

Alaska Salmon Biological Data Repository

Variations of format, coding, and definitions have been used among regions in collecting detailed data for Alaskan Salmon. Differences have compounded over time, as staffing and program requirements changed. This protocol is defined to facilitate the transmission of Alaska’s historic and future salmon biological data into a central repository. It provides a clear specification that explains the nature of data to the users, and a well-defined transmission mechanism for populating the repository. First released as the Alaska Salmon Age, Sex, Length Repository, the project has been expanded to include as much Alaskan Salmon Biological Data as possible into a single location.

A. Data Specification v2.3

Max Chars refers to the maximum number of characters a field’s value may contain. **Reqd** indicates whether the field must contain a value (nulls ARE NOT accepted when Reqd=Yes). **Data Type** references how the column should be defined in a relational database. **Validation** gives specific rules that the submission must fully meet in order to be accepted into the repository.

COMMERCIAL FISHERIES

| Division of Commercial Fisheries Alaskan Salmon Biological Data Repository Specification | | | | | | |
|--|---------------------------------|--------------|------|-----------|---|---|
| Ref | Column Name (Alternate Name) | Max Chars | Reqd | Data Type | Description | Validation |
| 1 | Sample_ID | 23 | | Character | Value generated by the reporting region, which may be used to associate specific records in the original regional data as belonging to a particular sampling event. Uniqueness is desired, but not mandatory. | |
| 2 | Region_ID | 1 | Yes | Character | Commercial Fisheries region of collection | Must be ‘1’, ‘2’, ‘3’ or ‘4’ |
| 3 | Sample_Year | 4 | Yes | Character | 4-digit year in which sampling event occurred | Must be between 1930 and the current calendar year |
| 4 | Management_area | 3 | | Character | Geographic area spanning a number of districts. Typically defined at the region level for their areas of interest. | |
| 5 | Tix_management_area | 1 | | Character | Management Area code formally defined by the fish ticket system. | If present, must match an existing code in Appendix A |

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| Ref | Column Name (Alternate Name) | Max Chars | Reqd | Data Type | Description | Validation |
|-----|-----------------------------------|--------------|------|--------------------|--|---|
| 6 | District | 3 | | Character | Three character district of observation | If present, must match a current or historic CF fish ticket district |
| 7 | Subdistrict | 3 | | Character | ID for subset of district sampled, if any | If present, must be exactly two digits |
| 8 | Stream | 50 | | Character | ID for anadromous waters catalog stream sampled R 3 always 0 | |
| 9 | Location | 50 | | Character | R 1: port codes R 2: stream location-Salt water location R 3: stream location, some fish tickets R 4: some stream locations | |
| 10 | Project | 2 | | Character | “Fishery Type” Legacy code. Typical values are in Appendix I | |
| 11 | Sample_Day | 2 | | Character | Day this sample was taken, or began to be taken. | If present, must be 1 or 2 digits in range 1 through 31 |
| 12 | Sample_Month | 2 | | Character | Month number when this sample was started | If present, must be 1 or 2 digits in range 1 through 12 |
| 13 | Sample_Date | 10 | | Date mm/dd/yyyy | Single date sample was taken May equal Sample Date Start (ref 57) or Sample Date End (ref 58) depending on project | If present, must be a valid date. |
| 14 | Gear | 2 | | Character | Type of collection gear. Typical values are in Appendix H. | |
| 15 | Harvest_Code | 2 | | Character | Type of commercial fishery sampled | If present, must match a current or historic Harvest Code in Appendix B |
| 16 | Mesh | 5 | | Character | Net mesh size Converted to inches None for R1 and R4 | |
| 17 | Length_Type (Measurement Type) | 2 | | Character | Codes indicating type of length measurement | If present, must match a mark-sense length code in Appendix C |

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| Ref | Column Name (Alternate Name) | Max Chars | Reqd | Data Type | Description | Validation |
|-----|---------------------------------|--------------|------|-----------|--|--|
| 18 | Number_Scales | 1 | | Number | Number of scales per fish | If present, must be a valid whole number with no punctuation |
| 19 | Number_Cards | 1 | | Number | Number of gum cards taken for a particular mark-sense form referenced in field 20 | If present, must be a valid whole number with no punctuation |
| 20 | Form_Number | 15 | | Character | Mark-sense data form sequence number | If present, must be digits |
| 21 | Species | 5 | Yes | Character | Salmon species code | Must match a Species Code in Appendix D |
| 22 | Stage | 1 | Yes | Character | Indicates Juvenile, adult, etc. | Must match a stage code in Appendix E |
| 23 | Batch_Number (Data Link) | 24 | | Character | Region specific – track uploading of data or data Source | |
| 24 | Stat_week | 2 | | Character | Statistical week | If present, must be 1 or 2 characters representing a number between 1 and 54 |
| 25 | Period | 2 | | Character | Openings (e.g. R3) | |
| 26 | Comments | 50 | | Character | | |
| 27 | Specimen_ID | 4 | | Character | Value generated by the submitter which identifies a particular observation in a sample. Typically, they range 1 through n. | |
| 28 | Card_Number | 3 | | Character | Sequence number of gum card in a particular collection | |
| 29 | Fish_Number | 5 | | Character | | |
| 30 | Sex | 1 | | Character | Male, female, indeterminate | If present, must match an existing sex code in Appendix F |
| 31 | Length | 4 | | Number | Length of fish in millimeters | If present, must be a valid whole number |
| 32 | FW_Age | 1 | | Character | Freshwater age using European method | If present, must be a digit |

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| Ref | Column Name (Alternate Name) | Max Chars | Reqd | Data Type | Description | Validation |
|-----|---|--------------|------|-----------|--|---|
| 33 | SW_Age | 1 | | Character | Saltwater age using European method | If present, must be a digit |
| 34 | Age_Error_code | 10 | | Character | String of one or more digits indicating problems in aging. Regional use varies somewhat. Typical values are in Appendix G. | If present, must be composed of digits 0 through 9 |
| 35 | Weight | 7 | | Number | Weight in grams to the nearest tenth of a gram | If present, must be a number in the range 0.1 through 99999.9 |
| 36 | CWT_Head_Number (Strap Tag, Cinch Strap) | 6 | | Character | Six digit strap tag number identifying a head collected for the coded wire tag lab | If present, must be all digits |
| 37 | Mark_Recapture_Tag | 10 | | Character | Up to 10 characters from a tag used in mark-recapture programs: disk tag, spaghetti tag, etc. | |
| 38 | DNA_Vial_Code | 25 | | Character | Up to 25 characters used to identify DNA specimen collected for genetics lab and placed in a Vial which was assigned a DNA_VIAL_CODE | |
| 39 | Otolith_BP_Number (BP Coordination #, Brain Parasite #) | 8 | | Character | Up to 8 characters used to identify a specimen collected for otolith lab | |
| 40 | Image_Name | 20 | | Character | File name for digitized scale image | |
| 41 | Format | 6 | Yes | Character | The version of the transfer specification used to build the file. Every row in the file must have this same value. | Must be "CF-2.1" 2.0 will continue to be accepted based on 2.0 specification rules * |
| 42 | Otolith_Tray_Cell | 9 | | Character | Up to a 9 digit key to Mark Lab otolith recoveries: up to a 6 digit tray number concatenated with 3 digit cell number | |
| 43 | Quadrant | 2 | | Character | Two character quadrant code from Coded | Must match quadrant in Appendix J |

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| Ref | Column Name (Alternate Name) | Max Chars | Reqd | Data Type | Description | Validation |
|-----|---------------------------------|--------------|------|-----------|---|---|
| | | | | | Wire Tag lab | |
| 44 | ADFG_Number | 5 | | Character | Up to 5 digit ADF&G vessel number from CFEC | If present, must be composed of digits 0 through 9 |
| 45 | Processor_code | 5 | | Character | Five character “intent to operate” processor code from Comm Fish HQ | If present, must be one alpha followed by 4 digits |
| 46 | DNA_Tray_Code | 25 | | Character | Up to 25 characters used to identify DNA specimen collected for genetics lab and placed in a Tray which was assigned a DNA_TRAY_CODE | |
| 47 | SSID | 13 | | Number | Standard Specimen Identifier | If present must be unique |
| 48 | DNA_Tray_Well_Code | 3 | | Number | Identifies a specific specimen within a DNA Tray, referenced in 46 | |
| 49 | DNA_Tray_Well_Position | 3 | | Character | Identifies the Column and Row within a DNA Tray in which a specimen resides which may be necessary to determine the orientation of a tray as it was filled with specimens | |
| 50 | Gender_Determination_Code | 1 | | Character | Identifies the means by which the gender was determined if an attempt was made and the method used has been recorded | If present must match Gender Determination Code in Appendix K |
| 51 | Aging_Structure_Code | 1 | | Character | Identifies the structure used to determine age | If present must match Aging Structure Code in Appendix L |
| 52 | Otolith_Mark_Present | 1 | | Character | Indicates Wild vs. Hatchery origin where Marked Otolith determination has been attempted | If present, must be a Y or N value. |
| 53 | Otolith_Mark_ID | 32 | | Character | Hatchery Mark Identifier observed during Marked Otolith determination | If present, must match existing Mark ID in CWTOTO.OTO.MARK_ID |
| 54 | Otolith_Mark_Status_Code | 4 | | Character | Defines readability characteristics of otolith as defined in Appendix M | If present, must match Otolith Read Status Code in Appendix M |
| 55 | GCL_Region | 50 | | Character | | |

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| Ref | Column Name (Alternate Name) | Max Chars | Reqd | Data Type | Description | Validation |
|-----|---------------------------------|--------------|------|-----------|---|---|
| 56 | GCL_Quadrant | 50 | | Character | | |
| 57 | GCL_Location_Code | 1000 | | Character | GCL specific unique key for location identification | |
| 58 | GCL_Sub_Location_Code | 100 | | Character | Location name where samples were taken. Sublocation to the main collection location | |
| 59 | GCL_Bulk_Collection_ID | 50 | | Character | Unique code per genetic collection Barcode | |
| 60 | GCL_Bulk_Specimen_Count | | | Number | Field count of number of samples in bulk container | |
| 61 | Sample_Start_Date | | | Date | Start date for sample collection where a begin and end date exist | If present must be a valid date. If Start and End date exist, Start Date may not be greater than End Date |
| 62 | Sample_End_Date | | | Date | End date for sample collection where a begin and end date exist | If present must be a valid date. If Start and End date exist, Start Date may not be greater than End Date |
| 63 | Sample_Latitude_Start | 7,4 | | Number | Geographic coordinate for north-south position. Decimal degrees. | |
| 64 | Sample_Longitude_Start | 7,4 | | Number | Geographic coordinate for north-south position. Decimal degrees. | |
| 65 | Sample_Latitude_End | 7,4 | | Number | Geographic coordinate for north-south position. Decimal degrees. | |
| 66 | Sample_Longitude_End | 7,4 | | Number | Geographic coordinate for north-south position. Decimal degrees. | |

[Items in GREEN were specifically defined for the CF-2.3 revision]

* Version 2.0 will continue to be accepted based on specification 2.0 rules when the value of FORMAT is 2.0 affecting specifically:
 DNA_NUMBER will be an accepted column name, however; the value will be placed in the DNA_VIAL_NUMBER column
 DNA_TRAY_CODE, SSID, DNA_TRAY_WELL_CODE, and DNA_TRAY_WELL_POSITION will not be required columns

* Version 2.1 will continue to be accepted based on specification 2.1 rules when the value of Format is 2.1 affecting specifically:
GENDER_DETERMINATION_CODE, and AGING_STRUCTURE_CODE will not be required columns
Submitting agencies are encouraged to submit based on version 2.1 rules whenever possible.

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B. Transmission Mechanism

Oracle Data Integrator (ODI) will connect to the data sources in each location where Salmon biological data is stored. Scheduling and handling of data is based on the needs of each project.

Salmon Age, Sex, Length

| Region | Management Area | Office | Data Type | Database Name | DB Technology | DW Connectivity |
|--------|------------------------|---------------------------------------|------------|---------------|---------------|--------------------|
| 1 | Southeast Alaska | Douglas | Salmon ASL | IFDB | Oracle | Yes |
| 2 | Central | Prince William Sound (Cordova) | Salmon ASL | none | | |
| 2 | Central | Bristol Bay (King Salmon, Dillingham) | Salmon ASL | FDMS | Oracle | <i>New in 2014</i> |
| 2 | Central | Upper Cook Inlet (Soldotna) | Salmon ASL | none | | |
| 2 | Central | Lower Cook Inlet (Homer) | Salmon ASL | none | | |
| 3 | Kodiak and Westward | Kodiak | Salmon ASL | KODDATA | Postgres | Yes |
| 4 | Arctic-Yukon-Kuskokwim | | Salmon ASL | CF_AYK_ASL | MS SQL Server | Yes |

Region 1, 3, and 4 host Salmon Age, Sex, Length data in a centralized location. There is no overlap, therefore a fetch and replace by Region is possible.

Region 2 ASL data is currently spread across four management areas, only one of which will be accessible by the end of 2014 for inclusion in the data warehouse.

Data Refresh Method: Full refresh, Sunday of each week.

Alaska Hatchery Research Project (AHRP):

| Region | Management Area | Office | Data Type | Database Name | DB Technology | DW Connectivity |
|--------|------------------|--------------------------------|------------------|---------------|---------------|-----------------|
| 1 | Southeast Alaska | Douglas | Scale Age & ASL | IFDB | Oracle | Yes |
| 2 | Central | Prince William Sound (Cordova) | Otolith Recovery | PWSTMR | MS Access | |
| HQ | Statewide | Gene Conservation Laboratory | Pedigree | LOKI | Oracle | Yes |
| HQ | Statewide | Mark, Tag, and Age Laboratory | Otolith Recovery | CWTOTO | Oracle | Yes |

The Alaska Hatchery Research Project collects data and specimens for processing in Southeast Alaska and Prince William Sound, specimen types, transmission schedules and rules are:

Otolith Recovery in CWTOTO and PWSMTR collected in Anadromous Streams and High Seas

Data transmission to Data Warehouse will occur every 24 hours

Where Otoliths are **not** paired with genetic tissue, sampling data as well as results will be retrieved

Sample ID and Specimen ID will match CWTOTO values

Where Otoliths are paired with genetic tissue, only results will be retrieved

Scales for Age Data in IFDB from Anadromous Streams

Data transmission to Data Warehouse will occur during regular Salmon, Age, Sex Length retrieval process, Sunday of each week

Tissue samples for pedigree reconstruction collected in Anadromous Streams

Data transmission to Data Warehouse will occur every 24 hours or via Journalization

Sample ID will be comprised of DNA_Tray_Code

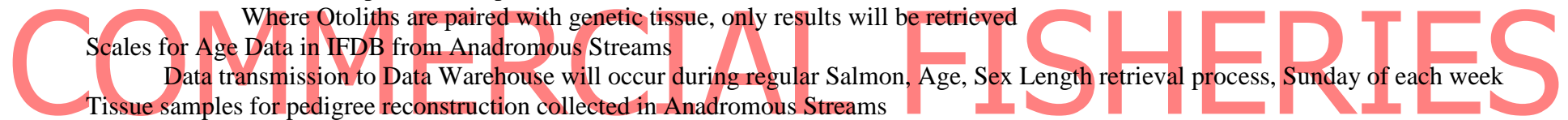
Specimen ID will be comprised of DNA_Tray_Well_Code

Species will be translated to ADFG Species Codes, RACE species codes are available in Species lookup

Stage will be Alevin or Adult

GCL specific values include: DNA prefixed fields (38, 46, 48 & 49) and GCL prefixed fields (55-58)

Otolith Recovery will be retrieved where Otolith read results exist



Appendix A – Standard Tix Management Area Codes

| <u>CODE</u> | <u>DESCRIPTION</u> |
|-------------|------------------------------|
| 9 | CANADA |
| A | JUNEAU/YAKUTAT |
| B | KETCHIKAN/CRAIG |
| C | PETERSBURG/WRANGELL |
| D | SITKA/PELICAN |
| E | PRINCE WILLIAM SOUND |
| F | EEZ |
| H | COOK INLET |
| K | KODIAK |
| L | CHIGNIK |
| M | ALASKA PENINSULA |
| O | DUTCH HARBOR |
| Q | BERING SEA |
| R | ADAK/WEST ALEUTIANS |
| S | SOUTHEAST INSIDE (1990-1998) |
| T | BRISTOL BAY |
| W | KUSKOKWIM |
| X | KOTZEBUE |
| Y | YUKON |
| Z | NORTON SOUND |

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Appendix B – Standard Harvest Codes

| <u>CODE</u> | <u>DESCRIPTION</u> |
|-------------|------------------------|
| 10 | MARK SELECTIVE FISHERY |
| 11 | TRADITIONAL |
| 12 | TERMINAL AREA |
| 13 | EXPERIMENTAL AREA |
| 14 | EXPERIMENTAL GEAR |
| 17 | M-I-C |
| 18 | CONFISCATED |
| 21 | PNP FISH |
| 22 | PNP CARCASSES |
| 23 | STATE FISH |
| 24 | STATE CARCASSES |
| 25 | FEDERAL FISH |
| 26 | FEDERAL CARCASSES |
| 27 | PNP DONATED |
| 28 | PNP DISCARDED |
| 31 | DERBY |
| 33 | DISCARDED |
| 34 | OILED WASTE |
| 35 | EDUCATIONAL |
| 36 | COMMERCIAL DONATED |
| 41 | TEST RUN ASSESSMENT |
| 42 | TEST SPECIAL STUDY |
| 43 | TEST STOCK ASSESSMENT |

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Appendix C – Standard Length Type Codes

| <u>CODE</u> | <u>DESCRIPTION</u> | <u>REFERENCE</u> |
|-------------|--|------------------|
| 00 | LENGTH NOT TAKEN | 1 |
| 01 | TIP OF SNOOT TO FORK OF TAIL | 1 |
| 02 | MID-EYE TO FORK OF TAIL | 1 |
| 03 | POST ORBIT TO FORK OF TAIL | 1 |
| 04 | MID-EYE TO HYPURAL PLATE | 1 |
| 05 | POST ORBIT TO HYPURAL PLATE | 1 |
| 06 | TIP OF SNOOT TO TIP OF TAIL | |
| 07 | CLEITHRAL ARCH TO TIP OF TAIL | |
| 08 | CALCULATED FORK LENGTH | |
| 09 | CLEITHRAL ARCH TO FORK | 2 |
| 10 | CLEITHRAL ARCH TO HYPURAL PLATE | 2 |
| 11 | FORK LENGTH, LOW QUALITY | 2 |
| 12 | CLEITHRAL ARCH TO FORK OR TIP | 2 |
| 13 | MID-EYE TO POSTERIOR INSERTION OF ANAL FIN | 3 |
| 14 | TIP OF SNOOT TO HYPURAL PLATE | 4 |
| 15 | MIDEYE TO END OF OPERCULA | 5 |
| 16 | TIP OF SNOOT TO END OF OPERCULA | 6 |
| 99 | LENGTH TYPE UNKOWN | 2 |

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REFERENCES

1. Standard Code set on creation of bubble sheet ASL data capture 1980
2. Region 1 code
3. Cordova Otolith Lab - Steve Moffitt - "only been used for upper Copper River salmon from the personal use and subsistence fisheries"
4. Cordova Otolith Lab "Standard Length"...used almost exclusively for Pacific herring data in this database.
http://www.fishbase.org/Images/Glospic/G_Fig13a6181_SL.jpg (Retrieved 9-26-2016) "99herring.POP.DOC LCI reference"
5. Mideye to opercula (end of gill plate) - New CWT Historic lengths taken in 1980 to 1985
6. Tip of snout to end of opercula - New CWT Historic lengths taken in 1980 to 1985

Appendix D – Standard Species Codes

| <u>CODE</u> | <u>DESCRIPTION</u> | <u>RACE SPECIES CODE</u> |
|-------------|--------------------|--------------------------|
| 410 | CHINOOK | 23220 |
| 420 | SOCKEYE | 23240 |
| 430 | COHO | 23225 |
| 440 | PINK | 23230 |
| 450 | CHUM | 23235 |
| 470 | CUTTHROAT | |
| 540 | STEELHEAD | 23260 |
| 666 | ATLANTIC | A0007 |

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Appendix E – Standard Stage Codes

| <u>CODE</u> | <u>DESCRIPTION</u> |
|-------------|--------------------|
| A | ADULT |
| V | ALEVIN |
| E | EMERGENT FRY |
| F | FED FRY |
| G | FINGERLING |
| I | IMMATURE |
| J | JUVENILE |
| P | PRESMOLT |
| S | SMOLT |

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Appendix F – Standard Sex Codes

| <u>CODE</u> | <u>DESCRIPTION</u> |
|-------------|-------------------------------|
| 1 | MALE |
| 2 | FEMALE |
| 3 | EXAMINED BUT DID NOT IDENTIFY |

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Appendix G – Typical Age Error Codes

| <u>CODE</u> | <u>DESCRIPTION</u> |
|-------------|-------------------------------------|
| 1 | OTOLITH |
| 2 | INVERTED |
| 3 | REGENERATED |
| 4 | ILLEGIBLE |
| 5 | MISSING |
| 6 | REABSORBED |
| 7 | WRONG SPECIES |
| 8 | NOT PREFERRED |
| 9 | NO FRESH WATER AGE, ONLY SALT WATER |
| 10 | NO SALT WATER AGE, ONLY FRESH WATER |
| 11 | NO SCALE COLLECTED |
| 12 | DOUBLE SCALE |
| 13 | VERTEBRAE |
| 14 | REDIGITIZE |

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Appendix H – Typical Gear Codes

| <u>CODE</u> | <u>DESCRIPTION</u> |
|-------------|---------------------|
| 00 | TRAP |
| 01 | PURSE SEINE |
| 02 | BEACH SEINE |
| 03 | DRIFT GILLNET |
| 04 | SET GILLNET |
| 05 | HAND TROLL |
| 06 | LONG LINE |
| 07 | OTTER TRAWL |
| 08 | FISHWHEEL |
| 09 | POTS |
| 10 | SPORT HOOK AND LINE |
| 11 | HERRING PURSE SEINE |
| 12 | HANDPICKED |
| 13 | DIP NET |
| 14 | WEIR |
| 15 | POWER TROLL |
| 17 | BEAM TRAWL |
| 18 | SHOVEL |
| 19 | WEIR |
| 20 | TROLL (PRE 1975) |
| 21 | POUND/ELECTROSHOCK |
| 22 | SPEAR |
| 23 | SNAG |
| 34 | HERRING GILLNET |
| 90 | TRAP |
| 91 | POTS |
| 97 | CAST NET |

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Appendix I – Typical Project Codes

| <u>CODE</u> | <u>DESCRIPTION</u> |
|-------------|--|
| 1 | COMMERCIAL HARVEST |
| 2 | SUBSISTENCE HARVEST |
| 3 | ESCAPEMENT (TOWER, WEIR, SONAR SITE, ETC.) |
| 4 | ESCAPEMENT – SPAWNING GROUNDS |
| 5 | TEST FISHING |
| 6 | SPORT CATCH (MARINE) |
| 7 | SPORT CATCH (FRESHWATER) |
| 14 | ? |

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Appendix J – Quadrant Codes

| <u>QUADRANT</u> | <u>QUADRANT DESCRIPTION</u> | <u>REGION</u> |
|-----------------|-----------------------------|---------------|
| NE | SE - NORTHEAST | 1 |
| NW | SE - NORTHWEST | 1 |
| SE | SE - SOUTHEAST | 1 |
| SW | SE - SOUTHWEST | 1 |
| BB | BRISTOL BAY | 2 |
| BS | BERING SEA | 2 |
| LC | LOWER COOK INLET | 2 |
| PW | PRINCE WILLIAM SOUND | 2 |
| UC | UPPER COOK INLET | 2 |
| KO | KOTZEBUE | 3 |
| KU | KUSKOKWIM | 3 |
| NS | NORTON SOUND | 3 |
| YU | YUKON | 3 |
| AL | ALEUTIANS | 4 |
| CH | CHIGNIK | 4 |
| DH | DUTCH HARBOR | 4 |
| KD | KODIAK | 4 |
| PE | PENINSULA | 4 |

COMMERCIAL FISHERIES

Appendix K – Gender Determination Codes

GENDER_DETERMINATION_CODE

EPS

IPS

EAS

IAS

EAU

IAU

GEN

DESCRIPTION

External Pre-Spawning

Internal Pre-Spawning

External At Spawning

Internal At Spawning

External Age Unknown

Internal Age Unknown

Genetic

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Appendix L – Aging Structure Code

AGING STRUCTURE CODE

F
O
S
V

DESCRIPTION

Finray
Otolith
Scale
Vertebra

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Appendix M – Otolith Mark Status Code

| <u>OTOLITH MARK STATUS CODE</u> | <u>BASE READ STATUS</u> | <u>OTOLITH USED</u> | <u>LEFT SPECIMEN STATUS</u> | <u>RIGHT SPECIMEN STATUS</u> |
|---------------------------------|-------------------------|---------------------|-----------------------------|------------------------------|
| 1B00 | 1-OK | B-BOTH | 0-Core Vis,OK | 0-Core Vis,OK |
| 1B01 | 1-OK | B-BOTH | 0-Core Vis,OK | 1-Core NotVis,OK |
| 1B10 | 1-OK | B-BOTH | 1-Core NotVis,OK | 0-Core Vis,OK |
| 1B11 | 1-OK | B-BOTH | 1-Core NotVis,OK | 1-Core NotVis,OK |
| 1L02 | 1-OK | L-LEFT | 0-Core Vis,OK | 2-Overgrind,NR |
| 1L03 | 1-OK | L-LEFT | 0-Core Vis,OK | 3-WrongSideUp,NR |
| 1L06 | 1-OK | L-LEFT | 0-Core Vis,OK | 6-No Oto,NR |
| 1L0n | 1-OK | L-LEFT | 0-Core Vis,OK | n - null |
| 1L12 | 1-OK | L-LEFT | 1-Core NotVis,OK | 2-Overgrind,NR |
| 1L14 | 1-OK | L-LEFT | 1-Core NotVis,OK | 4-Crystalline,NR |
| 1L15 | 1-OK | L-LEFT | 1-Core NotVis,OK | 5-Morph Prob,NR |
| 1L16 | 1-OK | L-LEFT | 1-Core NotVis,OK | 6-No Oto,NR |
| 1L1n | 1-OK | L-LEFT | 1-Core NotVis,OK | n - null |
| 1R20 | 1-OK | R-RIGHT | 2-Overgrind,NR | 0-Core Vis,OK |
| 1R21 | 1-OK | R-RIGHT | 2-Overgrind,NR | 1-Core NotVis,OK |
| 1R30 | 1-OK | R-RIGHT | 3-WrongSideUp,NR | 0-Core Vis,OK |
| 1R31 | 1-OK | R-RIGHT | 3-WrongSideUp,NR | 1-Core NotVis,OK |
| 1R40 | 1-OK | R-RIGHT | 4-Crystalline,NR | 0-Core Vis,OK |
| 1R60 | 1-OK | R-RIGHT | 6-No Oto,NR | 0-Core Vis,OK |
| 1R61 | 1-OK | R-RIGHT | 6-No Oto,NR | 1-Core NotVis,OK |
| 1R80 | 1-OK | R-RIGHT | 8-Wrong Oto Used | 0-Core Vis,OK |
| 3N66 | 3-Otolith Lost | N-NONE | 6-No Oto,NR | 6-No Oto,NR |
| 4N22 | 4-Unreadable | N-NONE | 2-Overgrind,NR | 2-Overgrind,NR |
| 4N23 | 4-Unreadable | N-NONE | 2-Overgrind,NR | 3-WrongSideUp,NR |
| 4N25 | 4-Unreadable | N-NONE | 2-Overgrind,NR | 5-Morph Prob,NR |
| 4N26 | 4-Unreadable | N-NONE | 2-Overgrind,NR | 6-No Oto,NR |
| 4N28 | 4-Unreadable | N-NONE | 2-Overgrind,NR | 8-Wrong Oto Used |

Appendix M – Otolith Readability Status Code - continued

| <u>OTOLITH MARK STATUS CODE</u> | <u>BASE READ STATUS</u> | <u>OTOLITH USED</u> | <u>LEFT SPECIMEN STATUS</u> | <u>RIGHT SPECIMEN STATUS</u> |
|---------------------------------|-------------------------|---------------------|-----------------------------|------------------------------|
| 4N32 | 4-Unreadable | N-NONE | 3-WrongSideUp,NR | 2-Overgrind,NR |
| 4N36 | 4-Unreadable | N-NONE | 3-WrongSideUp,NR | 6-No Oto,NR |
| 4N42 | 4-Unreadable | N-NONE | 4-Crystalline,NR | 2-Overgrind,NR |
| 4N44 | 4-Unreadable | N-NONE | 4-Crystalline,NR | 4-Crystalline,NR |
| 4N45 | 4-Unreadable | N-NONE | 4-Crystalline,NR | 5-Morph Prob,NR |
| 4N46 | 4-Unreadable | N-NONE | 4-Crystalline,NR | 6-No Oto,NR |
| 4N52 | 4-Unreadable | N-NONE | 5-Morph Prob,NR | 2-Overgrind,NR |
| 4N56 | 4-Unreadable | N-NONE | 5-Morph Prob,NR | 6-No Oto,NR |
| 4N62 | 4-Unreadable | N-NONE | 6-No Oto,NR | 2-Overgrind,NR |
| 4N63 | 4-Unreadable | N-NONE | 6-No Oto,NR | 3-WrongSideUp,NR |
| 4N77 | 4-Unreadable | N-NONE | 7-Wrong Species | 7-Wrong Species |
| 7B00 | 7-Unknown Mark | B-BOTH | 0-Core Vis,OK | 0-Core Vis,OK |
| 7L0n | 7-Unknown Mark | L-LEFT | 0-Core Vis,OK | n - null |

COMMERCIAL FISHERIES