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Parasite diversity at the Holarctic nexus: species of *Arostrilepis* (Eucestoda: Hymenolepididae) in voles and lemmings (Cricetidae: Arvicolinae) from greater Beringia

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Abstract

Previously unrecognized species of hymenolepidid cestodes attributable to *Arostrilepis* Mas-Coma & Tenora, 1997 in arvicoline rodents from the greater Beringian region and western North America are described. Discovery and characterization of these tapeworms contributes to the recognition of a complex of cryptic species distributed across the Holarctic region. Three species are proposed: *Arostrilepis gulyaevi* **sp. n.** is named for cestodes in *Myodes rufocanus* from the Republic of Buryatia, southeastern Siberia and from the Khabarovskiy Kray, Chukotka Autonomous Okrug, and Magadanskaya Oblast', Russian Far East (western Beringia); *A. cooki* **sp. n.** is named for cestodes in *Myodes gapperi* from British Columbia, Canada and Montana, USA; and *A. rauschorum* **sp. n.** is named for cestodes in *Microtus oeconomus*, *M. longicaudus*, *M. pennsylvanicus* and *M. xanthognathus* from the Brooks Range, Seward Peninsula, north-central interior, and Arctic coastal plains of Alaska (eastern Beringia) and Montana, USA. Consistent with recent studies defining diversity in the genus, the form, size, and spination (pattern, shape and size) of the cirrus are diagnostic; species are further distinguished by the relative position and length of the cirrus sac, and arrangement of the testes. Assessment of genetic data from the cytochrome *b* gene of mitochondrial DNA complements differentiation of this complex based on morphological attributes and confirms known species diversity within the genus. New data for geographical distribution and host specificity of known *Arostrilepis* spp. indicate that 3 of 12 recognized species have Holarctic distributions extending across Beringia. These include *Arostrilepis beringiensis* (Kontrimavichus & Smirnova, 1991) in lemmings (species of *Lemmus* and *Synaptomys*), *A.* cf. *janickii* Makarikov & Kontrimavichus, 2011 in root voles (*M. oeconomus*)

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