Occurrence of mixed helminth infestation in an Asian elephant and its successful therapeutic management: A case report

Mridu Pavan Baishya, Gautam Bordoloi, Sanjib Khargaria, Sampurna Nand Yadav, L Sanathoi Khuman, Prasanta Kumar Boro, Prasanta Chabukdhara, Kandarpa Boruah, Dwijjyoti Mahanta, Manoj Kumar Kalita, Karuna Saikia and Aditya Baruah

Abstract
In the present communication occurrence and therapeutic management of mixed Parasitic infestation in elephant is reported. Asian elephants or Indian elephants Elephas maximus (Linn.), now recognized as an ‘endangered species’ as per the IUCN Red List of Threatened Species. The factors which threaten the elephant population include poaching, shrinkage of habitat due to expansion of human habitat, destruction of habitat for agriculture and disease outbreaks. Only a few studies have been made on the parasitic infestation in Asian elephants even though parasitic infections cause weight loss, loss in productivity and may even cause death. In the present study examination of elephant dung sample revealed mixed parasitic infections with the presence of Fasiola jacksoni eggs, Amphistome eggs, Strongyle eggs and Strongyloides larvae. The elephant in the present communication was later treated with zivet (Closantel) bolus @ 10g total dose which was repeated after 15 days against Fasiola jacksoni and amphistomes and Fentas (Fenbendazole) 3g bolus x 4 orally which was repeated after 15 days for strongyles. Along with anthelmintics Feroliv Fe bolus @ 4 bolus orally twice daily for 15 days, Minelex Gold bolus @ 2 bolus twice daily for 1 month, Tribivet injection @ 20 ml daily through IM route for 10 days and Novizat injection 20 ml IM at alternate days for 5 occasions. The animal was re-examined for the presence of any parasitic helminth ova after 20 days of treatment. No ova were detected thereafter. Proper anthelmintic therapy eliminated the mixed parasitic infestation successfully.

Keywords: Asian elephant, Fasiola jacksoni, mixed parasitic infections, closantel, fenbendazole

Introduction
Asian elephants or Indian elephants Elephas maximus (Linn.), in India they are commonly used for timber logging in jungles, transportation and for some religious purposes in temples [1]. The Asian elephants, earlier were common all over the tropical south and south-east Asia, including India, Vietnam and Sumatra [2]. But now it is recognized as an ‘endangered species’ with an estimated population of 30,000–50,000, approximately 60% of the population inhabiting in India as per the IUCN Red List of Threatened Species [3]. The factors which threaten the elephant population include poaching, shrinkage of habitat due to expansion of human habitat, destruction of habitat for agriculture and disease outbreaks [2, 4, 5]. Lots of work is being done on the Asian Elephants regarding their status and ecology in different parts of the world [6, 7, 8, 9, 10, 11, 12], but in contrast of all those, information from North-Eastern India is still scarce. Like in domestic animals elephants are also exposed to various diseases including parasitic infestations, which cause weight loss, loss in productivity and severe conditions may even cause death [1]. The parasite infested elephants remain as a source of infection for domestic animals and vice-versa in the close vicinity of elephant habitats. Epidemiological studies are essential to know the status and transmission of such diseases. The transmission of parasites between wild and domestic animals in those areas can be prevented by manipulating the factors for its transmission. Only a few studies have been made on the parasitic infestation in Asian elephants both in natural forest area [13, 14, 15, 16, 17] and its captive counterparts [1, 18, 19, 20, 21, 22]. The occurrence of endoparasitic infestations from Asian elephants in different parts of India was reported by many workers previously. Fasiola jacksoni infection in wild and captive elephants from Assam, India was also reported [23].
In South Wayanad Forest Division 74.5% prevalence of helminth parasites were reported that include mostly *Ancylostoma* sp. *Anoplocephala* sp., *Strongyle* type egg and *Strongyloides* sp. [13]. Management of endoparasitic infestation has relied predominantly upon the use of various anthelmintic drugs such as ticlabendazole and oxyclozanide for *Fasciola jacksoni* infection [23]. The present communication is intended to report the occurrence of endoparasitic infestation in Asian elephants in the present area of study and its successful therapeutic management.

**Materials and methods**
An adult Asian Elephant with ill health in the Pasighat area of Arunachal Pradesh, India was reported to the Veterinary Clinical Complex of Lakhimpur College of Veterinary Science (LCVSc), Assam Agricultural University, Joyhing, North Lakhimpur, Assam. Besides preliminary clinical examinations, the dung sample was also collected from the animal and brought to the Department of Veterinary Parasitology Laboratory of LCVSc for further diagnostic procedures. The dung sample later was examined by saturated salt floatation technique and sedimentation technique of faecal sample examinations following the standard protocols [24] to see the presence of helminth eggs, if any.

**Results and discussion**
Dung sample examination revealed the presence of *Fasciola jacksoni* eggs (Fig. 1), *Amphistome* eggs (Fig. 2), *Strongyle* eggs (Fig. 3) and *Strongyloides* larvae (Fig. 4). The mixed endoparasitic infestation was reported earlier in Asian Elephants from South Wayanad Forest Division with 74.5% prevalence that includes mostly *Ancylostoma* sp. *Anoplocephala* sp., *Strongyle* type egg and *Strongyloides* sp. [3]. The elephant in the present communication was later treated with zevent (Closantel) bolus @ 10g total dose which was repeated after 15 days against *Fasciola jacksoni* and amphistomes and Fentas (Fenbendazole) 3g bolus x 4 orally which was repeated after 15 days for strongyles. Along with anthelmintics Feroliv Fe bolus @ 4 bolus orally twicew daily for 15 days, Minerex Gold bolus @ 2 bolus twice daily for 1 month, Tribivet injection @ 20 ml daily through IM route for 10 days and Novizac injection 20 ml IM at alternate days for 5 occasions. The animal was re-examined for the presence of any parasitic helmint ova after 20 days of treatment. No ova were detected thereafter. Occurrence and therapeutic management of *Fasciola jacksoni* infection are previously reported from Assam where a prevalence rate of 33.78% in wild elephants and a varied rate of prevalence were recorded like 42.50%, 62.28% and 18.18% in captive elephants depending on its locality [23], *Fasciola jacksoni* is also recognized as a significant pathogen that contributes to the ill health and mortality of Asian elephants in Sri Lanka [25]. Therapeutic management of *Fasciola jacksoni* with ticlabendazole (9 mg/kg, not exceeding 7200 mg/animal) and oxyclozanide (7.5 mg/kg, not exceeding 6.8 g/animal) was done with their efficacy 100 and 72.16% respectively [23]. A wide range of anthelmintics can be recommended with good efficacy viz. Ivermectin, benzimidazoles, levamisole etc. for successful management of strongyles in elephants [26]. In the present study Fenbendazole @ 3g bolus x 4 given orally which was repeated after 15 days eliminated all the strongyles effectively. Detailed epidemiological study needs to be carried in the present study area for helminths in elephant.

**Conclusion**
It is observed that mixed helminth infection occurs in Asian elephants in the present area of study which can be treated successfully with suitable anthelmintics.

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**Ethics statement**
No invasive procedures or no animal experimentation was used in the present study. Only clinical samples were analyzed and reported. Moreover, the therapeutic management parts were all under the ethical guidelines of veterinary medicine.

**Declaration for conflict of Interest**
The author hereby declares that there is no conflict of Interest with anybody regarding the article “Occurrence of mixed helmint infestation in an Asian Elephant and its successful therapeutic management- A case report”.

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Fig 1: *Fasciola jacksoni* ova

Fig 2: Amphistome ova

References