Participation by a male Grant’s gazelle in the defense of a fawn

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Introduction
In many ungulate species, females aggressively defend their young against predators (Estes & Estes, 1979; Hamel & Côté, 2009; Jarnemo, 2004; Reynolds, 1983; Wyman, 1967). This behavior can improve the offspring’s chance of survival, thereby increasing the mother’s reproductive success (Grovenburg et al., 2012). Paternal defense has been reported in some equids, in which males form temporally stable relationships with females and their mutual dependent offspring (Berger & Rudman, 1985; Klingel, 1969). Similarly, male white-tailed deer (Odocoileus virginianus) yearlings have been reported to participate in defense of their infant half-siblings (Grovenburg et al., 2009). However, most ungulate social systems are characterized by male dispersal and unstable groups with fluctuating membership. In such species, adult males are unlikely to associate with related infants and therefore do not gain inclusive fitness benefits from defensive behavior (Jacques & Jenks, 2010).

There are a handful of reports of male ungulates acting to defend apparently unrelated infants. The drivers of this behavior are unclear, and more observations are necessary to identify potential explanations. Here I report an instance in which an adult male Grant’s gazelle (Gazella granti) participated in the defense of a neonate against three black-backed jackals (Canis mesomelas).

Materials and Methods
The interaction occurred on 17 August, 2012 at Ol Pejeta Conservancy in Laikipia, Kenya. I observed and video-recorded the events from a vehicle parked approximately 70 m from the subjects.

Results and Discussion
Shortly before 5:00 PM I spotted a female Grant’s gazelle grooming a fawn. The fawn walked unsteadily and the female frequently raised her tail away from her body, a typical peripartum behavior in antelope (Gosling, 1969; Jarman, 1976; Roberts & Rubenstein, 2014). These observations suggested that the fawn had been born earlier that day.

At 5:01 PM, three jackals attacked the fawn. The mother responded with typical defensive behavior previously described for gazelles (Estes, 1967; Walther, 1969; Wyman, 1967). When a jackal approached the fawn, the female would chase it away, allowing another jackal to rush in and seize the infant. The mother eventually stopped chasing one jackal in order to charge the other jackals, forcing them to drop their prey. This general pattern of behavior persisted for the duration of the attack, which lasted until 5:25 PM when the jackals killed the fawn.

An adult male gazelle approached the scene of the attack approximately one minute after the jackals arrived and remained until the jackals killed the fawn. He spent much of
this time observing the attack, but also interacted with the fawn and jackals in four distinct ways that hindered the jackals’ attempts to kill the fawn (Supplementary Video). First, on at least 18 occasions, the male lowered his horns toward or chased a jackal that came near him, causing the jackal to retreat. Second, on at least six occasions, the male lowered his horns toward or chased a jackal holding the fawn, causing it to drop the fawn and retreat. Third, in one instance, he ran alongside the female as she chased jackals. Finally, in four instances, the male stood over or directly next to the fawn, which prevented the jackals from approaching and seizing it.

In comparison to the female’s vigorous and sustained defensive efforts, the male’s behaviors were markedly less intense. Rather than running in pursuit of the jackals, the male walked or trotted and only gave chase for a short distance. While the female fully lowered her horns when charging, the male lowered his head only slightly. Furthermore, the male’s aggression did not seem to be triggered by the jackals’ attacks on the fawn: in many instances the jackal seized and bit the fawn while the male looked on passively.

The male’s lower motivation to chase the jackals was advantageous for the fawn in one regard: when he was standing near the fawn, and thereby preventing the jackals from seizing it, the jackals could not draw him away into a chase. Although this may have delayed the fawn’s death, the male always eventually wandered away, leaving the fawn exposed to attack.

There are several possible explanations for the defense of infants by unrelated males. First, the male’s behavior may serve to promote the survival of fawns that represent future mating opportunities. If so, males should only protect female fawns (Berger, 2005). I could not determine the sex of the fawn during my observation. Second, the “Mating Effort Hypothesis”, proposed for primates, suggests that males protect infants in order to secure future mating opportunities with the infant’s mother (Smuts & Gubernick, 1992). The unstable nature of associations between adult Grant’s gazelles suggests that this explanation is unlikely. Third, by attacking jackals, the male may discourage them from hunting Grant’s gazelles in the future (Berger, 1979; Berger, 2005). However, jackals routinely attack gazelle fawns despite maternal defense behavior. Furthermore, coyotes (Canis latrans) that experience attacks from female pronghorn (Antilocapra americana) are no less likely to attack fawns in the future (Lipetz & Bekoff, 1980). Fourth, the “Naïve Prey Hypothesis” suggests that predator harassment may arise when low-risk encounters offer prey an opportunity to learn about predators (Berger, 1979; Jacques & Jenks, 2010). Black-backed jackals rarely hunt adult gazelle, so inspection probably confers little benefit to the male. Finally, some cases of apparent male defense may actually be instances of the male attempting to prevent the female from leaving his territory (Lipetz & Bekoff, 1980). The male Grant’s gazelle did not chase the female, and she was not attempting to leave the area; therefore, I reject this explanation for my observation.

I suggest that the male gazelle’s behavior was not targeted toward the defense of the fawn, but rather resulted from a series of proximate stimuli that elicited investigative and defensive reactions. First, the male may have been attracted to the scene of the attack by the high level of activity, the fawn (Roberts & Rubenstein, 2014), or the female, whose raised tail may have suggested sexual receptivity (Estes, 1967). Once during the observation, the male approached the female with his head and tail raised in courtship posture (Estes, 1967; Supplementary Video), which supports the latter interpretation. His tendency to approach and sniff the prone fawn also suggests an investigative motive. The male’s brief chases and threats toward the jackals may have been defensive.
reactions to their aggressive behavior, aimed at protecting himself rather than the fawn. Male ungulates commonly behave aggressively toward predators when they are threatened (Gese, 1999; Hamel & Côté, 2009).

Thus, I argue that this observation does not represent evolved defense behavior, but rather a sequence of responses to attractive and threatening stimuli.

References