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Cover Page Footnote

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Distribution of *Dracunculus* sp. Infection in River Otters (*Lontra canadensis*) in Arkansas

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Running Title: *Dracunculus* sp. in River Otters of Arkansas

Mature females of the Guinea worm (*Dracunculus* sp.) are large and most commonly observed in the subcutaneous layers beneath the skin of extremities of certain mammals. *Dracunculus insignis* has been reported primarily from raccoon (*Procyon lotor*), but is known also from mink (*Neovison vison*), opossum (*Didelphis virginiana*), muskrat (*Ondatra zibethicus*), domestic dogs, and a variety of mustelids (Crites 1963; Ewing and Hibbs 1966; Crichton and Beverley-Burton 1974; Tumlison *et al.* 1984; Richardson *et al.* 1992). Historically, *Dracunculus insignis* was the only species of *Dracunculus* known in North America, so it was identified by default until Crichton and Beverley-Burton (1973) described *D. lutrae* from the river otter (*Lontra canadensis*) in Canada. Earlier reports of infection by *Dracunculus* sp. in otter occurred under the designation *D. insignis*, but Crichton and Beverley-Burton (1973) argued that *Dracunculus* in river otters throughout North America likely were *D. lutrae*, although definitive diagnosis requires examination of male specimens. In the absence of males, diagnosis was based on host.

Tumlison *et al.* (1984) first reported *Dracunculus* sp. in Arkansas from 3 species of mammals (raccoon, mink, and river otter). Because no males were located, the authors used host identity and personal communication with V. Crichton to suggest *D. lutrae* to be the species found in their river otter samples. More recently, use of DNA barcoding of the mitochondrial cytochrome c oxidase I (*cox1*) gene resulted in identification of both species of *Dracunculus* from river otters (Elsasser *et al.* 2009). Currently, species designation cannot be based on an assumption of host specificity, and identification lacking either males or use of DNA techniques is valid only to the genus level.

Although the fur trade generates a large number of carcasses in many states of the U.S. and provinces of Canada, few studies have attempted to examine the occurrence and geographic distribution of infection by *Dracunculus* sp. in furbearing mammals. Cheatum and Cook (1948) reported them in New York, Toll (1961) in Massachusetts, Crichton and Beverley-Burton (1974) in

Ontario, Lauhachinda (1978) in Alabama, Tumlison *et al.* (1984) in Arkansas, and Barding and Lacki (2014) in Kentucky.

We contacted fur trappers and fur buyers in Arkansas through social media and personal communication, to secure carcasses of river otters for examination. We obtained and examined 184 skinned carcasses of river otters harvested during the December-January harvest seasons of 2013-2014, of which 29 (15.8%) were found to be infected by *Dracunculus* sp. In an earlier Arkansas study conducted in 1981-1982, Tumlison *et al.* (1984) found 17 of 105 otters (16.2%) were infected.

Tumlison *et al.* (1984) documented specimens of *Dracunculus* from 12 Arkansas counties (Ashley, Bradley, Conway, Craighead, Greene, Hot Spring, Jackson, Prairie, Pulaski, Randolph, White, and Woodruff). From the 30 Arkansas counties represented in the current sample, we report new records of *Dracunculus* sp. from the counties of Arkansas, Crawford, Franklin, Grant, Miller, Montgomery, Polk, Sebastian, and Sevier (Fig. 1). We found this nematode again in river otters from Bradley, Prairie, Pulaski, and White counties, previously reported by Tumlison *et al.* (1984). No males were found during our survey, but a sample of our specimens has been examined by use of *cox1* sequence analysis (Prosser *et al.* 2013), and all were *D. insignis* (M. J. Yabsley, College of Veterinary Medicine, University of Georgia, *pers. comm.*). It seems, then, that the report of *D. lutrae* in Arkansas (Tumlison *et al.* 1984) more likely represented *D. insignis*.

Besides documenting new county records of this parasite in Arkansas, examination of Fig. 1 reveals presence of the parasites in western portions of the state. It is likely that this parasite occurs in every county of Arkansas in which river otters also occur. The present report extends the known range of occurrence westward in the Arkansas and Ouachita River drainages, and for the first time documents occurrence in the Red River drainage.

***Dracunculus* sp. in River Otters from Arkansas**

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