Habitat Monitoring Protocol

Visual Obstruction Method

Density of Vertical Cover

METHOD

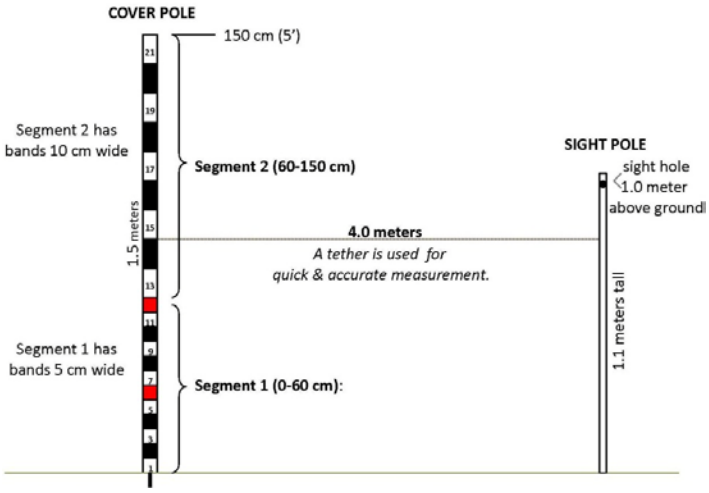
Visual Obstruction using a Cover Pole. A cover pole (Robel pole) is a device used to estimate the visual obstruction resulting from standing plants or residues; an indicator that reflects the density of vertical cover. This method can be implemented with one or two people, and is consistent and time-effective.

MATERIALS

Cover Pole: 1.5 meter tall, 1" diameter, with contrasting bands numbered sequentially from the bottom of the pole. The bands are in increments of 5 cm to provide a higher precision within the first 60 cm above ground. Bands are in increments of 10cm thereafter (60cm-150cm). A stake may be used to anchor the pole to the ground; for one person observations. A four meter tether attaches the cover pole to the sighting pole. The sight pole is 1.10 meters tall, 0.5" in diameter, with a bored sight hole at 1.0 meter in height. Toledo et.al 2008 provides details on construction.

Other Materials: Map, GPS/compass, camera, clip board/pencil, calculator, data forms (Appendix 1). For permanent transects: 1' rebar (or other) and hammer.

Diagram 1 – Cover Pole



TIMING

Time the monitoring activities to ensure the data will be useful to assess existing conditions and to show changes with time or management technique.

Examples: 1] If assessing current year nesting habitat, monitor one to four weeks prior to the nesting season.

2] If assessing the potential for nesting habitat for the following year, monitor towards the end of the current year's growing season (provided no more utilization of the site); to assess residual cover.

3] If using grazing as a habitat management tool, assess prior to (planning stage) and towards the end of the rotation (not afterwards); to ensure the desired vegetation conditions are reached without overutilization. Adjust the grazing schedule based on the results.

FREQUENCY OF MONITORING

Conduct monitoring as often as needed to satisfy data requirements. In most cases, monitoring will occur prior to the initiation of management action (baseline), periodically throughout the action (to modify the action), and immediately afterwards to show the results achieved through the management action.

ESTABLISH STUDY SITES

Identify and prioritize key areas to monitor (study sites). Study sites will generally be critical areas such as nesting and brood-rearing habitats, where the data will be useful to assess existing conditions and to show changes with time or management technique. Careful consideration and good professional judgment must be used in selecting study sites to ensure the validity of any conclusions reached. Additionally, since study sites are subjectively selected, no valid statistical projections to an entire management area are possible.

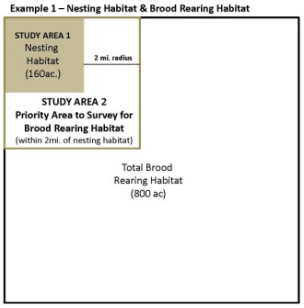
Key Considerations:

- Each monitoring area should be established within one, fairly homogenous, habitat type. (e.g. midgrass grasslands, midgrass grassland-shrubland, shortgrass grassland, etc.).
- Areas with different levels of utilization (i.e. different pastures) should not be included within the same study site; differences in percent utilization may mask extremes in either of the pastures.

The sites selected will be identified on a map prior to field data collection, and given an identifying name (ex. T1512/Field 1_nesting12'). Calculate the acres of each study site. It may also be helpful to use an enlarged aerial map as reference in the field, or as downloaded aerial images in a handheld device.

Provided below is an example of targeted monitoring efforts for ground nesting bird habitat:

The project involves improving 160 acres of nesting habitat and 800 acres of brood rearing habitat; the study will focusing efforts on monitoring the 160 acres of nesting habitat, and a two mile radius of brood rearing habitat (or avg. distance the target species will travel between these habitat types). Each habitat type (nesting/brood rearing) will be a separate study area. The brood rearing habitat outside of the study plot may have a few random sample points taken to check for inconsistencies.



ESTABLISH SAMPLE SIZE

The number of "Sample Points" needed within each study site, will vary according to the size and complexity (variability) of the site. *i.e.* the more variable the site conditions, the more sample points needed.

- As a general rule, a <u>minimum</u> of 60 sample points should be taken for every 640 acres.
- After the minimum sample points are taken, run a statistical test to determine if more sample points are needed. The calculation can be found in within the Data Form.
  - ✓ *Use a 95% confidence level with a 5-20% confidence interval.*

ESTABLISH TRANSECT LINES & POINT INTERVAL

Sample points are generally taken at set intervals along a <u>randomly placed</u> transect line. Typical length of a transect line is 50, 100, or 200 meters, and sample points are often located at 10 meter intervals along the line. The interval of points may vary according to the site needs. Document the method used on field data form, and it's recommended to GPS the transect line start and stop points. If permanent markers are placed, the starting point will be GPS'ed and marked with a one foot rebar post placed and azimuth of the line direction recorded.

- Provide good interspersion of transect lines throughout the study site. Avoid placing all of the sampling points along a single transect line; it will not provide a representative sample.
- Ensure that the transect lines do not cross each other, and they should be at least 20 meters apart.
- Sample points may be determined in the field by measuring or pacing out the distance. If using the pace method, calculate your walking pace (paces/meters) or use a pedometer.

FIELD PROCEDURE

I. **Photo Documentation**. The starting point of each transect will serve as the photo point location. Each photo point will include a landscape level photo and a ground level photo. The landscape photo will taken in the same azimuth as the transect line, at a height of 1.5 meter (the top of the cover pole may be used as a height guide). The ground level photo will be taken at or near the photo point at a location which is representative of the plant composition and ground cover. A marker board may be used in the photo to document the study site name, transect number, point number and date.

II. **Visual Obstruction Readings (VOR)** are made with the cover pole placed on the transect line, at each sample point. Ensure the cover pole is vertical with the base firmly on the soil surface. The sample point can be moved, along the transect line, if it falls in a depression or on a mound/rock. At each sample point, one to four VO reading will be taken on the pole. The number of observations required will be determined by the size and complexity of the study site (see Sample Size).

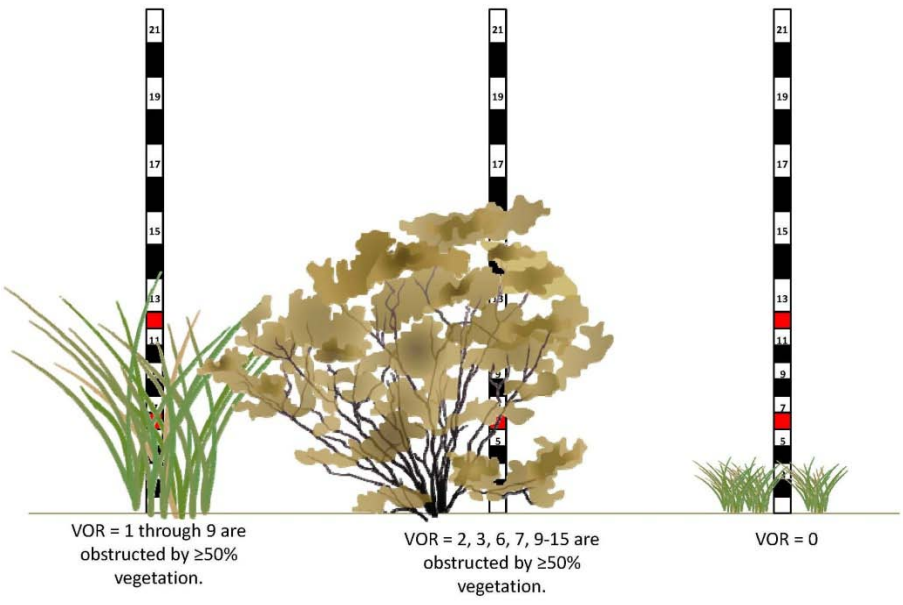
- One reading, take the reading from the North side of the transect line.
- Two readings will be taken perpendicular to the transect line; a third may be taken in any direction.
- Four readings will be taken from the four cardinal directions (north, south, east, and west). Each reading will be made by viewing the cover pole through the hole on the sight pole, using the tether to accurately take the reading at a distance of four meters.

Use the Visual Obstruction Data Form to record all the bands which are≥ 50% obscured by vegetation (live or dead) at 0-60cm, and record all bands obscured ≥ 25% at 60-150cm.

VOR may be taken for all vegetation types, for only specific species, or for different cover types.

III. **Estimate Average Plant Height.** At each sample point estimate the average height (cm) of the overall vegetation within a 12 inch diameter circle around the pole. Use the cover pole to measure.

Diagram 2 – Visual Obstruction Reading (VOR)



REFERNCES

Toledo, D. et.al. 2008. Cover Pole Design for Easy Transport, Assembly, and Field Use. Journal of wildlife management. 2008 Feb., v. 72, no. 2, p. 564-567.

Appendix 1 – Visual Obstruction Data Form

- A usable version can be found as an Excel document named "VOCoverPole_DataForm.xlsm". The worksheets provide a printable form, and a data entry form which automatically calculates the data.