

AN ACANTHOCEPHALAN, *PLAGIORHYNCHUS CYLINDRACEUS*, IN EASTERN BLUEBIRDS

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Within an eight-day period, 17-24 April 2017, three adult Eastern Bluebirds (*Sialia sialis*) were found dead within 300 yards of each other, on separate days, along a nest box trail at Mashomack Preserve on Shelter Island, Suffolk County, New York. Two of the deceased birds were found within nest boxes, and the other was on the ground near a box. All three had been banded locally as nestlings, two in 2016 and one in 2012. Outwardly, all three appeared to be well fed, normal adults with no signs of external wounds or injuries. All three had fly eggs deposited around the proximal beak and vent, and one had visible maggots in the abdomen, suggesting death had occurred several days prior to discovery. Their intestinal tracts contained no ingesta, but each had several pale yellow worms (5 mm by 1 mm) in the gut above the colic caecae. In all three birds, the worms were gathered close together, though in two birds a single worm appeared to be outside the intestinal wall on the serosal side. One of the birds had 15 of the worms gathered in one section of the gut in a clump. See photos, page 218. The ventriculus in two of the birds seemed flaccid, and remains of a beetle were found in that of the third. On 3 May, a fourth bird was found dead in a nest box, with injuries suggestive of an attack by another bird. This bluebird also had five of the same type of worm in its gut just proximal to the colic caecae. No other bluebirds were found dead in the area during weekly monitoring through 9 June 2017, nor were any of the known, color-banded breeders missing, implying that none had died and been scavenged between weekly visits.

Specimens of the worms submitted to Dr. Mani Lejeune at the Cornell University College of Veterinary Medicine Animal Health Diagnostic Laboratory were identified as the acanthocephalan *Plagiorhynchus cylindraceus* (*Polymorphida: Plagiorhynchidae*). Commonly known as a “spiny headed worm”, its proboscis bears multiple hook-like projections which it can evert and contract to grasp its host’s tissues. Dr. Lejeune (pers. comm.) stated that he had seen *P. cylindraceus* associated with sudden death in American Robins (*Turdus migratorius*) in Alberta, Canada, presenting with only lesions in the lower gut, and he noted similarities in the case of the bluebirds. The USGS National Wildlife Health Center has also reported death of American Robins in Montana associated with this acanthocephalan:

(<https://www.nwhc.usgs.gov/publications/quarterlyreports/2009>).

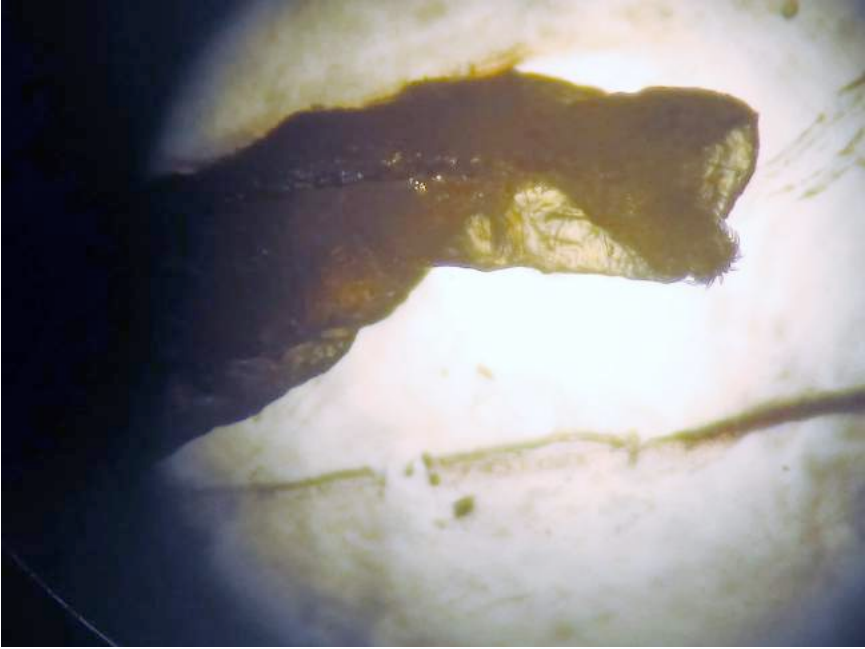
Histopathology revealed features consistent with local antigen-antibody reactions in response to pathogenic organisms. The small intestine of one bird showed brightly eosinophilic radiating material (Splendore-hoeppli) surrounded by macrophages and multi-nucleated giant cells. Examination also revealed focally extensive fibrosing pyogranulomatous intestinal myositis. The presence of the latter in association with *P. cylindraceus* in our specimens is notable because this parasite has been reported in cases of necrotizing enteritis in Eastern and Western Bluebirds (Bildfell et al. 2001). Numerous adult and larval aphasid worms (Nematoda) measuring 60 microns wide were also found within the ventriculus. These are ubiquitous organisms that are unlikely to have caused the pathologies observed in these specimens.

The acanthocephalan *Plagiorhynchus cylindraceus* has an indirect life cycle in which the vertebrate definitive host becomes infected by ingesting larval parasites, known as cystacanths, contained in the body cavity of an arthropod intermediate host. Cystacanths have been reported from terrestrial isopods (or “pillbugs”) and also, interestingly, in mammals such as hedgehogs (Moore 1983, Dimitrova and Genov 2000). Eastern Bluebirds consume many kinds of invertebrates, and it is likely the bluebirds described here contracted this infestation in their normal course of feeding. However, the highly variable life cycle of this parasite and its impacts on its hosts are not completely understood. Although unexplained bluebird deaths have been few at this site, previous years’ necropsies have never yielded any suggestion of this parasite. Thus, their appearance this year raises the question as to whether changes may be occurring in food and/or parasite distribution.

LITERATURE CITED

- Bildfell, R.J., E.K. Eltzroth, and J.G. Songer. 2001. Enteritis as a cause of mortality in the western bluebird (*Sialia mexicana*). Avian Disease 45(3): 760-763.
- Dimitrova Z., B.B Georgiev, T Genov. 2000. Review of the avian acanthocephalans from Bulgaria. Acta Zoologica Bulgarica 52: 3–22.
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Acanthocephalan worms (*Plagiorhynchus cylindraceus*) in Eastern Bluebirds. Top: an individual parasite. Bottom: parasites in and through the intestine of an Eastern Bluebird. Photos copyright W. E. Zitek. See article pp. 179-180.