



SHORT NOTES

A REPORT ON THE DEATH OF SHEATHBILLS, *Chionis alba* (Gmelin), AT SIGNY ISLAND, SOUTH ORKNEY ISLANDS, DURING THE WINTER OF 1965

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DURING the winter of 1965 unusually large numbers of sheathbills were found dead in the vicinity of the British Antarctic Survey station on Signy Island. Between mid-July and early September twelve carcasses were found, two of which showed a possible cause of death. One of these, a juvenile male, was heavily infected with tapeworms and was considerably underweight (380 g.)- The other, an adult male, was seen to fall during flight and die; on post-mortem examination a split was found in the hepatic portal vein with resulting haemorrhage. A third bird was seen to die moments after feeding (Burton and Howie, 1965).

Between 8 and 17 October, a further 25 birds were found dead. These were mostly from Factory Cove in the immediate neighbourhood of the British Antarctic Survey station and included ten banded birds, two of which were known to have nested on the island. Several birds were under observation in front of the station when they died. In all cases death was very sudden; the birds were active, either in the air or on the ground, when they fell, kicked and died (Burton and Howie, 1965).

Sixteen of the birds found dead in October were preserved in deep freeze and were received in the United Kingdom in May 1966. Twelve of these specimens were examined by N.V.J. and I.C.W., the remaining four being sent to Dr. A. R. Jennings, Department of Animal Pathology, University of Cambridge, who also sent organs from three of the birds to the Laboratory of the Government Chemist for determination of pesticide residues. With few exceptions, the 12 birds examined by us were well preserved and the tissues had suffered little apparent deterioration. Dr. Jennings, however, reported that the specimens he examined showed histological deterioration that would mask any small pathological changes.

RESULTS *Pathological examinations*

None of the specimens examined by Dr. Jennings and ourselves showed any significant pathological condition. On the contrary, the birds appeared to have been in good condition prior to death. None of them had suffered any physical damage, for example from the attacks of other birds, before death. All 16 birds were adults, and of the 12 we examined ten were males. The body weight of the males varied from 500 to 770 g. with an average weight of 675 g.; the weight of one female was 625 g., while the weight of the other, which had been damaged by other birds after death, was not recorded.

The crop and gizzard of nine of the 12 birds we examined contained food which consisted, for the most part, of tea leaves and chopped mammalian muscle, obtained no doubt by foraging at the British Antarctic Survey station. Other common items in the crop were penguin egg-shells, algae, and cherry and apple seeds. In two birds we found eight cephalopod beaks which were sent to Dr. M. R. Clarke, National Institute of Oceanography, but no identification has so far been made. Vertebrae from a small fish were found in one bird, and small bird bones in another. Several small stones, and in one case a lead shot, were present in the *gizzard* of each bird. The crop and gizzard contents indicate that the birds had been feeding normally, mainly by scavenging, almost until they died. The crop and gizzard were empty in the remaining three birds.

Dr. Jennings (personal communication) found that routine bacteriological, histological and parasitological examinations of three females proved negative. He was unable to offer any opinion as to the cause of death.

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Pesticide residues

The livers of three females were examined by the Laboratory of the Government Chemist and found to contain traces of chlorinated residues. The results have been published and discussed elsewhere (Tatton and Ruzicka, 1967).

Parasitological examinations

Ectoparasites. Analgesid mites were present on the feathers overlying the preen gland of most birds. A small number of lice was also collected from the head and neck regions. Both of these types of parasite are quite usual on Signy Island sheathbills (Jones, 1963).

Endoparasites. Eight species of helminth parasite were found, none of which is thought to have caused the death of the host. The parasites comprised two species of trematode, *Noto-cotylus chionis* Baylis 1928 and *Gymnophallus deliciosus* (Olsson 1893), two cestodes, *Lateri-porus australis* Jones and Williams 1967 and *Nototaenia fileri* Jones and Williams 1967, three nematodes, *Paracuaria tridentata* (von Linstow 1877), *Phocanema decipiens* (Krabbe 1878) and *Contracaecum* sp., and one acanthocephalan, *Corynosoma hammani* (von Linstow 1892). A full account of these infections has been given elsewhere (Jones and Williams, 1967, 1968, in press).

DISCUSSION

The absence of pathological lesions and of helminth parasites, in sufficient numbers to produce disease, in most of the sheathbills seems to be a clear indication that these unusual deaths were caused by some external agency or by the ingestion of some rapidly acting poison which, owing to absence of alimentary damage, must have been non-irritant in action. The apparently normal behaviour of the birds before death, and the presence of food in the crop and gizzard of most of those examined, argues that viral or bacterial infection was not the cause of death. The weights of the birds, which were generally within the normal range for adult sheathbills, seem to indicate that a slow-acting and debilitating poison was not the cause of death. This is supported by the report that the pesticide residues were very low in the samples examined.

Among possible external agencies, only severe climatic conditions seem to us to be capable of causing the death of so many adult birds within such a short period of time. Some sheathbills over-winter at Signy Island, while numbers of others, which had dispersed at the end of the preceding season, return to the island in October for the commencement of the breeding season (Jones, 1963). During the late winter of 1965 there were several cold spells between July and September (minimum temperature about -20°C), but they were not unusual for the time of year and seem unlikely to have accounted for the deaths of sheathbills observed during this period. The birds examined in the laboratory were found dead on 8-10 October during an unusually cold period for October; the minimum temperature for 10 October was -23.7°C which was one of the coldest October temperatures recorded at Signy Island. Yet even these birds were of normal weight and had been feeding almost until death, whereas the predominant cause of death among birds during severe winters is starvation and not cold. Judging from testes sizes, the birds were not far advanced in their reproductive state although, obviously, this was developing. At the same time, some if not all of these dead birds may have recently returned to the South Orkney Islands from more temperate regions and, encountering usually low temperatures for October, may have suffered acute cold stress before acclimatization.

Pathological conditions, parasites, pesticides and environmental conditions have been considered and on the evidence available only the possibility of acute cold stress could be considered a likely cause of death, and this only for some of the birds dying in October. We must, therefore, consider the possibility that some item of chemical waste, disposed of in the neighbourhood of the Signy Island station and readily accessible to the birds, was eaten and was sufficient to be toxic to kill the birds rapidly. If so, this could account for the deaths that occurred during the whole of the period of July to October. Even if the evidence for this is circumstantial, it is a clear warning that great care has to be exercised in the disposal of chemical waste. Sheathbills are probably more susceptible to this danger than any other Antarctic bird because of their scavenging habits.

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