

**A Rare Avian Nematode *Oswaldostrongylus indicum* n.sp. from
Indian Pigeons, *Columba livia domestica***

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Abstract

Oswaldostrongylus indicum n.sp. from *Columba livia domestica* has been described for the first time in India on bursate males, 6 pairs of cephalic papillae, inflated cephalic cuticle and lateral flanges, stouter spicules with a proximal knob and trifold distal end, presence of gubernaculum, prebursal papillae and post-equatorial vulva in female worms. The new form has been compared with the known valid species.

Key words: *Oswaldostrongylus indicum*, Heligmosomidae, Ornithostrongylidae, cephalic papillae, bursa

Introduction

Very little work has been done in Garhwal Himalayas and at Allahabad on the nematode parasites of avian hosts. In the present investigation *Oswaldostrongylus indicum* n.sp. has been described from the large intestine of the Indian pigeon. The new species has been compared with the other valid species of the genus.

Materials and Methods

During a research project survey sponsored by Department of Science and Technology, India, on Bio-ecology of high altitude parasites 124 avian hosts, *Columba livia domestica* (L.) were examined at Kotdwara (425mASL) in Garhwal Himalayas, and 76 pigeons at Allahabad (106mASL). Of these eleven birds at high altitude and four at Allahabad harboured 47 roundworms in the hinder part of their intestines. The worms were washed in normal saline; fixed in hot 70% alcohol and glycerine (95:5); cleared and mounted in lactophenol. Measurements were recorded in millimeters unless otherwise stated, and men-

tioned as ranges followed by mean in parentheses.

Oswaldostrongylus indicum n.sp.
(Figs. 1—12)

Male (N = 5)

Worms small, filiform, 3.44—5.66 (4.18) × 0.05—0.06 (0.06). Cephalic cuticle inflated, continues with the lateral flanges (Fig. 1) present throughout the body. Cephalic papillae 6 pairs (Figs. 2, 5b) — 4 pairs median and 2 pairs laterally directed, one pair on each lateral side. The posteriormost median pair of cephalic papillae elongate. Mouth simple with rudimentary triangular buccal capsule measuring, 0.003—0.01 (0.01) × 0.018—0.02 (0.02). Head not distinctly marked off from rest of the body (Fig. 1). Nerve ring, 0.08—0.09 (0.09) from anterior end of body. Oesophagus (Fig. 5), 0.3—0.4 (0.4) × 0.02—0.1 (0.06), does not possess a bulb. Intestine, 0.04—0.05 (0.04) in diameter. Bursa (Figs. 3, 6) with asymmetric lobes. The ventrolateral and lateroventral bursal rays possess a common trunk; externolateral and mediolateral rays three each in number, diverging in opposite directions distally, and the dorsal ray divided into two widely divergent limbs, each of which terminates in two unequal branches, the inner branch being the longer. Spicules two, slightly stouter with a knob-like proximal end and

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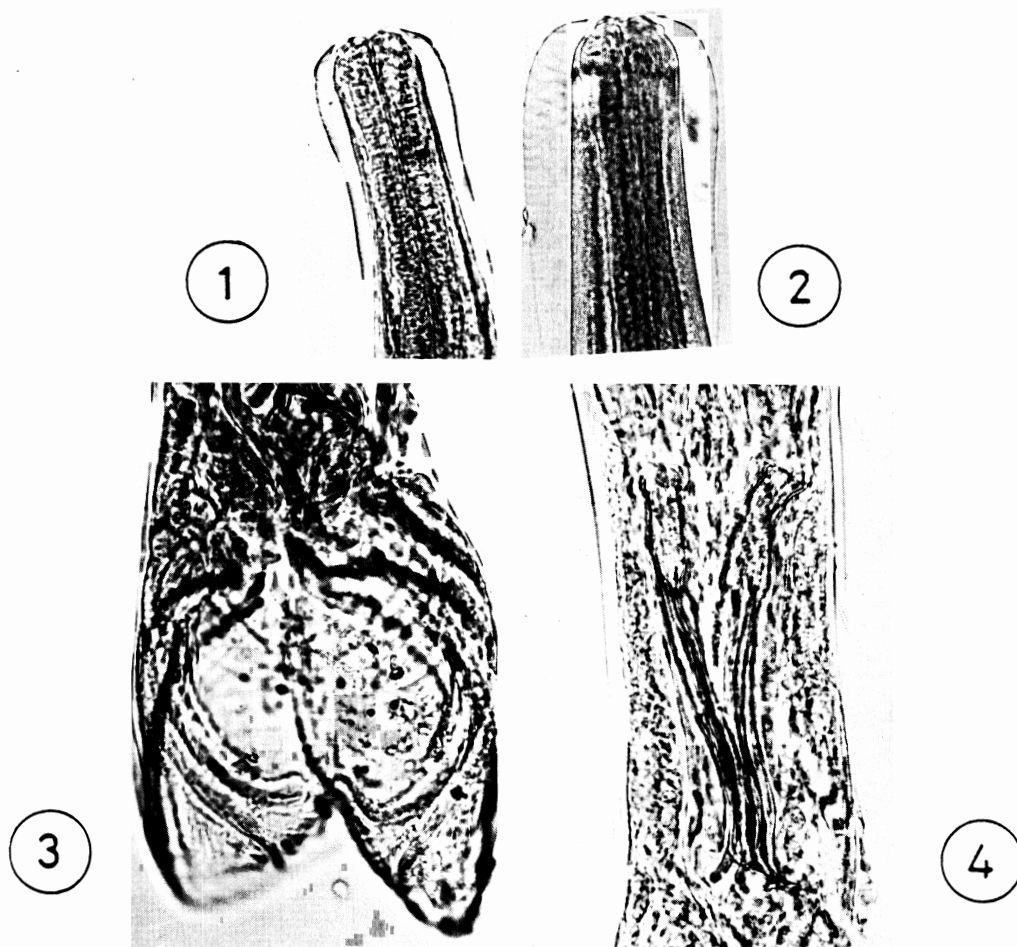


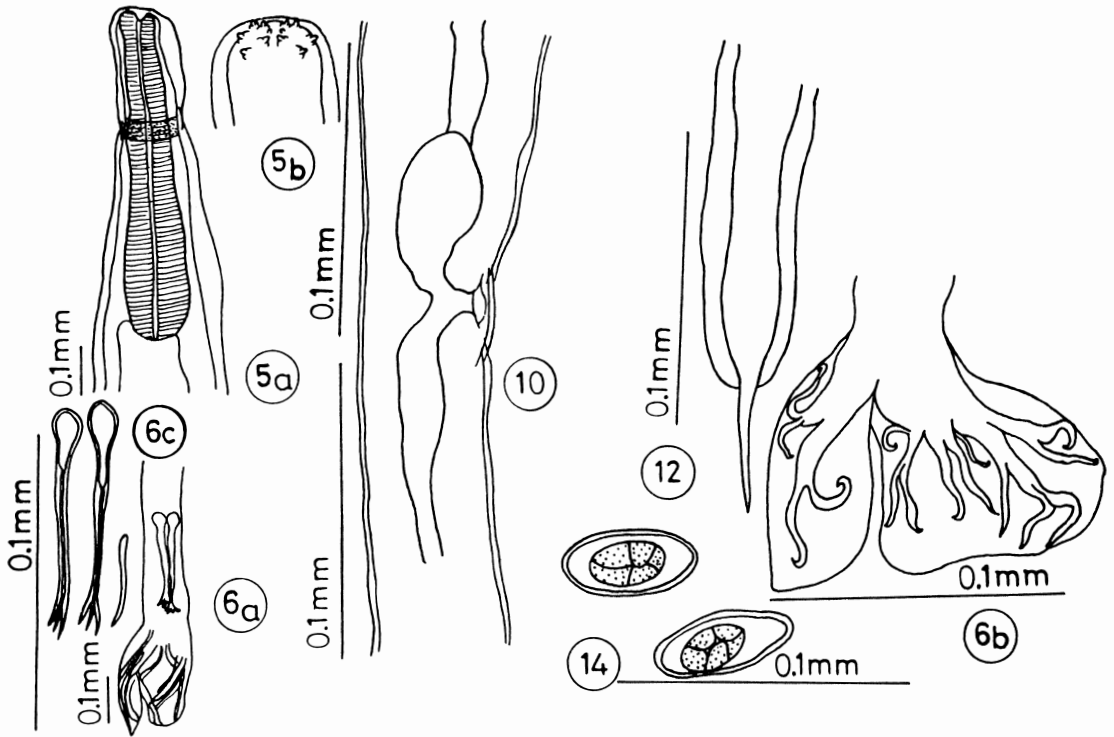
Fig. 1—6. *Oswaldostrongylus indicum* n.sp. Male—Microphotographs of 1. anterior end; 2. cephalic papillae arranged on the anterior end; 3. bursa with bursal rays; and 4. spicules with trifid distal end. 5(a) Anterior end to show inflated cuticle, lateral flanges ($\times 110$) and (b) cephalic papillae ($\times 660$); 6(a). Posterior end showing bursa and spicules ($\times 110$); 6(b). Posterior end showing details of bursal rays ($\times 660$) and 6(c). spicules and gubernaculum ($\times 660$).

trifid distally possessing median longitudinal groove (Fig. 4). Spicules measure, 0.09—0.12 (0.1) \times 0.007—0.01 (0.01). Gubernaculum elongate, 0.02—0.04 (0.03) \times 0.003—0.01 (0.004). Prebursal papillae 3. Anus terminal, at the base of bursal lobes.

Female (N = 22)

Female specimens are longer than the male worms, filiform and measure, 5.66—9.56 (7.63) \times 0.42—0.43 (0.43). Cephalic cuticle inflated and continuous with the lateral flanges (Fig. 7)

in rest of the body. Cephalic papillae 6 pairs — 4 pairs median and 2 pairs lateral. Mouth simple with a rudimentary triangular buccal capsule measuring, 0.003—0.01 (0.0047 \times 0.02—0.03 (0.02)). Head indistinct from rest of the body. Oesophagus measure, 3.81—4.85 (4.11) \times 0.04—0.1 (0.6) without oesophageal bulb. Vulva (Figs. 8, 9, 10) post-equatorial, 5.06—7.16 (5.09) from anterior end and 1.96—2.41 (1.81) from posterior end. Tail (Figs. 11, 12), 0.54—0.78 (0.59) terminating into a short spine at the tip. Eggs (Figs. 13, 14) oval to ellipsoidal, 0.04—0.05



(0.04) × 0.06—0.08 (0.07).

Discussion

The genus *Oswaldostrongylus* was established by Lent and Freitas, 1934. Yamaguti (1961) considered it under subfamily Ornithostrongylinae (Travassos, 1937) of the family Trichostrongylidae (Leiper, 1912). Later, Durette-Desset and Chabaud (1977) discussed the systematics of Trichostrongyloidea and assigned this genus to subfamily Ornithostrongylinae, family Heligmosomidae. Recently Durette-Desset (1983) transferred it to subfamily Ornithostrongylinae, family Ornithostrongylidae (Durette-Desset and Chabaud, 1981). The present form differs from the only known species to date, *O. cruzia* Lent and Freitas, 1934 in having smaller worms, number of cephalic papillae, smaller oesophagus, lesser distance of nerve ring from the anterior end, greater number of strongly chitinized bursal rays, smaller but slightly stouter spicules with a trifid distal end, smaller gubernaculum, lesser

number of prebursal papillae, lesser distance of vulva from posterior end, smaller eggs and the shape of the tail in female worms.

Hence on the basis of the above differentiating features the present lot of worms are proposed to be regarded as a new species. *Oswaldostrongylus indicum* n.sp.. This is the first report of the genus from India.

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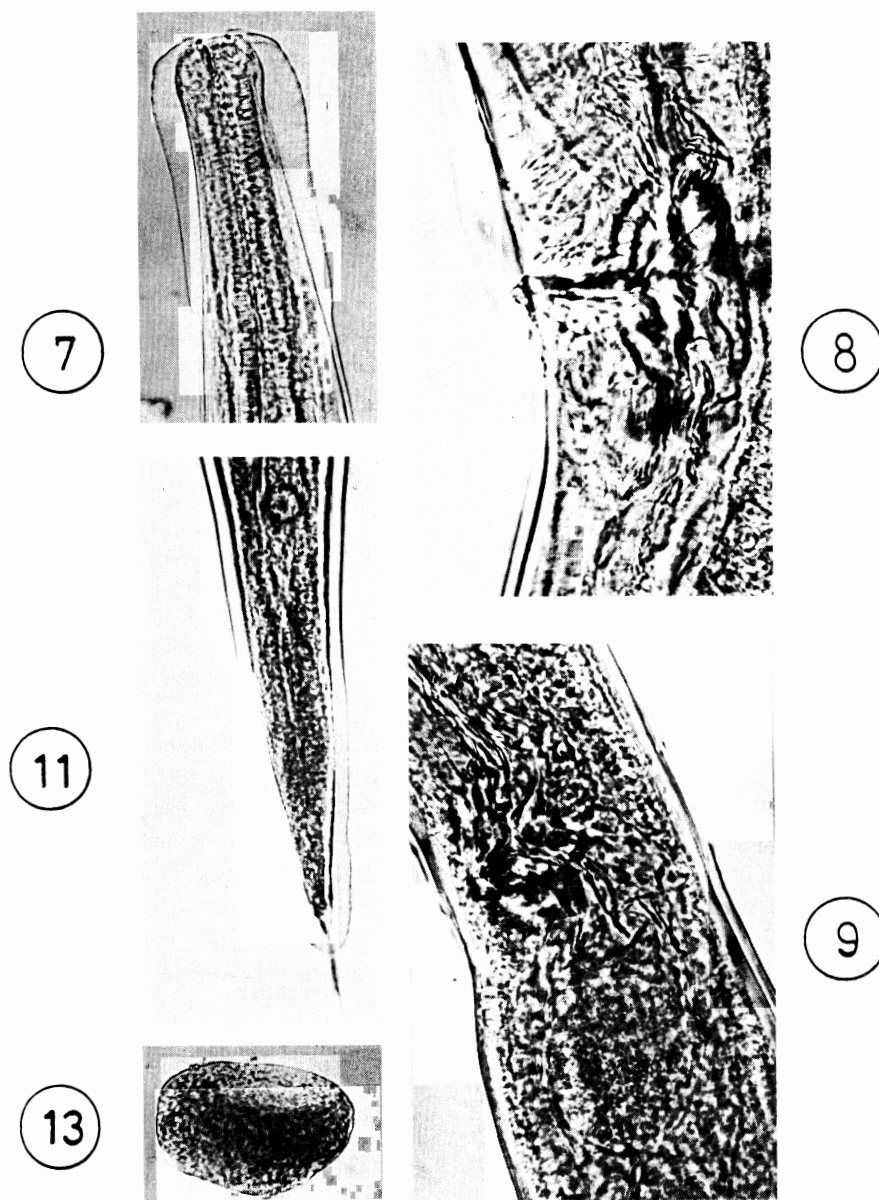


Fig. 7—12. *Oswaldostrongylus indicum* n.sp. Female—Microphotographs of 7. anterior end showing inflated cephalic cuticle continuous with lateral flanges; 8. middle region to show vulva and, 9. vagina. 10. Mid-region showing vulva and vagina ($\times 660$). 11. Microphotograph of tail with spine at the extremity. 12. Tail with terminal spine ($\times 660$); 13. eggs ($\times 660$). 14. Microphotograph of an egg.

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