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Notes

A Gray Wolf (*Canis lupus*) Delivers Live Prey to a Pup

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A two-year-old sibling Gray Wolf (*Canis lupus*) carefully captured an Arctic Hare (*Lepus arcticus*) leveret alive on Ellesmere Island, Nunavut, Canada, and delivered it alive to a pup 28–33 days old. This appears to be the first observation of a Gray Wolf delivering live prey to a pup.

Key Words: *Canis lupus*; Gray Wolf; Arctic Hare; *Lepus arcticus*; learning; feeding; Ellesmere Island; Nunavut

The capacity to hunt and kill is innate in canids, as anyone who has raised a domestic dog (*Canis lupus familiaris*) can attest (Fox 1969). However, because of the difficulty of observing young free-ranging carnivores hunting and killing, information about the role of learning in helping fine-tune these behaviors is still developing (Caro and Hauser 1992; Thorton and Raihani 2008), and I know of no such information on Gray Wolves (*Canis lupus*).

Several felid species bring live prey to kittens (Kitchen 1999). Meerkats (*Suricata suricatta*) feed disabled scorpions (of the genera *Parabuthus* and *Opisthophthalmus*) to pups (Thornton and McAuliffe 2006). Battered Foxes (*Otocyon megalotis*) bring live invertebrates to their young (Nel 1999; Pauw 2000), and Red Foxes (*Vulpes vulpes*) allow cubs to capture live earthworms (MacDonald 1980). The phenomenon is discussed and the literature is summarized in Caro and Hauser (1992) and Thornton and Raihani (2008).

In Gray Wolves, the canine teeth are usually fully emerged by about 7 months of age (Van Ballenberghe and Mech 1975), and we know that by winter, when young-of-the-year are 7–10 months old, they accompany adults and participate in the hunting and killing of prey (MacNulty *et al.* 2009). Even without parents present, 8- or 9-month-old Gray Wolves can kill White-tailed Deer (*Odocoileus virginianus*) (M. Jimenez, personal communication).

Young Gray Wolves accompanying adults probably learn to perfect their killing technique by observing the adults during the actual attacking and killing, and probably by imitating them. Yearling Gray Wolves seen up close while helping their parents kill a Muskox (*Ovis moschatus*) calf bit the calf as close as possible to where their parents were biting it on the head (Mech 1988, page 78), even though no Gray Wolf was biting any other part of the body and the head holds were not lethal.

Although the basic killing tendency is innate in carnivores, gaining experience at an early age would be adaptive because prey is often so difficult to find, catch, and kill that any advantage at any step in the process would promote survival. Thus the following observation of a two-year-old sibling Gray Wolf providing a pup 28–33 days old (the pup's ears had only begun to stand upright 1–2 days before) with an opportunity to handle a live Arctic Hare (*Lepus arcticus*) is informative. I made the observation on 6 July 1994 on Ellesmere Island, Northwest Territories (now part of Nunavut), Canada, where I studied human-habituated Gray Wolves around dens close-up each summer from 1986 through 2010 (Mech 1988, 1995, 2005).

The primary prey of those Gray Wolves was Muskoxen and Arctic Hares, and the composition of the pack attending the den under observation during the present study was a breeding male and female (named Whitey), a two-year-old female (Explorer), a two-year-old male, and a single pup (Mech 1995). It was common for the adults to catch and quickly kill young Arctic Hares, and I had watched Explorer do so several times both as a yearling and as a two-year-old (Mech *et al.*, in press).

Following are my observations as edited from my field notes:

6 July 1994, 1534—I left the north side of the den ridge and started toward a hill to the east. Explorer followed me and, when 150–250 m from the den, surprised an Arctic Hare leveret about 20 cm long which jumped up and fled. Explorer chased it for 4 minutes back and forth along a creek bed and valley, catching it several times with her paws, grasping it with her mouth, shaking it, and dropping it. She could have killed it several times but did not. Each time that she dropped the hare it ran again, and she had to re-catch it. Finally she secured it alive.

Just as Explorer caught the leveret, Whitey came running down from the den (around 300 m away) and chased Explorer trying to snatch the Arctic Hare. Whitey was unable to catch Explorer, and Explorer took the Arctic Hare to the den. My assistant observing from another vantage point saw Explorer carry the live leveret by the nape of the neck toward the den. She dropped it on the way and re-caught it, and then delivered it alive to the pup. The pup was very interested in the leveret and tried to eat it. Explorer eventually grabbed the leveret from the pup, and she and the pup chewed it. At some point during this process the leveret died.

The obvious question about this observation is why Explorer spent so much time and effort keeping the leveret alive. Explorer found the leveret close to the den, and the leveret was small. Both circumstances were favorable for the live delivery. Delivering a small live prey animal to a pup would serve to introduce the pup to live prey when the prey is helpless, and that would allow the pup to learn that the active animal represents food. An alternative explanation suggested by a reviewer is that “the juvenile rabbit triggered several incomplete responses, with behavioral elements of (a) prey killing, (b) food delivery, and (c) pup carrying.” It was not clear whether the pup or Explorer actually killed the leveret, but the killing took place some time soon after the pup encountered the animal alive. Simple learning would have allowed the pup to associate pawing the live leveret with feeding.

To my knowledge this is the first observation of a Gray Wolf delivering live prey to a pup. Such behaviors might not be common in Gray Wolves, because this incident is the only time I have seen it during 13 summers observing Gray Wolves and dens in the area for 2–6 weeks each year. On the other hand, even though I have seen Gray Wolves kill Arctic Hares about 25 times, I have never seen a Gray Wolf capture a leveret so close to a den before.

This observation fits the definition of opportunistic teaching (Caro and Hausner 1992), in that the two-year-old Gray Wolf modified her behavior in the presence of a pup with no killing experience without an immediate benefit to herself and provided the pup with experience, thus helping the pup improve its basic predatory skill.

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