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Gastrointestinal parasites of captive, semi-captive and wild elephants of Sri Lanka

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Parasites can influence the fitness of individuals particularly of small populations of endangered species. Only few studies have examined the gastrointestinal (GI) parasites of Asian and African elephants and there is no published literature available on the GI parasites of elephants in Sri Lanka. A cross sectional, coprological survey of the Sri Lankan elephant *Elephas maximus maximus* was carried out from January to October 2015. Fresh faecal samples from wild, captive and semi-captive elephants were collected and analyzed using a modified salt floatation, Sheather's sucrose floatation, direct iodine smears and sedimentation methods. Species identification was done morphologically. Intensity of parasite infections was determined using the McMaster technique. A total of 85 faecal samples (wild =45; Semi-captive= 20; Captive =20) were analysed of which 58 (68.2%) were positive for GI parasites. Overall, helminth infections (60.0%) were more common compared to the protozoan (37.6%) infections (Chi square test, $\chi^2 = 8.499$; df = 1, $p < 0.001$). A significantly high prevalence of infection was observed in wild elephants (93.3%) compared to semi-captive elephants (55.0%; $\chi 2 = 13.516$; df = 1, $p < 0.001$) and captive elephants (25.0%; $\chi 2 = 32.289$; df = 1, $p < 0.001$) but there was no significant difference in the prevalence between captive and semi-captive elephants ($\chi 2 = 3.750$; df = 1, $p = 0.053$). Ten types of GI parasites were observed, nine of which were recorded in the wild elephants. Among them the most common infection was *Strongylus* sp. (34.1%) with high intensity (440.1±295.2 EPG). Semi-captive elephants harboured five types of GI parasites while captive elephants had only three types. One captive elephant in the Temple of Tooth was infected with *Anoplocephala* sp. with a low intensity of 50 EPG. In captive elephants protozoan infections were more common than helminth infections which could be due to treatment with antihelminthics. Some of the GI parasites are highly pathogenic such as *Strongylus* sp., *Fasciola* sp. and *Anoplocephala* sp. while others are incidental. It is important to monitor mortalities of these elephants and carry out postmortem examinations to determine whether the cause of death was due to GI infections.