

Ectoparasites of some waterfowl (Anatidae) from Victoria

S.C. van Mourik¹ and F.I. Norman²

¹School of Agriculture and Forestry, University of Melbourne, Parkville, Victoria 3052

²Ministry for Conservation, Forests and Lands; Fisheries and Wildlife Service, Arthur Rylah Institute for Environmental Research, 123 Brown Street, Heidelberg, Victoria 3084

Abstract. van Mourik, S.C. and Norman, F.I. (1985) Ectoparasites of some waterfowl (Anatidae) from Victoria. *Occ. Pap. Mus. Vict.* 2: 1-3.

Breast feathers, and one wing, from 93 anatids (7 species) shot at two sites in Victoria in 1980 were examined for the presence of ectoparasites. A further 54 chestnut teal (*Anas castanea*), 11 grey teal (*A. gibberifrons*) and 4 Pacific black duck (*A. superciliosa*) were live-trapped and also examined. The lice *Acidoproctus*, *Anaticola*, *Anatoecus*, *Holomenopon*, *Rallicola*, and *Trinoton* spp. were found as were the mites *Alloptoides*, *Bdellorhynchus*, *Freyana* and *Ingrassia* spp., though not from each duck species. Data are compared with previous Australian records and 29 new host-parasite associations are reported.

Introduction

Ectoparasites of birds have been extensively studied in the northern hemisphere but, whilst some Asian material has been published (McClure et al., 1973), relatively little is known of the ectoparasite burden carried by the Australian avifauna, including waterfowl. Details of the ectoparasites found on some local members of the Anatidae have been summarised (Lapage, 1961), and the listing was extended in studies of waterfowl in north Queensland (Lavery, 1967, 1971). However, we are unaware of recent published Victorian material.

During the opening days of waterfowl hunting seasons large numbers of ducks are shot in Victoria. Some of those killed at two popular hunting areas were examined as were birds trapped in routine banding sessions held at the Serendip Wildlife Research Station, near Geelong. This report summarises our observations.

Materials and methods

Breast feathers and one wing, detached close to the body, were collected from 89 anatids (6 species: Australasian shoveler *Anas rhynchotis*, Australian shelduck *Tadorna tadornoides*, grey teal *A. gibberifrons*, freckled duck *Stictonetta naevosa*, Pacific black duck *A. superciliosa*, pink-eared duck *Malacorhynchus membranaceus*) shot at Lake Buloke, near Donald, Victoria on 1 March 1980. The same material was taken from 4 chestnut teal (*Anas castanea*) obtained at Dowds Morass, near Sale, on the same day. Wings were placed individually in a clear plastic bag, as were the samples of breast feathers, before transport to the laboratory. Each wing was examined under a low-power (to 20×) stereo-microscope and indi-

vidual lice and mites were removed, by fine brush, and stored in 70% ethanol until identified. Breast feathers were pooled for each species following cursory examination and then immersed (Watson and Amerson, 1967), sieved and ectoparasites recovered and fixed in alcohol.

At Serendip waterfowl were caught in grain-baited traps (26 August, 7 October, 3 December 1980). Samples trapped included 54 chestnut teal, 11 grey teal and 4 Pacific black duck; a few Eurasian coot (*Fulica atra*) were also caught during these sessions. For the trapped birds an attempt was made to obtain ectoparasites from the whole body. Ducks were thoroughly dusted with pyrethrum and placed in individual plastic bags for about 10 minutes whilst feathers were continually disturbed; their heads, which were retained outside of the bags, were closely examined for ectoparasites during this time. Following the release of the birds the bags were examined; ectoparasites present were removed and placed in ethanol.

Artificial wooden nest boxes used by breeding chestnut teal at Serendip were also dismantled and the debris searched for potential ectoparasites.

Results

The ectoparasites collected from the wings and breast feathers in seven pools, from 93 ducks, were identified and the results are summarised in Table 1. The identified material has been deposited with the Museum of Victoria. Whilst some of the Mallophaga were found in coverts of the major flight feathers (primaries and secondaries), their eggs were also found along feather shafts, which was also the location of mites when present. The

Table 1. Ectoparasites recorded from shot and live-trapped waterfowl in Victoria, 1980. Comparison is made with previous records made for the same species: a, Lapage, 1961; b, Lavery, 1967, 1971. c, shot birds; d, trapped birds.

Ectoparasites	Australasian shoveler	Australian shelduck	Chestnut teal	Freckled duck	Grey teal	Pacific black duck	Pink-eared duck
Mallophaga							
<i>Acidoproctus</i> sp.				c			
<i>Anaticola</i> sp.	c	c	c,d		b,d	b,c	c
<i>Anaticola crassicornis</i>	c		d		b,d	b	
<i>Anatoecus</i> sp.			d		b		
<i>Holomenopon</i> sp.	c	c			b		c
<i>Rallicola fulica</i>					d		
<i>Trinoton</i> sp.	c			c	b,c,d	b,c	c
<i>Trinoton querquedula</i>		c	c,d	c	b,c,d	b	c
Acarina							
<i>Alloptoides</i> sp.			d				
<i>Bdellorhynchus</i> sp.			d				
<i>Bdellorhynchus polymorphus</i>					c,d	c	
<i>Freyana</i> sp.			d		d		
<i>Freyana largifolia</i>	a		c,d		a,c,d		
<i>Freyana microchaeta</i>							a,c
<i>Ingrassia</i> sp.			d		d		
Number of ducks examined							
- shot	18	10	4	3	25	8	25
- trapped	-	-	54	-	11	4	-

pyrethrum-dusting of trapped birds (Table 1) uncovered additional species of lice and particularly mites; however, no mites were found around the ear or nasal cavities.

None of the mallophagan or acarine species found on shot or wild-trapped chestnut teal was found in the nest boxes at Serendip.

Discussion

Results presented above from ducks collected in Victoria considerably extend the range of acarine and mallophagous parasites previously recorded from the same species of waterfowl sampled elsewhere (cf. Lapage, 1961; Lavery, 1967). Indeed, examination of the relatively small number of ducks involved in this survey provided an additional 29 host-parasite associations. Apart from *Anatoecus* and *Holomenopon* spp. on grey teal, *Trinoton querquedula* on Pacific black duck, *Freyana largifolia* on the Australasian shoveler, *F. australis* on the freckled duck (Lavery 1967; McClure, 1973), and *Saemundssonina minitrans* on the pink-eared duck (Timmermann, 1977), all associations recorded by earlier investigations were duplicated.

We found no ectoparasites specific to the endemic (those recorded have been found on other anatids) genera *Stictonetta* and *Malacorhynchus*, and there was little difference between the lice and mites found on the related grey and chestnut teal. Indeed, many of the genera of mallophagans, and some of the same species, recorded here have also been recorded from ducks of the genus *Anas* in both North America (Broderson et al., 1977; Lapage, 1961) and Asia (McClure et al., 1973). The

probable arrival of most species of *Anas* into Australia via an Indo-Malaysian route (Rich, 1975), and the close relationship between *A. superciliosa* and the Indo-Asian spot-bill (*A. poecilorhyncha*) species group (Johnsgard, 1975) is supported by the affinities shown by the ectoparasites. The grey teal, one of the most nomadic of Australian anatids, may offer a route for ectoparasites to enter the species within the Australian duck 'pool.' Acting as a vector, its nomadic habits and adaptability to a wide range of habitats allows frequent overlap with the range of other local species.

This note has shown the possibility of using waterfowl shot during open seasons as a source of ectoparasite material. Apart from problems associated with cross-infection, which could be eliminated, the opportunity exists for further examination of the ectoparasite fauna to be found on Australian waterfowl, particularly on the endemic freckled and pink-eared ducks. Clarification of the host-parasite relationships and of the origin of the host species might ensue.

Acknowledgements

We thank Dr J. Gaud (Laboratoire de Parasitologie, Faculté de Médecine, Nice-cedex, France) and Mr C. Lyal (British Museum (Natural History), England) for their advice and for their identifications of specimens of Acarina and Mallophaga respectively. The work of the senior author was partially supported by the Victorian Fisheries and Wildlife Division whilst holding a Rotary Foundation scholarship.

References

- Broderson, D., Canaris, A.G., and Bristol, J.R. 1977. Parasites of waterfowl from southwest Texas: II. The shoveler *Anas clypeata* J. Wildl. Dis. 13: 435-9.
- Clay, T., 1957. The Mallophaga of birds. In *First Symposium on Host Specificity among Parasites of Vertebrates*. Université de Neuchatel: Neuchatel.
- Frith, H.J., 1967. *Waterfowl in Australia*. A.H. and A.W. Reed: Sydney.
- Johnsgard, P.A., 1975. *Ducks, Geese and Swans of the World*. University of Nebraska: Lincoln.
- Lapage, G., 1961. A list of the parasitic protozoa, helminths and arthropoda recorded from species of the family Anatidae (ducks, geese and swans). *Parasitology* 51: 1-109.
- Lavery, H.J., 1967. Studies of waterfowl (Anatidae) in north Queensland. 2. Parasite records. *Qld J. Agric. Anim. Sci.* 24: 126-9.
- Lavery, H.J., 1971. An investigation of the biology and ecology of waterfowl (Anatidae: Anseriformes) in north Queensland. M.Sc. thesis, University of Queensland.
- McClure, H.E., Ratanaworabhan, N., Emerson, K.C., Hoogstraal, H., Nadchatram, N., Kwanyuen, P., Atyeo, W.T., Maa, T.C., Wilson, N. and Wayupong, L., (1973). *Some Ectoparasites of the Birds of Asia*. Bangkok. (undated)
- Rich, P.V., 1975. Changing continental arrangements and the origin of Australia's non-passeriform continental avifauna. *Emu* 75: 97-112.
- Timmerman, G., 1977. Mallophagologische Kollektaneen. 3. *Bonn. Zool. Beitr.* 28: 135-40.
- Watson, G.E. and Amerson, B.A., 1967. *Instructions for collecting bird parasites*. Museum of Natural History, Smithsonian Institution: Washington.