

Table 3, version 1.1. Fall NBCI coordinated monitoring protocol (Covey Point Count) attributes and methodologies.

Attribute	Methodology
Survey season	Fall
Length of survey period	Approximately a 6-8 week window, centered on calling peak, but terminated prior to hunting. It is recommended that sampling begin early in the season to maximize opportunity to collect data under best weather conditions.
Start and stop time	45 minutes before sunrise until sunrise.
Focal versus Reference Areas	Fall covey counts are recommended on focal and reference areas, but only required on the focal area.
Calling quail observations	Record actual location and time of first detection of coveys (with unique number) on aerial maps with crosshairs printed for guides to be entered into GIS. Be conservative when deciding whether or not there is >1 covey in a "small" area.
Flushed quail observations	Recommended that >10 coveys be flushed to count number of individuals per covey for calculation of quail per acre, versus coveys per acre, and to learn observer accuracy in identifying locations of calling quail.
Distance between points	About 1,000 m (Wellendorf et al. 2004, Seiler et al. 2005).
Point count radius	Unlimited, but for designing data map, about 500 m (most Distance analyses truncate fall distance observations >500 m). Moreover, Distance sampling is relatively insensitive to double counting of birds (Buckland et al. 2001:37,176, and Buckland 2006).
Number of points to sample and observations per point	Determined by desired effect size and precision. Without pilot data, a starting number would be enough points to survey at least 20% of focal area. Given 20% sampling and a focal area of at least 1,500 acres (about 8 500-m sampling circles), recommended number of sampling points in fall is at least 2. Collect data from each of these points >1 time.
Order of visiting points	Randomize order of visits if not visiting all points in one day.
Noise level	0, 1, 2, 3 noise index as covariate.
Weather	Best weather conditions: stable or rising barometric pressure, clear sky, and wind speed <2 (Beaufort). Avoid sampling if cloud cover >75% or wind index >4.
Visual/auditory detection	Auditory only.
Electronic covey calls	Recommended only after 2 observations per point.
Observer	Each with a unique identifier or full names. Recommended: annual training for all observers. One or more observers per point.
Covariates	Habitat managed, weather, harvest, land cover, habitat index.
Covariates for estimating detection probability	Barometric pressure at 0100 and 0700 hours; wind-Beaufort scale; percent cloud cover; noise level and observer ID.

Buckland, S. T., D. R. Anderson, K. P. Burnham, J. L. Laake, D. L. Borchers, and L. Thomas. 2001. Introduction to Distance Sampling. Oxford University Press, Oxford. 432 pp.

Buckland, S. T. 2006. Point transect surveys for songbirds: robust methodologies. *The Auk* 123:345-357.

Seiler, T. P., R. D. Drobney, and T. V. Dailey. 2005. Observer group accuracy in plotting locations of northern bobwhites when using fall covey counts. *Proceedings Annual Conference Southeastern Association of Fish and Wildlife Agencies* 59:57-65.

Wellendorf, S. D., W. E. Palmer, and P. Bromley. 2004. Estimating calling rates of northern bobwhite coveys and measuring abundance. *Journal of Wildlife Management* 68: 672-682.