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Title: Prevalence, diversity, and risk factors for gastrointestinal parasitic infection in Hong Kong feral cattle.

Gastrointestinal parasites influence survival of both wildlife and feral populations. In ruminant livestock industry, impacts of gastrointestinal parasitism (GIP) such as decreased production and increased disease susceptibility cause significant economic loss. Currently, no data are available on gastrointestinal parasites in Hong Kong feral cattle. This study aims to determine gastrointestinal parasite diversity, prevalence, and associated risk factors for GIP in Hong Kong feral cattle. Fecal samples were collected from feral cattle (n=140) among seven herds alongside individual information such as body condition score (BCS) and sex. Different microscopic parasite identification techniques were used, McMasters' technique for distinguishable nematodes and protozoans, sedimentation technique for trematodes. Larval culture and extraction with Baermann's technique was conducted for strongyle L3 larvae identification. Nine parasites were identified, *Fasciola* spp., *Paramphistomum* spp., *Eimeria* spp., *Trichostrongylus* spp., *Cooperia* spp., *Ostertagia* spp., *Oesophagostomum* spp., *Trichuris* spp. and *Dictyocaulus viviparus*. The overall prevalence rate of GIP was 97.1%. The prevalence of trematodes was highest (90.7%), followed by protozoan parasites (60.0%) and nematodes (33.6%). Species-specific wise, *Paramphistomum* spp. was most abundant with a prevalence of 90.0% followed by *Eimeria* spp. with 59.6% and *Fasciola* spp. with 19.9%. Within the nematode parasites recovered, *Trichostrongylus* spp. (19.3%) and *Cooperia* spp. were most abundant (18.6%). The prevalence of *Trichostrongylus* spp. was significantly higher (X^2=5.1, p=0.024) in males (27.9%) compared to females (12.7%). However, none of the other parasite species and the overall GIP, nematode and trematode prevalence showed statistically significant difference between males and females (p>0.05). The prevalence of Eimeria spp. was significantly higher (X^2=4.0, p=0.045) in cattle with optimum BCS (63.6%) compared to cattle with borderline BCS (38.9%). However, none of the other parasite species and the overall GIP, nematode and trematode prevalence showed statistically significant difference between optimum and borderline BCS categories (p>0.05). At present, this is the first study reporting the gastrointestinal parasite diversity, prevalence, and associated risk factors for GIP in the Hong Kong feral cattle. This research revealed a high GIP prevalence and presence of pathologically parasites. Findings from this study should help authorities inform animal management and encourage implementation of routine health and disease surveillance strategies to maintain animal health and welfare.