

THE PETERSON FIELD GUIDE SERIES

A Field Guide to Animal Tracks

Text and illustrations by
OLAUS J. MURIE



Second Edition

HOUGHTON MIFFLIN COMPANY BOSTON

A Field Guide to Animal Tracks

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Editor's Note

WILD ANIMALS are shy, and try to avoid us. A large percentage of mammals are nocturnal, venturing from their dens only after darkness has fallen. We sometimes see their eyeshine in the glare of the headlights as we drive down country roads at night, but in the daytime the most frequent signs of their presence are their tracks — in the snow, in sand, or in the soft mud. Sometimes we find their scats. It is important to be able to recognize these trails and other traces of their presence.

This volume fits well into the *Field Guide* series, for it supplements the volume on mammals and to a certain extent the ones on birds, providing the amateur naturalist (and also the professional wildlife technician and biologist) with a means of identifying the wildlife around him even when he cannot see it. Moreover, it is a bridge between the art of identification and the science of ecology. There is a story behind the tracks in the snow or along the river's edge and study may reveal much about the animal in relation to its habitat.

This book, the only comprehensive one in its category, covers every mammal for which tracks have been obtained in North America, Mexico, and Central America — not only the common ones. It also includes over thirty birds, some reptiles, and a few insects; there is a section on twigs and limbs and one on bone and horn chewing. The abundant illustrations are in line; certainly color is not necessary, because tracks are not colored. Not only are the tracks and trails pictured with measurements, but scats are shown, with variations, and in addition there is a pen and ink drawing of each animal in its habitat. Where peculiarities of the track are not obvious in the drawing they are discussed in the text.

Olaus Murie reminds us very much of an earlier master, Ernest Thompson Seton. Like Seton he was not only an eminent naturalist and an accomplished woodsman but also a fine artist, able to interpret in pen and ink the things he had witnessed. Dr. Murie's drawings in this book were made in the field, except where it was impossible; he used material in museums and zoos only when field specimens were unobtainable.

Dr. Murie was most at home in the wilderness areas of the West. The Red River — with its animals, woods, and waters — was the

background of his childhood. After completing his university work in Oregon he went to Hudson Bay for two years and later spent six years in Alaska studying caribou, Arctic waterfowl, and the biology of the Alaska Peninsula and the Aleutians. In 1927 he moved to Jackson Hole, Wyoming, where the elk became the subject of intensive study. Resigning from the United States Fish and Wildlife Service in 1946 he became director of The Wilderness Society and later its president. Modest and very gifted, Olaus Murie dedicated his life to the ideal of wilderness preservation. In this *Field Guide* he shared with others some of his knowledge and love of the natural world.

In the twenty years since the first edition was published there have been many changes in nomenclature. This second edition, completely reset, has attempted to bring both scientific and vernacular names in line with current practice. In addition, there is a new index, and some minor changes have been made throughout the text. We are grateful to the author's widow, Margaret Murie, for her assistance in answering questions and in reading proof, and to the author's brother, Adolph Murie, for his kind help in solving problems of nomenclature.

ROGER TORY PETERSON

1974

Acknowledgments

THIS FIELD GUIDE is based almost entirely on my own field observations and the collection of plaster casts and other material that has been assembled since 1921.

However, I have also studied the extensive mammalian literature, which has been of great value, and a bibliography of some of this literature is given at the end of the book. Moreover, I have had the assistance of a number of persons, and without their help there would have been gaps in my information.

Dr. Hartley H. T. Jackson, with whom I was once associated in the United States Fish and Wildlife Service, many years ago suggested that I write such a handbook, and I began in a small way at that time.

Mr. Ernest P. Walker, Assistant Director of the National Zoological Park in Washington, D.C., together with members of his staff and the staff of the Woodland Park Zoo in Seattle and of the Fleishhacker Zoo of San Francisco have all been of much help. With the help of attendants at the last-named zoo my son, Martin Murie, obtained tracks of the jaguar, which I could not have obtained otherwise.

The entomology department of the National Museum, the United States Fish and Wildlife Service, and the staff at Sequoia National Park have all given me assistance.

Many individuals have furnished valuable material: the late Francis H. Allen of Cambridge, Massachusetts; Dr. E. L. Cheatum of the New York Conservation Department; Dr. C. H. D. Clarke, Department of Lands and Forests, Ontario; Antoon de Vos, Ontario College of Agriculture; Lieutenant and Mrs. H. H. J. Cochrane, Canal Zone; Dr. James Zetek, in charge of the research station at Barro Colorado Island, Canal Zone; Warren Garst, Douglas, Wyoming; Luther C. Goldman, Texas; John K. Howard, who, with co-operation of The American Museum of Natural History of New York, made available to me film on Arctic hares; Dr. William J. Hamilton of Cornell University; William Handley of the National Museum; William Nancarrow, Alaska; Ivan R. Tompkins, Georgia; Dr. Robert Rausch of the Public Health Service, Alaska; Erwin Verity of the Walt Disney Studios; and Dr. Frank N. Young of Indiana University.

My son Donald live-trapped certain mammals for study of their

tracks. Howard Zahniser, my associate on the staff of The Wilderness Society, gave me pertinent suggestions. My brother, Adolph Murie, during his long sojourn in Alaska, assembled a mass of valuable data on such animals as the wolf and the wolverine, as well as ptarmigan and other species. This was all put at my disposal.

When I fell ill in May 1954 some illustrations were still needed to complete the manuscript. The warm response of the many people who were asked to help was overwhelming. To every one of them I give earnest thanks, and especially to Mrs. William Grimes of the Massachusetts Audubon Society and Miss Frances Burnett of the Harvard Museum of Comparative Zoology for their helpful research; to Dr. William Burt of the University of Michigan Museum of Zoology and Mr. Bert Harwell of California for their many useful suggestions; to Mr. Richard Westwood of the American Nature Association for taking a personal interest in the project; to the New Hampshire Fish and Game Commission, who obtained from the Blue Mountain Forest Association the feet of a 206-pound wild boar; and to Mr. Ellsworth Jaeger of the Buffalo Museum of Science and Mr. George Mason of The American Museum of Natural History, who both offered their services in finding specimens and making the necessary illustrations.

The seven plates of track drawings were done on very short notice by Mr. Carroll B. Colby of Briarcliff Manor, and to him I owe my deepest gratitude, as I do to my artist friend and neighbor Grant Hagen, who furnished the final sketches for Figure 147 and for the marsh rabbit on page 249.

Finally, I appreciate the cordial and intimate relationship with Mr. Paul Brooks, editor-in-chief of Houghton Mifflin Company, and members of his staff who have taken a genuine interest in the manuscript and whose encouragement has been very stimulating. Among these, I give special gratitude to Katharine Bernard, Helen Phillips, and Anne Cabot Wyman.

Whether in the field of natural history or elsewhere, one does not accomplish a piece of work alone. It must at least in part draw on the experience of others. It is a pleasure to acknowledge such help, and to express my gratitude for such participation in my efforts.

O. J. M.

My Life List

- | | |
|--------------------------------|--|
| Opossum | River Otter |
| Armadillo | Sea Otter |
| Townsend Mole | Striped Skunk |
| Hairytail Mole | Hooded Skunk |
| Eastern Mole | Hognose Skunk |
| Pacific Mole | Spotted Skunk |
| California Mole | Badger |
| Starnose Mole | Dog |
| Shrew-Mole | Gray Wolf |
| Arctic Shrew | Red Wolf |
| Northern Water Shrew | Coyote |
| Pygmy Shrew | Red Fox |
| Least Shrew | Gray Fox |
| Gray Shrew | Kit Fox |
| Red Bat | Arctic Fox |
| Hoary Bat | Cat |
| Long-eared Myotis | Bobcat |
| Alaska Brown Bear | Lynx |
| Grizzly Bear | Mountain Lion |
| Black Bear | Jaguar |
| Polar Bear | Ocelot |
| Raccoon | Jaguarundi Cat |
| Coati | Harbor Seal |
| Kinkajou | Sea Lion |
| Ringtail | Woodchuck |
| Shorttail Weasel (Ermine) | Yellowbelly Marmot |
| Longtail Weasel | Hoary Marmot |
| Least Weasel | Prairie Dog |
| Mink | Golden-mantled Squirrel |
| Marten | Antelope Squirrel |
| Fisher | Thirteen-lined Ground
Squirrel |
| Tayra | Uinta Ground Squirrel |
| Black-footed Ferret | Franklin Ground Squirrel |
| Wolverine | |

-
- | | |
|-----------------------------|---------------------------|
| Rock Squirrel | Alaska Vole |
| Eastern Chipmunk | Mountain Vole |
| Western Chipmunk | Richardson Vole |
| Red Squirrel | Meadow Vole |
| Eastern Gray Squirrel | Pine Vole |
| Western Gray Squirrel | Sagebrush Vole |
| Arizona Gray Squirrel | Bog Lemming |
| Eastern Fox Squirrel | Redback Vole |
| Apache Fox Squirrel | Tree Phenacomys |
| Tassel-eared Squirrel | Mountain Phenacomys |
| Flying Squirrel | Pacific Phenacomys |
| Pocket Gopher, Genus | Collared Lemming |
| <i>Thomomys</i> | Brown Lemming |
| Pocket Gopher, Genus | Arctic Hare |
| <i>Geomys</i> | Whitetail Jackrabbit |
| Pocket Gopher, Genus | Blacktail Jackrabbit |
| <i>Papogeomys</i> | Antelope Jackrabbit |
| Pocket Mouse | European Hare |
| Kangaroo Rat | Snowshoe Hare |
| Kangaroo Mouse | Washington Hare |
| Beaver | Rocky Mountain |
| Muskrat | Snowshoe Hare |
| Florida Water Rat | Cottontail |
| Porcupine | Marsh Rabbit |
| Aplodontia | Swamp Rabbit |
| Agouti | Pygmy Rabbit |
| Paca | Pika |
| Norway Rat | Whitetail Deer |
| House Mouse | Key Deer |
| Jumping Mouse, Genus | Mule Deer |
| <i>Zapus</i> | Elk |
| Jumping Mouse, Genus | European Red Deer |
| <i>Napaeozapus</i> | Moose |
| Woodrat | Caribou |
| White-footed Mouse | Reindeer |
| Golden Mouse | Domestic Pig |
| Cotton Mouse | Wild Boar |
| Beach (Oldfield) Mouse | Peccary |
| Grasshopper Mouse | Pronghorn |
| Harvest Mouse | Mountain Sheep |
| Rice Rat | Domestic Sheep |
| Cotton Rat | Mountain Goat |

.... Domestic Goat	.... *Sharp-tailed Grouse
.... Bison	.... *Bohemian Waxwing
.... Muskox	.... *Townsend's Solitaire
.... Domestic Cattle	.... *Chukar
.... Horse	.... *White-tailed Ptarmigan
.... Burro	.... *Ferruginous Hawk
.... Baird's Tapir	.... *Red-tailed Hawk
.... Willow Ptarmigan	.... *Prairie Falcon
.... Spotted Sandpiper	.... *Swainson's Hawk
.... Canada Goose	.... *Shrike
.... Trumpeter Swan	.... *Sparrow Hawk
.... Glaucous-winged Gull	.... *Clark's Nutcracker
.... Common Teal	.... *Short-eared Owl
.... Sage Grouse	.... *Long-eared Owl
.... Blue Grouse	.... *Burrowing Owl
.... Ruffed Grouse	.... *Great Gray Owl
.... Ring-necked Pheasant	.... *Goshawk
.... Rock Ptarmigan	.... *Golden Eagle
.... Roadrunner	.... Toad
.... Flicker	.... Frog
.... Scaled Quail	.... Lizard
.... Gray Partridge	.... Turtle
.... Domestic Pigeon	.... Sidewinder
.... Junco	.... Garter Snake
.... Sandhill Crane	.... Kingsnake
.... Wild Turkey	.... Hognose Snake
.... Great Blue Heron	.... Crayfish
.... Greater Yellowlegs	.... Clam
.... Common Snipe	.... Mole Cricket
.... Rock Sandpiper	.... Burrowing Beetle
.... California Condor	.... Centipede
.... Bald Eagle	.... Katydid
.... Barred Owl	.... Mormon Cricket
.... Great Horned Owl	.... Caterpillar
.... Raven	.... Grasshopper
.... Crow	.... Carrion Beetle
.... Magpie	.... Earthworm
.... *Spruce Grouse	.... Twigs and Limbs
.... *Harlequin Quail Bone and Horn Chewing
.... *Lesser Prairie Chicken	

*Only droppings are shown

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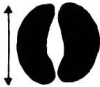

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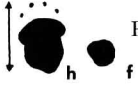




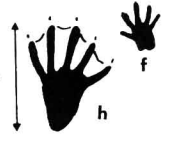
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Key to Tracks

with General Distribution Areas

Bear Family	see also Fig. 8, 9, 10, 15
Raccoon and Ringtail Families	see also Figs. 16, 17
Weasel Family	see also Fig. 21
5 toes.	
Dog Family	see also Fig. 40
4 toes. Claws usually show in track.	
Cat Family	see also Fig. 54
4 toes. Claws do not show in track.	
Rodents	see also Figs. 63, 64
Only representative or distinctive tracks shown here.	
Rabbit Families	see also Figs. 120, 123, 124, 125, 126, 127, 128, 129
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4½ in.		Elk and Red Deer (parts of nw. U.S., Can.)	p. 271
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6 in.		Horse (w. U.S.)	p. 314

- 
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- 
 3 in. Domestic Pig (U.S., Mex., Can.) p. 289
- 
 1½ in. Striped Skunk (U.S., Mex., Can.) p. 77
- 
 2½ in. Porcupine (sw., w., n., and e. U.S., Can.) p. 180
- 
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 Hind foot of Grizzly, about 1 ft. long. p. 25
- 
 Polar Bear (far n. Can.) p. 35
- 
 6 in. Sea Otter (western coastal U.S.) p. 74
- 
 2¼ in. Kinkajou (Cen. Am.) p. 42
- 
 7 in. Beaver (U.S., Can.) p. 171

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