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Records of *Sorex* species (Soricidae, Mammalia) from Mt. Paektu, North Korea, with the First Record of *S. daphaenodon*

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Abstract

We conducted a survey for shrews by use of pitfall traps at three sites near Mt. Paektu, North Korea (People's Republic of Korea) in June, 2001. Twenty five specimens of *Sorex caecutiens*, two *S. gracillimus*, and one *S. daphaenodon* were collected. It was the first record of *S. daphaenodon* from the Korean Peninsula and the southernmost record of this species.

Key words: *Sorex daphaenodon*, North Korea, mammalian fauna

Introduction

Information of small mammalian fauna in North Korea (People's Republic of Korea) is very scarce although this region is important to investigate biogeography of East Asia and Japan. Won (1968) listed three *Sorex* species (Soricidae, Mammalia) from North Korea: *S. mirabilis* Ognev, *S. caecutiens* Laxmann, and *S. gracillimus* Thomas. Later, Han (1994) and Won and Smith (1999) added other three species to the list: *S. araneus* Linnaeus, *S. minutissimus* Zimmermann, and *S. unguiculatus* Dobson. However, the presence of *S. araneus* is very doubtful as the eastern boundary of the distribution of *S. araneus* in the former U.S.S.R. is in western Siberia (Dolgov 1985). In addition, *S. isodon* Turov probably occurs in North Korea because it is recorded from South Korea (Republic of Korea), Far Eastern Russia, and northeastern China (Dolgov 1985, Zhang *et al.* 1997, Han *et al.* 2000). The presence of *S. unguiculatus* also should be carefully re-examined because it is morphologically similar to *S. isodon* (Ohdachi 1998).

In June, 2001, we collected 28 *Sorex* specimens in Mt. Paektu, Ryanggang-do, North Korea and recognized three species: *S. caecutiens*, *S. gracillimus*, and *S. daphaenodon* Thomas.

Methods

To capture shrews, 20 pitfall traps were set for several nights at each of three sites in the southern foot of Mt. Paektu (Fig. 1), North Korea in June, 2001: Shin-mu-sung (41° 57' 10" N, 128° 15' 00" E, at an altitude of 1,700 m), Sun-o-san (41° 54' 35" N, 128° 07' 05" E, at an altitude of 1,985 m), and Mupo (41° 54' 55" N, 128° 27' 10" E, at an altitude of 1,300 m). See Abe *et al.* (1996) for trapping method. After captured, shrews were preserved in 70 % ethanol. Then, external measures (head and body length, tail length, forefoot length, and hind-foot length) were recorded in millimeter. Age (young-of-the year or overwintered) was determined by observing wearing conditions of

hairs and teeth and reproductive organs. Sex was determined by examining external and internal reproductive organs. Species identification was due to Yudin (1971) and Dolgov (1985). Specimens were deposited at Institute of Low Temperature Science, Hokkaido University, Japan.

Results and discussion

In the survey, 25 specimens of *S. caecutiens*, two *S. gracillimus*, and one *S. daphaenodon* were captured (Table 1). Specimen 01misc-96 (collection number) had large teeth with large portion pigmented in red (Fig. 2); especially molars are large and unicuspid are robust and blunt. The height of unicuspid decreases gradually from the first to fourth unicuspid, and the fifth is much smaller than the fourth (Fig. 2). These features are prominent diagnostic characters to *S. daphaenodon* (Yudin 1971, Dolgov 1985). We also checked other key characters to identify Eurasian *Sorex* species according to Yudin (1971) and Dolgov (1985), and the specimen (01misc-96) was identified as *S. daphaenodon*. The specimen was collected from Mupo (Fig. 1). Trapping site at Mupo was surrounded by streams and vegetation mainly consisted of a Korean larch *Larix gmelini* var. *principisruprechtii*. Reported range of *S. daphaenodon* has been Far Eastern Russia, Jilin and Heilongjiang Provinces of China, northern Mongolia, and eastern West Siberia (Dolgov 1985, Zhang *et al.* 1997). The southernmost collection record of *S. daphaenodon* was from Antu, Jilin Province, China (Zhang *et al.* 1997), which is located about 90 km northeast to the present collection site. Thus, the present specimen is the southernmost record of *S. daphaenodon* and the specimen is the first capture from North Korea.

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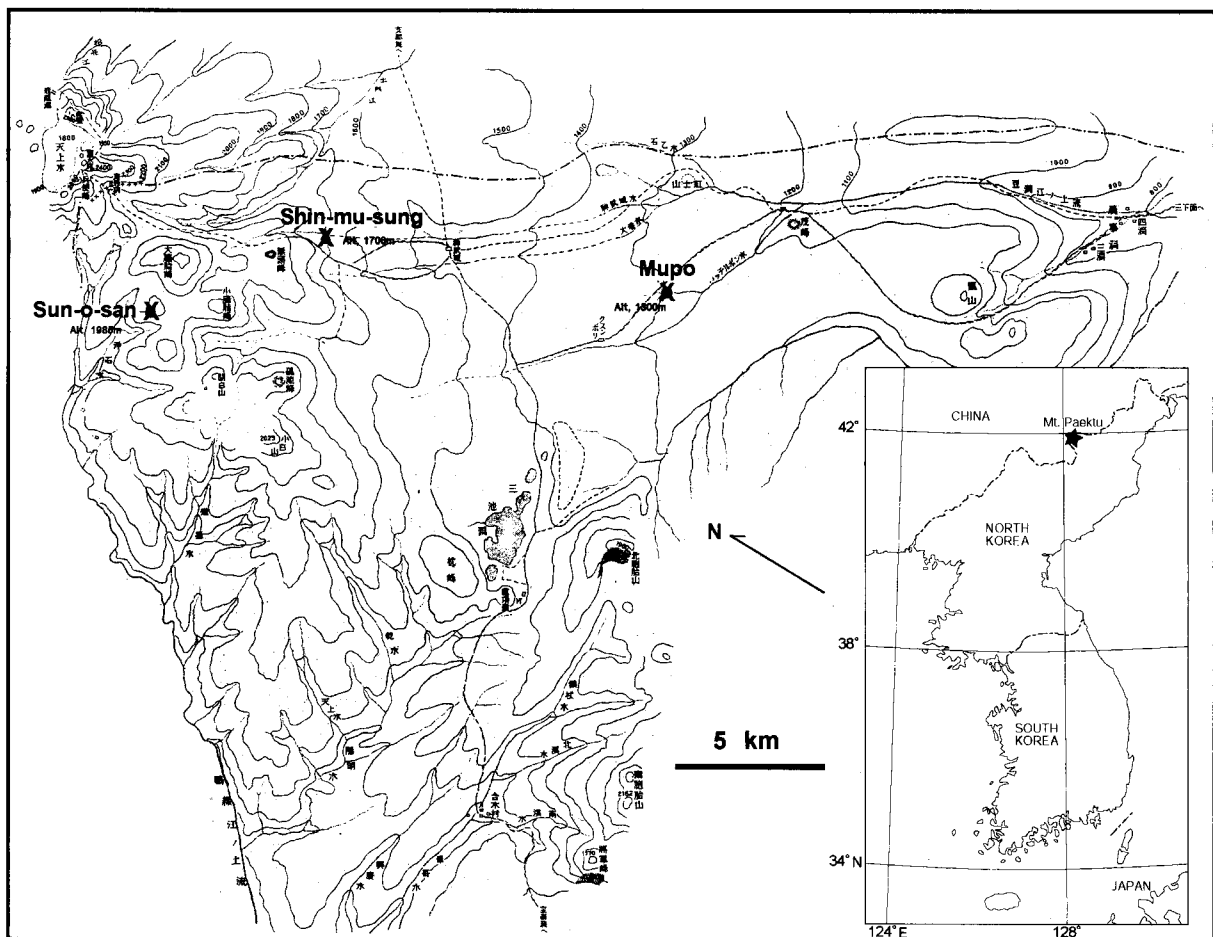


Fig. 1. A map of sampling sites of shrews on Mt. Paektu, North Korea.

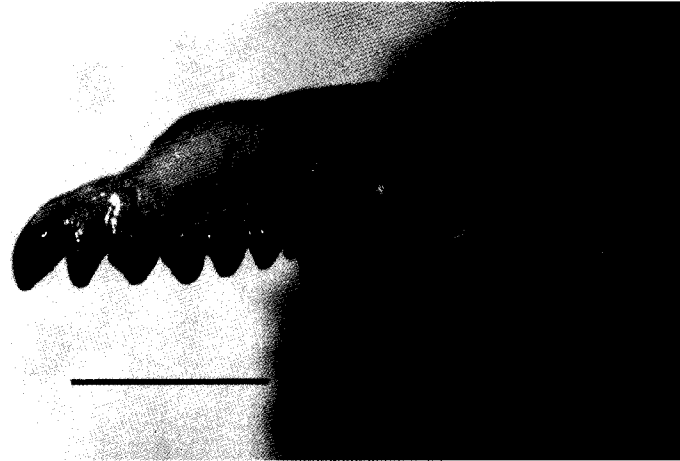


Fig. 2. Lateral left view of rostrum of a specimen *Sorex daphaenodon* (01misc-96) captured from Mupo in the foot of Mt. Paektu, North Korea. Horizontal bar = 5 mm.

Table 1. List of specimens collected in Mt. Paektu, North Korea.

collection no.	species	date of capture	Locations	age	sex	HB	T	FF (cu)	HF (cu)
01misc-76	<i>S. caecutiens</i>	6-Jun-01	Shin-mu-sung	y	m	57	33	6.3	10.9
01misc-77	ditto	ditto	ditto	ow	f	70	35	7.2	10.9
01misc-78	ditto	ditto	ditto	y	f	55	31	6.4	11.0
01misc-79	ditto	ditto	ditto	y	m	51	32	6.4	10.2
01misc-80	ditto	ditto	ditto	y	m	52	37	7.0	11.2
01misc-81	ditto	ditto	ditto	y	m	58	34	7.0	11.6
01misc-82	<i>S. gracillimus</i>	7-Jun-01	ditto	ow	m	55	37	6.0	10.6
01misc-83	<i>S. caecutiens</i>	ditto	ditto	y	m	53	17	7.2	10.6
01misc-84	ditto	ditto	ditto	y	f	52	32	7.0	11.0
01misc-85	ditto	ditto	ditto	y	f	54	34	6.6	11.0
01misc-86	ditto	ditto	ditto	y	f	57	32	6.9	10.3
01misc-87	ditto	ditto	ditto	y	m	53	32	6.9	11.0
01misc-88	ditto	ditto	ditto	y	m	54	32	7.2	11.2
01misc-89	ditto	ditto	ditto	y	f	56	36	6.9	11.0
01misc-90	<i>S. gracillimus</i>	14-Jun-01	Sun-o-san	ow	m	52	38	6.6	11.3
01misc-91	<i>S. caecutiens</i>	ditto	ditto	y	f	52	35	7.0	10.9
01misc-92	ditto	ditto	ditto	y	f	59	35	7.3	10.9
01misc-93	ditto	ditto	ditto	y	f	48	31	6.7	10.8
01misc-94	ditto	ditto	ditto	y	m	54	32	7.2	11.0
01misc-95	ditto	ditto	ditto	y	m	54	32	7.1	10.7
01misc-96	<i>S. daphaenodon</i>	18-Jun-01	Mupo	y	m	60	36	8.2 (9.5)	11.6 (13.0)
01misc-97	<i>S. caecutiens</i>	ditto	ditto	ow	f	57	33	7.0	10.5
01misc-98	ditto	ditto	ditto	y	m	53	31	6.8	10.4
01misc-99	ditto	ditto	ditto	y	f	53	34	7.0	10.8
01misc-100	ditto	ditto	ditto	y	f	58	33	6.7	10.9
01misc-101	ditto	ditto	ditto	y	f	52	31	7.0	10.8
01misc-102	ditto	ditto	ditto	y	f	49	35	7.3	10.3
01misc-103	ditto	ditto	ditto	y	f	51	35	6.9	10.8

External measurements were taken after fixed in ethanol and expressed in millimeter.

HB = head and body length, T = tail length, FF = length of forefoot, HF = length of hind foot.

y = young-of-the year, ow = overwintered. m = male, f = female. cu = measure including claw.