

The Wandering Shrew, *Sorex vagrans*, in Alberta

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Seven specimens of the Wandering Shrew, *Sorex vagrans*, were collected in the West Castle area of southwestern Alberta. This constitutes the first record of this species east of the continental divide and the first record for Alberta.

Key Words: Wandering shrew, *Sorex vagrans*, first record, Alberta.

In August 1982 the Provincial Museum of Alberta conducted a small mammal survey in the West Castle area of southwestern Alberta. Among the ninety-one specimens collected were thirteen identified as *Sorex monticolus*.

Recently, while examining the *Sorex monticolus* collection in the Provincial Museum of Alberta, I found seven specimens that showed characteristics of *Sorex vagrans*. These seven specimens were part of the thirteen "*Sorex monticolus*" specimens collected in the West Castle survey (Table 1). In order to verify the identification, six specimens were forwarded to C. G. van Zyll de Jong of the National Museum of Natural Sciences in Ottawa. Dr. van Zyll de Jong confirmed that the specimens in question were *Sorex vagrans*. This species has not previously been reported east of the continental divide (Hall 1981; Hawes 1977; Hennings and Hoffmann 1977; Junge and Hoffmann 1981; van Zyll de Jong 1983) and constitutes a species new to Alberta.

There is a great deal of confusion over the names applied to this species-complex, especially for those found in Alberta. For example, Soper (1964) used the name *Sorex vagrans obscurus* for those shrews of this group found in Alberta. He was using the taxonomy of Findley (1955). Hall (1981) also used this name for these shrews. Banfield (1974), on the other hand, used the name *Sorex obscurus* for those animals found in northern British Columbia and western and northern Alberta. He used the name *Sorex vagrans* for those animals found in southern British Columbia. Hennings and Hoffmann (1977) reviewed the *Sorex vagrans* complex of western North America and concluded that two species were identifiable: *Sorex vagrans* and *Sorex monticolus*. Like Banfield (1974), Hennings and Hoffmann (1977) used the name *Sorex vagrans* for those animals found in southern British Columbia, Washington, Oregon, northern California and Nevada, western

and northern Idaho, and western Montana. The name *Sorex monticolus* was used, on the basis of priority, for the more widespread form. According to these authors the subspecies found in Alberta is *Sorex monticolus obscurus*.

Externally *Sorex monticolus* and *Sorex vagrans* are difficult to tell apart; however, several characters have been found that are useful in separating the two species. For example, Hawes (1976) found that breeding males of the two species could be distinguished from each other on the basis of odor. Van Zyll de Jong (1982) pointed out that the hind feet of *Sorex vagrans* were shorter than those of *Sorex monticolus*. He also found that the number of callosities, or friction pads, on the hind toes II to IV are fewer in *Sorex vagrans* (four) than in *Sorex monticolus* (more than four). The character I used to determine the species from the West Castle area was that of Hennings and Hoffmann (1977). The medial tines on the upper incisors of *Sorex vagrans* are relatively small and barely reach the dark orange pigmentation on the front of the incisors, whereas these tines in *Sorex monticolus* are large and extend well into the orange pigmentation. It was found that this character was reliable for all specimens except very old individuals with extremely worn incisors.

When compared to a larger sample of *Sorex monticolus* from other areas of Alberta, it was found that *Sorex vagrans* from West Castle were significantly smaller in all but one cranial or external measurement (Table 2).

Hawes (1977) found that where the two species occur sympatrically, *Sorex monticolus* prefers more acidic conditions, whereas *Sorex vagrans* prefers a richer soil. In the West Castle survey, specimens of each species were collected on the same trapline; unfortunately field notes made at the time do not describe the habitat surrounding the trap sites. It is not possible, therefore, to provide any information on habitat preferences in Alberta.

TABLE 1. Trapping localities, species list, and numbers of specimens of small mammals trapped in small mammal survey in West Castle area, Alberta, August 1982.

	49° 16'N 114° 16'	49° 16'N 114° 22'	49° 17'N 114° 24'	49° 17'N 114° 26'	49° 19'N 114° 25'	49° 19'N 114° 24'
Masked Shrew (<i>Sorex cinereus</i>)			1	1		2
Dusky Shrew (<i>Sorex monticolus</i>)		1	2		2	1
Wandering Shrew (<i>Sorex vagrans</i>)		1			3	3
Water shrew (<i>Sorex palustris</i>)		2				
Yellow-pine Chipmunk (<i>Tamias amoenus</i>)						1
Deer Mouse (<i>Peromyscus maniculatus</i>)	1	2	4	8	2	6
Southern Red-backed Vole (<i>Clethrionomys gapperi</i>)						1
Heather Vole (<i>Phenacomys intermedius</i>)		3				1
Meadow Vole (<i>Microtus pennsylvanicus</i>)	1		1		8	15
Long-tailed Vole (<i>Microtus longicaudus</i>)		2	5			2
Western Jumping Mouse (<i>Zapus princeps</i>)			2		3	9

Pruitt (1954) used a method of tooth wear for placing *Sorex cinereus* into age groups. Age Group 1 is the youngest with little or no tooth wear, Age Group 4 the oldest with extensive tooth wear. Age Groups 2 and 3 are between these extremes. Using this method to age the samples of *Sorex vagrans* and *Sorex monticolus* collected at West Castle, *Sorex vagrans* can be placed in the following age categories: Age Group 1 (five specimens), and Age Group 2 (2 specimens). Six of these specimens are females and one sex not determined. Specimens from the *Sorex monticolus* sample are assigned to the following groups: Age Group 1 (one specimen), Age Group 2 (three specimens), Age Group 4 (two specimens). Three specimens are females, two are males, and one sex not determined.

The discovery of a population of *Sorex vagrans* east of the continental divide opens several questions that are not answerable by the small sample reported here. For example, the age structure of the *Sorex monticolus* sample contained both young and old individuals and the sex ratio of this sample was almost 1:1. In the *Sorex vagrans* sample only young were caught and all but one were females.

Are these artifacts of trapping methods? Hennings and Hoffmann (1977) pointed out that *Sorex vagrans* occupies riparian habitats in western Montana and appears limited by high

altitude, dry soils, and boreal forests. For these reasons, these authors believed the continental divide limits the eastward expansion of the range of *Sorex vagrans*. If these limitations are real, the routes open to invading individuals are not known, as all the passes between southeastern British Columbia and northwestern Montana to southwestern Alberta are at relatively high elevations with intervening boreo-montane forests. Van Zyll de Jong (1983) reports specimens from Morrissey, British Columbia. Morrissey is on the Elk River and this river comes near Crowsnest Pass. This pass has an elevation of 1370 metres, possibly low enough to be a pathway for *Sorex vagrans*.

At this time, no assessment of the abundance and distribution of *Sorex vagrans* in Alberta can be made. In the sample of small mammals collected in the West Castle area, *Sorex vagrans* made up eight per cent of the specimens caught (Table 1). The species was also taken at three localities separated from each other by several kilometres.

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TABLE 2. Selected external and cranial measurements of *Sorex monticolus* and *Sorex vagrans*. The *Sorex monticolus* are from various areas of Alberta; the *Sorex vagrans* are from the West Castle area. The measurements are according to Junge and Hoffmann (1981).

		<i>Sorex monticolus</i>	<i>Sorex vagrans</i>
		n = 24	n = 6
Total Length	$\bar{x}$	105.9*	100.2*
	SD	5.89	6.08
	R	94-120	92-110
Tail	$\bar{x}$	45.2	46.0
	SD	2.57	5.02
	R	42-50	42-56
Condylbasal Length	$\bar{x}$	17.27**	16.75**
	SD	0.37	0.14
	R	16.19-17.93	16.65-16.97
Rostrum Length	$\bar{x}$	7.37**	6.65**
	SD	0.28	0.14
	R	6.61-7.80	6.38-6.77
Interorbital Breadth	$\bar{x}$	3.36**	3.10**
	SD	0.09	0.17
	R	3.21-3.51	2.80-3.26
Maxillary Tooththrow Length	$\bar{x}$	6.52**	6.14**
	SD	0.18	0.09
	R	6.03-6.76	6.01-6.29
Cranial Breadth	$\bar{x}$	8.67*	8.39*
	SD	0.23	0.14
	R	8.15-9.14	8.18-8.58

*Means significantly different at $P < .05$, t -test

**Means significantly different at $P < .001$, t -test

Literature Cited

- Banfield, A. W. F.** 1974. The mammals of Canada. University of Toronto Press, Toronto, Ontario. 438 pp.
- Findley, J. S.** 1955. Speciation of the wandering shrew. University of Kansas Publications, Museum of Natural History, University of Kansas 9: 1-68.
- Hall, E. R.** 1981. The mammals of North America. Second edition. John Wiley and Sons, New York. 1181 + 90 pp.
- Hawes, M. L.** 1976. Odor as a possible isolating mechanism in sympatric species of shrews (*Sorex vagrans* and *Sorex obscurus*). Journal of Mammalogy 57: 404-406.
- Hawes, M. L.** 1977. Home range, territoriality, and ecological separation in sympatric shrews, *Sorex vagrans* and *Sorex obscurus*. Journal of Mammalogy 58: 354-367.
- Hennings, D., and R. S. Hoffmann.** 1977. A review of the taxonomy of the *Sorex vagrans* complex from western North America. Occasional Papers, Museum of Natural History, University of Kansas 65: 1-35.
- Junge, J. A., and R. S. Hoffmann.** 1981. An annotated key to the long-tailed shrews (Genus *Sorex*) of the United States and Canada, with notes on middle American *Sorex*. Occasional Papers, Museum of Natural History, University of Kansas 94: 1-48.
- Pruitt, W. O., Jr.** 1954. Aging in the masked shrew, *Sorex cinereus* Kerr. Journal of Mammalogy 35: 35-39.
- Soper, J. D.** 1964. The mammals of Alberta. Queen's Printer, Edmonton, Alberta. 402 pp.
- van Zyll de Jong, C. G.** 1982. An additional morphological character useful in distinguishing two similar shrews *Sorex monticolus* and *Sorex vagrans*. Canadian Field-Naturalist 96: 349-350.
- van Zyll de Jong, C. G.** 1983. Handbook of Canadian mammals: marsupials and insectivores. National Museum of Natural Sciences, National Museums of Canada, Ottawa. 210 pp.

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