Species of Concern (SOC) on Department of Defense Installations

Report and Documentation

Prepared for:

Department of Defense

U.S. Fish and Wildlife Service

Submitted by:

NatureServe

NatureServe

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Report and Documentation for Species of Concern (SOC) on Department of Defense Installations

1.0 Introduction – Project Description

The information supplied through this project by NatureServe and the network of Natural Heritage Programs (NHPs) provides the Department of Defense (DOD) and the U.S. Fish and Wildlife Service (FWS) with information about Species of Concern (SOC) on military bases. This work is intended to assist the military in focusing efforts, efficiently and effectively, towards conservation of species that may soon need listing if population declines occur or continue. Some of these species of concern may be endemic to military landholdings or dependent on military efforts to remain viable or achieve recovery. The conservation of SOC habitats could possibly preclude the need to list the species. Early conservation of candidate species, or before the species becomes a candidate, preserves management options, minimizes the cost of recovery, and reduces the potential for restrictive land use policies in the future.

This document supports the spatial biodiversity data analyses provided to the DOD and the FWS. The document contains an explanation of NatureServe and Natural Heritage Program methods and details of the data to aid DOD and FWS in proper interpretation and representation of the information provided.

Section 2 describes general methods NHPs and NatureServe employ to gather and maintain information on biological diversity. Section 3 provides a description of the dataset, the analyses performed, and provides suggestions and guidelines for the use of the project results. Appendix 5 contains details pertaining to the state datasets delivered. Additional appendices contain supporting documents useful for interpretation.

For additional information, contact NatureServe project manager, Lynn Kutner (lynn_kutner@natureserve.org), or database project specialist, Jason McNees (jason_mcnees@natureserve.org), at 703-908-1800.

2.0 Biodiversity Data Methodology

NatureServe, formerly known as the Association for Biodiversity Information, is a non-profit organization dedicated to developing and providing information about the world's plants, animals, and ecological communities. NatureServe works in partnership with 75 independent Natural Heritage Programs and Conservation Data Centers that gather scientific information on rare species and ecosystems in the United States, Latin America, and Canada (the Natural Heritage Network). NatureServe is a leading source for biodiversity information that is essential for effective conservation action.

One of the most important reasons the information NatureServe supplies is so valuable is because it has been developed centrally at NatureServe or within the programs in the Natural Heritage network with a common methodology. This section will discuss the two main components of the Heritage methodology that are significant contributions to conservation and directly applicable to the analyses performed for the DOD and the FWS. These are: 1) Conservation Statuses and 2) Element Occurrences.

2.1 Elements of Biological Diversity

The Natural Heritage programs function to inventory each state or subnation (e.g. Navajo Nation) for biological features in need of conservation attention (Jenkins 1985, 1988, 1996). Because these features may include more than just the locations of individual species, the inclusive phrase 'elements of natural diversity' was put into use with the creation of the first heritage program in 1974. The concept and term 'element' still remains in use today and will be used in this document.

An Element is defined as a unit of natural biological diversity, representing species (or infraspecies taxa), ecological communities, or other non-taxonomic biological entities, such as migratory species aggregation areas.

For the purposes of the analysis of Species of Concern on DOD Installations, these elements of diversity refer to the locations of species and infrataxa only. No ecological communities or other significant areas such as migratory stopover points are included in the datasets provided

2.2 Assigning Conservation Status Ranks

An element is assigned one global rank (called a GRANK), which applies across its entire range; a national rank (NRANK) for each nation in its range; and a subnational rank (SRANK) for each state, province, or other subnational jurisdiction in its range. In general, NatureServe scientists assign global ranks and U.S. and Canadian national ranks. These scientists receive guidance from subnational data centers, especially for endemic elements, and from experts on particular taxonomic groups. Local data centers

assign subnational ranks for elements in their respective jurisdictions and contribute information for national and global ranks. New information provided by field surveys, monitoring activities, consultation, and literature review improves the accuracy and keeps ranks current. NatureServe's centrally aggregated data are stored in the Natural Heritage Central Databases. These databases are updated continually with revisions, corrections, and information on ranked elements. Species' conservation status ranks are updated annually in the data exchange process between local data centers and NatureServe's central office (see section 2.5).

What the Ranks Mean

The conservation rank of an element known or assumed to exist within a jurisdiction is designated by a whole number from 1 to 5, preceded by a G (Global), N (National), or S (Subnational) as appropriate. The numbers have the following meaning:

1 = critically imperiled
2 = imperiled
3 = vulnerable to extirpation or extinction
4 = apparently secure
5 = demonstrably widespread, abundant, and secure

G1, for example, indicates critical imperilment on a range-wide basis—that is, a great risk of extinction. S1 indicates critical imperilment within a particular state, province, or other subnational jurisdiction—i.e., a great risk of extirpation of the element from that subnation, regardless of its status elsewhere.

Species known in an area only from historical records are ranked as either H (possibly extirpated/possibly extinct) or X (presumed extirpated/presumed extinct). Certain other codes, rank variants, and qualifiers are also allowed in order to add information about the element or indicate uncertainty. Additional detail on conservation ranks is provided in Appendix 1.

Elements that are imperiled or vulnerable everywhere they occur will have a global rank of G1, G2, or G3 and equally high or higher national and subnational ranks. (The lower the number, the "higher" the rank, and therefore the conservation priority.) On the other hand, it is possible for an element to be rarer or more vulnerable in a given nation or subnation than it is range-wide. In that case, it might be ranked N1, N2, or N3, or S1, S2, or S3 even though its global rank is G4 or G5. The three levels of the ranking system give a more complete picture of the conservation status of a species or community than either a range-wide or local rank by itself. They also make it easier to set appropriate conservation priorities in different places and at different geographic levels.

In an effort to balance global and local conservation concerns, global as well as national and subnational (provincial or state) ranks are used to select the elements that should receive priority for research and conservation in a jurisdiction. Highest priority should be

given to elements that are most vulnerable to extinction—that is, those ranked G1, G2, or G3. And, according to the rules of ranking, these must have equally high or higher national and subnational ranks. Elements vulnerable to national or subnational extirpation (ranks N1, N2, N3, or S1, S2, S3) with global ranks of G4 or G5 should be considered next.

Ranking Factors

Use of standard ranking criteria and definitions makes Natural Heritage ranks comparable across element groups—thus G1 has the same basic meaning whether applied to a salamander, a moss, or a forest community. Standardization also makes ranks comparable across jurisdictions, which in turn allows NatureServe scientists to use the national and subnational ranks assigned by local data centers to determine and refine or reaffirm global ranks.

Ranking is a qualitative process: it takes into account several factors, which function as guidelines rather than arithmetic rules. The ranker's overall knowledge of the element allows him or her to weigh each factor in relation to the others and to consider all pertinent information for a particular element. The factors considered in ranking species and communities are similar, but the relative weight given to the factors differs.

For species elements, the following factors are considered in assigning a rank:

- **total number and condition of element occurrences**
- **population size**
- **range extent and area of occupancy**
- **short- and long-term trends in the foregoing factors**
- **threats**
- **environmental specificity**
- **fragility**

Relationship of Ranks to Other Status Designations

Conservation status ranks and their documentation are a valuable complement to national and subnational statuses assigned by government agencies (e.g. the United States Fish and Wildlife Service governs threatened and endangered statuses). The detailed and extensive information gathered by NHPs can provide support for official designations. However, since Natural Heritage lists of vulnerable species and official lists of endangered or threatened species have different criteria, evidence requirements, purposes, and/or taxonomic depth and breadth, they normally do not coincide completely. For example, a species listed by a subnational jurisdiction as "endangered" may not be ranked S1, and vice versa. Multilevel ranking (using global, national, and subnational ranks), and the use of range ranks (e.g., S2S4 which represents an element meeting criteria for S2, S3, or S4 ranks) to indicate the degree of uncertainty also sets Natural Heritage ranks apart from official status designations.

Rounded Global Conservation Status Ranks

In general, rounded ranks represent the "basic ranks" displayed in the GRANK field values. Rounded ranks simplify complex conservation status rank values. They may be useful when performing tallies or analyses, or when summarizing complex element status information. Rounded ranks serve as an approximate substitute only; they are not intended as a replacement for the detailed element status information contained in the global, national, and subnational conservation status rank. Details regarding Rounded ranks including an the algorithm used to calculate the ranks are found in Appendix 1.

2.3 Element Occurrence Data

The element occurrence is the mapping unit developed by NHPs for documenting the distribution of species populations. Formally defined as “an area of land and/or water in which a species or natural community is, or was, present,” an element occurrence ideally reflects species population units; either a distinct population, part of a population (subpopulation), or a group of populations (metapopulation).

Once the location of the element is determined and delineated based on the biology of the species, the quality or viability of each occurrence is assessed in the form of an element occurrence rank (EORANK). In general, EO ranks are designed to represent the relative conservation value of an occurrence and are assigned on the basis of the population’s size, condition and landscape context.

2.4 Last Observation Date and Survey Date

The Last Observation date (LASTOBS) is the date that the Element Occurrence was last observed to be extant at the site. This is not necessarily the date the site was last visited, which is recorded in the Survey Date (SURVEYDATE) field.

Dates typically follow a standard YYYY-MM-DD format. It is important to note, however that the LASTOBS and SURVEYDATE fields can include text so these fields and all other element occurrence date fields cannot be treated as true date fields.

Uncertainty in the year is indicated by a placeholder character such as: "X", "?", "_", or "-". Uncertainty in the month and day can also be indicated with the appropriate number of placeholder characters, although it is acceptable to use other characters or words. For example, seasons could be abbreviated as follows: spring (SP), summer (SU), fall (FA), winter (WI). Date ranges are indicated using the complete year for both years (e.g., 1979-1980) to avoid confusing a date range (1990-2005) with a year-month combination (1999-05).

Following are guidelines for the use and interpretation of LASTOBS and other EO "date" fields such as SURVEYDATE:

1) Truncate LASTOBS value to the first four characters; ideally, this should result in a real numerical YEAR that can be used in analytical queries and sorts.

2) If there are any "unknown" or "no date" or "XXXX-XX-XX" values, they should be treated as NULLS.

3) Uncertainty in the year is indicated by a placeholder character (such as: "X", "?", "_" or "-"); according to the Heritage methodology and NatureServe data standards these are valid LASTOBS values. If there is uncertainty in the year, for the purposes of searches and sorts, all placeholder characters should be treated as if they were "zeros". This will ensure that a LASTOBS with uncertainty will sort before an actual year value; example of sort order:

   1979
   198X = 198? = 198_ = 198-
   1980
   1981
   1982
   1983

   it is important, however, to differentiate between degrees of certainty in the year:

   198? = the year is known to the precision of the decade
   1980 = the year is known to the precision of an exact year

The following table presents a sampling of LASTOBS values and their interpretations for different date scenarios.

Table 1. Examples of Values for the Last Observation Field

LASTOBS value	Alternate LASTOBS value	Interpretation
1980-07-01		July 1, 1980
1980-07		July 1980
1934		1934
1965-SP		Spring 1965
1979-1980-WI		Winter 1979-80
1930-PRE		before 1930
196--EARLY	1960s-EARLY	Early 1960s
193-	1934?	probably in 1934
198--07-30	1980s-07-30	July 30, 1980s
195-	1950s	1950s
194--06	1940s-06	June, 1940s
18--	1800s	1800s

Table 1. Examples of Values for the Last Observation Field		
LASTOBS value	**Alternate LASTOBS value**	**Interpretation**
1998-2002		Betw. 1998 & 2002
-----07-04		July 4, ?
1962----04	1962-XX-04	? 4, 1962
No Date	ND	date not known

2.5 Data Exchange Cycle and Data Upload

NatureServe is linked to the NHPs through a process of regular annual data exchanges conducted between the Natural Heritage Central Databases and each of the individual heritage programs in the U.S. and Canada. Each month a set of NHPs send their data to NatureServe for upload of the past year's updates to status ranking and inventory work. The exchange process includes both taxonomic and status reconciliation. New or updated Element Occurrence data are uploaded to NatureServe and in return centrally developed scientific information is distributed to the state and provincial programs.

2.6 Improving Access to Information on Species of Conservation Concern

NatureServe, working with the Natural Heritage Network in each state, has developed a website entitled NatureServe Explorer (http://www.natureserve.org/explorer/) that provides a wide range of information about species and ecological communities including presence by state. By working with the Natural Heritage Programs (NHPs) that perform field surveys in their states, the data are continually updated. The website provides a multi-state dataset of species information over the Internet. The information on this website can be used to guide the stewardship of all DOD-controlled or DOD-managed natural resources and specifically aid in the protection of species listed or proposed under the Federal Threatened and Endangered Species Act (ESA) as well as species not yet proposed or listed, but ranked by NatureServe as 'imperiled,' thereby allowing DOD to stay ahead of the curve on species protection.

Under a DOD Legacy Resource Management Program-funded project, the NatureServe Explorer website has been enhanced to include locational information at a finer scale and to provide the ability to download information from the Internet. The enhanced NatureServe Explorer website can be accessed through: https://www.denix.osd.mil/denix/DOD/ES-Programs/Conservation/Legacy/legacy_hottopic.html

By providing an Internet-based information tool with locational information as fine as the U.S. Geological Survey 7.5-minute quadrangle, this effort provides an important tool to natural resource managers, command staff, and headquarters staff for future natural resource management and land use planning.

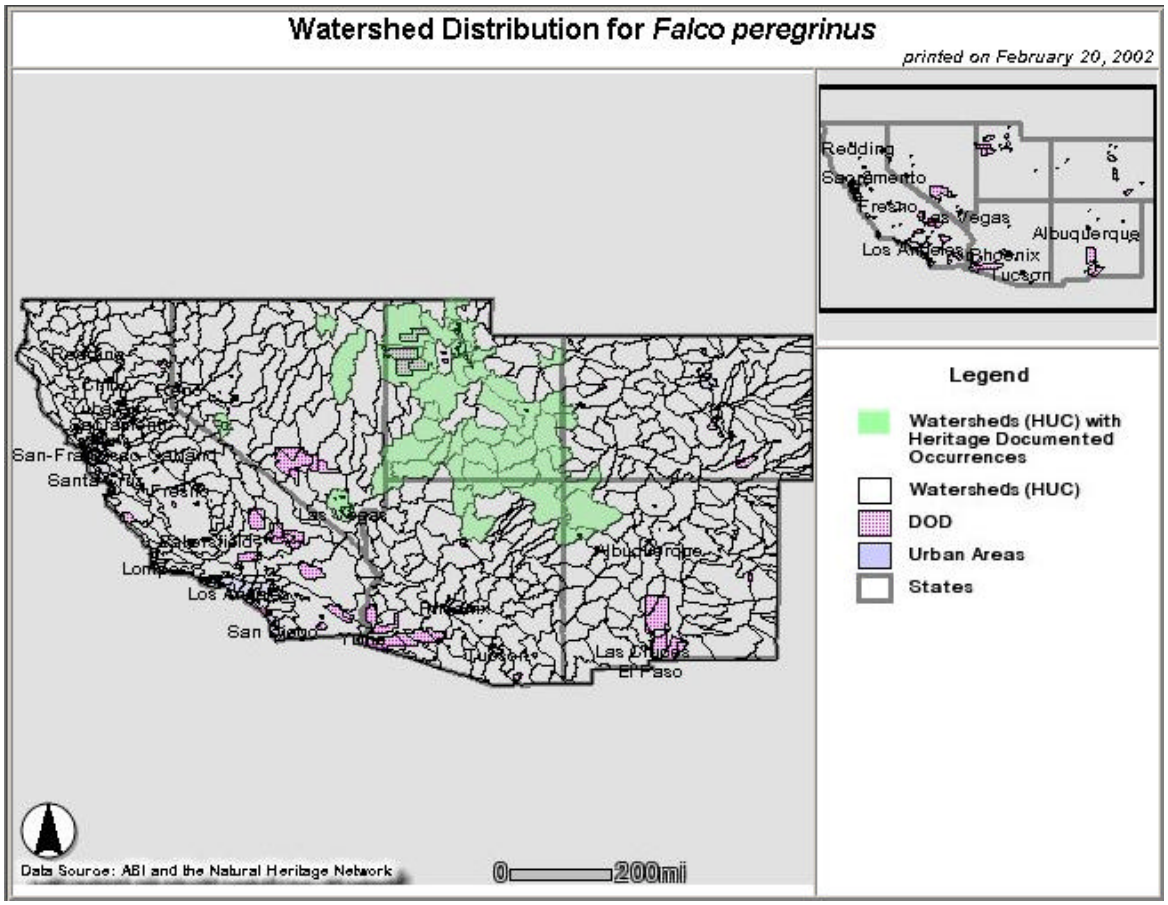
The web data access project, though limited at this time to Arizona, California, New Mexico, Utah, Colorado, and Nevada is considered a technology demonstration that can be expanded in the future.

Potential benefits of the site include:

- Detailed information on over 50,000 plants, animals, and ecological communities including taxonomic information, ESA rank, NatureServe rank, management strategies, threats and trends.
- Locational information down to the quad-scale provides information for species protection plans. This information is particularly beneficial to those installations that know what species are on their lands but may not have information about the surrounding lands.
- MAJCOM and headquarter planning can be done for installations in multiple states.

Sample Map from NatureServe Explorer - DOD Enhanced Data Access Site

NatureServe *Explorer*
an online encyclopedia of life



3.0 Description of Data Analyses and Data Use

The following description summarizes the criteria for the SOC analyses, describes the underlying data sets used for this project, and presents guidelines for the use of the data and resulting analyses.

3.1 Species of Concern (SOC) Criteria

For the purpose of this project, SOC is defined as native, regularly occurring species in the United States that are either:

- Candidates under the U.S. Endangered Species Act, or
- considered by NatureServe and the Network of Natural Heritage Programs to be critically imperiled (rounded global rank of G1 or T1) or imperiled (rounded global rank of G2 or T2) and have not been federally listed.

Species are defined as in the Endangered Species Act to "include any subspecies of fish or wildlife or plants, and any distinct population segment of any species or vertebrate fish or wildlife which interbreeds when mature."

The analyses are based on element occurrence (EO) records (i.e. population-level distribution data) in NatureServe's Natural Heritage Central Databases that have been aggregated from the Natural Heritage Programs. EO records that are unmappable, known to be misidentified, or have been determined by NatureServe to be historical or extirpated have been excluded.

A SOC was defined as being on a DOD installation if one or more element occurrences of that species fell completely or partially in, or within a 2 km (1.24 mi) buffer zone of the borders of a DOD installation as specified in the USGS coverage described below. This buffer zone has been included for several reasons, including:

- the location of a SOC occurrence near an installation may indicate that the occurrence is actually found on both sides of the fence;
- the analyses are being conducted using the centrum points of occurrences that actually occupy a certain spatial extent; occurrences should not be excluded because the centrum falls slightly outside an installation boundary;
- the locational data from selected NHPs has been slightly fuzzed; and
- there may be data gaps on installations due to a lack of inventory and/or data sharing with heritage programs.

3.2 NatureServe Data Completeness, Quality, and Currentness

All data are provided as is: NatureServe makes no warranty as to the currency, completeness, or accuracy of any specific data. Since the data in the central databases are continually being updated, it is advisable to refresh data received at least once a year after its receipt.

For a detailed description of the data from each state and a summary of any state-specific data issues, please see Appendix 5.

Completeness

The completeness of NatureServe's data varies between species. The data aggregated by NatureServe from the Natural Heritage Programs is particularly strong and very complete in tracking the terrestrial and freshwater vertebrate species, vascular plants and entities that are imperiled and/or have federal status under the Endangered Species Act (ESA). Many invertebrate groups are completely tracked, but the databases on these elements continue to expand. The non-vascular plant data (lichens, mosses, liverworts & hornworts, fungi) is being actively developed and element occurrences of these groups will expand over the next few years. Marine species, even in coastal areas are not completely tracked and documented with element occurrences, however this varies across NHPs.

Note that data for Native American tribal lands are not available for most western states.

NatureServe conducted analyses on all available data that met the criteria for the project as described above.

Quality

All the data fields which are considered necessary for the DOD SOC data analyses have been quality controlled either by the individual heritage program or NatureServe staff to meet minimum standards for spatial representation, taxonomy and status as defined below:

- **Conservation Status Ranks:** NatureServe has conducted quality control checks to assure that the global conservation status ranks of the individual state datasets are consistent with the most current ranks in the Natural Heritage Central Databases.

- **Federal Status Designations:** NatureServe has conducted quality control checks to assure that the federal listed status for each species and element occurrence correlates with the most recent U.S. Fish and Wildlife Service listing of Threatened and Endangered species.

- **Spatial Data:** All element occurrence records are mapped as accurately as recorded by NHPs with at least a general (defined as within 8 kilometers, 5 miles, or to quad or place name) precision. Any Element Occurrences known to be incorrectly identified or mapped have been excluded.

Please report any errors or omissions to NatureServe data management staff.

Currentness and Updates

Federal status designations are updated in the Natural Heritage Central Databases within two weeks of publication of listings or proposed status changes in the Federal Register and updated within four weeks of publication in Notices of Review in the Federal Register.

Taxonomy is constantly being updated based on the publication of new sources. See Appendix 3 for a current list of sources for all taxonomic groups potentially included in the dataset.

Spatial data are updated and reviewed by the NHPs annually in preparation for their annual data exchange with NatureServe.

3.3 Additional Data Sources

Installation Boundaries

Species of Concern are identified for military installations in the U.S. Geological Survey data set "Federal Land Features of the United States". It was determined, in coordination with the Department of Defense, that this is the best readily available GIS representation of military installations across the country. Since the minimum map resolution of the USGS coverage is 640 acres or one square mile, installations that are under this size are generally not shown. To obtain a copy of this map layer or for additional information about its creation and sources, please see:
http://www.nationalatlas.gov/fedlandsm.html.

Fort Bliss Military Reservation Species

Heritage species location data are not currently available for Fort Bliss Military Reservation (FBMR). The data that are presented for Fort Bliss in this analysis is based on a species list obtained directly from FBMR. This species list was reconciled taxonomically with the NatureServe Central Databases by NatureServe's Botany and Zoology science staff. Global, national, and state level data in the databases for those species that could be matched up were included in the Species of Concern analysis; however, statistics that are based on specific locational information such as occurrence or base / buffer counts do not include numbers for FBMR.

Fort Bliss is represented on the USGS "Federal Land Features of the United States" coverage as two polygons. The first is titled "Fort Bliss" and is entirely in Texas, and the second is titled "Fort Bliss – McGregor Range" and is entirely in New Mexico. For the purposes of this analysis "Fort Bliss" and "Fort Bliss – McGregor Range" were treated as one unit.

White Sands Missile Range Species

Heritage species location data are not currently available for White Sands Missile Range (WSMR). The data that are presented for White Sands in this analysis is based on a species list obtained directly from WSMR. This species list was reconciled taxonomically with the NatureServe Central Databases by NatureServe's Botany and Zoology science staff. Global, national, and state level data in the databases for those species that could be matched up were included in the Species of Concern analysis; however, statistics that are based on specific locational information such as occurrence or base / buffer counts do not include numbers for WSMR.

3.4 Data Use Suggestions and Guidelines

The information about Species of Concern (SOC) on military bases is provided to the Department of Defense (DOD) and the U.S. Fish and Wildlife Service (FWS) for planning, assessment, and informational purposes. NatureServe reserves all rights in data provided.

This is intended as an initial coarse filter to help identify and prioritize conservation efforts for species of concern on or near DOD installations on a national level. The analyses and reports described in the next section can be used, for example, to identify installations that have a significant number of conservation targets or to identify species that are known to occur mostly on DOD lands. In both cases, conservation efforts by the DOD would have a major impact on protecting biodiversity in the United States.

The data presented in these analyses, however, should not be considered a definitive statement on the presence, absence, or condition of biological elements at any given location. The lack of data for any installation cannot be construed to mean that no species of concern or other significant features are present. Installation-specific projects or activities should be reviewed for potential environmental impacts with appropriate regulatory agencies. It is suggested that the appropriate state natural heritage program(s) be contacted for a site-specific review of the area and/or for input on the creation of management plans. For natural heritage program contact information, please see the NatureServe web site: http://www.natureserve.org/.

Distribution of the complete data set or subsets of the SOC data to other than agreed upon parties, or posting of these data in whole or in part on any public computer network may only be done with prior written permission of NatureServe. All parties receiving these data must be informed of these restrictions.

Please provide appropriate and mutually agreed acknowledgment of NatureServe and as data contributors to any reports or other products derived from this data. The following citation and acknowledgement statement should be used. As appropriate, NatureServe's logo should also be used on publications or other products where NatureServe contributed data or information.

Citation:
NatureServe. 2002. Natural Heritage Central Databases. Arlington, VA. U.S.A.

Acknowledgement Statement:
This information is provided by NatureServe (http://www.natureserve.org/) and its natural heritage member programs, a leading source of information about rare and endangered species, and threatened ecosystems.

Please provide a copy of materials produced which include the data or portions of the data. Please send these documents to NatureServe's Network Operations Division:

Attn: Jason McNees
NatureServe
1101 Wilson Blvd., 15th Floor
Arlington, VA 22209

As your time permits, please note any errors or omissions that you find in the data. Such comments will be valuable in improving the quality of our databases for the network of users.

3.5 SOC Analyses and Reports

In discussion with DOD and FWS, it was determined that the following analyses and reports would provide a useful foundation for setting species conservation priorities.

Unless noted in the descriptions below, all tables and maps are being provided to DOD and FWS both electronically and as hard-copy.

For additional details, please see section 3.6 "Data Field Definitions".

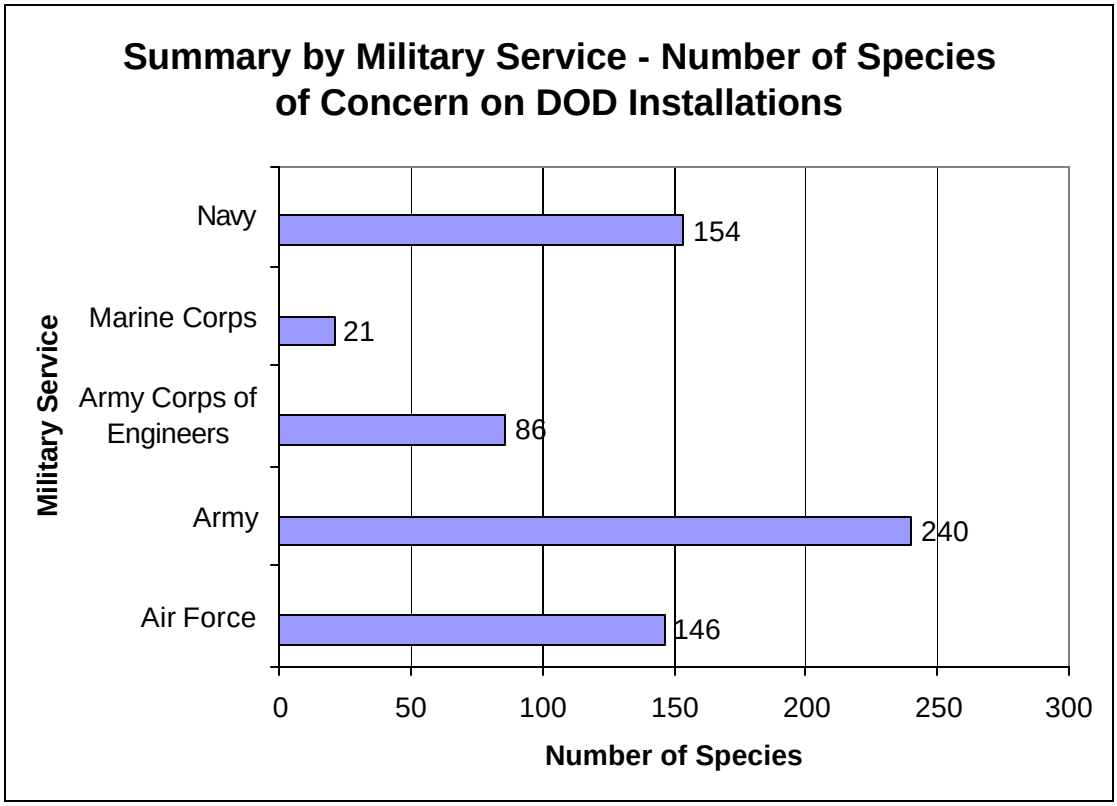
Installation-Specific SOC List
File name: FINAL_instal_master_summary.xls
For each installation in the USGS DOD coverage, a list of the Species of Concern found on or near the installation. This list includes information about the species' conservation status at the global (range-wide) and local (state) levels, any federal or state listing status, the date of the most recent survey and observation of occurrences, and habitat and threat information where available. In addition, to provide a larger context for interpretation and use of the materials the list will include the state, FWS region, and The Nature Conservancy (TNC) ecoregion where the installation is found.
NOTE: This table is only being provided electronically because it is too large to readily print as hard-copy.

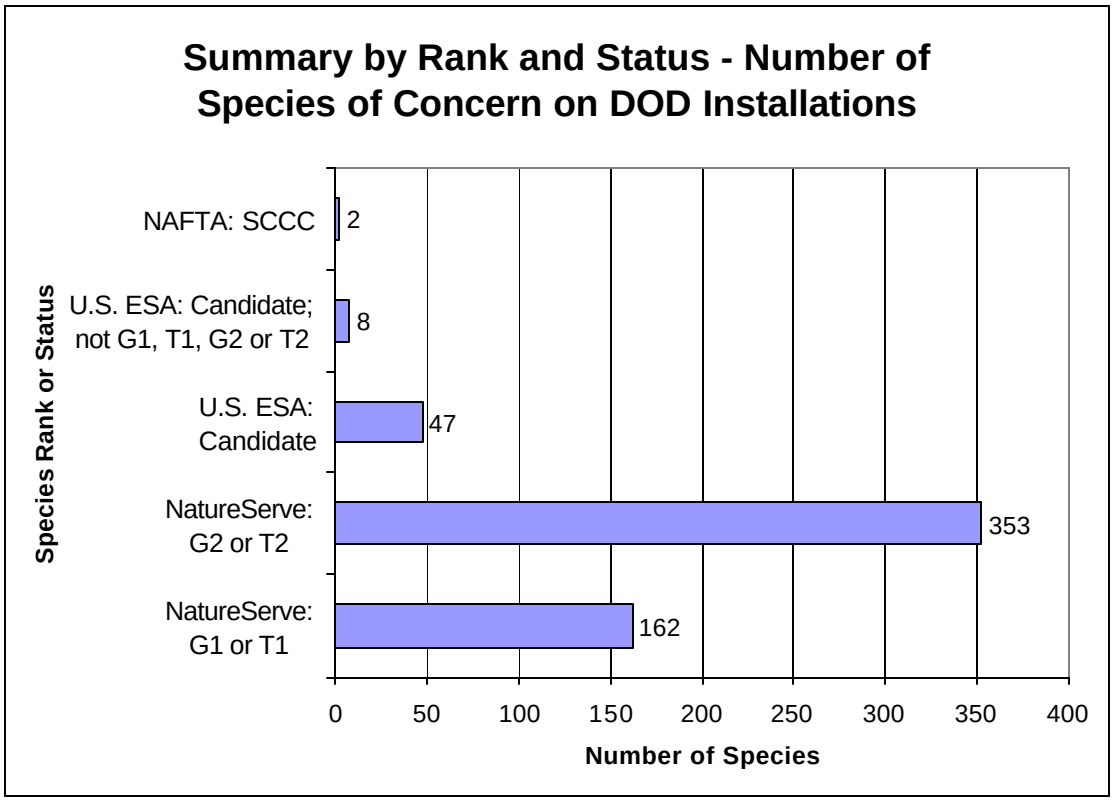
SOC Summary Statistics

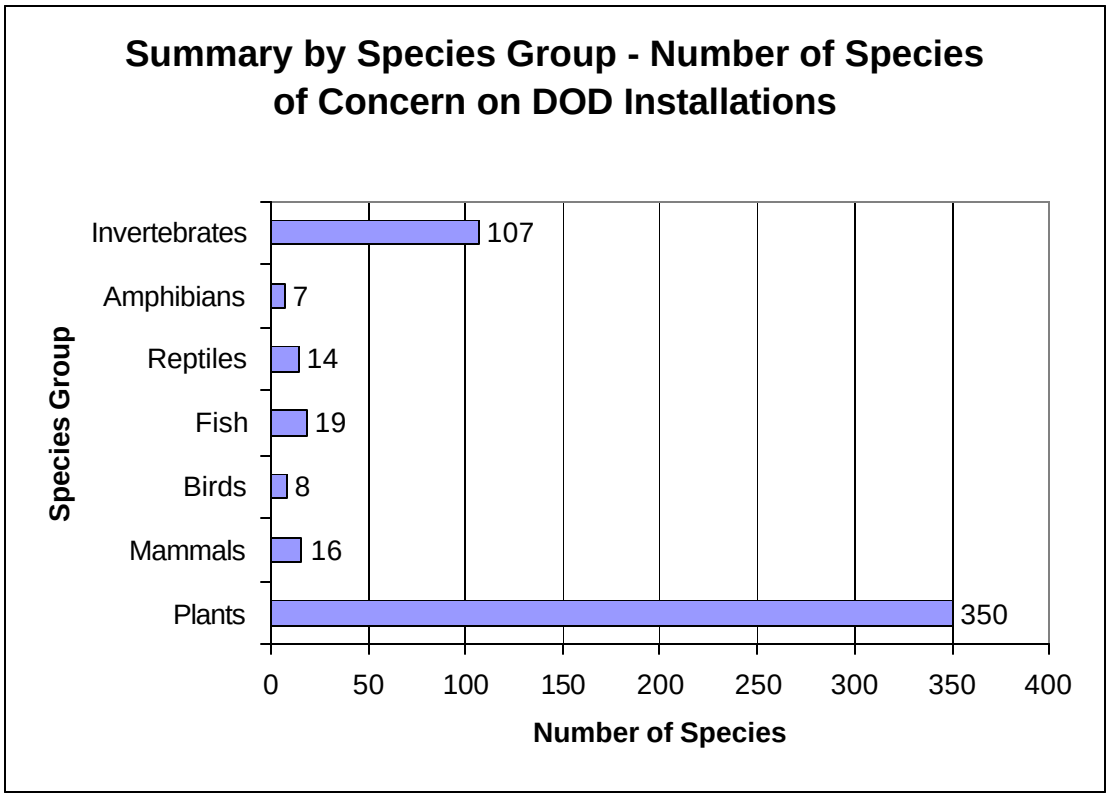
File name: FINAL_Summary_Statistics.xls

To help interpret the results of the installation-specific SOC lists and compare various installations to each other, summary statistics have been prepared which include the total number of species and occurrences, number of species with various conservation and listing statuses, number of species unique to that installation, a comparison of species and occurrences found on the installation or in the buffer area, and summary numbers by the species group (i.e. mammals, birds, plants, etc.).

To help with the use and interpretation of this large table, selected summary statistics are represented below as graphs.




Summary by Rank and Status - Number of Species of Concern on DOD Installations
Species Rank or Status
NAFTA: SCCC
U.S. ESA: Candidate; not G1, T1, G2 or T2
U.S. ESA: Candidate
NatureServe: G2 or T2
NatureServe: G1 or T1
2
8
47
353
162
0
50
100
150
200
250
300
350
400
Number of Species


Summary by Species Group - Number of Species of Concern on DOD Installations
Species Group
Invertebrates
Amphibians
Reptiles
Fish
Birds
Mammals
Plants
107
7
14
19
8
16
350
0
50
100
150
200
250
300
350
400
Number of Species

SOC Summary Statistics 2

File name: FINAL_Summary_Statistics_2.xls

SOC Summary Statistics 2 is a subset of the information in the previous table, showing only the military service and state associated with each installation, the total number of species by installation, and the number of species unique to that installation.

SOC Totals by DOD Installation and for the U.S.

File name: FINAL_SOC_occ_counts.xls

All Species of Concern that are found on or near a DOD Installation are listed with the following summary numbers of occurrences:

- total number of occurrences in the U.S.
- number of occurrences that are not on DOD lands
- number of occurrences found on DOD installations (bases)
- number of occurrences found in the buffer zones
- number of occurrences on each installation

The absence of Species of Concern on any particular Installation does not necessarily mean that no Species of Concern are present. Many areas in the United States have not been adequately inventoried and new locations of species are continuously being discovered.

NOTE: This table is only being provided electronically because it is too large to readily print as hard-copy.

INRMP / SOC Comparison

File name: FINAL_inrmp_soc_compare.xls

To help compare this SOC analysis to other conservation planning efforts, a summary of installations that have an Integrated Natural Resource Management Plan (INRMP):

- but are not included in the USGS DOD coverage, and
- are included in the USGS DOD coverage, but there were no Species of Concern (SOC) from the NatureServe analysis.

DOD Installations without SOC

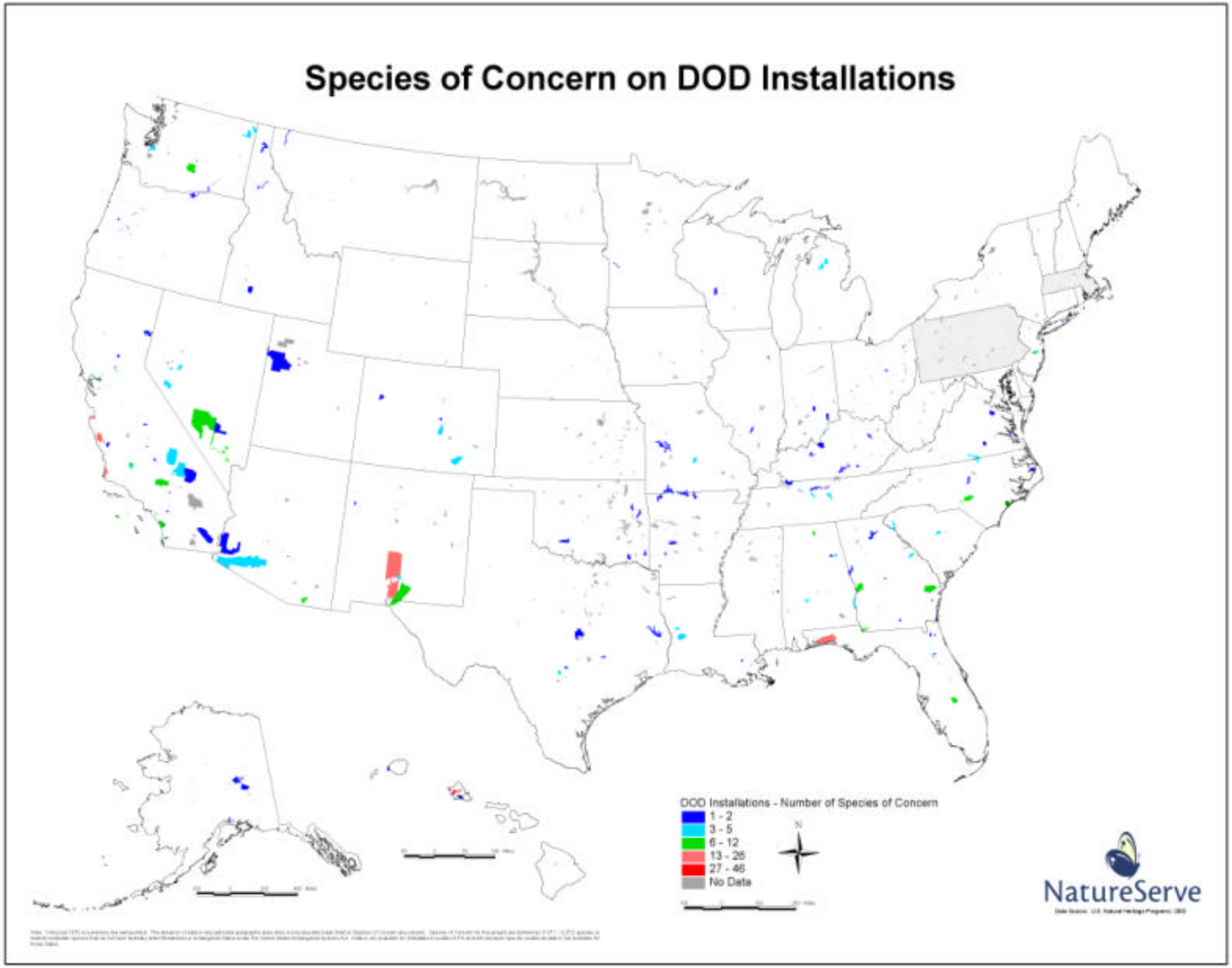
File name: FINAL_USGS_install_nodata.xls

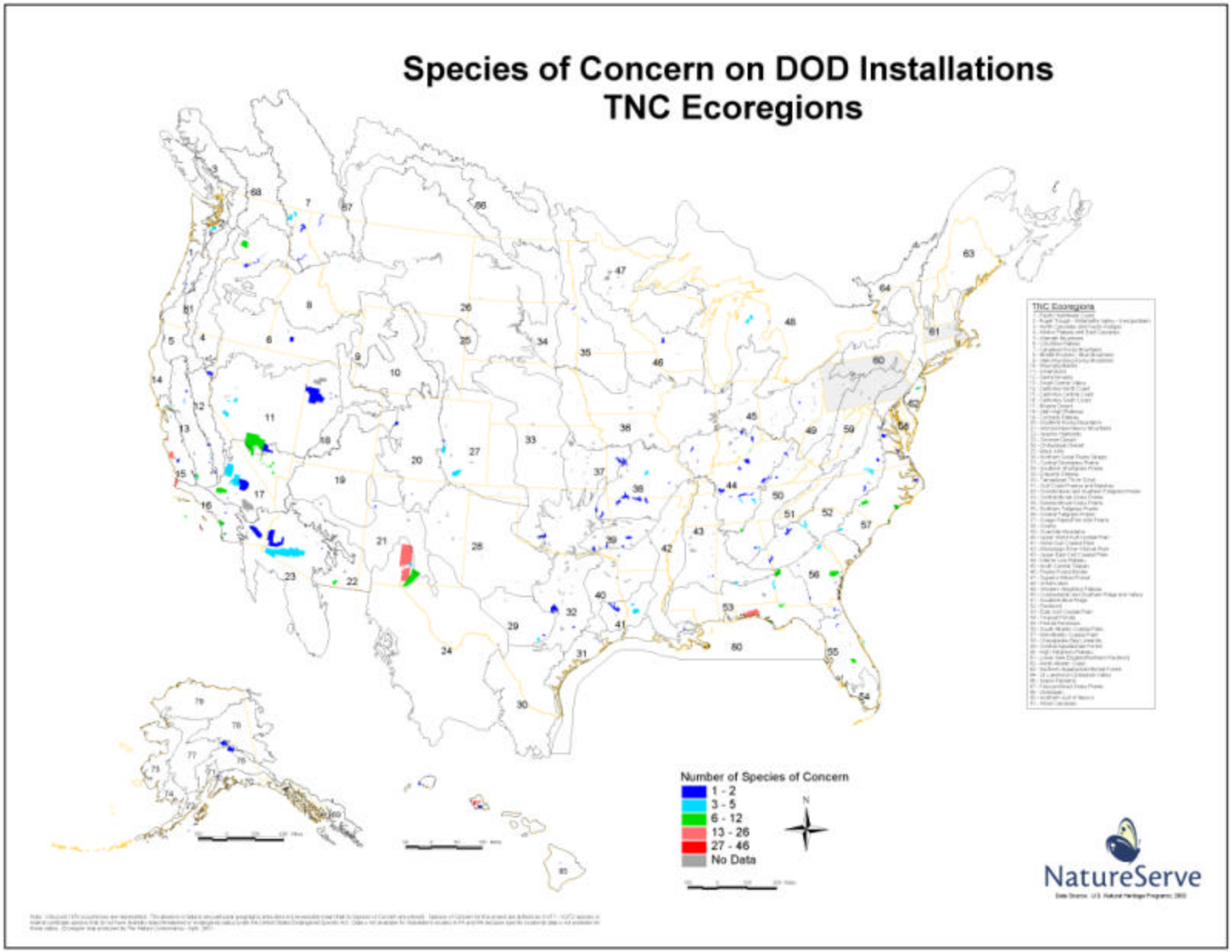
DOD Installations in the USGS data set "Federal Land Features of the United States" without Species of Concern. NOTE: The absence of Species of Concern on any particular Installation does not necessarily mean that no Species of Concern are present. Many areas in the United States have not been adequately inventoried and new locations of species are continuously being discovered. Data are not available for installations in Pennsylvania and Massachusetts because specific locational data was not available for those states.

DOD Installations – SOC and SOC by The Nature Conservancy (TNC) Ecoregion (Map Graphics)

File name: dod_soc_maps.ppt

A map of the United States with DOD Installations color coded by the number of Species of Concern that occur on the installation or within its buffer and a second map with the same information overlain with The Nature Conservancy's Ecoregions layer for the U.S. These maps were created using the data from the "Total Number SOC Species" column in the SOC Summary Statistics and SOC Summary Statistics 2 tables described above. Both the state boundary layer and the DOD Installations layer were developed by USGS.


Species of Concern on DOD Installations
DOD Installations - Number of Species of Concern
1 - 2
3 - 5
6 - 12
13 - 26
27 - 46
No Data
N
NatureServe


Species of Concern on DOD Installations
TNC Ecoregions
Number of Species of Concern
1 - 2
3 - 5
6 - 12
13 - 26
27 - 46
No Data
N
NatureServe

3.6 Data Field Definitions

Included below are definitions for fields provided in the installation-specific list of SOC and the summary figures.

Values of Conservation Status Ranks and Federal Status designations are listed in Appendices 1 and 2.

Installation-Specific SOC List
File name: FINAL_install_master_summary.xls

Species Group (Informal taxonomy of the species) - the name of the species' group in plain English (mammals, birds, freshwater mussels, etc.)

Scientific Name (GNAME) - The standard global (i.e., rangewide) scientific name (genus and species) adopted for use by the Natural Heritage Central Databases based on selected standard taxonomic references.

Common Name (GCOMNAME) - The standard global (i.e., rangewide) common name of species adopted for use in the Natural Heritage Central Databases (e.g. the common name for *Haliaeetus leucocephalus* is bald eagle).

Global Conservation Status (GRANK) - The conservation status according to NatureServe and the NHPs of a species from a global (i.e., rangewide) perspective, characterizing the relative rarity or imperilment of the species.

Rounded GRANK – Global conservation status "rounded" to a single character.

Global Conservation Status Date (GRANKDATE) - The date the Global Conservation Status (GRANK) was originally entered or last changed by the lead responsible office.

Federal Listing Status (USESA) - Official federal status assigned under the U.S. Endangered Species Act.

Federal Listing Status Date (USESADATE) - Date when the US Federal species category was published in the Federal Register.

State Conservation Status (SRANK) - The conservation status of a species from the state/subnation perspective, characterizing the relative rarity or imperilment of the species. Together these values provide national distribution data.

Rounded SRANK - State conservation status "rounded" to a single character.

State Protection Status (SPROT) - Abbreviation used by state/subnation for the level of legal protection afforded to the element by that entity. Abbreviations and definitions will vary by state or subnation.

Most Recent Year Last Observed (LASTOBS) - The date that an Element Occurrence for the species was last observed to be extant at the site. This is not necessarily the date the site was last visited. See "Most Recent Year Surveyed", below.

Most Recent Year Surveyed (SURVEYDATE) – The date of the most recent field survey. If the Element Occurrence (EO) was found, then the LASTOBS is also updated. If the EO was not found, then only the SURVEYDATE is updated.

If the survey date is older than the most recent last observed date, please use the last observed date.

It is common for the most recent survey date to be greater (i.e. more current) than the most recent last observation date. Example: A particular EO was last observed in 1995 (LASTOBS = 1995). A biologist conducts a field survey in 2001 and does NOT find that EO. The SURVEYDATE is updated in the databases to "2001", but the LASTOBS value is still "1995".

Species of Common Conservation Concern in North America – Indicates whether or not the species is on the "Species of Common Conservation Concern" (SCCC) list, a selected group of 17 North American migratory and transboundary species, mostly birds. The SCCC list is created and maintained by the Commission for Environmental Cooperation (CEC), an international organization created by Canada, Mexico, and the United States under the North American Agreement on Environmental Cooperation (NAAEC). The NAAEC agreement complements the environmental provisions of the North America Free Trade Agreement. For more information, please see: http://www.cec.org/

The Nature Conservancy (TNC) Ecoregion - The Nature Conservancy (TNC) Ecoregion(s) where the installation occurs. This information is provided to create a larger context for the SOC analyses, and is potentially useful for DOD / FWS work with The Nature Conservancy on ecoregional planning efforts.

Global (Species) Habitat Comment (GHABCOM) - A text summary of the habitats and microhabitats commonly used range-wide describing any daily, seasonal, and geographic variation in habitat use. NOTE: The species-level habitat information should be considered complete and comprehensive.

Occurrences General Description (GENDESC) - A description of the general area where the EO is located. This information is summarized for all occurrences of a SOC on a particular installation. NOTE: The level of detail and completeness of the occurrence-level descriptions varies from state to state; this information is provided "as-is" and should not be considered as comprehensive. For additional information, please contact the appropriate state natural heritage program(s).

Please refer to Appendix 6 for the Occurrences General Description for *Pyxidanthera brevifolia* (Well's Pixie-Moss) and *Cimicifuga elata* (Tall Bugbane). For these two species, the occurrences general description data was too long to be incorporated into the spreadsheet.

Species Habitat Types - For animal species only, a text field that combines the values from several fields that characterize habitat at a global or range-wide level. These values are selected from a set of standardized domain tables. For more details, the full list of allowed values, and their definitions see Appendix 4.

Species-Level Threats (GTHREATCOM) – A description of the degree to which the species is directly or indirectly threatened globally (range-wide). Actual threats are cited where known. NOTE: Animal species – the threat information was last updated in August 2001. Plant species – the threat information has not been systematically reviewed and has not been systematically updated in several years. Some of the species-level threat information may be old and no longer relevant. All of the species-level threat data should be treated as background information and as a potential starting point for additional research.

SOC Summary Statistics

File name: FINAL_Summary_Statistics.xls; FINAL_Summary_Statistics_2.xls

Totals

Number of SOC species and element occurrences found on or near the installation.

Total Number DOD SOC Species
Total Number DOD SOC Occurrences

Summary – Statuses

Number of SOC species with various conservation and/or listing statuses.

Number G1/T1 Species
Number G2/T2 Species
Number Federal Candidate Species
Number Federal Candidates not G1/T1 or G2/T2
Number SCCC Species – Number of species identified as "Species of Common Conservation Concern", a selected group of 17 North American migratory and transboundary species. For more information, please see: http://www.cec.org/

Unique to Installation

Species that are found only on or near a particular installation are "irreplaceable" and could represent an unique conservation opportunity.

Number SOC Species Endemic to Installation

Summary of SOC found on Installation vs. in Buffer Area

NatureServe flagged all of the SOC occurrences as either on an installation or in a buffer zone. This information was used to create a summary for each installation of the numbers of SOC species and occurrences that were in each category. It is important to note that a single species can have occurrences that are both on an installation and in that installation's buffer zone and would therefore be counted as both "installation" and "buffer". It is not possible to add these figures together to obtain installation species and occurrence totals. The totals should instead be obtained from the columns labeled "Total Number DOD SOC Species" and "Total Number DOD SOC Occurrences"

Number Species on Installation
Number Species in Buffer
Number Occurrences on Installation
Number Occurrences in Buffer

Summary by Species Group

Number of SOC species in different taxonomic groups.

Number Plant Species
Number Mammal Species
Number Bird Species
Number Fish Species
Number Reptile Species
Number Amphibian Species
Number Invertebrate Species

4.0 References

Jenkins, R.E. 1985. Information Methods: Why the Heritage Programs work. Nature Conservancy News 35: 21-23.

Jenkins, R.E. 1988. Information management for the conservation of biodiversity. In Biodiversity, ed. E.O. Wilson, pp. 231-239. Washington: National Academy Press.

Jenkins, R.E. 1996. Natural Heritage Data Center Network: Managing information for managing biodiversity. In Biodiversity in Managed Landscapes: Theory and Practice, ed. R.C. Szaro and D.W. Johnston, pp. 176-192. New York: Oxford University Press.

The Nature Conservancy. 1982 (revised 1988). Natural Heritage Operations Manual. The Nature Conservancy, Arlington, Virginia.

Stein, B.A., L.S. Kutner, J. A. Adams (eds.). 2000. Precious Heritage: The Status of Biodiversity in the United States. New York: Oxford University Press.

Benchmark Data Standards for the Canadian and U.S. Natural Heritage Programs and Conservation Data Centres. Prepared by the Association for Biodiversity Information Data Standards Committee, 10 December 1998.

Appendix 1
Conservation Status Rank Definitions

Global Conservation Status Ranks

Listed below are definitions for interpreting the global (i.e., range-wide) conservation status ranks. Global ranks are assigned by NatureServe scientists.

Global Conservation Status Rank Definitions

Rank	Definition
GX	Presumed Extinct (species)—Believed to be extinct throughout its range. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
GH	Possibly Extinct (species)—Known from only historical occurrences, but may nevertheless still be extant; further searching needed.
G1	Critically Imperiled—Critically imperiled globally because of extreme rarity or because of some factor(s)making it especially vulnerable to extinction. Typically 5 or fewer occurrences or very few remaining individuals (<1,000) or acres (<2,000) or linear miles (<10).
G2	Imperiled—Imperiled globally because of rarity or because of some factor(s) making it very vulnerable to extinction or elimination. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000) or acres (2,000 to 10,000) or linear miles (10 to 50).
G3	Vulnerable—Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction or elimination. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.
G4	Apparently Secure—Uncommon but not rare (although it may be rare in parts of its range, particularly on the periphery), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern. Typically more than 100 occurrences and more than 10,000 individuals.
G5	Secure—Common, widespread, and abundant (although it may be rare in parts of its range, particularly on the periphery). Not vulnerable in most of its range. Typically with considerably more than 100 occurrences and more than 10,000 individuals.

Variant Global Ranks

Rank	Definition
G#G#	Range Rank—A numeric range rank (e.g., G2G3) is used to indicate uncertainty about the exact status of a taxon. Ranges cannot skip more than one rank (e.g., GU should be used rather than G1G4).
GU	Unrankable—-Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible, the most likely rank is assigned and the question mark qualifier is added (e.g., G2?) to express uncertainty, or a range rank (e.g., G2G3) is used to delineate the limits (range) of uncertainty.
G?	Unranked—Global rank not yet assessed.
HYB	Hybrid—(species elements only) Element not ranked because it represents an interspecific hybrid and not a species. (Note, however, that hybrid-derived species are ranked as species, not as hybrids.)

Rank Qualifiers

Rank	Definition
?	Inexact Numeric Rank—Denotes inexact numeric rank
Q	Questionable taxonomy that may reduce conservation priority. Distinctiveness of this entity as a taxon at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority (numerically higher) conservation status rank.
C	Captive or Cultivated Only—Taxon at present is extant only in captivity or cultivation, or as a reintroduced population not yet established.

Infraspecific Taxon Ranks

Rank	Definition
T_	Infraspecific Taxon (trinomial)—The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species (e.g., a G1T2 subrank should not occur). A vertebrate animal population (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T rank; in such cases a Q is used after the T rank to denote the taxon's informal taxonomic status.

National and Subnational Conservation Status Ranks

Elements are assigned a numeric rank of relative imperilment based on standard rank factors applied at national or subnational (e.g. state, province, or regional governmental level such as the Tennessee Valley Authority) levels as appropriate. A subnational rank cannot imply the element is more abundant at the subnational level than it is nationally or globally (i.e., a G1/S2 rank should not occur). Subnational ranks may occasionally be subdivided by using decimal extensions .1, .2, and .3 (e.g., S1.3) to permit a province or state to further prioritize its vulnerable elements. National and subnational ranks are usually assigned by Natural Heritage data centers, if one exists for the jurisdiction, otherwise by NatureServe scientists. The same basic ranks and qualifiers used for subnational ranks are used for national ranks. Therefore, the definitions below may be used interchangeably for national and subnational ranks (e.g., N1, NH = S1, SH).

National (N) and Subnational (S) Conservation Status Rank Definitions

Rank	Definition
NX **SX**	Presumed Extirpated—Element is believed to be extirpated from the nation or subnation. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
NH **SH**	Possibly Extirpated (Historical)—Element occurred historically in the nation or subnation, and there is some expectation that it may be rediscovered. Its presence may not have been verified in the past 20 years. An element would become NH or SH without such a 20-year delay if the only known occurrences in a nation or subnation were destroyed or if it had been extensively and unsuccessfully looked for. Upon verification of an extant occurrence, NH or SH-ranked elements would typically receive an N1 or S1 rank. The NH or SH rank should be reserved for elements for which some effort has been made to relocate occurrences, rather than simply using this rank for all elements not known from verified extant occurrences.
N1 **S1**	Critically Imperiled—Critically imperiled in the nation or subnation because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the subnation. Typically 5 or fewer occurrences or very few remaining individuals (<1,000).
N2 **S2**	Imperiled—Imperiled in the nation or subnation because of rarity or because of some factor(s) making it very vulnerable to extirpation from the nation or subnation. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000).
N3 **S3**	Vulnerable—Vulnerable in the nation or subnation either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.
N4 **S4**	Apparently Secure—Uncommon but not rare, and usually widespread in the nation or subnation. Possible cause of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.
N5 **S5**	Secure—Common, widespread, and abundant in the nation or subnation. Essentially ineradicable under present conditions. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
N? **S?**	Unranked—Nation or subnation rank not yet assessed.
NU **SU**	Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

Rank	Definition
N#N# S#S#	Range Rank—A numeric range rank (e.g., S2S3) is used to indicate the range of uncertainty about the exact status of the element. Ranges cannot skip more than one rank (e.g., SU should be used rather than S1S4).
HYB	Hybrid—Element not ranked because it represents an interspecific hybrid, not a species.
NE SE	Exotic—An exotic established in the nation or subnation; may be native in nearby regions (e.g., house finch or catalpa in eastern U.S.).
NE# SE#	Exotic Numeric—An exotic established in the nation or subnation that has been assigned a numeric rank to indicate its status, as defined for N1 or S1 through N5 or S5.
NA SA	Accidental—Accidental or casual in the nation or subnation (i.e., infrequent and outside usual range). Includes species (usually birds or butterflies) recorded once or only a few times. A few of these species may have bred on the one or two occasions they were recorded. Examples include European strays or western birds on the East Coast and vice-versa.
NZ SZ	Zero Occurrences—Present but lacking practical conservation concern in the nation or subnation because there are no definable occurrences, although the taxon is native and appears regularly in the nation or subnation. An NZ or SZ rank will generally be used for long distance migrants whose occurrences during their migrations have little or no conservation value for the migrant, as they are typically too irregular (in terms of repeated visitation to the same locations), transitory, and dispersed to be reliably identified, mapped, and protected. In other words, the migrant regularly passes through the nation or state, but enduring, mappable Element Occurrences cannot be defined. Typically, the NZ or SZ rank applies to a non-breeding population in the nation or subnation - for example, birds on migration. An NZ or SZ rank may in a few instances also apply to a breeding population, for example, certain Lepidoptera which regularly die out every year with no significant return migration. Although the NZ or SZ ranks typically apply to migrants, it should not be used indiscriminately. NZ or SZ only apply when the migrants occur in an irregular, transitory, and dispersed manner.
NP SP	Potential—Potential that element occurs in the nation or subnation but no extant or historic occurrences are accepted.
NR SR	Reported—Element reported in the nation or subnation but without a basis for either accepting or rejecting the report, or the report not yet reviewed locally. Some of these are very recent discoveries for which the program hasn't yet received first-hand information; others are old, obscure reports.
NRF SRF	Reported Falsely—Element erroneously reported in the nation or subnation (e.g., misidentified specimen) and the error has persisted in the literature.
NSYN SSYN	Synonym—Element reported as occurring in the nation or subnation, but the national or state data center does not recognize the taxon; therefore the element is not assigned a national or subnational rank.
*****	N or S rank has been assigned and is under review. Contact the individual subnational Natural Heritage program for assigned rank.

Breeding Status Qualifiers

Note: A breeding status subrank is only used for species that have distinct breeding and/or non-breeding populations in the nation or subnation. A breeding-status SRANK can be coupled with its complementary non-breeding-status SRANK. The two are separated by a comma, with the higher-priority rank listed first in their pair (e.g., "S2B,S3N" or "SHN,S4S5B").

Rank	Definition
B	Breeding—Basic rank refers to the breeding population of the Element in the nation or subnation.
N	Nonbreeding—Basic rank refers to the non-breeding population of the Element in the nation or subnation.

Other Rank Qualifiers

Rank	Definition
?	Inexact or Uncertain—Denotes inexact or uncertain numeric rank. For SE denotes uncertainty of exotic status. (The ? qualifies the character immediately preceding it in the SRANK.)
C	Captive or Cultivated—Native element presently extant in the nation or subnation only in captivity or cultivation, or as a reintroduced population not yet established.

Rounded Global Conservation Status Ranks

Rounded GRANK are generated by a calculated field, ROUNDED.GRANK. In general, the rounding algorithm eliminates range ranks, strips the qualifiers "?", "C", and "Q" off the GRANK, and focuses on the "T" subrank for infraspecific taxa. There are 21 possible values for a rounded global rank as listed in the following table. (Note that 9 of these values reflect rounded ranks for infra-specific taxa.).

Comprehensive List of ROUNDED.GRANK values

G1	T1	HYB
G2	T2	*
G3	T3	[null]
G4	T4	
G5	T5	
GH	TH	
GX	TX	
GU	TU	
G?	T?	

Calculating ROUNDED.GRANK

Rounded global ranks are determined according to the following procedures and rules:

1) If GRANK = null, then ROUNDED.GRANK = null

2) If GRANK = invalid, then ROUNDED.GRANK = *

   [Note: the asterisk indicates that the GRANK value does not conform to valid global rank syntax and therefore a rounded global rank can not be calculated.]

3) If GRANK = GXC or contains the value TXC,
   then ROUNDED.GRANK = GH or TH, respectively.

   [According to this rule, Elements that are but still extant ex situ, are treated with the same conservation importance as globally historic Elements. In contrast, Elements that are nationally or state extirpated, but still extant in those jurisdictions (i.e., NRANK = NXC or SRANK = SXC), are treated separately from nationally or state historic Elements.]

4) For all remaining GRANK values, strip the basic rank qualifiers "?", "C", and "Q" and the "T" subrank qualifiers "?", "C", and "Q" off the GRANK value.

   a) if the stripped GRANK value contains no "T" subrank and

      i) is not a range rank (G_n), then ROUNDED.GRANK = stripped GRANK value

      ii) is a range rank (with range G_nG_{n+1}), then ROUNDED.RANK = G_n

      iii) is a range rank (with range G_nG_{n+2}), then ROUNDED.RANK = G_{n+1}

   b) if the stripped GRANK value contains a "T" subrank, then further strip the basic rank (i.e., the G portion) off the value. If the remaining "T" portion of the stripped GRANK value

      i) is not a range rank (T_n), then ROUNDED.GRANK = stripped GRANK value

      ii) is a range rank (with range T_nT_{n+1}), then ROUNDED.GRANK = T_n

      iii) is a range rank (with range T_nT_{n+2}), then ROUNDED.GRANK = T_{n+1}

Examples of ROUNDED.GRANKs

The following examples are not a comprehensive list of rounded ranks derived from rank combinations and variations, but serve to illustrate the use of the rounding algorithm.

GRANK	ROUNDED.GRANK	Explanation
		a null GRANK
G2G4?	*	an invalid GRANK
GX	GX	
GH	GH	
GXC	GH	despite extinction in native habitat, round to historic rank since still captive/cultivated
G2TXC	TH	despite extinction in native habitat, round to historic rank since still captive/cultivated
G1THC	TH	
G3T1	T1	
G2	G2	
G2Q	G2	
G2G3	G2	round to low point of 1 point range
G2G4	G3	round to midpoint of 2 point range
G3?	G3	the "?" qualifier stripped off
G4T2T4	T3	
G4T3?	T3	
G?	G?	"?" represents a basic rank already, not a qualifier
G3T?	T?	
HYB	HYB	

Appendix 2
United States Federal Status Listing Process and Definitions

The U.S. Fish and Wildlife Service (USFWS) and the U.S. National Marine Fisheries Service designate and/or propose federal status in accordance with the U.S. Endangered Species Act of 1973, as amended (U.S. ESA). Plant and animal species, subspecies (including plant varieties), and vertebrate populations are considered for Endangered or Threatened status according to the criteria established under the U.S. ESA.

Proposals and determinations to add taxa or populations to the Lists of Endangered and Threatened Wildlife and Plants are published in the Federal Register. Additionally, USFWS periodically publishes a Notice of Review in the Federal Register that presents an updated list of plant and animal taxa that are regarded as candidates or proposed for possible addition to the Lists of Endangered and Threatened Wildlife and Plants.

How NatureServe Manages U.S. Federal Status Data

The U.S. Federal Status Date represents the date of publication in the Federal Register of notification of an official status for a taxon or population. Dates appear only for taxa and populations which are specifically named in a Federal Register Notice of Review Table or in the section of a Federal Register Proposed or Final Rule that proposes or declares an amendment to 50 CFR Part 17 Section 11 or 12 (i.e., changes to the Lists of Endangered and Threatened Wildlife and Plants).

Dates Represent

For listed endangered and threatened taxa and populations: the date recorded in the USESADATE field is the date of publication of the Federal Register "Final Rule" for the taxon or population. For proposed taxa and populations: the date of publication of the most recent Federal Register "Proposed Rule" for the taxon or population. For candidate taxa and populations: the date of publication of the most recent "Notice of Reclassification" or "Notice of Review" in which the candidate appears.

Staff update the Natural Heritage Central Databases with changes in status due to proposals and determinations to add taxa to the Lists of Endangered and Threatened Wildlife and Plants within two weeks of publication in the Federal Register. Addition and removal of candidates in Notices of Review are entered within four weeks of their publication.

Status Due to Taxonomic Relationship (Values in Parentheses)

The taxonomic relationships between species and their infraspecific taxa may determine whether a taxon has federal protection. Section 17.11(g) of the U. S. ESA states, "the listing of a particular taxon includes all lower taxonomic units." Also, if an infraspecific

taxon or population has federal status, then by default, some part of the species has federal protection. Some taxa show values indicating U.S. Federal Status even though the element may not be specifically named in the Federal Register. Where status is implied due to a taxonomic relationship alone, the status abbreviation appears in parentheses and no date of listing is given.

Nomenclature for Taxa and Populations with U.S. Federal Status

For most species which have U.S. Federal Status, any available distribution, conservation, and management information is maintained in records under the same scientific name as the one used by USFWS (and printed in the Federal Register). For animal subspecies and populations that have U.S. Federal Status, most of this information is maintained in the species record associated with the subspecies or population. Where the names used by USFWS and NatureServe differ, data may be found using either name.

U.S. Federal Status Designations and Definitions

Abbreviation	U.S. Federal Status
LE	Listed endangered
LT	Listed threatened
PE	Proposed endangered
PT	Proposed threatened
C	Candidate
PDL	Proposed for delisting
E(S/A) or T(S/A)	Listed endangered or threatened because of similarity of appearance
XE	Essential experimental population
XN	Experimental nonessential population
Combination values	The taxon has one status currently, but a more recent proposal has been made to change that status with no final action yet published. For example, LE-PDL indicates that the species is currently listed as endangered, but has been proposed for delisting.

Abbreviation	U.S. Federal Status
Values in parentheses	The taxon itself is not named in the Federal Register as having federal status; however, it does have federal status as a result of its taxonomic relationship to a named entity. For example, if a species is federally listed with endangered status, then by default, all of its recognized subspecies also have endangered status. The subspecies in this example would have the value "(LE)" under U.S. Federal Status. Likewise, if all of a species' infraspecific taxa (worldwide) have the same federal status, then that status appears in the record for the "full" species as well. In this case, if the taxon at the species level is not mentioned in the Federal Register, the status appears in parentheses in that record.
Combination values in parentheses	The taxon itself is not named in the Federal Register as having official federal status; however, all of its infraspecific taxa (worldwide) do have official status. The statuses shown in parentheses indicate the statuses that apply to infraspecific taxa or populations within this taxon.
(PS)	Indicates "partial status" - status in only a portion of the species' range. Typically indicated in a "full" species record where an infraspecific taxon or population has federal status, but the entire species does not.
Null value	Usually indicates that the taxon does not have any federal status. However, because of potential lag time between publication in the Federal Register and entry in the NHCD, some taxa may have a status that does not yet appear.

Appendix 3
Standard Global Taxonomic Sources

Classification of Vertebrates and Invertebrates

Standard vertebrate and invertebrate names are defined by NatureServe zoologists who use a set of major references generally accepted by researchers working on a given taxonomic group. However, many of these major references are updated infrequently, typically only every 10 years. Because taxonomy is a dynamic field, the central Heritage zoologists review numerous journals and monographs each year for taxonomic and nomenclature changes, and they may accept these changes before the major source(s) for each group are updated to reflect them. In addition, taxa of conservation concern for which names have not yet been published may be tracked in the Natural Heritage Central Databases.

Major References for Vertebrate and Invertebrate Names

Higher Taxonomy

- Margulis L, Schwartz KV. 1998. Five kingdoms: an illustrated guide to the phyla of life on earth. 3rd ed. New York: WH Freeman and Co. 520 p.

- Integrated Taxonomic Information System. 1999 [last updated Feb. 17]. Integrated Taxonomic Information System: biological names. Online. Available: http://www.itis.usda.gov/itis/status.htm. [Used for higher taxonomy below the phylum level.]

- Ruppert EE, Barnes RD. 1994. Invertebrate zoology. 6th ed. New York: Saunders College Publishing. 1056 p. [Used for higher taxonomy below the phylum level.]

Phylum Craniata (Vertebrates)

Class Mammalia (Mammals)

- Wilson DE, Reeder DM, editors. 1993. Mammal species of the world: a taxonomic and geographic reference. 2nd ed. Washington, DC: Smithsonian Institution. 1206 p.

- Jones C, Hoffman RS, Rice DW, Engstrom MD, Bradley RD, Schmidly DJ, Jones CA, Baker RJ. 1997. Revised checklist of North American mammals north of Mexico, 1997.Occas Pap Mus Texas Tech Univ 173:1-19. [Used for North American common names and for scientific names based on information since development of the ASC reference above.]

- American Society of Mammalogists. 1969 et seq. Mammalian Species.

Subspecies:

Hall ER. 1981. The mammals of North America. 2nd ed. New York: John Wiley & Sons. 1181+ p. [Used for North American mammal subspecies names, within the framework of the species classification of the major sources above.]

Class Aves (Birds)

- American Ornithologists' Union (AOU). 1998. Checklist of North American birds. 7th ed. Washington, DC: American Ornithologists' Union. 829 p. [as modified by any supplements and corrections].

- Monroe BL Jr, Sibley CG. 1993. A world checklist of birds. New Haven: Yale University Press. 393 p. [Used only for scientific and common names for birds occurring in South America; higher taxonomy for South American birds follows the AOU checklist.]

Subspecies:

American Ornithologists' Union. 1957. Checklist of North American birds. 5th ed. Baltimore, MD: Port City Press, Inc. [Used for North American bird subspecies names, within the framework of the species classification in AOU checklist.]

Class Reptilia (Reptiles)

- King WF, Burke RL. 1989. Crocodilian, tuatara, and turtle species of the world. Association of Systematics Collections. 216 p.

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Class Branchiopoda (Fairy, Clam, and Tadpole Shrimps)

Belk, Denton, 840 E. Mulberry Ave., San Antonio, TX 78212-3194

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- Boyd HP and Associates. 1982. Checklist of Cicindelidae, the tiger beetles. Marlton, NJ: Plexus Publishing. 31 pp.

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Appendix 4
Habitat Types Summary – Animal Data

For animal records only, the following standardized habitat types are summarized in the field "Species Habitat Types".

Marine habitats:

Values	Definitions
Pelagic	Open ocean waters, above the abyssal zone and not associated with the shore.
Abyssal	Ocean habitats below the depth of effective penetration of light.
Nearshore	Coastal subtidal marine habitats, extending outward as far as wave action and light penetration to the bottom.

Estuarine habitats:

Estuarine habitats are deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. Includes other intertidal habitats such as tidal flats and rocky intertidal shore that may be open to the ocean.

Values	Definitions
Bay/Sound	Subtidal (continuously submerged), open water, estuarine habitats, excluding river mouths.
River mouth/ Tidal river	Lower reaches of rivers with both brackish water and tidal influence.
Lagoon	Open (unvegetated), shallow, estuarine waters isolated at low tide or separated from deeper waters by a natural barrier such as a spit or barrier island.
Tidal flat/ Shore	Non-vegetated zone of wave or tidal action, intermittently exposed or inundated.
Herbaceous wetland	Vegetated areas characterized by emergent herbaceous aquatic plants, excluding mosses and lichens.
Scrub-shrub wetland	Vegetated areas dominated by woody plants less than 6 m tall (e.g., some mangroves, marsh elder).
Forested wetland	Areas vegetated by woody plants 6 m tall or taller.

Riverine habitats:

Riverine habitats are wetlands and deep water habitats contained within a stream channel, except for wetlands dominated by persistent vegetation or habitats with brackish water.

Values	Definitions
BIG RIVER	The largest streams, generally characterized by large perennial flows, large quantities of nutrients and organic matter, high turbidity, and fine sediments.
MEDIUM RIVER	Perennial tributaries of big rivers (or flowing directly into other water bodies); with coarse-to-fine sediments. Riparian vegetation does not heavily dominate the community through shading and organic inputs.
CREEK	Smaller streams, sometimes characterized by heavy influence (shading, organic detritus) from adjacent terrestrial habitats; variable flow, sometimes intermittent.
SPRING/ SPRING BROOK	Points of concentrated groundwater discharge, either concentrated (at a distinct orifice) or diffuse (at a seep). The outflow channel is classified as a spring brook as far downstream as the spring waters' characteristics (relatively constant temperature, nutrient-poor) are maintained.
High gradient	Streams with a fall of more than 2 meters per kilometer, characterized by riffles, pools, rock outcrops, and coarse sediments.
Moderate gradient	Streams with a fall between 0.2 and 2 meters per kilometers; bottom sediments are a mosaic of sand, gravel, and silt.
Low gradient	Streams with a fall less than 0.2 meters per kilometer; there may be sand bars, but the sediments are mostly silt.
Riffle	Shallow area where water passing over the bottom causes visible disturbances (ripples) at the water surface.
Pool	Discrete areas where the water is relatively still and usually deeper than adjacent waters.

Lacustrine habitats:

Lacustrine habitats are open standing waters without substantial emergent vegetation.

Values	Definitions
Deep water	Open, non-vegetated aquatic habitats, extending beyond the littoral zone (shore or shallow water).
Shallow water	The littoral zone: characterized by the frequent presence of rooted aquatic plants, disturbance by wave action, and periodic exposure during drawdown (during drought, for example). Some lakes and ponds are all shallow water; in some others, shallow water is restricted to shores and bays.

Palustrine habitats:

Palustrine habitats include nontidal freshwater vegetated wetlands; also nonvegetated areas with a saturated substrate (water table at or very near the surface).

Values	Definitions
Temporary pool	Small depressions in which surface water is present for extended periods (especially early in the growing season) but is absent by the end of the season in most years; "seasonally flooded" (Cowardin).
Herbaceous wetland	Vegetated areas characterized by emergent herbaceous aquatic plants, excluding mosses and lichens; e.g., freshwater marsh.
Scrub-shrub wetland	Areas dominated by woody vegetation less than 6 m tall.
Forested wetland	Areas dominated by woody vegetation 6 m tall or taller.
Bog/fen	Wetlands with peat or muck substrate resulting from unusual water chemistry; includes areas of highly mineralized groundwater discharge (e.g., many fens) as well as sterile rainwater catch-basins (e.g., many bogs) and other peatlands.
Riparian	A narrow zone of habitats, which may or may not be vegetated, directly associated with stream sides or lake shores, or similar immediately adjacent habitat.

Terrestrial habitats:

Terrestrial habitats are upland, well-drained habitats, as opposed to aquatic (wetland or deep water) habitats; vegetation not adapted to saturated soil; surface not flooded or saturated for any period of time.

Values	Definitions
FOREST	Woody vegetation at least 6 m tall (usually much taller) with a fairly continuous and complete (two-thirds or greater) canopy closure.
FOREST – HARDWOOD	"HARDWOOD" = Angiosperms that comprise over two-thirds of the canopy.
FOREST – CONIFER	"CONIFER" = Gymnosperms that comprise over two-thirds of the canopy.
FOREST – MIXED	"MIXED" = Stand composed of both hardwood and conifer trees, neither dominating as much as two-thirds of the canopy.
WOODLAND	Open stands of trees at least 6 m tall, with crowns often not interlocking; tree canopy discontinuous (often clumped), averaging between two-thirds and 40% overall cover (at 40%, the average diameter of a tree crown equals the average distance between crowns); shrub layer often poorly developed or present only in gaps in the canopy. Forest edge species (i.e., those dependent on a break in the canopy rather than on forest per se) are included in this category. "Pine barrens" are either conifer or mixed woodlands.
WOODLAND – HARDWOOD	"HARDWOOD" = Angiosperms that comprise over two-thirds of the canopy.
WOODLAND - CONIFER	"CONIFER" = Gymnosperms that comprise over two-thirds of the canopy.
WOODLAND – MIXED	"MIXED" = Stand composed of both hardwood and conifer trees, neither dominating as much as two-thirds of the canopy.
SHRUBLAND/ CHAPARRAL	Vegetation composed of shrubs (many-stemmed woody plants, generally less than 6 m tall). Chaparral is a type of fire maintained evergreen shrub community. Does not include desert shrublands.
SAVANNA	Mosaic of trees or shrubs and grassland; between 40% and 10% cover by trees and shrubs.
GRASSLAND/ HERBACEOUS	Habitat dominated by grasses or forbs; trees and shrubs very widely scattered, if present. (Includes pastures and hayfields.)
OLD FIELD	A successional habitat composed of a mosaic of shrubs, scattered trees, and herbaceous vegetation.
DESERT	Extremely dry landscape, sparsely vegetated by widely spaced herbs, shrubs, or succulent tree-like plants; relatively barren substrate tends to dominate the aspect of the habitat.
ALPINE	Barren substrate or herbaceous and low shrubby vegetation above mountain timberline.

Values	Definitions
TUNDRA	Herbaceous and dwarf shrubby vegetation beyond the subpolar tree line.
ICE	Glaciers, snow fields, and ice fields.
PLAYA/ SALT FLAT	Level basins, floored with fine sediments, which periodically may contain a shallow lake. Some salt flats are rarely inundated.
SAND/DUNE	Open sandy beaches above high tide, barren active dunes, and similar areas of barren, largely unvegetated sand. Does not include stabilized thickly vegetated dunes.
BARE ROCK/ TALUS/SCREE	Unvegetated expanses of bedrock or broken rock.
CLIFF	Vertical or nearly vertical rock outcrops.
CROPLAND/ HEDGEROW	Cultivated fields and field borders.
SUBURBAN/ ORCHARD	Human-maintained habitats, generally characterized by open-grown trees, lawns, and small buildings. Does not include rural residential areas where human dwellings are scattered within or widely adjacent to more or less natural ecosystems or CROPLAND.
URBAN/ EDIFICARIAN	Habitats dominated by buildings, with little vegetation.

Subterranean habitats:

Subterranean habitats are habitats beneath the earth's surface. (Soil and benthic habitats are not subterranean.)

Values	Definitions
Subterrestrial	Subterranean terrestrial (air-filled) habitats, ranging from large caves to interstitial crevices below soil horizons.
Subaquatic	Subterranean aquatic. Underground waters, above and below the water table.

Special habitat factors:

Values	Definitions
Standing snag/hollow tree	Self-explanatory.
Fallen log/debris	Self-explanatory.
In soil	This refers to taxa that burrow or use soils.
Benthic	The bottom of any body of water.

Appendix 5
Supplemental State-Specific Documentation

This supplement provides state-specific documentation as part of the DOD / FWS Species of Concern on DOD Installations project.

State Protection Status (SPROT)

The State Protection Status (SPROT) field is an abbreviation used by state for the level of legal protection afforded to the element by that entity. Abbreviations and definitions will vary by state or subnation. Those SPROT values used in this data set are shown in the table below. States that are not included in this table did not have any SOC with SPROT values.

State Protection Statuses and Definitions

STATE	SPROT CODE	SPROT DEFINITION	LEGAL STATUS / COMMENTS
AL	SP	State Protected (animals)	AL: Nongame animals given legal status under AL Regulations Game & Fish & Furbearing Animals.
AR	ST	State Threatened (plants)	AR: AR codes only apply to plants; SE and ST designation is "administrative" - there is no special legal protection for state endangered or threatened plants.
CA	CT	Threatened (plants and vertebrates)	CA: 1-5, and Endangered, Threatened, Rare, Candidate, and None are all legal designations
CA	Endangered	Endangered (plants and vertebrates)	
CA	NONE	None (plants and vertebrates)	
CA	Rare	Rare (any taxa)	
CA	Threatened	Threatened (plants and vertebrates)	
FL	LE	Listed Endangered (plants and animals)	FL: Plants - (CE, LC, LE, and LT) are listed in the Preservation of Native Flora of Florida Act: other SPROT codes for plants are for administrative purposes only. Animals - (LE, LS, SSC and LT) are listed by the Florida Game and Fresh Water Fish Commission (FGFWFC): these are legal designations.
FL	LS	Listed Species of Special Concern (animals)	
FL	LT	Listed Threatened (plants and animals)	
FL	LT*	Listed Threatened, only protected in certain counties (plants and animals)	
GA	E	Endangered (animals and plants)	GA: (E, T, R, U) plant and animal species are state protected; the following categories do not have legal status: PE, PT, PU.
GA	R	Rare (animals and plants)	
GA	T	Threatened (animals and plants)	
HI	LE	Listed Endangered	HI: The state follows the federal listing

State Protection Statuses and Definitions

STATE	SPROT CODE	SPROT DEFINITION	LEGAL STATUS / COMMENTS
HI	LEOA	Listed Endangered, Oahu only (animals)	codes except for LELA and LEOA, but these still denote federal status LE.
HI	NONE	None	
ID	GP2	Global priority 2; species with GRANK G2 or T2 (plants)	ID: For plant species, the following codes: 1, 2, M, R, S, and X are Idaho Native Plant Society categories that do not carry legal status although are considered by all state and federal agencies. For animal (not inverts) species, Endangered, Game endangered, Game special concern, Game threatened, Protected, Special Concern, and Threatened are legally protected, see Idaho Code, sections 36-106(e)5 & 36-1107, or Commission regulation.
ID	GP3	Global priority 3; species with GRANK G3 or T3 (plants)	
IL	LE	Listed Endangered (plants and animals)	IL: Listing and removal of species from Endangered and Threatened species list is made by Endangered Species Protection Board; this is a legal status.
IL	LT	Listed Threatened (plants and animals)	
IN	SE	State Endangered (animals and plants)	IN: IN Nongame Animal Act protects mammals, birds, reptiles, amphibians, and mussels if designated SE. SSC taxa are listed but have no protection. All other codes have no legal status.
IN	SR	State Rare (plants and insects)	
IN	SSC	State Special Concern (animals)	
IN	ST	State Threatened (animals and plants)	
KY	E	Endangered (plants and animals)	KY: KY State Nature Preserves Commission state status: Endangered, Historic, None, Special Concern, Threatened, and Extirpated. Administrative only, no regulatory statute protects them.
KY	S	Special Concern (plants and animals)	
KY	T	Threatened (plants and animals)	
MI	SC	Special Concern (any species) (no legal protection - could become threatened in the near future)	MI: E, T, and X are of legal status according to MI ESA (now under new name). Special Concern status has no legal protection.
MN	SPC	Species of Special Concern (extremely uncommon or has unique habitat requirements and deserve careful monitoring)	MN: MN Endangered Species Statute (MN Statutes, Section 84.0895) gives definitions of Endangered, Threatened, and Special Concern. Species of Special Concern are not protected although this is a legal status.
MN	THR	Threatened (plants and animals)	
MT	NONE	None	MT: State legal status in MT (GA, GF, FB, MB, UB, E, NG, P, U, CS, RH and code combinations) applies only to vertebrates as listed in the 1989 Statutes of MT for the Dept. of Fish, Wildlife and Parks - plants have no status.

State Protection Statuses and Definitions

STATE	SPROT CODE	SPROT DEFINITION	LEGAL STATUS / COMMENTS
NC	C	Candidate (plants)	NC: Animal legal status: E, T and SC (mammals, birds, reptiles, amphibians, freshwater fishes, and mollusks) from NC Endangered Species Act; Plant legal status (E, T, and SC) legally protected through the NC Plant Conservation Program, GS 19B 106:202.12. SR and C do not have legal status.
NC	E	Endangered (animals and plants)	
NC	SC	Special Concern (animals and plants)	
NC	SR	Significantly Rare (animals and plants)	
NC	T	Threatened (animals and plants)	
NJ	E	Endangered (animals and plants)	NJ: Legal status for endangered animals and endangered plants.
NM	E	Endangered (plants and animals) - survival in NM in jeopardy or likely to become so in the foreseeable future	NM: Animal status (E, T) determined by NM Dept. of Game and Fish; plant status (E, S, R, and D) determined by Energy, Minerals and Natural Resources Dept. Plants: E, S, R, and D correspond to the legal designations 1, 2, 3, 4 respectively under the NM Endangered Plant Species Act, but only E status provides protection under the law.
NM	S	Sensitive (plants) - rare because of restricted distribution of low numerical density	
NM	T	Threatened (animals) - likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico	
NY	U	Unprotected (plants and animals)	NY: plant legal status (E, T, R, and V), see 6NYCRR part 193.3, applies to NY State Environmental Conservation Law (NYSECL) sections 9-1503 & 11-0103; animal legal status (E, T, SC, P, and G), see NYSECL sections 11-0535 & 11-0103 and 6NYCRR 182.5.
NY	U SC	Unprotected, Special Concern (animals)	
OH	E	Endangered (plants and animals)	OH: Animals: legal status: (E): see 1531.25 ORC; other designations for animals are for administrative /planning purposes only. Plants: legal status: (E, T), under OH Revised Code Chp. 1518, OH Endangered Plant Law
OH	T	Threatened (plants and animals)	
OR	C	Candidate (plants); Sensitive-Critical (animals)	OR: Animals, OR Dept of Fish & Wildlife Status, Plants - OR Dept. of Agriculture status. Only LE and LT are legal designations.
OR	LE	Listed Endangered (plants and animals)	
OR	LT	Listed Threatened (plants and animals)	
TN	D	Deemed in need of management (nongame animals)	TN: Plants formally listed under the authority of the TN Dept. of Environment and Conservation; E, PE, T, S, CE, and P are legal designations. D is an administrative designation. Animals
TN	E	Endangered (plants and animals)	
TN	S	Special Concern (plants)	

State Protection Statuses and Definitions			
STATE	**SPROT CODE**	**SPROT DEFINITION**	**LEGAL STATUS / COMMENTS**
TN	T	Threatened (plants and animals)	administrative designation. Animals formally listed (E,T) under the authority of the TN Wildlife Resources Agency (T.C.A. 70-8-104, 70-8-105, 70-8-107).
TX	T	State Threatened (plants and animals)	TX: legal status (E, T) under the TX Parks & Wildlife Code.
UT	CS	Conservation Species - special management under Conservation Agreement (wildlife species and subspecies)	UT: XNCT, XTRP, E, T, S1, S2, S1S2, GAME, NGP, NGN are abbreviations from the UT DNR 1993 Draft Species of Special Concern list: these designations are allowed under the UT Code but do not provide any legal protection. Wildlife = vertebrates, crustaceans incl. brine shrimp and crayfish, and mollusks, except for feral animals. A management program is needed for these species if a recovery plan has not been developed.
UT	None	None (plants and vertebrates)	
VA	LE	Listed Endangered	VA: status (LE and LT) determined by VA Dept. of Game and Inland Fisheries, or Dept. of Agriculture and Consumer Services, under authority of Virginia Code. SC is not a legal designation - for administrative purposes only.
VA	LT	Listed Threatened	
VA	SC	Special Concern (animals on a non-regulatory list)	
WA	C	Candidate for listing (animals)	WA: legal protection status for animals (E, T): see WA Administrative Codes 232-12-011, 232-12-014, and 232-12-297. Plants have no legal status.
WA	E	Endangered (animals and plants)	
WA	S	Sensitive (vulnerable or declining) (animals and plants)	
WA	T	Threatened (animals and plants)	
WI	END	Endangered (plants and animals)	WI: Protection category (END, THR, RULE, NONE, PEND, PTHR, SC) designated by the Wisconsin DNR.
WI	SC/N	Special concern - no laws regulating use, possession, or harvesting	

State-Specific Documentation and Data Issues

State-specific documentation and data issues are described in the following pages.

NatureServe worked with the data from the Natural Heritage Programs within which the 726 DOD Installations in the USGS federal lands file are located. State-specific issues are shown in the table below.

State / Program	State / Program Specific Data Comments
Alabama Natural Heritage Program	The geographic region of the Tennessee Valley Authority (TVA) Heritage Program overlaps a portion of Alabama. While known duplicate records have been removed from the project dataset, there is a possibility of an Element Occurrence (EO) being tracked by both the state and TVA programs. For more details, please see the comments for the TVA program below.
Alaska Natural Heritage Program	In Alaska, many of the element occurrence locations have only been recorded to the precision of degrees and minutes, not to the level of seconds. This has the effect of "fuzzing" the Alaska locational information. For the SOC analyses, there may be some additional species that were not captured as being either on a DOD Installation or in it's buffer zone.
Arizona Heritage Data Management System	The Arizona Natural Heritage Program (NHP) is required to randomize, or "fuzz," all element occurrence (EO) data on private lands. The NHP is also required to fuzz EOs on public lands unless specific permission is received from those Federal Agencies managing the lands. Data are "fuzzed" by up to 30 seconds in latitude and up to 30 seconds in longitude. For this project, the EOs on DOD installations were fuzzed. Because of data access constraints, NatureServe and the Arizona Natural Heritage Program cannot provide records for locations on Native American Tribal lands (other than those provided by the Navajo Nation Natural Heritage Program). Data from the tribal lands of Navajo Nation are tracked by the Navajo Nation Natural Heritage Program and are supplied separately for use in this project. This division of responsibility results in an apparent "hole" in the Arizona data set.
Arkansas Natural Heritage Program	No state-specific data issues.
California Natural Heritage Program, California Natural Diversity Database	No state-specific data issues.

State / Program	State / Program Specific Data Comments
Colorado Natural Heritage Program	Data from the tribal lands of Navajo Nation are tracked by the Navajo Nation Natural Heritage Program and are supplied separately for use in this project. This division of responsibility results in an apparent “hole” in the Colorado data set.
Connecticut Natural Diversity Database	No state-specific data issues.
Delaware Natural Heritage Program	No state-specific data issues.
Florida Natural Areas Inventory	No state-specific data issues.
Georgia Natural Heritage Program	The geographic region of the Tennessee Valley Authority (TVA) Heritage Program overlaps a portion of Georgia. While known duplicate records have been removed from the project dataset, there is a possibility of an Element Occurrence (EO) being tracked by both the state and TVA programs. For more details, please see the comments for the TVA program below.
Hawaii Natural Heritage Program	No state-specific data issues.
Idaho Conservation Data Center	The Idaho Conservation Data Center (the state NHP) does not maintain locational data for fish. The fish locational data are maintained by Streamnet and are represented by state-wide distribution in rivers rather than Element Occurrences. Since these data do not follow standard Natural Heritage data methodology, they have not been included in the DOD-SOC analyses. For the Idaho fish Streamnet data, please contact: Bart Butterfield Idaho Fish and Game 600 S. Walnut, Box 25 Boise, ID 83707 (208) 334-3180 x262 bbutterf@idfg.state.id.us
Illinois Natural Heritage Database Program	No state-specific data issues.
Indiana Natural Heritage Data Center	No state-specific data issues.
Iowa Natural Areas Inventory	No state-specific data issues.
Kansas Natural Heritage Inventory	Kansas NHP notes that it has no recorded species occurrences on Tribal Lands; only ecological community surveys have been conducted on Tribal Lands.

State / Program	State / Program Specific Data Comments
Kentucky Natural Heritage Program	The geographic region of the Tennessee Valley Authority (TVA) Heritage Program overlaps a portion of Kentucky. While known duplicate records have been removed from the project dataset, there is a possibility of an Element Occurrence (EO) being tracked by both the state and TVA programs. For more details, please see the comments for the TVA program below.
Louisiana Natural Heritage Program	No state-specific data issues.
Maine Natural Areas Program	In the state of Maine, species locational data are maintained by two entities: • The Maine Natural Areas Program maintains the plant data, this program is a Natural Heritage Program and follows Natural Heritage data methodology. These data are included in the DOD-SOC analyses. • The Maine Endangered and Threatened Species Program maintains animal locational data. This program is not a Natural Heritage Program but works closely with the Maine Natural Heritage Program and does follow Natural Heritage data methodology. Because of data access constraints, however, NatureServe does not have access to the Maine animal data and they therefore were not included in this project. For DOD installations in Maine, it is likely that there are additional animals that should be considered as SOC but due to the above data limitation do not appear in the installation species lists and summary numbers.
Maryland Natural Heritage Program	No state-specific data issues.
Massachusetts Natural Heritage & Endangered Species Program	Specific locational data (i.e. lat / long coordinates) for Massachusetts was not available for the NatureServe Species of Concern project work. Available species distributions in this state are identified only to the level of county or watershed of occurrence, both of which are significantly larger than installations in Massachusetts. If requested, it is possible to provide a list of SOC for the county or watershed in which an installation is located, but this is a much coarser analysis and could include many species not actually found on or near installations.
Michigan Natural Features Inventory	No state-specific data issues.
Minnesota Natural Heritage & Nongame Research	No state-specific data issues.

State / Program	State / Program Specific Data Comments
Mississippi Natural Heritage Program	The geographic region of the Tennessee Valley Authority (TVA) Heritage Program overlaps a portion of Mississippi. While known duplicate records have been removed from the project dataset, there is a possibility of an Element Occurrence (EO) being tracked by both the state and TVA programs. For more details, please see the comments for the TVA program below.
Missouri Natural Heritage Program	No state-specific data issues.
Montana Natural Heritage Program	No state-specific data issues.
Navajo Natural Heritage Program	Data from the tribal lands of Navajo Nation are tracked by the Navajo Natural Heritage Program and include portions of Arizona, New Mexico, Utah, and Colorado. Data from the Navajo Nation Heritage Program includes selected information for Hopi lands.
Nebraska Natural Heritage Program	No state-specific data issues.
Nevada Natural Heritage Program	No state-specific data issues.
New Hampshire Natural Heritage Inventory	No state-specific data issues.
New Jersey Natural Heritage Program	No state-specific data issues.

State / Program	State / Program Specific Data Comments
New Mexico Natural Heritage Program	Due to data sensitivity concerns, locational data used in these analyses had been randomized, or "fuzzed," to 1 mile. Because of data access constraints, the New Mexico Natural Heritage Program cannot provide to NatureServe records for: • Locations on Native American Tribal lands (other than those provided by the Navajo Nation Natural Heritage Program) • Locations on the lands of White Sands Missile Range and Fort Bliss Military Reservation. As noted in Section 3.2 "Additional Data Sources", species lists for White Sands Missile Range and Fort Bliss Military Reservation were provided by these installations for use in the NatureServe DOD-SOC project. The summary statistics for these two locations therefore includes only numbers of SOC on the installation and does not include information about the numbers of element occurrences. Data from the tribal lands of Navajo Nation are tracked by the Navajo Nation Natural Heritage Program and are included in these analyses. All other tribal areas in New Mexico are not represented in the NatureServe DOD-SOC analyses.
New York Natural Heritage Program	No state-specific data issues.
North Carolina Natural Heritage Program	The geographic region of the Tennessee Valley Authority (TVA) Heritage Program overlaps a portion of North Carolina. While known duplicate records have been removed from the project dataset, there is a possibility of an Element Occurrence (EO) being tracked by both the state and TVA programs. For more details, please see the comments for the TVA program below.
North Dakota Natural Heritage Inventory	No state-specific data issues.
Ohio Natural Heritage Database	No state-specific data issues.
Oklahoma Natural Heritage Inventory	No state-specific data issues.
Oregon Natural Heritage Program	No state-specific data issues.

State / Program	State / Program Specific Data Comments
Pennsylvania Natural Diversity Inventory	Specific locational data (i.e. lat / long coordinates) for Pennsylvania was not available for the NatureServe Species of Concern project work. Available species distributions in this state are identified only to the level of county or watershed of occurrence, both of which are significantly larger than installations in Pennsylvania. If requested, it is possible to provide a list of SOC for the county or watershed in which an installation is located, but this is a much coarser analysis and could include many species not actually found on or near installations.
Rhode Island Natural Heritage Program	No state-specific data issues.
South Carolina Heritage Trust	The South Carolina NHP uses a slightly different approach in the management of their EO last observed (LASTOBS) dates. In SC, if the LASTOBS date for an EO is the same as the first observation date, then they have left the LASTOBS field blank. In the installation-specific lists of SOC, this could result in some blank and/or under-represented most recent observation dates.
South Dakota Natural Heritage Data Base	No state-specific data issues.
Tennessee Division of Natural Heritage	The geographic region of the Tennessee Valley Authority (TVA) Heritage Program overlaps a portion of Tennessee state. While known duplicate records have been removed from the project dataset, there is a possibility of an Element Occurrence (EO) being tracked by both the state and TVA programs. For more details, please see the comments for the TVA program below.
Tennessee Valley Authority (TVA) Regional Natural Heritage	The TVA Heritage Program's geographic region overlaps portions of the following states: Tennessee, Kentucky, Virginia, North Carolina, Georgia, Alabama, and Mississippi. This creates the possibility of an Element Occurrence (EO) being tracked by both a state Natural Heritage Program (NHP) and the TVA program. Known duplicates have been flagged by TVA, were removed by NatureServe from the DOD-SOC project dataset, and were not included in the analyses. However, some of the records in the TVA data do fall very close to EO's of the same species maintained by state NHPs, yet they have not yet reconciled these EO's to flag them as duplicates. In these cases, therefore, both EO records are included in the analyses and could result in a slightly inflated count of numbers of occurrences. There is no impact on the SOC installation-specific species lists and the species-level summary numbers.
Texas Conservation Data Center	No state-specific data issues.

State / Program	State / Program Specific Data Comments
Utah Natural Heritage Program	As is required by Utah state law, all specific locational data have been randomized, or "fuzzed," within the square mile by "fuzzing" up to 0.5 miles north or south and up to 0.5 miles east or west. Because of data access constraints, the Utah Natural Heritage Program cannot provide records to NatureServe for locations on Native American Tribal lands (other than those provided by the Navajo Nation Natural Heritage Program). Therefore, this information was not included in the NatureServe DOD-SOC project analyses Data from the tribal lands of Navajo Nation are tracked by the Navajo Nation Natural Heritage Program and are supplied separately. This division of responsibility results in an apparent "hole" in the Utah data set.
Vermont Nongame & Natural Heritage Program	No state-specific data issues.
Virginia Division of Natural Heritage	The geographic region of the Tennessee Valley Authority (TVA) Heritage Program overlaps a portion of Virginia. While known duplicate records have been removed from the project dataset, there is a possibility of an Element Occurrence (EO) being tracked by both the state and TVA programs. For more details, please see the comments for the TVA program above.
Washington Natural Heritage Program	In the state of Washington, species locational data are maintained by two entities: • The Washington Natural Heritage Program (WA-NHP) in the Department of Natural Resources maintains plant data and data on a small number of non-game animals including butterflies / skippers and mussels. This program is a Natural Heritage Program and follows Natural Heritage data methodology. These data are included in the DOD-SOC analyses. • The Washington Department of Fish and Wildlife (WA-DFW) maintains animal locational data. This program is not a Natural Heritage Program and does not follow Natural Heritage data methodology. Accordingly, animal data from WA-DFW were <u>not</u> included in this project. For DOD installations in Washington state, it is likely that there are additional animals that should be considered as SOC but due to the above data limitation do not appear in the installation species lists and summary numbers.
West Virginia Natural Heritage Program	No state-specific data issues.
Wisconsin Natural Heritage Program	No state-specific data issues.

State / Program	State / Program Specific Data Comments
Wyoming Natural Diversity Database	Because of legal and security constraints, Wyoming Natural Heritage Program (WYHP) can not provide to NatureServe the precise locations of restricted data records. Therefore, NatureServe can not include these records in the DOD-SOC project analyses. Restricted data records may include: 1. Certain private land information. 2. Data that has been shared with WYHP but has specific security constraints imposed by the individual or agency that provided the data. 3. Data for certain species or communities or for certain locations of species or communities that have been determined as sensitive for the continuing existence of the species or community.

Appendix 6
Additional SOC "Occurrences General Description (GENDESC)" Data

Additional data for two species; their "occurrence general descriptions" were too long to be presented in Excel tables:

PYXIDANTHERA BREVIFOLIA – WELL'S PIXIE-MOSS
CIMICIFUGA ELATA – TALL BUGBANE

Occurrences General Description for PYXIDANTHERA BREVIFOLIA – WELL'S PIXIE-MOSS

PINE/SCRUB OAK SANDHILL WITH WIRE GRASS GROUND COVER & EVERGREEN SHRUBS IN MOIST POCKETS, ON UPLAND, UNDULATING, COARSE SAND/CLAY RIDGES.*
SUBPOP A=DRY SANDSTONE/CLAY HILLTOP WITH DENSE ARISTIDA STRICTA GROUND COVER; NO TREE CANOPY (PINUS PALUSTRIS & QUERCUS LAEVIS ON SLOPES BELOW); SCATTERED JUVENILE P.PALUSTRIS; VACCINIUM CRASSIFOLIUM THRUOUT; OPEN; WITH ASTER WALTERI, EPIGAEA REPENS, SEYM*
SUBPOPS A-E=BROAD, UPLAND AREA WITH SEVERAL SCATTERED LARGE SUBPOPS PROBABLY FRAGMENTED DUE TO LOGGING ROADS THRU AREA; SUBPOPS A-D=PINE/SCRUB OAK SANDHILL, FIRE-SUPPRESSED WITH MODERATELY DENSE QUERCUS LAEVIS; SUBPOPS E/F=RIDGE OF PEBBLY/CLAY HILLTOP WIT*
GROWING IN SHADE OF PINES WITH WIREGRASS (WYATT & PRIMACK 1973). PLANTS GROWING IN EXPOSED WHITE SAND UNDER TURKEY OAK AND LONG LEAF PINE (PRIMACK & WYATT 1973)*
XERIC SANDHILL SCRUB; XERIC, FLAT RIDGETOP; MODERATELY DENSE QUERCUS LAEVIS WITH WIDELY SCATTERED PINUS PALUSTRIS; HEAVY OAK LEAF LITTER; FIRE-SUPPRESSED; LITTLE TO NO WIREGRASS; FILTERED LIGHT; WITH SCHIZACHYRIUM SCOPARIUM, EPIGAEA REPENS & GAYLUSSACIA DUMOSA.*
FAIR XERIC SANDHILL SCRUB; MODERATE TO DENSE PINUS PALUSTRIS WITH SOME SCATTERED SECOND-GROWTH; MODERATE TO DENSE QUERCUS LAEVIS; MODERATE GROUND COVER OF ARISTIDA STRICTA; DRY, UPLAND FLAT, FILTERED LIGHT, SANDY SOIL; WITH GAYLUSSACIA DUMOSA, BAPTISIA CINEREA, EPIGAEA REPENS.*
ON A SOUTH-FACING BLUFF, PURCHASED AS A HOMESITE (HORNER 1978).*
SUBPOPS A/B=XERIC SANDHILL SCRUB WITH DENSE QUERCUS LAEVIS MIDSTORY; A=RECENTLY BURNED; VEHICLE DISTURBANCE SURROUNDS B; BOTH AREAS HEAVILY DISTURBED; WITH PINUS PALUSTRIS, GAYLUSSACIA DUMOSA, ARISTIDA STRICTA, EPIGAEA REPENS, SOLIDAGO ODORA, MINUARTIA CA*
UPLAND SCRUB OAK/RUNNING HUCKLEBERRY/WIREGRASS COMMUNITY.*
ON TOP AND ERODED SIDE OF SSW-FACING SLOPE ON SAND-CLAY RIDGE. WITH PINUS PALUSTRIS, ARISTIDA STRICTA, VACCINIUM CRASSIFOLIUM, EPIGAEA REPENS. FIRE HAS BEEN EXCLUDED.*
DENSE LONGLEAF PINE FOREST ON RIDGE (XERIC SANDHILL SCRUB NATURAL COMMUNITY), WITH VACCINIUM CRASSIFOLIUM, PTERIDIUM, ARISTIDA STRICTA, EUPHORBIA IPECACUANHAE, ETC.*
SUBPOP A=WITH PINUS PALUSTRIS, QUERCUS LAEVIS, ARISTIDA STRICTA & GAYLUSSACIA DUMOSA (ROBINSON 1991). SUBPOP B=XERIC SANDHILL SCRUB; MODERATE TO POOR HABITAT WITH SMALL PINUS PALUSTRIS, HEAVY QUERCUS LAEVIS SCRUB & POOR GROUND COVER INCLUDING SPARSE, FRUI*
POOR TO FAIR PINE/SCRUB OAK SANDHILL, CLAY HILLTOP VARIANT; DENSE, UNEVEN-AGED STAND OF PINUS TAEDA WITH SOME P.PALUSTRIS & OCCASIONAL P.ECHINATA; MODERATE QUERCUS LAEVIS-Q.MARILANDICA MIDSTORY; MODERATE GROUND COVER OF ARISTIDA

STRICTA; DRY, UPPER SLOPE, FILTERED LIGHT, LOAMY SOIL; WITH AGALINIS SETACEA, ANDROPOGON GYRANS, A.TERNARIUS, BAPTISIA CINEREA, EPIGAEA REPENS, SOLIDAGO SP., VACCINIUM CRASS., PTERIDIUM AQUILINUM.*
VERY GOOD XERIC SANDHILL SCRUB; FORMER CLEARCUT AREA REGENERATING TO QUERCUS LAEVIS & PINUS PALUSTRIS; LARGE AREAS SUBJECT TO HEAVY TRAMPLING, BIVOUACKING & FOXHOLE DIGGING BY ARMY; SOIL MOSTLY SANDY BUT CLAY CONTENT CONSIDERABLE LOCALLY; ONE SLOPE WITH QUARTZITE PEBBLES; DRY, MID SLOPE, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, ARISTIDA STRICTA, BAPTISIA CINEREA, MINUARTIA CAROLINIANA, PITYOPSIS ASPERA, SCHIZACHYRIUM SCOPARIUM, LUPINUS DIFFUSUS, HYPERICUM GENTIANOIDES.*
SUBPOP A=PINE/SCRUB OAK SANDHILL, CLAY/SANDSTONE HILLTOP VARIANT; SECOND-GROWTH PINUS PALUSTRIS; SPARSE MIDSTORY OF QUERCUS LAEVIS; ARISTIDA STRICTA GROUND COVER; DRY, UPPER SLOPE, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, CARPHEPHORUS BELLID., EPIGAEA REP*
POOR XERIC SANDHILL SCRUB; FIRE-SUPPRESSED WITH SECOND-GROWTH PINUS PALUSTRIS CANOPY & MODERATELY THICK QUERCUS LAEVIS MIDSTORY; MODERATE & PATCHY GROUND COVER OF ARISTIDA STRICTA; SURROUNDING AREA WITH HIGH SOIL DISTURBANCE; DRY, UPPER SLOPE TO CREST/HILLTOP, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, PINUS TAEDA, QUERCUS MARILANDICA, ANDROPOGON TERNARIUS, EPIGAEA REPENS.*
SUBPOP A=POOR PINE/SCRUB OAK SANDHILL, CLAY HILLTOP VARIANT; DENSE, YOUNG, MIXED PINUS TAEDA-P.ECHINATA OVERSTORY; SPARE QUERCUS MARILANDICA MIDSTORY; MODERATE TO DENSE ARISTIDA STRICTA GROUND COVER; DRY, UPPER SLOPE, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, ANDROPOGON GYRANS, VACCINIUM CRASSIFOLIUM, LYONIA MARIANA, ARISTIDA PURPUREA. SUBPOP B=GOOD CLAY HILLTOP WITH DENSE MATURE PINUS ECHINATA & SOME P.TAEDA; MODERATE QUERCUS MARILANDICA & DENSE ARISTIDA STRICTA; DRY, UPPER SLOPE, FILTERED LIGHT; WITH QUERCUS VELUTINA, GAYLUSSACIA DUMOSA, EPIGAEA REPENS, SCHIZACHYRIUM SCOPARIUM, SEYMERIA CASSIOIDES.*
SUBPOPS A/B=POOR TO FAIR PINE/SCRUB OAK SANDHILL WITH DENSE, YOUNG PINUS PALUSTRIS OVERSTORY, SCATTERED QUERCUS LAEVIS-Q.MARILANDICA MIDSTORY & SPARSE ARISTIDA STRICTA GROUND COVER; BURNED WINTER 1991/92; DISTURBED BY ROADS & PAST PINESTRAW RAKING; DRY, M*
SUBPOP A=XERIC SANDHILL SCRUB; DENSE ARISTIDA STRICTA, QUERCUS LAEVIS & PINUS PALUSTRIS REGENERATION; NEEDS BURNING; RECENT WHEELED VEHICLE TRAFFIC IN AREA OFF OF ROADS; DRY, UPPER SLOPE TO CREST, OPEN TO SHADED; WITH ANDROPOGON VIRGINICUS, ASTER SPP., GAYLUSSACIA DUMOSA, EPIGAEA REPENS. SUBPOP B=FAIR PINE/SCRUB OAK SANDHILL WITH SPARSE PINUS PALUSTRIS OVERSTORY; SPARSE QUERCUS LAEVIS-Q.MARILANDICA MIDSTORY & MODERATE ARISTIDA STRICTA, GAYLUSSACIA DUMOSA & CARPHEPHORUS BELLID. GROUND COVER; PLANTS MAY HAVE BEEN MISSED DUE TO DENSELY CLUMPED GROUND COVER SEPARATED BY BARE GROUND; DRY, UPPER SLOPE, OPEN/FILTERED LIGHT; WITH ANDROPOGON SPP., TEPHROSIA VIRG.*
DRY N-FACING PORTION OF RIDGE; MODERATE QUALITY WITH LOW DIVERSITY; BURNED SPRING 1993; TYPICAL PINE/SCRUB OAK SANDHILL WITH SOME QUERCUS MARIL. SPROUTS; OPEN UNDERSTORY & NO SHRUB LAYER; DRY, UPPER SLOPE, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, PINUS PALUSTRIS, QUERCUS LAEVIS, ANDROPOGON TERN., CARPHEPHORUS BELLID., EPIGAEA REPENS, GALACTIA REG., LIATRIS COKERI, TEPHROSIA VIRG.*
SUBPOP A=DRY, UPPER SLOPE, OPEN; WITH QUERCUS LAEVIS (1991). SUBPOP B=WELL-BURNED, SHARP-TRANSITION ECOTONE BETWEEN SANDHILL SEEP & XERIC SANDHILL SCRUB; MOIST, LOWER SLOPE, FILTERED LIGHT; WITH PINUS SEROTINA, P.PALUSTRIS, Q.LAEVIS, ARISTIDA STRICTA, RHE*
SUBPOP A=POOR, EVEN-AGED PINUS ELLIOTTII PLANTATION; INTENSIVELY SITE-PREPPED & FIRE-SUPPRESSED; HIGH RIDGE WITH DENSE STAND, FEW SHRUBS/TREES IN UNDERSTORY & MODERATE ARISTIDA STRICTA COVER; DRY, RIDGETOP/UPPER SLOPE, SHADED; WITH VACCINIUM TENELLUM, SAS*

LONGLEAF PINE/SCRUB OAK SANDHILL; SECOND-GROWTH PINUS PALUSTRIS; OPEN TO MODERATELY DENSE QUERCUS LAEVIS; ARISTIDA STRICTA GROUND COVER; DRY, UPPER SLOPE TO CREST, FILTERED LIGHT ALSO WITH EPIGAEA REPENS, GAYLUSSACIA DUMOSA, BAPTISIA CINEREA, CNIDOSCOLUS STIMULOSUS, EUPHORBIA IPECACUANHAE.*
SUBPOPS A-D=XERIC SANDHILL SCRUB; SECOND-GROWTH REGENERATION & PLANTATION PINUS PALUSTRIS WITH QUERCUS LAEVIS UNDERSTORY, ARISTIDA STRICTA GROUND COVER; DRY, UPPER SLOPE/CREST, FILTERED LIGHT; WITH EPIGAEA REPENS, GAYLUSSACIA DUMOSA, BAPTISIA CINEREA & IN*
OLD DIRT ROADBED IN DISTURBED XERIC SANDHILL SCRUB; DRY, OPEN, CREST.*
SUBPOP A=FAIR TO GOOD XERIC SANDHILL SCRUB WITH MODERATE PINUS PALUSTRIS OVERSTORY; MODERATE TO DENSE QUERCUS MIDSTORY; MODERATE ARISTIDA STRICTA COVER; DRY, MID SLOPE, FILTERED LIGHT; SUBPOP B=P/SOS; GENERALLY OPEN WITH OAKS, EXPOSED SAND/PEBBLES & LOW H*
SUBPOP A=PINE/SCRUB OAK SANDHILL; SCATTERED, YOUNG PINUS PALUSTRIS OVERSTORY WITH DENSE QUERCUS LAEVIS MIDSTORY & SCATTERED ARISTIDA STRICTA & GAYLUSSACIA DUMOSA GROUND COVER; AREA WAS BURNED IN RECENT PAST BUT NEEDS ANOTHER BURN; DRY CREST/HILLTOP, FILTE*
FAIR TO POOR PINE/SCRUB OAK SANDHILL, PEBBLY HILLTOP VARIANT; PINUS PALUSTRIS OVERSTORY; NO MIDSTORY; SPARSE ARISTIDA STRICTA & PINESTRAW GROUND COVER; DRY, CREST/HILLTOP, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, QUERCUS MARILANDICA, EPIGAEA REPENS, VACCINIUM SP.*
DRY, UPPER SLOPE, OPEN; WITH QUERCUS LAEVIS.*
SUBPOP A=XERIC SANDHILL SCRUB WITH CLUMPED PINUS PALUSTRIS & OPEN QUERCUS LAEVIS & ABUNDANT ARISTIDA STRICTA; SUBPOP B=XSS CREST, OPEN; WITH Q.LAEVIS & SANDY FIREBREAK THRU SUBPOP; SUBPOP C=FEW LARGE P.PALUSTRIS, SPARSE MIDSTORY OF Q.LAEVIS & P.PALUSTRIS *
EXCELLENT PINE/SCRUB OAK SANDHILL; WELL-SPACED, SECOND-GROWTH PINUS PALUSTRIS OVERSTORY; MODERATE, MIXED OAK MIDSTORY; GOOD ARISTIDA STRICTA GROUND COVER; WELL-BURNED SUMMER 1992; POCKETS OF DISTURBANCE; EO ON RIDGE & GROWING IN OLD ROADBED; DRY, UPPER SLOPE, FILTERED LIGHT; WITH QUERCUS INCANA, Q.LAEVIS, Q.MARILANDICA, GAYLUSSACIA DUMOSA, SASSAFRAS ALBIDUM, CARPHEPHORUS BELLID., CNIDOSCOLUS STIMULOSUS, TOXICODENDRON PUBESCENS.*
PINE/SCRUB OAK SANDHILL & XERIC SANDHILL SCRUB WITHOUT OVERSTORY; MIDSTORY OF YOUNG PINUS PALUSTRIS & QUERCUS LAEVIS; MODERATE ARISTIDA STRICTA GROUND COVER WITH SPARSE OAK LEAF LITTER; DRY, HILLTOP, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, EPIGAEA REPENS, BAPTISIA CINEREA.*
SUBPOPS A/B=HIGHLY DISTURBED PINE/SCRUB OAK SANDHILL; MEDIUM TO HIGH DENSITY OF SECOND-GROWTH PINUS PALUSTRIS CANOPY WITH LOW DENSITY SCRUB OAK UNDERSTORY; LOW TO NO ARISTIDA STRICTA & MEDIUM LEAF LITTER WITH PATCHES OF OPEN SAND FROM MILITARY BIVOUACKING*
XERIC SANDHILL SCRUB; SUBPOPS A-C=MODERATE TO DENSE YOUNG TO OLDER SECOND-GROWTH PINUS PALUSTRIS OVERSTORY WITH MODERATE QUERCUS LAEVIS MIDSTORY & MODERATE ARISTIDA STRICTA GROUND COVER WITH GAYLUSSACIA DUMOSA, ANDROPOGON GYRANS, BAPTISIA CINEREA, PITYOPS*
PINE/SCRUB OAK SANDHILL & XERIC SANDHILL SCRUB WITH SCATTERED YOUNG PINUS PALUSTRIS & MODERATE QUERCUS LAEVIS & SOME Q.MARILANDICA; SPARSE ARISTIDA STRICTA & SCHIZACHYRIUM SCOPARIUM GROUND COVER WITH SPARSE OAK LEAF LITTER & SOME AREAS OF EXPOSED SAND; DRY, MID TO UPPER SLOPE & HILLTOP, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, PITYOPSIS ASPERA, ANDROPOGON SPP., AUREOLARIA PECTINATA, LICHENS.*
SUBPOP A=XERIC SANDHILL SCRUB; WIREGRASS SLOPE WITH SCATTERED PINUS PALUSTRIS & QUERCUS LAEVIS SPROUTS; PARTLY BURNED IN SUMMER 1991; SLOPE GRADES (RATHER STEEPLY) INTO DRY HOLLOW; DRY, MID TO UPPER SLOPE, OPEN/FILTERED LIGHT; WITH ANDROPOGON TERNARIUS, A*
SUBPOP A=PINE/SCRUB OAK SANDHILL; HIGHLY DISTURBED DUE TO MILITARY BIVOUAC ACTIVITY & PINESTRAW RAKING; FRAGMENTED BY ROADS & TRAILS; RIDGE WITH SCATTERED

SECOND-GROWTH PINUS PALUSTRIS CANOPY WITH FEW QUERCUS LAEVIS & Q.MARILANDICA IN UNDERSTORY; ARISTIDA*
PINE/WIREGRASS ON SANDSTONE PEBBLE RIDGE; POOR QUALITY DUE TO HEAVY DISTURBANCE BY TROOPS & VEHICLES; SCATTERED PINUS PALUSTRIS WITH SPARSE ARISTIDA STRICTA; DRY, UPPER SLOPE, OPEN/FILTERED LIGHT; WITH PITYOPSIS ASPERA, SCHIZACHYRIUM SCOPARIUM, VACCINIUM TENELLUM, LYONIA MARIANA (LOCALLY DOMINANT).*
FAIR PINE/SCRUB OAK SANDHILL; GENERALLY OPEN CANOPY OF P.PALUSTRIS WITH GOOD REGENERATION; THICK ARISTIDA STRICTA; FEW OAKS IN VICINITY OF EO; GOOD HERB DIVERSITY; OLD ROADBED THRU AREA; DRY, UPPER SLOPE & UPLAND FLAT, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, QUERCUS INCANA, Q.LAEVIS, Q.MARIL., DIOSPYROS VIRG., BAPTISIA TINCT., CARPHEPHORUS BELLID., PTERIDIUM AQ., SOLIDAGO ODORA, TEPHROSIA VIRG., VACCINIUM CRASS.*
PINE SAVANNA*
SUBPOPS A-D=XERIC SANDHILL SCRUB; DRY, UPPER SLOPES & RIDGETOPS WITH YOUNG, EVEN-AGED PINUS PALUSTRIS & THICK QUERCUS LAEVIS; RECENTLY (1991) BURNED BUT STILL OAK-ENCROACHED WITH HEAVY LEAF LITTER, SPARSE HERB LAYER & LITTLE TO NO WIREGRASS; OPEN/FILTERED*
PINE/OAK SANDHILL, MORE OPEN THAN THE DENSEST STANDS ON THE TRACT (MOORE & CARTER 1989).*
PINUS TAEDA PLANTATION ON COARSE UPLAND SOILS; PROBABLY PINE/SCRUB OAK SANDHILL AT ONE TIME; EVEN-AGED STAND OF APPROX. 10-15M TREES; POOR, UNNATURAL COMMUNITY; DRY, UPLAND & CREST/HILLTOP, FILTERED LIGHT/SHADED.*
SUBPOPS A-C=GOOD PINE/SCRUB OAK SANDHILL; DRY, SANDY FLAT, FILTERED LIGHT; WITH EPIGAEA REPENS & QUERCUS LAEVIS (HOFFMAN 1990); XERIC SANDHILL SCRUB; DRY, UPLAND FLAT, OPEN; WITH SPARSE ARISTIDA STRICTA & LICHENS, IN DRY SANDY SOILS (HOFFMAN 1989). SUBPOPS D/E=SLIGHTLY PROTECTED, CANOPIED STRIPS OF PINE/SCRUB OAK SANDHILL & XERIC SANDHILL SCRUB BETWEEN FIRING LANES OF RANGE 30; GROUND DISTURBANCE MODERATELY HIGH FROM VEHICLES MOVING THRU AREA; MODERATELY OPEN PINUS PALUSTRIS CANOPY, OPEN UNDERSTORY WITH SCATTERED QUERCUS LAEVIS & Q.MARG.; FREQUENTLY BURNED FROM ARTILLERY FIRES; DRY, UPPER SLOPE, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, ARISTIDA STRICTA, LIATRIS COKERI (SFO 1992).*
SUBPOPS A-C=FAIR TO GOOD PINE/SCRUB OAK SANDHILL; MODERATE TO DENSE, YOUNG PINUS PALUSTRIS CANOPY WITH SOME TALL QUERCUS LAEVIS & SOME AREAS OF SHORT OAKS & MODERATE TO GOOD ARISTIDA STRICTA; SOME Q.MARILANDICA ON LOWER SLOPES; SANDY TO CLAY SOILS; DRY, M*
PINE/SCRUB OAK SANDHILL; HARDWOOD ENCROACHMENT; SANDY, DRY SOILS (HOFFMAN 1988); AREA BURNED MID-FEB 1992 (SFO 1992).*
PINE/SCRUB OAK SANDHILL; PINUS PALUSTRIS OVERSTORY; ARISTIDA STRICTA UNDERSTORY; FEW QUERCUS; AREA BURNED 1988. SUBPOP A=FAIR TO POOR QUALITY DUE TO DISTURBANCE FROM MILITARY ACTIVITIES, SILTATION, DISSECTION BY ROADS; VARIABLE HABITAT; DENSE TO NO P.PALU*
SUBPOP A=PINE/SCRUB OAK SANDHILL; PINUS PALUSTRIS OVERSTORY WITH INTERMINGLED QUERCUS; DRY, UPLAND FLAT, OPEN; WITH ARISTIDA STRICTA. SUBPOP B=XERIC SANDHILL SCRUB; DRY SANDHILL OF QUERCUS LAEVIS & HEAVILY FRUITING ARISTIDA STRICTA WITH FEW SCATTERED PINUS PALUSTRIS; SITE CLEARLY WELL-BURNED; PLANTS ON E-FACING RIDGE CREST; OPEN/FILTERED LIGHT; WITH SCHIZACHYRIUM SCOPARIUM, EUPATORIUM ALBUM, GENTIANA AUTUMNALIS.*
SUBPOP A=FAIR XERIC SANDHILL SCRUB; PINUS PALUSTRIS OVERSTORY WITH ARISTIDA STRICTA UNDERSTORY WITH SOME PATCHES OF BARE SAND; NEEDLE LITTER BUILDING UP; DRY, CREST/HILLTOP, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, QUERCUS LAEVIS, BAPTISIA CINEREA, PITYOP*
CLAY/SANDSTONE OUTCROP, INTACT ALONG W SLOPES & HIGHLY DEGRADED ALONG RIDGETOP; MODERATELY DENSE PINUS PALUSTRIS CANOPY; KALMIA LATIFOLIA DOMINANT

COVER ALONG MID SLOPES & RAVINES BETWEEN E-W FINGERS OF RIDGE; UPPER SLOPE & TOPS OF FINGERS WITH MODERATELY*
SUBPOP A=HIGHLY DISTURBED PINE/SCRUB OAK SANDHILL; UNEVEN-AGED & OPEN CANOPY OF PINUS PALUSTRIS; SCATTERED QUERCUS LAEVIS UNDERSTORY; MODERATELY LOW ARISTIDA STRICTA-HERB LAYER; FIRE-SUPPRESSED; DRY, CREST/HILLTOP, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DU*
XERIC SANDHILL SCRUB & PINE/SCRUB OAK SANDHILL; DENSE, YOUNG PINUS PALUSTRIS REGENERATION WITH SCATTERED SECOND-GROWTH OVERSTORY; SOME OPENINGS IN OVERSTORY; SPARSE TO MODERATE, MIXED OAK MIDSTORY; MODERATE ARISTIDA STRICTA COVER; SOME MILITARY DISTURBANCE; FIRE-SUPPRESSED; DRY, UPPER SLOPE, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, P.TAEDA, QUERCUS INCANA, Q.LAEVIS, Q.MARIL., SASSAFRAS ALB., DIOSPYROS VIRG., EPIGAEA REPENS, TEPHROSIA VIRG., VACCINIUM CRASS., LYONIA MARIANA, PTERIDIUM AQ. (SFO 1992). [XERIC SANDHILL SCRUB; PINUS PALUSTRIS PLANTATION (10-15 YEARS OLD) WITH QUERCUS LAEVIS (4-5M) UNDERSTORY & ARISTIDA STRICTA GROUND COVER; DRY, CREST/UPPER SLOPE, FILTERED LIGHT; WITH EPIGAEA REPENS, GAYLUSSACIA DUMOSA, SOLIDAGO ODORA & IRIS VERNA (ROBINSON).]*
SUBPOP A=PINE/SCRUB OAK SANDHILL; DRY RIDGE WITH YOUNG PINUS PALUSTRIS REGENERATION, FEW SMALL OAKS & MODERATE TO GOOD ARISTIDA STRICTA; DRY, CREST/HILLTOP, OPEN/FILTERED LIGHT; WITH QUERCUS LAEVIS, Q.INCANA, Q.MARILANDICA, GAYLUSSACIA DUMOSA, BAPTISIA CI*
SUBPOP A=XERIC SANDHILL SCRUB; E-FACING UPPER SLOPE; OPEN, WIDELY SCATTERED PINUS PALUSTRIS CANOPY; MODERATELY DENSE QUERCUS LAEVIS UNDERSTORY & LOW DENSITY ARISTIDA STRICTA & ANDROPOGON SP.; PREVIOUSLY LOGGED & WITH FIREBREAKS & TRAILS THRUOUT; WITH EPIG*
SUBPOP A=WELL-BURNED XERIC SANDHILL SCRUB WITH FAIRLY YOUNG PINUS PALUSTRIS CANOPY; MODERATELY LOW DENSITY QUERCUS LAEVIS UNDERSTORY & LOW ARISTIDA STRICTA DENSITY; PERHAPS LOGGED SEVERAL DECADES AGO; PROBABLY BURNED YEARLY; DRY, CREST/HILLTOP, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, BAPTISIA CINEREA, EPIGAEA REPENS, PITYOPSIS ASPERA, TEPHROSIA VIRG., TRAGIA URENS. SUBPOP B=XSS RIDGE WITH MODERATELY SPARSE P.PALUSTRIS CANOPY & Q.LAEVIS SCRUB LAYER; SPARSE A.STRICTA & SCATTERED HERBS; DISTURBED BY OLD VEHICLE TRAIL; SAME ASSOCIATES AS A.*
POOR PINE/SCRUB OAK SANDHILL, CLAY/PEBBLE HILLTOP, WITH MODERATE PINUS PALUSTRIS CANOPY; NO MIDSTORY; SPARSE ARISTIDA STRICTA GROUND COVER; NO LEAF LITTER; MUCH BARE GROUND; EROSION & MILITARY TRAFFIC EVIDENT; BURNED SUMMER 1992; DRY, CREST/HILLTOP, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, QUERCUS LAEVIS, Q.MARILANDICA, ANDROPOGON SPP., CARPHEPHORUS BELLID., TEPHROSIA VIRG., SMILAX SP.*
DRY, SANDY (GRAVEL LOWER LAYER) PINE/SCRUB OAK WITH MODERATELY OPEN PINUS PALUSTRIS-P.TAEDA CANOPY; MODERATE MIDSTORY OF QUERCUS LAEVIS, Q.MARIL. & Q.MARG.; DENSE ARISTIDA STRICTA-HERB LAYER; VERY GENTLE SLOPE TO N; NOT PRISTINE, OBVIOUSLY DISTURBED IN PAST, BUT APPEARS RELATIVELY NATURAL PINUS PALUSTRIS REGENERATION; BURNED IN 1992; ALMOST XERIC TO DRY, UPLAND FLAT, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, QUERCUS INCANA, Q.NIGRA, DIOSPYROS VIRG., ALETRIS FAR., ASTER LIN., A.WALTERI, BAPTISIA CIN., CARPHEPHORUS BELLID., CHRYSOPSIS GOSS., CIRSIUM REP., EUPATORIUM ALBUM, E.COMP., EUPHORBIA CURT., GELSEMIUM SEMP., PITYOPSIS ASPERA, RHUS COP., SOLIDAGO ODORA, TEPHROSIA VIRG., VIOLA PEDATA, PARTHENIUM INTEG., SMILAX GLAUCA, ORBEXILUM LUPINELLUM.*
FLAT, XERIC UPLAND IN AREA OF PINUS PALUSTRIS & PLANTED P.TAEDA WITH LOW BEDDING STILL EVIDENT; USUAL XERIC ASSOCIATES WITH MODERATE ARISTIDA STRICTA & FREQUENT SAND PATCHES; BURNED SPRING 1992; DRY, UPLAND FLAT, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, QUERCUS INCANA, Q.LAEVIS, DIOSPYROS VIRG., ANDROPOGON TERNARIUS, CARPHEPHORUS BELLID., CHRYSOPSIS GOSS., CIRSIUM REP., EPIGAEA REPENS, SILPHIUM COMP., EUPATORIUM LIN., STIPULICIDA SETACEA, STYLISMA PATENS.*
SUBPOPS A-E=HIGHLY DISTURBED LONGLEAF PINE/SCRUB OAK SANDHILL; PINUS PALUSTRIS PLANTATION WITH SOME OPEN AREAS & SOME AREAS OF SECONDARY GROWTH WITH

QUERCUS LAEVIS MIDSTORY & ARISTIDA STRICTA & TEPHROSIA VIRGINIANA GROUND COVER; DRY, UPLAND FLAT, FILTERED*
SUBPOP A=FAIR PINE/SCRUB OAK SANDHILL; SCATTERED PINUS PALUSTRIS OVERSTORY; SPARSE QUERCUS LAEVIS-Q.INCANA SHRUB LAYER; DENSE ARISTIDA STRICTA-HERB LAYER; BURNED SUMMER 1991; DRY, OPEN CREST/HILLTOP. SUBPOP B=P/SOS WITH OVERSTORY OF YOUNG P.PALUSTRIS; MID*
PINE/SCRUB OAK SANDHILL & XERIC SANDHILL SCRUB; SUBPOP A=MODERATELY DENSE 50-YR-OLD PINUS PALUSTRIS OVERSTORY; UNDERSTORY CLEARED BETWEEN 10-35M AROUND SUBPOP; MODERATELY DENSE UNDERSTORY BEYOND CLEARED AREA COMPOSED OF QUERCUS LAEVIS & Q.MARILANDICA 1-7M TALL; GROUND COVER OF DENSE ARISTIDA STRICTA. SUBPOPS B/C=MODERATELY DENSE, MOSTLY YOUNG (<20-YR-OLD) P.PALUSTRIS REGENERATION (UNEVEN-AGED STAND) WITH FEW SCATTERED FLAT-TOPS; MODERATELY DENSE TO DENSE (0.3-6M) Q.LAEVIS UNDERSTORY; SPARSE TO DENSE A.STRICTA. SEE SURVEY FORMS FOR ADDITIONAL ASSOCIATES.*
SUBPOP A=FAIR PINE/SCRUB OAK SANDHILL, PEBBLE/STONE HILLTOP; WITH MODERATE, YOUNG PINUS TAEDA CANOPY WITH DENSE QUERCUS LAEVIS-Q.MARILANDICA MIDSTORY & MODERATE ARISTIDA STRICTA & LICHEN GROUND COVER; DRY, CREST/HILLTOP, FILTERED LIGHT; WITH GAYLUSSACIA D*
LONGLEAF PINE/SCRUB OAK SANDHILL*
OPEN TO PINE-COVERED ROCK OUTCROPS & STONY STEEP SLOPES; SANDSTONE STONES MIXED WITH SANDY SOILS; RESEMBLES PIEDMONT/COASTAL PLAIN ACIDIC CLIFF (RARE ON FORT BRAGG); RECENTLY BURNED (LATE 1991/EARLY 1992); DRY, UPPER SLOPE TO CREST/HILLTOP, OPEN/FILTERED LIGHT; WITH CLETHRA ALNIFOLIA, LYONIA MARIANA, PINUS PALUSTRIS, P.TAEDA, VACCINIUM CRASSIFOLIUM, EPIGAEA REPENS.*
SUBPOP A=XERIC SCRUB QUERCUS LAEVIS WITH SCATTERED PINUS PALUSTRIS & P.TAEDA; DRY, UPPER SLOPE, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, EPIGAEA REPENS, MINUARTIA CAROLINIANA, LICHENS. SUBPOP B=P.ELLIOTTII-P.TAEDA(?) PLANTATION WITH RELATIVELY OPEN U*
FAIR TO GOOD PINE/SCRUB OAK SANDHILL WITH MOSTLY SCATTERED PINUS PALUSTRIS OVERSTORY; SPARSE QUERCUS LAEVIS MIDSTORY; SPARSE ARISTIDA STRICTA & GAYLUSSACIA DUMOSA COVER; DRY, UPPER SLOPE, FILTERED LIGHT; SOME DISTURBANCE FROM MILITARY ACTIVITIES; WITH QUERCUS INCANA, Q.MARILANDICA, DIOSPYROS VIRG., EPIGAEA REPENS, BAPTISIA CINEREA, VACCINIUM TENELLUM, ROBINIA SP., TEPHROSIA VIRG., CNIDOSCOLUS STIM.*
PINE/SCRUB OAK SANDHILL, NORMAL & CLAY HILLTOP VARIANTS; GENERALLY OPEN AREA WITH SOME UNDERSTORY, OTHERWISE WITH OPEN SAND & LOW SHRUBS NO MORE THAN 30 CM TALL; ROAD NEARBY CAUSING SOME EROSION & DISTURBANCE FROM MILITARY BIVOUACKING; EO FRAGMENTED; DRY, CREST/HILLTOP, FILTERED LIGHT; WITH QUERCUS LAEVIS, Q.INCANA, ARISTIDA STRICTA, CARPHEPHORUS BELLID., IRIS VERNA, TEPHROSIA VIRG., VACCINIUM TENELLUM, CRATAEGUS SP.*
SUBPOPS A/B=FAIR PINE/SCRUB OAK SANDHILL WITH MODERATE SECOND-GROWTH PINUS PALUSTRIS OVERSTORY; MODERATE MIXED-OAK MIDSTORY; SPARSE ARISTIDA STRICTA GROUND COVER; DRY, MID SLOPE TO UPLAND FLAT, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, QUERCUS LAEVIS, Q.MARIL. SUBPOPS C/D=GRADUALLY ROLLING PINE/SCRUB OAK SANDHILL WITH UNEVEN-AGED P.PALUSTRIS CANOPY; MODERATE Q.LAEVIS-Q.INCANA & SOME Q.MARILANDICA UNDERSTORY; MODERATE A.STRICTA COVER; DRY, UPPER SLOPE TO UPLAND FLAT, FILTERED LIGHT/SHADED; WITH PINUS TAEDA, G.DUMOSA, EPIGAEA REPENS, SCHIZACHYRIUM SCOPARIUM, TEPHROSIA VIRGINIANA (SFO 1992). [LONGLEAF PINE/SCRUB OAK SANDHILL; DRY, SANDY HILLTOP & UPLAND FLAT, FILTERED LIGHT; EXCESSIVE BARE GROUND WITH PITYOPSIS ASPERA, Q.LAEVIS, P.PALUSTRIS, A.STRICTA & G.DUMOSA (ROBINETTE 1989?).]*
SUBPOP A=DISTURBED OPENING IN MATURE PINE/SCRUB OAK SANDHILL WITH YOUNG, REGENERATING PINES & OAKS; SCATTERED WIREGRASS & MIXED HERB LAYER; AREA BURNED IN 1991; DRY, UPLAND FLAT, OPEN/FILTERED LIGHT; WITH PINUS PALUSTRIS, QUERCUS INCANA, Q.LAEVIS, GAYLUSSACIA DUMOSA, SASSAFRAS ALB., VACCINIUM TEN., ANDROPOGON GYRANS, ASTER LIN., A.TORT., A.WALT., BAPTISIA CIN., B.TINCT.,

CARPHEPHORUS BELLID., CIRSIUM REP., EPIGAEA REPENS, PITYOPSIS ASPERA, RHYNCHOSIA REN., SILPHIUM COMP., SOLIDAGO ODORA, TRAGIA URENS, HIERACIUM X MARIANA, ROBINIA NANA, SCHRANKIA MICRO., CNIDOSCOLUS STIM., EUPHORBIA IPEC. SUBPOP B=SMALL OPENING IN MATURE P/SOS NEAR RCW COLONY WITH MODERATE QUERCUS & SASSAFRAS MIDSTORY; MODERATE HERB LAYER WITH MUCH LEAF LITTER OVER BARE GROUND; DRY, UPPER SLOPE, FILTERED LIGHT; WITH SIMILAR ASSOCIATES AS WELL AS DIOSPYROS VIRG., GALACTIA REG., SEYMERIA CASS.*
SUBPOP A=XERIC SANDHILL SCRUB; DENSE TO MODERATE 35- TO 50-YR-OLD PINUS PALUSTRIS OVERSTORY WITH DENSE QUERCUS LAEVIS MIDSTORY; ARISTIDA STRICTA GROUND COVER; DRY, MID SLOPE, FILTERED LIGHT; WITH TEPHROSIA VIRGINIANA, GAYLUSSACIA DUMOSA, STYLISMA PATENS, *
MODERATE PINE/SCRUB OAK SANDHILL RIDGE WITH WIDELY SCATTERED PINUS PALUSTRIS & LOW QUERCUS COMPONENT DUE TO RECENT HARDWOOD CONTROL (NEARBY RCW COLONY); MODERATE TO LOW ARISTIDA STRICTA COVER; HIGH SOIL DISTURBANCE IN SURROUNDING AREAS (FOODPLOT & FIREBREAKS) & BARBED WIRE RUNNING THRU EO; DRY, CREST/HILLTOP, OPEN; WITH ANDROPOGON GYRANS, BAPTISIA CINEREA, PITYOPSIS ASPERA, LUPINUS DIFF. (SFO 1992).*
PINE/SCRUB OAK SANDHILL; DRY, UPLAND SLOPE, OPEN RIDGE TOP; WITH ARISTIDA STRICTA, IN SANDY SOILS (HOFFMAN 1990).*
PINE/SCRUB OAK SANDHILL; DRY, UPPER SLOPE JUST ABOVE LOWLAND DRAINAGE; FILTERED LIGHT; WITH SPARSE ARISTIDA STRICTA, IN DRY SANDY LOAMY SOIL (HOFFMAN 1989).*
LONGLEAF PINE/SCRUB OAK SANDHILL.*
SUBPOP A=LONGLEAF PINE/WIREGRASS; PINE SAVANNA; SANDY RIDGE WITH SCATTERED PINUS PALUSTRIS FLAT-TOPS; W CLUSTER ON S-FACING SLOPE ABOVE DRAIN (LAPE 1989). SUBPOP B=LONGLEAF PINE/SCRUB OAK SANDHILL; WITH ARISTIDA STRICTA, IN DRY, SANDY SOILS (LAPE 1989); DRY, OPEN, MID SLOPE (1991). SUBPOP C=LONGLEAF PINE/SCRUB OAK SANDHILL; WITH ARISTIDA STRICTA (LAPE 1989).*
XERIC SANDHILL SCRUB; SUBPOP A=YOUNG PINUS PALUSTRIS REGENERATION (CLEARCUT AREA) WITH 3-7M TALL QUERCUS LAEVIS & MODERATE ARISTIDA STRICTA; SUBPOPS B/C=MODERATE PINE CANOPY & MODERATELY DENSE Q.LAEVIS & GOOD A.STRICTA; SUBPOP D=SCATTERED YOUNG PINUS PALUSTRIS, MODERATE Q.LAEVIS & SPARSE TO MODERATE ARISTIDA STRICTA; WITH EPIGAEA REPENS, ANDROPOGON GYRANS, MINUARTIA CAROL., PITYOPSIS ASPERA, LUPINUS PERENNIS, TOXICODENDRON PUBESCENS, LECHEA SP., SEYMERIA CASS., EUPHORBIA IPEC.*
SUBPOPS A-C=PINE/SCRUB OAK SANDHILL CONVERTED TO DENSE PINUS ELLIOTTII PLANTATION WITH EVEN-AGED (30-YR-OLD) TREES, SCATTERED QUERCUS LAEVIS-DIOSPYROS VIRG. MIDSTORY & SPARSE ARISTIDA STRICTA-HERB COVER; AREA THINNED & BEDDED; LOW LEAF LITTER & MUCH BARE *
SUBPOP A=DRY TO XERIC SANDHILL SCRUB WITH SOME FIRE PLOWLINES & ADJACENT LOW MOUNDS; CREST/HILLTOP, FILTERED LIGHT; WITH PINUS PALUSTRIS, QUERCUS LAEVIS, GAYLUSSACIA DUMOSA, ANDROPOGON GYRANS, ARISTIDA STRICTA, PITYOPSIS ASPERA. SUBPOP B=DISTURBED, POOR XSS JUST OFF MAIN ROAD; DENSE GROUND COVER WITH MUCH DOWNED WOOD & SOME LEAF LITTER; DRY, UPLAND FLAT, FILTERED LIGHT/SHADED; WITH SIMILAR ASSOCIATES INCLUDING EPIGAEA REPENS. SUBPOP C=HIGHLY DISTURBED, FRAGMENTED XSS WITH MODERATE TO DENSE Q.LAEVIS & MODERATE TO SPARSE ARISTIDA STRICTA; DRY, UPLAND FLAT, FILTERED LIGHT; WITH BAPTISIA CINEREA, VIOLA PEDATA, DALEA PINNATA.*
SUBPOP A=PINE/SCRUB OAK SANDHILL; FEW SCATTERED PINUS PALUSTRIS, ARISTIDA STRICTA ALONG WITH P.TAEDA; INTERMINGLED WITH MAINLY QUERCUS LAEVIS; OPEN, UPPER SLOPE; SANDY SOIL. SUBPOP B=PINE/SCRUB OAK SANDHILL; DRY, UPLAND, SANDY HILLSIDE; WITH SCATTERED PINUS PALUSTRIS, QUERCUS MIDSTORY & XERIC GROUND SPECIES INCL ARISTIDA STRICTA & QUERCUS LAEVIS, ON SANDY SOILS (HOFFMAN 1990). SUBPOP C=PINE/SCRUB OAK SANDHILL; WITH SCATTERED PINUS PALUSTRIS, QUERCUS MIDSTORY & INFREQUENT UNDERSTORY; DRY, UPPER SLOPE, FILTERED LIGHT; ARISTIDA STRICTA & QUERCUS LAEVIS, ON SANDY SOILS (HOFFMAN 1990).*

XERIC SANDHILL SCRUB; SCATTERED PINUS PALUSTRIS OVERSTORY; SPARSE QUERCUS LAEVIS-Q.INCANA MIDSTORY; SPARSE GAYLUSSACIA DUMOSA GROUND COVER; DRY, CREST/HILLTOP, FILTERED LIGHT; WITH ROBINIA SP., ARISTIDA STRICTA.*
SUBPOP A=GOOD XERIC SANDHILL SCRUB WITH MODERATE TO SPARSE, UNEVEN-AGED PINUS PALUSTRIS, DENSE QUERCUS LAEVIS & MODERATE ARISTIDA STRICTA; NEAR MAJOR FIREBREAK WITH MILITARY VEHICLE DISTURBANCE NEARBY; DRY, MID SLOPE, FILTERED LIGHT; WITH GAYLUSSACIA DUMO*
PINE/SCRUB OAK SANDHILL, CLAY HILLTOP VARIANT; MODERATELY YOUNG PINUS TAEDA-P.ECHINATA OVERSTORY; MODERATE MIXED OAK MIDSTORY; DENSE ARISTIDA STRICTA COVER; DRY, UPPER SLOPE, FILTERED LIGHT; WITH QUERCUS LAEVIS, Q.INCANA, Q.MARIL., DIOSPYROS VIRG., GAYLUSSACIA DUMOSA, EPIGAEA REPENS, ANDROPOGON SP., BAPTISIA TINCT., TEPHROSIA VIRG., VACCINIUM CRASS., LESPEDEZA SP., DALEA PINNATA.*
GOOD XERIC SANDHILL SCRUB; LITTLE DISTURBANCE & RECENTLY BURNED; SUBPOP A=NO OVERSTORY; VERY SPARSE ARISTIDA STRICTA & NO LEAF LITTER; SUBPOPS B/C=SECOND-GROWTH PINUS PALUSTRIS & MIDSTORY OF QUERCUS LAEVIS; SPARSE A.STRICTA & LEAF LITTER; DRY, UPLAND FLAT, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, BAPTISIA CIN., TEPHROSIA VIRG., LOW SPECIES DIVERSITY (1992). MOSTLY SECOND-GROWTH PINUS PALUSTRIS; SANDY/LOAMY RIDGE; UPPER TO MID SLOPE, FILTERED LIGHT; WITH QUERCUS LAEVIS & ARISTIDA STRICTA (1989).*
FAIR PINE/SCRUB OAK SANDHILL, INCL SOME CLAY HILLTOP VARIANT; MODERATE SECOND-GROWTH PINUS PALUSTRIS OVERSTORY; NO MIDSTORY; MODERATE ARISTIDA STRICTA; DISTURBANCE FROM MILITARY ACTIVITIES; DRY, UPPER SLOPE TO CREST/HILLTOP, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, QUERCUS INCANA, Q.MARILANDICA, ANDROPOGON SP., BAPTISIA CIN., EPIGAEA REPENS, DIOSPYROS VIRG., TEPHROSIA VIRG., TOXICODENDRON PUB., VACCINIUM CRASS.*
SUBPOP A=FAIR XERIC SANDHILL SCRUB; OPEN TO SHADED RIDGETOP WITH MODERATE SECOND-GROWTH PINUS PALUSTRIS OVERSTORY; SCRUB OAK UNDERSTORY; LITTLE LEAF LITTER; OPEN SAND; DISTURBANCE FROM MILITARY ACTIVITIES (ROADS, FIRE PLOWLINES & BIVOUACKING); BURNED SUMM*
SUBPOP A=FAIR TO GOOD PINE/SCRUB OAK SANDHILL, CLAY HILLTOP VARIANT & XERIC SANDHILL SCRUB; LONG, GENTLY SLOPED RIDGE BETWEEN BRANCHES OF CREEK; MODERATELY DENSE, MATURE PINUS PALUSTRIS OVERSTORY; SPARSE, LOW, MIXED-OAK MIDSTORY; SPARSE TO MODERATE ARISTI*
XERIC SANDHILL SCRUB; SECOND-GROWTH PINUS PALUSTRIS WITH SCATTERED OLD-GROWTH; MODERATELY LIGHT QUERCUS LAEVIS UNDERSTORY; DRY, UPPER SLOPE/CREST, FILTERED LIGHT; WITH ARISTIDA STRICTA, EPIGAEA REPENS, GAYLUSSACIA DUMOSA, TEPHROSIA VIRGINIANA, BAPTISIA CINEREA.*
ALONG ROAD RIGHT-OF-WAY AND IN EDGE OF WOODS ON SANDY RIDGETOP.*
SANDY HILLTOP ADJACENT TO A ROAD. XERIC SANDHILL SCRUB COMMUNITY, WITH MIXED PINUS PALUSTRIS-PINUS TAEDA CANOPY AND TALL QUERCUS LAEVIS.*
ADJACENT TO A ROAD ON A DRY, SANDY RIDGETOP. XERIC SANDHILL SCRUB COMMUNITY.*
PINE SCRUB OAK SANDHILL COMMUNITY, WITH ABUNDANT ARISTIDA STRICTA.*
SUBPOP A=PINE SCRUB/OAK SANDHILL, CLAY/ROCK HILLTOP VARIANT; DRY, SANDHILLS WOODLAND WITH CLOSED CANOPY OF PINUS PALUSTRIS WITH ARISTIDA STRICTA & LOW OAK COMPONENT; PRESENCE OF QUERCUS MARGARETTIAE & LYONIA MARIANA INDICATE MORE MESIC CONDITIONS (POSSIBL*
POOR PINE/SCRUB OAK SANDHILL; SPARSE SECOND-GROWTH PINUS PALUSTRIS OVERSTORY; MODERATE QUERCUS LAEVIS MIDSTORY; MODERATE ARISTIDA STRICTA GROUND COVER; HEAVY DISTURBANCE PROBABLY FROM LOGGING & PINESTRAW RAKING; DRY, MID SLOPE, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, Q.INCANA, Q.MARIL., CARPHEPHORUS BELLID., EUPATORIUM SP., EPIGAEA REPENS, CNIDOSCOLUS STIM., TEPHROSIA VIRG., SILPHIUM COMP., CLITORIA MARIANA, DIOSPYROS VIRG.*
PINE/SCRUB OAK SANDHILL; UNUSUAL LOAMY RIDGE WITH MID-AGED PINUS PALUSTRIS CANOPY; DENSE QUERCUS INCANA-Q.MARIL. UNDERSTORY; MODERATELY DENSE ARISTIDA STRICTA COVER; DRY, CREST/HILLTOP, FILTERED LIGHT/SHADED; WITH CARPHEPHORUS BELLID., SOLIDAGO ODORA, VACCINIUM TENELLUM.*

SUBPOP A=HIGHLY DISSECTED XERIC SANDHILL SCRUB; SMALL STAND OF YOUNG PINUS PALUSTRIS & QUERCUS LAEVIS; AREA GENERALLY SCRAPED UP WITH ROADS & OTHER VEHICLE TRACKS; OPEN SAND WITH LOW HERB LAYER & ARISTIDA STRICTA COVER; BURNED SUMMER 1991; DRY, UPLAND FLAT, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, AUREOLARIA PECT., PITYOPSIS ASPERA, TEPHROSIA VIRG., TOXICODENDRON PUB., LICHENS. SUBPOP B=VERY DISTURBED XSS WITH OPEN SAND & LOW SCRUB OAK COVERAGE; WITH P.PALUSTRIS, Q.LAEVIS, A.STRICTA, A.TUBERC., SCHIZACHYRIUM SCOP., GAYLUSSACIA DUMOSA.
SUBPOP A=XERIC SANDHILL SCRUB; RIDGE WITH QUERCUS LAEVIS DOMINATING & WITH PINUS PALUSTRIS SCATTERED; AREA NOT WELL-BURNED FOR SEVERAL YEARS; LACK OF MATURE CANOPY PROBABLY DUE TO ARTILLERY FIRE FROM RANGE 78; ARISTIDA STRICTA DENSE IN PATCHES; DRY, CREST*
SUBPOP A=POOR TO FAIR PINE/SCRUB OAK SANDHILL, PEBBLE/ IRONSTONE HILLTOP; MODERATE 20- TO 30-YR-OLD PINUS PALUSTRIS-P.SEROTINA OVERSTORY WITH SPARSE, SHORT (<1M TALL) QUERCUS MARIL., Q.LAEVIS & Q.INCANA MIDSTORY & MODERATE TO GOOD ARISTIDA STRICTA GROUND COVER; LOW SPECIES DIVERSITY; EO ALONG OLD ROAD; AREA PREVIOUSLY LOGGED; BURNED 1992; DRY, UPPER SLOPE & CREST/HILLTOP, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, EPIGAEA REPENS, PITYOPSIS ASPERA, TEPHROSIA VIRG., PARTHENIUM INTEG., BAPTISIA CIN. SUBPOP B=P/SOS WITH OPEN CANOPY OF P.PALUSTRIS & LOW MIDSTORY OF Q.MARIL., Q.INCANA & Q.LAEVIS; GOOD COVER OF FRUITING A.STRICTA; DRY, MID SLOPE, FILTERED LIGHT/OPEN; WITH EPIGAEA REPENS, PTERIDIUM AQ., VACCINIUM TEN., TEPHROSIA VIRG., DIOSPYROS VIRG., PARTHENIUM INTEG., GAYLUSSACIA DUMOSA.*
ABRUPT DROPOFF BETWEEN UPLAND PINE/SCRUB OAK SANDHILL & MESIC RIVER BANK; PATCHES OF WHITE SAND VISIBLE; SPARSE ARISTIDA STRICTA COVER WITH SCATTERED LOW-GROWING SHRUBS; DRY, UPPER SLOPE, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, PINUS PALUSTRIS, P.SEROTINA, QUERCUS LAEVIS, Q.MARG., Q.MARIL., CARPHEPHORUS BELLID., EPIGAEA REPENS, EUPATORIUM ALBUM, PITYOPSIS ASPERA, CLETHRA ALN., SYMPLOCOS TINCT.*
BROAD UPLAND RIDGETOP.*
UPLAND RIDGES AND SLOPES WITH TYPICAL SANDHILL COMMUNITIES.*
SUBPOP A=NEARLY FLAT-TOPPED, NARROW RIDGE PROJECTING SE; XERIC SANDHILL SCRUB; MODERATELY DENSE PINUS ELLIOTTII, MUCH QUERCUS LAEVIS & GAYLUSSACIA DUMOSA, SOME BARE SAND; GOOD ARISTIDA STRICTA COVER; BEDDED; SUBPOP B=TOP & SIDES OF LARGE KNOLL; MODERATE P.ELLIOTTII, SOME P.PALUSTRIS, DENSER Q.LAEVIS & LESS A.STRICTA; BEDDED; DRY, CREST/HILLTOP, FILTERED LIGHT; WITH ANDROPOGON TERN., A.GYRANS, AUREOLARIA PECT., CARPHEPHORUS BELLID., CIRSIUM REP., EPIGAEA REPENS, IRIS VERNA, LIATRIS COKERI, MINUARTIA CAROLINIANA, PITYOPSIS ASPERA, LICHENS, MOSSES.*
SUBPOPS A/B=HIGHLY DISTURBED PINUS ELLIOTTII UPLANDS WITH PARALLEL TRACKS (ROLLER-CHOPPED) THRUOUT; EO ON RIDGES BETWEEN TRACKS; THICK QUERCUS UNDERSTORY; ALTHOUGH BURNED 1991, HEAVY LEAF LITTER; DRY, UPLAND FLAT & CREST/HILLTOP, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, Q.LAEVIS, ARISTIDA STRICTA, EPIGAEA REPENS, MINUARTIA CAROLINIANA, SCHIZACHYRIUM SCOPARIUM. SUBPOP C=DRY, UPPER SLOPE (NOT HIGHEST PART OF KNOLL) PLANTED TO P.ELLIOTTII WITH BEDDING OF SOIL EVIDENT; LOTS OF Q.LAEVIS, SPARSE TO MODERATE A.STRICTA, NOT MUCH OPEN SAND; WITH MOSSES, SCATTERED P.PALUSTRIS, ANDROPOGON TERN., SCHIZ.SCOP., RHYNCHOSPORA GRAYI, G.DUMOSA, LIATRIS COKERI, MIN.CAROL.*
TYPICAL XERIC SANDHILL SCRUB RIDGE WITH UP TO 3M TALL QUERCUS LAEVIS; SCATTERED PINUS PALUSTRIS BUT NO FLAT-TOPS; MODERATE ARISTIDA STRICTA DENSITY; SCATTERED HERBS; DRY CREST/HILLTOP, OPEN/FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, EPIGAEA REPENS, GENTIANA AUTUMNALIS.*
XERIC SANDHILL SCRUB; FLAT RIDGETOP; MODERATELY XERIC; DENSE QUERCUS LAEVIS UNDERSTORY; CANOPY OF WIDELY SCATTERED SECOND-GROWTH PINUS PALUSTRIS WITH FEW FLAT-TOPS & NO ARISTIDA STRICTA; DRY, UPLAND FLAT, FILTERED LIGHT; WITH MINUARTIA CAROLINIANA, MONOTROPA UNIFLORA.*

XERIC SANDHILL SCRUB WITH PLANTED PINUS ELLIOTTII; DISTURBANCE NOT EVIDENT; EO AREA ODDLY SHAPED & CURIOUSLY NARROW--DOES NOT OCCUPY ALL AVAILABLE GOOD HABITAT; PLANTS FREQUENTLY OCCUR ON BED RIDGES; DRY, CREST/HILLTOP, FILTERED LIGHT; WITH GAYLUSSACIA DUMOSA, QUERCUS LAEVIS, ARISTIDA STRICTA, BAPTISIA CIN., EPIGAEA REPENS, MINUARTIA CAROLINIANA, LUPINUS DIFF., LICHENS & MOSSES.*
SUBPOP A=FAIR XERIC SANDHILL SCRUB WITH SOME PATCHES OF BARE GROUND & EVIDENCE OF VEHICLES; LOW SPECIES DIVERSITY; BURNED SUMMER 1991; SPARSE TO MODERATE PINUS PALUSTRIS CANOPY; MODERATE TO DENSE QUERCUS LAEVIS MIDSTORY; MODERATE TO DENSE ARISTIDA STRICTA*
HABITAT IS PINE/SCRUB OAK SANDHILL, WITH AN OPEN CANOPY OF PINUS PALUSTRIS, A FEW OAKS, AND GOOD COVER OF ARISTIDA STRICTA. AN ERODING FIREBREAK IS NEARBY.*
PINE SCRUB OAK SANDHILL, ASSOCIATED SPECIES ARE PINUS PALUSTRIS, QUERCUS LAEVIS, Q. MARILANDICA, Q. INCANA, Q. MARGARETTA, DIOSPYROS VIRGINIANA, GAYLUSSACIA DUMOSA, TOXICODENDRON PUBESCENS, SASSAFRAS ALBIDUM, ARISTIDA STRICTA, BAPTISIA INEREA, EPIGAEA REPENS, SOLIDAGO ODORA, CNIDOSCOLUS STIMULOSUS, COREOPSIS MAJOR, EUPHORBIA COROLLATA*
XERIC SANDHILL SCRUB, DISTURBED BIVOUAC AREA WITH SUBSTANTIAL SOIL DISTURBANCE AND SPARSE HERBACEOUS STRATUM, ASSOCIATED SPECIES ARE PINUS PALUSTRIS, QUERCUS LAEVIS, ARISTIDA STRICTA, EUPHORBIA IPECACUANHAE, EUPHORBIA CURTISII, GAYLUSSACIA DUMOSA*
XERIC SANDHILL SCRUB, MODERATE-POOR QUALITY WITH DENSE PINUS PALUSTRIS STAND AND SPARSE HERBACEOUS STRATUM, ASSOCIATED SPECIES ARE QUERCUS LAEVIS, GAYLUSSACIA DUMOSA, ARISTIDA STRICTA, TEPHROSIA VRIGINIANA, STYLISIMA PATENS, CNIDOSCOLUS STIMULOSIS, PITYOPSIS GRAMINIFOLIA, LIATRIS SP.*
PINE SCRUB OAK SANDHILL, GOOD QUALITY, ASSOCIATED SPECIES ARE PINUS PALUSTRIS, QUERCUS MARILANDICA, Q.INCANA, DIOSPYROS VIRGINIANA, SASSAFRAS ALBIDUM, GAYLUSSACIA DUMOSA, ARISTIDAS STSICTA, TEPHROSIA VIRGINIANA, SOLIDAGO ODORA, EUPHORBIA CURTISII*
PINE SCRUB OAK SANDHILL WITH OPEN PINUS PALUSTRIS CANOPY AND WELL-DEVELOPED HERBACEOUS STRATUM, ASSOCIATED SPECIES ARE QUERCUS LAEVIS, Q. INCANA, GAYLUSSACIA DUMOSA, ARISTIDA STRICTA, ROBINIA ELLIOTTII, SOLIDAGO ODORA, EUPHORBIA IPECACUANHAE, E. CURTISII, SILPHIUM COMPOSITUM, TEPHROSIA SPICATA, PITYOPSIS ASPERA, HYPOXIA HIRSUTA*
XERIC SANDHILL SCRUB, POOR QUALITY WITH DENSE STAND OF YOUNG PINUS PALUSTRIS AND SPARSE HERBACEOUS STRATUM, ASSOCIATED SPECIES ARE PINUS PALUSTRIS, QUERCUS LAEVIS, GAYLUSSACIA DUMOSA, ARISTIDA STRICTA, TEPHROSIA VIRGINIANA, CNIDOSCOLUS STIMULOSUS, ARENARIA CAROLINIANA*
POOR QUALITY PINE SCRUB OAK SANDHILL WITH EXTENSIVE SOIL DISTURBANCE (RUTTING) AND VERY SPARCE HERB LAYER, ASSOCIATED SPECIES ARE AN OPEN PINUS PALUSTRIS OVERSTORY, QUERCUS MARILANDICA, Q. LAEVIS, DIOSPYROS VIRGINIANA, GAYLUSSACIA DUMOSA, TEPHROSIA VIRGINIANA*

Occurrences General Description for CIMICIFUGA ELATA – TALL BUGBANE

N-FACING SLOPE IN OPEN SHADE OF MIXED CONIFER-DECIDUOUS FOREST THAT HAS BEEN THINNED BY SALVAGE LOGGING. PLANTS WITHIN 10-15 M OF ROAD, MANY GROWING ON OLD ROADCUT. ASSOC. SP. INCLUDE PSME, ABGR, ACMA, ALRU/COCO, HODI, OECE/POMU, RUUR, DIFO, THOC, SMRA, SMST, HYTE, ASCA, BROMUS VULGARIS, TELLIMA GRANDIFLORA, DISPORUM SMITHII, PTAQ, STELLARIA CRIPSA (?), TRILLIUM OVATUM, ACHLYS TRIPHYLLA, ACTAEA RUBRA, ADENOCAULON BICOLOR, PHACELIA NEMORALIS, CAREX HENDERSONII. CIRSIUM VULGARE COMMON WHERE DISTURBED.*
Cedar-hemlock forest on lower slopes of logged mountainside.*
SHADY DECIDUOUS WOODS, IN PATCHES OF LOW TO NO UNDERGROWTH. SOIL DAMP. ASSOCIATED SPECIES INCLUDE: PSME, ALRU, ACMA, RHAMNUS PURSHIANA/HODI, RUUR, SYAL, OEMLERIA CERASIFORMIS/DISPORUM HOOKERI, POLYSTICHUM, SMILACINA RACEMOSA, HYDROPHYLLUM TENUIPES, ADENOCAULON BICOLOR, TELLIMA GRANDIFLORA, TRILLIUM OVATUM, CIRCEA ALPINA*
Possible threats from spraying, although roadside mowed 1983. Original population has been destroyed but subpopulation scattered along lake side trail is healthy.*
WITH ACER, RUBUS, ALNUS, PSEUDOTSUGA, PHILADELPHUS, POLYSTICHUM*
MOIST SHADY GROUND, WET BANK OF A SMALL STREAM*
With Vancouveria, Dicentra, Smilacina, POMU,PSME,THPL.| Woods along Lewis River near Battle Ground Washington.*
Ten to fifteen year old clearcut on Tamahi Creek forest service road.*
EAST AND WEST-FACING SIDES OF A S/SE RUNNING DRAW. FAIRLY OPEN CANOPY OF LARGE PSME AND ABGR AND MODERATE SIZED ACMA AND ALRU WITH SCATTERED ACCI AND COCO. GROUND COVER DOMINATED BY POMU, ADBI, OSMORHIZA SP., MONTIA SIBIRICA, VANCOUVERIA HEXANDRA, ANEMONE DELTORDEA, DISPORUM SP., ATHYRIUM FILIX-FEMINA, ACTAEA RUBRA, ASARIUM CAUDATUM, ACHLYS TRIPHYLLA.*
1982: with young growth in a cedar-western hemlock clear-cut ca. 1982.*
Wooded slopes, also open rocky creek bottoms, and along roadside between Renton and Issaquah. Taxon not sighted, possibly description too vague, possible populations have been extirpated - ERA 6/83.*
Just south of DNR land. East-facing moderate slope. Shade. Damp humus few 3 or 4.*
Shady & damp*
Forested fillslope with highway above, river below. Just downslope is steep dry oak community. Mesic forest understory, unstable soil surface, patches or boulders (?) at surface. Ah horizon 12-15 cm think loam taxture, B horizon more fine grained. Single larger plant on more moist microsite than 2 other plants seen on plot described with attached sheet.*
Shady, damp, humus*
2 plants in flower on steep north facing roadbank 10 feet from road, 1 non-flowering plant 25 feet back, advacent forest recently cut, now in full sun, plants damages by herbicide spraying, POMU & native forest herbs abundent.*
In various habitats to bare soil. Plants not robust-only 8 in bloom, no seedlings. Possibility of more plants in area.*
Site probably grazed in past but not now, no threats at present. In bud.*
Locally frequent. Best in open shade; some plants destroyed by recent logging, not found in disturbed areas.*
AT EDGE OF CA 25 YR. OLD SECOND GROWTH FOREST, W/PSME, ACMA, ACCI, ALRU, CONU, TABR, ADJACENT FOREST VERY DENSE, MAY BE TOO SHADY FOR CYEL TO SURVIVE. NEAR SANDSTONE IN ROAD CUT. ASSOC. SPECIES: SHRUBS: HODI, GASH, ACCI; HERBS: POMU, HEMI, SMST, TRLA, VICIA.*
Rocky, well-drained soils.*
IN SMALL PATCH OF "VIRGIN" CONIFEROUS FOREST. PSEUDOTUGA TREES 4-5 FT. ACMA COMMON. ASSOC. SPECIES: ACCI,SYAL,RHAI,COCO. HERBS:POMU,POMU,DRAR,TROV,SMST,DIHO,VAHE,ACRU,RUUR,ADBI,LICO ,GATR,DSCH,TEGR.*

IN LARGE OPEN OLD GROWTH PSME. UNDERSTORY OF ACMA AND CORYLUS CORNUTA. TRANSITION BETWEEN DRY AND MOIST SITE. ORGANIC LAYER OVERSOIL. ASSOC. W/GASH, POMU, COCO, RHDI, ACTAEA RUBRA, SYAL.*
OLD GROWTH PSME. UNDERSTORY OF CORYLUS CORNUTA, ACMA, ACCI. GROUND COVER MAINLY POMU. ASSOC. W/TRIENTALIS LATIFOLIA, TRILLIUM OVATUM, ADENOCAULON BICOLOR, DISPORUM SP.., VANCOUVERIA HEXANDRA, BENE, ROSA NUTKANA, HODI, GALIUM OREGANUM*
Rocky, well-drained soils. Threats: Trampling, brushing out of trail.*
NEAR BOTTOM OF SLOPE. LUSH, N/NE SLOPE BORDERING ON CREEK; SURROUNDING CLEAR CUTS HAVE LITE OR NO BUFFER. CANOPY - MIXED CONIFER AND DECIDUOUS. SOIL LOOSE BUT RICH. ASSOC. W/POMU, ATFI, DRAR, OXOR, ADPE, RUSP, TITR, TROV - TREES; ACMA, ALRU, PSME, TSHE, THPL*
Threats: Logging, herbicide spraying of roadsides.*
SCATTERED OVERSTORY OF LARGE PSME WITH DECIDUOUS UNDERSTORY. ASSOC. W/ACMA, ALRU, COCO, RUSP, ACCI, SYAL, ADBI, MONTIA SIBIRICA, VIOLA GLABELLA, VANCOUVERIA HEXANDRA, GALIUM APARINE, NEMOPHILA PARVIFLORA, CAREX HENDERSONII.*
PSME OVERSTORY, GASH MAJOR SHRUB SPECIES. MOIST SITE. MID-SLOPE OF MODERATE SLOPE.*
FAIRLY OPEN W/WIDLEY SPACED 2ND GROWTH PSME. ALSO W/ACCI, ACMA, COCO, ALRU, POMU, RUBUS PARVIFLORA, RHAMNUS PURSHIANA, OXALIS OUGANA, RUBUS DISCOLOR, PTAQ.*
One plant seen at Penrose State Park in June 1963. Area searched, suitable habitat found but no plants seen, E Alverson, 25 July 1986)*
UPPER SLOPE OF CONIFEROUS FOREST WITH SCATTERED BIG-LEAF MAPLE. TSHE/OXOR AND TSHE/POMU. PSME, ACMA, TSHE (CANOPY COVER 70%); ACCI (COVER LIGHT); POMU, ADPE, OXOR, ARALIA (COVER DENSE).*
Not seen since 1978.*
RIPARIAN WOODLAND. UNSTABLE LOAM OVER CLAY. TSHE/POMU PLANT ASSOC. ACMA, PSME, TABR, TSHE (CANOPY COVER 75%); RUPA, RIBR, ACCI, ARSY, ARALIA CALIFO. (COVER LIGHT); VAHE, PHACELIA SP., ADPE, BENE, OXOR, POMU, (COVER DENSE); MOSS/LICHEN LAYER OF CONIUM SP. AND OTHERS (COVER DENSE).*
Not seen since 197?*
MOIST CONIFEROUS FOREST, PSME DOMINATED, ALSO W/ACMA, ACCI, TABR. ASSOC. SPECIES: POMU, VAHE, CLSI, DIHO, TROV, ACRU, GATR*
Heavily shaded woods with Holodiscus discolor and Physocarpus capitatus under alder and cherry.*
STEEP ROADSIDE BANK AND ADJACENT N-FACING SLOPE, 2ND GROWTH FOREST DOMINATED BY PSME, BUT ALSO W/ACMA & ALRU. ASSOC. SPECIES: RUPA, HODI, ACCI, COCO, DELE, SYAL; HERBS: PTAQ, POMU, RUUR, SMRA, VAHE, TEGR, THOC, ELGL. LOWER SLOPE, FILTERED SHADE; MOIST*
Landform = lower slope. Habitat = coniferous forest with scattered bigleaf maple. Microtopography = undulating. Soil = loose gravelly soil.*
2ND GROWTH MOIST FOREST, DOMINATED BY ALRU ALONG W/PRAV, COCO. MID-SLOPE, SHADE, MOIST. ASSOC. SPECIES: OECE, BENE, POMU, RUUR, GAAP, ASCA, TROV, CIAL.*
Lowland deciduous woods which have been at least partially cut probably 30-40 years ago.*
MOIST, MIXED SECOND GROWTH FOREST W/ACMA, ALRU, PSME, ABGR. ASSOC. SPECIES: SHRUBS; ACCI, COCO, OECE, SYAL, SARA. HERBS: POMU, SMRA, HYTE, DISM, TROV, TEGR, PHNE, GAAP. MID-SLOPE TO LOWER SLOPE POSITION. IN SHADE, MOIST.*
SECOND GROWTH FOREST, UNDER PSME, ALRU, AND PREM. ASSOC. SPECIES: POMU, GASH, TROV, VAHE, ACRU. UPPER SLOPE, SHADE, MOIST (1989). 1992 REPORT: PSME - POMU PLANT ASSOC. ASSOC SP: ACCI, ACRULOWER SLOPE, FILTERED LIGHT, MOIST.*
Narrow deep ravine within the city of Vancouver. Forested, not apparently cut. Houses on all sides. A paved road runs through middle of ravine, and several well - used developed trails run parallel.*
1998: ASSOC.SP.: POLYSTICHUM MUNITUM, PSEUDOTSUGA MENZIESII, ACER MACROPHYLLUM, RUBUS PARVIFLORUS. STEEP HILLSIDES, NEXT TO RIVER, NORTH SLOPE, CONIFEROUS FOREST ASSOC SPECIES: DOUG FIR, SWORD FERN, MAIDENHAIR FERN.*
Landform = Stream terrace. Habitat = mixed coniferous and hardwood regeneration about 30 years old.*

1998: ASSOC.SP.: POLYSTICHUM MUNITUM, PSEUDOTSUGA MENZIESII, RUBUS PARVIFLORUS, ACER MACROPHYLLUM. 1996: ASSOC.SP.: ADIANTUM, POLYSTICHUM, CLAYTONIA, RUBUS SP., DISPORUM, ACER SSP. 1991: SHADY SHORELINE, STEEP NORTH SLOPE, CONIFEROUS FOREST, 2ND. GROWTH. ASSOC. SPECIES: DOUGLAS FIR, BIG LEAF MAPLE, SWORD FERN.*
Located in about a 30 acre stand of near-mature (~80 yr) Psme surrounded by younger forests of PSME, ACMA, ALRU. Rural residential and small farms w/in 1/2 mile. Located on flat top of a ridge.*
NORTH SLOPE, CLEARCUT, FULLY EXPOSED. ASSOC. SPECIES: YOUNG BIGLEAF MAPLE, BRACKEN FERN, SWORD FERN, FIREWEED. RELATIVELY DRY AND BADLY OVERGROWN BY TYPICAL CLEARCUT INVADERS.*
Landscape a mix of young forest and low-density rural residential. Occurence located at one end of a ~100+ acres forest along East side of Lewis River. Seems to be major plant community in area where not converted to other uses. About 10 acres of mature unlogged forest on adjacent steep slope.*
DOUGLAS FIR, BIG LEAF MAPLE FOREST EDGE. ASSOC. SPECIES: PSME, ACMA, RUBUS PAVIFLORUS, MONTIA SIBIRICA, VANCOUVERIA HEXANDRA, SMILLACINA STELLATA, ACHLYS TRIPHYLLA, OSMORHIZA OCCIDENTALE; SYMPHORICARPOS ALBA, POLYSTICHUM MUNITUM.*
Part of ~60 ac fragment of forest in urban/suburban setting. Major highway at W end of forest; industrial complex at E end. Forest mostly young 50-80yr, few older residuals.*
EDGE OF PSME-ACMA FOREST WITH SHRUBS AND HERBACEOUS PERENNIALS, VERY FEW WEEDS. LOWER SLOPE POSITION, FILTERED, MOIST. SEDIMENTARY ROCK. ASSOC SPECIES: PSME, ACMA, RUBUS, PARVIFLORA, SYMPHORICARPOS ALBA, RHUS DIVERSILOBA.*
Habitat is throughout the recreational trail system adjacent to ballfields & picnic area.*
CLEAR CUT. LOWER SLOPE POSITION. ASSOC. W/CIRSIUM SP. EQUISETUM SP., RUBUS URSINUS, PSEUDOTSUGA MENZIESII, PHILADELPHUS LEWISII, ACER CIRCINNATUM, ACER MACROPHYLLUM.*
Densely shaded, upslope of riparian wetland on DNR timber land.*
IN LOWER SLOPE POSITION OF SLIGHT SLOPE. A GENTLE BANK ON THE ROADSIDE COVERED WITH RUBUS PARVIFLORUS AND ACTAEA RUBRA (IN FRUIT). CANOPY ABOVE, BUT OPEN NEXT TO ROAD. PARTIAL SHADE.*
PRESENTLY DISTURBED ROADSIDE; IN MIDSLOPE POSITION. YOUNG, PSME FOREST WITH ABUNDANT RUPA AND REMNANTS OF A MOISTER HABITAT PRIOR TO DISTURBANCE. ASSOCIATED SPECIES ARE BERBERIS NERVOSA, PTERDIUM AQUILINIUM, VANCOUVERIA HEXANDRA, LOTUS CRASSIFOLIOUS VAR. SUBGLABER, POLYSTICHUM MUNITUM, HOLODISCUS DISCOLOR, CORYLUS CORNUTA VAR. CALIFORNICA, RUBUS LEUCODERMIS, ACTAEA RUBRA, GAULTHERIA SHALLON.*
Steep valley paralell to watercourse, with in riparian zone, TSME overstory, primary land is private timberland.*
UPPER SLOPE POSITION. CONIFEROUS FOREST. PLANT ASSOCIATION OF TSHE/ POMU. HERB LAYER: POLYSTICHUUM MUNITUM, ADIANTUM PEDATUM, ATHYRIUM FILIX-FEMINA, HYDROPHYLLUM TENUIPES, ACTEA RUBRA, ARALIA CALIFORNICA. (COVER DENSE). LOW SHRUB LAYER: RUBUS PARVIFLOUS (COVER LIGHT). HIGH SHRUB LAYER: ACER CIRCINATUM, SMALL ALNUS RUBRA (COVER LIGHT). PSUEDOTSUGA MENZIESII, TSUGA HETEROPHYLLA. CANOPY COVER OF 70%.*
51+ year old 2nd growth PSME plantation. Area has evidence of prior burn. Steep, rocky slope.*
ROADSIDE. ASSOC. W/ POMU.*
Lower third of slope.*
MATURE PSME-ACMA FOREST, APPARENTLY NEVER LOGGED, WITH ACCI, COCO, POMU, VANCOUVERIA, CLAYTONIA SIBIRICA, GALIUM APARINE, AND MANY OTHER FORBS. SOILS MAPPED AS RITNER COBBY SILTY CLAY LOAM.*
NORTH FACING ROAD BANK, UNDER PSME AND ACMA, WITH RUPA, SYAL, POMU, URDI. SUITABLE HABITAT IS FAIRLY LIMITED ON THE SITE.*
NORTH FACING SLOPE 2 METERS ABOVE SMALL INTERMITTENT STREAM: ACMA OVERSTORY, WITH ACCI, COCO, SYAL, POMU. THICK CARPET OF IVY COVERING THE GROUND.*
MID-SLOPE. MODERATELY OPEN CANOPY OF PSEUDOTSUGA MENZIESII (OLDER GROWTH) AND ACER MACROPHYLLUM. MINIMAL HIGH BRUSH LAYER OF CORYLUS CORNUTA, ACER CIRCINATUM, AND HOLODISCUS DISCOLOR. GROUND COVER, DENSE, POLYSTICHUM MUNITUM GROWTH. ASSOCIATED SPECIES: POLYSTICHUM MUNITUM, ACHLYS TRIPHYLLA,

BERBERIS NERVOSA, DISPORUM HOOKERI, ADENOCAULON BICOLOR, RUBUS URSINUS, STREPTOPUS SPP., SYMPHORICARPOS ALBUS, VANCOUVERIA HEXANDRA, GALIUM TRIPHYLLUM, TOLMEIA MENZIESII, RHAMNUS PURSHIANA, ATHYRIUM FILIX-FEMINA, SYNTHERIS, SANICULA SPP.*
FAIRLY CLOSE CANOPY OF OLD GROWTH PSEUDOTSUGA MENZIESII & LARGE ACER MACROPHYLLUM WITH MINIMAL SUB-CANOPY OF A FEW SMALL TSUGA HETERPHYLLA, VACCINIUM PARVIFOLIUM, CORYLUS CORNUTA AND HOLODISCUS DISCOLOR. STEEP N. FACING SLOPE WITH PREDOMINANT GROUND COVER OF POLYSTICHUM MUNITUM. ASSOCIATED SPECIES: POLYSTICHUM MUNITUM, THALICTRUM OCCIDENTALE, VANCOUVERIA HEXANDRA, MONTIA SIBIRICA, HOLODISCUS DISCOLOR, OXALIS OREGANA, ADENACAULON BICOLOR, DISPORUM HOOKERI, DICENTA FORMOSA, MELICA SUBULATA, PTERIDIUM AQUILINUM.*
BOTTOM SLOPE, IN SHADE WITH MOIST SOIL. ALONG CREEK IN YOUNG (20-40 YRS) DOUGLAS FIR STAND; VERY LITTLE UNDERBRUSH.*
IN MID SLOPE, ON NORTH FACING SLOPE UNDER CANOPY OF ACER MACROPHYLLUM; A. CIRCINATUM, TSUGA HETEROPHYLLA AND CORYLUS CORNUTA. SOME PLANTS GROWING AT EDGE OF CLEARING IN PARTIAL SUN. SOIL MOIST. ASSOCIATED SPECIES: BERBERIS NERVOSA; VANCOUVERIA HEXANDRA; POLYSTICNUM MUNITUM; PTERIDIUM AQUILINUM; VERATRUM CALIFORNICUM; GAULTHERIA SHALLAN; ACHLYS TRIPHYLLA; DISPORUM HOOKERI; GALIUM TRIFIDUM; TRILLIUM OVATUM; COPTIS LACINATA AND SMILACINA STELLATA.*
UPPER SLOPE; ROCK OUTCROP - WELDED TUFF. CONCAVE MICROTOPOGRAPHY. PLANT ASSOCIATION: PSME/GASH/PMMY EXCEPT NO TWINFLOWER OR CHIQUAPIN SEEN. MOSS/LICHEN LAYER: MOSSES, LICHENS, MODERATE COVER. HERB LAYER: WIPPLEAMODESTO, ACHLEA (VANILLA LEAF), BERBERIS NERVOSA, SYNTHRIS RENIFORMES. LOW SHRUB LAYER: ROSA GYMNOCARPA, SALMONBERRY, SALAL, SYMPHORICARPUS MOLLIS, PORILL, MODERATE COVER. HIGH SHRUB LAYER: HOLODISCUS DISCOLOR, CARNUS NUTTALLI - MODERATE COVER. TREE LAYER: ACER MACROPHYLLUM, PSEDUOTSUGA MENZIESSI, CALOCEDRAS DECURRENS. CANOPY COVER 65%. ASPECT 310 DEG. SLOPE 50%*
PSME/ACCI/POMU COMMUNITY, LOCAL IN MESIC POCKET ON SHADY NE SLOPE WITH TRILLIUM OVATUM, ADENOCAULON, OSMORHIZA CHILENSIS, DISPORUM HOOKERI, TRIENTALIS, CARDAMINE PULCHERRIMA, GALIUM TRIFLORUM. MOST TREES <100 YRS. OLD, BUT PROBABLY WAS FOREST AT THE TIME OF SETTLEMENT. SOILS MAPPED AS STEINER LOAM.*
UPPER TO LOWER SLOPE. MOIST, OPEN CONIFEROUS FOREST WITN MOIST MEADOWS INTERMIXED. PLANAR TO UNDULATING MICOTOPOGRAPHY. BASALT/ANDESITE SOIL. PLANT ASSOC OF ACCI, ABCO,ACTR,ACRU, MOSS/LICHEN LAYER. OPEN COVER OF MOSS. HERB LAYER: ACTR, ACRU, CIEL, VANE, ASCH, DINO; COVER, VERY DENSE. LOW SHRUB LAYER: ALRU, COVER LIGHT. HIGH SHRUB LAYER: ACCI, COVER LIGHT TO VERY DENSE. TREE LAYER: ABCO/PSME, COVER LIGHT TO VERY DENSE. CANOPY COVER 20-40%. ASPECT 16 DEG N: SLOPE 35-55%.*
1991: CONIFEROUS FOREST. UPPER SLOPE. UNDULATING MICROTOPOGRAPHY. LOOSE GRAVELLY SOIL. TSHE/POMU PLANT ASSOC. HERB LAYER, DENSE COVER OF POPYSTICHUM MUNITUM, ADIANTUM PEDATUM, OXALIS OREGANA, RUBUS URSINUS, MONTIA SIBERICSA, ADENOCAULON BICOLOR, ASARUM CAUDATUM, VANCOUVERIA HEXANDRA, ARALIA CALIFORNICA; LOW SHRUB LAYER, COVER LIGHT OF BERBERIS NERVOSA, GAULTHERIA SHALLON (MINOR). HIGH SHRUB LAYER, COVER LIGHT OF ACER CIRCINATUM. TREE LAYER, CANOPY COVER 60% OF PSEUDOTSUGA MENZIESII, TSUGA HETEROPHYLLA, ACER MACROPHYLLUM. ASPECT: 40-330 DEG. SLOPE: 30-70%*
#1) CONIFEROUS FOREST WITH SCATTERED ALNUS RUBRA. MID-SLOPE. UNDULATING MICROTOPOGRAPHY. LOOSE GRAVELLY SOIL. TSHE-POMA PLANT ASSOCIATION. HERB LAYER, DENSE COVER OF POLYSTICHUM MUNITUM. ADANTUM PEDATUM, OXALIS OREGANA, MONTIA SIBERICA, ARALIA CALIFORNICA. LOW SHRUB LAYER, COVER LIGHT OF RUBUS PARVIFLORUS, RUBUS SPECTABILIS. TREE LAYER, CANOPY COVER 70% OF PSEUDOTSUGA MENZIESSII, TSUGA HETEROPHYLLA, ALNUS RUBRA, ACER MACROPHYLLUM. ASPECT: 36 DEG. SLOPE: 70%
#2) CONIFEROUS FOREST W/MAPLE ON UPPER SLOPE, SLOPE 50% & ASPECT 30 W/LOOSE FINE SOIL. ASSOC SPECIES: POLYSTICHUM MUNITUM, ADIANTUM PEDATUM, OXALIS OREGANA, RUBUS URSINUS, RUBUS PARVIFLORUS, BERBERIS NERVOSA, VACCINIUM

PARVIFOLIUM, ACER CIRCINATUM, CAULTHERIA SHALLON, PSEUDOTSUGA MENZIESII & TSUGA HETEROPHYLLA.*
OLD GROWTH DOUGLAS FIR. TREE OVERSTORY: PSME 40% COVER, ACMA 70%, ABCO 10%. SHRUBS: COCOC 20%, HODI 5%. HERBS: POMU 80%, MOSI 10%, ACTR 10%. ASPECT N; SLOPE, EXTREME 45+. UPPER SLOPE POSITION. GRAVELLY SILTY LOAM/METAMORPHIC SUBSTRATE.*
OLD GROWTH LIDE3/BENE, BELOW ROCK OUTCROP NEAR DRAW. TREE OVERSTORY: ACMA 60%, PSME 40%, LIDE3 40%. SHRUBS: COCOC 10%. HERBS: POMU 50%, ACTR 5%. ASPECT N, MODERATE SLOPE 80% [SIC]. LOWER SLOPE POSITION. GRAVELLY LOAM SUBSTRATE.*
OLD GROWTH, BIGLEAF MAPLE AND SHRUB. E ASPECT, MOD. SLOPE, UPPERSLOPE POSITION. ASSOC. SPECIES: CORYLUS CORNUTA, ACER MACROPHYLLUM, POLYSTICHUM MUNITUM, HYDROPHYLLUM TENUIPES, ADEROCAULON BICOLOR, OXALIS OREGANA, CAREX HONDERANII, MONTIA SIBIRIIA, HOLODISCUS DISINOR, GALIUM APARINE, DICENTRA FORMOSA.*
RIPARIAN NORTH ASPECT. RICH LOOSE SOIL. SHADY UNDER ALRU,ACCI. MODERATE SLOPE LOCATED ON LOWER SLOPE IN SHADE. MOISTURE=MOIST. ASSOC SPECIES: ACER MACROPHYLLA,ACER CIRCINATUM, ALNUS RUBRA, POLYSTICHUM MUNITUM, BOYKINIA ELATA, TSUGA HETEROPHYLLA, THUJA PLICATA.*
ROADSIDE IN SHADE, RUBUS PARVIFLORA/PSEUDOTSUGA MENZIESII. N ASPECT. MODERATE SLOPE. LOCATED ON CREST IN FILTERED LIGHT. DRY CONDITIONS.*
6' FROM ROAD. SOIL: KLICKITAT, KINNEY COMPLEX. BRIGHT-SHADY LIGHT, MOIST. ASPECT E, SLOPE 11%.*
6' FROM ROAD EDGE. POLYSTICHUM MUNITUM, ACER MACROPHYLLUM ASSOCIATED SPECIES. SOIL: KLICITAT, STORY LOAM, BOTTOM TO LOWER SLOPE POSITION. LIGHT BRIGHT TO FILTERED, MOIST. ASPECT EAST, SLOPE 9%.*
MIXED SECONDARY FOREST. ASSOCIATED SP: PSEUDOTSUGA MENZIESII, ACER MACROPHYLLUM, POLYSTICHUM MUNITUM. SOIL: CORNELIUS AND KINTON SILT LOAMS. FILTERED LIGHT, MOIST. ASPECT WEST, SLOPE 3%.*
OLD GROWTH FOREST. ASSOCIATED WITH ACER MACROPHYLLUM, OXALIS OREGANA. FILTERED LIGHT, MOIST. PLATEAU.*
IN SEVERAL WET AREAS. ASSOC PLANT: DELPHINIUM GLAUCUM (HAUSOTTER, 1991). RICHARD CALLAGAN, 1996 SIGHTING IN MOIST MIXED CONIFER FOREST WITH RECENT CANOPY REDUCTION.*
ON EDGE OF ROAD, PLANTS MOSTLY IN PSME SAPLINGS, ON OLD CUTBANK AND UP INTO THE WOODS, AND ACROSS THE ROAD. ASSOC. SPECIES: BENE, GASH, CONU, POMU, RUNU, ARGR, VAHE, TROV, RUUR, RUPR, ASPECT N; MODERATE SLOPE, 20-45 DEG, MID-SLOPE POSITION.*
ALONG CREEK IN YOUNG (20-40YRS) DOUGLAS FIR STAND, VERY LITTLE UNDERBRUSH. E ASPECT, MODERATE SLOPE 20-45 DEG, BOTTOM SLOPE POSITION.*
PLANTS LOCATED ON STEEP SLOPES ABOVE A SMALL CREEK/RIPARIAN AREA. OVERSTORY COMPRISED OF ACER MACROPHYLLUM; ALNUS RUBRA; ACER CIRCINATUM & A FEW PSEUDOTSUGA MENZIESII. MODERATE GROUND COVER OF POLYSTICHUM MUNITUM & BERBERIS NERVOSA WITH VARIOUS FORBS... N & S ASPECT, EXTREME SOLPE, LOCATED MID & LOWER SLOPE POSITION IN FILTERED LIGHT AND SHADE. MOISTURE = MOIST.*
EARLY SERAL STAGE FOREST; N ASPECT; <50% SLOPE, MID-SLOPE POSITION; ASSOC. SP. RUBUS URSINUS, RUBUS LEUCODERMIS (RULE), RUBUS PARVIFLORUS (RUPA), GAULTHERIA SHALLON (GASH), POLYSTUCHUM MUNITUM, ATHYRIUM FILIX-FEMINA, ADIANTUM PEDATUM (ADPE), GALIUM APARINE (GAAP2), GALIUM TRIFOLRUM, ANAPHALUS MARGARITACEA (ANMA).*
TRAILSIDE*
MIDSLOPE, CONIFEROUS FOREST 80% SLOPE 354 ASPECT, LOOSE FINE SOIL. ASSOC SPP: POLYSTICHUM MUNITUM, ADIANTUM PEDATUM, POLYPODIUM GLYCYRRHIZA, ATHYRIUM FILIX-FEMINA, THALYCTRUM, RUBUS PARVIFLORUS, CORYLUS CORNUTA, ACER GLABRUM VAR. DOUGLASII, PSEUDOTSUGA MENZIESII AND ACER MACROPHYLLUM*
MESIC, MATURE PSME-ACMA FOREST ON N FACING SLOPE. GROUND COVER DOMINATED BY HEDERA HELIX. DISPORUM HOODERI, VANCOUVERIA HEXANDRA, POLYSTICHUM MUNITUM ALSO COMMON. PLANTS SEEM MOST VIGOROUS UNDER CANOPY GAPS. SOILS MAPPED AS RITNER COBBLY SILTY CLAY LOAM.*

N-FACING BRUSHY HILLSIDE OVERLOOKING CREEK. MODERATE SLOPE, 20-45 DEG., MID SLOPE POSITION.*
MOIST OPEN FOREST ON LOWER TO UPPER SLOPE WITH LOOSE SOIL AND FOREST LITTER. FILTERED TO SHADY LIGHT. DOM. SPS: PSEUDOTSUGA MENZIESII AND ABIES GRANDIS WITH SMALL AMOUNTS OF THUJA PLICATA. OTHER ASSOCS: POLISTICUM MUNITUM, VANCOUVERIA HEXANDRA, ACTEA RUBRA, RUBUS PARVIFLORUS, EBUROPHYTON AUSINAE, CIREAE ALPINA.*
MOIST PSUEDOTSUGA MENZIESII FOREST WITH ACER MACROPHYLLUM INTERSPERSED - FILTERED SUNLIGHT. LOWER TO MID-SLOPE TOPO. WITH LOOSE SOIL AND FOREST LITTER. UNDERSTORY SPS: POLYSTICHUM MUNITUM, RUBUS PARVIFLORUS, HOLODISCUS DISCOLOR, ACER CIRCUNATUM.*
1998: #3) CONIFEROUS FOREST W/LOTS OF HARDWOODS & A THICK VINE MAPLE UNDERSTORY. TERRAIN IS STEEP W/MANY ROCKY CLIFFS. SHADE IS HIGH, MOISTURE IS MOD & LARGEST PLANTS ARE FOUND WHERE GRAZING IS DIFFICULT, MID/UPPER SLOPE, SOIL OVER BASALT, 62-350 DEG ASPE*
IN THE SHADE OF SECOND GROWTH DOUGLAS FIR-CLEARCUT ECOTONE. ONE PLANT DISJUNCT IN CLEARCUT FARTHER ON TRAIL. MID-SLOPE POSITION, OPEN & FILTERED LIGHT, MOIST. ASSOC SP: PSEUDOTSUGA MENZIESII, CORYLUS CORNUTA, RUBUS PARVIFLORA, RUBUS IDEAUS, POLYSTICHUM MUNITUM. ASPECT N, SLOPE 0-20 DEG.*
DRAW; PERENNIAL STREAM/MIXED CONIFER-HARDWOOD FOREST; PLANAR MICROTOPOGRAPHY; LITTER AND BRANCHES ON TOP OF ORGANIC MATERIAL ON A ROCKY SLOPE. ASSOC SP: OPEN MOSS LAYER. HERB LAYER OF POLYSTICHUM MUNITUM, LACTUCA MURALIS, HYDROPHYLUM TENUIPES, TOLMIEA MENZIESII, DICENTRA FORMOSA, MONTIA PARVIFOLIA, ADIANTUM PEDATUM, MODERATE COVER. LOW SHRUB LAYER OF RUBUS URSINUS, OPEN COVER; HIGH SHRUB LAYER OF RUBUS SPECTABILIS, ACER DOUGLASII, ALNUS SINUATA, ACTAEA RUBRA, ARUNCUS SYLVESTER, VERY DENSE COVER; TREE LAYER OF ACER MACROPHYLLA, THUJA PLICATA, 50-60% CANOPY COVER.*
MID SLOPE, MIXED CONIFEROUS-HARDWOOD FOREST; (UNDULATING) PLANAR MICROTOPOGRAPHY; GROWING IN ORGANIC SOIL WITH A LITTER LAYER. MOSS/LICHEN LAYER LIGHT. HERB LAYER: VANCOUVERIA HEXANDRA, ATHERIUM FILIX-FEMINA, ACHLYS TRIPHYLLA, ADENOCAULON BICOLOR, GALIUM OREGANUM, OSMORHIZA CHILENSIS FRAGARIA, STACHYS COOLEYEI, LATHYRUS, GALIUM TRIFLORUM, CAMPANULA SCOULERI, CAREX DEWEYANA, MONTIA, POLYSTICHUM MONITUM, DENSE COVER; LOW SHRUB LAYER OF RUBUS IDAEUS, OPEN COVER; HIGH SHRUB LAYER OF ALNUS SINUATA, BERBERIS NERVOSA, RUBUS PARVIFLORUS, RHAMNUS PURSHIANA, MODERATE COVER; TREE LAYER OF ACER MACROPHYLA, PSEUDOTSUGA MENZIESII, CANOPY COVER 75%*
OLD GROWTH DOUGLAS FIR; LOWER SLOPE, FILTERED & SHADE LIGHT, MOIST. ASSOC SP: CORYLUS CORNUTI, BERBERIS NERVOSA, RUBUS PARVIFLORA, TAXUS BREVIFOLIS, ACER MACROPHYLLUM, POLYSTICUM MUNITUM, ACER CLERINATUM, SHILACENS. ASPECT NE, MODERATE SLOPE (20-45 DEG).*
MOIST PSUEDOTSUGA MENZIESII FOREST ON LOWER TO UPPER SLOPE (FILTERED SUNLIGHT). UNDERSTORY OF RHUBUS PARVIFLORUS, ACTEA RUBRA, GAULTHERIA SHALLOM, POLYSTICHUM MUNITUM, ASARUM CAUDATUM. SUBSTRATE OF FOREST LITTER WITH LOOSE ORGANIC RICH SOILS. (NO OTHER CIMIFUGA).*
MOIST LOOSE SOILED DRAINAGE AREA ON LOWER SLOPE (FILTERED SUNLIGHT). SUBSTRATE OF LEAF LITTER AND FOREST DEBRIS. ASSOC. SPS.: THUJA PLICATA, TSUGA HETEROPHYLLA, OPLAPANAX HORRIDUM, ADIANTUM PEDANTUM, POLYSTICHUM MUNITUM, ATHYRUM FILIX-FEMINA, RUBUS PARVIFLORUS, MONOTROPA URIFLORA, ACER MACROPHYLLUM.*
OLD GROWTH PSME-DOMINATED FOREST; RIPARIAN, STREAMBANK; ALL PLANTS WITHIN 10-15' FROM CREEK W/RUNNING WATER; DENSE COMPETING UNDERSTORY; 70% CANOPY COVER; ASSOC SPECIES: PSME, BENE, POMU, PTAQ, ASCA, ROGY, OSCH, ACTAEA RUBRA, PETASITES PALMATUS, TIARELL UNIFOLIATA, RIBES LACUSTRE, TAXUS BREV.*
SPARSE OVERSTORY OF PSEUDOTSUGA MENZIESII WITH INTERMEDIATE CANOPY OF ACER MACROPHYLLUM. WEST END OF POPULATION (SITE OF ODA TRANSECT MF1) HAS BEEN CLEARCUT AND HERBICIDED. LOWER SLOPE, FILTERED LIGHT, MOIST; COBBLY LOAM. ASSOC SP: PSEUDOTSUGA MENZIESII, ACER MACROPHYLLUM, ACER CIRCINATUM, CORYLUS

CORNUTA, POLYSTICHUM MUNITUM, THALICTRUM OCCIDENTALE, HYDROPHYLLUM TENUIPES, CLAYTONIA SIBIRICA, VANCOUVERIA HEXANDRA. ASPECT N, SLOPE 20-45 DEG.*
MOIST DRAW WITH SOME SEEPS, MIXED CANOPY OF ACER MACROPHYLLUM, PSEUDOTSUGA MENZIESII. COMMUNITY DOMINATED BY POLYSTICHUM MUNITUM. ASSOC SPECIES: POLYSTICHUM MUNITUM, ACHLYS TRIPHYLLA, ACTAEA RUBRA. ASPECT N-NW, SLOPE MODERATE*
LOWER SLOPE; MOIST SLOPES OF STREAM DRAWS WITH MIXED CANOPY OF ACER MACROPHYLLUM, ALNUS RUBRA, TSUGA HETEROPHYLLA, PSEUDOTSUGA MENZIESII AND THUJA PLICATA; FOREST LITTER, LOOSE, RICH, ORGANIC SOIL; ASSOC SPECIES: POLYSTICHUM MUNITUM, VANCOUVERIA HEXANDRA, ADIANTUM PEDATUM, ACHLYS TRIPHYLLA, ACTAEA RUBRA. ASPECT N-NW, SLOPE MODERATE.*
1 PLANT FOUND BENEATH MASSIVE TAXUS BREVIFOLIA WITHIN AN ALDER FLAT PLANT COMMUNITY. OTHER 13 PLANTS FOUND IN LIGHT GAP AREAS OF WIDELY SCATTERED OLD-GROWTH DOUG FIR WITH MUCH ACER MACROPHYLLUM COMPOSITION. ASPECT N AND FLAT, SLOPE SLIGHT TO EXTREME, MID-SLOPE AND BOTTOM POSITION, FILTERED LIGHT. ASSOCIATED WITH: VANCOUVERIA HEXANDRA, RUBUS SPECTABILIS, POLYSTICHUM MUNITUM, ACER CIRCINATUM, RUBUS URSINUS, ADIANTUM PEDATUM, BERBERIS NERVOSA, LEUCOLEPIS ACANTHENEURON, ACER MACROPHYLLUM, OXALIS OREGANA, ASARUM CAUDATUM, RUBUS PARVIFLORUS, RUBUS LEUCODERMIS, TOLMIEA MENZIESII, BROMUS VULGARIS, THALICTRUM OCCIDENTALIS, HYDROPHYLLUM TENUIPES, GALIUM APARINE, PHACELIA HETEROPHYLLA, DICENTRA FORMOSA, DISPORUM SMITHII, EPILOBIUM SP.*
TSHE-ACMA/POMU-OXOR AND TSHE-ACMA/GASH/POMU-OXOR PLANT ASSOCIATION. WIDELY SCATTERED OPEN-GROWN OLD GROWTH PSME WITH COMPONENT OF 60-70 YR PSME. FAIRLY OPEN OVERSTORY, DAPPLED LIGHT, WITH MUCH ACMA IN OVERSTORY CANOPY. N ASPECT, EXTREME SLOPE, MID- TO LOWER-SLOPE POSITION. ASSOCIATED WITH: ACER MACROPHYLLUM, GAULTHERIA SHALLON, OXALIS OREGANA, ASARUM CAUDATUM, BERBERIS NERVOSA, POLYSTICHUM MUNITUM*
2 PLANTS IN ABOUT 60 YR PSME CLOSED STAND ON OF WHICH IS EXPOSED TO EAST BY ROAD. 2 PLANTS IN ACMA/BENE/POMU, MOVE OPEN AND BRUSH. ONE PLANT IN SCARIFIED CLEAR-CUT, BARE GROUND. ASSOCIATED WITH: ACER MACROPHYLLUM, BERBERIS NERVOSA, CORYLUS CORNUTA, GAULTHERIA SHALLON, POLYSTICHUM MUNITUM, PSEUDOTSUGA MENZIESII. E ASEPCT, MODERATE SLOPE, MID-SLOPE POSITION, OPEN TO SHADED LIGHTING. (NOTE: A MAP ATTACHED TO EOR ALSO INDICATES A CIEL SITE IN 017S-002W. EO WAS FORMERLY MAPPED AT THIS SITE (440735N, 1225650W). HOWEVER, THERE IS NO OTHER INFORMATION RELATING TO THIS LOCATION. MAPPING HAS BEEN CHANGED TO CORRESPOND WITH TRS NOTATION AND MAPS WHICH ACCOMPANY SITE REPORT; PER JIMMY KAGAN/MK.)*
ACER MACROPHYLLUM/DOUGLAS FIR WITH SWORD FERN IN UNDERSTORY. ASSOCIATED WITH: ACER MACROPHYLLUM, PSEUDOTSUGA MENZIESII, ACER CIRCINATUM, CORYLUS CORNUTA, GAULTHERIA SHALLON, VANCOUVERIA HEXANDRA. CUT DOMINATED BY POLYSTICHUM MUNITUM. N ASPECT, MODERATE TO EXTREME SLOPE, MID- AND LOWER-SLOPE POSITION, FILTERED AND SHADED LIGHTING.*
TSHE/ACCI/POMU-OXOR PLANT ASSOCIATION. WIDELY SCATTERD LARGE (3'+ DBH) DOUGLAS FIR; SUBDOMINANT BIGLEAF MAPLE; DAPPLED LIGHT; DIVERSE HERBACEOUS LAYER. SANDSTONE/BOHANNON GRAVELLY LOAM WITH SOME POTENTIAL DIGGER INCLUSION. ASSOCIATED WITH: POLYSTICHUM MUNITUM. N ASPECT, EXTREME SLOPE, MID-SLOPE POSITION.*
PSME/ACMA/-/POMU-OXOR-VAHE. 75-80% CLOSED CANOPY OF PSME, WITH UNDERSTORY OF SCATTERED ACMA; SPARSE SHRUB LAYER, BUT LUSH HERB LAYER. MOIST SOIL OF BELLPINE. ASSOC. SPS: PSEUDOTSUGA MENZIESII, ACER MACROPHYLEUM, THUJA PLICATA, ABIES GRANDIS, TAXUS BREVIFOLIA, CORNUTA CALIFORNICA, POLYSTICHUM MUNITUM, OXALIS OREGANA,VANCOUVERIA HEXAVORA, DIASPORUM SMITHII, ATHYRIUM FILIX-FEMINA, HYDROPHYLLUM TENUIPES.*
PSEUDOTSUGA MENZIESII/ACRE MACROPHYLLUM/ACER C*
FOREST OF PSME AND ACMA, DENSE OVERSTORY AND SHRUB COVER. ASSOC. SPS: PSEUDOTSUGA MENZIESEE, ACER MACROPHYLLUM, ACER CIRCINATUM, POLYSTICHUM

MUNITUM, CORYLUS CORNUTA, VACCINIUM PARVIFORIUM, BERBERIS NERVOSA, ANEMONE DELTOIDEA.*
PSEUDOTSUGA MENZIESII/ACER MACROPHYLLUM/ACER CIRCINATUM/ POLYSTICHUM MUNITUM. GAULTHIERIA SHALLON IS A DOMINANT IN SUBPOP. THREE. FILTERED LIGHT AND THIN, MOIST ACTIVELY MOVING SOILS. ASSOC. SPS: PSEUDOTSUGA MENZIESII ACER CIRCINATUM, ACER MACROPHYLLUM, POLYSTICHUM MUNITUM, VACCINIUM PARVIFOLIUM. VANCOUVERIA HEXANDRA, GALIUM TRIFLORUM, DISPORUM HOOKERI, OXALIS CREEANA. FESTUCA SUBLIFLORA, PTERIDUM AQUILINUM.*
1991: SITE 1A ON STEEP BANK ABOVE CREEK. DENSE OVERSTORY OF ACCI WITH PSME CANOPY. GROUND COVER PREDOMINATELY POMU. SITE 1B LOCATED UNDER ACMA AND ACCI - FAIRLY OPEN UNDERSTORY NEAR CLEAR-CUT EDGE OF UNIT. GROUND COVER OF POMU AND GAULTHERIA SHALLON. UNIT 2 OPEN CANOPY OF PSME WITH SUBCANOPY OF ACCI AND RHPU. PLANTS LOCATED ON STEEP BANK OF SMALL 1ST ORDER CREEK UNDER ACMA. ASSOC. SPS.: POLYSTICHUM MUNITUM, VANCOUVERIA HEXANDRA, ADIANTUM PEDATUM, ANEMONE DELTOIDEA, DICENTRA FORMOSA, OXALIS OREGANA, TOLMIEA MENZIESII, STREPTOPUS AMPLEXIFOLIUS, CIRCAEA ALPINA, ASARUM CAUDATUM, BERBERIS NERVOSA, ACHLYS TRIPHYLLA, ADENOCAULON BICOLOR, GAULTHERIA SHALLON.*
MOSTLY MIXED ACMA-PSME OVERSTORY ON A MOIST NORTHERLY SLOPE. ASSOC SPECIES: POLYSTICUM MUNITUM, ACER MARCOPHYLLUM, PSEUDOTSUGA MENZIESII, HYDRYPHYLLUM TENUIPES, ACTAEA RUBRA, ACHLYS TRIPHYLLA.*
RIPARIAN AREA. ON BANKS OF SEVERAL BEAVER PONDS, FOUND ON WEST AND EAST BANKS (SLOPE) OF NORTH FLOWING BAKER CREEK. LOWER SLOPE TO BOTTOM POSITION, FILTERED LIGHT, MOIST. ASSOC SP: ACER MACROPHYLLUM, A. CIRCINATUM, TAXUS BREVIFOLIA, ACTEA RUBRA, SCIRPUS, CORY LUS CORNUTA, POLYSTICTUM MUNITUM, PSEUDOTSUGA MENZIESII. ASPECT N, SLOPE 0-20 DEG.*
FOUND MOSTLY UNDER DECIDUOUS TREES NEXT TO APPROX 20-YEAR-OLD PSEUDOTSUGA REGROWTH. ALMOST NO CIMICIFUGA WAS FOUND UNDER THE YOUNG DOUGLAS-FIR. MID-SLOPE TO BOTTOM POSITION, SHADE, MOIST. ASSOC SP: ACER MACROPHYLLUM, ALNUS RUBRA, HYDROPHYLLUM TENUIPES, POLYSTICUM MUNITUM, CORYLUS CORNUTA, ABIES GRANDIS, PSEUDOTSUGA MENZIESII. ASPECT N, SLOPE 20-45 DEG.*
OLD GROWTH PSEUDOTSUGA, CLEARCUT, AND THE ECOTONE BETWEEN. MID TO LOWER SLOPE POSITION; OPEN, FILTERED, & SHADE LIGHT; MOIST. ASSOC SP: PSEUDOTSUGA MENZIESII, CORNUS NUTALLII, CORYLUS CORNUTA, BERBERIS NERVOSA, POLYSTICHUM MUNITUM, RUBUS PARVIFLORA, ROSA GYMNOCARPA, TOTAEA RUBUS, RUBUS URSINUS, HYDROPHYLLUM TENNIPES. ASPECT N, MODERATE SLOPE 20-45 DEG.*
SCATTERED OLD GROWTH PSEUDOTSUEGA MENZIESII (3+ M DBH) MIXED WITH INTERMEDIATE CANOPY OF ACER MACROPHYLLUM. THE WESTERN 2 HA OF POPULATION HAS BEEN PARTIALLY LOGGED AND SPRAYED WITH HERBICIDE. CIEL LOOKS OK THUS FAR. MID-SLOPE POSITION, FILTERED LIGHT, MOIST. SOIL: LOAMY, LITTLE GRAVEL. ASSOC SP: BERBERIS NERVOSA, POLYSTICHUM MUNITUM, CORYLUS CORNUTA, THALICTRUM OCCIDENTALE, HOLODISCUS DISCOLOR, ACHLYS TRIPHYLLA, ACER CIRCINATUM, HYDROPHYLLUM TENUIPES, RUBUS PARVIFLORA. ASPECT N, SLIGHT SLOPE(0-20 DEG).*
ON HIGH TERRACE OF SOAP CREEK AT STREAM EDGE. BOTTOM POSITION, FILTERED LIGHT, MOIST; LOAM. ASSOC SP: PSEUDOTSUGA MENZIESII, TAXUS BREVIFLORA, ACER MACROPHYLLUM, ALNUS RUBEN, RHAMNUS PURSHIANA, RUBUS PARVIFLORA, SYMPHORICARPOS ALBUS, ACER CIRCINATUM, THALICTRUM OCCIDENTALE, POLYSTICHUM MUNITUM. ASPECT E, SLOPE 0-20 DEG.*
SCATTERED OVERSTORY OF OLD GROWTH PSEUDOTSUGA MENZIESII WITH INTERMEDIATE CANOPY OF ACER CIRCINATUM. PLANT ASSOC: ABGR/POMU. MID-SLOPE POSITION, FILTERED LIGHT, MOIST. GRAVELLY LOAM AND LOAM. ASSOC SP: PSEUDOTSUGA MENZIESII, ACER MACROPHYLLLUM, CORYLUS CORNUTA, HOLODISCUS DISCOLOR, POLYSTICHUM MUNITUM, ADENOCANLON BICOLOR, LACTUCA MURALIS, ACTAEA RUBRA, VANCOUVERIA HEXANDRA. ASPECT N, SLOPE 45 DEG+.*
IN AN OLD GROWTH DOUGLAS FIR FOREST; IN A NORTH FACING BOWL; SPRING/SEEP AREA. MID-UPPER SLOPE POSITION; OPEN, FILTERED, AND SHADE LIGHTING; MOIST. ASSOC SP: DOUGLAS FIR CORYLUS CORNUTA, ACTEA RUBRA, POLYSTICHUM MUNITUM, ABIES GRANDIS,

VANCOVERIA HEXANDRA, ADENOCAULON BICOLOR, PTERIDIUM AQUILINUM, VERATRUM INSOLITUM, RUBUS ?. ASPECT N, MODERATE SLOPE 20-45 DEG.*
LOWER SLOPE TO BOTTOM POSITION, FILTERED LIGHT & SHADE, MOIST. RIPARIAN AREA: PSEUDOTSUGA MENZEISII AND ACER MACROPHYLLUM. ASSOC SP: CORYLUS CORNUTA, RUBUS PARVIFLORA, POLYSTICHUM MUNITUM, SYMPHORYCARPUS ALBA, ACTEA RUBRA, ADENOCAULON BICOLOR, ACER CIRCINATUM, ABIES GRANDIS (UNDERSTORY). ASPECT N, SLOPE 0-20 DEG.*
PSME, ACMA, ALRU/COCOC, ACCI, SARA/POMU, HYTE. ADDL ASSOCIATES: VACCINIUM PARVIFLORUM, OEMLERIA CERASIFORMIS, ATHYRIUM FILIX-FEMINA, RUBUS URSINUS, GERANIUM ROBERTIANUM, ADIANTUM PEDATUM, TRILLIUM OVATUM. LOWER SLOPE, FILTERED LIGHT, MOIST LOCATION. SUBSTRATE UNKNOWN, PROBABLY SILTY CLAY LOAM.*
SECOND-GROWTH DOUG FIR; PSEUDOTSUGA MENZIESII/CORYLUS CORNUTA VAR. CALIFORNICA/POLYSTICHUM MUNITUM-OSMORHIZA CHILENSIS. (THALICTRUM POLYCARPUM-FESTUCA SUBULATA-GALIUM TRIFLORUM PRESENT.) MID-SLOPE, FILTERED LIGHT, DRY. HAZELAIR SILTY CLAY LOAM (POSSIBLY ON WILLAKENZIE &/OR RITNER, ALSO). A FEW ACTAEA RUBRA PRESNT. NO ACMA IN OVERSTORY ABOVE CIEL, BUT A FEW NEARBY.*
ROADSIDE YOUNG TO MATURE DOUGLAS FIR STANDS W/OVERSTORY COMPONENT OF BIG LEAF MAPLE AND DIVERSE HERBACEOUS LAYER DOMINATED BY SWORD FERN. ASSOC. SPECIES: PSEUDOTSUGA MENZISII, ACER MACROPHYIUM, POLYSTICHUM MUNITUM.*
2ND GROWTH PSME, 60-80 YR OLD W/SCATTERED LARGER TREES 100-140 YR OLD; CANOPY IS CLOSED OVER MUCH OF THE STAND; LOWER SLOPE, IN SHADE, MOIST. ASSOC SPECIES: TREES & SHRUBS: ALNUS RUBRA, BERBERIS NERVOSA, CASTANOPSIS CHRYSOPHYLLA, CORNUS NUTTALLII, CYTISUS SCOPARIUS, ETC. FORBS: ACHILLEA MILLEFOLIUM, ACTEA RUBRA, AGOSERIS HETEROPHYLLA, ANAPHALIS MARGARITACEA, ANEMONE DELTOIDEA, ETC. GRASSES: BROMUS SP, CYNOSURUS ECHINATUS, DACTYLIS GLOMERATA, FESTUCA SP, HOLCUS LANATUS, POA ANNUA & POA PRATENSIS.*
PSME-ACNA/COCOC-BENE/PONU-OXOR. WNW ASPECT ON 80%+ SLOPE, LOWER SLOPE, IN SHADE, MOIST. ASSOC. SP.: SMILACINA STELLATE, TRILLIUM OVATUM, SMILACINA STELLATA, TRILLIUM OVATUM, SMILACINA PACEMOSA. O*
OLYIC SILT LOAM, BRIGHT AND FILTERED LIGHT, MOIST, LOWER SLOPE. ASSOC SP: P. MENZIESII, A. MACROPHYLLA, HAZEL, VINE MAPLE, OCEAN SPRAY, SWORD FERN, PATH FINDER, OREGON GRAPE, WILD ROSE*
IN DRY STREAMBED (MOIST-WET SUBSURFACE) IN MIXED EVERGREEN FOREST. PSME-ACMA RIPARIAN (UPLAND IS PSME/RHDI-BEPI). ASSOCIATED WITH: ACMA, PSME, CORYLUS CORNUTA, SYAL, POMU, MELICA SUBULATA, ADBI, TELLIMA GRANDIFLORA, DIHO, GALIUM TRIFLORUM, PHILADELPHUS LEWIII, BERBERIS NERVOSA, TONELLA TENELLA, OSMORHIZA CHILENSIS, QUERCUS CHRYSOLEPIS, TRIENTALIS LATIFOLIUS. 80% OVERSTORY, 15% UNDERSTORY, 20% SHRUB, 40% COVER.*
MIXED CONIFER-HARDWOOD STANDS. SW ASPECT, SLIGHT 0-20% SLOPE, UPPER SLOPE POSITION, FILTERED LIGHT, MOIST. ASSOC. SP: PSME, ACMA, ACCI, COCO, PTAQ, OXOR, CLSI, GATR, ASOA, MAST.*
E/NE FACING BANK ABOUT 30 FT FROM LOG CREEK; MODERATE SLOPE; FILTERED LIGHT; MOIST SOIL; ALLUVIUM SOIL; PLANT ASSOC: PSEMEN/ACECIR-OEMCER-RUBSPE/POLMUN, OXAORE.*
GROWING ON BANKS OF DRY (SEASONALLY WET) RAVINE, JUST ABOVE ROCKS & BOULDERS. STREAM BED-MOSSES ONLY. BANKS-THUPLI & TSUHET/POLMON, VIOSEM, FESSUB, ETC. SCATTERED ACEMAC, ACTRUB, ARUSYL. ON DRY UPPER SLOPE IN OPEN & FILTERED LIGHT. SOIL: DUFF & ORGANICS ADJ TO ROCKY STREAM BED.*
GROWING AMONGST LARGE BLOW DOWN-FAIRLY OPEN CANOPY. OTHERS HAVE LIGHT SUB-SUBCANOPY OF CORYLUS CORNUTA, ACER CIRCINATUM, CORNUS NUTTALLIII, PSEUDOTSUGA. ONE PLANT HAS DENSE ACER CIRCINATUM OVER CANOPY. N ASPECT, EXTREME (45 DEG+) SLOPE, MID-SLOPE POSITION. ASSOCIATED WITH: POLYSTICHUM MUNITUM, GAULTHERIA SHALLON, GALIUM OREGANUM, ACER CIRCINATUM, ASARUM CAUDATUM, ADENOCAULON BICOLOR, SYNTHYRIS RENIFORMIS, VERATRUM CALIFORNICUM, DISPORUM SMITHII, TRILLIUM OVATUM.*

HABITAT IS OPEN BECAUSE OF THE ROAD AND CLEARCUT DIRECTLY BELOW. POPULATION DOES NOT EXTEND UPSLOPE UNDER THE MORE CLOSED FOREST CANOPY. ASPECT N (20 DEG), MODERATE 20-45 DEG, MID-SLOPE, OPEN-FILTERED LIGHT.*
LARGE MATURE PSEUDOTSUGA MENZIESII/ACER MACROPHYLLUM OF SMALL DRAINAGE, MOIST HABITAT BUT NO RUNNING WATER. ASSOCIATED WITH: PSEUDOTSUGA MENZIESII, ACER MACROPHYLLUM, POLYSTICHUM MUNITUM, ACHYLYS TRIPHYLLA, ACER CIRCINNATUM, VANCOUVERIA HEXANDRA, GERANIUM ROBERTIANUM, THALICTRUM OCCIDENTALE, DISPORUM HOOKERI, CAMPANULA SCOULERI. ASPECT NW, SLOPE MODERATE (20-45 DEG), MID-SLOPE POSITION.*
SITUATED AT BASE OF LARGE ACER MACROPHYLLUM UNDER PSEUDOTSUGA MENZIESII CANOPY. STEEP N FACING SLOPE, LOWER SLOPE POSITION, COVERED WITH POLYSTICHUM MUNITUM. CLASSIC CIEL HABITAT. ASSOCIATED WITH: CORYLUS CORUNATA, HOLODISCUS DISCOLOR, BERBERIS NERVOSA, ACHLYS TRIPHYLLA.*
MOIST FOREST ON NW SLOPE NEAR HEAD OF SMALL DRAINAGE. ASSOCIATED WITH: PSME, THPL, ACMA, ACCI, POMU, BENE, ABGR. ASPECT 320-350 DEG., SLOPE MODERATE (20-45 DEG). LOWER TO MID SLOPE POSITION.*
YOUNG DOUGLAS FIR FOREST WITH FAIRLY CLOSED CANOPY AND A SPARSE UNDERSTORY OF GAULTHERIA SHALLON. SOME ACER CIRCINNATUM AND CORYLUS CORNUTA IN VICINITY. ASSOCIATED WITH: POLYSTICHUM MUNITUM, PTERIDIUM AQUILINUM. FLAT ASPECT, IN SHADE.*
LOCATED ON A MOIST FORESTED NORTH SLOPE. DOMINATED BY ACMA, PSME, ABGR/POMU, ACTR. ASPECT 358 DEG, SLOPE MODERATE (20-45 DEG), MID-SLOPE POSITION. ASSOCIATED WITH: GALIUM TRIFLORUM, DISPROUM SMITHII, VANOCUVERIA HEXANDRA, RUBUS URSINUS, CAREX HENDERSONII, ATHYRIUM FILIX-FEMINA, BROMUS VULGARIS, CORYLUS CORNUTA.*
MIXED CONIFER WITH LARGE ACMA AND POTR. N, W ASPECT, SLIGHT TO MODERATE SLOPE;, LOWER TO MID-SLOPE POSITION; SHADE TO FILTERED LIGHT (RELATIVELY OPEN CANOPY), DRY TO MOIST. ASSOC.SP: ACER MACROPHYLLUM, ACTAEA RUBRA, ADENOCAULON BICOLOR, ANEMONE OREGANA, ASARUM CAUDATUM, BARBERIS NERVOSA, CAMPANULA SCOULERI, FRAGARIA VESCA, GAULTHERIA SHALLON, HOLODISCUS DISCOLOR, LIGUSTICUM APIIFOLIUM, LILIUM COLUMBIANUM, LONICERA HISPIDULA, OSMORHIZA CHILENSIS, POLYSTICHUM MUNITUM, PSEUDOTSUGA MENZIOSII, RUBUS PARIVIFLORUS, SATUREJA DOUGLASII, SMILACINA RACEMOSA, SYMPHORICARPOS ALBUS, SYNTHYRIS RENIFORMIS, TOXICODENDRON DIVERSI., TRILLIUM OVATUM, VANCOUVERIA HEXANDRA, WHIPPLEA MODESTA, MONOTROPA UNIFLO., ILEX AQUIFOLIA.*
MATURE PSME ~115 YEARS OLD IN A SMALL WELL-SPACED STAND SHOWING LARGE LOWER LIMBS AND "WOLFY" OPEN-GROWN CHARACTERISTICS. CORYLUS CORNUTA AND CORNUS NUTTALLII MID-CANOPY, VERY LITTLE ACER. POMU PREDOMINATING IN HERBS. N & E ASPECT; MODERATE, 35 DEG SLOPE; MID-SLOPE TOPOG.POS.; FILTERED LIGHT; MOIST- VERY MOIST IN BOTTOM. SUBSTRATE SOFT & UNSTABLE WHERE PLANTS ARE GROUPED. ASSOC.SP: POMU, COCO, CONU, PSME, ACTAEA RUBRA.*
PLANTS ARE BLOOMING IN AN OBVIOUS SLUMP. OTHER SLUMPING IS ACTIVE. PLANTS ARE ON UPHILL SLOPE OF A ROAD THAT SEPARATES THE SITE FROM NORRIS CREEK. N ASPECT; EXTREME, MORE THAN 45 DEG SLOPE; MID SLOPE TOPOG. POSITION; FILTERED LIGHT; MOIST. VERY UNSTABLE SLOPE IS ACTIVELY SLUMPING. ASSOC.SP: PSME, ACMA, POMU, RUPA.*
MIXED CONIFEROUS FOREST. SOIL: FARVA COBBY LOAM & PINEHURST LOAM. N, NE ASPECT, 40-60% SLOPE, ON UPPERSLOPE. FILTERED LIGHT, MESIC MOISTURE REGIME. ASSOC.SP.: TREE OVERSTORY 45%: PSME 25%, ABGR 10%, CEDE 5%; SHRUBS 1%: SACE 1%, HODI, RUBUS PARVIFLORA; HERBS 50%: ACTAEA RUBRA 10%, DELPHINIUM GLAUCUM 5%, ANEMONE DELTOIDES 2%, POLEMONIUM OCCIDENTALE 10%.*
MIXED CONIFEROUS FOREST. SOIL: ORGANIC/DUFF; SOME TATOUCHE GRAVELY LOAM (840). N-NE ASPECT, 40-60% SLOPE. FILTERED LIGHT, ESP ON NORTH SLOPES, SEMI SHADED TO OPEN, STEEPER SLOPES. TREE OVEESTORY 25%: PSME 25%, ABDR 10%, ACMA, CEDE; SHRUBS: ELDERBERRY SACE, HODI OCEANSPRAY, RUBUS PARVIFLORUS; HERBS: ACTACEA RUBRA, POLEMONIUM OCCIDENTALE, DELPHINIUM GLAUCUM, ANEMONE DELTOIDES. SLOPES. SLOPES. MESIC MOISTURE REGIME.*
1989 CLEARCUT, N ASPECT, 30-40% SLOPE, MIDDLE SLOPE, BRIGHT LIGHT, MOIST*

2ND GROWTH PSME FOREST WITH OCC. ACEMAC. N ASPECT, MODERATE SLOPE (20-45 DEG), LOWER SLOPE POSITION, FILTERED LIGHT.*
(1 & 2) STEEP N-FACING ROAD CUTBANK. (3) DENSE, BRUSHY CLEARCUT. (4) CLEARCUT EDGE OF PSEMEN/ACENAC/THUPLI OLD-GROWTH & OLD GROWTH FOREST. ASSOC SPECIES: ALNUS RUBRA, RUBUS PARVIFLORUS, POLYSTICHIUM MINITUM, VICIA GIGANTEA, PTERIDIUM AQUILINUM, SYMPHCRICARPOS, TELLIMA GRANDIFLORA, DISPORUM SMITHII, PSEUDOTSUGA MENZIESII, RUBUS DISCOLOR, VANCOUVERIA HEXANDRA, ACHLYS TRIPHYLIA, DISPORUM HOOKERI, CYNOGLOSSUM GRANDE, PTERIDIUM AQUILINUM, GAULTHERIA SHALLON, RUBUS LEUCODERMIS.*
ROADSIDE POPULATION AT EDGE OF DOUGLAS FIR FOREST, ABOUT 50 YEARS OLD. LOWER SLOPE POSITION; OPEN LIGHT, MOIST. ASSOC SPECIES: RUSP, RUPA.*
STEEP WALL OF RAVINE JUST ABOVE A CREEK; SMALL OPENING IN CONIFEROUS FOREST, LOWER BANK JUST ABOVE CREEK; PLANER MICROTOPOGRAPHY; GRAVELLY SOIL; PLANT ASSOC: OPENING=RUBFAR- ARUSTL-CIMELA; SURROUNDING=PSEMEN/RUBPAR-POLMUN. ASSOC SPECIES: NO MOSS LAYER; HERB LAYER: ADIALE (OPEN); NO LOW SHRUB LAYER; HIGH SHRUB LAYER: RUBPAR, ARUSYL, SAMBUCUS SP, SALLIX SP (DENSE); TREE LAYER: (NONE IN OPENING) PSEMEN, THUPLI (WITHIN 42' RADIUS) (DENSE CANOPY COVER).*
1999: MIXED DECIDUOUS CONIFEROUS FOREST, N SLOPE W/FILTERED LIGHT, SEEPY DRAW NEARBY. SOIL: LOAM, LITTER & DUFF. 360 DEG ASPECT, 30-70% SLOPE. PLANT ASSOC: TSHE/BENE/OXOR CHSI 13. ASSOC SPECIES: ACER MACROPHYLLUM (85% COVER), OXALIS OREGANA (70%), POLYSTICHUM MUNITUM (50%), BERBERIS NERVOSA (25%), PSEUDOTSUGA MENZIESII (10%), ACER CRICINATUM (5%), VACCINIUM PARVIFOLIUM (2%), ROSA GYMNOCARPA (1%), ACTAEA RUBRA (1%), OEMLERIA CERASIFORMIS (TRACE), PTERIDIUM AQUILIUM (T), GAULTHERIA SHALLON (T), RUBUS URSINUS (T), BROMUS VULGARIS (T). 1996: PSEMEN FOREST, OCC ACEMAC, LOWER SLOPE, FILTERED LIGHT, MOIST, NO ASSOC SPECIES GIVEN.*
1) UNLOGGED, STEEP SLOPE W/LARGE OLD PSEMEN NEARBY, MID-UPPER SLOPE. LIGHT: FILTERED TO SHADED, MOIST. SOIL: SHALLOW & CRUMBLY. PSEMEN/ACEMAC-PSEMEN-ALNRUB/TSUHET-CORCOR/POLMUN. ADDITIONAL ASSOCIATED SPECIES: VANCOUVERIA HEXANDRA, GALIUM TRIFLORUM, PROSARTES HOOKERI, ACTAEA RUBRA, TRILLUM OVATUM, PTERIDIUM AQUILINUM, BERBERIS NERVOSA, OXALIS OREGANA, ACER CIRCINATUM. 2) MATURE PSEMEN FOREST W/UNDERSTORY OF CORYLUS CORNUTA CALIFORNICA, ACER CIRCINATUM, BERBERIS NERVOSA, POLYSTICHUM MUNITUM, LARGE ACER MACROPHYLLUM ARE SCATTERED INTERMEDIATES. A RECENT CLEARCUT IS DOWNSLOPE ABOUT 100 FT. SUBPOP IS IN A STEEP DRAW DOMINATED BY PSEMEN/ACEMAC/POLMUN. ASSOC SPECIES: THOSE LISTED ABOVE PLUS ACHLYS TRIPHYLLA, GALIUM TRIFLORUM, VANCOUVERIA HEXANDRA, RUBUS PARVIFLORUS, HOLODISCUS DISCOLOR, ALNUS RUBRA.*
SMALL BENCH, MID SLOPE WITH NORTH ASPECT NEXT TO SCAR LEFT BY ROOTWAD OF BLOWN DOWN TREE. FILTERED LIGHT. MOIST-DRY. SOILS: LOOSE FRIABLE. ASSOC SPECIES: PSME, ACMA, POMU, BENE, EUOR, ACRU.*
ROADSIDE POP ON E FACING SLOPE, NEXT TO BIERCE CREEK RIPARIAN. CANOPY OF ALNUS RUBRA, ACER MACROPHYLLUM, PSEUDOTSUGA MENZIESII & TSUGA HETEROPHYLLA, SOMEWHAT BRUSHY W/RUBUS PARVIFLORUS, LOWER & BOTTOM SLOPE, SHADED & MOIST HABITAT. ASSOC SPECIES: RUBUS PARVIFLORUS, RUBUS SPECTABILIS, POLYSTICHUM MUNITUM, ANAPHALIS MARGARITACEA, GEUM MACROPHYLLUM, TELLIMA GRANDIFLORA, CLAYTONIA SIBIRICA, RUBUS URSINUS, RHAMNUS PURSHIANA, OXALIS SUKSDORFII, MARAH OREGANUS, CORNUS NUTTALLII, BROMUS C.F. CARINATUS.*
1) LOCATED ALONG N FACING BANK OF SMALL CREEK ON STEEP NE FACING SLOPE. FAIRLY CLOSE CANOPY OF ACER MACROPHYLUM REGEN SPROUTS, 4-5 FT PSEUDOTSUGA MENZIESII, RUBUS PARVIFLORUS & SALIX. ASSOC SPECIES: SALIX LUCIDA SSP LASIANDRA, S. SITCHENSIS, S. HOOKERIANA, TELLIMA GRANDIFLORA, ADIANTUM PEDATUM, POLYSTICHUM MUNITUM, RUBUS URSINUS, ASARUM CAUDATUM, DISPORUM SMITHII, IRIS TENAX, OEMLERIA CERASIFORMIS, AQUILEGA FORMOSA, VACCINIUM PARVIFLORUM, CORYLUS CORNUTA, ROSA GYMNOCARPA, DICENTRA FORMOSA, LUZULA PARVIFLORA. 2) LOCATED ALONG N FACING BANK OF SMALL CREEK ON STEEP N FACING SLOPE-FAIRLY OPEN. SMALL 3-4 FT PSEUDOTSUGA MENZIESII ABOVE WITH CORYLUS CORNUTA, RHAMNUS PURSHIANA, VACCINUM PARVIFLORUM & RUBUS PARVIFLORA. ASSOC SPECIES: ADIANTUM PEDATUM,

AQUILEGIA FORMOSA, VACCINUM PARVIFLORUM, POLYSTICHUM MUNITUM, BERBERIS NERVOSA, ANAPHALIS MARGARITACEA, PTERIDIUM AQUILINUM, RUBUS URSINUS.*
N-FACING ROADCUT, TSUHET-ACEMAC/POLMUN-ADIALE. LOWER SLOPE POSITION, FILTERED, MOIST.*
PSME/COCOC-ACCI/POMU FOREST. MOIST N SLOPE FOREST DOMINATED BY PSME BUT W/A FEW HARDWOODS PRESENT (ALRU, FRLA, ACMA, QUGA). ASSOC SPECIES: PSME, FRLA, ACRU, CORYLUS CORNUTA VAR CALIF, OEMLERIA CERASIFORMIS, AMALANCHIER ALNIFOLIA, ACER CIRCINATUM, POMU, SMILACINA RACEMOSA, ACTAEA RUBRA, SYMPHORICARPOS ALBUS, CLAYTONIA SIBIRICA.*
HIGH COVER OF BIGLEAF MAPLE, LARGEST PATCHES ARE RIGHT IN THE DRAW WITH SCATTERED PATCHES OUT OF DRAW. OCCURS UNDER SOLID MAPLE AS WELL AS UNDER SOLID DOUG FIR. DRAW-UPPER SLOPE POSITION, PLANAR MICROTOPOGRAPHY. SOIL: GRAVELLY/METAVOLCANIC. ASSOC SPECIES: PSME (60% COVER), ACMA (50%), BENE (60%), AMAL (15%), BEPI (5%), ACGL (3%), COCOC (10%), DISPORUM HOOKERI (1%), GALIUM APARINE (5%), TRILIUM OVATUM (1%), GALIUM TRIFLORUM (1%), MELICA SUBULATA (1%), OSMERHIZA CHILENSIS (1%).*
1)UPPER SLOPE DRAW W/HIGH COVER OF ACMA & PATCHES OF DENSE DWARF OREGON GRAPE; PLANER/CONCAVE MICROTOP; COBBLY, METAVOLCANIC SOIL; ASSOC SPECIES: PSME (50% COVER), ACMA (50%), BENE (60%), HODI (10%), COCOC (2%), RUPA (1%), POLYSTICUM MUNITUM (1%). 2) UPPER SLOPE; SHALLOW WIDE DRAW W/DOUG FIR & MAPLE & DENSE DWARF OREGON GRAPE; PLANAR/CONCAVE MICROTOP; COBBLY/METAVOLCANIC SOIL; ASSOC SPECIES: PSME (60%) ACMA (30%), ABCO (3%), BENE (80%), COCOC (15%), AMELANCHIER ALNIFOLIA (5%), SYMPHOROCARPUS MOLLIS (2%), SMILACINA STELLATA (3%), TRIENTALIS LATIFOLIAS (2%).*
RIPARIAN; MOIST, COOL, LOTS OF VEGETATION; ROCKY SOIL; OPENING IN CANOPY; CANOPY CLOSURE ~40%; ASSOC SPECIES: HODI, POMU, ASARUM CAUDATUM, CADE, TAXUS BREVIFOLIA, CLINTONIA UNIFOLRA, OSM CHILENSIS, PSME, PETASITES PALMATUS.*
LOWER SLOPE; FILTERED LIGHT; MOIST; PLANT COMM: ALEMAC-PSEMEN-TSUHET/ACECIR/POLMUN; NO ASSOC SPECIES GIVEN.*
BOTTOM TO UPPER SLOPE; FILTERED LIGHT; ASSOC SPECIES: ACTEA RUBRA, POLYSTICHUM MUNITUM, ACER CIRCINATUM, HYDROPHYLLUM TENUIPES, TELLINA GRANDIFLORA, DICENTRA FORMOSA, GALIUM SPP, HOLODISCUS DISCOLOR, CORYLUS CORNATA, HERARLEUM.*
FLOOD PLAIN. MOIST BOTTOM/SLOPE. SHADY. ASSOC SPECIES: ACMA POBA.*
ALL SITES: POP IS ON N ASPECT OF RIPARIAN AREA, ALTHOUGH 8 PLANTS WERE FOUND ON S ASPECT; VERY STEEP W/LOOSE GRAVELLY SOILS; POP LOCATED UNDERNEATH GAPS IN THE CANOPY; LOWER SLOPE; FILTERED LIGHT; MOIST; ASSOC SPECIES: PSME, ACMA, ALRU, SHRUB LAYER IS OF POMU, ADPE, CLUN, GASH, TROV.*
WET BANK. ASSOCIATED WITH ALRU, ACMA, THPL, CORYDALIS SCOULERI, STACHYS COOLEYAE, EQUISETUM TOLMIAEA.*
OLD PARTIAL CUT W/MANY REMAINING MID-MATURE & MATURE DF & A FEW SCATTERED WHITE/GRAND FIR, MOD-HEAVY BURSH, MOD GROUND COVER & HEAVY LITTER; PLANT COMM: PSME/BENE; GRAVELLY CARIS OFFENBACHER SOIL; HYDRIC MOISTURE REGIME; FILTERED/SHADED; ASSOC SPECIES: TREES: PSME (60% COVER), ABGR (3%), RHPU (TRACE), ACMA (5%); SHRUBS: ACGL (15%), SYAL (5%), RISA (5%), RUPA (7%), HODI (3%), BENE (5%), BEPI (1%), SYMO (2%); HERBS: GALIUM (1%)*
PLANTS FOUND IN DRY CREEKBED, SIDE OF CREEKBED & AT CONFLUENCE OF TWO DRAWS; PLANT COMM: RIPARIAN PSME; CONCAVE MICROTOP; LOAM SOIL; HYDRIC MOISTURE REGIME; SHADED; ASSOC SPECIES: CALOCEDRUS DECURRENS, PSEUDOTSUGA MENZIESII, TAXUS BREVIFOLIA, BERBERIS NERVOSA, CORYLUS CORNUTA CALIFORNICA, PHILADELPHUS LEWISII, RUBUS URSINUS, SYMPHOROCARPUS ALBA, SYMPHOROCARPUS MOLLIS, WHIPPLEA MODESTA, ADENOCAULON BICOLOR, GALIUM TRIFLORUM, SYNTHRIS RENIFORMES.*
RIPARIAN, 5-10' FROM STREAMBED; DRAW; CONCAVE MICROTOP; LOAM CARIS OFFENBACHER SOIL; HYDRIC MOISTURE REGIME; FILTERED LIGHT; ASSOC SPECIES: PSME (60% COVER), ACMA (10%), ALRH (5%); SHRUBS: SYAL (70%), PHLE (20%), RUVR (3%); HERBS: SMST (10%), GATR (2%), AQFO (1%), PRVU (1%).*

UPPERSLOPE/DRAW, CLEARCUT; CONCAVE MICROTOP; SOIL: JAYAR, VERY GRAVELLY LOAM; HYDRIC/MESIC MOISTURE REGIME; OPEN/FILTERED LIGHT; PLANT COMM: ABCO/BENE; HABITAT: IN DRAW IN CLEARCUT (~20 YR OLD) & IN NARROW OPEN WET MEADOW; ASSOC SPECIES: TREES: PSME (20% COVER), PIPO (15%), ABCO (5%); SHRUBS: BENE (5%), SYMO (10%), RUPA (3%), RISA (1%), ACGL (2%); HERBS: ELGL (30%), BRVU (10%), TRCA (5%), SMST (5%), LAPO (20%), SYRE (2%), ADBI (2%), AQFO (2%).*
STEEP, STEEP SLOPE (90+%) IN DOUGLAS FIR WOODS. BELOW MID-SLOPE (MOST OF UPPER SLOPE IS NEARLY BARE). THIS PLANT IS NEAR THE EDGE OF THICKER VEGETATION. SHADED, MOIST AREA. BASALT BEDROCK. ASSOC SPECIES: PSME, THPL, RUPA, POMU.*
PERENNIAL STREAM, CONIFEROUS FOREST. MIDSLOPE, IN DRAW. SOIL: ORGANIC LAYER W/LITTER, BRANCHES ON TOP. ASSOC SPECIES: PSEUDOTSUGA MENZIESII, THUJA PLICATA, CORYLUS CORNUTA, ALNUS RUBRA, POLYSTICHUM MUNITUM, BERBERIS NERVOSA, ACTAEA RUBRA, PHYSOCARPUS CAPITATA, CIRCAEA ALPINA, VANCOUVERIA HEXANDRA, MOSS SPP, GALIUM TRIFLORUM, ACHLYS TRIPHYLLA, TRISETUM CERNUUM, TOLMIEA MENZIESII, MITELLA CAULESCENS. CANOPY COVER 60-90%.*
MIXED CONIFER/HARDWOOD FOREST, MIDSLOPE/DRAW POSITION. SOME ALONG TRAIL, SOME IN A SMALL, PROBABLY INTERMITTENT SEEPAGE. 1) UNDULATING MICROTOPOGRAPHY. SOIL: ROCKY/BOULDERY W/ORGANIC MATERIAL. ASSOC SPECIES: DENSE MOSS LAYER. HERB LAYER: (MODERATE COVER) *
DRAW; CONCAVE MICROTOP; JAYAR LOAM; HYDRIC MOISTURE REGIME; OPEN/FILTERED LIGHT; HABITATS RANGE FROM ABCO/PSME FOREST EDGE & WITHIN N FACING SLOPE TO MOIST RIPARIAN DRAW W/ACMA/HODI/DICENTIA FORMOSA/SMST/MONTIA/HYDROPHYLLUM OCC TO DRY RIPARIAN W/ACER/SYAL/POMU/COCOC TO MOIST MEADOW W/SEEPS & FULL SUN. PLANT COMM: CLEARCUT; ASSOC SPECIES: TREES: ABCO (30% COVER), PSME (20%), CADE (5%), SASC (2%), ACMA (10%), ACGLD (40%); SHRUBS: HODI (20%), SYMO (15%), SYAL (10%), RISA (7%), COCOC (10%), RUPA (15%), RIVI (3%), RILO (10%); HERBS: SMST (10%), LAPO (5%), MITR (7%), DIFO (10%), BENE (7%), VIGL (3%), FRUE (5%), ADBI (3%), SMCA (2%), COLI (3%), MOSI (5%).*
DRAW; CONCAVE MICROTOP; SOIL: GRAVELLY, CARIS OFFENBACKER; FILTERED LIGHT; HYDRIC MOISTURE REGIME; PLANT COMM: DOUGLAS FIR FOREST; BASAL AREA EST: 30"; HABITAT DESC: RIPARIAN DRAWS ON N FACING SLOPES, DRAWS MOIST, ALWAYS W/FILTERED SUNLIGHT OF ACER MACROPHYLLUM. POP CREEP INTO FOREST IN A FEW PLACES, BUT ARE MOSTLY LIMITED TO MOIST LOCATIONS IN DRAWS. ASSOC W/MOISTURE LOVING FORBS. POP DENSITIES INCREASE AS BOTH PSME & POMU COVER INCREASES & SLOPE DECREASES. ASSOC SPECIES: TREES: PSME (50% COVER), ACMA (40%), CADE (5%); SHRUBS: RUPA (40%), RISA (20%), COCOC (15%), AMAL (10%); HERBS: BENE2 (30%), SYMO (20%), TROV (10%), POMU (20%), GAAP (7%), SMST (7%), SMRA (5%), OSCH (3%), ASMA (3%), SYRE (2%), ADBI (2%), DIHO (2%), LILIUM SPP (1%).*
DRAW; CONCAVE MICROTOP; SOIL: GRAVELLY, JAYAR; OPEN/FILTERED LIGHT; HYDRIC/MESISC MOISTURE REGIME; PLANT COMM: MIXED CONIFER/PSME; BASAL AREA EST: CLEARCUT 35"; HABITAT DESC: CLEARCUT ON N FACING SLOPE; RIPARIAN DRAW W/SEEPY RUNNING WATER; ACMA DOMINANT REGENERATING TREE PROVIDES FILTERED SUNLIGHT HABITAT FOR FROM DRAWS ~250-300 FT; HODI DOMINANT SHRUB; MUCH FULL SUN EXPOSURE ON PLANTS; ECOTONE AT SE END OF UNIT BECOMES MORE MESIC & DENSITIES DECLINE. ASSOC SPECIES: TREES: ACMA (60% COVER), PSME (10%), ABCO (3%), CADE (5%), SASC (2%), PIPO; SHRUBS: SYMO (10%), HODI (15%), RILO (10%), RIVI (3%), RUPA (10%), SYAL (20%); HERBS: DIFO (20%), GAAP (20%), HYOC (20%), TROV (10%), VIGL (15%), NEPA (15%), HYPE (5%), BENE2 (5%), CANUN (3%), SMST (5%), POMU (3%), ASCA (5%), ELGL (25%), MITR2 (3%), OSCH (3%), CYFR (2%), FRVE (2%).*
IN A PARTIAL CUT WITH A FEW REMAINING MATURE PSME AND ABCO. SOMEWHAT BRUSH IN PATCHES, GRASSY IN OTHER AREAS. AREAS OF POOR CONIFER REGENERATION. STRONG HERB LAYER, SOME WEEDS LIKE BULL THISTLE. SCATTERED BANEBERRY. PLATEAU. PINEHURST LOAM SOIL. OPEN LIGHT. MESIC MOISTURE REGIME. PLANT COMM: ABCO/BENA/LIBOL. ASSOC SPECIES: TREES: PSME (20% COVER), ABCO (10%). SHRUBS: SYAL (10%), RISA (3%), AMAL (3%), BENE (2%). HERBS: ELGL (7%), BRCA (5%), LAPO (4%), TRCA (3%),

POPR (2%), VAHE (2%), VIAM (1%), ACRU (2%), RUAC (2%), SMST (2%), CIVU (1%), DIHOO (1%), SYRE (1%), HIAL (1%), AGGR (1%), FRVE (1%).*
NORTH ASPECT, MODERATE SLOPE, OPEN/FILTERED LIGHT, MOIST, ASSOC SPECIES: BIG LEAF MAPLE. [NO GENDESC GIVEN IN 1980]*
MOIST BOTTOM/SLOPE; FILTERED LIGHT; ASSOC SPECIES: ACMA, POTR, SMRA, PSME.*
ALL 3 SITES: FOREST EDGE CUT, NEXT TO ROAD; LOWER/MID SLOPE; FILTERED LIGHT; DRY; [NO ASSOC SPECIES GIVEN].*
POP IN FOREST & FOREST EDGE; RIDGELINE; SHADED; DRY; ASSOC SPECIES: ABIES GRANDIS, ACER CIRCINATUM, ACER MACROPHYLLUM, ACHLYS TRIPHYLLA, ADENOCAULON BICOLOR, ALNUS RUBRA, ANAPHALIS MARGARITACEA, ANEMONE DELTOIDEA, AQUILEGIA FORMOSA, ARENARIA MACROPHYLLA,*
BASE OF STEEP CLIFF ON STEEP BOULDER RUN OFF. MID/LOWER SLOPE; FILTERED/SHADE; MOIST/DRY; ASSOC SPECIES: POLYSTICHUM MUNITUM, RUBUS PARVIFLORUS, ACER CIRCINATUM, PSEUDOTSUGA MENZIESEII, GAULTHERIA SHALLON, ACER MACROPHYLLUM.*
OLD CLEARCUT, BURNED, TREES ~15 YR OLD; PLANTS ON N SIDE OF DRAW ONLY; PLANTS OCCUR UNDER & AROUND THE MAPLES; MID SLOPE; FILTERED LIGHT; MOIST; ASSOC SPECIES: BIG LEAF MAPLE, VINE MAPLE, THIMBLEBERRY, ACTAEA RUBRA, CEONOTHUS, SWORD FERN, ANTHANSIS FELIX-FEMINA, BEER FERN.*
1) NE BOTTOM SLOPE; PSME, ACMA, POMU, ~80 YRS; FAIRLY OPEN MID-CANOPY; ROCKY SOIL; FAIRLY OPEN TO NE; FILTERED LIGHT; MOIST; ASSOC SPECIES: PSME, ACMA, POMU, ACCI, COCO, OXOR, TROV, ADDE, ACRU. 2) STEEP N FACE, LOWER SLOPE, STONEY SOIL, SHADED TO S & W, OPEN NE, PSME, ACMA CANOPY; MID-CANOPY FAIRLY OPEN; TREES ~60-80 YRS; MOIST; ASSOC SPECIES: PSME, TSHE, ACMA, ACCI, VAPI, RHPU, COCO, GASH, OXOR, AOPE, POMU, ACRU, ROGY, TROV.*
1) 10 X 10 M CLEARING, SURROUNDED BY PSME (10 M TALL), ACMA (20 M), ALRU (12 M); DENSE LAYER OF TALL HERBS/SHRUBS (1-5 M); RUBUS PARVIFOLIA 20%, BRACKEN 20%, POMU 10%, LOGGING DEBRIS; UPPER SLOPE; OPEN/FILTERED LIGHT; MOIST; ASSOC SPECIES: PLAQ, RUPA, POMU, LAPO, ACCI, ACMA, TRLA, GRAP, OXLO, HYTE, ADPE, RULE, CLSI. 2) HEAD WALL OF N DRAW; LOTS OF SLASH IN DRAW; POP ON EDGE OF CUT FOREST; UPPER SLOPE; OPEN LIGHT; MOIST; SOIL: SHALLOW LOOSE OVER SANDSTONE; ASSOC SPECIES: ACMA, PSME, ALRU, POMU, RUPA, PTAQ, EPPA.*
OLD GROWTH ALONG ROCKY OUTCROP/COAST MTNS.*
MIXED CONIFER SECOND GROWTH RIPARIAN.*
[NONE GIVEN]*
CONIFEROUS FOREST.*
OLD GROWTH OPENING.*
[NONE GIVEN]*
HABITAT: PSME PLANTATION W/YOUNG ACER MACROPHYLLUM; UPPER SLOPE; PLANTS FOUND IN ALL LIGHT CONDITIONS, OPEN-SHADE; MOIST; ASSOC SPECIES: RUUR, RULA, RULU, RUDI, ACMA, POMU; SHRUBS INCLUDE HOLODISCUS DISCOLOR & CORYLUS CORNUTA, UNDERSTORY PRIMARILY DOMINATED BY RUBUS & POLYSTICHUM MUNITUM.*
1) MID/LOWER SLOPE ABOVE DRAW; GAP CREATED BY ACER MAC BLOW-DOWN; FOREST CANOPY AROUND GAP IS CLOSED; SATURATED SOIL & SLIDE PRONE; PLANT GROWING UNDER A STUNTED CORYLUS CORNUTA; HEAVY POP OF ADIANTUM PEDATUM; FILTERED LIGHT; MOIST; ASSOC SPECIES: ACER MACROPHYLLUM, BERBERIS NERVOSA, CORYLUS CORNUTA, GAULTHERIA SHALLON, HOLODISCUS DISCOLOR, PSEUDOTSUGA MENZIESII, RUBUS PARVIFLORUS, RUBUS SPECTABILIS, OXALIS OREGANA, BROMUS VULGARIS. 2) CUTBANK ABOVE RD 14-2-16; SATURATED, FRAGILE SOIL; GAP ARTIFICIALLY MAINTAINED; FOREST CANOPY OVERHANGING FROM S; OPEN TO RD N; FAIRLY HEAVY MID-CANOPY ON CUTBANK; MID SLOPE; FILTERED LIGHT; MOIST; ASSOC SPECIES: ACER MACROPHYLUM, ALNUS RUBRA, RUBUS SPECTABILIS, RUBUS PARVIFLORUS, HOLODISCUS DISCOLOR, ADIATUM PEDATUM, EQUISETUM ARVENSE, TELLIMA GRANDIFLORA, GALIUM SP, NEMOPHILA PARVIFLORA, POLYSTICHUM MUNITUM.*
RIPARIAN AREA, ROADSIDE, MIXED BIG LEAF MAPLE & DOUGLAS FIR FOREST (120 YRS); BOTTOM SLOPE; SHADED; MOIST; ASSOC SPECIES: ACCI, ACMA, ARSY, RIBR.*

2ND GROWTH DOUG FIR W/SCATTERED OLDER TREES; MID SLOPE; SHADED; MOIST; ASSOC SPECIES: PONU, ALRU, PSSME, TSHE.*
MID SLOPE ABOVE RIPARIAN AREA; TIGHT CANOPY; FILTERED LIGHT; MOIST; ~60-70 M FROM NEAREST LIVING CONIFER; ASSOC SPECIES: ALRU ACMA, OCCI, POMU, HTYE, OXOR, EUON.*
PLANT COMM: ACEMAC/POLNUM-OXAORE; MID SLOPE; FILTERED LIGHT; DRY; ASSOC SPECIES: IN ADDITION TO COMM (ABOVE), ACTRUB, PROHOO, SYMALB.*
PLANTS GROWING ABOVE CUT BANK; LOWER SLOPE; FILTERED LIGHT; DRY; [NO ASSOC SPECIES GIVEN].*
MID SLOPE; FILTERED LIGHT; DRY; [NO ASSOC SPECIES GIVEN].*
#1) UPPER SLOPE; FILTERED LIGHT; MOIST; ASSOC SPECIES: PSME, ACMA, POMU. #2) POP GROWING WITHIN AN OLD GROWTH PSME/ACMA STAND; UPPER/MIDDLE SLOPE; FILTERED LIGHT; MOIST; ASSOC SPECIES: PSME, ABGR, ACMA.*
ROAD CUT, CLEAR CUT; BRIGHT LIGHT; MIDDLE SLOPE; MOIST; [NO ASSOC SPECIES GIVEN].*
SPECIAL FEATURE: TIMBER TYPE D4-1800 & D3-1920; MIDDLE SLOPE; FILTERED LIGHT; MOIST; ASSOC SPECIES: PSME, ACMA, FRLA, TSHE, POMU.*
PLANT GROWING IN A BRUSHY R/W AREA ALONG COUNTY RD, KINGSTON JORDAN RD; PSME OVERSTORY; MID SLOPE; FILTERED LIGHT; MOIST; ASSOC SPECIES: PSME, POMU.*
CREEKBANK; LOWER/BOTTOM SLOPE; FILTERED/SHADY; MOIST; ASSOC SPECIES: ACMA, POMU.*
CONIFEROUS FOREST, LARGE PSME WITH A LOT OF BROADLEAVES BELOW (PARTICULARILY ACMA). PLANTS FOUND BTWN CREEK & RIDGE. MID-SLOPE, SOIL: ROCKY W/HUMMUS. ASPECT: 252, 60 DEG, SLOPE: 50%. PLANT ASSOC: TSUGA HETEROPHYLLA/POLYSTICHUM MUNITUM. ASSOC SPECIES: PSEUDOTSUGA MENZESII, TSUGA HETEROPHYLLA, POLYSTICHUM MUNITUM, ACER CIRCINATUM, ACER MACHRPHYLLUM, CORYLUS CORNUTA, GAULTHERIA SHALLON, OXALIS OREGANA, VANCOUVERIA HEXANDRA, ANEMONE DELTOIDEA, ASARUM CAUDATUM, TRILLIUM OVATUM, GLAIUM SP, DISPORUM HOOKERII, BLECHNUM SPICANT, TRIENTALIS LATIFOLIA, ACTEA RUBRA, SMILACINA STELLATA.*
CONIFEROUS FOREST W/HARDWOODS, PLANTS WERE GROWING IN A SURPRISING AMOUNT OF BRUSH INCLUDING DEVIL'S CLUB & SALMONBERRY. ALSO A THICK LAYER OF HARDWOODS, PRIMARILY ACER MACROPHYLLUM, IN THE OVERSTORY. MID/LOWER SLOPE, ONE PLANT RIGHT ON CREEK, SOIL: MAINLY THICK DUFF COVERING ROCKY LAYER, 350-20 DEG ASPECT, VARIABLE SLOPE 10-90%, PLANT ASSOC: TSHE/OXOR. ASSOC SPECIES: PSEUDOTSUGA MENZIESII, ACER CIRCINATUM, RUBUS PARVIFLORUS, POLYSITCHUM MUNITUM, RUBUS LEUCODERMIS, CORYDALIS SCOULERI, VACCINIUM PARVIFLORA, TIARELLA TRIPHYLLA, RHAMNUS PURSHIANA, TSUGA HETEROPHYLLA, OPLOPANAX HORRIDUM, RUBUS SPECTABALIS, ADIANTUM PEDATUM, ACER MACROPHYLLUM, ATHYRIUM FILIX-FEMINA, OXALIS OREGANA, ARALIA CALIFORNICA, ALNUS RUBRA.*
LOCATED ON N SIDE OF ROCK OUTCROP UNDER A CANOPY OF ACMA/ACCI/PSME & ALRU. ROCK OUTCROP, PLANT ASSOC: PSME & ACMA W/ACCI UNDERSTORY & POMU GROUNDCOVER. ASSOC SPECIES: POLYSTICHUM MUNITUM (80% COVER), HERACLEUM LANATUM (10%), PTERIDIUM AQUILINUM (15%), TSUGA HETEROPHYLLA (20%), RUBUS PARVIFLORUS (30%), ANEMONE DELTOIDEA (5%), ASARUM CAUDATUM (5%), FRAGARIA VIRGINIANA (1%), TRILLIUM OVATUM (1%), LAPSANA COMMUNIS (1%), ACTAEA RUBRA (1%), ATHYRIUM FILIX-FEMINA (10%), RIBES SANGUINEUM (5%), TELLIMA GRANDIFLORA (1%), HYDROPHYLLUM TENUIPES (15%), DRYOPTERIS EXPENSA (1%), ACER MACROPHYLLUM (80%), ACER CIRCINATUM (60%).*
PSEMEN-ACEMAC/AEMCER/POLMUN. MANY HERBS VERY VIGOROUS ESP SMILACINA RACEMOSA, ADENCAULON BICOLOR. TREE COVER: GAP BELOW, 80% ABOVE, SHRUB 60%, HERB 100%. ASPECT: 84 DEG AZ, SLOPE: 20-45%. MID SLOPE, OPEN/FILTERED LIGHT, MOIST. ASSOC SPECIES: SHRUBS: SAMBUCUS CALLICARPA, RUBUS DISCOLOR, CORYLUS CORNUTA VAR CAL, ADENOCAULON BICOLOR, SMILACINA RACEMOSA, DRYOPTERIS SP, HEDERA HELIX, OSMORHIZA CHILENSIS, GERANIUM ROBERTIANUM, ACTAEA RUBRA, RUBUS URSINUS, PROSARTES HOOKERII.*
80% CANOPY CLOSURE W/PSME & ACMA IN OVERSTORY. POLYSTICUM MUNITUM, OXALIS OREGANA, ATHYRIUM FELIX-FEMINA IN UNDERSTORY. MESIC-MOIST AREA IN RIPARIAN AREA

OF TEAL CREEK. UPPER SLOPE OF TEAL CREEK DRAW, LOOSE ORGAINIC SOIL, WNW ASPECT, ~15% SLOPE.*
VOLCANIC BEDROCK, SOIL: EXTREMELY GRAVELLY LOAM, NORTH ASPECT, 55% SLOPE. MOIST, SHADED, LOWER SLOPE. PLANT COMM: TSHE/GASH/POMU-SWO. ASSOC SPECIES: TREES: PSEUDOTSUGA MENZIESII, ALNUS RUBRA, THUJA PLICATA, ACER MACROPHYLLUM; SHRUBS: ACER CIRCINATUM; HERBS: ADIANTUM ALEUTICUM, PETASITES FRIGIDUS, ANAPHALIS MARGARITACEA, OSMORHIZA CHILENSIS, MONTIA SIBIRICA, ELYMUS GLAUCUS.*
AT BASE OF N ASPECT SLOPE, PLANAR MICROTOP, SLIGHT SLOPE. PLANT ASSOC: PSME, ACMA, POMU, OXOR, EUOR. ASSOC SPECIES: MOSS LAYER: EUOR (MODERATE COVER); HERB LAYER: OXOR (SPARSE COVER); LOW SHRUB LAYER: POMU (SPARSE); HIGH SHRUB LAYER: ACMA, COCO (SPARSE); TREE LAYER: PSME, ACMA, THPL (90+% CANOPY COVER).*
MIXED CONIFER/HARDWOOD RIPARIAN. DRAW, SOIL: DUFF/ORGANIC, SOME COBBLE. 340 DEG ASPECT, 25% SLOPE. PLANT ASSOC: TSUGA HETEROPHYLLA/POLYSTICHUM MUNITUM CHF1 51. ASSOC SPECIES: ACER MACROPHYLLUM (90% COVER), PSEUDOTSUGA MENZIESII (50%), MOSS SP (50%), POLYSTICHUM MUNITUM (5%), ACHLYS TRIPHYLLA (1%), TRILLIUM OVATUM (1%), CLAYTONIA SIBIRICA (1%), ASARUM CAUDATUM (1%).*
TYPICAL CIEL GROUND: STEEP N SLOPE W/MUCH ACER CIRCINATUM, POLYSTICHUM MUNITUM DOMINANT IN SHRUB LAYER. SEEPS HAD ACTIVE SURFACE WATER AT TIME OF VISIT. NEAR RIDGELINE, STEEPM MOIST ROCKY SOIL. 120 DEG ASPECT, 60% SLOPE. PLANT ASSOC: VINE MAPLE TALUS & TSHE/POMU SLOPES. ASSOC SPECIES: PSEUDOTSUGA MENZIESII (VARIABLE COVER), ACER CIRCINATUM (VARIABLE), ACER MACROPHYLLUM, ALNUS RUBRA (TRACE), CORYLUS CORNUTA (T), POLYSTICHUM MUNITUM (70%), OXALIS OREGANA (40%), ACTAEA RUBRA (T), RUBUS PARVIFLORUS (1-5%), RUBUS URSINUS (T), BERBERIS NERVOSA (20%), TRILLIUM OVATUM (1-5%), RHAMNUS PURSHIANA (T), ABIES GRANDIS (T), VANCOUVERIA HEXANDRA (T), ADIANTUM PEDATUM (T), DISPORUM SP (T), NEMOPHILA PARVIFLORA (T), CLAYTONIA PERFOLIATA (T).*
MOIST THUJA PLICATA/ACER MACROPHYLLUM WOODS W/VANCOUVERIA HEXANDRA, VIOLA GLABELLA, TOLMIEA MENZIESII, DISPORUM HOOKERI, ATHYRIUM FILIX-FEMINA. SMALL STREAM AT BOTTOM OF SLOPE ~50' BELOW POP. WNW ASPECT, 20-45 DEG SLOPE, MID-SLOPE, SHADED, MOIST, FOREST LOAM SOIL. ASSOC SPECIES: HYDROPHYLLUM TENUIPES, CIRCAEA ALPINA, POLYSTICHUM MUNITUM, PSEUDOTSUGA MENZIESII, OEMLERIA CERASIFORMIS, ACER CIRCINATUM, SAMBUCUS RACEMOSA, URTICA DIOICA.*
MOIST WHITE FIR FOREST & 15 YR OLD CLEARCUTS. DEFINITELY DOING BEST UNDER CANOPY. FORESTED AREAS HAVE BEEN HIGH GRADED, BUT STILL 30-40% OF CANOPY INTACT. UPPER SLOPE, CONCAVE/PLANAR MICROTOP, LOAM, FILTERED/SHADED, MESIC MOISTURE REGIME. 10-60 DEG ASPECT, 20-40% SLOPE. PLANT COMMUNITY: ABCO/BENE2. ASSOC SPECIES: TREES: ABCO (30% COVER), TABR (10%); SHRUBS: RIBES BINOMINATUM (3%); HERBS: ACTEA RUBRA (20%), HYDROPHYLLUM FENDLERI (5%), VICIA AMERICANA (5%), CAMPANULA SCOULERI (5%), SMILACINA STELLATA (3%), AGASTACHE URTICIFOLIA (2%), ERIGERON ALICEAE (1%).*
IN THE BOTTOM OF A CANYON THAT HAS BEEN CLEARCUT. THE PREDOMINANT TREE THAT HAS RECOVERED IS ACER MACROPHYLLUM AND IT CREATES ABOUT A 95% CANOPY COVER. THERE IS PLENTIFUL ORGANIC DUFF & HEAVY SHRUB COVER. THERE IS A SMALL AMOUNT OF SURFACE WATER ~30' FROM*
#1) IN CUT AREA, PSME REGENERATING, ABCO IN REMAINING OVERSTORY, MOD THICK BRUSH DOMINATED BY RUUR, HODI & RUPA. MID-SLOPE, CONCAVE MICROTOP, OPEN LIGHT, MESIC MOISTURE REGIME, 8 DEG ASPECT, 17% SLOPE. SOIL: COBBLY, GRAVELLY BYBEE-TATOUCHE COMPLEX. PLANT*
#1) OLD GROWTH RIPARIAN W/DOUG-FIR OVERSTORY, WHITE FIR MID LAYER & UNDERSTORY. BIGLEAF MAPLE 5% COVER. MOST POP IS IN AQUATIC ZONE, BUT SPREADS OUT INTO ADJ FOREST AREA AT S END, IN AN AREA OF OLD SLUMPING. DRAW, SHADED, HYDRIC MOISTURE REGIME, CONCAVE M*
#1) MOIST CONCAVE AREA W/BIGLEAF MAPLE OVERSTORY, DRAW, SHADED, HYDRIC MOISTURE REGIME, 30 DEG ASPECT, 20% SLOPE, SOIL: MCNULL LOAM. PLANT COMMUNITY: RIPARIAN. ASSOC SPECIES: TREES: ACMA (60% COVER), ABCO (10%), PSME (10%); SHRUBS: SYAL (50%), BENE2 (20%), COCOC (5%), RUUR (1%); HERBS: VAHE (3%), ADBI (2%), SMST (2%),

SMRA (1%), VIGL (1%). #2) IN MOIST PORTION OF A 200 FT WIDE FLOODPLAIN AREA, MAPLE DOMINANT IN OVERSTORY. BOTTOM, SHADED, PLANAR MICROTOP, HYDRIC MOISTURE REGIME, 310 DEG ASPECT, 5% SLOPE. SOIL: COBBLY MCNULL . RIPARIAN PLANT COMMUNITY. ASSOC SPECIES: TREES: PSME (30%), ACMA (70%), CADE27 (10%); SHRUBS: SYAL (20%), RUUR (3%); HERBS: VAHA (20%), ACRU (5%), POMU (2%), SMST (2%).*
#1) SITE IS ON A SLIGHT NE SLOPE W/OVERSTORY OF PSME & ABCO. UNDERSTORY IS PSME, ABCO & CONU4. SHRUB LAYER IS MODERATE W/MOSTLY SYAL, BENE2 & ROGY. MANY PLANTS ARE GROWING AROUND THE EDGES OF SYAL. GROUND COVER IS LIGHT/MODERATE W/MOSTLY LAPO3, ACLE8 & EL*
#1) PLANTS ARE GROWING IN THICK AREA OF COCOC. OVERSTORY IS ABCO. UNDERSTORY IS ABCO, PSME & TABR2. SHRUB LAYER IS DENSE W/COCOC, RISA, RUPA & RUUR. GROUND COVER IS MODERATE W/MOSTLY LAPO3, FRVE & VAHE. LOWER SLOPE, PLANAR MICROTOP, FILTERED LIGHT, MESIC *
NEAR TOP OF 15 FT HIGH ROAD CUT. PLANT COMMUNITY: ACEMAC/THUPLE/CORCOR/POLMUN. NNE ASPECT, 45+ DEG SLOPE, FILTERED LIGHT, DRY. ASSOC SPECIES: SEE COMMUNITY DESC, ALSO BERNER, GAUSHA, PTEAQU, RUBURS.*
ACEMAC POCKET IN ALNRUB/BERNER/POLMUN, SMALL GAP, FILTERED LIGHT, MID-SLOPE, MOIST/DRY. 225-280 DEG ASPECT, 45+ DEG SLOPE. ASSOC SPECIES: BERNER, RUBURS, OXAORE, PROSMI, ACTRUB, PTEAQU, VANHEX, CORCOR, POLMUN.*
ON EDGE OF DENSE ACECIR-RHAPUR-CORCOR. PSEMEN NEARBY ABOVE, W/SYMALB, HOLDIS, EPICIL, POLMUN & TELGRA. N ASPECT, 20-45 DEG SLOPE, MOIST.*
TRAILSIDE, IN GAP OF MATURE PSEMEN FOREST, W/POLNUM & OXAORE.*
MOIST, STEEP ROADCUT W/LUSH HERB LAYER, LOTS OF SWORD FERN, THICK MOSS MAT OVER VERY GRAVELLY SOILS. NORTH ASPECT, 45 DEG SLOPE, LOWER SLOPE, SHADED, MOIST. DOUGLAS-FIR IN SURROUNDING AREA LESS THAN 12" DIAMETER. ASSOC SPECIES: POLYSTICHUM, THALICTRUM, AQUILEGIA, OXALIS OREGANA, ADIANTUM, ACER MACROPHYLLUM.*
ROADSIDE DITCH NEAR CUTBANK, WET, SEEPY, ~25-30 FT FROM A SMALL WATERFALL. NW ASPECT.*
SLIGHT SLOPE, MID-SLOPE, FILTERED LIGHT, MOIST.*