

## Response of Breeding Male Ruffed Grouse, *Bonasa umbellus*, to Playbacks of Drumming Recordings

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On seven separate occasions I assessed the response of breeding male Ruffed Grouse (*Bonasa umbellus*) to a playback of a drumming recording. On five occasions, the resident male grouse approached to within 20 m of my location, four of these between 9 and 3 m, despite my making no attempt to conceal my presence. This technique may be useful in verifying the presence of breeding males in known territories, and may also be useful in luring breeding males within noosing range for capture.

**Key Words:** Ruffed Grouse, *Bonasa umbellus*, playbacks, drumming, trapping, census, breeding season, breeding males, territorial, Alberta.

Male Ruffed Grouse (*Bonasa umbellus*) drum from one or several locations (usually logs) within a territory during the spring breeding season (Gullion 1967). Drumming, which produces a sound audible to the human ear up to 300 m away, functions both as a territorial defense mechanism and as a means to attract females (Bump et al. 1947). Because it is relatively easy to detect drumming male grouse, censuses using drumming counts as an index of population size or density are commonplace (Petraborg et al. 1953; Frank 1947). Furthermore, as drumming logs are easy to locate, breeding males may be trapped using mirror traps placed near drumming logs (Gullion 1965). Both the censusing and the trapping methods have drawbacks, however. Gullion (1966) pointed out problems in using drumming counts to estimate population density, due to presence of silent males. Mirror traps, while reasonably effective, are passive sampling, and many trap-days may pass before a targeted individual is trapped. Actively searching out and capturing individual Ruffed Grouse with noosing poles is much more difficult than noosing tamer grouse species such as Spruce Grouse (*Falci pennis canadensis*) and Blue Grouse (*Dendragapus obscurus*) (Zwickel and Bendell 1967).

Despite the use of playbacks of territorial songs/calls to census or attract many other bird species (e.g., Falls 1981; Villard et al. 1995; Rail et al. 1997), I could find no mention of use of playbacks of drumming recordings in the Ruffed Grouse literature. Therefore, I made field breeding trials as a preliminary investigation of how breeding male Ruffed Grouse respond to such playbacks.

On 6 and 7 May 1999, I conducted playback trials using a recording of drumming by a male Ruffed Grouse from Peterson Bird Songs, Western Edition. The trials were in the Cooking Lake-Blackfoot Provincial Recreation Area in central Alberta

(53° 26' N, 113° 02' W). I used a portable stereo player (Sharp WQ - CD220) which had an extra bass option to better replicate the low frequencies produced by drumming grouse. The drumming recording was played through an amplified 6 × 9 - inch mid-range speaker (Kudelski S. A., Switzerland), and was clearly audible to human ears at least 150 m away.

One trial was conducted in the evening on 6 May (18:00), the remainder on 7 May throughout the day (10:00–17:00). The procedure for each trial was as follows: I approached a drumming log known to be occupied during the current breeding season until 20 - 40 m distant. In most cases I selected a log to sit on and placed the portable stereo beside me. The speaker was placed on the ground approximately 1 m away from the stereo. The drumming recording consisted of individual drumming bouts alternating with 3 - 4 minutes of silence. I initially played the drumming tape for about 20 minutes; if there was no response during this time I ended the trial. If the resident male responded to the initial playback I continued playing the tape until the end of the trial. I was careful to minimize motion that would scare off an approaching male grouse, but otherwise made no effort to conceal my presence. During a trial I noted general behavioural responses of the resident male grouse to the playback. Trials ended 30 minutes to 1 hour after they began. Each trial involved a different male grouse territory, except trials 3 and 4, which mistakenly involved the same territory. Results of each trial follow:

*Trial 1* — I sat on a log 20 m from the resident male's drumming log and played the recording. The male immediately appeared and throughout the course of the trial circled my location at a distance of 6 m, strutting and making aggressive clucking sounds. Eventually, the male climbed onto the log I

was sitting on, about 9 m away, and remained there until I ended the trial after 50 minutes.

*Trial 2* — I parked my vehicle on a narrow road and set up the speaker on the hood, 45 m from the resident male's drumming log. I remained in the truck and played the drumming recording. Throughout the 30-minute trial, the male circled the truck at a distance of 9 m while strutting and clucking. The male appeared reluctant to linger on the open road, but crossed it several times. This behaviour continued until the end of the trial.

*Trial 3* — I sat on a log 40 m from the resident male's drumming log and played the recording. The male was very aggressive, strutting and clucking, and seemed almost oblivious to my presence, approaching to 3 m from the speaker. It subsequently retreated to approximately 20 m away and remained in the vicinity until the trial ended.

*Trial 4* — I inadvertently placed the speaker too close to the territory of the male used in Trial 3, therefore this bird again responded to the drumming playbacks. It approached only to 9 m this time, and was much less aggressive than in Trial 3. It remained at the same distance away from the speaker throughout the trial. This suggests the individual had already become habituated to the playback; habituation has been noted in other bird species subjected to call playbacks (e.g., Searcy et al. 1994).

*Trial 5* — I sat on a log 13 m from the resident male's drumming log, and played the drumming recording for 20 minutes. There was no response.

*Trial 6* — I sat on a log about 2 m away from a secondary drumming log (Gullion 1967). The resident male was apparently drumming on another log about 40 m away. For the first 20 minutes of the playback, the resident male continued drumming. After 20 minutes, however, the male appeared, approximately 20 m away. This individual was extremely cautious, and approached no closer than 20 m. It did not strut nor make clucking noises. When I ended the trial and approached the bird, it did not flush but rather fled on the ground, as territorial males are inclined to do.

*Trial 7* — I sat approximately 5 m from a resident male's drumming log. The male was drumming on another log approximately 30 m distant. The male seemed to drum in response to the playback, as on several consecutive drumming bouts, it drummed immediately after the recorded bout ended. Males drumming in sequence during the breeding season were noted by Archibald (1976). The male had not approached the speaker after 20 minutes, therefore the trial was ended.

These results verify that playbacks of Ruffed Grouse drumming may be useful in censusing. In the one trial where no response from the resident male was elicited, drumming was not heard, nor was the bird seen, prior to the trial. Playback trials were con-

ducted approximately 10 days after estimated peak of drumming activity as judged from the frequency of drumming individuals and weather conditions. Stronger responses might have been observed had the trials been conducted during the peak period.

Playbacks of drumming recordings could also be useful in luring Ruffed Grouse into noosing range for capture. Although generally regarded as a wary bird, Ruffed Grouse responding to the drumming playback approached to within 9 m of my location on four of five occasions. Had I hidden, and had a stuffed dummy grouse been placed near the speaker, grouse might have approached the playback location to within noosing range.

Finally, although the drumming playback appeared of sufficient realism to "fool" male Ruffed Grouse, to the human ear the playback did not fully capture the bass sound of the drumming. I recommend use of a woofer or sub-woofer, rather than a mid-range speaker, when using playbacks of drumming recordings.

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#### Literature Cited

- Archibald, H. L. 1976. Spring drumming patterns of ruffed grouse. *Auk* 93: 808–829.
- Bump G., R. W. Darrow, F. C. Edminster, and W. F. Crissey. 1947. Ruffed grouse: life history, propagation, management. The Holling Press, Inc. Buffalo, New York.
- Falls, J. B. 1981. Mapping territories with playback: an accurate census method for songbirds. *Studies in Avian Biology* 6: 86–91.
- Frank, W. F. 1947. Ruffed grouse drumming site counts. *Journal of Wildlife Management* 11: 307–316.
- Gullion, G. W. 1965. Improvements in methods for trapping and marking ruffed grouse. *Journal of Wildlife Management* 29: 109–116.
- Gullion, G. W. 1966. The use of drumming behavior in ruffed grouse population studies. *Journal of Wildlife Management* 30: 717–729.
- Gullion, G. W. 1967. Selection and use of drumming sites by male ruffed grouse. *Auk* 84: 87–112.
- Lynch, J. F. 1989. Distribution of overwintering nearctic migrants in the Yucatan peninsula, I: General patterns of occurrence. *Condor* 91: 515–544.
- Petraborg, W. H., E. G. Wellein, and V. E. Gunvalson. 1953. Roadside drumming counts: A spring census method for ruffed grouse. *Journal of Wildlife Management* 17: 292–295.
- Rail, J.-F., M. Darveau, A. Desrochers, and J. Huot. 1997. Territorial responses of boreal birds to habitat gaps. *Condor* 99: 976–980.
- Searcy, W. A., S. Coffman, and D. F. Raikow. 1994. Habituation, recovery and the similarity of song types

- within repertoires in red-winged blackbirds (*Agelaius phoeniceus*) (Aves, Emberizidae). *Ethology* 98: 38-49.
- Villard, M.-A., G. Merriam, and B. A. Maurer.** 1995. Dynamics in subdivided populations of neotropical migratory birds in a fragmented temperate forest. *Ecology* 76: 27-40.
- Zwickel, F. C., and J. F. Bendell.** 1967. A snare for capturing blue grouse. *Journal of Wildlife Management* 31: 202-204.

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