

U.S. Department of the Interior

National Park Service

Photomonitoring Protocol for the Upper Columbia Basin Network

Standard Operating Procedure (SOP) #4

Photopoint Establishment

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Note: This SOP describes the step-by-step procedures for establishing photopoints for purposes of long-term trend monitoring of vegetation cover and demography, stream bank morphology, and for evaluating general landscape change.

Required reading:

Hall, F.C. 2002. Photo point monitoring handbook. U.S. Forest Service General Technical Report PNW-GTR-526. Parts A and B. 134 p.

Rogers, G.F., H.E. Malde, R.M. Turner. 1984. Bibliography of repeat photography for evaluating landscape change. University of Utah Press, Salt Lake City.

Wright, R. G. and S. C. Bunting. 1994. The Landscapes of Craters of the Moon National Monument. University of Idaho Press, Moscow.

Procedures:

1. To relocate an historic camera station, prepare a copy of the original photograph and include it in the site locator fieldbook (see SOP#1). Identify date and time of day of the original photograph, if possible, and information on the camera equipment. If this information is unavailable, multiple visits may be required to duplicate the exact shadows and plant phenology captured in the original photograph. Once at the approximate site of the original camera station, begin using the camera viewfinder to find the correct position and aim of the camera. Do not rely on simply framing the new photograph to match the original, as this will result in errors resulting from different lens and view angles. It will be necessary to visually approximate the alignment and distance between near and distant objects in the center of the view. Use a polaroid camera to test and adjust position and aim. Hall (2002) describes a method of relocation using triangulation between objects in the center and sides of both photographs, which may be necessary in some cases. Once the exact position and aim of the camera have been established, proceed with data collection and establish permanent site markers.
2. To locate a new photopoint, go through the steps outlined in the detailed sampling design to select sample points. In the field, locate the photopoint, and then proceed to establish a camera station and witness site. Carefully consider placement of the camera station and witness site to ensure long-term stability of the site. Anticipate possible catastrophic events, such as floods, and plant growth that might obscure the camera view.
3. To locate a camera station, locate the photopoint, and then carefully consider the monitoring objectives. Ideally, determine whether landscape or topical photopoints (or both) are required prior to field work. For topical photographs, the meter board height should not be less than 25% of the height of the

photograph. A distance of 5-20 m will be appropriate for most topical applications. At 20 m, a 2-m meter board will be necessary. A clear view of the meter board from the camera station is necessary for grid intersect analysis, and may require clipping of vegetation away from the base. **Once a distance between camera station and photopoint is established, it must remain the same in all subsequent photographs.** Depending on monitoring objectives, co-location of multiple photopoints monitored from a single camera station may be possible, increasing efficiency and sampling intensity. Multiple camera stations for a single photopoint may be necessary if different views are needed.

4. Locate a witness station after photopoints and camera stations have been established. The witness site should be easy to relocate. The witness station should be a place from which a good overview of the whole area can be gained, and an informative photograph can be taken that shows both the photopoint and the camera station. Attempt to include helpful reference points in the photograph, including distant hills or other permanent features. Include distinctive vegetation, and witness site photographs can be updated as reference features change. A permanent marker, such as a yellow aluminum bearing tree sign, can be placed at the witness site without attracting unwanted attention to the actual photopoint.
5. Permanently mark the photopoint, camera station, and witness site locations. In sensitive areas, several options are available, including sinking a steel survey marker into the ground so that it is flush with the soil. Relocation will require the use of a metal detector. At present in the UCBN, this is not necessary. Stamped metal fenceposts or ½" steel reinforcing bar (rebar) will work best for permanent markers that are easy to relocate. In backcountry situations a lightweight alternative may be preferred. Painting the tops of markers bright orange can help with relocation. Attach aluminum tags with the identification information engraved into the tag. In unstable situations, such as stream banks subject to erosion or deposition, consider driving the photopoint marker into the ground so that it is exactly the height of the 1-m mark on the meter board. This will provide a reference point for future meter board placement in the event of bank change.
6. Record detailed location and directional information for photopoints, camera stations, and witness sites into digital and paper data forms. Use GPS to collect Universal Transverse Mercator (UTM) coordinates to the nearest meter. Set the horizontal datum settings of the GPS unit to the North American Datum of 1983 (NAD83). See SOP # 3 for detailed instructions on using the GPS. Record the Public Lands Survey legal description location (Township, Range, Section). Record the distance and bearing (azimuth) from the camera station to the photopoint. For distance, use a 30-m tape reel and round to the nearest decimeter. For bearing, round to the nearest degree. Develop a description of the site and include details of permanent or semi-permanent topographic and vegetation features to aid in relocation. Ensure that directions to the witness site are infallible, and that directions from the witness site to the camera station and photopoint are based on paced estimates of distance and bearings. Include driving

directions, mileage estimates from odometer readings, and bearings from a designated parking spot to the witness site.

7. Develop and follow closely the numbering system developed to identify camera stations and photopoints. This has not been developed for the UCBN, but will be included in the next version of this protocol. It is important that the numbering and cataloging system is integrated into the monitoring program, and that co-located plots share numbers to minimize confusion.