

# PREVALENCE OF MARSHALLAGIA MARSHALLI (ORLOV, 1933) IN WILD RUMINANTS IN WYOMING<sup>1</sup>

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Prevalence of *Marshallagia marshalli* (Orlov, 1933) in wild ruminants in Wyoming was determined by screening abomasal and small intestinal contents after necropsy and by analyses of feces collected from free-ranging ruminant individuals. No *M. marshalli* were found in 60 moose. Only two elk fecal samples, of over 2,000 collected, were positive (a new host record) but the parasite was not found at necropsy of 60 elk. One of 51 mule deer fecal samples was positive. The nematode species is very common in pronghorn antelope and bighorn sheep.

*Marshallagia marshalli*, Orlov, 1933, a trichostrongylid, abomasal nematode often found in domestic sheep and goats, is also a common parasite of wild ruminants in the Rocky Mountain region of the western United States.

*M. marshalli* was originally described (as *Ostertagia marshalli*) from specimens taken from domestic sheep in Montana (1). In 1933, the genus was changed to *Marshallagia* (2). *M. marshalli* is quite different from most species of the genus *Ostertagia* (3) in adult morphology, size of eggs, larval development and numbers in host animals.

*M. marshalli* was reported as *O. marshalli* in 1932 from a bighorn sheep (*Ovis canadensis*) (4) and from a deer (*Odocoileus odocoileus*) in Yellowstone National Park, Wyoming (4). In 1945 *M. marshalli* was reported as a parasite of pronghorn antelope, (*Antilocapra americana*) (5) and in 1956 the nematode was listed as a parasite of several wild ruminants in Wyoming (6).

*M. marshalli* may be cosmopolitan in distribution (7) or according to another authority (8), the species is common only in the western U. S.

Gastrointestinal tracts and fecal samples from moose, elk, mule deer, pronghorn antelope and bighorn sheep were gathered mainly during hunting seasons, from 1963-1973. Adult worms were recovered by screening contents of the gastrointestinal tracts (at least 10% of the contents of each tract was screened). The worms were recovered, counted and sexed.

Fecal analyses of worm eggs per gram (epg) feces were made using a modification of Lane's (1923) technique. Flotations (with saturated sucrose solutions) and centrifugation @ 2000 rpm were made of eggs with 3 g feces per 27 ml water.

Listed in Table 1 are the ruminant animals which were sampled for *M. marshalli*. Results of necropsy data and fecal examinations for parasite numbers are also shown in the table. In most cases necropsy examinations were on different individual host animals than those checked by fecal analyses.

TABLE 1. Prevalence of *Marshallagia marshalli* in wild ruminants in Wyoming according to necropsies and fecal analyses.

| Host species  | No. Nec. <sup>a</sup> |     | No. fecal exams./ |     | epg <sup>b</sup> feces |
|---------------|-----------------------|-----|-------------------|-----|------------------------|
|               | No. pos./ % pos.      | 0/0 | No. pos./ % pos.  | 0/0 |                        |
| Moose         | 10/ 0/0               |     | 50/ 0/0           |     | 0.0                    |
| Elk           | 60/ 0/0               |     | 2,280/ 2/09       |     | 2.4                    |
| Mule deer     | 20/ 0/0               |     | 51/ 1/2           |     | 2                      |
| Antelope      | 30/14/47              |     | 50/18/36          |     | 2-20                   |
| Bighorn sheep | 10/ 8/80              |     | 70/47/67          |     | 2-80                   |

<sup>a</sup> Number of necropsies/number with *M. Marshalli*/%

<sup>b</sup> egg number/gram.

Moose may avoid the infective larvae of *M. marshalli* by browsing extensively. However, the number of moose necropsied and sampled by fecal analyses was low.

*M. marshalli* had not been previously reported from elk and no adult worms were found in 60 elk gastrointestinal tracts ex-

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amined during this survey. However, the eggs of *M. marshalli* were found in elk fecal samples. Nearly 200 elk fecal samples were examined before the first *M. marshalli* eggs were found and nearly 1,000 samples were checked before the second positive fecal was found.

Apparently, *M. marshalli* is absent in many deer in Albany Co., Wyoming. Deer also ingest much browse which would not carry infective larval stages of the parasite.

*M. marshalli* is common in pronghorn antelope and bighorn sheep, especially the latter, but numbers of the parasite usually do not exceed 600 female worms per antelope or 2,000-2,400 female worms per bighorn sheep. *M. marshalli* worm egg numbers in feces of antelope and bighorn sheep were low (Table 1).

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