

Notes and Discussion

Ear Flashing Behavior of Black-tailed Jackrabbits (*Lepus californicus*)

ABSTRACT.—We describe a previously unreported behavior of black-tailed jackrabbits based on 22 nocturnal observations in northwestern Texas in 1999 and 2000. When being followed at high speeds (40–55 km/h), jackrabbits exhibited four head positions: head up and both ears raised; head up and left ear raised; head up and right ear raised and; head down and no ears raised. While running in a zigzag fashion, jackrabbits changed among the four head positions in rapid succession. Because the ears have conspicuous coloration on the back side (white fur with black-tips), we speculate that ear flashing is an adaptation to confuse predators when being chased at high speeds. Interestingly, this escape behavior is similar to the white rump and side flashing of antelope (*Lepus alleni*) and white-sided (*L. callotis*) jackrabbits.

INTRODUCTION

Several *Lepus* species in North America have relatively elaborate behaviors that involve flashing parts of their white fur, presumably as adaptations to confuse pursuing predators. Perhaps the most well known is that of the antelope jackrabbit (*L. alleni*), which conspicuously flashes its left and right white rump patches in alternating order while running in zigzag fashion from potential predators (Seton, 1953; Dunn *et al.*, 1982; Best and Henry, 1993a). The white-sided jackrabbit (*L. callotis*) has a similar adaptation, as this species flashes its white rump and sides in alternating order while running from potential predators (Dunn *et al.*, 1982; Best and Henry, 1993b).

The behavior of the black-tailed jackrabbit (*Lepus californicus*) reportedly does not involve any elaborate behavioral adaptations as described above. However, when being chased by potential predators, the black upperside of the tail is shown, which stands in stark contrast to the white rump (Seton, 1953; Lechleitner, 1958). When running in zigzag fashion, this conspicuous coloration supposedly acts to confuse pursuing predators (Seton, 1953).

During wildlife research in northwestern Texas, we observed a unique behavior of black-tailed jackrabbits not previously described, and what we term “ear flashing.” Based on behaviors of other *Lepus* species, we speculate reasons for this behavior in black-tailed jackrabbits.

METHODS

Our study sites occurred along a complex of county roads (all dirt) in central Dallam and western Sherman counties, in extreme northwestern Texas. Both study sites were being used for an ecological study of swift foxes (*Vulpes velox*) and coyotes (*Canis latrans*), and are described in detail by Kamler *et al.* (2003). Vegetation at study sites consisted mostly of short-grass prairie grasslands, dominated by buffalograss (*Buchloe dactyloides*) and blue grama (*Bouteloua gracilis*), that was moderately to intensively grazed by cattle (*Bos taurus*). During nocturnal field research, we drove on the county roads and several times observed black-tailed jackrabbits running in the road in front of the vehicle. The jackrabbits often ran in front of the vehicle for >10 s, allowing us to observe their behavior with our headlights, before they eventually veered off the road (hereafter, pseudo-chases). After initially observing previously unreported behavior in this species, we began noting the exact behaviors, along with the date and speed at which we were traveling.

RESULTS AND DISCUSSION

From January 1999 to January 2000 we recorded 22 pseudo-chases while driving 40–55 km/h on both study sites. During all pseudo-chases, black-tailed jackrabbits exhibited four distinct head positions: head up and both ears raised; head up and left ear raised; head up and right ear raised and; head down and no ears raised (*e.g.*, ears were flat against back). While running in zigzag fashion ca. 3 m wide (width of road), jackrabbits changed among the four head positions, with only 1–3 s per head position. We could not detect any head positions associated with directional body changes, although this cannot be ruled out. Both sub-adult and adult jackrabbits (based on approximate body sizes) exhibited this behavior.

This is the first reported description of ear flashing by black-tailed jackrabbits. Previous descriptions of ear positions of this species were contradictory, as fleeing black-tailed jackrabbits reportedly exhibited erect (Seton, 1953:749), flattened (Dunn *et al.*, 1982:134), or slightly lowered (Lechleitner, 1958:149) ears. Perhaps because these authors did not follow this species in high-speed chases, this unique behavior went unreported prior to our observations.

Because the ears of black-tailed jackrabbits have conspicuous coloration on the back side (*e.g.*, white fur with black tips; Seton, 1953; Best, 1996), we speculate that ear flashing is an adaptation to confuse predators when being chased at high speeds. In fact, no other reason has been given for the conspicuous ear coloration in this species. Contrasting coloration has been related to predator confusion in other prey species (Hailman, 1977; Powell, 1982). Interestingly, both antelope and white-sided jackrabbits, which exhibit white flashing with other body parts, have inconspicuous ear coloration on the back side (*e.g.*, sparse hair with no prominent black tips; Seton, 1953; Dunn *et al.*, 1982; Best and Henry, 1993a, b). Thus, the contrasting ear coloration of black-tailed jackrabbits likely functions to enhance the effects of ear flashing. Finally, white-tailed jackrabbits (*Lepus townsendii*) also have conspicuous coloration on the back side of the ears (*e.g.*, whitish fur with black tips; Seton, 1953; Dunn *et al.*, 1982; Kim, 1987), thus ear flashing behavior also should be investigated in this species.

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