HAU FIELD INVENTORY PROCEDURES

PRE-FIELD

1. ASSEMBLE FIELD MATERIALS

Rare species, rare habitats, and invasives lists
Blank polygon data sheets
Field data sheet narrative/definitions
PIWO and RLF info sheets
Bags (for plant snatches; digital photos are another option)
Red Sharpie mapping pens
Acetates for photo mapping, with transparent tape to attach to top edge of photo
Digital camera
GPS (for unique features)

2. ASSEMBLE HAU PACKET

Aerial photo with acetate transparency taped to top edge
Base mapping on photo, including access permission lots
Topo map
Tax lot log sheet
1850 veg map and 1936 aerial photo (review, & add to form if desired)
Access permission forms
Call ahead if directed to do so on permission form

FIELD

3. FIELD INVENTORY

Locate access points & plan route
Intuitive meander through each polygon; more intensive survey if unique habitats found
Fill out data sheets for each polygon, lettering them A, B, C, D, etc.
Photograph each polygon (if possible) from edge; note location, direction, photo ID# on aerial overlay
Map target species sightings on overlay
GPS rare plant sites (wayside aster & tall bugbane optional, as they will be regular)
GPS rare animal sites (PIWO and RLF optional, as they will be regular)

POST FIELD

4. COMPLETENESS CHECK

Double check to be sure all field data blanks on each polygon form are filled in correctly
Be sure all boundaries, site locations, and photo points are mapped
Be sure tax lot log is filled out

5. DIGITAL PHOTO PROCESSING

Name each digital polygon photo file with: HAU #, Polygon letter, view direction, date and number (01, 02, 03, etc.), your initials -- like this example for Polygon G in HAU 14::

14G view southwest 2006-05-30-01 DB.jpg

Backup a copy of the photos at your home or office
Store a copy on a CD, and when done with HAU, give CD or e-mail to BN (please no files larger than 300k if possible; no e-mails larger than about 5MB)

6. COMPLETION

Make backup copy of HAU map and Polygon data sheets
Drop off completed original maps and data sheets to BN
Assist with office assessment/ranking as requested
Begin to prepare for the next HAU

INSTRUCTIONS for FIELD DATA INVENTORY SHEET

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HABITAT ASSESSMENT UNIT (HAU) NUMBERS
These are pre-numbered in the office. Copy onto each Veg Polygon (VMU) form.

POLYGON NUMBERS
Letter these in the field for areas of fairly homogeneous vegetation. Fill out a Polygon Habitat Assessment Form for each one. (If you exceed 26 polygons in an HAU, start over with AA, AB, etc.)

SHADING
Shaded areas generally are filled out in the office, or are headings.

OFFICE
Includes GIS acreage, polygon centroid, average slope/aspect. Historic vegetation cover, 1936 veg cover and ARA land cover class will all be added in the office if not done in field. (Note the ARA classes and definitions following.)

INVENTORY METHOD
Note whether the site was inventoried on-site, off site adjacent, or off site with no view. Many polygons likely will be a combination. A summary table of tax lots with access permission and actual on-site visitation (or no visitation) will be attached separately. If there is a combination, check all appropriate boxes. For "off-site no view," a nearby, similar reference polygon will be listed in the office.

LAYERS
Tree: all vegetation >20' tall. Shrub: all woody vegetation 3' to 20' tall. Consider Armenian blackberries as woody, so if taller than 3', record in shrub layer, and if shorter than 3', record in herb layer. Herb: woody veg <3' tall, and all herbaceous (may be taller).

COVER
Actual cover is "bird's eye view" looking straight down on the polygon, with the polygon acreage being 100%. If there is 60% Doug fir cover, and 50% bigleaf maple cover with half of it under the Doug fir, the TREE LAYER ACTUAL COVER = 85% (60% + 25%).

For each category (evergreen, deciduous, native, exotic) record cover class as "bird's eye view" (actual cover) as if there is no taller vegetation obscuring the view.

OBSERVED SPECIES
Dominants are 20% cover or greater, and subdominants are 5-19% cover. Rare and Invasive are from species lists in the field packet. List only those seen.

For dominant and subdominant trees, estimate the average dbh (diameter breast height, 4.5' above ground level) for trees in the stand. For scattered large trees, note them in the large block below.

DISTURBANCE
Note how much of the soil and/or herb layer vegetation is/was disturbed, the nature of the disturbance and if it was recent or historic.

NOTES
Describe rare species or habitats or invasive species observed (population sizes, distributions, etc.), habitat quality, large trees (if any). The minimum polygon mapping size generally is 2 acres for any cover type, except wherever possible, rare habitats and developed areas (where little to no native habitat values remain) will be mapped down to a size of 1 acre.

COVER TYPES
The EPA/Adamus Resource Assessment (ARA) used for satellite interpretation served as a basis, but required modification for field use – so there is not a 1 to 1 correspondence. Details of natural vegetation and development cover type categories as adapted for our on-the-ground application follows. (All covers are actual, not relative.) An "R" suffix added after a number indicates a "riparian/wetland" element.

Cover Type	Code	Description
FOREST (>70% tree cover)	1-6	Conifer forest
	7	Mixed conifer/hardwood forest (each > 30% cover of tree layer)
	8	Hardwood forest
WOODLAND (31-70% tree cover)	9	Conifer woodland (conifer cover >60% of tree layer)
	10	Mixed conifer/hardwood woodland – (each not > 30% cover)
	11	Hardwood woodland (hardwood cover >60%)
SAVANNA (5-30% tree cover)	12	Other savanna (not oak)
	13	Oak savanna - trees scattered (white and/or black)
SHRUBLAND (shrub cover >30-100%)	14	Shrub – upland (tree cover to 70%)
	15	Shrub – wetland
AGRICULTURE	17	Orchard
PRAIRIE/GRASSLAND/ROCK (shrub cover <30%, tree cover <5%)	20	Grass short - lawn, heavily grazed pasture
	21	Grass natural - native and introduced, but not cultivated, mowed or grazed
	22	Grass tall - cultivated grass and grass-like vegetation including ryegrass, orchard grass, fescue, wheat, hayfields, and lightly grazed pasture
	24	Rock – large outcrops, balds; open rocky areas
WETLANDS	26	Seasonal wetlands
	27	Permanent wetlands
RESIDENTIAL HABITAT	33	Low density residential (≤ 4 dwelling units/acre) w/habitat

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TARGET or UNUSUAL SPECIES
Observed species from the rare list can be listed here, along with any other sighting considered to be unusual by the surveyor.

PIWO and NRLF DETECTION and HABITAT FEATURES
Pileated Woodpeckers (PIWO) and Northern Red-legged Frogs (NRLF or RLF) are previously identified as the two target wildlife species for this inventory. They are highlighted here to be sure that their sign and habitat requirements are noted during the inventory if they are encountered. Because the woodpecker and woodpecker sign are visible (and audible), PIWO entries on the form are oriented more toward detection, whereas NRLF entries are oriented toward habitat suitability.

PIWO: If one is seen or heard tapping, check Y. If characteristic foraging excavations are seen, check Y and describe. Same for nesting excavations. Clearly note if an active nest is detected.

NRLF: Although one can check Y if there is a visual detection, that is not likely. These two NRLF columns mostly allow evaluation of suitable habitat. If a wetland is present, estimate cover class for open water and low, emergent vegetation. Medium ranges are best for NRLF. Check Y if the site gets good sun in the winter. Small wetlands on forested north slopes likely will get little winter sun. Check Y if you see either aquatic invertebrates present (good) or Eastern bullfrogs (bad). Check Y if there is a cultivated crop or lawn adjacent to the wetland (bad). In the second column, check Y if the polygon is forested (regardless of if there are wetlands present). Check Y if there is dense vegetation in the herbaceous layer, and estimate cover of sword fern (*Polystichum munitum*). If there is a component of alder (*Alnus rubra* or *A. rhombifolia*) or bigleaf maple (*Acer macrophyllum*) or Oregon ash (*Fraxinus latifolia*) in the overstory, check Y. If the forest is adjacent to a wetland, check Y (good), and if it is separated by a road, also check Y (bad).

SPECIAL HABITATS and FEATURES
Habitat diversity elements such as water, rock features, balds, small habitat, and mature forests, if present, can be described in detail here.

RESTORATION POTENTIAL
If feasible methods can be used to restore valuable, historic habitat types, that can be noted here.

OFFICE ADDITIONS
Rare species previously recorded on the site, or rare habitats determined to be present from the rating form can be noted here, as can any other observations or recommendations made after the field survey.

Cover Type Descriptions

#	Cover Type: Map Designation	Description
1	Conifer forest 0-20 yrs	Forests are defined as having more than 70% of the mapped area covered by trees, as viewed from above. Conifer forests have at least 60% to 80% of this tree layer covered by trees with needles (rather than leaves, such as Douglas fir, and up to 40% covered with hardwood trees (which have leaves, such as maple or oak). This category was judged to contain primarily conifer trees from 0 to 20 years old.
2	Conifer forest 21 - 40 yrs	Forests are defined as having more than 70% of the mapped area covered by trees, as viewed from above. Conifer forests have at least 60% to 80% of this tree layer covered by trees with needles (rather than leaves, such as Douglas fir, and up to 40% covered with hardwood trees (which have leaves, such as maple or oak). This category was judged to contain primarily conifer trees from 21 to 40 years old.
3	Conifer forest 41 - 60 yrs	Forests are defined as having more than 70% of the mapped area covered by trees, as viewed from above. Conifer forests have at least 60% to 80% of this tree layer covered by trees with needles (rather than leaves, such as Douglas fir, and up to 40% covered with hardwood trees (which have leaves, such as maple or oak). This category was judged to contain primarily conifer trees from 41 to 60 years old.
4	Conifer forest 61 - 80 yrs	Forests are defined as having more than 70% of the mapped area covered by trees, as viewed from above. Conifer forests have at least 60% to 80% of this tree layer covered by trees with needles (rather than leaves, such as Douglas fir, and up to 40% covered with hardwood trees (which have leaves, such as maple or oak). This category was judged to contain primarily conifer trees from 61 to 80 years old.
5	Conifer forest 81 - 200 yrs	Forests are defined as having more than 70% of the mapped area covered by trees, as viewed from above. Conifer forests have at least 60% to 80% of this tree layer covered by trees with needles (rather than leaves, such as Douglas fir, and up to 40% covered with hardwood trees (which have leaves, such as maple or oak). This category was judged to contain primarily conifer trees from 81 to 200 years old. "Old growth" conifer forests are generally defined by presence of large trees, snags and logs, and presence of multiple canopy layers, and are generally much older than 200 years. No "old growth" forests were identified in the SRHS inventory.
7	Mixed forest	Forests are defined as having more than 70% of the mapped area covered by trees, as viewed from above. Mixed forests generally have less than 60% of this tree layer covered by trees with needles (rather than leaves, such as Douglas fir), and less than 60% covered with hardwood trees (which have leaves, such as bigleaf maple or Oregon white oak).

#	Cover Type: Map Designation	Description
7 R	Mixed riparian/wetland forest	Forests are defined as having more than 70% of the mapped area covered by trees, as viewed from above. Mixed forests generally have less than 60% of this tree layer covered by trees with needles (rather than leaves, such as Douglas fir), and less than 60% covered with hardwood trees (which have leaves, such as bigleaf maple or Oregon white oak). The R (riparian/wetland) element indicates Oregon ash, black cottonwood and/or red alder was present as one of the dominant tree species.
8	Hardwood forest	Forests are defined as having more than 70% of the area covered by trees, as viewed from above. Hardwood forests have generally 60% or more of this tree layer covered by trees with leaves (rather than needles), such as bigleaf maple and Oregon white oak. They have 40% or less covered by conifers (trees with needles, such as Douglas fir and grand fir).
8 R	Hardwood riparian/wetland forest	Forests are defined as having more than 70% of the area covered by trees, as viewed from above. Hardwood forests have generally 60% or more of this tree layer covered by trees with leaves (rather than needles), such as bigleaf maple and Oregon white oak. They have 40% or less covered by conifers (trees with needles, such as Douglas fir and grand fir). The R (riparian/wetland) element indicates Oregon ash, black cottonwood and/or red alder was present as one of the dominant tree species.
9	Conifer woodland	Woodlands are defined as having between 31% and 70% of the area covered by trees, as viewed from above. Conifer woodlands have at least 60% of this tree layer covered by trees with needles (rather than leaves), such as Douglas fir or ponderosa pine.
9 R	Conifer riparian/wetland woodland	Woodlands are defined as having between 31% and 70% of the area covered by trees, as viewed from above. Conifer woodlands have 60% or more of this tree layer covered by trees with needles (rather than leaves), such as Douglas fir. The R (riparian/wetland) element indicates Oregon ash, black cottonwood and/or red alder was present as one of the dominant tree species.
10	Mixed woodland	Woodlands are defined as having between 31% and 70% of the area covered by trees, as viewed from above. Mixed woodlands have less than 60% of this tree layer covered by trees with leaves (rather than needles) such as Oregon white oak, California black oak or Pacific madrone, and less than 60% covered with trees with needles (rather than leaves), such as Douglas fir.
10 R	Mixed riparian/wetland woodland	Woodlands are defined as having between 31% and 70% of the area covered by trees, as viewed from above. Mixed woodlands have less than 60% of this tree layer covered by trees with leaves (rather than needles) such as Oregon white oak, California black oak or Pacific madrone, and less than 60% covered with trees with needles (rather than leaves), such as Douglas fir. The R (riparian/wetland) element indicates

#	Cover Type: Map Designation	Description
		Oregon ash, black cottonwood and/or red alder was present as one of the dominant tree species.
11	Hardwood woodland	Woodlands are defined as having between 31% and 70% of the area covered by trees, as viewed from above. Hardwood woodlands have at least 60% of this tree layer covered by trees with leaves (rather than needles) such as Oregon white oak, California black oak or Pacific madrone.
11 R	Hardwood riparian/wetland woodland	Woodlands are defined as having between 31% and 70% of the area covered by trees, as viewed from above. Hardwood woodlands have at least 60% of this tree layer covered by trees with leaves (rather than needles) such as Oregon white oak, California black oak or Pacific madrone. The R (riparian/wetland) element indicates Oregon ash, black cottonwood and/or red alder was present as one of the dominant tree species.
12	Other savanna	Savannas are defined as having between 6% and 30% of the area covered by trees, as viewed from above. "Other savannas" have Douglas fir and/or ponderosa pine as dominant tree species, sometimes in combination with Oregon white oak and/or California black oak.
13	Oak savanna	Savannas are defined as having between 6% and 30% of the area covered by trees, as viewed from above. Oak savannas have Oregon white oak as the only dominant tree (or possibly California black oak).
14	Upland shrub	Upland shrub areas have over 30% tree cover, and up to 70% tree cover. In this area, upland shrublands often are dominated by Armenian blackberry, and invasive, exotic species.
15	Wetland shrub	Wetland shrub areas have over 30% tree cover, and up to 70% tree cover. In this area, wetland shrublands often are dominated by native willows, creek dogwood, or occasionally, Armenian blackberry (an invasive, exotic species).
17	Orchards	This includes abandoned orchards.
20	Short grass	This category is defined by grassy areas that are heavily grazed or are mowed. Generally, they nearly always are dominated by non-native species.
21	Natural grass	Natural grass areas include areas where either native or non-native grasses and other non-woody vegetation predominate.
22	Tall grass	Tall grass areas generally are cultivated grasses, or grass-like vegetation.
24	Rock	This category is defined by having less than 30% of the area covered by shrubs, and less than 5% of the area covered by trees, as viewed from above. The remaining area is covered by large rock outcrops, balds (naturally barren areas, but may have sparse vegetation) and open rocky areas.
26	Seasonal wetlands	Seasonal wetlands generally are dry during the summer and fall.
27	Permanent water	Permanent water areas retain at least some ponded water throughout the year.

#	Cover Type: Map Designation	Description
33	Residential Habitat	Low density residential development at 4 dwelling units per acre or less. These areas were contained within the original study area, and are mapped as habitat generally because a native tree layer (and occasionally, a shrub or herb layer as well) still provides habitat values.

SRHS Vegetation Mapping Unit Inventory Form: HAU __ / V-Map Unit __

HAU #:	Observer:	Date: _____ 2006
On-Site ____	Off-Site ► View: ___Y ___N	Ref. HAU/VMU : ____ /____

Tree layer = >20' tall; **Shrub** layer = woody 3-20'; **Herb** layer = all <3', & herbs >3' | Cover #: ___

TREE LAYER:					**OBSERVED SPECIES**			
Cover class:	**< 5%**	**5 - 30**	**31-70**	**>70%**	Dominants (>20%; note average dbh of each):			
TOTAL								
Evergreen								
Deciduous					Subdominants (5-20%; note average dbh of each):			
Native								
Exotic					Invasives:			
Snags/ac. ≤1.5' dbh	__ 0	__ <5	__ ≥5		**Snags/ac. ≥1.5' dbh**	__ 0	__ <5	__ ≥5

SHRUB LAYER:					**OBSERVED SPECIES** (include RUBARM >3' here)
Cover class:	**< 5%**	**5 - 30**	**31-70**	**>70%**	Dominants (>20%):
TOTAL					
Evergreen					Subdominants (5-20%):
Deciduous					
Native					
Exotic					Invasives:

HERB LAYER:					**OBSERVED SPECIES**			
Cover class:	**< 5%**	**5 - 30**	**31-70**	**>70%**	Dominants (>20%):			
TOTAL								
Evergreen					Subdominants (5-20%):			
Deciduous								
Native					Rare:			
Exotic					Invasives:			
Logs/ac. 1'– 2' dia.	__ 0	__ <5	__ ≥5		**Logs/ac. > 2' dia.**	__ 0	__ <5	__ ≥5

RECENT DISTURBANCE (earthwork, logging, herbicides, grazing, etc.):	__ 0 - 20%	__ 21-50%	__ >50%

NOTES: Describe rare habitats, rare species pop. size, habitat quality, scattered large trees, recent activity, etc.

Describe photo point(s):

Cover Types: Forest ≥70% tree cover; woodland 30 – 69% cover; savanna 5-29%

1 Conifer >0-20 yrs	9 Conifer woodland	20 Short grass
2 Conifer forest 21-40	10 Mixed woodland	21 Natural grassland
3 Conifer forest 41-60	11 Hardwood woodland	22 Tall grass
4 Conifer forest 61-80	12 Other savanna	24 Rocky areas
5 Conifer forest 81-200	13 Oak savanna	26 Seasonal wetlands
6 Conifer forest > 200	14 Dry shrub, tree cover to 70%, valley	27 Permanent water
7 Mixed forest	15 Wet shrub	28 Streams small
8 Hardwood forest	17 Orchards, hybrid poplar	33 Residential habitat

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TARGET RARE PLANT & WILDLIFE SPECIES

SPECIAL PIWO/RLF DETECTION & HABITAT FEATURES

PIWO:	Y	N	RLF:	Y	N	RLF, con't.	Y	N
Visual			Visual			Forested upland		
Aural			Stillwater wetland			If yes, then:		
Foraging excavation			% open water :__<25 __25-50 __>50			% POLMUN/ low veg: _<⅓ _⅓-⅔ _>⅔		
Nesting excavation			% low emrgnt: __<25 __25-50 __>50			w/ dense u-story		
Describe:			winter sun			Alder, maple, ash, cottnwd o-story		
			aquatic inverts present			wetland adjacent		
			bullfrogs present	*		road between UL & WL	*	
			cultivated crop/lawn adjacent	*		(Office) ≥10 acres (4 ha)		
			** yes = negative factor*			(Office) compact shape		

ADDITIONAL INFORMATION

WATER: __Y __ N
Describe headwater streams, ponds, seeps, etc.

ROCK/BALDS: __Y __ N
Describe balds, outcrops, caves, etc.

SMALL HABITAT PATCHES: __Y __ N
Describe forest gaps, tree islands in prairies, etc.

MATURE FOREST: __Y __ N
Describe large tree dbh, age, species composition, layers, etc.

Restoration potential, other comments: