

Parasites Found in a Rough-legged Buzzard, *Buteo lagopus* (Pontoppidan, 1763) Collected at Rausu, Hokkaido, Japan

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ABSTRACT

A young male Rough-legged Buzzard, *Buteo lagopus*, was found debilitated at Rausu, Hokkaido, Japan on 16 December, 2013 and died shortly after transport to the shelter. A post-mortem revealed emaciation, chest pressure ulceration, sternal fracture, and claw damage suggesting the malnutrition. Nematodes of Capillariidae gen. sp. and Porrocaecum sp., and cestode of Cyclophyllidea fam. gen. sp. were detected in the alimentary tract. Also chewing lice, *Degeeriella fulva*, were found on the body surface. This is the first record of *D. fulva* from *B. lagopus* in eastern Hokkaido, and the first record of Capillariidae gen. sp. and Cyclophyllidea fam. gen. sp. from *B. lagopus* in Japan.

Key words: chewing lice, helminth, malnutrition, Rough-legged Buzzard

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The Rough-legged Buzzard, *Buteo lagopus* (Pontoppidan, 1763), is a Holarctic raptor breeding in the tundra and boreal areas of Northern Eurasia and North America, and wintering south of its breeding range from eastern Europe in the west to eastern Eurasia and Japan in the east [1]. Subspecies *B. l. menzbieri* Dementiev, 1951 is a scarce winter visitor to Japan, mainly to Hokkaido occasionally further south [2, 3]. Rough-legged Buzzards are among the few raptors to overwinter in Japan, but little biological data is available from Japan [4]. Information on disease causing agents such as viruses, bacteria and parasites, is important for the conservation of birds [5, 6].

On 16 December 2013, a debilitated Rough-legged Buzzard was taken in to captivity, but died shortly thereafter. The carcass was taken to Kushiro Zoo for postmortem examination (Zoo Postmortem No. 13-019). The body surface was examined macroscopically, and the gastrointestinal tract and organs were examined for parasites under a binocular microscope. Parasite specimens were fixed in 70% ethanol and taken to the Wild Animal Medical Center (WAMC) of Rakuno Gakuen University for taxonomical examination. The nematodes were cleared with

lacto-phenol solution, cestodes were encapsulated with balsam after staining with aceto-carmine solution, and arthropods were mounted using gum chloral for microscopic observation, and morphological and biometric data were recorded using a Lucida camera (OLYMPUS DP20). The parasite specimens are preserved in Kushiro Zoo and the buzzard specimens is stored at Kushiro City Museum.

The Rough-legged Buzzard weighed only 555.6 g and was emaciated compared with the average of that of this species (1.29 – 1.38 kg [3]), with significantly atrophied pectoral muscles and protruding keels (Table 1). A pressure ulcer had formed on the keel, and a fracture of the sternum was observed. In addition, the claws of the second and third toes of the right foot were broken or missing, but neither blood nor scabs were observed. Examination of the internal organs revealed that each was significantly atrophied, but no pathological conditions were found. A lump of murine hair was observed in the stomach. Neither green staining nor ulceration of the gastric mucosa was observed. A large number of chewing lice were found on the body surface, one nematode each was obtained from the esophagus and stomach, and one tapeworm was obtained from the intestinal tract.

Of the 11 lice obtained, six adult males and five females

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Table 1 Body parameters of the Rough-legged Buzzard specimen

Body weight	555.6 g		
Total length	540 mm	Wing span	1386 mm
Unflattened Wing length	412 mm	Maximum wing length	420 mm
Width of wing	237 mm	Tail length	228 mm
Tarsus length	72.05 mm	Head length	79.11 mm
External culmen (including cere)	28.52 mm	Total culmen	35.83 mm
External culmen	22.35 mm	Gape length	41.48 mm
Bill depth	17.69 mm	Bill width	16.68 mm

Table 2 Body parameters of the the specimens *Degeeriella fulva*, compaired with those of the Clay[8]

	male		female	
	Present specimens	[8]	Present specimens	[8]
	n=6	n=17	n=5	n=12
Body length	2.12-2.24 (2.19)*	1.83-2.20 (2.02)	2.41-2.44 (2.43)	2.03-2.35 (2.23)
Body width	0.67-0.71 (0.69)	0.50-0.67 (0.57)	0.70-0.73 (0.71)	0.60-0.70 (0.65)
Head length	0.58-0.60 (0.59)	0.50-0.58 (0.55)	0.62-0.64 (0.63)	0.58-0.62 (0.59)
Head width	0.46 (0.46)	0.38-0.45 (0.43)	0.50-0.51 (0.50)	0.45-0.49 (0.47)
Head index	0.77-0.79 (0.78)	0.75-0.79 (0.77)	0.78-0.81 (0.80)	0.77-0.81 (0.79)
Prothorax width	0.28-0.31 (0.29)	0.25-0.30 (0.27)	0.30-0.32 (0.31)	0.28-0.33 (0.29)
Pterothorax width	0.47-0.48 (0.47)	0.42-0.47 (0.45)	0.47-0.53 (0.51)	0.47-0.53 (0.50)
Abdomen length	1.26-1.35 (1.31)	1.02-1.25 (1.14)	1.45-1.49 (1.47)	1.13-1.43 (1.17)
Genitalia length	0.35-0.36 (0.36)	0.34-0.38 (0.37)	-	-

*: range (mean). Measured in mm

were identified and measured (Table 2). The specimens were identified as belonging to the family Philopteridae of the suborder Ischnocera because the snout did not extend from the head, there were two claws on each leg, and the antennae were elongated and filiform with five sections. They were further identified as belonging to the genus *Degeeriella* according to Price et al. [7], because the head was broad anteriorly, suboval (much longer than it was wide: head index less than 0.90), the abdomen was slender, sides subparallel, total length under 2.8 mm, and segment IV without pleural seta, segment V with one pleural seta each side, and male genitalia (Fig. 1). Although these specimens were slightly larger than those previously described, they were identified as *D. fulva* (Giebel, 1874) based on morphological characteristics [8, 9].

The single, female nematode obtained from the oesophageal mucosa was elongated, filamentous and had characteristic esophageal cells, indicated that it belonged to the family Capillariidae [10] (Fig. 2A, B). The single, larval nematode obtained from the stomach had three lips on the head and had a lesser sac attached to the stomach, allowing it to be identified as *Porrocaecum* sp [11] (Fig. 2C, D). The cestode specimen was in poor condition, and as no mature segment were obtained it was only identified to order, and considered to belong within

the order Cyclophyllidea because it had four suckers on its scolex [12] (Fig. 2E).

The Rough-legged Buzzard was extremely emaciated with a pressure ulcer on its keel and was unable to stand. It may have been unable to catch prey because of the damage to its claws, and thus obtained insufficient nutrition. The cause of the damage to the claws is unknown, but is assumed to have been accidental.

Lice in the genus *Degeeriella* mainly parasitize birds in the orders Accipiteriformes and Falconiformes. Approximately 40 *Degeeriella* species are known [7], four of which have been recorded from Japan [9,13,14](Nakagawa 1957; 1959; Yoshino et al. 2012): *D. fulva* from Rough-legged Buzzard (Ishikari, Hokkaido) (also from Common Buzzard *B. buteo* L. 1758 (Unknown Loc.)); *D. rufa* (Burmeister, 1838) from Eurasian Kestrel *Falco tinnunculus* L. 1758 (Aomori), *D. vagans* (Giebel, 1874) from Northern Goshawk *Accipiter gentilis* (L. 1758) (Subashiri, Shizuoka) and *Degeeriella* sp. from Mountain Hawk-eagle *Nisaetus nipalensis* (Hodgson, 1836) (Gifu). The present record of *D. fulva* is the second case in Japan and the first record from eastern Hokkaido.

We were unable to identify the nematodes and cestodes to species because no mature males were obtained, or specimen

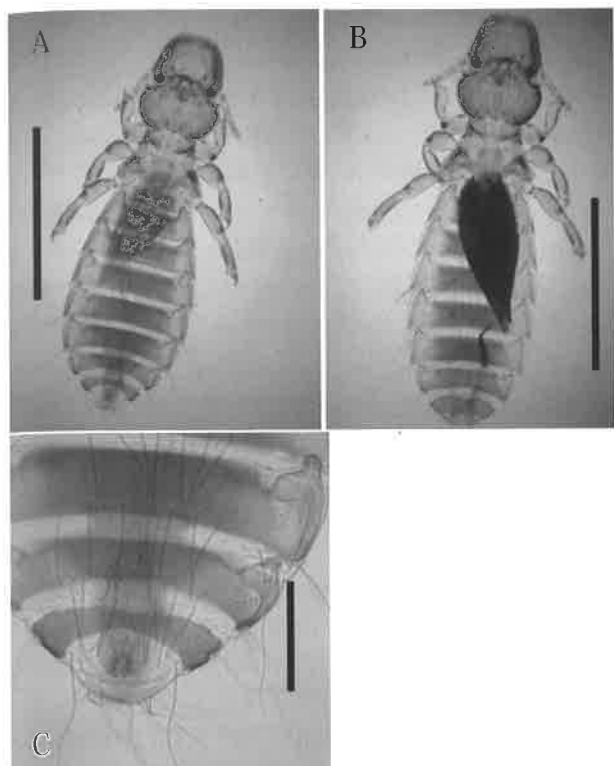


Fig. 1 *Degeeriella fulva* from a Rough-legged Buzzard, *Buteo lagopus* (Pontoppidan, 1763) in Rausu, Hokkaido, Japan. A, male, B, female (bar = 1 mm), C, male genitalia (bar = 0.2 mm)

conditions were poor. However, the specimens of Capillariidae gen. sp. and Cyclophyllidae fam. gen. sp. were the first records from Rough-legged Buzzard in Japan [15].

Capillariid nematodes use annelids, and species in the genus *Parrocaecum* require annelids and/or small mammals, such as soricids as intermediate or paratenic hosts [16], while the Cyclophyllid cestodes generally require small mammals as intermediate hosts [12]. The Rough-legged Buzzard is a top level predator of Japanese grassland ecosystems and preys on several mammal and bird species [1]. A hairball comprised of hairs from small mammals (rats or shrews) was found in the stomach of this bird (figure not shown), suggesting that this buzzard was infected through consuming prey carrying infective helminth larvae.

Chewing lice often cause adverse effects on their avian hosts, such as feather wear, increased energy consumption, and decreased reproductive performance [18,19]. The direct cause of death of this bird could be malnutrition; however, the large number of feather lice infesting its plumage may have contributed to its mal condition such as slightly coarse feather.

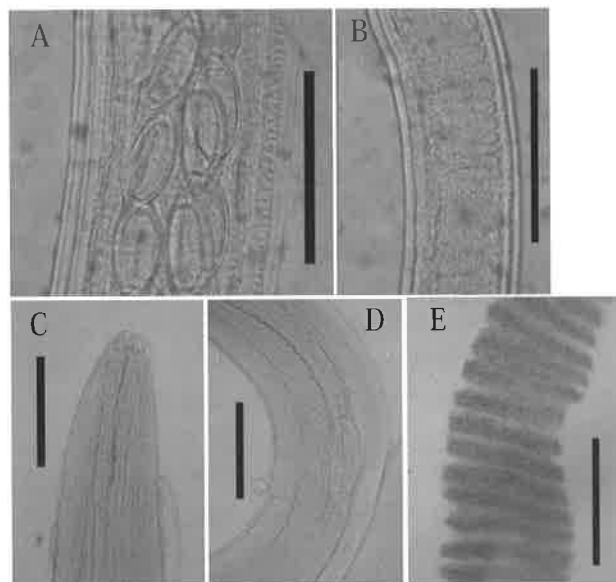


Fig. 2 Helminths from a Rough-legged Buzzard, *Buteo lagopus* (Pontoppidan, 1763) in Rausu, Hokkaido, Japan. A: Capillariidae gen. sp. eggs (bar = 0.1 mm), B: esophageal cells (bar = 0.1 mm), C: *Parrocaecum* sp. head (bar = 0.2 mm), D: stomach (bar = 0.2 mm), E: Cyclophyllidae fam. gen. sp. (bar = 0.2 mm)

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研究短報 寄生虫学

北海道羅臼町で収容されたケアシノスリから得られた寄生虫

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要約

2013年12月16日に北海道羅臼町で回収されたケアシノスリの剖検と寄生虫検査を実施した。当該個体は重度消瘦し右趾爪の欠損と胸骨骨折、胸部に褥瘡が認められたため、餌が十分に捕れず衰弱死したと考えられた。また消化管から線虫 *Porrocaecum* sp. および毛細線虫科の1種、属種不明四葉目条虫、体表からハジラミ *Degeeriella fulva* が得られた。*D. fulva* は道東から初めて記録され、また毛細線虫科線虫および四葉目条虫は日本でケアシノスリから初めて記録された。

キーワード：蠕虫類, ケアシノスリ, ハジラミ, 消瘦

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