

## CDFW-CNPS Protocol for the Accuracy Assessment Field Form

(October 3, 2023)

### **Introduction**

This protocol describes Accuracy Assessment (AA) data collection procedures. The primary purpose of the AA fieldwork is to supply data to test the accuracy of a specific vegetation map. The information collected can also contribute additional data for the classification of vegetation communities. The primary sampling units are the vegetation polygons delineated by photo-interpreters in the creation of the vegetation map.

If an entire AA polygon cannot be fully investigated due to terrain or other reasons, as much of the polygon as can be evaluated should be assessed.

Note that a delineated polygon may differ from the conventional definition of a stand of vegetation. A stand is the basic physical unit of vegetation in a landscape. It has no set size. Some stands of vegetation are very small while some may be several square kilometers in size.

### **Defining a Stand**

A stand is defined by two main unifying characteristics:

- 1) It has compositional integrity. Throughout the site, the combination of species is similar. The stand is differentiated from adjacent stands by a discernable boundary that may be abrupt or indistinct.
- 2) It has structural integrity. It has a similar history or environmental setting that affords relatively similar horizontal and vertical spacing of plant species. For example, a hillside forest originally dominated by the same species that burned on the upper part of the slopes, but not the lower, would be divided into two stands. Likewise, sparse woodland occupying a slope with very shallow rocky soils would be considered a different stand from an adjacent slope with deeper, moister soil and a denser woodland or forest of the same species.

The structural and compositional features of a stand are often combined into a term called homogeneity. For an area of vegetated ground to meet the requirements of a stand, it must be homogeneous.

A properly delineated polygon may contain more than one stand. One example is a stand that is below the minimum mapping unit (MMU); it cannot be mapped separately and will be absorbed into the surrounding vegetation type. Another example is vegetation that is difficult to identify accurately on photo imagery. Several similar-looking stands may be grouped into one polygon and assigned a vegetation type at a high level, such as Group.

### **Selecting a location to sample within a polygon (for subsamples only):**

If assessing a large polygon, it may be difficult to summarize the species composition, cover, and structure of the entire area. We are also usually trying to capture the most information as efficiently as possible. Thus, we may be forced to select a representative portion of the delineated polygon to sample.

When taking a subsample, the main point to remember is to select an area that, in as many ways possible, is representative of that entire polygon. This means that you are not randomly

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selecting a sample location; on the contrary, you are actively using your own best judgment to find a representative example of the polygon.

Selecting an assessment site requires that you see enough of the polygon you are sampling to feel comfortable in choosing a representative sample location. If possible, take a brief walk through the polygon and figure out where the boundary lines are drawn. Look for variations in species composition and in stand structure. In the process, decide whether the polygon includes more than one mappable vegetation type or if the stand boundaries don't seem to match up with the polygon delineation. **If more than one vegetation type is present, fill out an AA form for each type ONLY IF each type is mappable (i.e., it is large enough to meet MMU and can be delineated without creating unreasonably shaped polygons).** Small variations in vegetation that are repeated throughout the polygon should be included in your subsample. Once you assess the variation within the polygon, attempt to find an area that captures the stand's species composition and structural condition to sample.

**If it appears that the polygon represents a group-level classification** and consists of multiple alliance stands, make notes about alliances. Assess the polygon's mapping unit but don't provide a field alliance / association that doesn't apply to the whole polygon.

### How to enter fields on the form:

**Recorder:** The full name of the recorder should be provided for the first field form for the day. On successive forms, initials can be recorded.

**Other Surveyors:** The full names of each person assisting should be provided for the first field form for the day. On successive forms, initials of each person assisting can be recorded.

**Date:** The date the AA point was sampled. Use the standard U.S. format of "month-day-year" or use letters to write out the month.

**Waypoint ID:** The Waypoint ID in this format: GPS device name + date (yymmdd) + 24-hour time (hhmm). For example, for a survey taken on iPad "V" on March 27, 2018 at 1:45pm in the afternoon, the Waypoint ID will be "V1803271345." It is also acceptable to use the Polygon UID. If using this method, then for base points, the format would be B\_'PolygonUID' and if there is a multiple point assessment the format would be 'PolygonUID'\_1, PolygonUID\_2, etc.

*Note that the GPS point should be taken away from the edge of the polygon, and near the center of the subsample (if one is used).*

**Polygon UID:** The unique identifier (UID) assigned to each polygon, displayed in the GPS data and on paper maps.

**Location Name:** The name of the property, park, or the location within large holdings (like USFS or BLM properties).

**GPS name:** The name/number assigned to the GPS unit/device name.

**Projected? Yes / No / Base / Digitized:** Circle the appropriate option

**Yes** - The point is a projected, or offset point. The surveyors used a bearing, distance, and inclination to project the point into the polygon they are describing.

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**No** - The surveyor is within the boundary of the polygon being assessed and the point is where the observer was standing for photographs. This location can also be used as a base location for an offset survey.

**Base** - Base point only. This is where a surveyor was standing when taking an offset survey to describe vegetation not at that point. No plant data or vegetation descriptions are associated with this location. However, cardinal photos taken at this point will be stored in a directory of this name.

**Digitized** -An offset point was created on the GPS unit without taking bearing and distance readings. This option should only be used when the imagery on the GPS unit is unique and unmistakable.

### If Projected = Yes

**Distance (m):** The distance in meters from the Base point to the Projected point, determined by use of a range finder.

**Bearing (°):** The compass bearing from the Base point to the Projected point.

**Inclination (°):** The vertical offset from the Base point to the Projected point.

### If Projected = Yes or Digitized

**Base Waypoint ID:** The location where the surveyor was standing when the information was collected. Cardinal photographs will be taken at this point and will be stored on the computer under this ID. Photographs of the stand vegetation will be taken from this point and will be stored on the computer under the Projected point's ID.

**Base UTM / Projected UTM:** If the point is projected or digitized, circle whether the UTM coordinates of the base point or the projected point have been recorded. These will generally be for the base point.


**UTM coordinates:** Easting (**UTME**) and Northing (**UTMN**) location coordinates using the Universal Transverse Mercator (UTM) grid. Record this information from a GPS unit.

**Zone:** Universal Transverse Mercator zone. Zone 10 is for California west of the 120<sup>th</sup> longitude; zone 11 is for California east of 120<sup>th</sup> longitude (the straight portion of California's eastern boundary).

**NAD83:** This is the default GPS datum. If you use a different one, cross this out and write in the correct datum.

**GPS error: ft/ m/ PDOP:** Circle the appropriate unit of measure and record the error reading from the GPS unit.

**Decimal degrees:** *Use this if your GPS unit is not recording UTM coordinates.* Latitude—Longitude reading in decimal degrees, with 6 decimal places. Record the information from your GPS unit.

**Camera Name / Photo #s:** Write the name or the camera, JPG numbers, and direction of photos. *Take four photos in the main cardinal directions (N, E, S, W) clockwise from the north, from the GPS location.* This symbol can be used to indicate the cardinal photos: . Make sure to take additional photos of the general composition of the stand if the cardinal photos do not do an adequate job; note the JPG numbers and a description and direction of each additional photo. **A digital camera with a minimum 10 megapixel resolution is required.**

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### Species list and coverage

List up to twelve species that are dominant or that are characteristically consistent throughout the stand. These species may or may not be abundant, but they should be constant representatives in the survey. When different layers of vegetation occur in the stand, make sure to list species from each stratum. As a general guide, make sure to list at least 1-2 of the most abundant species per stratum.

#### Strata:

**T = Tree.** A woody perennial plant that has a single trunk.

**A = SApling.** 1" - <6" dbh and young in age, OR small trees that are <1" dbh, are clearly of appreciable age, and are kept short by repeated browsing, burning, or other disturbance. Includes trees that are re-sprouting from roots or stumps following fire, logging or other disturbance. These re-sprouts may exhibit a shrubby form, with multiple small trunks, but are species that are generally considered trees. If a majority of the trunks are >6" dbh, then the re-sprouts would be recorded under the "Tree" stratum.

**E = SEedling.** A tree species clearly of a very young age that is <1" dbh or has not reached breast height. Applies only to trees propagating from seed; re-sprouts are not recorded here even if they meet the size requirements.

**S = Shrub** A perennial, woody plant that is multi-branched and doesn't die back to the ground every year.

**H = Herb** An annual or perennial that dies down to ground level every year.

**N = Non-vascular** Includes mosses, liverworts, hornworts, and algae.

Be consistent and break up a single tree species into two+ separate strata, if multiple strata are observed. If using an electronic form, break up tree species into separate records for each stratum. If using a paper form, combine tree species into a single record.

In some cases, the stratum of a particular species might not be obvious. Some examples are *Juniperus californica*, which has the size and growth habit of a shrub, but it is considered a tree, and mistletoe, which is considered a shrub. It is useful to have a list of species with ambiguous strata for each project. Consult the MCV or contact VegCAMP if you are unsure.

**Species:** Use Jepson Manual nomenclature, write out the scientific name of each plant to the finest taxonomic level possible. When uncertain of an identification (which you intend to confirm later) use parentheses to indicate what part of the determination needs to be confirmed. For example, you could write out *Brassica (nigra)* if you are sure it is a *Brassica* but you need further clarification on the specific epithet.

**% cover:** provide the % absolute aerial cover for each species listed, considering porosity. When estimating, it is often helpful to think of coverage in terms of the following cover intervals at first:

<1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%.

Keeping these classes in mind, refine your estimate to a specific percentage. The sum of all species percent covers may total over 100% because of overlap. Cover should reflect what is within the portion of the polygon you can observe. Record the <1% cover in one of two categories: "r" for trace (i.e., rare in plot, or solitary individuals, entered into database as 0.1) and "+" for <1% but not rare or solitary individuals (entered into database as 0.2).

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**C:** If a species collection is made, it should be indicated with a “C” (for collected). If the species is later keyed out, cross out the species name or description and write the keyed species name in pen on the data sheet. Do not erase what was written in the field, because this information can be used if specimens get mixed up later. If the specimen is then thrown out, add a “T” to the “C” in that column (CT = thrown out after confirmation) or cross out the “C”. If the specimen is kept but is still not confidently identified, add a “U” to the “C” (CU = collected and unconfirmed). In this case the unconfirmed species epithet should be put in parentheses [e.g. *Hordeum (murinum)*]. If the specimen is kept and is confidently identified, add a “C” to the existing “C” (CC = collected and confirmed). If the specimen is later deposited in an herbarium, add a “D” to the existing “C” (CD = collected and deposited) and note the receiving herbarium.

**Notes:** Describe the stand age or seral stage, disturbance history, nature and extent of land use, and other site environmental and vegetation factors. Include recommendations for line-work revision, discernibility of the vegetation based on season and topography, problems with classification interpretation, homogeneity of vegetation, and unusual sightings of plants or animals.

**Map Unit Name:** Enter the vegetation type name here. Refer to the Vegetation Mapping Key to select the type. If the vegetation in this polygon does not exactly match the descriptions in the key, enter the best-fitting vegetation type here and the second-best type in the next field. For further verification of the vegetation, refer to the Stand Tables.

**Secondary** (Optional): Assign a second-best-fitting name for the vegetation within the polygon. Assign a secondary code **only** if there is some ambiguity in assigning the polygon to a primary vegetation. Note the reason for assigning a secondary call within the “*Confidence in map unit ID*” field below.

**Confidence in map unit ID? L M H Explain:** Note the level of confidence you feel in the map unit identification by circling **Low**, **Moderate**, or **High**. This is an area to describe how well the stand characteristics match the Vegetation Key. Are all diagnostic species present in proper proportions? If not, how do they differ? If a secondary type is identified, what made the stand type ambiguous? ***Note that if you choose low or moderate confidence, you should have a secondary call, as an alternative way to classify the vegetation.***

**Linework problems:** Check the box if the polygon boundary line does not surround a distinct vegetation type. Examples for which you would check the box include situations where there is more than one type of mappable vegetation within the polygon, when a portion of the boundary includes part of an adjacent stand, or when the stand continues beyond the polygon boundary. If checked, provide comments in the Notes section to explain.

**More than 1 vegetation type in this polygon:** Check if there is more than one vegetation type within the polygon. If the polygon includes more than one type, take a separate GPS point and fill out an AA form for each **mappable** vegetation type. If these other types are smaller than the MMU, and therefore would not be expected to be mapped, just note the additional vegetation types in the Notes section.

**Vegetation change since imagery taken:** Check the box if the vegetation in the polygon has changed since the aerial imagery used as the base of the vegetation map was taken. If yes, provide a description in the Notes section of how the vegetation has changed (for example: burned, developed, visible dominance change over time).

**Field Alliance:** Enter the vegetation alliance name here. Refer to the Vegetation Key to select the type. If the vegetation in this polygon does not exactly match the descriptions in the key, enter the best-fitting vegetation type here and describe issues in the notes. If the polygon

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contains multiple alliances, and has been mapped at the group level, don't fill this in. You can add Notes to cover those.

**Field Association:** Enter the vegetation association name here. Refer to the Vegetation Key to select the type. If the vegetation in this polygon does not exactly match the descriptions in the key, it is okay to leave at the alliance level with notes. If the polygon contains multiple associations, and has been mapped at the alliance level, don't fill this in. You can add Notes to cover those.

### **% Cover by Layer**

**Conifer Cover:** The total foliar cover (considering porosity) of all live conifer trees, disregarding overlap of individual trees.

**Hardwood Cover:** The total foliar cover (considering porosity) of all live hardwood trees, disregarding overlap of individual trees.

**Total Tree Cover:** The total foliar cover (considering porosity) of all live tree species, disregarding overlap of individual trees. This value may be less than the sum of the conifer and hardwood covers due to overlap.

**Shrub Cover:** The total foliar cover (considering porosity) of all live shrubs, disregarding overlap.

**Herb Cover Class:** The total cover (considering porosity) of all herbaceous species, disregarding overlap. Circle the appropriate cover class range.

<2%      2–9%      10–40%      >40%

**Tree Height:** Circle the height range of the modal tree height.

<0.5m    0.5-1m    1-2m    2-5m    5-10m    10-15m    15-20m    20-35m    35-50m    >50 m    NA

**Tree DBH:** Circle one of the tree size classes provided. Size class is based on the average diameter at breast height (dbh) of each trunk (standard breast height is 4.5ft or 137cm).

When marking the main size class, make sure to estimate the mean diameter of all trees over the entire stand, weighing the mean toward the larger tree dbh's if large trees are consistent in the stand, though they may be low in cover. The "**T6 multi-layered**" dbh size class signifies a multi-layered tree canopy, with a size class T3 and/or T4 layer growing under a T5 layer and a distinct height separation between the classes. Stands in the T6 class must contain a total absolute tree cover that exceeds 60% including at least 10% cover of size class 5 (>24" dbh) trees growing over a distinct layer of trees in size classes 3 (>6-11" dbh) or 4 (>11-24" dbh) with at least 10% combined cover.

**Exotics:** Circle the appropriate level:

None or not visible

1. Light, less than 33% of total cover is non-native
  2. Moderate, between 33% and 66% of total cover is non-native
  3. Heavy, more than 66% of total cover is non-native
- Not Applicable

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### Estimated area of identifiable vegetation viewed:

Enter a rough estimate of the **percent of the polygon** that you were able to assess from your point AND any additional area that you were able to view while driving or walking around or through the polygon.

### Is this a “multiple” point assessment?:

Circle **NO** or **YES**. If Yes, fill in the sequence and total number of points for this polygon (e.g., 1 of 2 points for this polygon).

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Surveyor:

Other Surveyors:

Date:

Location Name:

Waypoint ID:

Polygon UID:

GPS Name \_\_\_\_\_

Projected? Yes / No / Base

If Yes, enter: Distance (m): \_\_\_\_\_ Bearing (°): \_\_\_\_\_ Inclination (°): \_\_\_\_\_

If Yes, enter: Base Waypoint ID: \_\_\_\_\_

Record either UTM's or Decimal Degrees

Base UTM's / Projected UTM's (circle one)

UTME \_\_\_\_\_ UTMN \_\_\_\_\_

Decimal degrees: LAT \_\_\_\_ . \_\_\_\_\_ LONG \_\_\_\_ . \_\_\_\_\_

Zone: 11 NAD83

GPS error: ft / m / PDOP \_\_\_\_\_

Camera name:

Photo #s:

Strata	Species	% cover	C	Strata	Species	% cover	C

Notes:

Map Unit Name:

Secondary:

Confidence in map unit ID: L M H Explain:

Describe above:

Linework problems ☐

More than 1 vegetation type in this polygon ☐

Vegetation change since imagery taken ☐

Field Alliance:

Field Association:

Conifer Cover: \_\_\_\_\_ Hardwood Cover: \_\_\_\_\_ Total Tree Cover: \_\_\_\_\_ Shrub Cover: \_\_\_\_\_

Herb Cover Class <2% 2–9% 10–40% >40%

Tree Height <0.5m 0.5-1m 1-2m 2-5m 5-10m 10-15m 15-20m 20-35m 35-50m >50 m NA

Tree DBH : **T1** (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Exotics (relative cover) None or not visible <33% 33-66% >66% NA

Estimated % of polygon viewed \_\_\_\_\_ Is this a multiple point assessment? No / Yes If "Yes," point \_\_\_\_\_ of \_\_\_\_\_



Accuracy Assessment Form

(10/2/2023)

Surveyor:

Other Surveyors:

Date:

Location Name:

Waypoint ID:

Polygon UID:

GPS Name \_\_\_\_\_

Projected? Yes / No / Base

If Yes, enter: Distance (m): \_\_\_\_\_ Bearing (°): \_\_\_\_\_ Inclination (°): \_\_\_\_\_

If Yes, enter: Base Waypoint ID: \_\_\_\_\_

Record either UTM's or Decimal Degrees

Base UTM's / Projected UTM's (circle one)

UTME \_\_\_\_\_ UTMN \_\_\_\_\_

Decimal degrees: LAT \_\_\_\_ . \_\_\_\_\_ LONG \_\_\_\_ . \_\_\_\_\_

Zone: 11 NAD83

GPS error: ft / m / PDOP \_\_\_\_\_

Camera name:

Photo #s:

Strata	Species	% cover	C	Strata	Species	% cover	C

Notes:

Map Unit Name:

Secondary:

Confidence in map unit ID: L M H Explain:

Describe above:

Linework problems ☐

More than 1 vegetation type in this polygon ☐

Vegetation change since imagery taken ☐

Field Alliance:

Field Association:

Conifer Cover: \_\_\_\_\_ Hardwood Cover: \_\_\_\_\_ Total Tree Cover: \_\_\_\_\_ Shrub Cover: \_\_\_\_\_

Herb Cover Class <2% 2–9% 10–40% >40%

Tree Height <0.5m 0.5-1m 1-2m 2-5m 5-10m 10-15m 15-20m 20-35m 35-50m >50 m NA

Tree DBH : **T1** (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

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Estimated % of polygon viewed \_\_\_\_\_ Is this a multiple point assessment? No / Yes If "Yes," point \_\_\_\_\_ of \_\_\_\_\_