

METHODS FOR COLLECTING FLEAS FROM THE BURROWS OF GERBILS IN PLAGUE SURVEYS
IN THE SANDS OF THE NORTHERN CASPIAN SHORES

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IN THE SANDS OF THE NORTHERN CASPIAN SHORES

[Following is the translation of an article by L. T. Bykov and N. B. Belkina, Ural Anti plague Station, published in the Russian-language periodical Med. Parazitol. (Medical Parasitology and Parasitic Diseases), No 5, 1964, page 621. It was submitted on 3 May 63. Translation performed by Sp/7 Charles T. Ostertag, Jr.]

The work was carried out with the aim of seeking effective methods of collecting fleas from the burrows of midday gerbils and Tamarisk gerbils during epizootological investigations of sandy sectors of the natural plague focus in the Volga-Ural interfluvial area.

Investigations of the burrows of these species of gerbils are usually carried out by means of raking out, with the help of various devices, the substrate from the first bend of the burrow, from which the ectoparasites are then collected. Under these sandy conditions we checked the possibility of using flannel packing material, used successfully by us in the steppe for collecting fleas from the burrows of little sousliks.

As is known, the method of collecting fleas from burrows with flannel packing material for the purpose of counting them has been worked out in detail in respect to colonies of great gerbils (Mikulín, 1951; Darskaya, 1955; Gershkovich, 1959). From oilcloth we prepared a tubular case one meter in length and around 2.5 cm in diameter and stuffed it with cotton. We put a removable flannel cover on the oilskin plait. This simplified the disinfection of the device.

In the sands of the Dzhangalinskiy Rayon (open-grassy semiarid land) we made a comparative test of the devices for investigating the burrows. These devices would make it possible to reveal the most economical burrows based on expenditure of labor and the effectiveness of collecting fleas. We tested a scraper-rake (based on Shiranovich), a spoon-rake and the flannel plait.

The work was carried out monthly from April through October: In the spring -- in the morning, afternoon and evening, and in the summer and fall -- only in the morning and evening. All together 8470 burrows were investigated and 1494 fleas collected from them.

There was no sharp difference in the effectiveness of investigating burrows based on the number of fleas captured with the raking devices and the flannel plait; the index of abundance (per 100 burrows) fluctuated within small limits -- from 15.7 (spoon) to 19 (plait). However, when investigating the burrows with the flannel plait the working time was reduced by 1½ times.

The greatest number of fleas was captured in the morning (between 7 and 10 o'clock), then in the evening (between 1700 and 2000 hours); during the hot and sunny daylight hours the indices were low, which corresponds with the daily rhythm in the migration of fleas from the burrows. Strong wind and heavy rain sharply reduces the harvest of fleas. Throughout the entire warm period of the year fleas were detected both in inhabited and empty burrows.

A check under practical conditions fully supported the feasibility of using the flannel plait for the mass collection of fleas from gerbil burrows and the advantages of this method. The plait was inserted up to 70 cm into the burrow and left there for 5 seconds, during which time it was moved around a little. Then it was removed in order to collect the fleas from it and again put back into the burrow. It was established that one worker in one working day, even if there was a small number of gerbils, could investigate more than 150 burrows with the plait by this method.

In individual seasons, for example during the hot period, it is possible in the sands to use the method of undermining the mouth of the burrow in order to collect the fleas from its second bend; here the fleas hold out more constantly and it is possible to capture 3 times more than from the first bend.

The results of the investigation make it possible to include the flannel plait in the equipment for the field brigades for the mass capture of fleas from the burrows of midday and Tamarisk gerbils in the sands of the North Caspian shores.