A Group Defense Incident Involving Juvenile Striped Skunks, *Mephitis mephitis*

JEFFERY T. WILCOX and BRENDAN N. LARSEN

Blue Oak Ranch Reserve, University of California, Berkeley, 23100 Alum Rock Falls Road, San Jose, California 95127 USA
21181 Alum Rock Falls Road, San Jose, California 95127 USA

Wilcox, Jeffery T., and Brendan N. Larsen. 2008. A group defense incident involving juvenile Striped Skunks, *Mephitis mephitis.* Canadian Field-Naturalist 122(1): 80-82.

Striped Skunks *(Mephitis mephitis)* occasionally fall prey to various predators. To reduce the risk of predation, Striped Skunks have evolved multiple defensive behaviors and aposematic coloration. Several types of defensive behaviors have been reported for individual Striped Skunks, but never for a group of skunks. We describe a group defense incident in an encounter between four juvenile Striped Skunks and a perceived predator—a man on a motorcycle.

Key Words: Striped Skunk, *Mephitis mephitis,* group defense, aposematic, noxious.

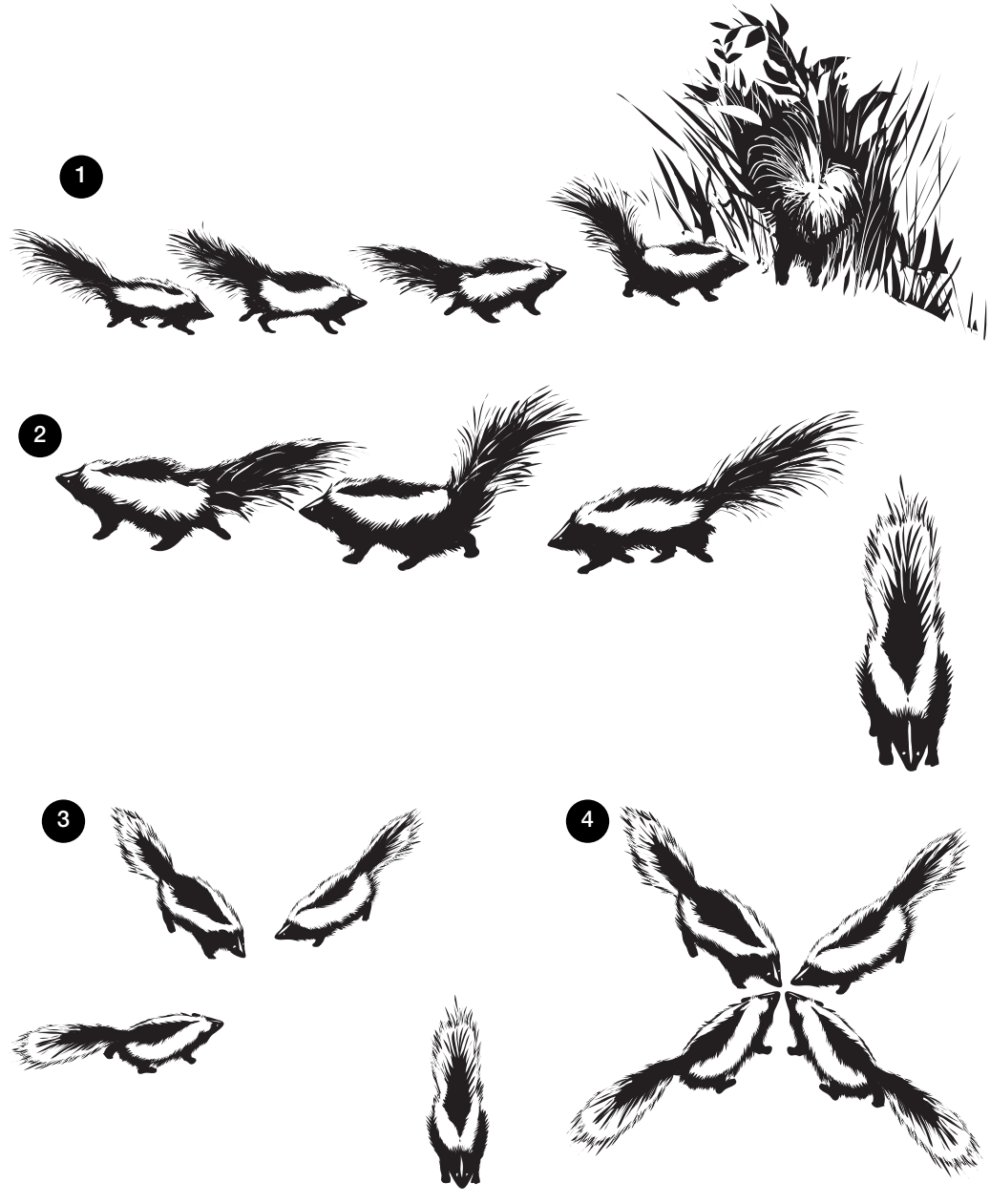
Striped Skunks *(Mephitis mephitis)* are occasionally preyed upon by various predators (Walton and Larivière 1994), and may be tested repeatedly by more than one predator in each encounter (Larivière and Messier 1996). From a young age, Striped Skunks rely on a strong chemical defense (Cuyler 1924) and, when threatened, are capable of scenting—expelling a noxious, strong-smelling musk—from anal glands located under the tail. A direct hit by a stream of musk to the eyes or mouth of a predator may cause vomiting or temporary blindness (Cuyler 1924). Each skunk has a limited volume of musk to devote to these scenting incidents before temporarily exhausting its supply (Verts 1967).

Skunks advertise their noxiousness through conspicuous morphological and behavioral traits known as aposematism. Aposematism is a visual signal to advertise unprofitability of prey, usually through bright warning colors set in bold patterns that contrast both with the background and with one another (Poulton 1889), making them conspicuous in most environments. Aposematic coloration benefits prey by reducing the frequency of encounters resulting in attack, and protects the predator by reducing time and energy spent pursuing noxious prey. The vivid, contrasting black-and-white pattern of Striped Skunks is an example of aposematic coloration.

Striped Skunks also display a wide array of defensive behavioral traits, such as abruptly changing direction (Larivière and Messier 1996), stomping their front feet, hissing, clacking their teeth, raising their tails in the direction of the predator, scenting, charging, fleeing, performing head stands with the anal area aimed at the predator, and hiding (Cuyler 1924; Laun 1962; Verts 1967; Walton and Larivière 1994; Larivière and Messier 1996). Until now, these defensive behavioral traits have been reported only for solitary individual Striped Skunks. Group defense in mammals is best known among rodents, ungulates, and primates, where prey species exhibit behaviors such as inspecting, scolding, or harassing a predator, and sometimes joint attack and defense (Caro 2005). Here we provide the first report of a group defense behavior in Striped Skunks.

The encounter occurred between one of the authors (BNL), operating a small, slow-moving motorcycle, and a family of Striped Skunks attempting to cross a rural paved road on the afternoon of 12 May 2006, in northeastern Santa Clara County, California. The specific area is a transition zone between chaparral, oak woodland, and riparian habitats, with little understory, sparse annual grasses and forbs, and 80% canopy of Coast Live Oak *(Quercus agrifolia)* and California Bay Laurel *(Umbellularia californica)*. While on his motorcycle, traveling southward approximately 150 meters from his residence at 21181 Alum Rock Falls Road, BNL encountered a family of five Striped Skunks walking south-southwest, perpendicular to the road and in single file, at the west end of Turkey Flat (37°23'53"N, 121°45'54"W). When first detected 50 meters distant, the lone adult skunk was approximately three meters ahead of the four juveniles, who kept an approximate 20-centimeter spacing between one another. As the motorcycle approached (at about 10 km per hour) to within 20 meters of the group, the adult skunk suddenly quickened its pace and disappeared into a thicket of Coyote Brush *(Baccharus pilularis)* 10 meters ahead of the juveniles (Figure 1). As the motorcycle approached to within three meters, the operator turned off the motor and stopped the vehicle. The young skunks were now caught in the open by a large, fast-moving "predator," so flight was likely a poor defense option. The lead juvenile skunk (approximately 15 cm, nose to rump) left the line, reversed its course, and advanced to within one meter of the motorcycle, confronting it (Figure 2). Seconds later, the remaining three juveniles turned, moved toward the first, and assumed a "tee" position, noses facing center about three cm apart and three cm off the pavement surface, hips elevated, and tails extended at a 45-degree angle (Figure 3). As the three remained motionless in this tee position the lead juvenile turned and joined the formation, keeping the same spacing and assuming the

FIGURES 1-4. Group defense by juvenile Striped Skunks. See text for details.



same pose as the original three, rump facing out. BNL observed that this arrangement was similar to the pinwheel defense exhibited by Musk Oxen *(Ovibos moschatus)* (Miller and Gunn 1984) and Wildebeest *(Connocheates* spp.) (Creel and Creel 2002), which present their defenses outward. In Striped Skunks, the threatening portion of the anatomy is presented from the posterior rather than the anterior end.

The skunks held this position for approximately 10 seconds as BNL remained motionless with the engine off. He was struck by the enhancement of the skunks' distinct black-and-white pattern as they formed a motionless "X" (Figure 4). After 10 seconds, the lead skunk glanced left at the motorcycle, lifted its right front foot, and moved its shoulders forward as if to walk away. The operator made a sudden movement

with his shoulders and the front wheel of the motorcycle, and the young skunk immediately resumed the cooperative group defense formation. This was repeated once more. On the third occasion, the operator let the skunks walk away. They formed a single-file line once again and walked swiftly into the Coyote Brush into which the adult had escaped. The skunks did not scent or vocalize during the entire incident.

Acknowledgments

We thank R. Craig for creating the Striped Skunk illustrations. Help from N. Parizeau, and the comments of A. Giordano and one anonymous reviewer, greatly improved this manuscript.

Literature Cited

Caro, T. M. 2005. Antipredator defenses in birds and mammals. University of Chicago Press, Chicago and London.

Creel, S., and **N. M. Creel.** 2002. The African wild dog: Behavior, ecology and conservation. Princeton University Press, Princeton, New Jersey, USA.

Cuyler, W. K. 1924. Observations on the habits of the striped skunk (*Mephitis mesomelas varians*). Journal of Mammalogy 5: 180–189.

Laun, H. C. 1962. Loud vocal sounds produced by a striped skunk. Journal of Mammalogy 43: 432–433.

Larivière, S., and **F. Messier**. 1996. Aposematic behavior in the striped skunk, *Mephitis mephitis*. Ethology 102: 986-992.

Miller, F. L., and **A. Gunn.** 1984. Muskox defense formations in response to helicopters in the Canadian high arctic. Biological Papers of the University of Alaska: Special Reports 4:123–126.

Poulton, E. B. 1889. Natural selection: the cause for mimetic resemblance and common warning colours. Zoological Journal of the Linnean Society 26: 558-612.

Verts, B. J. 1967. The biology of the striped skunk. University of Illinois Press, Urbana.

Walton, L. R., and **S. Larivière** 1994. A striped skunk, *Mephitis mephitis*, repels two coyotes, *Canis latrans*, without scenting. Canadian Field Naturalist 108: 492–493.

Received 31 August 2007
Accepted 12 January 2009