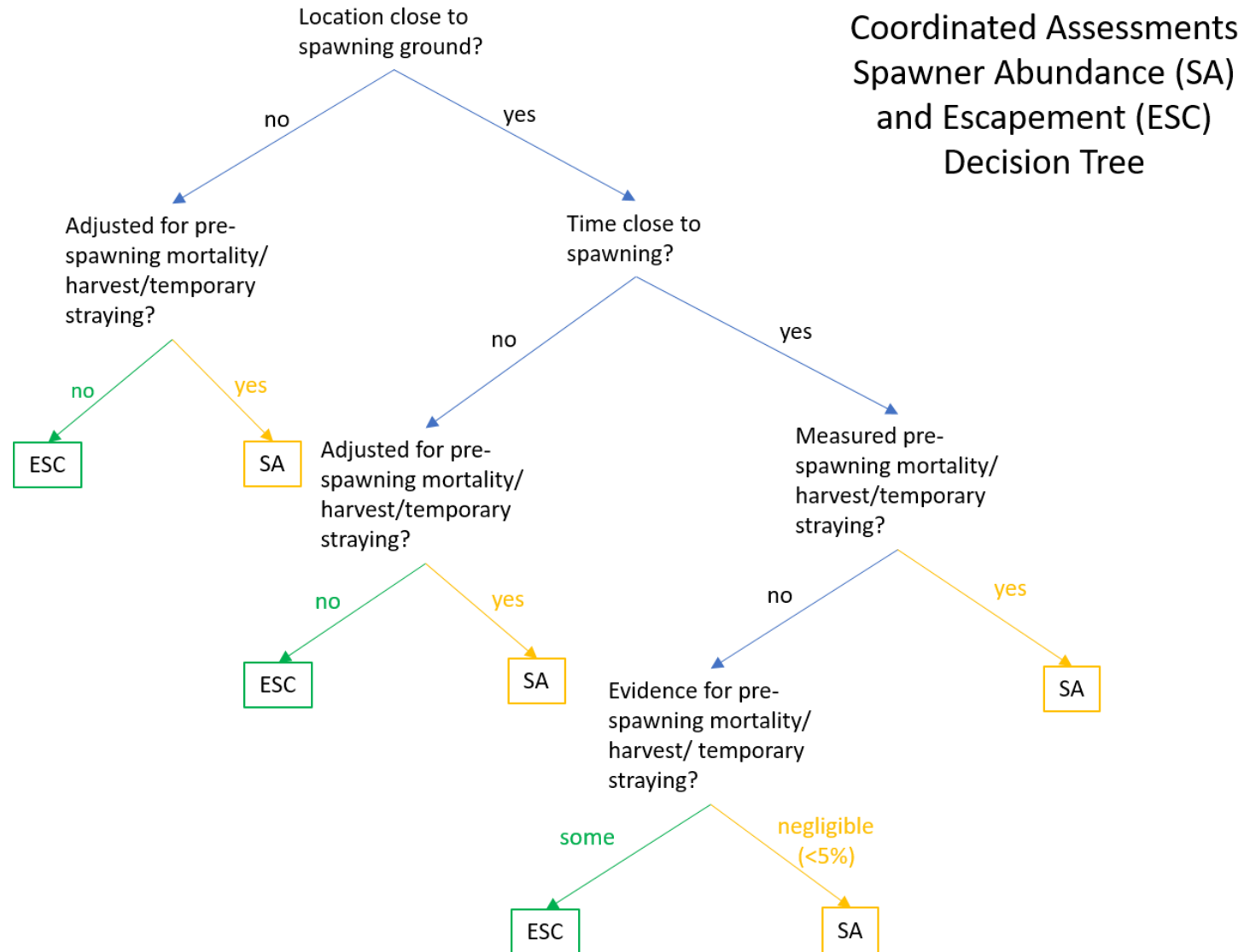
This table lists the individual component populations which, when combined, define a superpopulation. The records with the same SuperPopID all belong to the same superpopulation. Both the SuperPopID and the PopID of each component population must already exist with an "ID" value in the Populations table before this table can be filled.

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Field Name	Field Description	Data Type	Codes/Conventions for SuperPopulations Table
<b>SuperPopID</b>	StreamNet-defined code for the superpopulation.	<b>Integer</b>	Foreign key to the Populations table's ID field.
<b>PopID</b>	StreamNet-defined code for a component population.	<b>Integer</b>	Foreign key to the Populations table's ID field.
<b>PopFit</b>	Categorization of how well the geographic extent of the data corresponds to the geographic definition of the component population.	<b>Text 8</b>	<p><u>Acceptable values:</u> [Do not include comments in brackets.]</p> <ul style="list-style-type: none"> <li>• Same [Represents one entire population, the whole population, and nothing but the population.]</li> <li>• Portion [Represents a portion of one population. (Describe in PopFitNotes field.)]</li> </ul>
<b>PopFitNotes</b>	Text description of why only part of the component population is included in the superpopulation.	<b>Memo</b>	<p>This field is required if the PopFit field is "Portion".</p> <p>If the PopFit field is "Portion" describe the lack of correspondence between the whole component population and that part of it that is part of the superpopulation.</p>
<b>ContactAgency</b>	Agency, tribe, or other entity that requested this population be added to the list.	<b>Text 255</b>	<p>Entries in this field must precisely match a name in the StreamNet agency list. Here are the ones most likely needed. If yours is not found here, contact your agency StreamNet representative, or call PSMFC's StreamNet staff at 503-595-3100.</p> <ul style="list-style-type: none"> <li>• Columbia River Inter-Tribal Fish Commission</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Tribes and Bands of the Yakama Nation</li> <li>• Confederated Tribes of the Umatilla Indian Reservation</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> </ul> <ul style="list-style-type: none"> <li>• Fish Passage Center</li> <li>• Idaho Department of Fish and Game</li> <li>• Nez Perce Tribe</li> <li>• Northwest Indian Fisheries Commission</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Quantitative Consultants, Inc.</li> <li>• Shoshone-Bannock Tribes</li> <li>• Spokane Tribe of Indians</li> <li>• U.S. Fish and Wildlife Service</li> <li>• Washington Department of Fish and Wildlife</li> </ul>
<b>UpdDate</b>	The date and time that the record was created or updated. For data obtained in electronic format from another source it can reflect the date and time of data capture or of conversion to Coordinated Assessment/StreamNet standards.	<b>Datetime</b>	This can be the time a record was created, or the last time it was edited. This field tells the end user when the record was last modified at the source organization.

## Appendix F. NOSA/Escapement Decision Tree

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## Appendix G. MS-Access 2010 Data Types

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MS-Access 2010 Data Type	Purpose	Characteristics	Storage Required Per Record
Currency	Numbers. Appropriate for numbers other than currency.	Zero to 15 digits to the left of the decimal point and zero to 4 digits to the right.	8 bytes
Date/Time	Date and time for the years 100 through 9999.	This data type stores date <u>AND</u> time -- it is not possible to store one without the other. A date with no time is interpreted as 00:00 in the morning. A time with no date is interpreted as 12/30/1899. Calculations among records recognize and use these default values in calculations, so must be accounted for when using the data.	8 bytes
Memo Equivalent to SQL Server nvarchar(4000) field.	Long text entries.	Up to 4,000 characters in length.	2 bytes / character for Unicode. 1 byte / character if Unicode compression enabled and entry is under 4,096 characters.
Memo* Equivalent to SQL Server nvarchar(max) field.	Long text entries.	Essentially unlimited length. Indicated with an asterisk in the tables above.	2 bytes / character for Unicode. 1 byte / character if Unicode compression enabled and entry is under 4,096 characters.
Number (Byte)	Whole numbers from 0 to 255.	Integers only: no decimal places. No negative numbers.	1 byte
Number (Decimal)	Numbers from $-9.999 \times 10^{27}$ to $9.999^{27}$ .	Decimal places and negative numbers allowed. Up to 28 significant digits.	12 bytes
Number (Integer)	Whole numbers from -32,768 to 32,767.	Integers only: no decimal places.	2 bytes
Number (Long Integer)	Whole numbers -2,147,483,648 to 2,147,483,647.	Integers only: no decimal places.	4 bytes
Number (Single)	Floating point numbers $-3.402823 \times 10^{38}$ to $3.402823 \times 10^{38}$ .	Up to 7 significant digits.	4 bytes
Number (Double)	Floating point numbers $-1.79769313486231 \times 10^{308}$ to $1.79769313486231 \times 10^{308}$ .	Up to 15 significant digits.	8 bytes
ReplicationID	Globally unique identifier (GUID).	Creates a (presumably) unique value to identify a record.	16 bytes
Text	Text. (Including numbers not used in calculations.)	Up to 255 characters in length. Maximum allowed length can be shorter than 255.	2 bytes / character for Unicode. 1 byte / character if Unicode compression enabled.
Yes/No	Storage of values that can have only one of two values. Yes/No; On/Off; True/False.	Cannot be null. Must be one of the 2 values. It is not possible to indicate such things as "Not applicable" or "Unknown".	1 bit