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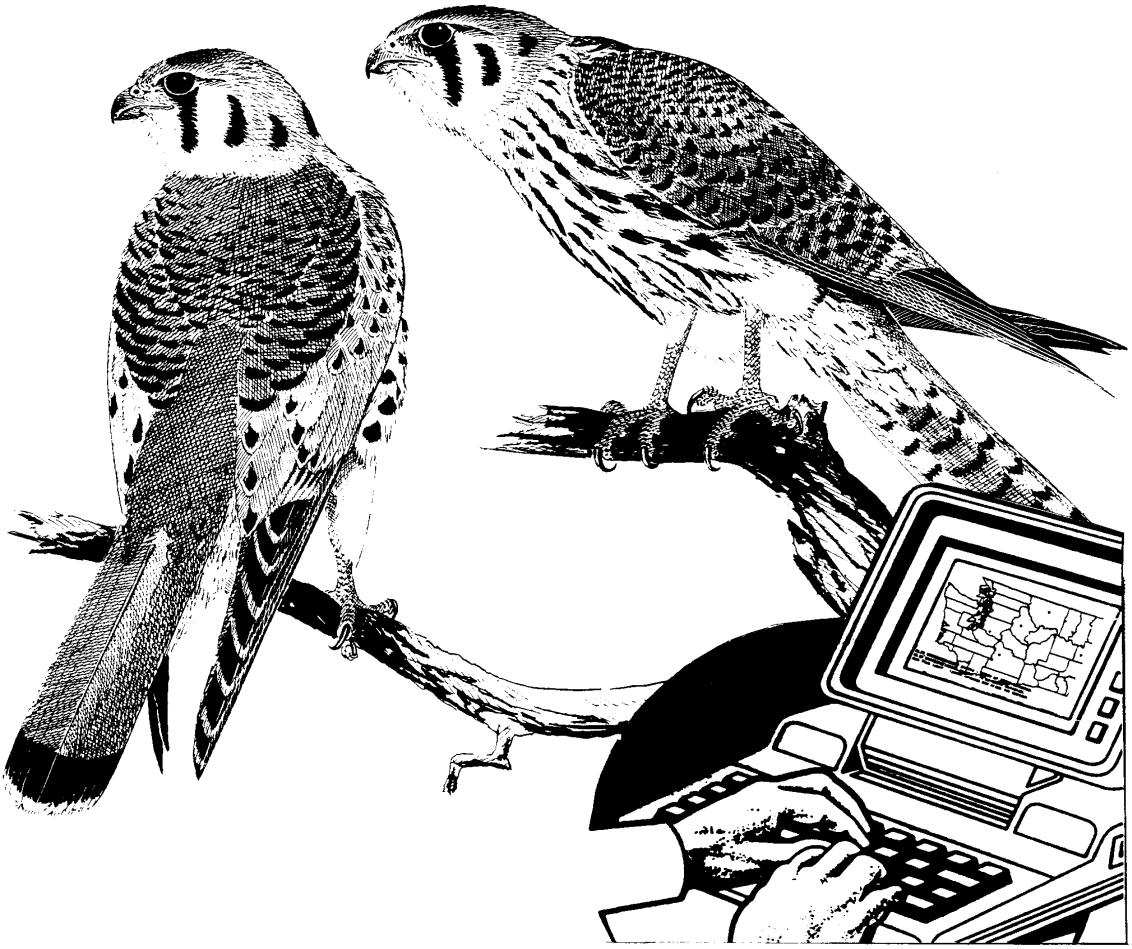
DEPARTMENT OF FISH AND WILDLIFE

# Washington

March 2005



# FISH AND WILDLIFE GEOGRAPHIC INFORMATION SYSTEM DIGITAL DATA DOCUMENTATION

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# WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

# GEOGRAPHIC INFORMATION SYSTEM DIGITAL DATA DOCUMENTATION

## MARCH 2005

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# WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

# DESCRIPTION OF FISH AND WILDLIFE DIGITAL DATA

## INTRODUCTION

This document describes digital fish, wildlife and habitat data available from the Washington Department of Fish and Wildlife (WDFW). It covers general background information on data compilation methods, data organization, structure, and details on using the digital data.

Data described here are developed and maintained by WDFW using Geographic Information System (GIS) software. Databases covered in this document contain WDFW's knowledge of fish and wildlife resources and occurrences based on research and field surveys conducted over the past 30 + years. It is important to note, however, that habitats and species may occur on the ground in areas not currently known to WDFW biologists or in areas for which comprehensive surveys have not been conducted. Site-specific surveys are frequently necessary to rule out the presence of priority species or habitat types. These databases are:

**Priority Habitats and Species Database** - An inventory of priority species use areas and habitats based on WDFW biologist knowledge.

**Wildlife Heritage Database** – Contains significant species site observations from field surveys to reports from reputable sources.

**Spotted Owl Database** - Locations of spotted owl sites.

**Marbled Murrelet Database** - Locations of marbled murrelet detection sites.

**Washington Lakes and Rivers Information System Database** – An inventory of priority anadromous/resident fish distribution, facilities, and lakes/reservoirs.

**Marine Resources Database** – A collection of marine and shellfish resources.

**Seabird Colony Database** – Contains locations surveyed for breeding seabirds.

**Seal and Sea Lion Haulout Database** – Seal and sea lion haulout sites.

**Old Growth Database** – Contains information about 1988 late successional forest stands.

**National Wetlands Inventory Database** - An inventory identifying wetland and deep water habitats based on data derived from high altitude color infrared aerial photographs.

Additionally information on kelp beds, oak stands, eelgrass, turf algae and township /section data are displayed on WDFW maps. These data are managed by the Washington Department of Natural Resources and are used with their permission. For information on these data in a digital format visit their web site at: dnr.wa.gov/dataandmaps.

Digital data products are supported by documents titled *Management Recommendations for Priority Habitats and Species*. These management recommendations are developed with a thorough review of the best scientific literature available. They provide important background information on each species or habitat type and recommendations for conducting land uses that consider the needs of fish and wildlife. When a priority habitat or species occurs in or near a project site, these management recommendations should be consulted to determine how to modify the project in consideration of fish and wildlife needs.

These databases do not represent exhaustive inventories. They are compilations of existing knowledge from field biologists that are updated as knowledge improves. Because these fish and wildlife data are not exhaustive and subject to change, project review for fish and wildlife should not rest solely on mapped priority habitats and species. Instead, they should also consider new information gathered from field investigations.

**Please note these databases may contain some species and habitats that are not considered priority by the agency. Also, because the databases are subject to change, digital data should not be used if they are over six months old; please request updated data rather than use old information.**

Information on specific locations of fish and wildlife is considered sensitive by the Director of WDFW and will be released in a standard format only. This format may be either tabular, digital, and/or displayed on a 1:24,000 scale map. WDFW standard map format consists of fish, wildlife, and habitat information displayed for an individual section with a one square mile buffer (nine square miles total). WDFW will release sensitive fish and wildlife information under its Releasing Sensitive Fish and Wildlife Information Policy – 5210 to the following parties in conjunction with the signing of a Release Agreement.

A. Government agencies;
B. Tribes;
C. Researchers affiliated with an accredited college or university;
D. Private landowners (for their lands), or other parties with permission from the landowner; or
E. Agents of the above parties (e.g., consultants, realtors, etc.).

Sensitive fish and wildlife information for less than thirty-six square miles (one Township) may be provided to these parties along with a request for a signed Sensitive Fish and Wildlife Information Release Agreement. WDFW will grant subsequent sensitive information only to those parties whom the signed agreement has been obtained.

The Release Agreement indicates that the signatory (person or organization) recognizes the appropriate guidelines for disseminating Sensitive Fish and Wildlife Information and has agreed to the provisions of the policy. For additional information or questions contact WDFW at (360) 902-2543.

For more information on WDFW you may visit our web site at wdfw.wa.gov or visit the Priority Habitats and Species site at wdfw.wa.gov/hab/phspage.htm.

For information on the state's endangered, threatened, and sensitive plants as well as high quality wetland and terrestrial ecosystems, please contact the Washington Department of Natural Resources, Natural Heritage Program at PO Box 47016, Olympia Washington 98504-7016, by phone (360) 902-1667 or visit their web site at dnr.wa.gov/nhp.

# PRIORITY HABITATS AND SPECIES DATABASE

**Database Manager:** Terry Johnson
(360) 902-2494

## General Description

The Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) Database consists of polygons or points that describe occurrences of priority habitats and species. Priority species are those fish and wildlife species requiring special efforts to ensure their perpetuation because of their low numbers, sensitivity to habitat alteration, tendency to form vulnerable aggregations, or because they are of commercial, recreational, or tribal importance. All priority species mapped areas represent known use areas; they are not potential habitats. Priority habitats are areas that support diverse, unique and/or abundant communities of fish and wildlife. Data are accompanied with items/fields or tables detailing each priority habitat and species.

PHS polygon or point information is collected by WDFW biologists using the best information available from research efforts, surveys, or field observations. The exact source of each delineated feature is described in the attribute tables. These data represents known occurrences of priority habitats and species not potential or theoretical.

## Resolution and Limitations

PHS polygon and point data are compiled on 1:24,000 scale US Geological Survey 7.5-minute topographic maps. A code is used, on supporting data forms, that contain information about the location and indicates the accuracy of the feature as determined by the field biologist doing the mapping. Accuracy ranges from within one-quarter mile to a general area.

WDFW updates this information as additional data become available. Because fish and wildlife species are mobile and because priority habitats and species information changes, project reviews for fish and wildlife should not rest solely on digital information. Instead, they should also consider new information gathered from current field investigations. Remember, priority habitats and species information can only show that a species or habitat type is present, they cannot show that a species or habitat type is not present. These products should not be used for future projects. Please obtain updates rather than use outdated information.

This database contains species and/or habitat locations that are deemed sensitive by WDFW under its Releasing Sensitive Fish and Wildlife Policy – 5210. Please refer to this policy for conditions regarding the use of this information. This policy is available by contacting the Priority Habitats and Species Section at (360) 902-2543.

## Data Organization and Structure

Digital data are available as ESRI® export or shape file format, in State Plane South coordinates (Zone 5626), North American Datum of 1927 or North American Datum of 1983 (1991 adjustment). The data will be provided as a single species and habitat polygon

layer and there may also be a point layer containing habitat sites as well. With the export files there will be a series of attribute INFO (tabular) tables related to the coverages to describe its features. In addition, a region feature class structure has been included with the polygonal data that simplifies the cumbersome use of the attribute table system.

The addition of the region feature class removes the cumbersome use of a cross-reference table to tie the polygons and attribute tables (PHSEO, PHSDSCRP, PHSSRC, and PHSLULC) together. Regions can be used like polygons, but they more efficiently represent complex area features that overlap, composite area features composed of many polygons, and multiple classes of area features that share common boundaries. Regions are organized by subclasses and the PHS polygonal data contains a subclass titled 'EO'. The subclass 'EO' contains region features based on the EOFORM number (key field in the attribute table) associated with a species or habitat record. The items EOCODE and CRIT have been added, along with some additional items, to the region feature attribute table (PATEO) to allow for reselection of regions based on species/habitat type and species use code.

The old data structure for PHS polygonal data was not simple. It utilized a cross-reference INFO (PHSXREF) table to tie polygons in the coverages to descriptive information in a set of extended attribute tables (PHSEO, PHSDSCRP, PHSSRC, and PHSLULC). For example in the old data structure a polygon may be described by one or many records in the extended attribute tables. A polygon might represent an intersection of elk winter range and a bald eagle communal roost. This made use of the data in ESRI© Arc/Info somewhat cumbersome without the aid of macros. The data description for PHSXREF describes some strategies for using the data in the old data structure format.

Please keep in mind that the data has not been fully edited. In most cases, errors are minor. If you encounter significant errors, please contact the database manager or the Department's regional habitat biologist. The data definitions and structure presented here are subject to change.

Since the PHS Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

**DATA STRUCTURE NAME: PHSPOLY**

**DATA STRUCTURE TYPE: ESRI© Arc/Info polygon coverage**

This coverage contains polygon data for fish, wildlife, and habitats mapped as priority habitats and species at Washington Department of Fish and Wildlife.

The data structure for Priority Habitat and Species (PHS) polygonal database has been simplified with the addition of a region feature class. This removes the cumbersome use of a cross-reference table (PHSXREF) to tie the polygons and attribute tables (PHSEO, PHSDSCRP, PHSSRC, and PHSLULC) together. The region feature class for PHS

**DATA STRUCTURE NAME:** PHSPOLY (continued)

polygonal data contains a subclass titled ‘EO’. The subclass ‘EO’ contains region features based on the EOFORM (key field in the attribute table) with a species or habitat record. The items EOCODE and CRIT, along with other additional items, have been added to the region feature attribute table (PATEO) to allow for reselecting regions based on species/habitat type and species use code.

Limited attributes are stored in the polygon attribute table (PAT) associated with the coverage. The item 'PHSID' in the PAT serves as a key field linking the coverage data to a cross-reference file PHSXREF, which in turn provides the linkage to the extended attribute tables, PHSEO, PHSDSCRP, PHSSRC, and PHSLULC. These tables contain information about the polygon as recorded by field staff on standard data forms. Please see the discussion of PHSXREF, later in this document, for more information about this linkage.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| FORMLIST | 120 | 120 | C | - | Concatenation of the item/field EOFORM numbers of each unique identifier of the mapped species or habitat information. The attribute tables PHSEO, PHSDSCRP, PHSSRC and PHSLULC are related to the spatial information by way of a cross-reference (PHSXREF) table. Each form number is six digits wide and separated from the other form numbers with an intervening dash. The form number ‘900000’ indicates the area was not mapped or the presence of a priority species was not known. The form numbers ‘909998’, ‘909997’ and ‘909996’ indicate an unresolved compilation error. |
| PHSID | 4 | 8 | B | - | Number assigned to the point or polygon uniquely identifying it statewide. This number links the record to one or many records in the cross-reference (PHSXREF) table. |

**DATA STRUCTURE NAME:** **PHSPOLY.PATEO or PHSPOLY**

**DATA STRUCTURE TYPE:** **ESRI© INFO region feature attribute table or shape file**

Items/fields from the various INFO tables (PHSEO, PHSSRC, and PHSDSCRP) have been added after CRIT, during the standard data release process, for your convenience.

**DATA STRUCTURE NAME:** PHSPOLY.PATEO or PHSPOLY (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| EOFORM | 4 | 7 | B | - | Unique numeric identifier. Each species or habitat type that is mapped is given a unique EOFORM number. The EOFORM number relates the spatial feature with the attribute information stored in the attribute tables (PHSEO, PHSDSCRP, PHSSRC, and PHSLULC) in a one-to-one relationship. This field serves to link this file to the cross-reference table PHSXREF. |
| EOCODE | 6 | 6 | C | - | Code that identifies species (derived from genus and species) or habitat. See ALLSPP and EOCODE tables that accompanies the data and the defin-itions for the tables, in this document, or COMNAME and SCINAME fields listed below. SCINAME will be blank if the code is a habitat. |
| CRIT | 3 | 3 | C | - | Species area use code. The type of use in an area that is considered important for the species. See Appendix B, at the end of this document, for species use codes. This field is blank if a habitat is described. |
| COMNAME | 32 | 32 | C | - | Common name of the species or habitat. |
| SCINAME | 32 | 32 | C | - | Scientific name of the species. |
| SEASON | 5 | 5 | C | - | Season of species use. Use is indicated by the presence of a non-blank character in one or more 'positions' or substrings of the field. Position: |
| | | | | | 1 = Winter use (W).<br>2 = Spring use (S).<br>3 = Summer use (U).<br>4 = Fall use (F).<br>5 = Severe winter use (S). |
| COORD | 1 | 1 | I | - | Mapping accuracy of the line delineation as determined by the individual doing the mapping. |

**DATA STRUCTURE NAME:** PHSPOLY.PATEO or PHSPOLY (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| | | | | | 1 = Accurate within a quarter mile.<br>2 = Accurate within a half mile.<br>3 = Location known to within one mile.<br>4 = Location known to a general locality. |
| SITENAME | 50 | 50 | C | - | Name assigned to the area based generally on a local place name. |
| GENDES1 | 80 | 80 | C | - | Description about the area, including how it is used and why it is important. |
| GENDES2 | 80 | 80 | C | - | Continuation of the description of the area. |
| GENDES3 | 80 | 80 | C | - | Continuation of the description of the area. |
| RECORDER | 25 | 25 | C | - | Name of the individual entering information on the data form. |
| MAPPER | 25 | 25 | C | - | Name of the individual doing the mapping. |
| COMPDATE | 6 | 6 | C | - | Date information was compiled. |
| SRCLEAD | 70 | 70 | C | - | Source of information, single or multiple sources may be cited. |
| SRCDATE | 6 | 6 | C | - | Date of source of information. |
| SRCCODE | 6 | 6 | C | - | Code identifying the source of information. See Appendix C, at the end of this document, for codes. |
| SRCSYN1 | 80 | 80 | C | - | Brief narrative describing content of source of information. |
| SRCSYN2 | 80 | 80 | C | - | Continuation of source of information. |
| PRIORITY | 3 | 3 | C | - | Species and habitats that are considered to be priorities for conservation and management by WDFW. For a copy of the most current *Priority Habitats and Species List*, Contact WDFW PHS Section at (360) 902-2543, or it is available on our web site at wdfw.wa.gov/hab/phspage.htm. |
| | | | | | YES = Indicates that the species is considered a WDFW priority and is on the *Priority Habitats and Species List* and/or *Species of Concern List*.<br>NO = Indicates that the species is not a WDFW priority. |

For those parties who do not meet the requirements to receive sensitive fish and wildlife information under WDFW's Releasing Sensitive Fish and Wildlife Information Policy – 5210 generalized layers have been created for the species or habitats listed in Appendix A of the policy.

Generalized township and section layers have been created for each of the databases that contain sensitive species or habitat locations. Accompanying these generalized layers is a INFO table of DBASE file that will relate (one to many) to these generalized layers by using the item/field TOWN_ID or SECTTOWN_ID. There will be some polygons with no attributes. These are no data or "donuts", created by surrounding polygons. Sensitive location information within the databases that contain any of the sensitive species or habitats may have some of their items/fields replaced with 'ZZZZZZ' to mask information that pertains to their location.

**DATA STRUCTURE NAME: PHSTOWN**

**DATA STRUCTURE TYPE: Esri® Arc/Info polygon coverage or shape file**

Layer of townships that contain sensitive species or habitat locations from the Priority Habitats and Species polygon database.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. This item/ field is used to relate one to many to the associated township INFO table or DBASE file. |

**DATA STRUCTURE NAME: PHSTOWN_TBL**

**DATA STRUCTURE TYPE: ESRI® INFO table or DBASE file**

INFO table or DBASE file of Priority Habitats and Species polygon database records with sensitive species or habitat locations generalized to a township. See PHSPOLY.PATEO or PHSPOLY layer, listed above, for the item/field descriptions. Additional items/fields are listed below.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| RESOLUTION | 8 | 8 | C | - | Finest resolution allowable for location of sensitive species or habitat. | |
| | | | | | SECTION | = Locations are generalized to a section. |
| | | | | | TOWNSHIP | = Locations are generalized to a township. |

**DATA STRUCTURE NAME:** PHSTOWN_TBL (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. This item/ field is used to relate many to one to the associated township sensitive species or habitat location layer. |

**DATA STRUCTURE NAME:** **PHSSECT**
**DATA STRUCTURE TYPE:** **Esri® Arc/Info polygon coverage or shape file**

Layer of sections that contain sensitive species or habitat locations from the Priority Habitats and Species polygon database.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SECTTOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources section code. This item/ field is used to relate one to many to the associated section INFO table or DBASE file. |

**DATA STRUCTURE NAME:** **PHSSECT_TBL**
**DATA STRUCTURE TYPE:** **ESRI® INFO table or DBASE file**

INFO table or DBASE file of Priority Habitats and Species polygon database records with sensitive species or habitat locations generalized to a section. See PHSPOLY.PATEO or PHSPOLY layer, listed above, for the item/field descriptions. Additional items/fields are listed below.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| RESOLUTION | 8 | 8 | C | - | Finest resolution allowable for location of sensitive species or habitat. |
| | | | | | SECTION = Locations are generalized to a section.<br>TOWNSHIP = Locations are generalized to a township. |
| SECTTOWN-ID | 7 | 7 | I | - | Washington Department of Natural Resources section code. This item/ field is used to relate many to one to the associated section sensitive species or habitat location layer. |

**DATA STRUCTURE NAME:** **PHSEO**

**DATA STRUCTURE TYPE:** **ESRI© INFO table or DBASE file**

This file contains descriptive information about polygons mapped as priority habitats and species at WDFW and contained in the PHS Database. The item/field CLASS has been dropped from the original table because it is no longer in use.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| EOFORM | 4 | 7 | B | - | Number identifying data form on which descriptive information was originally recorded. This field serves to link this file to the cross-reference table PHS-XREF. |
| BATCHID | 6 | 6 | C | - | Data entry batch number. |
| EOCODE | 6 | 6 | C | - | Code that identifies the species (derived from genus and species) or habitat. See ALLSPP and EOCODE tables that accompany the data and the definitions for the tables in this document. |
| CRIT | 3 | 3 | C | - | Criteria that identifies how the area is used by the indicated species. See Appendix B, at the end of this document, for species use codes. This field is blank if a habitat is described. |
| SEASON | 5 | 5 | C | - | Season of use. Use is indicated by the presence of a non-blank character in one or more 'positions' or substrings of the field. Position: |
| | | | | | 1 = Winter use (W).<br>2 = Spring use (S).<br>3 = Summer use (U).<br>4 = Fall use (F).<br>5 = Severe winter use (S). |
| DEF | 5 | 5 | c | - | Identifies the definitions or criteria used to classify the area as a priority. In most cases, the definitions are consistent statewide, (described as "Priority Area" in the *Priority Habitats and Species List* published by WDFW) but there may be some exceptions particularly between eastern and western Washington. This field |

**DATA STRUCTURE NAME:** PHSEO (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| | | | | | identifies the WDFW region number 1-6, because definitions within a region are as consistent as possible. Below are special qualifiers that may be used to further clarify the definition. |
| | | | | | AS = Artificial structure.<br>D = Damage control area. Applies to an identified winter range where WDFW manages against the species. Could be applied to areas which were historical ranges but where management practices such as fencing now exclude wildlife but may also be areas for potential WDFW acquisition.<br>EW = Elk wallow.<br>F = Artificial feeding site.<br>HC = Very high concentration. This applies to game species for which an identified concentration area is known and mapped and is significant, but there are areas where animals are extremely concentrated and identifiable. Mapped as a polygon within the winter range polygon.<br>T = Raptor territory; defended area around an active nest. |
| COORD | 1 | 1 | I | - | Mapping accuracy of the line delineation as determined by the individual doing the mapping. |
| | | | | | 1 = Accurate within a quarter mile.<br>2 = Accurate within a half mile.<br>3 = Location known to within one mile.<br>4 = Location known to a general locality. |
| MODWHO | 25 | 25 | C | - | Last person to modify the record. |
| MODDATE | 6 | 6 | I | - | Date of last modification of the record. |

**DATA STRUCTURE NAME:** **PHSDSCRP**
**DATA STRUCTURE TYPE:** **ESRI© INFO table or DBASE file**

This file contains the narratives describing the priority areas as recorded on the data form.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| EOFORM | 4 | 7 | B | - | Number identifying data form on which descriptive information was originally recorded. This field serves to link this file to the cross-reference file PHSXREF. |
| BATCHID | 6 | 6 | C | - | Data entry batch number. |
| SITENAME | 50 | 50 | C | - | Name assigned to the area based generally on a local place name. |
| GENDES1 | 80 | 80 | C | - | Description about the area, including how it is used and why it is important. |
| GENDES2 | 80 | 80 | C | - | Continuation of the description of the area. |
| GENDES3 | 80 | 80 | C | - | Continuation of the description of the area. |
| RECORDER | 25 | 25 | C | - | Name of the individual entering information on the data form. |
| MAPPER | 25 | 25 | C | - | Name of the individual doing the mapping. |
| COMPDATE | 6 | 6 | C | - | Date information was compiled. |
| MODWHO | 25 | 25 | C | - | Last person to modify the record. |
| MODDATE | 6 | 6 | I | - | Date of last modification of the record. |

**DATA STRUCTURE NAME:** **PHSSRC**
**DATA STRUCTURE TYPE:** **ESRI© INFO table or DBASE file**

This INFO file contains the source of information from the data forms. One data form can be supported by multiple sources of information.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| EOFORM | 4 | 7 | B | - | Number identifying data form on which descriptive information was originally recorded. This field serves to link this file to the cross-reference file PHSXREF. |
| BATCHID | 6 | 6 | C | - | Data entry batch number. |

**DATA STRUCTURE NAME:** PHSSRC (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SRCCODE | 6 | 6 | C | - | Code identifying the source of information. See Appendix C, at the end of this document, for codes. |
| SRCDATE | 6 | 6 | C | - | Date of source of information |
| SRCLEAD | 70 | 70 | C | - | Source of information. Single or multiple sources may be cited. |
| SRCSYN1 | 80 | 80 | C | - | Brief narrative describing content of source of information, single or multiple sources may be cited. |
| SRCSYN2 | 80 | 80 | C | - | Continuation of source of information. |
| MODWHO | 25 | 25 | C | - | Last person to modify the record. |
| MODDATE | 6 | 6 | I | - | Date of last modification of the record. |

**DATA STRUCTURE NAME:** **PHSLULC**

**DATA STRUCTURE TYPE:** **ESRI© INFO table or DBASE file**

This INFO file contains coded land use/land cover information recorded on the data form. One form can be described by one to three records. For most forms, land use/land cover was not recorded. The information in this file is incomplete and is generally subjective in nature and has not been derived from a structured inventory.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| EOFORM | 4 | 7 | B | - | Number identifying data form on which descriptive information was originally recorded. This field serves to link this file to the cross-reference file PHSXREF. |
| BATCHID | 6 | 6 | C | - | Data entry batch number. |
| LULCCODE | 3 | 3 | I | - | Land use/land cover code. See Appendix D, at the end of this document, for codes. |
| LULCPER | 3 | 3 | I | - | Percentage of total polygon area associated with the data form described in LULCCODE. Generally, this percentage is a rough estimate made by the individual doing the mapping. |
| LULCDATE | 6 | 6 | C | - | Date of source of information. |
| LULCSRC | 6 | 6 | C | - | Code identifying the source of information. See Appendix C, at the end of this document, for codes used. |
| MODWHO | 25 | 25 | C | - | Last person to modify the record. |
| MODDATE | 6 | 6 | I | - | Date of last modification of the record. |

**DATA STRUCTURE NAME:** **PHSXREF**
**DATA STRUCTURE TYPE:** **ESRI© INFO table or DBASE file**

This table is part of the old Priority Habitats and Species (PHS) polygon database before the region feature was available. The old data structure for PHS polygonal data was not simple. It utilized a cross-reference INFO (PHSXREF) table to tie polygons in the coverages to descriptive information in a set of extended attribute tables (PHSEO, PHSDSCRP, PHSSRC, PHSSRC and PHSLULC). The data description for PHSXREF describes some strategies for using the data.

One polygon can be associated with multiple descriptive records (e.g., in the file PHSEO) and one descriptive record can describe multiple polygons. For example, a polygon may be described on one data form as an elk winter range and on another as an elk migration corridor. The data form describing the migration corridor may apply to several polygons on the map as the corridor 'intersects' other priority areas or crosses a map boundary. This type of relationship is called a 'many to many' relationship in database jargon. It was not handled well by ESRI© Arc/Info software and data structure. This cross-reference file addressed this problem.

The file contains one record for every unique pairing in the database of PHSID (a unique polygon identifier) and EOFORM (a unique form or descriptive record). From the perspective of this file, the relationship to the PHS coverage and the PHS descriptive tables is many to one. This structure is generally better handled by relational databases used in GIS technology (particularly ESRI© Arc/Info) than is the many to many relationship described above.

To select polygons from the PHS coverage based on descriptive information in PHSEO, the following general steps are used in ESRI© Arc/Info.

1. The PHSXREF file is related to the PHSEO file using the field EOFORM as the key or linking field. The desired records are reselected based on user-specified values for one or more fields in PHSEO.

2. The field PHSID, which is a unique polygon identifier, is placed in a temporary lookup table.

3. The coverage polygon attribute table (PAT) is related or linked to the lookup table using PHSID as the key or related field. All polygons, which have a “hit”, in the lookup table are associated with the descriptive values specified by the user in step 1.

Rather than use temporary lookup tables, an alternative is to create permanent tables representing various combinations of descriptive values of common interest. For example, an elk winter range table can be created by selecting PHSEO records where **SPPCODE = 'CEEL'** and **SEASON = 'W'** or **SEASON = 'S'** and saving PHSID from the PHSXREF file to the newly created table. This table can then be related to the PAT of the PHS coverage to select 'hits' as described above.

**DATA STRUCTURE NAME:** PHSXREF (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| PHSID | 4 | 8 | B | - | Number assigned to the point or polygon uniquely identifying it statewide. This number links the record to one or many records in the PHSXREF file. |
| EOFORM | 4 | 7 | B | - | Data from number links with PHS attribute tables PHSEO, PHSSRC, PHSDSCRP, and PHSLULC in a one-to-one relationship. This field serves to link these files to the cross-reference file PHSXREF. |

**DATA STRUCTURE NAME:** **EOCODE**

**DATA STRUCTURE TYPE:** **ESRI© INFO table or DBASE file**

This table is used to relate to the EOCODE item/field in the PHS polygon tables or point data to get the common name and scientific name for each of the species or habitat codes. This table is unnecessary if you use the region feature class because the common name, scientific name and items/fields from some of the other tables have been added for your convenience. The items/fields CLASS, PHS and PHS FLAG have been dropped from the original table because they are no longer in use.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| EOCODE | 6 | 6 | C | - | Code identifying species (derived from genus and species) or habitat. See ALLSPP and EOCODE tables that accompanies the data and the definitions for the tables, in this document, or COMNAME and SCINAME fields listed below. SCINAME will be blank if the code is a habitat. |
| COMNAME | 32 | 32 | C | - | Common name of the species or habitat. |
| SCINAME | 32 | 32 | C | - | Scientific name of the species. |

**DATA STRUCTURE NAME:** **HABPTS**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info point coverage or shape file**

Contains point data for mapped priority habitats that can't be shown as polygons (e.g. cave entrance). Items/fields from the various INFO tables (PHSEO, PHSSRC, and PHSDSCRP)

**DATA STRUCTURE NAME:** HABPTS (continued)

have been added after Y-COORD, during the standard data release process, for your convenience.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| EOFORM | 4 | 7 | B | - | Data form number links with PHS attribute tables PHSEO, PHSSRC, PHSDSCRP, and PHSLULC in a one-to-one relationship |
| EOCODE | 6 | 6 | C | - | Code that identifies the habitat. See EOCODE table that accompanies the data and the definitions for the table, in this document, or COMNAME field listed below. |
| X-COORD | 4 | 12 | F | 3 | X coordinate of habitat point. |
| Y-COORD | 4 | 12 | F | 3 | Y coordinate of habitat point. |
| QUADCODE | 4 | 7 | B | - | The Washington Department of Fish and Wildlife standard 7 digit number identifying the 1:24,000 scale US Geological Survey 7.5-minute topographic map where the habitat is located. See appendix A, at the end of this document, for the quadcode format. |
| COORD | 1 | 1 | I | - | Mapping accuracy of the point as determined by the individual doing the mapping. |
| | | | | | 1 = Accurate within a quarter mile.<br>2 = Accurate within a half mile.<br>3 = Location known to within one mile.<br>4 = Location known to a general locality. |
| SITENAME | 50 | 50 | C | - | Name assigned to the area based generally on a local place name. |
| GENDES1 | 80 | 80 | C | - | Description about the area, including how it is used and why it is important. |
| GENDES2 | 80 | 80 | C | - | Continuation of the description of the area. |
| GENDES3 | 80 | 80 | C | - | Continuation of the description of the area. |
| RECORDER | 25 | 25 | C | - | Name of the individual entering information on the data form. |
| MAPPER | 25 | 25 | C | - | Name of the individual doing the mapping. |

**DATA STRUCTURE NAME:** HABPTS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SENS | 1 | 1 | C | - | Indicates if habitat location is sensitive. |
| | | | | | Y = Yes, habitat is sensitive<br>N = No, habitat is not sensitive. |
| COMNAME | 32 | 32 | C | - | Common name of the habitat. |

For those parties who do not meet the requirements to receive sensitive fish and wildlife information under WDFW's Releasing Sensitive Fish and Wildlife Information Policy – 5210 generalized layers have been created for the species listed in Appendix A of the policy.

Generalized township and section layers have been created for each of the databases that contain any of the sensitive species or habitat locations. Accompanying these generalized layers is an INFO table of DBASE file that will relate (one to many) to these generalized layers by using the item/field TOWN_ID or SECTTOWN_ID. There will be some polygons with no attributes. These are no data or "donut" polygons, created by surrounding polygons. Sensitive location information within the databases that contain any of the sensitive species or habitats may have some of their items/fields replaced with 'ZZZZZZ' to mask information that pertains to a their location.

**DATA STRUCTURE NAME:** **HABTOWN**
**DATA STRUCTURE TYPE:** **Esri® Arc/Info polygon coverage or shape file**

Layer of townships that contain sensitive habitat locations from the Priority Habitat and Species point database.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. This item/ field is used to relate one to many to the associated township INFO table or DBASE file. |

**DATA STRUCTURE NAME:** **HABTOWN_TBL**
**DATA STRUCTURE TYPE:** **ESRI® INFO table or DBASE file**

INFO table or DBASE file of Priority Habitat and Species point database records with sensitive habitat locations generalized to a township. See HABPTS layer description, listed above, for all the item/field descriptions. Additional items/fields are listed below.

**DATA STRUCTURE NAME:** HABTOWN_TBL (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| RESOLUTION | 8 | 8 | C | - | Finest resolution allowable for location of sensitive habitat. | |
| | | | | | SECTION<br>TOWNSHIP | = Locations are generalized to a section.<br>= Locations are generalized to a township. |
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. This item/ field is used to relate many to one to the associated section sensitive habitat location layer. | |

**DATA STRUCTURE NAME:** **HABSECT**

**DATA STRUCTURE TYPE:** **Esri® Arc/Info polygon coverage or shape file**

Layer of sections that contain sensitive habitat locations from the Priority Habitats and Species point database.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SECTTOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources section code. This item/ field is used to relate one to many to the associated section INFO table or DBASE file. |

**DATA STRUCTURE NAME:** **HABSECT_TBL**

**DATA STRUCTURE TYPE:** **ESRI® INFO table or DBASE file**

INFO table or DBASE file of Priority Habitats and Species point database records with sensitive habitat locations generalized to a section. See HABPTS layer, listed above, for all the item/field descriptions. Additional items/fields are listed below.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| RESOLUTION | 8 | 8 | C | - | Finest resolution allowable for location of sensitive habitat. | |
| | | | | | SECTION<br>TOWNSHIP | = Locations are generalized to a section.<br>= Locations are generalized to a township. |

**DATA STRUCTURE TYPE:** HABSECT_TBL (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SECTTOWN-ID | 7 | 7 | I | - | Washington Department of Natural Resources section code. This item/ field is used to relate many to one to the associated section sensitive habitat location layer. |

# WILDLIFE HERITAGE DATABASE

**Database Manager:** Gretchen Blatz
(360) 902-2484

## General Description

The Washington Department of Fish and Wildlife (WDFW) Heritage Database contains information on documented point occurrences of non-game species of concern, state and federal species including those designated as endangered, threatened, sensitive, candidate, and monitor. This database was developed in the early 1980s and formed the beginning of the Priority Habitats and Species (PHS) Program.

Wildlife heritage data are collected by a variety of means from field surveys to reports from reputable sources. Scope of the database is statewide and encompasses over 230 species. The database is continually being updated. High priority species are surveyed either every year or every five years. Lower priority species are surveyed as field logistics allow or on a less rigorous schedule.

Spotted owl and marbled murrelet detection sites are not included in the Wildlife Heritage Database. If there are spotted owls or murrelets within your project area they will be included as part of the standard request process but in separate databases. Please see the Spotted Owl and Marbled Murrelet Database sections, of this document, for more information.

## Resolution and Limitations

Positional accurate data for current site observations are represented as point locations. These data are at least accurate to within a quarter section of the Public Land Survey older, and less accurate data are reported by the section only.

Only the most current (1978 and later) and accurately known data will be supplied as points with standard products. All other information will only be provided in response to special requests. Using the older information requires consultation with WDFW biologists. See Appendix G, at the end of this document, for those contacts.

**Please note digital data may contain some species and habitats that are not considered priority by the agency. Also, this database contains information on species locations with direct regulatory implications. Wildlife heritage data is updated constantly; therefore, information should not be used for future projects. Please obtain updated digital data rather then use outdated information.**

This database contains species locations that are deemed sensitive by WDFW under its Releasing Sensitive Fish and Wildlife Policy – 5210. Please refer to this policy for conditions regarding the use of this information. This policy is available by contacting the Priority Habitats and Species Section at (360) 902-2543.

## Data Organization and Products

Digital data are available as ESRI® export or shape file format, in State Plane South coordinates (Zone 5626), North American Datum of 1927 or North American Datum of 1983 (1991 adjustment). The data will be provided as a single species point layer.

Since the Wildlife Heritage Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

**DATA STRUCTURE NAME: HRTGPTS**

**DATA STRUCTURE TYPE: ESRI© Arc/Info point coverage or shape file**

The item/field COMNAME and PRIORITY have been added and NAME has been renamed to SCINAME in the original layer, during the standard data release process, for your convenience. The following twelve items/fields HRTGID, PROV, YEAR, NUMOWN, PROTST, SPECST, BEPLANDT, POLY, POLYGON, LABELER, FIRSTDOT and CRIT_SYM were dropped from the original table because they are used for WDFW internal purposes only.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SPPCODE | 6 | 6 | C | - | Standard Washington Department of Fish and Wildlife code which identifies the species. The code is derived from genus and species. See ALLSPP table, in this document, for definitions or COMNAME and SCINAME listed below. |
| IDXCODE | 6 | 6 | C | - | Phylogenic-based species code. |
| OCCUR | 4 | 4 | I | - | An ascension catalog number that combined with the sequence number identifies a unique record within a species. |
| SEQNO | 2 | 2 | I | - | Occurrences with multiple locations of a species. Generally, several nests within one territory are given different sequence numbers (SEQNO) within an occurrence, or several observations within a single survey effort are given different sequence numbers within an occurrence. |
| QUADCODE | 4 | 7 | B | - | The Washington Department of Fish and Wildlife standard 7 digit number identifying the US Geological 7.5-minute topographic map where the species is located. See appendix A, at the end of this document, for the quadcode format. |
| DATAPT | 3 | 3 | I | - | Sequence number within a US Geological Survey 7.5-minute topographic map for each site location. |
| QUADPT | 10 | 10 | I | - | Concatenation of QUADCODE and DATAPT. |
| QUADNAME | 28 | 28 | C | - | Name of the US Geological Survey 7.5-minute topographic map where the species is located. |

**DATA STRUCTURE NAME:** HRTGPTS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TRS | 20 | 20 | C | - | The legal description of the species occurrence based on township, range, meridian, section, quarter and sixteenth section of the site location. |
| COUNTY | 2 | 2 | I | - | Federal Information Processing Standard (FIPS) county code of site location. Codes are determined by the National Institute of Standards and Technology. Additional information can be found at: itl.nist.gov/fipspubs/co-codes/states.htm. |
| REGION | 1 | 1 | I | - | WDFW administrative region 1 through 6 of site location. |
| CLASS | 2 | 2 | C | - | Code that separates animals into general groups. |
| | | | | | AA = Artificial animal, nest platform not used yet.<br>EA = Exotic animal.<br>GA = Game animal.<br>NA = No animal found after target specific survey completed.<br>SA = Special animal (e.g., state listed and monitor species).<br>ZA = Zapped animal. Site no longer supports original occurrence. |
| CRIT | 5 | 5 | C | - | Criteria that identifies how the area is used by the indicated species. |
| | | | | | ART = Artificial nest.<br>B = Breeding occurrence.<br>BOX = Nest Box.<br>CF = Peregrine falcon cross-foster site.<br>CR = Communal roost.<br>DEN = Den.<br>E = Peregrine falcon eyrie.<br>H = Peregrine falcon hack site.<br>IO = Individual occurrence.<br>LEK = Lek.<br>RC = Regular concentration, relative size not indicated.<br>RI = Regular occurring individual.<br>RLC = Regular large concentration.<br>RLS = Turkey release sites.<br>RSC = Regular small concentrations. |

**DATA STRUCTURE NAME:** HRTGPTS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| CRITQUAL | 1 | 1 | C | - | Modifier for data entry criterion varies by species (e.g., grizzly bear, wolf records, gray squirrel). | |
| | | | | | 1 | = Confirmed location of nest. |
| | | | | | 2 | = Flightless young observed. |
| | | | | | 3 | = Fledgling young observed. |
| | | | | | 4 | = Adult defensive (breeding related). |
| | | | | | 5 | = Nest building (carrying of nest material). |
| | | | | | 6 | = Pair courtship, including copulation. |
| | | | | | 7 | = Single bird courtship (singing). |
| | | | | | 8 | = Unassigned. |
| | | | | | 9 | = Unassigned. |
| | | | | | 10 | = Confirmed locations of peregrine eyries are given the CRIT of E. Therefore, all CRIT = E have CRITQUAL = 1. As of January 26, 1999 there are no CRIT = B for peregrines, and no breeding behavior other than active breeding at known eyries has been recorded. After this date the use of "B" and a CRITQUAL of more than 1 may be used to designate other behaviors, such as pre-breeding courtship. |
| VERIFY | 1 | 1 | C | - | Verification code for an observation. | |
| | | | | | V | = Verified by a reliable source, generally WDFW or other agency biologist. |
| | | | | | U | = Not verified by a reliable source, or identification of species is uncertain. |
| | | | | | 1 | = Confirmed grizzly bear or wolf observation. |
| | | | | | 2 | = Probable grizzly bear or wolf observation. |

**DATA STRUCTURE NAME:** HRTGPTS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| COORD | 1 | 1 | I | - | Mapping accuracy of the point as determined by the individual doing the mapping. |
| | | | | | C = Accurate to within quarter mile radius and confirmed by a reliable source.<br>G = Location known only to a general locality.<br>N = Accurate to within one mile radius.<br>U = Accurate to within quarter mile radius and unconfirmed by a reliable source |
| DATE | 8 | 8 | I | - | Date of observation in the following format: YYYYMMDD. For multiple observations of same feature (e.g., nest), the year reflects the latest survey that found the site occupied. |
| SRCLEAD | 70 | 70 | C | - | Source of observation by observer or source document. For multiple observations of same feature (e.g., nest), the source reflects the latest survey. |
| GENDES1 | 80 | 80 | C | - | Description of location of a species. |
| GENDES2 | 80 | 80 | C | - | Continuation of the description of the location of a species. |
| GENDES3 | 80 | 80 | C | - | Continuation of the description of the location of a species. |
| SITENAME | 50 | 50 | C | - | Name assigned to the location based generally on the closest definable geographic place name. |
| NAMEOWN | 27 | 27 | C | - | Name of landowning entity. May or may not be listed, depending on the type of entity. |
| NAMEAREA | 46 | 46 | C | - | Name of the area. Generally used only for areas that are managed in some way for resource protection (e.g., parks, wilderness, wildlife areas etc.). |
| AGENCYSB | 26 | 26 | C | - | Name of management sub-unit (e.g., a US Forest S<br>ervice ranger district). |
| OWNCODE | 9 | 9 | C | - | Ownership code. See Appendix E, at the end of this document, for codes. |

**DATA STRUCTURE NAME:** HRTGPTS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| LATLONG | 15 | 15 | C | - | Latitude and longitude in degrees, minutes, seconds, in the following format, 462345N1223412W. |
| XSOUTH | 11 | 11 | C | - | Easting State Plane South coordinates in zone 5626. |
| YSOUTH | 11 | 11 | C | - | Northing State Plane South coordinates in zone 5626. |
| DTENTER | 8 | 8 | I | - | Date occurrence entered in database. |
| DTMOD | 8 | 8 | I | - | Date occurrence last modified in the database. |
| STASTAT | 2 | 2 | C | - | State listing status of species. |
| | | | | | SE = State endangered.<br>ST = State threatened.<br>SS = State sensitive.<br>SC = State candidate.<br>SM = State monitor.<br>EX = Extirpated from the state. |
| FEDSTAT | 3 | 3 | C | - | Federal listing status of species. |
| | | | | | FE = Federal endangered.<br>FT = Federal threatened.<br>FC = Federal candidate.<br>Fco = Federal species of concern. |
| PHCLASS | 1 | 1 | C | - | Phylogenetic class of species. |
| | | | | | I = Invertebrate.<br>F = Fish.<br>A = Amphibian.<br>R = Reptile.<br>B = Bird.<br>M = Mammal. |
| PRIORT | 2 | 2 | I | - | Numerical state listing status of species. |
| | | | | | 1 = State endangered.<br>3 = State threatened.<br>5 = State sensitive.<br>7 = State candidate.<br>9 = State monitor. |
| COMNAME | 40 | 40 | C | - | Common name of the species. |
| SCINAME | 40 | 40 | C | - | Scientific name of the species. |
| PRIORITY | 3 | 3 | C | - | Species and habitats that are considered to be priorities for conservation and management by |

**DATA STRUCTURE NAME:** HRTGPTS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| | | | | | WDFW. For a copy of the most current *Priority Habitats and Species List*, contact WDFW PHS Section at (360) 902-2543, or it is available on our web site at wdfw.wa.gov/hab/phspage.htm. |
| | | | | | YES = Indicates that the species is considered a WDFW priority and is on the *Priority Habitats and Species List* and/or *Species of Concern List*.<br>NO = Indicates that the species is not a WDFW priority. |

**DATA STRUCTURE NAME:** **ALLSPP**

**DATA STRUCTURE TYPE:** **ESRI© INFO table or DBASE file**

The table contains a list of all species that occur in Washington State. It is a database of species taxonomy, nomenclature and legal status classifications. It contains upper and lower case versions of common and scientific names and alphanumeric codes to permit sorting and display of data in phylogenetic order. In addition, it includes state, federal and The Nature Conservancy's species status codes.

This is a near static reference table. If additions or edits are made to the list, the table is edited and then a new master table is produced.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| CHSCINAM | 40 | 40 | C | - | Scientific name of taxon in upper and lower case. |
| CRIT | 10 | 10 | C | - | Data entry criterion for inclusion of data into the Wildlife Heritage Database. |
| CLASS | 1 | 1 | C | - | Phylogenetic class of taxon. |
| | | | | | I = Invertebrate.<br>F = Fish.<br>A = Amphibian.<br>R = Reptile.<br>B = Bird.<br>M = Mammal. |
| SPPNO | 8 | 8 | I | - | A phylogenetic ascension number unique per species when used with PHYLO or CLASS. |
| PHYLO | 1 | 1 | C | - | Phylogenetic class of taxon. |

**DATA STRUCTURE NAME:** ALLSPP (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| | | | | | A = Invertebrate.<br>F = Fish.<br>G = Amphibian.<br>H = Reptile.<br>Y = Bird.<br>Z = Mammal. |
| IDXCODE | 6 | 6 | C | - | Phylogenic-based taxon code. Established to accommodate entry of non-game fish sample sites where no fish were found; used in conjunction with 'NA' in class field for "no animal". |
| PRIORT | 8 | 8 | I | - | Numerical state listing status of taxon. |
| | | | | | 1 = State endangered.<br>3 = State threatened.<br>5 = State sensitive.<br>7 = State candidate.<br>9 = State monitor. |
| COMNAME | 40 | 40 | C | - | Common name of taxon. |
| SCINAME | 40 | 40 | C | - | Scientific name of taxon. |
| SPPCODE (or EOCODE in the PHS database) | 7 | 7 | C | - | Standard WDFW code which identifies the species. The code is derived from genus and species. |
| NONATIVE | 1 | 1 | C | - | Non-native status of species to Washington State. |
| | | | | | Y = Indicates this species has been introduced to Washington.<br>C = Indicates this species is casual to Washington.<br>A = Indicates this species is accidental to Washington. |
| PROTECTD | 1 | 1 | C | - | A 'Y' in this field indicates this species is classified as protected by Washington Administrative Code (WAC) 232.12.011. |
| NONWLDLF | 1 | 1 | C | - | A 'Y' in this field indicates this species is classed as non-wildlife by Revised Code of Washington (RCW) 77 08. 010 :16 |
| PELAGIC | 1 | 1 | C | - | Indicates those primarily ocean/sea going species that are occasionally washed ashore or blown over land are designated as pelagic by having a value of 'P'. |

**DATA STRUCTURE NAME:** ALLSPP (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| GAMEST | 1 | 1 | C | - | Game fish classification.<br>CLASS = F/GAMEST = F means taxon classes as food fish by former Department of Fisheries.<br>GAMEST = G means taxon classed as game fish by former Department of Wildlife.<br>CLASS = M/GAMEST = F then taxon classed as game/furbearer by former Department of Wildlife, else GAMEST = G means taxon classes as game by for Washington Department of Game. |
| SUBSPP | 1 | 1 | C | - | Taxon has or is a subspecies that is managed differently from the full species or other subspecies. |
| | | | | | F = Full species.<br>Y = Subspecies. |
| STASTAT | 2 | 2 | C | - | Alphanumeric code of state listing status of species. |
| | | | | | SM = State monitor.<br>SC = State candidate.<br>SS = State sensitive.<br>ST = State threatened.<br>SE = State endangered. |
| NOWACP | 1 | 1 | C | - | A 'Y' in this item/field indicates this species is protected from hunting. It is protected by Washington Administrative Code (WAC) or Revised Code of Washington (RCW) but by exclusion from the hunting season (e.g., swans are a game species but are not hunted). |
| COLVILLE | 1 | 1 | C | - | An "I" in this item/field means that the species is an indicator species for the Colville National Forest. |
| GPINCHOT | 1 | 1 | C | - | An "I" in this item/field means that the species is an indicator species for the Gifford Pinchot National Forest. |
| MBAKSNO | 1 | 1 | C | - | An "I" in this item/field means that the species is an indicator species for the Mount Baker-Snoqualmie National Forest. |
| OKANOGAN | 1 | 1 | C | - | An "I" in this item/field means that the species is an indicator species for the Okanogan National Forest. |

**DATA STRUCTURE NAME:** ALLSPP (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| OLYMPIC | 1 | 1 | C | - | An "I" in this item/field means that the species is an indicator species for the Olympic National Forest. | |
| UMATILLA | 1 | 1 | C | - | An "I" in this item/field means that the species is an indicator species for the Umatilla National Forest. | |
| WENATCHE | 1 | 1 | C | - | An "I" in this item/field means that the species is an indicator species for the Wenatchee National Forest. | |
| CHCOMNAM | 40 | 40 | C | - | Common name of taxon in upper and lower case (e.g., Brown creeper). | |
| PRGNOSIS | 2 | 2 | C | - | Prognosis of species state listing status within the next 10 years without changes in current management practices. | |
| | | | | | ++ | = Improves sufficiently to change state status. |
| | | | | | + | = Improves. |
| | | | | | 0 | = No change. |
| | | | | | - | = Deteriorates. |
| | | | | | -- | = Deteriorates sufficiently to change state status. |
| MISCSTAT | 3 | 3 | C | - | Used in conjunction with PRGNOSIS value. | |
| | | | | | X | = Extirpated. |
| | | | | | XB | = Extirpated as a breeding species. |
| | | | | | XB? | = Nearly extirpated as a breeding species. |
| | | | | | G | = Grandfathered from federal threatened and endangered species list. No state management options. |
| | | | | | XW | = Extirpated from west side of Washington State. |
| | | | | | XE | = Extirpated from east side of Washington State. |
| STAPROPD | 2 | 2 | C | - | Alphanumeric codes of proposed state status listing. | |
| | | | | | PM | = Proposed monitor. |
| | | | | | PS | = Proposed sensitive. |
| | | | | | PT | = Proposed threatened. |
| | | | | | PE | = Proposed endangered. |

**DATA STRUCTURE NAME:** ALLSPP (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| FPA | 1 | 1 | C | - | Forest practice associated species. |
| | | | | | Y = Yes.<br>N = No.<br>? = Possibly. |
| NEWIDX | 10 | 10 | C | - | Phylogenic based species code. |
| TNCGLOBL | 6 | 6 | C | - | The Nature Conservancy's (TNC) global species status codes. For complete definitions see TNC element ranking instructions. |
| | | | | | G1 = Critically imperiled globally due to extreme rarity (5 or fewer occurrences) or because of some factors making it extremely vulnerable to extinction.<br>G2 = Imperiled globally (6 to 20 occurrences).<br>G3 = Either very rare and local throughout its range or found locally, even abundantly at some locations, in a restricted range (21 to 100 occurrences).<br>G4 = Apparently secure globally, though may be quite rare in parts of its range, especially at periphery.<br>G5 = Demonstrably secure globally, though may be quite rare in parts of its range, especially at periphery.<br>GU = Of historical occurrence throughout its range, formerly part of the established biota with the expectation it may be rediscovered (e.g., Bachman's warbler).<br>GX = Believed extinct with virtually no likelihood of rediscovery. |
| TNCSTATE | 6 | 6 | C | - | The Nature Conservancy's (TNC) state species status codes. For complete definitions see TNC element ranking instructions. |

**DATA STRUCTURE NAME:** ALLSPP (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| | | | | | S1 = Critically imperiled in state due to extreme rarity (5 or fewer occurrences) or because of some factors making it extremely vulnerable to extirpation.<br>S2 = Imperiled in state (6 to 20 occurrences).<br>S3 = Rare or uncommon in state (21 to 100 occurrences).<br>S4 = Apparently secure in state with many occurrences.<br>S5 = Demonstrably secure in state and essentially ineradicable under present conditions.<br>SA = Accidental in state.<br>SE = An exotic established in state.<br>SH = Of historical occurrence throughout its range, formerly part of the established biota with the expectation it may be rediscovered (e.g., Bachman's warbler).<br>SN = Regularly occurring, usually migratory and typically non-breeding species for which no significant or effective habitat conservation measures can be taken in state.<br>SR = Reported from state, but without persuasive documentation for either accepting or rejecting report.<br>SRF = Reported in error from state but error persists in literature.<br>SU = Possibly in peril in state but status uncertain, need more information.<br>SX = Apparently extirpated from state. |
| AOUNO | 8 | 8 | I | - | Some of the American Ornithological Union (AUO) values were updated based on changes published in the 35th supplement of the journal AUK (1985):102.680.686. AUK is the journal of the AOU. |

**DATA STRUCTURE NAME:** ALLSPP (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| FEDSTAT | 3 | 3 | C | - | Alphanumeric code of federal listing status of species. |
| | | | | | FC = Federal candidate.<br>FS = Federal sensitive.<br>FT = Federal threatened.<br>FE = Federal endangered. |
| POLY | 4 | 4 | C | - | Used internally for the Priority Habitat and Species project. |
| PHSSTAT | 5 | 5 | C | - | Used internally for the Priority Habitat and Species project. |
| PHSFPA | 5 | 5 | C | - | Used internally for the Priority Habitat and Species Forest Practices Association species phase project. |
| HBMDL | 5 | 5 | C | - | Habitat “model” exists per Beckstead/ Timber, Fish and Wildlife effort Y/N. |
| LOCDATA | 5 | 5 | C | - | Used internally for the Priority Habitat and Species project. |
| CLAS | 6 | 6 | C | - | First two digits of IDXCODE, provides rough phylogenic grouping. |
| INTPRI | 8 | 8 | I | - | Numerical equivalents of state listing status of species. |
| | | | | | 1 = State endangered.<br>2 = Proposed endangered.<br>3 = State threatened.<br>4 = Proposed threatened.<br>5 = State sensitive.<br>6 = Proposed sensitive.<br>7 = State candidate.<br>9 = State monitor. |
| PHSFOR | 1 | 1 | C | - | Used internally for the Priority Habitat and Species forest phase project. |
| PHSURB | 1 | 1 | C | - | Used internally for the Priority Habitat and Species urban phase project. |
| PHSCOAST | 1 | 1 | C | - | Used internally for the Priority Habitat and Species coastal phase project. |
| PHSSHRUB | 1 | 1 | C | - | Used internally for the Priority Habitat and Species shrub-steppe phase project. |
| PHSNAME | 40 | 40 | C | - | Used internally for the Priority Habitat and Species project. The name of the species as it appears in the documents of the project. |

For those parties who do not meet the requirements to receive sensitive fish and wildlife information under WDFW's Releasing Sensitive Fish and Wildlife Information Policy – 5210 generalized layers have been created for the species or habitats listed in Appendix A of the policy.

Generalized township and section layers have been created for each of the databases that contain sensitive species or habitat locations. Accompanying these generalized layers is a INFO table of DBASE file that will relate (one to many) to these generalized layers by using the item/field TOWN_ID or SECTTOWN_ID. There will be some polygons with no attributes. These are no data or "donuts", created by surrounding polygons. Sensitive location information within the databases that contain any of the sensitive species or habitats may have some of their items/fields replaced with 'ZZZZZZ' to mask information that pertains to a their location.

**DATA STRUCTURE NAME: HRTGTOWN**

**DATA STRUCTURE TYPE: Esri® Arc/Info polygon coverage or shape file**

Layer of townships that contain sensitive species locations from the Wildlife Heritage database.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. This item/ field is used to relate one to many to the associated township INFO table or DBASE file. |

**DATA STRUCTURE NAME: HRTGTOWN_TBL**

**DATA STRUCTURE TYPE: ESRI® INFO table or DBASE file**

INFO table or DBASE file of Wildlife Heritage database records with sensitive species locations generalized to a township. See HRTGPTS layer, listed above, for the item/field descriptions. Additional items/fields are listed below.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| RESOLUTION | 8 | 8 | C | - | Finest resolution allowable for location of sensitive species. | |
| | | | | | SECTION | = Locations are generalized to a section. |
| | | | | | TOWNSHIP | = Locations are generalized to a township. |

**DATA STRUCTURE NAME:** HRTGTOWN_TBL (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. This item/ field is used to relate one to many to the associated township sensitive species location layer. |

**DATA STRUCTURE NAME:** **HRTGSECT**
**DATA STRUCTURE TYPE:** **Esri® Arc/Info polygon coverage or shape file**

Layer of sections that contain sensitive species locations from the Wildlife Heritage database.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SECTTOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources section code. This item/ field is used to relate one to many to the associated section INFO table or DBASE file. |

**DATA STRUCTURE NAME:** **HRTGSECT_TBL**
**DATA STRUCTURE TYPE:** **ESRI® INFO table or DBASE file**

INFO table or DBASE file of Wildlife Heritage database records with sensitive species locations generalized to a section. See HRTGPTS layer, listed above, for the item/field descriptions. Additional items/fields are listed below.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| RESOLUTION | 8 | 8 | C | - | Finest resolution allowable for location of sensitive species. |
| | | | | | SECTION = Locations are generalized to a section.<br>TOWNSHIP = Locations are generalized to a township. |
| SECTTOWN-ID | 7 | 7 | I | - | Washington Department of Natural Resources section code. This item/ field is used to relate many to one to the associated section sensitive species layer. |

# SPOTTED OWL DATABASE

**Database Manager:** Lori Salzer
(360) 902-2482

## General Description

The US Fish and Wildlife Service and Washington Department of Natural Resources (DNR) are the primary regulatory agencies managing impacts to spotted owls. These agencies have adopted a management circle approach for assessing the remaining suitable habitat surrounding documented spotted owls. Spotted owl observations are evaluated by Washington Department of Fish and Wildlife (WDFW) biologists and organized to comprise the most accurate representation of owl territories based on type of observation, dispersal distances, habitat characteristics, and topography. The most recent related observation is designated the spotted owl site center. From this site center location a radius of 9,504 feet (1.8 miles) is used for owl sites east of the I-5 corridor or 14,256 feet (2.7 miles) is used west of I-5 to evaluate the amount of remaining habitat. The different radii reflect differences in home range sizes used by owls as determined by radio-telemetry studies.

Spotted owl survey results are sent in to WDFW where owl locations are compared to existing spotted owl site centers. If the new locations are sufficiently distant from established site centers, a new site is established. If the new observation is geographically related to a existing site center, has equivalent or greater biological significance, and is more current than the observation used to establish the existing site center, the site center is moved to the location of the new observation and the site center datum is encoded with the new biological status and observation date. If the new observation is geographically related to an existing site center, but does not have equivalent or greater biological significance relative to the observation used to establish and existing site center, the site center remains unchanged.

## Resolution and Limitations

Spotted owl survey data are digitized from 1:24,000 scale US Geological Survey 7.5-minute topographic maps. The Spotted Owl Database site centers and its associated files are continually being updated from information received from WDFW, DNR, and timber industry survey efforts. Data from previously un-surveyed areas or of higher biological status receive data processing priority over geographically or biologically redundant data.

**This database contains information on species locations with direct regulatory implications. Spotted owl data is updated constantly; therefore digital data should not be used for future projects. Please obtain updated data rather than use outdated information.**

Spotted owl locations are deemed sensitive by WDFW under its Releasing Sensitive Fish and Wildlife Policy – 5210. Please refer to this policy for conditions regarding the use of this information. This policy is available by contacting the Priority Habitats and Species Section at (360) 902-2543.

## Data Organization and Structure

Digital data are available as ESRI® export or shape file format, in State Plane South coordinates (Zone 5626), North American Datum of 1927 or North American Datum of 1983 (1991 adjustment). The spotted owl site center data will be provided as a single species point layer. Owl management circles use the site center location to generate a radius of 9,405 feet (1.8 miles) for owl sites east of the I-5 corridor or 14,256 feet (2.7 miles) for owl sites west of I-5. Owl management polygon layers are not routinely provided as part of the standard request process. If you require these layers a special request for them must be made at the time you place your order.

Since the Spotted Owl Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

**DATA STRUCTURE NAME: OWLS**

**DATA STRUCTURE TYPE: ESRI© Arc/Info point coverage or shape file**

This layer consists of the site center locations, highest and most recent biological status codes, and the years associated with those coded observations. Only spotted owl site centers with official status 1 through 4 are provided as part of the standard data release process. All other data will only be provided in response to a special request made at the time you place your order.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| REFNO | 5 | 5 | I | - | A unique numeric identifier for each site response entry. |
| SITENAME | 26 | 26 | C | - | A geographic name used to identify an area as a spotted owl site center. |
| LATLONG | 15 | 15 | C | - | Latitude/longitude of site center as determined by digitizing from 1:24,000 scale US Geological Survey 7.5-minute topographic maps. |
| Q100K | 5 | 5 | C | - | Five character name abbreviation of the 1:100,000 scale topographic map that the site center is located on. |
| TRS | 13 | 13 | C | - | The legal description of the site center based on township, range and section. |
| M | 1 | 1 | C | - | The Willamette Meridian descriptor for the location of the original site response entry. |
| | | | | | E = East of the meridian.<br>W = West of the meridian. |
| SITENO | 4 | 4 | I | - | A unique numeric identifier for each site. |

**DATA STRUCTURE NAME:** OWLS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| OWNCODE | 1 | 1 | C | - | General ownership information near a site center. | |
| | | | | | D | = Some Department of Natural Resources managed land 2.7 miles west or 1.8 east of site center based on 1:100,000 scale public land quad maps. |
| | | | | | F | = All lands within 2.7 west or 1.8 east of site center are federally owned. |
| | | | | | N | = Not exclusively federal with 2.7 miles west or 1.8 east of site center but no Department of Natural Resources land present. |
| HIGHSTAT | 1 | 1 | C | - | Hierarchical scheme of site center listed from highest to lowest. | |
| | | | | | R | = Reproductive status. |
| | | | | | P | = Pair present. |
| | | | | | S | = Single present. |
| HIGHYEAR | 4 | 4 | I | - | Most recent year achieving the highest status. | |
| LASTSTAT | 1 | 1 | C | - | Status of site during most recent year when at least one spotted owl was detected. | |
| LASTYEAR | 4 | 4 | I | - | Most recent year when spotted owl presence was detected. | |
| STATUS | 20 | 20 | C | - | Overall official status of the site based on all years of data. See OFFSTAT field below for codes. | |
| OFFSTAT | 1 | 1 | C | - | Numeric code of official site status. | |
| | | | | | 1 | = Pair or reproductive site. |
| | | | | | 2 | = Two or more spotted owls detected, but pair status is unknown. |
| | | | | | 3 | = Resident single site. |
| | | | | | 4 | = Single spotted owl detected, but site status is unknown. |
| | | | | | 5 | = Historic site deemed no longer suitable for owl use. |
| I5SIDE | 1 | 1 | C | - | Site center is east or west of the I-5 corridor. | |
| | | | | | E | = East of I-5 corridor. |
| | | | | | W | = West of I-5 corridor. |

**DATA STRUCTURE NAME:** **BUFFTERR**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file.**

Spotted owl management circles of established territories are buffered site centers for which evidence of territorial behavior has been documented. Such evidence includes, multiple years of observation of a single spotted owl (resident single), two or more spotted owls detected but pair status unknown, and coincident pair of owls observed or evidence of reproduction documented. This layer is not routinely provided as part of the standard request process. If you require this layer a special request for it must be made at the time you place your order.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| INSIDE | 4 | 5 | B | - | Polygon buffer zones. | |
| | | | | | 100 | = Polygons representing a buffer zone of spotted owl established territories. |
| | | | | | 1 | = Polygons outside the buffer zone (e.g., “donut holes” created by surrounding territories). |

**DATA STRUCTURE NAME:** **BFNOTERR**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file.**

Spotted owl management circles with insufficient data to establish territories are buffered site centers for which no evidence of territorial behavior has been documented. This layer is not routinely provided as part of the standard request process. If you require this layer a special request for it must be made at the time you place your order.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| INSIDE | 4 | 5 | B | - | Polygon buffer zones. | |
| | | | | | 100 | = Polygons representing a buffer zone of spotted owls with insufficient data to establish territories. |
| | | | | | 1 | = Polygons outside the buffer zone (e.g., “donut holes” created by surrounding territories). |

**DATA STRUCTURE NAME:** **BFHSTERR**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Spotted owl management circles are buffered site centers consisting of those sites that are deemed no longer viable or active by Washington Department of Fish and Wildlife owl data management biologists. These sites have been subjected to a multiple year protocol survey and no owl locations have been documented and the area is thought no longer capable of supporting spotted owls. This layer is not routinely provided as part of the standard request process. If you require this layer a special request for it must be made at the time you place your order.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| INSIDE | 4 | 5 | B | - | Polygon buffer zones. | |
| | | | | | 100 | = Polygons representing a buffer zone of spotted owls consisting of historic territories. |
| | | | | | 1 | = Polygons outside the buffer zone (e.g., “donut holes” created by surrounding territories). |

For those parties who do not meet the requirements to receive sensitive fish and wildlife information under WDFW’s Releasing Sensitive Fish and Wildlife Information Policy – 5210 generalized layers have been created for the species or habitats listed in Appendix A of the policy.

Generalized township and section layers have been created for each of the databases that contain sensitive species or habitat locations. Accompanying these generalized layers is a INFO table of DBASE file that will relate (one to many) to these generalized layers by using the item/field TOWN_ID or SECTTOWN_ID. There will be some polygons with no attributes. These are no data or “donuts”, created by surrounding polygons. Sensitive location information within the databases that contain any of the sensitive species or habitats may have some of their items/fields replaced with ‘ZZZZZZ’ to mask information that pertains to their location.

**DATA STRUCTURE NAME:** **OWLTOWN**

**DATA STRUCTURE TYPE:** **Esri® Arc/Info polygon coverage or shape file**

Layer of townships that contain sensitive species locations from the Spotted Owl database.

**DATA STRUCTURE NAME:** OWLTOWN (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. This item/ field is used to relate one to many to the associated township INFO table or DBASE file. |

**DATA STRUCTURE NAME:** **OWLTOWN_TBL**
**DATA STRUCTURE TYPE:** **ESRI® INFO table or DBASE file**

INFO table or DBASE file of Spotted Owl database records with sensitive species locations generalized to a township. See OWLS layer, listed above, for the item/field descriptions. Additional items/fields are listed below.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| RESOLUTION | 8 | 8 | C | - | Finest resolution allowable for location of sensitive species. |
| | | | | | SECTION = Locations are generalized to a section.<br>TOWNSHIP = Locations are generalized to a township. |
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. This item/ field is used to relate many to one to the township sensitive species location layer. |

# MARBLED MURRELET DATABASE

**Database Manager:** Jane Jenkerson
(360) 902-2497

## General Description

The Washington Department of Fish and Wildlife (WDFW) maintains information on marbled murrelet occupancy detection locations, detection areas and detection sections. Data are collected by a variety of means from field surveys to reports from reputable sources.

## Resolution and Limitations

Positional accurate data for observations are represented as point locations. These data are at least accurate to within 1/16 section of the Public Land Survey.

Of 19,000 marbled murrelet detections 17,000 locations were digitized from 1:12,000 scale aerial photography. Only the detections indicative of stand occupancy will be provided as part of the standard request process. All other information will only be provided as a special request made at the time you place your order.

**This database contains information on species locations with direct regulatory implications. Marbled murrelet data is updated constantly; therefore it is essential that users obtain updates before using data for future projects**.

All fish and wildlife species are vulnerable to harm from human activities. By receiving marbled murrelet information from WDFW, you incur an obligation to use it in a way that does not cause undue harm to our public fish and wildlife resources.

## Data Organization and Structure

Digital data are available as ESRI® export or shape file format, in State Plane South coordinates (Zone 5626), North American Datum of 1927 or North American Datum of 1983 (1991 adjustment). The marbled murrelet detection locations will be provided as a single species point layer. In August 1997, due to rules adopted by the Forest Practice Board (FPR-8/97), WDFW was required to maintain additional marbled murrelet layers, detection areas and sections. These murrelet detection areas and section polygon layers, consisting of buffers and the section of site centers along with the survey station point layer, are not routinely provided as part of the standard request process. If you require these layers a special request for them must be made at the time you place your order.

Since the Marbled Murrelet Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

**DATA STRUCTURE NAME:** **MAMUPTS**

**DATA STRUCTURE TYPE:** **ESRI © Arc/Info point coverage or shape file**

This point layer contains marbled murrelet detection locations. Only the detection locations for WDFW status 1 thorough 3 will be provided as part of the standard data release

process. All other data will only be provided in response to a special request made at the time you place your order.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| REFNUM | 8 | 8 | I | - | A unique reference number used for a single survey. | |
| MAPID | 3 | 3 | I | - | A unique detection identifier. | |
| WDFWSTAT | 1 | 1 | I | - | Numerical value that broadly summarizes a combination of behaviors used for data retrieval. See Appendix F, at the end of this document, for more detailed codes. | |
| | | | | | 1 | = Nest or nest site. |
| | | | | | 2 | = Eggshells or downy young. |
| | | | | | 3 | = Occupied site, sub-canopy behavior and circling between > 1 and <= 2 canopy heights. |
| | | | | | 4 | = Above canopy behavior. |
| OBSCODE | 2 | 2 | I | - | A more definitive code that identifies specific behavior combinations used internally by WDFW. See Appendix F, at the end of this document, for more detailed codes. | |
| DETTIME | 4 | 4 | C | - | A time noted for each murrelet detection. | |
| VOCAL | 1 | 1 | C | - | Number of reported vocalization 1-5. | |
| | | | | | M | = Multiple >= 5 vocals. |
| | | | | | V | = Visual silent. |
| OVERLAP | 1 | 1 | C | - | Vocalization between or vocalization of two or more birds at the same time. | |
| AVOCAL | 1 | 1 | C | - | Groan or alternate vocalizations. | |
| | | | | | Y | = Yes. |
| | | | | | N | = No. |
| OVOCAL | 1 | 1 | C | - | Whistle or soft que vocalization. | |
| | | | | | Y | = Yes. |
| | | | | | N | = No. |
| DETTYPE | 3 | 3 | C | - | Detection type. | |
| | | | | | H | = Heard only. |
| | | | | | S | = Seen only. |
| | | | | | B | = Both heard and seen. |
| AUDIO | 1 | 1 | C | - | Audio type. | |
| | | | | | J | = Jet sound. |
| | | | | | W | = Wing beats. |
| | | | | | B | = Both jet sounds and wing beats. |

**DATA STRUCTURE NAME:** MAMUPTS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| BEHAVIOR | 2 | 2 | C | - | Behavior observed. |
| | | | | | F = Fly over > 1 canopy.<br>C = Circle over > 1 canopy.<br>T = Fly through <= 1 canopy.<br>B = Circle below <= 1 canopy.<br>L = Land in or depart from tree.<br>S = Stationary calling.<br>U = Unknown behavior.<br>Blank = Unknown. |
| NUMBIRDS | 2 | 2 | C | - | Number of birds detected. |
| BIRDHGT | 4 | 4 | C | - | Bird height reported by observer in fractions of canopies. |
| DETNOTES | 80 | 80 | C | - | Detection notes reported by observer. |
| TOWNSHIP | 6 | 6 | N | 2 | The legal description of the township where the detection site is located. A township is a square parcel of land that is six miles on each side. Its location is established as being so many six-mile units, called Townships, north or south of its baseline, and so many six-mile units, called Ranges, east or west of its meridian. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |
| RANGE | 6 | 6 | N | 2 | The legal description of the range where the detection site is located. A township is a square parcel of land that is six miles on each side. Its location is established as being so many six-mile units, called Townships, north or south of its baseline, and so many six-mile units, called Ranges, east or west of its meridian. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |
| MERIDIAN | 1 | 1 | C | - | The Willamette Meridian descriptor for the location of the detection. |
| | | | | | E = East of meridian.<br>W = West of meridian. |
| SECTION | 3 | 3 | I | - | The legal description of the section where the detection site is located. A section is a square parcel of land that contains 640 acres or one square mile. |

**DATA STRUCTURE NAME:** MAMUPTS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| | | | | | Sections are subdivisions of townships. Each township contains 36 sections. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |
| CNTYFIPS | 2 | 2 | I | - | Federal Information Processing Standard (FIPS) county code of site location. Codes are determined by the National Institute of Standards and Technology. Additional information can be found at itl.nist.gov/fipspubs/co-codes/states.htm. |
| QUADCODE | 7 | 7 | I | - | The Washington Department of Fish and Wildlife standard 7 digit number identifying the US Geological Survey 7.5-minute topographic map where the detection site is located. See Appendix A, at the end of this document, for the quadcode format. |
| DTENTER | 8 | 8 | D | - | Date survey was entered into the official Washington Department of Fish and Wildlife database. |
| DTMODIFY | 8 | 8 | D | - | Date of last modification of the record. |

**DATA STRUCTURE NAME:** **MMSURVEY_TBL**

**DATA STRUCTURE TYPE:** **ESRI© INFO table of DBASE file**

This table contains marbled murrelet survey location information. If the geographic items/fields are empty then there's no corresponding point in the MMSTATIONS layer. This table will not be provided as part of the standard data release process. It will only be provided in response to a special request made at the time you place your order.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| REFNUM | 8 | 8 | I | - | A unique reference number used for a single survey. |
| OBSDATE | 8 | 8 | D | - | Date the survey was conducted. |
| DATECODE | 1 | 1 | I | - | Date interpolation code. |
| OBSYEAR | 4 | 4 | I | - | Year of survey. |
| AFFIL | 20 | 20 | C | - | Affiliation of observer. |

**DATA STRUCTURE NAME:** MMSURVEY_TBL (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| OBSERVER | 30 | 30 | C | - | Observer(s) name. |
| EFFTYPE | 1 | 1 | C | - | Survey effort type. |
| | | | | | S = Standard survey with intent to locate murrelets.<br>I = Incidental, happened upon a murrelet. |
| NUMDETECT | 3 | 3 | I | - | Numeric value that summarizes the total number of detections occurring per survey visit. |
| BESTSTAT | 1 | 1 | I | - | Numeric value that summarizes the best status (highest biological behavior) occurring per survey visit. |
| TOWNSHIP | 6 | 6 | N | 2 | The legal description of the township where the survey site is located. A township is a square parcel of land that is six miles on each side. Its location is established as being so many six-mile units, called Townships, north or south of its baseline, and so many six-mile units, called Ranges, east or west of its meridian. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |
| RANGE | 6 | 6 | N | 2 | The legal description of the range where the survey site is located. A township is a square parcel of land that is six miles on each side. Its location is established as being so many six-mile units, called Townships, north or south of its baseline, and so many six-mile units, called Ranges, east or west of its meridian. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |
| MERIDIAN | 1 | 1 | C | - | The Willamette Meridian descriptor for the location of the survey. |
| | | | | | E = East of meridian.<br>W = West of meridian. |

**DATA STRUCTURE NAME:** MMSURVEY_TBL (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SECTION | 3 | 3 | I | - | The legal description of the section where the survey site is located. A section is a square parcel of land that contains 640 acres or one square mile. Sections are subdivisions of townships. Each township contains 36 sections. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |
| CNTYFIPS | 2 | 2 | I | - | Federal Information Processing Standard (FIPS) county code of site location. Codes are determined by the National Institute of Standards and Technology. For additional information see itl.nist.gov/fipspubs/co-codes/states.htm. |
| QUADCODE | 7 | 7 | I | - | The Washington Department of Fish and Wildlife standard 7 digit number identifying the US Geological Survey 7.5-minute topographic map where the survey site is located. See Appendix A, at the end of this document, for the quadcode format. |
| OBSSAID | 40 | 40 | C | - | Observer survey identifier. An alphanumeric value that describes a broad area in which one or more sites make up a survey area. |
| SITE | 20 | 20 | C | - | Alphanumeric value that describes the general location in which one or more stations make up a survey area. |
| STATION | 6 | 6 | C | - | Alphanumeric value that describes the exact location in which the survey was conducted. |
| VISSTAT | 1 | 1 | C | - | Code assigned by a Forest Practices Application (FPA) reviewer. |
| | | | | | P = Pass.<br>F = Fail.<br>M = Marginal. |
| DTREVIEW | 8 | 8 | D | - | Date reviewed for a Forest Practices Application (FPA). |
| REVIEWER | 35 | 35 | D | - | Reviewer code? |
| DTENTER | 8 | 8 | D | - | Date survey was entered into the official Washington Department of Fish and Wildlife database. |
| DTMODIFY | 8 | 8 | D | - | Date of last modification of the record. |

**DATA STRUCTURE NAME:** **MMSTNS**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info point coverage or shape file**

This is a point layer showing locations of marbled murrelet surveys if known. This layer will not be provided as part of the standard data release process. It will only be provided in response to a special request made at the time you place your order.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| REFNUM | 8 | 8 | I | - | A unique reference number used for a single survey. |

**DATA STRUCTURE NAME:** **MAMUSECT**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

This is a polygon layer containing marbled murrelet detection sections. A detection section is defined as any section where a murrelet has been regardless of status (occupancy or presence). Each section is labeled with the most biologically significant detection status recorded for that section. Data prior to 1970 are not used for this process. These detection sections have regulatory significance under the forest practices rules (FPR-8/97). Only the detection locations with a field STATUS 1 through 4, derived from the WDFWSTAT field in the MAMUPTS layer, will be provided as part of the standard data release process. All other data will only be provided in response to a special request made at the time you place your order or in place of MAMUPTS for those parties who do not meet the requirements to receive sensitive fish and wildlife information. MAMUSECT is clipped by a layer that consists of a polygon that extends 50 miles inland from the saltwater shoreline and a polygon in the Columbia River estuary that was derived from the inland extent of tidal influence, approximately at Township 9 North, Range 7 west.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. First two numbers are the township and third is 0 unless the township is a half, fourth and fifth are the range, the sixth is 0 unless the range is a half, and the seventh is either 1 for range East or 2 for range West. For additional informaition see: dnr.wa.gov/datanadmaps. |
| SECTION_ID | 5 | 5 | I | - | Washington Department of Natural Resources section code. First number specifies the subtype of a legal description, the second and third represent the section number. For additional information see: dnr.wa.gov/dataandmaps. |

**DATA STRUCTURE NAME:** MAMUSECT (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TOWNSHIP | 8 | 8 | C | - | The legal description of the township and range where the survey site is located. A township is a square parcel of land that is six miles on each side. Its location is established as being so many six-mile units, called Townships, north or south of its baseline, and so many six-mile units, called Ranges, east or west of its meridian. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |
| STATUS | 1 | 1 | I | - | Numerical value that broadly summarizes a combination of behaviors used for data retrieval. See Appendix F, at the end of this document, for more detailed codes. |
| | | | | | 1 = Nest or nest site.<br>2 = Eggshells or downy young.<br>3 = Occupied site, sub-canopy behavior and circling between > 1 and <= 2 canopy heights.<br>4 = Presence detections.<br>5 = No detections. |

**DATA STRUCTURE NAME:** **MMBF8**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

This is a polygon layer consisting of the eight adjacent sections surrounding a detection section with a STATUS value of 1 through 4. The internal sections have been dissolved away for cartographic simplicity. You may have polygons from these, known as “donut holes”, that are caused by adjacent detection sections. These management circles have regulatory significance under the forest practices rules (FPR-8/97). MMBF8 are clipped by a layer that consists of a polygon that extends 50 miles inland from the saltwater shoreline and a polygon in the Columbia River estuary that was derived from the inland extent of tidal influence, approximately at Township 9 North, Range 7 west.

**DATA STRUCTURE NAME:** MMBF8 (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| TOWN_ID | 7 | 7 | I | - | Washington Department of Natural Resources township code. First two numbers are the township and third is 0 unless the township is a half, fourth and fifth are the range, the sixth is 0 unless the range is a half, and the seventh is either 1 for range East or 2 for range West. For additional information see dnr.wa.gov/datanandmaps. | |
| SECTION_ID | 5 | 5 | I | - | Washington Department of Natural Resources section code. First number specifies the subtype of a legal description, the second and third represent the section number. For additional information see: dnr.wa.gov/dataandmaps. | |
| TOWNSHIP | 8 | 8 | C | - | The legal description of the township and range where the survey site is located. A township is a square parcel of land that is six miles on each side. Its location is established as being so many six-mile units, called Townships, north or south of its baseline, and so many six-mile units, called Ranges, east or west of its meridian. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. | |
| STATUS | 1 | 1 | I | - | Numerical value that broadly summarizes a combination of behaviors used for data retrieval. See Appendix F, at the end of this document, for more detailed codes. | |
| | | | | | 1 | = Nest or nest site. |
| | | | | | 2 | = Eggshells or downy young. |
| | | | | | 3 | = Occupied site, sub-canopy behavior and circling between > 1 and <= 2 canopy heights. |
| | | | | | 4 | = Presence detections. |
| | | | | | 5 | = No detections. |
| SUR_8 | 1 | 1 | C | - | Y | = Eight sections surrounding a detection section and not containing the detection section. |
| | | | | | N | = The detection section. |

**DATA STRUCTURE NAME:** MMBF8 (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | Item/Field Name |
|---|---|---|---|---|---|---|
| MMBF8FLAG | 1 | 1 | C | - | Y<br>N | = Either a detection or "surrounding eight" sections.<br>= Neither a detection nor "surrounding eight" sections. |
| DETSEC | 1 | 1 | C | - | Y<br>N | = A detection section.<br>= Not a detection section. |

**DATA STRUCTURE NAME:** **MMST3BF**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

This is a polygon layer derived from buffering murrelet occupancy detections, using the WDFWSTAT field values 1 through 3 from MAMUPTS, by 1.5 miles. These management circles have regulatory significance under the forest practices rules (FPR-8/97). This layer will not be provided as part of the standard data release process. It will only be provided, in response to a special request made, at the time you place your order.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| INSIDE | 4 | 5 | B | - | Polygon buffer zones. | |
| | | | | | 100<br>1 | = Polygons representing a buffer zone of marbled murrelet occupancy detections.<br>= Polygons outside the buffer zone (e.g., "donut holes" created by surrounding detection polygons). |

# WASHINGTON LAKES AND RIVERS INFORMATION SYSTEM DATABASE

**Database Manager:** Martin Hudson
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## General Description

The Washington Lakes and Rivers Information System (WLRIS) Database contains statewide priority fish distribution, streams, lakes and reservoirs at a scale of 1:24,000 and a facilities layer at a scale of 1:100,000. Fish distribution information is based on Limiting Factors Analysis (LFA) for defining the documented, presumed and potential presence categories. Known spawning and rearing information are also included where available.

The Washington Department of Fish and Wildlife (WDFW) Fish Programs Science Division directs database project management. Funding sources are WDFW Fish Program and Information Technology Services. Recent statewide updates and reviews of the database by biologists indicate that a significant number of additional 1:24,000 scale streams of documented, presumed and/or potential fish presence, thus, justifying the need for a fish resource Geographic Information System (GIS) database at 1:24,000 scale or greater.

## Resolution and Limitations

WDFW has assimilated anadromous salmonid and dolly varden/bull trout distribution and use information compiled from numerous fish mapping initiatives in the state. The priority resident fish information was transferred from the 1:100,000 scale StreamNet Database and linked to the 1:24,000 scale hydrography layer. The goal is to provide a single database for priority fish distribution that is spatially enabled via links to a 1:24,000 scale routed hydrography layer. Mapping review parties were organized across the state to verify the results of the data assimilation work. Updates and corrections to the database were completed after the reviews.

One of the greatest challenges was to settle on a set of fish distribution and use categories and to align the formal definitions so that a common understanding and a standard vocabulary could be developed. Care was taken not to obliterate the original understandings that guided compilation of earlier data from other databases. It was recognized that shades of distinction exist between databases that are important for some species such as bull trout; and a means to provide these distinctions was made without making the broader database cumbersome.

The salmon/steelhead anadromous species and bull trout data are current as of June 2004 and will be updated based on a “need to know” set of criteria driven primarily by WDFW’s Salmonid Stock Inventory (SaSI) data. Other factors will include data availability from outside sources that include the Tribal Nations and federal and local agencies. The intent of the database is to provide the most recent data collected under the LFA guidelines. The resident fish information was compiled largely by interviews with WDFW biologists and has not been reviewed since 1989 and, therefore, these data are less comprehensive and are not current.

All fish and wildlife species are vulnerable to harm from human activities. By receiving WLRIS data from WDFW, you incur an obligation to use it in a way that does not cause undue harm to our public fish and wildlife resources.

## Data Organization and Structure

The hydrography data source for the Washington Department of Fish and Wildlife (WDFW) Washington Lakes and Rivers Information System (WLRIS) Database layers is the Washington Department of Natural Resources (WADNR) 1:24,000 scale hydro layer, also referred to as “Data 96”. These line and polygon layers spatially locate and describe the major rivers, streams, water bodies and other hydrographic features at 1:24,000 scale or greater. The WADNR hydro layer is composed of features found on the 1:24,000 scale US Geological survey’s topographic map series; and the layer has been enhanced using orthographic photography over WADNR project areas primarily within Washington State owned lands. The WADNR version used for the final development of the WDFW STR24 and LAKES hydrography layers is from the year 2001.

The WDFW STR24 hydrography layer includes line work that has been added or altered by WDFW based of reprocessed ten-meter Digital Elevation Modes (DEMs) and orthographic photos where available.

WLRIS includes statewide priority fish distribution, lakes and reservoirs at a scale of 1:24,000 and a facilities layer at a scale of 1:100,000. This information is related to the cleaned and routed 1:24,000 scale hydrography layer using ESRI© Arc/Info’s Dynamic Segmentation data model. The primary advantage for using dynamic segmentation is that this advanced data structure removed the constraints that have prevented Geographic Information System (GIS) from providing more accurate attribute data for linear features with reasonable costs. In the past, arcs had to be manually segmented for tracking detailed events occurring along linear features such as transportation or stream networks.

Routes are used to define the link between features in dynamic segmentation. A “route” on a hydrographic layer is typically a named river or stream or a set of unnamed reaches that is assumed to define a stream. Routes are also assigned to single reach streams. The relates between attribute tables are constructed using system generated tables that define and/or describe a given route. The data tables that store attributes for linear runs or for points that fall along a stream or river are called event tables.

Two system generated tables serve as the important internal unique “relate” used in dynamic segmentation, the section (SEC) and route attribute (RAT) tables. The section table provides the measures and linkages to the arc layer via the route attribute table, which defines the routes. A linkage is in place between the section and route attribute table with the main arc layer. Additional attribute information can be added to the tables, such as names of features or lengths of the individual arcs in the section table or the total length of a route in the attribute table.

Tabular data are stored in files called event tables. These tables are used to describe linear and point events along linear features. The main advantage of event tables is that beginning and ending points of attributes or the measures of point attributes can fall anywhere along an arc or reach, independent of the underlying linear topology. They are also still tied directly to the feature via the unique and versatile relate structure built into the dynamic segmentation model.

For the standard data release process all event tables have been converted to line, point or polygon layers for ease of use.

Since the WLRIS Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

**DATA STRUCTURE NAME: STR24**

**DATA STRUCTURE TYPE: ESRI© Arc/Info line layer or shape file**

1:24,000 scale hydrography or watercourses from Washington Department of Natural Resources 1:24,000 scale densely populated hydro. The hydrography, which spatially describes the major rivers/streams, was cleaned and routed by Washington Department of Fish and Wildlife using line thinning techniques and adjustment to the ten meter Digital Elevation Modes (DEMs) as described above. Other sources include field observations provided during mapping review parties

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| LLID | 13 | 13 | I | - | Unique stream identifier (ID). The ID is generated from the node latitude and longitude located at a stream's mouth. This ID is to be construed only as an ID, and not necessarily as a reference to a stream's location. |
| LLIDSRC | 4 | 4 | C | - | Stream layer source of the LLID number. |
| | | | | | 100K = LLID transferred from the 1:100,000 scale hydrography layer.<br>24K = LLID generated from the 1:24,000 scale hydrography layer. |
| STRM_NAME | 50 | 50 | C | - | Stream name from the US Geological Survey Geographic Names Information System database. |

**DATA STRUCTURE NAME: LAKES**

**DATA STRUCTURE TYPE: ESRI© Arc/Info polygon coverage or shape file**

Polygons compiled from the Washington Department of Natural Resources (WADNR) 1:24,000 scale lakes and the Washington Department of Fish and Wildlife 1:100,000 scale banks layer. The polygons were primarily pulled from the WADNR layer and polygons describing lakes and/or the reservoirs were transferred into the layer and attributed with the lake name and other spatial information such as county, section and township.

**DATA STRUCTURE NAME:** LAKES (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| POLYTYPE | 4 | 4 | C | - | Numeric description of the type of polygon. |
| | | | | | 101 Reservoir.<br>421 Lakes.<br>999 Islands. |
| ACRES | 10 | 10 | N | C | Surface area in acres. |
| METERS | 4 | 12 | F | C | Polygon perimeter in meters. |
| MUCODE | 6 | 6 | C | - | Old Washington Department of Wildlife management unit code. |
| WBID | 13 | 13 | C | - | Unique water body identifier (ID). The ID is generated from the node latitude and longitude, located at the center of the polygon. This ID is to be construed only as an ID and not, necessarily as a reference to the polygon center. |
| LAKE2K | 5 | 5 | I | - | Unique polygon identifier used for cross-refrencing tabular data; because we adopted the WBID's from Washington Department of Ecology and they are not completely unique. |
| ELEV | 5 | 5 | I | - | Elevation in feet. |
| TOWNSHIP | 8 | 8 | C | - | The legal description of the township where the lake/reservoir is located. A township is a square parcel of land that is six miles on each side. Its location is established as being so many six-mile units, called Townships, north or south of its baseline, and so many six-mile units, called Ranges, east or west of its meridian. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |
| SECTION | 2 | 2 | I | - | The legal description of the section where the lake/reservoir is located. A section is a square parcel of land that contains 640 acres or one square mile. Sections are subdivisions of townships. Each township contains 36 sections. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |

**DATA STRUCTURE NAME:** LAKES (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| NAME | 50 | 50 | C | - | Lake/reservoir name from the US Geological Survey Geographic Names Information System database. |
| Q75KCODE | 7 | 7 | I | - | The Washington Department of Fish and Wildlife standard 7 digit number identifying the US Geological Survey 7.5-minute topographic map where the survey site is located. See Appendix A, at the end of this document, for the quadcode format. |
| SOURCE | 4 | 4 | C | - | Lake source. |
| | | | | | 100K = 1:100,000 scale hydrography layer.<br>24K = 1:24,000 scale hydrography layer. |
| CNTYID | 4 | 4 | C | - | Alphanumeric code consisting of the first four characters of the county name. |
| OUTLET | 1 | 1 | C | - | Indicates if a stream outlet exists. |
| | | | | | Y = Yes.<br>N = No. |
| WOLCODE | 12 | 12 | C | - | Reference to volume, page and line number in the Washington Department of Ecology's publication "Wolcott's Lakes of Washington". Contact Leslie Sikora at sikorles@dfw.wa.gov for the lookup table (wolcott.db). |
| STATUS | 3 | 3 | C | - | Internal tracking code to explain where the polygon originated from or where the codes come from. |
| DSI | 2 | 2 | I | - | Code indicating the symbology, used internally, to color code any maps created with this data. Contact the WLRIS database manager if you would like a copy of the lookup table of these symbols. |
| ERROR | 1 | 1 | I | - | A field to temporarily (and repeatedly) flag issues until they are resolved. |

**DATA STRUCTURE NAME:** **FISHDIST**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info line coverage or shape file**

A 1:24,000 scale spatial representation of priority fish distribution, maintained by the Washington Department of Fish and Wildlife (WDFW). Data were compiled based on Limiting Factors Analysis (LFA) criteria for fish distribution that defines fish presence as documented, presumed, potential or undetected. Fish distribution also contains documented spawning and juvenile rearing from the StreamNet Database. The distribution is based on stream gradient, barriers, stream flow characteristics, field surveys, and best biological knowledge. The database is updated as knowledge improves and/or errors are discovered.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| LLID | 13 | 13 | I | - | Unique stream identifier (ID). The ID is generated from the node latitude and longitude located at a stream's mouth. This ID is to be construed only as an ID, and not necessarily as a reference to a stream's location. |
| SPPCODE | 4 | 4 | C | - | Alphanumeric code that identifies fish species and run timing for salmonids. |
| | | | | | CHFA = Fall chinook.<br>CHSP = Spring chinook.<br>CHSU = Summer chinook.<br>CHMF = Fall chum.<br>CHMS = Summer chum.<br>CHMW = Winter chum.<br>COHO = Coho salmon.<br>PINK = Pink salmon.<br>SOCK = Sockeye salmon.<br>STSU = Summer steelhead.<br>STWI = Winter steelhead.<br>DBT = Dolly varden/bull trout.<br>CCT = Resident cutthroat trout.<br>WCT = Westslope cutthroat trout.<br>KOK = Kokanee salmon.<br>RBT = Rainbow trout.<br>CCF = Channel catfish.<br>SMB = Smallmouth bass.<br>LMB = Largemouth bass.<br>WAL = Walleye. |
| DIST_TYPE | 2 | 2 | I | - | Fish distribution type. **Distribution types of 10, 11, and 13 are considered subsets of documented known distribution/presence (e.g., shown as priority fish presence on WDFW habitat and species maps).** |

**DATA STRUCTURE NAME:** FISHDIST (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| | | | | | 10 | = Presence Documented (synonyms include “Known” and “Currently Occupied”). Aquatic habitat that is documented to be presently utilized by fish (based on reliable published sources, survey notes, firsthand sightings, etc.). This includes habitat used by any like history stage for any length of time. This designation is applied to all stream sections downstream of a documented sighting to the next documented habitat section (or to marine waters), unless otherwise indicated by a formal review group. |
| | | | | | 11 | = Presence Documented Transported. Aquatic habitat that meets the basic criteria for where fish presence is wholly supported by an active fish passage operation (such as a trap-and-haul facility). |
| | | | | | 12 | = Presence Documented Historic. Aquatic habitat that meets the basic criteria for where the available documentation is more than 20 years old. Note, that this does not intend to convey presence “prior” to develop-ment”, which is a separate concept. |
| | | | | | 13 | = Presence Documented Artificial. Aquatic habitat that meets the basic criteria for “Documented” which did not historically support a particular salmonid species but has now been opened up |

**DATA STRUCTURE NAME:** FISHDIST (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| | | | | | | to use. Examples include fish ladders that provide passage past a historically impassable waterfall or the creation of irrigation ditches now used by salmonids. |
| | | | | | 20 | = Presence Presumed (synonyms include "Suitable Habitat"). Aquatic habitat lacking reliable documentation of fish use where, based on the available data and best biological judgement, fish are presumed to occur. For migratory fish, such habitat will extend upstream to the end of the stream OR to the first known natural barrier (including sustained 12% stream gradient or small stream size). Best biological judgement includes consideration of suitable (species specific) habitat availability, life history strategies, proximity and connectivity to adjacent documented habitat sections or logical extrapolation of range from similar systems. |
| | | | | | 30 | = Presence Potential (synonyms include "Recoverable Habitat"). Aquatic habitat that meets the basic criteria for "Presumed" but is unused by fish due to artificial obstructions, poor quality, or extirpation of local fish populations. This category is used in cases where habitat could be made available to fish through removal of obstructions, improvement of habitat, or re-introduction of fish. |

**DATA STRUCTURE NAME:** FISHDIST (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| | | | | | 40 | = Presence Undetected. Aquatic habitat where, based on through physical and biological sampling, fish have not been detected. |
| | | | | | 41 | = Presence Undetected American Fisheries Society (AFS) 2000 Protocol. Aquatic habitat where, based on sampling adhering to the guidelines published by the AFS in 2000, bull trout have not been detected. |
| USE_TYPE | 2 | 2 | I | - | Code that represents spawning, rearing or presence of salmonids. | |
| | | | | | 1 | = Presence/Migration. Sections of aquatic habitat coded as "Documented" for which no further information about life history use is available. This category is the default use type. |
| | | | | | 2 | = Known spawning. Sections of aquatic habitat coded as "Documented" where fish are known to spawn. We have records provided of "Pioneering spawning", defined as "sections where spawning activity has been observed but successful incubation and rearing are considered unlikely at this time." These records are distinguishable in the database but are grouped into this category. |
| | | | | | 3 | = Known Juvenile Rearing. Sections of aquatic habitat coded as "Documented" where juvenile fish are known to rear. For bull trout a juvenile is defined as a fish up to 150 mm in length. |

**DATA STRUCTURE NAME:** FISHDIST (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| WRIA | 2 | 2 | I | - | The number of the Watershed Resource Inventory Area (WRIA) basin where the species is located. There are 62 WRIA basins in Washington State. These planning and administrative boundaries are managed by the Washington Department of Ecology. Additional information can be found at: ecy.wa.gov/watershed/index.html. |
| LLID_SRC | 4 | 4 | C | - | Stream layer source of the LLID number. |
| | | | | | 100K = LLID transferred from the 1:100,000 scale hydrography layer.<br>24K = LLID generated from the 1:24,000 scale hydrography layer. |
| REV_DATE | 8 | 8 | C | - | Revision date for individual data records by year, month and day (YY-MM-DD). |
| REFCODE | 8 | 8 | I | - | Relational database code that provides a link to a table that contains information regarding sources and collection methods of fish distribution information. |
| STRM_NAME | 50 | 50 | C | - | Stream name based on the US Geological Survey Geographic Names Information System database. |

**DATA STRUCTURE NAME:** **SASI**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info line coverage or shape file**

Salmonid Stock Inventory (SaSI) describes salmonid populations based on genetics and applies a status value based on stock health. The SaSI process is a standardized, uniform approach to identifying and monitoring the status of Washington's salmonid fish stocks. The inventory is a compilation of data on all wild stocks and a scientific determination of each stock's status as healthy, depressed, critical, unknown, or extinct. SaSI thus is a basis for prioritizing recovery efforts and for measuring the results of future recovery actions.

**DATA STRUCTURE NAME:** SASI (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| LLID | 13 | 13 | I | - | Unique stream identifier (ID). The ID is generated from the node latitude and longitude located at a stream's mouth. This ID is to be construed only as an ID, and not necessarily as a reference to a stream's location. |
| DBMSCODE | 4 | 4 | I | - | Database management code. |
| SPPCODE | 4 | 4 | C | - | Alphanumeric code that identifies fish species and run timing for salmonids. |
| | | | | | CHFA = Fall chinook.<br>CHSP = Spring chinook.<br>CHSU = Summer chinook.<br>CHMF = Fall chum.<br>CHMS = Summer chum.<br>CHMW = Winter chum.<br>COHO = Coho salmon.<br>PINK = Pink salmon.<br>SOCK = Sockeye salmon.<br>STSU = Summer steelhead.<br>STWI = Winter steelhead. |
| SASISTKNUM | 4 | 4 | I | - | Unique Salmonid Stock Inventory (SaSI) species stock number. Each species has been assigned a range of stock numbers. |
| SPECIES | 10 | 10 | C | - | Species name for salmonids, Chinook, Chum, Pink, Coho, Sockeye and Steelhead. |
| RUN | 15 | 15 | C | - | Run timing of spawning of individual stocks. The run timing refers to the sum of stocks of a single species of salmonids that migrate to a particular region, river or stream of origin at a particular season. In most cases run timing refers to annual seasons, but in limited cases, run timing refers to the year of the run (even-year/odd-year) as in the case of the species Pink salmon. |
| | | | | | Spring = Spring run timing.<br>Summer = Summer run timing.<br>Fall = Fall run timing.<br>Winter = Winter run timing.<br>Even-year = Even-year run timing.<br>Odd-year = Odd-year run riming. |

**DATA STRUCTURE NAME:** SASI (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| STATCODE | 2 | 2 | I | - | Stock status rating of current conditions of a stock based on factors such as escapement value, run-size, survival, or fitness level. | |
| | | | | | 1 | = Healthy Status. A stock of fish that doesn't meet one or more of the four performance criteria (long-term negative trend, short-term severe decline, chronically low, or unknown) and exhibits productions levels within natural variations in survival and available habitat. |
| | | | | | 2 | = Depressed Status. A stock of fish whose production is below expected levels based on available habitat and natural variations in survival rates, but above the level where permanent damage is likely. |
| | | | | | 3 | = Critical Status. A stock of fish experiencing production levels that are so low that permanent damage to the stock is likely or has already occurred. |
| | | | | | 4 | = Status Not Rated. A stock that is not rated. |
| | | | | | 5 | = Unknown Status. A stock of fish whose trend information was unavailable or could not be used to assess stock |
| | | | | | 6 | = Extinct. A stock of fish that no longer exists in its original range or was observed in very low numbers, similar to the number of staying salmonids that occurs in other stocks. |
| | | | | | 8 | = Mixed Stocks (Columbia River). A stock that is mixed. |
| | | | | | 9 | = None/Undefined Stocks (UD). A stock that is undefined. |

**DATA STRUCTURE NAME:** SASI (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| ESACODE | 2 | 2 | I | - | Federal Endangered Species Act (ESA) status code. |
| | | | | | 1 = Candidate.<br>2 = Threatened.<br>3 = Endangered.<br>9 = No status. |
| STKNAME | 35 | 35 | C | - | General description of the salmonid stock. The stock name contains several pieces of information such as a general geographical description, run timing (where appropriate) and species. Often the location of a salmonid stock can be identified by looking at the name. |
| LLIDSRC | 4 | 4 | C | - | Stream layer source of the LLID number. |
| | | | | | 100K = LLID transferred from the 1:100,000 scale hydrography layer.<br>24K = LLID generated from the 1:24,000 scale hydrography layer. |
| WRIA | 2 | 2 | C | - | The number of the Watershed Resource Inventory Area (WRIA) basin where the species is located. There are 62 WRIA basins in Washington State. These planning and administrative boundaries are managed by the Washington Department of Ecology. Additional information can be found at ecy.wa.gov/watershed/index.html. |
| REV_DATE | 8 | 8 | C | - | Revision date for individual data records by year, month and day (YY-MM-DD). |
| STRM_NAME | 50 | 50 | C | - | Stream name from the US Geological Survey Geographic Names Information System database. |

**DATA STRUCTURE NAME:** **FACILITY**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info point coverage or shape file**

Information on the Washington Department of Fish and Wildlife production sites and other facilities such as office locations and lake access points. The primary focus is on production sites such as hatcheries, net pens, fish ways, spawning beaches, rearing ponds, and passage facilities.

**DATA STRUCTURE NAME:** FACILITY (continued)

The passage facility point locations and attributes are out of date and in transition. The layer is currently being updated. For more information please contact Leslie Sikora at (360) 902-2770 or by e-mail sikorles@dfw.wa.gov.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| HATFAC | 4 | 4 | C | - | The primary unique point identifier used for cross-referencing to the tabular data. |
| SN_HATCHID | 6 | 6 | I | - | Unique identifier used by the StreamNet project to cross-reference tabular data. |
| FACIL_ID | 3 | 3 | C | - | Obsolete - This attribute started as a unique identifier but it wasn't included in any of the integrated tabular processes to correct or update this field when new points were added. |
| FACLCODE | 3 | 3 | C | - | Facility type code. |
| | | | | | AC = Access point.<br>AR = Acclimation/release.<br>DM = Dam.<br>DT = Fish way/dam and trap.<br>EB = Egg box.<br>ES = Egg station.<br>FW = Fish way.<br>HT = Hatchery.<br>NP = Net pen.<br>OF = Agency office.<br>RF = Reef.<br>RP = Rearing pond.<br>RS = Reserve.<br>RW = Fish raceway.<br>SB = Spawning beach.<br>SC = Spawning channel.<br>SP = Sea pond.<br>TR = Trap. |
| SITE_LAT | 7 | 7 | N | 4 | The latitude of where the facility is located. Latitude is a spherical reference system used to measure locations on the Earth's surface. Latitude measures angles, from the Earth's center to a location on the Earth's surface, in a north-south direction. |

**DATA STRUCTURE NAME:** FACILITY (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SITE_LONG | 8 | 8 | N | - | The longitude of where the facility is located. Longitude is a spherical reference system used to measure locations on the Earth's surface. Longitude measures angles, from the Earth's center to a location on the Earth's surface, in an east-west direction. |
| OPERATOR | 6 | 6 | C | - | Facility operator. |
| OWNER | 40 | 40 | C | - | Facility owner. |
| TOWN | 8 | 8 | C | - | The legal description of the township where the lake/reservoir is located. A township is a square parcel of land that is six miles on each side. Its location is established as being so many six-mile units, called Townships, north or south of its baseline, and so many six-mile units, called Ranges, east or west of its meridian. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html. |
| SECTION | 2 | 2 | I | - | The legal description of the section where the lake/reservoir is located. A section is a square parcel of land that contains 640 acres or one square mile. Sections are subdivisions of townships. Each township contains 36 sections. Additional information can be found at geocommunicator.gov/GeoComm/lsis_home/home/index.html |
| CNTYID | 4 | 4 | C | - | Alphanumeric code consisting of the first four characters of the county name. |
| WRIA | 3 | 3 | I | - | The number of the Watershed Resource Inventory Area (WRIA) basin where the species is located. There are 62 WRIA basins in Washington State. These planning and administrative boundaries are managed by the Washington Department of Ecology. Additional information can be found at ecy.wa.gov/watershed/index.html. |

**DATA STRUCTURE NAME:** FACILITY (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| LOCATION | 100 | 100 | C | - | Description of facility location. |
| WATERSRC | 20 | 20 | C | - | Obsolete - The type of water source for the facility. In 2005 we might try to capture this data in a format that accommodates specific water sources instead of generalities. This field is non-standardized and has not been maintained for some time. |
| SPECIES | 40 | 40 | C | - | Obsolete - Entries of a series of fish species codes intended to indicate the species raised at the facility. This field is non-standardized and has not been maintained for some time. |
| OPERDATE | 4 | 4 | I | - | Date facility was commissioned. |
| MITCHACT | 4 | 4 | C | - | A facility receiving federal Mitchell Act Funding. This field has not been maintained for some time. |
| | | | | | YES = Yes, facility receives Mitchell Act Funding.<br>NO = No, facility does not receive Mitchell Act Funding. |
| HYDROUNIT | 8 | 8 | I | - | The number of the US Geological Survey Hydrologic Unit Code basin where the facility is located. The United States is divided and sub-divided into successively smaller hydrologic units which are classified info four levels: regions, sub-regions, accounting units, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions). Each hydrologic unit is identified by a unique Hydrologic Unit Code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system. Additional information can be found a water.usgs.gov/GIS/huc.html. |
| FACLNAME | 100 | 100 | C | - | Facility name. |

# MARINE RESOURCES DATABASE

**Database Manager:** Dale Gombert
(425) 379-2317

## General Description

The Marine Resources Database is a collection of information concerning marine fish and shellfish resources in the coastal and inland marine waters of Washington. These data were collected by Fish Program, Marine Resources Division, of the Washington Department of Fisheries (now the Washington Department of Fish and Wildlife).

"In 1983, the Washington Department of Fisheries (WDF) summarized available information concerning salmon, marine fish and shellfish resources in Washington's coastal and inland marine waters. This information was intended to be published as WDF *Technical Report No. 79* but for a variety of reasons the project was not completed at that time. This information primarily consisted of maps depicting locations of salmon, baitfish, ground fish, and shellfish resources and associated fisheries in Puget Sound, the Strait of Juan de Fuca, and the outer Washington coast.

In 1988, the US Department of Interior's Minerals Management Service (MMS) entered into a cooperative agreement with the Pacific States Marine Fisheries Commission (PSMFC), liaison for Oregon and Washington fish agencies, to develop fishery resource databases required for a proposed oil and gas leasing program off the coasts of the two states. As part of this contract, WDF developed quantitative and qualitative data reports describing major fisheries resources of Washington potentially affected by offshore mining explorations and/or developments. The qualitative data report included maps depicting locations and timings of major commercial and recreational ocean fisheries, and locations of razor clam beaches and coastal surf smelt spawning beaches (WDF 1992).

In 1991, WDF was requested to provide updated fishery resource information for the *Puget Sound Environmental Atlas*, originally published in February 1987 (Evans-Hamilton, Inc. and D.R. Systems Inc.). Since the information was readily available, it was decided to revise and update the original *Technical Report No.79* with the new resource maps produced for the MMS report and the *Puget Sound Atlas*."1

## Resolutions and Limitations

The Marine Resources data, for the most part, have not been updated since the publication of the *1992 Technical Report No. 79*. The exception to this is the baitfish layers, which consist of herring spawning/holding areas, surf smelt, sandlance and rocksole spawning. They continue to be updated as surveys are conducted.

Generally this data is highly variable regarding source some of it is based on field surveys while others are based on “best professional judgment” of the biologist involved. This data has been generalized for the release to the general public. If more specific information is needed users need to contact the biologist directly. See Appendix G, at the end of this document, for those contacts.

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1 April 1992, Technical Report No. 79 Revised, WDF

Only those species considered priority by the Washington Department of Fish and Wildlife (WDFW) will be provided from the Marine Resource Database. All other information will only be provided in response to special requests.

This database contains species locations that are deemed sensitive by WDFW under its Releasing Sensitive Fish and Wildlife Policy – 5210. Please refer to this policy for conditions regarding the use of this information. This policy is available by contacting the Priority Habitats and Species Section at (360) 902-2543.

## Data Organization and Structure

Digital data are available as ESRI® export or shape file format, in State Plane South coordinates (Zone 5626), North American Datum of 1927 or North American Datum of 1983 (1991 adjustment). Priority marine fish and shellfish resources in the coastal and inland marine waters of Washington will be provided as single polygon or line layers per species. If you require other layers, not considered priority by the agency, a special request for them must be made at the time you place your order.

Since the Marine Resources Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

**DATA STRUCTURE NAME: ABALONE**

**DATA STRUCTURE TYPE: ESRI© Arc/Info polygon coverage or shape file**

Northern abalone (*Haliotis kamtschatkana*) is known to occur on the Washington coast north of Portage Head and throughout the Strait of Juan De Fuca and the San Juan Islands. Only presence/absence data exists for certain locations and there's no data for the Washington coast south of Portage head. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| ABALONE | 1 | 1 | I | - | Northern abalone distribution. | |
| | | | | | 0<br>1 | = Implies absence of resource.<br>= Indicates presence of resource. |

**DATA STRUCTURE NAME: CLAM**

**DATA STRUCTURE TYPE: ESRI© Arc/Info polygon coverage or shape file**

Locations of the Manila littleneck clam (*Tapes phillippinarium*) in Grays Harbor and Willipa Bay. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*. The following items/fields HORSE, COCKLE, and EASTERN were dropped from the original layer, as part of the standard data release process, because these species are not considered priority.

**DATA STRUCTURE NAME:** CLAM (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| MANILA | 1 | 1 | I | - | Manila clam distribution. | |
| | | | | | 0<br>1 | = Implies absence of resource.<br>= Indicates presence of resource. |

**DATA STRUCTURE NAME:** **CLAMHARD**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Hardshell inter-tidal includes the littleneck clam (*Protohaca staminea*), the Manila (Japanese) littleneck clam (*Tapes phillippinairum*), butter clam (*Saxidomous giganteus*), and cockle (*Clinocardium nuttallii*) in the Puget Sound area. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| HARDSHELL | 1 | 1 | I | - | Hardshell inter-tidal clam species distribution. | |
| | | | | | 0<br>1 | = Implies absence of resource.<br>= Indicates presence of resource. |

**DATA STRUCTURE NAME:** **CLAMSUBT**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Hardshell sub-tidal includes the butter clam (*Saxidomous giganteus*), piddock (*Zirfaea pilsbryi*), native littleneck and horse clams (*Tresus capax and T. nuttallii*) in the Puget Sound Area. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| SUBTIDAL | 1 | 1 | I | - | Hardshell sub-tidal clam species distribution. | |
| | | | | | 0<br>1 | = Implies absence of resource.<br>= Indicates presence of resource. |

**DATA STRUCTURE NAME:** **CRAB**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Dungeness crab (*Cancer magister*) occurs along the Washington coast and in Puget Sound with occasional populations also associated with estuaries along the Strait of Juan De Fuca. It is found both in near-shore areas and off the coast in depths in excess of 100m, depending on the age and season of the year. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*. The item/field REDROCK was dropped, as part of the standard data release process, from the original layer because this species is not considered a priority.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| DUNGENESS | 1 | 1 | I | - | Dungeness crab distribution. | |
| | | | | | 0 | = Implies absence of resource. |
| | | | | | 1 | = Indicates presence of resource. |

**DATA STRUCTURE NAME:** **CRAB_C**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Locations of dungeness crab (*Cancer magister*) by harvest method in Grays Harbor and Willapa Bay. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*. The following item/field RECBOUNDS was dropped from the original layer as part of the standard data release process.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| COMMERCIAL | 1 | 1 | I | - | Areas where crab is commercially harvested in coastal estuaries. | |
| | | | | | 0 | = Crabs are typically not commercially harvested within these areas. |
| | | | | | 1 | = Crabs are commercially harvested within these areas. |
| SPORT | 1 | 1 | I | - | Areas where crab is recreationally harvested in coastal estuaries. | |
| | | | | | 0 | = Crabs are typically not recreationally harvested within these areas. |
| | | | | | 1 | = Crabs are recreationally harvested within these areas. |

**DATA STRUCTURE NAME:** **CRABLINE**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Dungeness crab (*Cancer magister*) fishing distribution and timing for Washington's Pacific coast. This layer has not been updated since the publication of the *1992 Technical Report No. 79*.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| TIME | 1 | 1 | I | - | Shows seasons of year when crabbing occurs. | |
| | | | | | sum | = Typical "sum"mer commercial crabbing grounds. |
| | | | | | spr | = Typical "spr"ing commercial crabbing grounds; should include "sum" polygons as well. |
| | | | | | wtp | = "W"inter "typ"ical commercial crabbing grounds; should include "sum" and "spr" polygons as well. |
| | | | | | wxt | = "W"inter e"xt"reme extent of commercial crabbing grounds; should include "sum", "spr", and "wtp" polygons as well. |
| | | | | | hvy | = Commercial crabbing grounds within the Columbia River estuary, crabbed during exceptionally heavy effort. |

**DATA STRUCTURE NAME:** **GEODUCK**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Geoduck (*Panope abrupta*) live both inter-tidally and sub-tidally but only sub-tidal beds are shown in this layer. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| GEODUCK | 1 | 1 | I | - | Sub-tidal geoduck clam distribution. | |
| | | | | | 0 | = Implies absence of resource. |
| | | | | | 1 | = Indicates presence of resource. |

**DATA STRUCTURE NAME:** **HERRHOLD**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

This layer depicts areas where adult Pacific herring (*Cluea harengus*) tend to gather prior to spawning on eelgrass. The layer originally came from the Washington Department of Natural Resources in 1991, and has been modified slightly in some areas, and some areas deleted. Large numbers of adult herring from diverse parts of Puget Sound congregate in a few major holding areas each winter prior to moving to their respective spawning grounds. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. Pacific herring holding areas continue to be updated as surveys are conducted. The items SITE1 and SITE2 were dropped from the original layer, as part of the standard data release process, because they are for WDFW internal use only.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| HERRHOLD | 1 | 1 | I | - | Pacific herring adult holding areas where they gather before spawning. | |
| | | | | | 0 | = Implies Pacific herring do not gather in these areas. |
| | | | | | 1 | = Indicates Pacific herring do hold to these areas prior to moving to their spawning grounds. |

**DATA STRUCTURE NAME:** **HERRSPWN**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Pacific herring (*Clupea harengus pallasi*) spawning occurs at specific sites throughout Puget Sound and Washington coastal areas and bays. They deposit their eggs on marine vegetation, eelgrass and various algae, in the shallow sub-tidal and inter-tidal zone generally at tidal elevations +3 feet to –20 feet Mean Low Low Watermark (MLLW). This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. Pacific herring spawning continues to be updated as surveys are conducted. The items/fields SITE1, SITE2 and YEAR were dropped from the original layer, as part of the standard data release process, because they are for internal use only.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| SPAWN | 1 | 1 | I | - | Areas of known Pacific herring spawning sites. | |
| | | | | | 0 | = Implies absence of resource. |
| | | | | | 1 | = Indicates presence of resource. |

**DATA STRUCTURE NAME:** **OYSTER**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

The Pacific oyster (*Crassostrea gigas*) is a Japanese species introduced into Washington State in the 1920's. Large populations of naturally produced and/or cultured Pacific oyster now exist in the protected waters of Willapa Bay, Grays Harbor, Hood Canal and south Puget Sound. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79.*

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| OYSTER | 1 | 1 | I | - | Oyster beds. | |
| | | | | | 0<br>1 | = Implies absence of resource.<br>= Indicates presence of resource. |

**DATA STRUCTURE NAME:** **OYSTER_C**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Locations of native (Olympia) oyster (*Ostrea Lurida*) and Pacific oyster (*Crassostrea gigas*) beds in the Grays Harbor and Willapa Bay area. The Pacific oyster is a Japanese species introduced in Washington State in the 1920's. Large populations of naturally produced and/or cultivated Pacific oysters now exist in the protected waters of Willapa Bay, Grays Harbor, Hood Canal and south Puget Sound. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| OYSTER | 1 | 1 | I | - | Native and introduced oysters in estuaries on the Pacific coast. |
| PACIFIC | 1 | 1 | I | - | Areas where Pacific (introduced) oysters are known to exist. |
| NATIVE | 1 | 1 | I | - | Areas where Olympia (native) oysters exist. |

**DATA STRUCTURE NAME:** **RAZRCLAM**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Razor clams (*Siliqua patula and S. sloati*) for Washington coastal beaches. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*.

**DATA STRUCTURE NAME:** **ROCKSOLE**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info line coverage or shape file**

Rocksole (*Lepidopsetta bilineata*) spawning areas, at specific sites, throughout Puget Sound. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. Rocksole continues to be updated as surveys are conducted.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| SPAWN | 2 | 2 | I | - | Rocksole spawning beaches and source of the information. | |
| | | | | | 0 | = Implies absence of resource. |
| | | | | | 1 | = Lines digitized from 1:24,000 scale charts, information from WDFW biologist Dan Penttila. |
| | | | | | 5 | = Lines digitized within circles buffered around survey points and in the inter-tidal zone. |

**DATA STRUCTURE NAME:** **SANDLANZ**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info line coverage or shape file**

Pacific sandlance (*Ammodytes hexapterus*) are an important forage fish frequently taken as food by salmon and other marine fish species. They occur throughout Puget Sound, in Western Strait of Juan De Fuca, and in the three large coastal estuaries. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. Sandlance continues to be updated as surveys are conducted. The item/field LARVAE was dropped from the original layer as part of the standard data release process. Larvae points in the layer indicate where single eggs were found. They are of interest to WDFW biologist for subsequent studies.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| SPAWN | 1 | 1 | I | - | Sandlance spawning beaches and source of the information. | |
| | | | | | 0 | = Implies absence of resource. |
| | | | | | 1 | = Spawning beaches documented and digitized from published reports. |
| | | | | | 2 | = Spawning beaches, documentation prior to studies conducted by WDFW biologist Dan Penttila. |

**DATA STRUCTURE NAME:** SANDLANZ (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| | | | | | 5 | = Spawning beaches as reported by surveyors working under the Northwest Straits Initiative. |

**DATA STRUCTURE NAME:** **SHRMPPAN**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

Four species of Pandalid shrimp, pink (*Pandalus jordani and P. borealis*), coonstripe (*P. danae*), and sport prawn (*P. platyceros*) are commonly harvested in Washington waters. They inhabit Puget Sound and coastal waters. This is the known distribution of the resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| PANDALID | 1 | 1 | I | - | Pandalid shrimp. | |
| | | | | | 0<br>1 | = Implies absence of resource.<br>= Indicates presence of resource. |

**DATA STRUCTURE NAME:** **SMELT**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info line coverage or shape file**

Surf smelt (*Hypomesus pretiosus*) are inter-tidal spawners. Eggs are deposited in the uppermost inter-tidal zone on gravel generally having a grain size of 1-7mm. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| SPAWN | 1 | 1 | I | - | Surf smelt spawning beaches and source of the information. | |
| | | | | | 0<br>1<br>2 | = Implies absence of resource.<br>= Spawning beaches identified as such by WDFW biologist Dan Penttila.<br>= Spawning beaches documented prior to studies conducted by WDFW biologist Dan Penttila. |

**DATA STRUCTURE NAME**: SMELT (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| | | | | | 3 | = Spawning beaches identified as such, by the Friends of the San Juans, under the North-west Straits Initiative. |
| | | | | | 4 | = Spawning beaches identified as such, by Moriarity et at, under the Northwest Straits Initiative. |
| | | | | | 5 | = Spawning beaches identified, by North Olympic Salmon Coalition, under the North-west Straits Initiative. |

**DATA STRUCTURE NAME: URCHIN**

**DATA STRUCTURE TYPE: ESRI© Arc/Info polygon coverage or shape file**

Red sea urchins (*Strongylocentrotus franciscanus*) occur throughout the Strait of Juan De Fuca, San Juan Islands and Washington's outer coast. This is the known distribution of this resource; blank areas either have none of this resource or have not been inventoried for it. This layer has not been updated since the publication of the *1992 Technical Report No. 79*.

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| URCHIN | 1 | 1 | I | - | Red sea urchins. | |
| | | | | | 0 | = Implies absence of resource. |
| | | | | | 1 | = Indicates presence of resource. |

# SEABIRD COLONY DATABASE

**Database Manager:** US National Oceanic Atmospheric Administration

## General Description

The Seabird Colony Database contains locations surveyed for breeding seabirds as documented in the *Catalog of Washington Seabird Colonies* by Steven M. Speich, et al, published in 1989 by US National Oceanic Atmospheric Administration.

## Resolution and Limitations

The Washington Department of Fish and Wildlife (WDFW) digitized the surveyed breeding locations from the 1989 publication. Population numbers by species reflect counts of breeding individuals based upon the most recent or best estimates as indicated in the publication. If no observations were classed as "most recent or best" populations numbers were not provided. Please note that this database is static and the information is dated, currently there are no plans to update the data. For more recent information, contact the WDFW biologist for your project area. See Appendix G, at the end of this document, for those contacts.

Please note data may contain some species and habitats that are not considered priority by the agency.

All fish and wildlife species are vulnerable to harm from human activities. By receiving seabird colony information from WDFW, you incur an obligation to use it in a way that does not cause undue harm to our public fish and wildlife resources.

## Data Organization and Structure

Digital data are available as ESRI® export or shape file format, in State Plane South coordinates (Zone 5626), North American Datum of 1927 or North American Datum of 1983 (1991 adjustment). Seabird Colony site centers will be provided as a single point layer.

Since the Seabird Colony Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

**DATA STRUCTURE NAME:** **SEABIRDS**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info point coverage or shape file**

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| COLONY | 1 | 1 | I | - | Colony number composed of area and site. Last three characters are a unique identifier for a haulout site (id number on WDFW habitat and species maps). |
| NOAA_FLAG | 1 | 1 | I | - | If equal to 1, indicates location is included in the US National Oceanic Atmospheric Administration (NOAA) seabird colony database. |

**DATA STRUCTURE NAME:** SEABIRDS

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| SPCLASS_SPEICH | 2 | 2 | C | - | Class of breeding species. Note this value is set for all colonies where species information is available regardless of date of observation. |
| | | | | | A = Alcids (may include others).<br>AC = Alcids and cormorants (may include others).<br>C = Cormorants (may include others).<br>O = Others (but no alcids or cormorants).<br>Blank = No breeding observed or no information. |
| COLONY_NOAA | 8 | 8 | C | - | US NOAA colony identifier. |
| COLONY_NAME | 31 | 31 | C | - | Colony name. Available only where NOAA_FLAG = 1. |
| The following items identify the number of breeding individuals by species for colonies where the NOAA_FLAG = 1. | | | | | |
| OC | 4 | 6 | B | - | Storm Petrel. |
| OCFU | 4 | 6 | B | - | Fork Tailed Storm Petrel. |
| OCLE | 4 | 6 | B | - | Leachs Storm Petrel. |
| PH | 4 | 6 | B | - | Cormorant. |
| PHAU | 4 | 6 | B | - | Double Crested Cormorant. |
| PHPEN | 4 | 6 | B | - | Brandts Cormorant. |
| PHPEL | 4 | 6 | B | - | Pelagic Cormorant. |
| HABA | 4 | 6 | B | - | Black Oystercatcher. |
| LADE | 4 | 6 | B | - | Ring Billed Gull. |
| LAOC | 4 | 6 | B | - | Western Gull. |
| LAGL | 4 | 6 | B | - | Glauccous Winged Gull. |
| STCA | 4 | 6 | B | - | Caspian Tern. |
| STPAR | 4 | 6 | B | - | Arctic Tern. |
| URAA | 4 | 6 | B | - | Common Murre. |
| CECO | 4 | 6 | B | - | Pigeon Guillemot. |
| PTAL | 4 | 6 | B | - | Cassins Auklet. |
| CEMO | 4 | 6 | B | - | Rhinoceros Auklet. |
| FRCI | 4 | 6 | B | - | Tufted Puffin. |
| TOTAL | 1 | 1 | I | - | Total population of breeding individuals. |
| PHS_FLAG | 1 | 1 | I | - | Contains one or more WDFW Priority Species. |

# SEAL AND SEA LION HAULOUT DATABASE

**Database Manager:** Raj Deol (until database manager appointed)
(360) 902-2489

## General Descriptions

The Seal and Sea Lion Haulout Database contains locations of haulout sites in Washington waters. The Washington Department of Fish and Wildlife (WDFW) published the information in February 2000, as the *Atlas of Seal and Sea Lion Haulout sites in Washington*. "The purpose of the atlas is to provide information on haulout sites for harbor seals, Steller sea lions, California sea lions, and northern elephant seals located in Washington waters. Locations are provided in order to conduct assessment surveys as well as identify important sites used by those species relative to potential sources of disturbance, development, and other uses of Washington's marine environment. Locations of haulout sites were mapped for sites that have been identified during aerial, ground and boat surveys conducted by personnel from the Washington Department of Fish and Wildlife, National Marine Fisheries Service and Cascadia Research Collective as part of ongoing assessment efforts for these pinniped species in Northwest water"2. For a copy of the atlas, contact WDFW Wildlife Program at (360) 902-2515.

## Resolution and Limitations

The Seal and Sea Lion Haulout Database only includes information that WDFW maintains in a central computer database. It only documents the haulout sites to the best of our knowledge. It is not a complete inventory of haulout sites in the state. To insure appropriate use of this information, users are encouraged to consult with WDFW biologists. See Appendix G, at the end of this document, for contacts.

Please note data may contain some species and habitats that are not considered priority by the agency.

All fish and wildlife species are vulnerable to harm from human activities. By receiving seal and sea lion haulout information from WDFW, you incur an obligation to use it in a way that does not cause undue harm to our public fish and wildlife resources.

## Data Organization and Structure

Digital data are available as ESRI® export or shape file format, in State Plane South coordinates (Zone 5626), North American Datum of 1927 or North American Datum of 1983 (1991 adjustment). Seal and sea lion haulout site centers will be provided as a single point layer.

Since the Seal and Sea Lion Haulout Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

2 Jeffries, S.J. et al, February 2000, Atlas of Seal and Sea Lion Haulout Sites in Washington, WDFW

**DATA STRUCTURE NAME:** **HAULOUTS**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info point coverage or shape file**

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| MAPID | 4 | 4 | I | - | Used internally by WDFW. |
| LAT | 9 | 9 | N | 4 | The latitude of where the haulout site is located. Latitude is a spherical reference system used to measure locations on the Earth's surface. Latitude measures angles, from the Earth's center to a location on the Earth's surface, in a north-south direction. |
| LONG | 9 | 9 | N | 4 | The longitude of where the haulout site is located. Longitude is a spherical reference system used to measure locations on the Earth's surface. Longitude measures angles, from the Earth's center to a location on the Earth's surface, in an east-west direction. |
| IDNUM | 4 | 4 | I | - | Unique identifier of the haulout site. |
| REGION | 24 | 24 | C | - | The waters of Washington were geographically divided into survey regions, which were based on the timing of harbor seal pupping seasons in different marine areas of Washington. |
| LOCATION | 30 | 30 | C | - | Name of haulout site based on one or more prominent features in the vicinity. |
| SITEID | 5 | 5 | C | - | Used by the field biologist doing the survey. |
| SPECIES | 8 | 8 | C | - | Code to identify each species at haul-out site. |
| | | | | | EJ = Steller Sea Lion (*Eumetopias jubatus*).<br>MA = Northern Elephant Seal (*Mirounga angustirostris*).<br>PV = Harbor Seal (*Phoca vitulina richardsi*).<br>ZC = California Sea Lion (*Zalophus californianus*). |

**DATA STRUCTURE NAME:** HAULOUTS (continued)

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| TIDE | 4 | 4 | C | - | Type of tide when haulout site can be used. |
| | | | | | LOW = Low tide.<br>HIGH = High tide.<br>ALL = All tides. |
| CNT | 7 | 7 | C | - | Approximate number of animals at the haulout site at the time of the survey. |
| DESC | 100 | 100 | C | - | General description of site. |

# OLD GROWTH DATABASE

**Database Manager:** Shelly Snyder
(360) 902-2483

## General Description

The Washington Department of Fish and Wildlife (WDFW) undertook an old growth inventory and mapping project as part of the overall Remote Sensing Program in 1986. WDFW uses remote sensing technology for wildlife habitat mapping and for research into habitat use by animals. The driving force behind this project was the need for forest stand type mapping for use in spotted owl habitat preference research, and management applications for elk and mountain goats. The objective was to improve the mapping of forest stand type categories in western Washington using digital Landsat Satellite data.

## Resolution and Limitations

The Landsat data and other data analysis were done by WDFW personnel between 1986 and 1989 and are available for most of western Washington (excluding coastal lowlands). If a more detailed description of the Old Growth Database is needed please request the following document: *The Status of Old Growth in Western Washington: A Landsat Perspective* by James R. Eby and Michelle C. Snyder, January 1990.

Please note that this database is static and the information is dated, currently there are no plans to update the data.

## Data Organization and Structure

Digital data are available as ESRI® export or shape file format, in State Plane South coordinates (Zone 5626), North American Datum of 1927 or North American Datum of 1983 (1991 adjustment). Old Growth data will be provided as a single polygon layer.

The data contains information about late successional timber stands, which are divided into three types, old growth, large saw timber, and small saw timber. Old growth is defined as coniferous forest stands where there are more than eight dominant trees per acre being thirty inches or more in diameter, co-dominant trees are sixteen or more inches in diameter, and where there is a deep multi storied canopy not completely closed. Large saw timer is defined as coniferous forest stands where there are ten or more dominant trees per acre being twenty to thirty inches in diameter, co-dominant trees are fourteen inches or more in diameter, and where there is a canopy of two or three layers being almost closed. Small saw timber is defined as coniferous forest stands where the dominant trees are fourteen to twenty inches in diameter, with a canopy of one or two layers and completely closed. Contact the database manager for any questions you may have about the data.

Since the Old Growth Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

**DATA STRUCTURE NAME:** **OG88**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description | |
|---|---|---|---|---|---|---|
| GRID_CODE | 4 | 5 | B | - | Cover category. | |
| | | | | | -9999 | = Null data. |
| | | | | | 1-5 | = Dummy value. |
| | | | | | 10 | = Old growth. |
| | | | | | 11 | = Originally mapped as old growth, but was logged by the time the 1988 data update was done. |
| | | | | | 20 | = Large saw timber. |
| | | | | | 21 | = Originally mapped as large saw, but was logged by the time the 1988 data update was done. |
| | | | | | 30 | = Small saw timber. |
| | | | | | 31 | = Originally mapped as small saw, but was logged by the time the 1988 data update was done. |
| PLOTYN | 1 | 1 | C | - | Flag for plotting large patches of old growth, or smaller patches of old growth within relative proximity to larger patches of old growth. | |
| | | | | | Y | = Yes, plot larger patches of old growth or smaller patches of old growth within relatively close proximity to larger patches of old growth. |
| | | | | | Blank | = Do not flag small patches of old growth 1988 for plotting. |

# NATIONAL WETLANDS INVENTORY DATABASE

**Database Manager:** US Fish and Wildlife Service
nwi.fws.gov

## General Description

The National Wetlands Inventory (NWI) Database is an inventory system developed in 1974 by US Fish and Wildlife Service. Mapped at a scale of 1:24,000 or 1:62,000, NWI identifies wetlands and deep-water habitats as either polygons or linear features. Attached to the mapped wetlands are descriptive codes based on the Cowardin classification system (Cowardin et al., 1979). Under the Cowardin system, wetlands are classified within a hierarchical organization according to plants, soils, and frequency of flooding. The US Fish and Wildlife Service manage NWI data.

## Resolution and Limitations

NWI data is collected through stereoscopic analysis of high altitude color infrared aerial photographs. Because the methodology and scope of work impose limitations on the accuracy of the data, there is an inherent margin of error. As there has been no attempt in the design of the inventory system to delineate wetland boundaries, the data should not be used for regulatory purposes. Data are useful as an initial means of identifying the general location and extent of wetlands within a region, and when used in conjunction with hydric soils maps and aerial surveys, as a starting point for developing more detailed wetland inventories.

Please note that this version of the NWI database, housed at Washington Department of Fish and Wildlife, is static and the information is dated. Check with the US Fish and Wildlife Service web site, listed above, for any data that may have been updated in Washington State.

## Data Organization and Structure

Digital data are available as ESRI® export or shape file format, in State Plane South coordinates (Zone 5626), North American Datum of 1927 or North American Datum of 1983 (1991 adjustment). National Wetlands Inventory data will be provided as a single polygon layer.

Since the NWI Database may be provided in several different formats there has been no attempt to define items or fields that are created and maintained internally by ESRI© software. Only those items or fields created by WDFW will be defined.

**DATA STRUCTURE NAME:** **NWI**

**DATA STRUCTURE TYPE:** **ESRI© Arc/Info polygon coverage or shape file**

| Item/Field Name | Input Width | Output Width | Data Type | Number of Decimals | Description |
|---|---|---|---|---|---|
| FWS_CODE | 16 | 16 | C | - | NWI code, concatenation of ecological system, subsystem, class, subclass, water regime, and other modifier codes. |

**DATA STRUCTURE NAME:** NWI (continued)

The NWI codes found in the table of the NWI database are a concatenation of coding for the ecological system, subsystem, class, subclass, and modifying terms for water regime, chemistry, and soil. For example, in the FWS_CODE, a marine, sub-tidal, open water body would be coded M1OW, while a marshy area of persistent, emergent vegetation would be coded PEMP. Marine, Riverine, Lacustrine, and Estuarine ecological systems have subsystems, while Palustrine does not.

| Ecological System | Ecological Subsystem | Class | Subclass |
|---|---|---|---|
| **M = MARINE** | | | |
| | 1 = Sub-tidal. | | |
| | | RB = Rock bottom. | |
| | | | 1 = Bedrock.<br>2 = Boulder. |
| | | UB = Unconsolida-ted bottom. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic. |
| | | AB = Aquatic bed. | |
| | | | 1 = Submergent algal.<br>2 = Submergent vascular.<br>6 = Unknown submergent. |
| | | RF = Reef. | |
| | | | 1 = Coral.<br>2= Worm. |
| | | OW = Open water. | |
| | 2 = Inter-tidal. | | |
| | | AB = Aquatic bed. | |
| | | | 1 = Submergent algal.<br>2= Submergent vascular.<br>6 = Unknown submergent. |
| | | RF = Reef. | |
| | | | 1 = Coral.<br>2 = Worm. |
| | | | |

**DATA STRUCTURE NAME:** NWI (continued)

| Ecological System | Ecological Subsystem | Class | Subclass |
|---|---|---|---|
| | | FL = Flat | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>6 = Vegetated non-pioneer. |
| | | RS = Rocky shore. | |
| | | | 1 = Bedrock.<br>2 = Boulder.<br>6 = Vegetated non-pioneer. |
| | | BB = Beach bar. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand. |
| **P = PALUSTRINE** | | | |
| | | RB = Rock bottom. | |
| | | | 1 = Bedrock.<br>2 = Boulder. |
| | | UB = Unconsolidated bottom. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic. |
| | | AB = Aquatic bed. | |
| | | | 1 = Submergent algal.<br>2 = submergent vascular.<br>3 = Submergent moss.<br>4 = Floating leaved.<br>5 = Floating.<br>6 = Unknown submergent.<br>7 = Unknown surface. |
| | | FL = Flat. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud. |

**DATA STRUCTURE NAME:** NWI (continued)

| Ecological System | Ecological Subsystem | Class | Subclass |
|---|---|---|---|
| | | | 4 = Organic.<br>5 = Vegetated pioneer.<br>6 = Vegetated non-pioneer. |
| | | ML = Moss/lichen. | |
| | | | 1 = Moss.<br>2 = Lichen. |
| | | | |
| | | EM = Emergent. | |
| | | | 1 = Persistent.<br>2 = Non-persistent.<br>3 = Narrow-leaved non-persistent.<br>4 = Broad-leaved non-persistent.<br>5 = Narrow-leaved persistent.<br>6 = Broad-leaved persistent. |
| | | SS = Scrub/shrub. | |
| | | | 1 = Broad-leaved deciduous.<br>2 = Needle-leaved deciduous.<br>3 = Broad-leaved evergreen.<br>4 = Needle-leaved evergreen.<br>5 = Dead.<br>6 = Deciduous.<br>7 = Evergreen. |
| | | OW = Open water. | |
| **R = RIVERINE** | | | |
| | 1 = Tidal.<br>2 = Lower perennial.<br>3 = Upper perennial.<br>4 = Intermittent.<br>5 = Unknown perennial. | | |

**DATA STRUCTURE NAME:** NWI (continued)

| Ecological System | Ecological Subsystem | Class | Subclass |
|---|---|---|---|
| EMERGENTS found only in RIVERINE TIDAL and RIVERINE LOWER PERENNIAL subsystems, all other classes found in all RIVERINE subsystems). | | | |
| | | EM = Emergent. | |
| | | | 2 = Non-persistent.<br>3 = Narrow-leaved non-persistent.<br>4 = Broad-leaved non-persistent. |
| | | RB = Rock bottom. | |
| | | | 1 = Bedrock.<br>2 = Boulder. |
| | | UB = Unconsolidated bottom. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic. |
| | | AB = Aquatic bed. | |
| | | | 1 = Submergent algal.<br>2 = Submergent vascular.<br>3 = Submergent moss.<br>4 = Floating leaved.<br>5 = Floating.<br>6 = Unknown submergent.<br>7 = Unknown surface. |
| | | FL = Flat. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic.<br>5 = Vegetated pioneer.<br>6 = Vegetate non-pioneer. |
| | | SB = Stream bed. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic. |

**DATA STRUCTURE NAME:** NWI (continued)

| Ecological System | Ecological Subsystem | Class | Subclass |
|---|---|---|---|
| | | RS = Rocky shore. | |
| | | | 1 = Bedrock.<br>2 = Boulder. |
| | | BB = Beach/bar. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand. |
| | | OW = Open water. | |
| **L = LACUSTRINE** | | | |
| | 1 = Limnetic. | | |
| | | RB = Rock bottom. | |
| | | | 1 = Bedrock.<br>2 = Boulder. |
| | | UB = Unconsolida-ted bottom. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic. |
| | | AB = Aquatic bed. | |
| | | | 1 = Submergent algal.<br>2 = Submergent vascular.<br>3 = Submergent moss.<br>4 = Floating leaved.<br>5 = Floating.<br>6 = Unknown sub-mergent. |
| | | OW = Open water. | |
| | 2 = Littoral. | | |
| | | RB = Rock bottom. | |
| | | | 1 = Bedrock.<br>2 = Boulder. |
| | | UB = Unconsoida-ted bottom. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic. |

**DATA STRUCTURE NAME:** NWI (continued)

| Ecological System | Ecological Subsystem | Class | Subclass |
|---|---|---|---|
| | | AB = Aquatic bed. | |
| | | | 1 = Submergent algal.<br>2 = Submergent vascular.<br>3 = Submergent moss.<br>4 = Floating leaved.<br>5 = Floating.<br>6 = Unknown submergent.<br>7 = Unknown surface. |
| | | FL = Flat. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic.<br>5 = Vegetated pioneer.<br>6 = Vegetated non-pioneer. |
| | | RS = Rocky shore. | |
| | | | 1 = Bedrock.<br>2 = Boulder. |
| | | BB = Beach/bar. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand. |
| | | EM = Emergent. | |
| | | | 2 = Non-persistent.<br>3 = Narrow-leaved non-persistent.<br>4 = Broad-leaved non-persistent. |
| | | OW = Open water. | |
| **E = ESTUARINE** | | | |
| | 1 = Sub-tidal. | | |
| | | RB = Rock bottom. | |
| | | | 1 = Bedrock.<br>2 = Boulder. |

**DATA STRUCTURE NAME:** NWI (continued)

| Ecological System | Ecological Subsystem | Class | Subclass |
|---|---|---|---|
| | | UB = Unconsolidated bottom. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic. |
| | | AB = Aquatic bed. | |
| | | | 1 = Submergent algal.<br>2 = Submergent vascular.<br>4 = Floating leaved.<br>5 = Floating.<br>6 = Unknown submergent.<br>7 = Unknown surface. |
| | | RF = Reef. | |
| | | | 2 = Mollusk.<br>3 = Worm. |
| | | OW = Open water. | |
| | 2 = Inter-tidal. | | |
| | | AB = Aquatic bed. | |
| | | | 1 = Submergent algal.<br>2 = Submergent vascular.<br>6 = Unknown submergent.<br>7 = Unknown surface. |
| | | RF = Reef. | |
| | | | 1 = Mollusk.<br>2 = Worm. |
| | | FL = Flat. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic.<br>5 = Vegetated pioneer.<br>6 = Vegetated non-pioneer. |

**DATA STRUCTURE NAME:** NWI (continued)

| Ecological System | Ecological Subsystem | Class | Subclass |
|---|---|---|---|
| | | SB = Stream bed. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand.<br>3 = Mud.<br>4 = Organic. |
| | | RS = Rocky shore. | |
| | | | 1 = Bedrock.<br>2 = Boulder<br>3 = Vegetated non-pioneer. |
| | | BB = Beach bar. | |
| | | | 1 = Cobble/gravel.<br>2 = Sand. |
| | | EM = Emergent. | |
| | | | 1 = Persistent.<br>2 = Non-persistent.<br>3 = Narrow-leaved non- persistent.<br>4 = Broad leaved non-persistent.<br>5 = Narrow-leaved persistent.<br>6 = Broad-leaved persistent. |
| | | SS = Scrub/shrub. | |
| | | | 1 = Broad-leaved deciduous.<br>2 = Broad-leaved evergreen.<br>4 = Needle-leaved evergreen.<br>5 = Dead.<br>6 = Deciduous.<br>7 = Evergreen. |
| | | FO = Forested. | |
| | | | 1 = Broad-leaved deciduous.<br>2 = Broad-leaved evergreen.<br>3 = Needle-leaved evergreen.<br>5 = Dead.<br>6 = Deciduous.<br>7 = Evergreen. |

**DATA STRUCTURE NAME:** NWI. (continued)

| **MODIFYING TERMS –** These are added to the class or sub-class of the five ecological classes to more adequately describe wetland and aquatic habitats. The FARMED modifier can also be applied at the ecological system level. | | |
|---|---|---|
| WATER REGIME | | |
| | Non-tidal | |
| | A | = Temporary. |
| | B | = Saturated. |
| | C | = Seasonal. |
| | D | = Seasonal well drained. |
| | E | = Seasonal saturated. |
| | F | = Semi-permanent. |
| | G | = Intermittently exposed. |
| | H | = Permanent. |
| | J | = Intermittently flooded. |
| | K | = Artificial. |
| | Z | = Intermittently exposed permanent. |
| | W | = Intermittently flooded temporary. |
| | Y | = Saturated/semi-permanent/seasonal. |
| | U | = Unknown. |
| | Tidal | |
| | K | = Artificial. |
| | L | = Sub-tidal. |
| | M | = Irregularly. |
| | N | = Regular. |
| | P | = Irregular. |
| | R | = Seasonal tidal. |
| | S | = Temporary tidal. |
| | T | = Semi-permanent tidal. |
| | V | = Permanent tidal. |
| | U | = Unknown. |
| WATER CHEMISTRY | | |
| | Coastal salinity. | |
| | 1 | = Hyperhaline. |
| | 2 | = Euhaline. |
| | 3 | = Mixohaline (brackish). |
| | 4 | = Polyhaline. |
| | 5 | = Mesohaline. |
| | 6 | = Oligohaline. |
| | 0 | = Fresh. |
| | Inland salinity. | |
| | 7 | = Hypersaline. |
| | 8 | = Eusaline. |
| | 9 | = Mixosaline. |
| | 0 | = Fresh. |

**DATA STRUCTURE NAME:** NWI (continued)

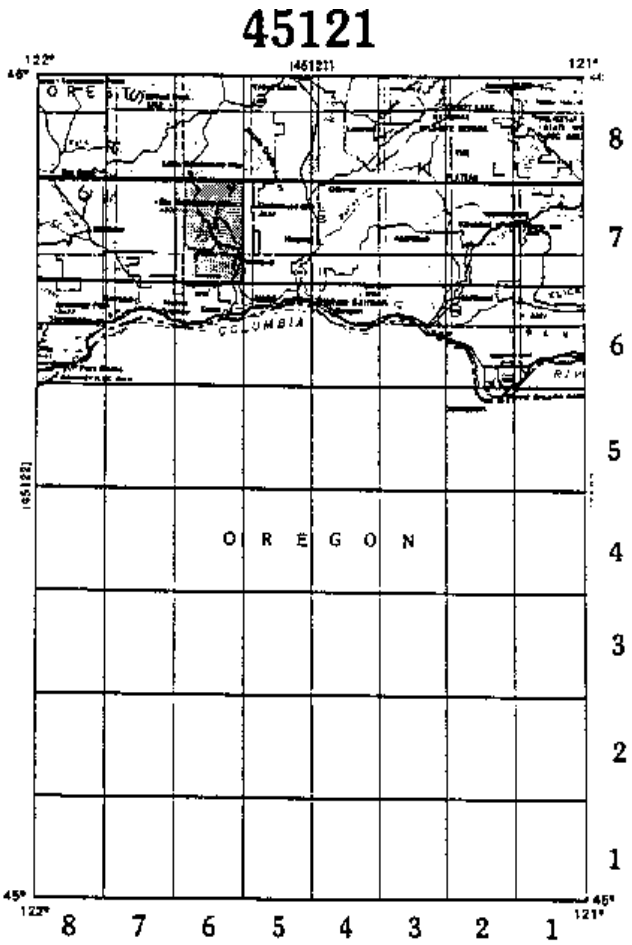
| **MODIFYING TERMS** (continued) | | |
|---|---|---|
| | PH modifiers for all freshwater. | |
| | a<br>t<br>l | = Acid.<br>= Circumneutral.<br>= Alkaline. |
| SOIL | | |
| | g<br>n | = Organic.<br>= Mineral. |
| SPECIAL MODIFIERS | | |
| | b<br>d<br>f<br>h<br>r<br>s<br>x | = Beaver.<br>= Partially drained/ditched.<br>= Farmed.<br>= Diked/impounded.<br>= Artificial.<br>= Spoil.<br>= Excavated. |

**Appendix A. Derivation of Quadrangle Codes (quadcodes) for 1:24,000 Scale US Geological Survey 7.5-minute topographic maps.**

DERIVATION OF QUADRANGLE CODES (QUADCODES) FOR US GEOLOGICAL SURVEY 1:24,000 SCALE 7.5-MINUTE TOPOGRAPHIC MAP SHEETS

The Washington Department of Fish and Wildlife quadcode for a 1:24,000 scale US Geological Survey (USGS) 7.5-minute topographic map sheet is a seven-digit numeric code. The first five digits of the code identify the latitude and longitude of the southeast corner of a one-degree block of 7.5-minute quadrangles. A one-degree block is divided into 8 columns and 8 rows of quadrangles resulting in a total of 64 quadrangles. Each row and column is numbered consecutively beginning at one and using the southeast corner of the block as the origin. The sixth digit of the quadcode identifies the row containing the map sheet while the seventh digit identifies the column.

The diagram below identifies the USGS 7.5-minute quadrangle associated with the quadcode 4512176 and named WILLARD.



**Appendix B. Species Use Codes**

ART = Artificial nest structure.

B = Breeding occurrence.

BOX = Nest box.

CF = Peregrine falcon cross foster site.

CR = Communal roost.

DEN = Den site.

E = Eyrie.

H = Peregrine falcon hack site.

HO = Haulout.

IO = Individual occurrence.

IR = Individual roost.

LEK = Lek.

M = Migration.

PA = Parturition.

RC = Regular concentration.

RI = Regularly occurring individual.

RLC = Regular large concentration.

RMC = Regular medium concentration.

RNG = Range.

RSC = Regular small concentration.

ZZZ = Sensitive information.

## Appendix C. Information Source Codes

GENERAL SOURCES

LIT = Literature.
LOCAL = Local knowledge of individuals not involved professionally in fish and wildlife management.
PROF = Knowledge of one or more professionals working in fish and wildlife science.
SIGN = Vocalization, track, or other sign.

MAPS

CZA = Coastal Zone Atlas of Washington, Washington Dept. of Ecology.
GSMAP = US Geologic Survey Maps (various scales).
DNRMAP = Washington Department of Natural Resources Public Lands Maps (1:100,000).
BLMMAP = US Bureau of Land Management Ownership Map (1:100,000 Scale).
FSMAP = US Forest Service maps.

REMOTE SENSING

MSS = LANDSAT satellite MSS sensor.
ORTHO = Washington Department of Natural Resources, US Forest Service, or other orthophoto.
PHOTO = Photo interpreted from quality field photography.
SAT = Satellite information other than SPOT or LANDSAT.
SPOT = SPOT satellite.
TM = LANDSAT satellite TM sensor.

SURVEYS

BROOD = Brood survey.
CALL = Survey call count/gobble route.
DRIVE = Drive by survey.
HERD = Herd composition count.
HUNT = Hunter survey, field checks, report cards, etc.
NEST = Nest site survey.
TELEM = Telemetry study/survey.
TRAN = Non-winter transect survey.
TREND = Regularly conducted survey to monitor trends.
WTRAN = Winter transect survey.

**Appendix D. Land Use Codes**

| | | |
|---|---|---|
| 1 = Urban or built up land. | 11 = Industrial, commercial. | |
| | 12 = Residential. | |
| | 13 = Transportation. | |
| | 14 = Right-of-ways (high-ways, power lines). | |
| | 15 = Camp grounds. | |
| | 16 = Other urban or built-up land. | |
| 2 = Agricultural land. | 21 = Croplands, pasture. | |
| | 22 = Orchards, nurseries. | |
| | 23 = Other agricultural lands. | |
| 3 = Rangeland. | 31 = Herbaceous moist. | |
| | 32 = Herbaceous medium. | |
| | 33 = Herbaceous dry. | |
| | 34 = Shrub, brush moist. | 341 = Tall, closed. |
| | | 342 = Short, closed. |
| | | 343 = Tall, open. |
| | | 344 = Short, open. |
| | 35 = Shrub, brush medium. | 351 = Tall, closed. |
| | | 352 = Short, closed. |
| | | 353 = Tall, open. |
| | | 354 = Short, open. |
| | 36 = Shrub, brush dry. | 361 = Tall, closed. |
| | | 362 = Short, closed. |
| | | 363 = Tall, open. |
| | | 364 = Short, open. |
| | 37 = Mixed moist. | |
| | 38 = Mixed medium. | |
| | 39 = Mixed dry. | |
| 4 = Forest land. | 41 = Conifer, closed canopy (> 70%). | 411 = Old growth. |
| | | 412 = Saw timber, large. |
| | | 413 = Saw timber, small. |
| | | 414 = Pole. |
| | | 415 = Lodgepole. |
| | | 416 = High altitude. |
| | 42 = Conifer, open canopy (40-70%). | 421 = Old Growth. |
| | | 422 = Lodgepole. |
| | | 423 = Lodgepole, regenerating. |

**Appendix D. Land Use Codes** (continued)

| | | |
|---|---|---|
| | | 424 = Shrub under story.<br>425 = Herbaceous, under story.<br>426 = Regenerating.<br>427 = High altitude. |
| | 43 = Conifer woodland. | 432 = Old growth.<br>432 = Lodgepole.<br>433 = Lodgepole, regenerating.<br>434 = Shrub under story.<br>435 = Herbaceous under story.<br>436 = Regenerating.<br>437 = High altitude. |
| | 44 = Broadleaf, closed. | |
| | 45 = Broadleaf, open. | 451 = Shrub under story.<br>452 = Herbaceous under story. |
| | 46 = Mixed, closed. | |
| | 47 = Mixed, open. | 471 = Shrub under story.<br>472 = Herbaceous under story.<br>473 = Regenerating. |
| | 48 = Clear-cut. | 481 = Barren.<br>482 = Grass/forb.<br>483 = Seedling/shrub. |
| 5 = Riparian land. | 51 = Conifer, closed. | 511 = Old growth. |
| | 52 = Conifer, open. | 521 = Shrub under story.<br>522 = Herbaceous under story.<br>532 = Regenerating. |
| | 53 = Broadleaf. | |
| | 54 = Mixed trees. | |
| | 55 = Shrub. | |
| | 56 = Herbaceous. | |
| 6 = Wetlands. | 61 = Conifer forest (swamp). | |
| | 62 = Broadleaf forest (swamp). | |
| | 63 = Mixed forest (swamp). | |
| | 64 = Shrub (swamp). | |

**Appendix D. Land Use Codes** (continued)

| | | |
|---|---|---|
| | 65 = Emergent vegetation (marsh). | |
| | 66 = Moss (bog). | |
| | 67 = Aquatic bed (pond). | |
| | 68 = Estuarine marsh. | |
| 7 = Aquatic types. | 71 = Open water (lake, reservoir, pond, ocean). | |
| | 72 = Rivers. | 721 = Mainstream, gradient < 1 %. |
| | | 722 = Mainstream, gradient 1-4% |
| | | 723 = Mainstream, gradient > 4%. |
| | | 724 = Tributary, gradient < 1%. |
| | | 725 = Tributary, gradient 1-4%. |
| | | 726 = Tributary, gradient 4-6%. |
| | | 727 = Tributary, gradient 6-12%. |
| | | 728 = Tributary, gradient > 12%. |
| | | 729 = Gravel bars, unvegetated flood plains. |
| 8 = Barren and tundra land. | 81 = Rock. | |
| | 82 = Talus. | |
| | 83 = Sand. | |
| | 84 = Strip mines, quarries. | |
| | 85 = Bare ground. | 851 = Reservoir drawdown. |
| | | 852 = Other bare ground. |
| | 86 = Shrub, brush. | |
| | 87 = Herbaceous. | |
| 9 = Perennial snow or ice. | 91 = Snow fields. | |
| | 92 = Glaciers. | |

**Appendix E. Ownership Codes**

| | |
|---|---|
| BIANPSFUS | = Bureau of Indian Affairs, US National Park Service. |
| BIAPVTFP | = US Bureau of Indian Affairs, private. |
| BIAPVTFS | = US Bureau of Indian Affairs, private, US Forest Service. |
| BLMPINFP | = US Bureau of Land Management, private individual. |
| BLMPVTFP | = US Bureau of Land Management, private. |
| BLMPVTFPS | = US Bureau of Land Management, private, with some state land. |
| DNRBLMSFP | = WA Department of Natural Resources, US Bureau of Land Management. |
| ERDDNRFS | = US Energy Resource Development, WA Department of Natural Resources. |
| ERDFWSF | = US Energy Resource Development, US Fish and Wildlife Service |
| ERDWDWFS | = US Energy Resource Development, WA Department of Fish and Wildlife. |
| FS BIAF | = US Forest Service, US Bureau of Indian Affairs. |
| FS DNRFS | = US Forest Service, WA Department of Natural Resources. |
| FS DNRFSP | = US Forest Service, WA Department of Natural Resources, private. |
| FS DNRPVT | = US Forest Service, WA Department of Natural Resources, private. |
| FS PVTFP | = US Forest Service, private. |
| FS PVTFPS | = US Forest Service, private, with some state land. |
| FWSPVTFP | = US Fish and Wildlife Service, private. |
| FWSWDWFS | = US Fish and Wildlife Service, WA Department of Fish and Wildlife. |
| LOCCTY | = Local county government. |
| LOCMUN | = Local city government. |
| LOCPVT | = Local government, private. |
| NPSBIAF | = US National Park Service, US Bureau of Indian Affairs. |
| NPSFS F | = US National Park Service, US Forest Service. |
| NPSFWSF | = US National Park Service, US Fish and Wildlife Service. |
| NPSPVTFPS | = US National Park Service, private, with some state land. |
| PINBLMPF | = Private individual, US Bureau of Land Management. |
| PVTBIAPF | = Private, US Bureau of Indian Affairs. |
| PVTBLMPF | = Private, US Bureau of Land Management (or PVTBLMFP). |
| PVTDNRPS | = Private, WA Department of Natural Resources (or PVTDNRSP). |
| PVTDODPF | = Private, US Department of Defense. |
| PVTFS PF | = Private, US Forest Service. |
| ST WFW | = WA Department of Fish and Wildlife (old WDF). |
| ST WDT | = WA Department of Transportation. |
| PVTPIN | = Private individual. |
| PVTPVT | = Private corporation. |
| PVTTNC | = Private, The Nature Conservancy. |
| PVTUAA | = Private, University. |
| PVTUUU | = Private unknown. |
| SPRDNRS | = WA Department of State Parks and Recreation, WA Department of Natural Resources. |
| SPRPVTSP | = WA Department of State Parks and Recreation, private. |

**Appendix E. Ownership Codes** (continued**)**

| | |
|---|---|
| ST | = Washington State. |
| ST DNR | = WA Department of Natural Resources. |
| ST SPR | = WA Department of State Parks and Recreation. |
| ST UAA | = WA State university system. |
| ST UOW | = University of Washington. |
| TNCPVT | = The Nature Conservancy, private. |
| USABIA | = US Bureau of Indian Affairs. |
| USABLM | = US Bureau of Land Management. |
| USABOR | = US Bureau of Reclamation. |
| USABPA | = Bonneville Power Administration. |
| USACOE | = US Army Corps of Engineers. |
| USADOA | = US Department of the Army. |
| USADOD | = US Department of Defense. |
| USAERD | = US Department of Energy Resource Development. |
| USAFHA | = US Farmers Home Administration. |
| USAFS | = US Forest Service. |
| USAFWS | = US Fish and Wildlife Service. |
| USAGS | = US Geological Survey. |
| USANPS | = US National Park Service. |
| USAPVTMI | = Federal, private ownership. |
| USAUUU | = Federal land, agency ownership unknown. |
| UUUUU | = Unknown (same as a blank). |
| WDWERDSF | = WA Department of Fish and Wildlife, US Energy Resource Development. |
| WDWPVTSP | = WA Department of Fish and Wildlife, private. |

## Appendix F. Marbled Murrelet STATUS and OBSCODE Values

LOGIC FOR ASSIGNING MARBLED MURRELET WDFWSTAT CODE VALUES:
(for clarification of codes please contact the Marbled Murrelet Database manager)

1) N = nest (assigned at time of data entry).

2) DG = dead young, flightless or downy (assigned at time of data entry).
EG = eggshell fragments on ground (assigned at time of data entry).

3) Circling <= 1 canopy.
a) Detection Type is B or S, Behavior is B, Bird Height is <= 1, blank or “U” for unknown.
Flythrough <= 1 canopy.
a) Detection Type is B or S, Behavior is T, Bird Height is <= 1, blank or “U” for unknown.

Circling > 1 and <= 2.00 canopies.
a) Detection Type is B or S, Behavior is C, Bird Height is > 1 and <= 2.00.

Stationary
a) Detection Type is H, Behavior is S, Vocalization is >= 3, Bird Height is any numerical value, blank, or “U” unknown, Notes or Closest Distance. is <= 100m or 328 feet (Closest Distance. was not captured in the 1995 database, therefore, it is necessary to manually review any surveys generating Behavior = S).

Land.
a) Detection Type is B or S, Behavior is L (Notes should re-enforce Behavior or be re-verified with the observer).

Unreported Behavior (sub-canopy).
a) Detection Type is B or S, Behavior is blank or “U” for unknown, Bird Height is <= 1 (check notes for Behaviors).

4) Circling > 2.00 canopies.
a) Detection Type is B or S, Behavior is C, Bird Height is > 2.00, blank or “U” for unknown.

Fly over > 1 canopies.
a) Detection Type is B, S, or H, Behavior is F, Bird Height is > 1, blank or “U” for unknown.

Feathered bird on ground.
a) Detection Type is B or S, Behavior is FG.

**Appendix F. Marbled Murrelet STATUS and OBSCODE values** (continued)

LOGIC FOR ASSIGNING MARBLED MURRELET WDFWSTAT CODE VALUES: (continued)
(for clarification of codes please contact the Marbled Murrelet Database manager)

Heard only.
a) Detection Type is H, Behavior is B, T, C, F, L, blank, or “U” for unknown.
b) Detection Type is H, Behavior is S, Vocal is < 3.

Unreported Behavior (above canopy).
a) Detection Type is B or S, Behavior is blank or “U” for unknown, Bird Height is >1 canopy (if a Bird Height is reported then it is possible that the notes may indicate some behavior, this should be manually reviewed).

5) No Detections.

LOGIC FOR ASSIGNING MARBLED MURRELET OBSCODE VALUES:
(for clarification of codes please contact the Marbled Murrelet Database manager)

1) Nest (assigned at time of data entry, Behavior N is recommended).

2) DG = dead young, flightless or downy (assigned at time of data entry).
EG = eggshell fragments on ground (assigned at time of data entry).

3) Visual circling <= 1 canopy.
a) Detection Type is B or S, Behavior is B, Bird Height is <= 1, blank or “U” for unknown.

4) Visual flythrough <= 1 canopy.
a) Detection Type is B or S, Behavior is T, Bird Height is <= 1, blank or “U” for unknown.

5) Visual circling > 1 and <= 1.25 canopies.
a) Detection Type is B or S, Behavior is C, Bird Height is > 1 and <= 1.25.

6) Visual circling < 1 canopy adjacent to suitable stand (circling flight in non-forested air space next to suitable stand).
a) Detection type is B or S, Behavior is B, Bird Height is <= 1 canopy, blank or “U” for unknown, Notes “adjacent to stand or over clear-cut” etc. (Note: If observer does not note circling over clear-cut, then this behavior would need to be recognized at time of digitization and then assigned at time of data entry. All adjacent sub-canopy circling was digitized, but not identified as a status “6" code, during statewide95 digitization.

**Appendix F. Marbled Murrelet STATUS and OBSCODE values** (continued)

LOGIC FOR ASSIGNING MARBLED MURRELET OBSCODE VALUES: (continued)
(for clarification of codes please contact the Marbled Murrelet Database manager)

7) Visual landing.
   a) Detection Type is B or S, Behavior is L, Bird Height is any numerical value, blank or "U" for unknown. (notes should re-enforce Behavior or re-verified with observer).

8) Stationary
   a) Detection Type is H, Behavior is S, Vocalization is >= 3, Bird Height is any numerical value, blank, or "U" unknown, Notes or Closest Distance. is <= 100m or 328 feet. (Closest Distance was not captured in the new '95 database, therefor, it is necessary to manually review any surveys generating Behavior S).

9) Unreported behavior (sub-canopy)
   a) Detection Type is B or S, Behavior is blank or "U" for unknown, Bird Height is <= 1 canopy (check notes for behaviors).

10) Visual circling > 1.25 and <= 2 canopies.
   a) Detection Type is B or S, Behavior is C, Bird Height is > 1.25 and <= 2 canopies.

11) Visual circling > 2 canopies.
   a) Detection Type is B or S, Behavior is C, Bird Height is > 2, blank or "U" for unknown.

12) Auditory circling <= 1 canopy.
   a) Detection Type is H, Behavior is B, Bird Height is <= 1, blank or "U" for unknown.

13) Auditory flythrough <= 1 canopy.
   a) Detection Type is H, Behavior is T, Bird Height is <= 1 canopy, blank or "U" for unknown

14) Auditory circling > 1 and <= 1.25 canopies.
   a) Detection Type is H, Behavior is C, Bird Height is > 1 and <= 1.25.

15) Auditory Unreported Behavior (sub-canopy).
   a) Detection Type is H, Behavior is blank or "U" for unknown, Bird Height is <= 1 canopy (when a Bird Height is reported then it is possible that the notes may indicated some behavior, this should be manually reviewed).

**Appendix F. Marbled Murrelet STATUS and OBSCODE values**

LOGIC FOR ASSIGNING MARBLED MURRELET OBSCODE VALUES: (continued)
(for clarification of codes please contact the Marbled Murrelet Database manager)

16) Auditory circling > 1.25 canopies.
a) Detection Type is H, Behavior is C, Bird Height is > 1.25, blank or “U” for unknown.

17) Auditory landing (an unlikely, yet possible, value for an observer to report).
a) Detection Type is H, Behavior is L, Bird Height is any numerical value, blank or “U” for unknown.

18) Fly over > 1 canopies
a) Detection Type is B, S, or H, Behavior is F, Bird Height is >1, blank or “U” for unknown.

19) Feathered bird on ground.
a) Detection Type is B or S, Behavior is FG.

20) Unreported behavior (above canopy).
a) Detection Type is B, S, or H, Behavior is blank or “U” for unknown, Bird Height is > 1, blank, or “U” for unknown (when Bird Height is reported it is possible that the notes may indicate some behavior, this should be manually reviewed).

21) Stationary < 3 vocals.
a) Detection Type is H, Behavior is S, Vocals is < 3.

30) No Detections.

**Appendix G. WDFW Region Contacts**

# WASHINGTON DEPARTMENT OF FISH AND WILDLIFE REGIONAL HABITAT PROGRAM MANAGER CONTACTS

**For Assistance with Priority Habitats and Species Information contact a regional habitat program manger and they will direct your questions to the appropriate biologist.**

| County project is in… | Contact… |
|---|---|
| Asotin, Columbia, Ferry, Garfield, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman | Mark Grandstaff (Acting)<br>PO Box 456<br>Walla Walla WA 99362<br>Region 1 Phone: (509) 546-4082<br>e-mail: grandmhg@dfw.wa.gov |
| Adams, Chelan, Douglas, Grant Okanogan | Chris Parsons<br>1550 Alder Street NW<br>Ephrata, WA 98823-9699<br>Region 2 Phone: (509) 754-4624<br>e-mail: parsocbp@dfw.wa.gov |
| Benton, Franklin, Kittitas, Yakima | Ted Clausing<br>1701 S 24th Avenue<br>Yakima, WA 98902-9651<br>Region 3 Phone: (509) 575-2740<br>e-mail: claustac@dfw.wa.gov |
| Island, King, San Juan Skagit Snohomish, Whatcom | Rich Costello<br>16018 Mill Creek Boulevard<br>Mill Creek, WA 98012-1296<br>Region 4 Phone: (206) 775-1311<br>e-mail: costerac@dfw.wa.gov |
| Clark, Cowlitz, Klickitat, Lewis, Skamania, Wahkiakum | Steve Manlow<br>2108 Grand Boulevard<br>Vancouver, WA 98661<br>Region 5 Phone: (360) 696-6211<br>e-mail: manloswn@dfw.wa.gov |
| Clallam, Grays Harbor, Jefferson, Kitsap, Mason, Pacific, Pierce, Thurston | Steve Kalinowski<br>48 Deveonshire Road<br>Montesano, WA 98563-9618<br>Region 6 Phone: (360) 249-4628<br>e-mail: kalinsak@dfw.wa.gov |