

Mammal Tracks and Sign: A Guide to North American Species. Second Edition

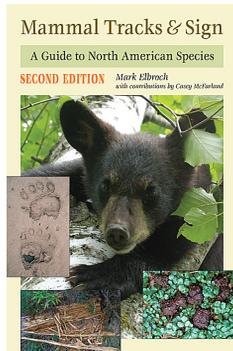
By Mark Elbroch with contributions by Casey McFarland. 2019. Globe Pequot / Stackpole Books. 680 pages, 49.95 USD, Paper, 47.50 USD, E-book.

The first edition of this magnificent guide was published 16 years ago. As Mark Elbroch explains in his Preface, the second edition is less personal—though it retains personal stories as introductions to the chapters—and more rigorous in terms of added depth of detail. It contains less about the “tools of the trade” (p. v), because basic information is now readily available through increasing online resources. Some adjustments in species inclusion were made, primarily removing any south of Mexico. Surprisingly, the second edition is shorter than the first (by just over 100 pages), a result of being tightened up, with white space at a premium and photos sometimes smaller. In sum, if you have the first, you wouldn’t be amiss to acquire this edition as well.

Senior author Elbroch and contributor Casey McFarland have extensive experience tracking animals. They are both certified Senior Trackers under the CyberTracker Conservation program, started in South Africa by biologist David Lieberman, who was inspired to develop CyberTracker freeware following his experiences with Kalahari Desert bushmen, whose lives depend on their ability. Elbroch is involved as well with Pathera, a big cat conservation organization, as Director of its Puma Program. His 10 books have been well received, the first edition of this guide being one of several of his books to win a National Outdoor Book Award.

The first chapter provides a brief and succinct introduction to this prodigiously illustrated and comprehensive guide. “Tracking is ... field ecology”, the authors note, that “grounds us in the natural history of a place” and provides “a natural bridge to science” (p. 2). Extensive, detailed knowledge is required to track successfully, but, they caution, one must always keep in mind the dangers of drawing conclusions without it.

A hundred pages are required in Chapter 2 to cover “Mammal Tracks and Track Patterns”. Feet make tracks, Elbroch reminds us, and the first section of this chapter follows its opening story with descriptions and sketches of the morphology of mammalian feet. But the tracks these feet produce have their own, obverse morphology, and eight questions are presented that relate the tracks to the feet that created



them. Track morphology can be affected by many things, including substrate (sand, soil, snow), sexual dimorphism (helpful in sexing individual animals), and the animal’s age. The many types of locomotion (gaits, hops, gallops, etc.) are covered in detail, with diagrams and illustrations of each, before the discussion turns to interpretation of tracks. This is an imaginative, speculative process that requires the tracker “to build a working hypothesis and test it” against later observations of the animal’s behaviour as evidenced in its tracks: “we either toss out our original hypothesis and create a new one, or continue to refine and support it” (p. 45). This lengthy chapter concludes with a “Reference guide to mammal tracks”, 46 pages of plates of life-size tracks, each example—as throughout the book’s illustrations—keyed to the long, final section of species accounts.

Seven subsequent chapters follow this format of text plus grouped illustrations, the latter having their own colour-coded page edges making these sections easy to find. In the course of their movements and other activities, mammals leave behind plenty of sign which offers rich and diverse clues to who they are and what they were doing. Thus, the emphasis shifts from tracks to sign, beginning with a discussion in Chapter 3 of the “Runs, Paths, and Eskers” created by the movements of animals. (Also known as trail castings, eskers are the backfilling materials deposited in snow tunnels created by the smallest mammals [p. 113].) Animals eat and then excrete, the subject of the fourth chapter. Scat is the primary topic, because urine, being hard to find, remains understudied generally. It can have its uses, however—Elbroch has an amusing account of tracking a Bobcat by sniffing the urine it had sprayed on “scent posts”, moving and sniffing from post to likely post to figure out its movements (p. 445). The short Chapter 5, “Nests, Lodges, and Other Constructions”, describes the often difficult to identify shelters animals “construct ... from materials they collect and manipulate” (p. 178); the shelters are organized under the likely places to find them. The next three chapters cover sign left on the ground, beginning with discussion in Chapter 6 of “diverse signs” (p. 192) created in the course of bedding down, rooting around for food, taking a dust bath, or making below-ground dens. Signs are also left “on Fungi, Herbaceous Plants, and Cacti” (Chapter 7) and “on Trees and Shrubs” (Chapter 8). While these are generally the result of feeding (Chapter 7), they can also be produced by climbing, stripping off bark, browsing on twigs, and taking advantage of tree cav-

ities (Chapter 8). Fourteen pages of colour plates are required to detail the “Sign on mast crops” alone. The penultimate chapter is not for the squeamish—it deals with “Interpreting Prey Remains” in gruesome, full-coloured detail. A suite of forensic skills is required when dealing with remains, one of the most difficult areas of tracking to decipher. This chapter is full of questions to consider and authoritative references to consult; techniques and data to aid with interpretation are offered, including, for example, a chart of the spread between upper and lower incisors of various mammals.

The topics of the preceding chapters are the basis for the rich data presented on each species described in Chapter 10, “Species Accounts”. The *Revised Checklist of North American Mammals North of Mexico, 2014* (Bradley *et al.* 2014) provides the taxonomic orders for 261 pages of individual species accounts. This is the most technical part, with data presented in small print, including measurements of front and hind tracks, trail strides of various kinds, and other measurable elements, all organized along the lines of the chapter headings. Sketches and photographs abound. The species themselves are named but not described—the evidence they leave behind is the constant topic. The trails data sections are frequently followed by notes describing that species’ movements under varying conditions.

By now, the reader can be forgiven for concluding—with good reason—that using tracks and sign is a more demanding and complex means of mammal identification than looking at the mammal itself. To summarize the authors, it’s a matter of detective work, close observation, detailed and intricate knowledge, plus a healthy dose of humility—the capacity to accept and admit one’s inevitable mistakes. Becoming a good tracker takes time, experience, and patience plus the helpful analyses presented in this

excellent guide. It’s on the heavy side for packing in the field, but it’s well organized and indexed, so useful whether in the field or in the study. Anyone interested in the topic will learn from this book. It opens up a new universe for exploring the natural world for those coming fresh to the topic and no doubt contains much for those with experience. As the authors note early on, it’s not only easy to get it wrong, but costly in terms of natural history. This guide will help.

A final note: Stackpole Books is to be congratulated on its publication of another fine field guide in its tracks and sign series. This one on mammals joins guides on birds (co-authored by Elbroch; Elbroch *et al.* 2001), reptiles and amphibians (Tkaczyk 2015), and insects (Eiseman *et al.* 2010), all similar in form and topics covered.

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