

## Mating behaviour of *Sorex isodon* Turov

UOLEVI SKARÉN

Skarén, U. 1979: Mating behaviour of *Sorex isodon* Turov. — Ann. Zool. Fennici 16:291—293.

Mating behaviour was observed in a caged pair of *Sorex isodon* Turov. During courtship play, the female only shammed flight. The male used both smell and hearing in pursuing the female, which was especially noisy at this time. During the copulations, which usually lasted for 5—7 sec, the male seized the fur on the nape of the female's neck with his teeth.

*Uolevi Skarén, 74300 Sonkajärvi, Finland.*

### 1. Introduction

Very little is known about the isolating mechanisms that prevent interbreeding between different species of shrew. They may include specific odours, sounds and courtship patterns. The following report concerns *Sorex isodon* Turov; nothing has previously been published about its breeding behaviour.

### 2. Material and methods

The material consisted of two animals which were live-trapped in Sonkajärvi, central Finland. The shrews lived for some days in separate glass cages (35 × 55 × 40 cm) at the beginning of the mating observations. A door was later opened between them. Each cage was supplied with dry moss, grass and leaves and a pair of boards. A small wooden nesting-box (14 × 10 × 8 cm) with two openings was put into each cage. Water was always available in the form of pieces of fish (usually *Perca fluviatilis*) and bovine heart. Frozen bees and ants with their cocoons were the basic insect food. Occasionally the animals were given moths, carcasses of shrews, etc. The cages were kept at room temperature (20° ± 5°C). They were kept near windows and therefore received natural illumination during the summer. Electric light was used during autumn evenings.

### 3. Results

On 13 August 1976 a pregnant *Sorex isodon* female was caught. On the following day she suddenly became much thinner, but no young

were found in the cage; the mother had apparently eaten them. This female then lived alone until 28 August when a door in one wall of the cage was opened and she was allowed to walk into the adjacent cage, which was occupied by a very old male (at least 2 years old). The male showed the following signs of old age: he walked stiffly and his ears and tail were hairless. However, there was marked descent of the testes.

When the animals met, a short series of staccato chirps were heard, but there was no fighting. The following morning, calls of medium intensity were heard almost continuously and short copulations were observed. The male seized the fur on the nape of the female's neck with his teeth (there was a white spot on the female's neck which was apparently a sign of earlier copulations). The male then mounted the female from behind and arched his hind-quarters towards the female for some seconds while "walking on the spot" with his hind legs (Fig. 1). The pair sometimes rolled about alongside each other. The male often licked his genitals after copulation. Later, the male occasionally pursued the female tranquilly, and calls of medium intensity were heard (but no staccato chirps). In the evening, the cage was quiet; the male walked on three legs only.

No copulation was seen on the following day (30 Aug.), although the male again walked using all four legs normally. A short chirp was sometimes heard, but as a rule it was quiet



Fig. 1. Copulating shrews (*Sorex isodon*).

in the cage. The following day was also quiet. The animals were then given several moths, and on 1 September there was activity in the cage. Between 15.00 and 17.00 hours, copulation was observed as often as ten times per half hour (copulation was seen only during these 2 hours although the cage was under observation between 13.00 and 21.00 hours). Each copulation usually lasted for 5—7 sec, though sometimes a little longer when the couple fell over, at which times the male seemed to hold on to the female firmly. The animals mostly copulated at a particular place, on a steady piece of board on which the food had been placed, — never on loose moss. Once, the male mounted the female in the nesting-box; the heads of the mating animals were seen at the door. The copulating female usually arched her head upwards as has been observed in many rodents, but sometimes held it horizontally. Evidently the female only shammed at escape while the animals were really playing hide-and-peek; they ran through the nesting-box many times, sometimes diving under the board or into the moss, sometimes changing cage. The male apparently used his sense of smell in pursuing the female: he followed the same path and seldom lost the scent. If this did happen, he stopped and tried to locate the female by sound. The female was also willing to mate: she often came to the usual copulation place as if to wait for the male, without making aggressive sounds or attempting to conceal

herself. She was particularly noisy during this time, but when she was alone in the nesting-box, between mating periods, she also emitted low calls. The animals were so engrossed in their mating that they were completely undisturbed by the presence of the microphone used for recording their calls during copulation.

No copulation was observed after this time, and so the door between the cages was closed on 4 September. The female, however, did not conceive during these copulations, but carried dry leaves into the nesting-box. Later, the animals again copulated many times, but without result. The male died on 2 November; examination showed no spermatozoa in the cauda epididymis.

#### 4. Discussion

Because of the difficulty of keeping most shrews in captivity (see e.g. Vogel 1972, Fons 1973) few descriptions of their mating behaviour are available. Pearson (1944) investigated *Blarina brevicauda* and Conaway (1958) *Cryptotis parva*. The copulation behaviour of these species resembled each other. Oestrus usually lasted for 1, or sometimes 2 days.

The mating behaviour of *S. isodon* is very similar to that of *S. araneus* (Dehnel 1952). Perhaps the only difference is that the courtship play preceding copulation is silent in the common shrew, and only when copulating do the animals “make low voice, hoarse sounds” (translation from Polish by Anna Buchalczyk). In Dehnel’s animal oestrus lasted about 2 hours. Crowcroft (1957) did not see the female common shrew fleeing and reported that during the oestrus period, which lasted less than 18 h, the female did not ‘make aggressive sounds’. Fons (1974) heard a continuous, low sound when *Suncus etruscus* was mating. He also mentions the grooming behaviour of the male *Crocidura russula* after copulation, as does Hellwing (1975). Sound may be important in mating shrews, and the possible specific differences should be analysed using sonograms. Gould (1969) found differences in vocalizations of *Suncus murinus* and *Blarina brevicauda* before copulation.

**References**

- Conaway, C. H. 1958: Maintenance, reproduction and growth of the least shrew in captivity. — *J. Mammal.* 39 (4): 507—512.
- Crowcroft, P. 1957: The life of the shrew. — 166 pp. Max Reinhardt. London.
- Dehnel, A. 1952: The biology of breeding of the common shrew *Sorex araneus* L. in laboratory conditions. — *Ann. Univ. M. Curie-Sklodowska* 6: 359—376.
- Fons, R. 1973: Modalités de la reproduction et développement postnatal en captive chez *Suncus etruscus* (Savi, 1822). — *Mammalia* 37 (2): 288—324.
- »— 1974: Le repertoire comportemental de la pachyure etrusque, *Suncus etruscus* (Savi, 1822). — *Terre et Vie* 1: 131—157.
- Gould, E. 1969: Communication in three genera of shrews (Soricidae): *Suncus*, *Blarina* & *Cryptotis*. — *Behav. Biol. A* 3 (1): 11—31.
- Hellwing, S. 1975: Sexual receptivity and oestrus in the whitetoothed shrew, *Crocidura russula monacha*. — *J. Reprod. Fert.* 45: 469—477.
- Pearson, O. P. 1944: Reproduction in the shrew (*Blarina brevicauda* Say). — *Amer. J. Anat.* 75: 39—93.
- Vogel, P. 1972: Beitrag zur Fortpflanzungsbiologie der Gattungen *Sorex*, *Neomys* und *Crocidura* (Soricidae). — *Verh. Naturf. Ges. Basel* 82 (2): 165—192.

Received 25. III. 1979

Printed 29. I. 1980