Acta vet. scand. 1982, 23, 622—623.

Brief Communication

YERSINIA PSEUDOTUBERCULOSIS INFECTION IN CAPTIVE BLACK GROUSE (TETRAO LYRURUS) AND WILLOW PTARMIGAN (LAGOPUS L. LAGOPUS)

Tetraonids have been kept in captivity at the Department of Arctic Biology, University of Tromsø, from 1972 and up till now. In the autumn of 1977 a Y. pseudotuberculosis infection appeared among the black grouse and willow ptarmigan. At that time the stock comprised 10 black grouse, 200 willow ptarmigan and 3 capercaillies (Tetrao urogallus). The disease first occurred among 7 juvenile black grouse. They were kept together on the ground in a $3 \times 5 \times 2$ m cage and were fed concentrates supplemented with blueberry plants (Vaccinium myrtillus) and willow (Salix spp.). During the period 7th to 22nd September all of them died.

In 3 neighbouring cages of the same type were kept 20 juvenile willow ptarmigan, 2 adult black grouse and 3 adult capercaillies, respectively. The willow ptarmigan were used in a social hierarchy study, and from 7th October to 26th November 6 of them died due to Y. pseudotuberculosis infection. The birds that died were all belonging to the lower class in the social hierarchy.

The rest of the ptarmigan were kept in $0.9 \times 0.9 \times 0.9$ m cages, 1—3 birds in each, with wire mesh floor. Only 1 of these birds, a juvenile, strongly inbred male died from Y. pseudotuberculosis infection.

The signs were anorexia, emaciation and lethargy. At necropsy yellow-greyish nodules of varying size were seen in the liver (4/14), spleen (4/14), lungs (3/14), kidneys (3/14), heart (1/14), pancreas (1/14), cerebellum (1/14) and small intestine (1/14). Histological examination revealed fibrosis in the pancreas and myocardium of 2 birds.

From tracks in the snow it could be deduced that the infection most probably was introduced by voles visiting the ptarmigan feed and water trays. The disease was largely restricted to juvenile birdt kept in flocks on the ground. These birds were probably submitted to a heavier infection, and were possibly

immunologically debilitated by a stressful social situation (*Myhre et al.* 1981) compared to the rest of the stock.

Y. pseudotuberculosis occurs in a variety of vole species, and also in lemmings (Lemus lemus) (*Wetzler* 1973). Willow ptarmigan production is consequently low after crashes in the microrodent population (*Hagen* 1952). One may ask whether pseudotuberculosis might be a direct link in this interplay. Studies on ptarmigan population dynamics give, however, no support to this hypothesis (*Watson & Moss* 1979).

Ingolf Hanssen
The Department of Arctic Biology and Institute of Medical Biology, University of Tromsø, Norway.

REFERENCES

Hagen, Y.: Rovfuglene og Viltpleien (Birds of prey and wildlife management). Gyldendal Norsk Forlag, Norway 1952.

Myhre, G., H. Ursin & I. Hanssen: Corticosterone and body temperature during acquisition of social hierarchy in the captive willow ptarmigan (Lagopus l. lagopus). Z. Tierpsychol. 1981, *57*, 123—130.

Watson, A. & R. Moss: Population cycles in the Tetraonidae. Ornis Fennica 1979, *56*, 87—109.

Wetzler, T. H.: Pseudotuberculosis. *In:* Infectious Diseases of Wild Mammals. J. W. Davis, L. H. Karstad & D. O. Trainer (eds.). Iowa State University Press, Ames, Iowa 1973, pp. 253—262.

(Received October 18, 1982).

Reprints may be requested from: Ingolf Hanssen, Steinåsen 33, N-7000 Trondheim, Norway.