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**Key to the species of *Morishitium* Wienberg, 1928 (Cyclocoelidae),
with the description of a new species from the red-billed blue magpie,
Urocissa erythrorhyncha (Boddaert) (Corvidae) from Guizhou Province,
People's Republic of China**

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Abstract

The 11 species currently assigned to *Morishitium* and the new species described herein are divided into the rauschi, straightum and vagum body types, and keys to species are provided. *Morishitium urocissae* n. sp. is described from the red-billed blue magpie, *Urocissa erythrorhyncha* (Corvidae), from the Dashahe Nature Reserve, Guizhou Province, south-western Peoples Republic of China. *Morishitium urocissae* n. sp. is similar to *M. bivesiculatum* by having a similar ratio of the width of the pharynx to the width of the oral sucker (1:1.0–1:1.2 compared to 1:1.0) and a similar sized cirrus sac (470–565 long; 3–5% of body length compared to 400; 4%). Both species also have the anterior extent of the vitelline fields reaching the level of the pharynx, which distinguishes them from all other species in the genus that have an oral sucker present and lack a ventral. The new species differs from *M. bivesiculatum* by having a larger maximum egg size (135 by 70 compared to 127 by 65), uterine loops that overreach the ceca laterally rather than being intercecal, a shorter distance from the posterior testis to the posterior arch of the cyclocoel (70 [0–110] compared to 400), and by being from a magpie from the People's Republic of China rather than being from a barbet from Sri Lanka. The new species is most similar to *M. dumetellae*, but differs from this species by having wider eggs (65 compared to 60), a longer body (10,400–13,350 compared to 8,500), a shorter cirrus sac (470–565; 3–5% of the body length compared to 595; 7%), a smaller ratio of the pharynx to the oral sucker (1:1.0–1:1.3 compared to 1:1.7), more laterally extensive uterine loops (overreaching the ceca compared to being intercecal), the anterior extent of the vitelline fields reaching to the level of the pharynx as compared to terminating posterior to the cecal bifurcation, and by being from a magpie from the People's Republic of China rather than from a catbird from the United States.

Key words: Corvidae, Cyclocoelidae, Dashahe Nature Reserve, Digenea, Guizhou Province, key to species, *Morishitium urocissae* n. sp., People's Republic of China, red-billed blue magpie, Trematoda, *Urocissa erythrorhyncha*

Introduction

Witenberg (1928) established the genus *Morishitium* Witenberg, 1928 with the reassignment of 2 species of cyclocoelids to *Morishitium*: *Cyclocoelum vagum* Morishita, 1924 (type species) from the golden pheasant, *Chrysolophus picta* (Linnaeus), and *Cyclocoelum distomatium* Morishita, 1924 from the sparkling pheasant, *Phasianus scintillans* Gould that had been described by Morishita (1924) from Japan. Yamaguti (1971) recognized 8 additional species in the genus: *Morishitium bivesiculatum* (Prudhoe, 1944) from the Ceylon or great Indian green barbet, *Megalaima zeylanicus* (Gmelin) (reported as *Thereiceryx zeylanicus* Gmelin), from Ceylon (Prudhoe 1944); *Morishitium dollfusi* (Timon-David, 1950) from the European or black-bellied magpie, *Pica pica* (Linnaeus), from France (Timon-David 1950); *Morishitium dumetellae* (Zeliff, 1943) from the grey catbird, *Dumetella carolinensis* (Linnaeus), from Pennsylvania, U.S.A. (Zeliff 1943); *Morishitium ominosum* (Kossack, 1911), originally described as *Hyptiasmus ominosus* Kossack, 1911 from the grey crane or trane, *Grus*

level of esophagus whereas in *M. dollfusi* the anterior extent of vitelline fields reach anteriorly to level of oral sucker. Both egg size and the relative length of the cirrus sac are characteristics generally applied to most other groups of flukes and appear to be consistent characteristic in *Morishitium*. In addition to using egg size in conjunction with body length as described above, eggs size was used along with the lateral extent of the uterine loops relative to the ceca to separate the new species from *M. dumetellae* in couplet 4 of the key to species assigned to the straightum body type. The new species further differs from *M. dumetellae* by having a longer body (10,400–13,350 compared to 8,500), a shorter cirrus sac (470–565; 3–5% of the body length compared to 595; 7%) and a smaller ratio of the pharynx to the oral sucker (1:1.0–1:1.3 compared to 1:1.7). Egg size also was used in couplet 1 to separate *M. distomatum* and *M. vagum* from *M. sinhaldrupa* and *M. taiwanense*, and along with sucker widths (as ratios or relative sizes) in couplet 2 to separate *M. distomatum* from *M. vagum*. *Morishitium distomatum* can further be distinguished from *M. vagum* by having the oral sucker wider than the pharynx (1:1.4 compared to 1:1:0.8) and the ventral sucker wider than the oral sucker (1:0.3 compared to 1:2.4). Egg size was also used along with the sucker ratio in couplet 3 of this same key to distinguish *M. sinhaldrupa* from *M. taiwanense*. *Morishitium sinhaldrupa* is also somewhat smaller than *M. tiawanense* (8,100 long compared to 10,465). The sucker ratio is generally recognized as an effective characteristic for distinguishing species in many digenean groups and appear consistent in species of *Morishitium*. The ratio of the width of the pharynx to the width of the oral sucker was used in couplet 1 of the key to the species assigned to the straightum body type to separate *M. petrowi* and *M. straightum* from *M. dumetellae*, *M. urocissae* n. sp., *M. bivesiculatum* and *M. dollfusi*. The position of the posterior testis relative to the posterior arch of the cyclocoel appears to us to be a consistent characteristic and was used in couplet 3 of the key to the species assigned to the straightum body type to separate *M. dumetellae* and the new species (posterior testis contiguous or nearly contiguous to cyclocoel) from *M. bivesiculatum* and *M. dollfusi* (posterior testis positioned half length, or more, of posterior testis from cyclocoel). *Morishitium dumetellae* (where the anterior extent of vitelline fields do not surpass the cecal bifurcation anteriorly) further differs from *M. bivesiculatum* and *M. dollfusi* because in these latter two species the anterior extent of vitelline fields reach anteriorly to level of posterior margin of pharynx or more anteriorly. The new species also differs from *M. bivesiculatum* and *M. dollfusi* (where the uterus is confined to the intercecal space) because it has uterine loops that overlap the ceca laterally, often reaching near to the body wall.

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