

TRICHOMONAS GALLINAE (RIVOLTA, 1878) STABLER, 1938, IN MOURNING DOVES, ZENAIDURA MACROURA, IN NORTHWEST OKLAHOMA

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In a survey conducted in northwest Oklahoma in July and August, 1971, *Trichomonas gallinae* occurred in 14.8% of 183 mourning doves examined. Gross lesions attributable to trichomoniasis were not observed in any of the doves sampled. This is the first record of this potentially pathogenic organism in mourning doves in Oklahoma.

Trichomonas gallinae (Rivolta, 1878) Stabler, 1938, is the etiological agent of avian trichomoniasis. Reviews of the occurrence and pathogenesis of *T. gallinae* in North America have been reported by Stabler and Herman (1), Stabler (2), and Kocan and Herman (3). Although this organism is a frequent parasite of columbids throughout the United States, no record of *T. gallinae* has been reported in mourning doves (*Zenaidura macroura*) in Oklahoma.

The morphology of *T. gallinae* has been described by Stabler (4). The parasite is a flagellated protozoan; the body is pyriform to rounded, 6.2-18.9 μ by 2.3-8.5 μ (mean 10.5 μ by 5.2 μ). There are four anterior flagella, 8-13 μ in length. The axostyle is narrow and protrudes a short distance posteriorly from the body. The undulating membrane extends about two-thirds of the total length of the body.

The primary route of transmission is via direct transfer per os of trichomonads to squabs (3). However, transmission may also occur by direct contact between infected and uninfected individuals during courtship, or by the ingestion of contaminated grain or water (3).

Lesions first appear in the mucosa of the oral cavity as small, yellowish, circumscribed areas. These progressively increase in size and number and extend to the esophagus, crop, and proventriculus; the liver may also be involved, and there may be an extension to the lungs and the serous surfaces of the intestine, pancreas, and

heart (5). These nodules may then form thick, caseous, necrotic masses. The earliest phase of infection is characterized histologically by a palisading of trichomonads on the epithelial surface of the oral mucosa; leucocytic infiltration then occurs, followed by necrosis and an increase in the size of the lesion (6).

The severity of this disease varies from a mild condition to possible death within 4 to 18 days after infection. Death may result from invasion of the skull and brain by the organism, from starvation following occlusion of the esophagus, or from respiratory failure caused by blockage of the trachea (3). Mortality resulting from *T. gallinae* infections depends largely on the virulence of the strain and on the resistance the doves may have developed following a previous exposure to a non-lethal infection. The extent of losses in mourning doves has been reviewed by Stabler and Herman (1).

MATERIALS AND METHODS

A total of 183 mourning doves from Major County in northwest Oklahoma were examined during July and August, 1971. Adults and immatures were live-trapped using portable bait traps (2 ft square by 8 inches high), while nestlings were obtained directly from the nest. Swabs of the oral pharynx and anterior esophagus were taken from each bird and inoculated onto egg-slant media overlaid with 2 ml Locke's solution and .04 ml horse serum (7). The tubes were stored horizontally at room temperature for 12 hr and subsequently transferred to an incubator for 12 hr at 37 C. Microscopic smears of the fluid overlays were then examined for trichomonads.

¹ Oklahoma Department of Wildlife Conservation, Oklahoma State University, U. S. Fish and Wildlife Service, and the Wildlife Management Institute cooperating.

TABLE 1. *Trichomonas gallinae* infection in mourning doves, *Zenaidura macroura*, examined in northwest Oklahoma in 1971.

| Sampling Period | Adults and Immatures | | Nestlings | | Total | |
|-----------------|----------------------|--------------------------------|-----------------|--------------------------------|-----------------|--------------------------------|
| | Number Examined | Number and Percentage Infected | Number Examined | Number and Percentage Infected | Number Examined | Number and Percentage Infected |
| 20, 21 July | 14 | 5 (35.7) | 0 | 0 (0) | 14 | 5 (35.7) |
| 12, 13 Aug. | 64 | 7 (10.9) | 14 | 4 (28.6) | 78 | 11 (14.1) |
| 18, 19 Aug. | 34 | 4 (11.8) | 1 | 0 (0) | 35 | 4 (11.4) |
| 23, 24 Aug. | 51 | 5 (9.8) | 5 | 2 (40.0) | 56 | 7 (12.5) |
| TOTAL | 163 | 21 (12.9) | 20 | 6 (30.0) | 183 | 27 (14.8) |

RESULTS AND DISCUSSION

Due to differences in sample size, it is difficult to correlate the occurrence of *T. gallinae* in mourning doves with a specific time period or age group (Table 1). However, it does appear that nestling mourning doves may be more susceptible to *T. gallinae* infection than are immatures and adults. The incidence of *T. gallinae* in the 183 doves examined was 14.8%; a comparable figure for frequency of infection has been reported in other parts of the country (8).

None of the doves examined in this survey had any lesions indicative of trichomoniasis. The potential virulence of *T. gallinae* and its effect on mourning doves in Oklahoma are not known. However, with a sudden increase in virulence of this parasite or with an increased environmental stress on the mourning doves, *T. gallinae* could have an important impact on survival and productivity of mourning doves.

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