



## Prevalence of Gastro-intestinal Parasites in Captive Wild Animals of Kanan Pandari Zoo, Bilaspur

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### ABSTRACT

The present study was envisaged to record the prevalence of gastro-intestinal parasites in captive wild animals of Kanan Pandari Zoo, Bilaspur, Chhattisgarh. For this investigation, a total of 145 faecal samples of different captive wild animals were screened, 54 were found positive for various helminth parasites, indicating 37.24% prevalence of gastro-intestinal parasites. Among different helminthic infections, the prevalence of nematodal infection was higher than cestodal infection. Among different captive wild animals, the prevalence of parasites was higher in herbivores (45.68%) followed by carnivores (28.33%). The intensity of gastro-intestinal parasitic infection in captive wild animals was mild as eggs per gram ranged from 100-500.

**Keywords:** Captive wild animals, Gastro-intestinal parasites, Kanan Pandari, Prevalence

India is unique in having immense natural beauty and possessing a rich and diverse wildlife. A number of factors threaten the existence of wild animals in this country, including wildlife diseases, in particular those arising from gastrointestinal parasites. Zoological gardens exhibit wild animals for aesthetic, educational and conservation purposes. Parasitic diseases constitute one of the major problems causing morbidity and even mortality in wild animals in captivity (Rao and Acharjyo 1984). Information on parasites of wild animals is meagre due to paucity of systematic investigation (Varadharajan and Kandasamy 2000). Parasitic diseases of wildlife are still in infancy in India and data are still on the base line. Little work has been done to understand the epidemiology of different parasitic diseases in wild animals kept in Indian zoos (Singh *et al.* 2009). There appears to be no report on prevalence of gastro-intestinal parasites in captive wild animals in Chhattisgarh. Keeping in view the present work was undertaken to study the prevalence of gastro-intestinal parasites in captive wild animals of Kanan Pandari Zoo, Bilaspur.

### MATERIALS AND METHODS

A total of 145 freshly passed faecal samples were collected from captive wild animals kept at various enclosures of Kanan Pandari Zoo, maintained by the forest department of Chhattisgarh, in a clean, dry and individually labelled polythene bags (Sloss *et al.* 1994). The faecal samples were brought to the laboratory for qualitative examination using sedimentation and sugar floatation technique and quantitative examination by Stoll's dilution technique for eggs per gram (EPG) to know the intensity of infection. The level of severity of infection was graded into three categories basing on EPG of faeces viz; below 500 (+), between 500 to 1000 (++) and more than 1000 (+++) (Ghoke *et al.* 2012). The prevalence of gastro-intestinal parasites in captive wild animals was recorded in respect to captive wild carnivores, herbivores and primates.

### RESULTS AND DISCUSSION

The prevalence of gastro-intestinal (GI) parasitic infection in different captive wild animals has been presented



in Table 1. Out of 145 faecal samples examined, 54 were found positive for different helminth parasites, indicating 37.24% prevalence of GI parasites. Among different helminthic infections in captive wild animals, the prevalence of nematodes and cestodes was 88.89% and 11.11% respectively. Among different captive wild animals, the prevalence of GI parasites was 28.33% in carnivores, 45.68% in herbivores and 0% in primates, indicating higher prevalence of GI parasites in herbivores than carnivores in zoo. Among carnivores the highest prevalence of GI parasites was recorded in mongoose (100%) followed by jackal (71.43%), palm civet (66.67%), tiger (50%), bear (42.86%), lion (16.67%) and leopard (14.29%).

In the present study, it was observed that carnivores except mongoose had single infection of *Toxocara sp.* or *Diphyllbothrium sp.* whereas mixed infection of *Taenia sp.* and *Diphyllbothrium sp.* was observed in mongoose. Among herbivores, the sambar showed highest prevalence (71.43%) of GI parasites followed by barking deer (66.67%), black buck (62.5%), chausingha (37.5%) and spotted deer (35.71%). Present study revealed that herbivores except sambar, had single infection of *Ascaris*

*sp.* whereas sambar had mixed infection of *Ascaris sp.* and *Strongyloides sp.* The intensity of infection in both carnivores and herbivores of Kanan Pandari Zoo was mild as revealed by EPG ranging from 100-500.

The present findings in respect to prevalence of GI parasites of captive wild animals was in agreement with earlier reports of Fagiolini *et al.* (2010). The nematodes parasites have direct life cycle and do not involve any intermediate host and are transmitted by faecal contamination of feed, water and soil. Some helminths potentially accumulate in a captive environment specially in open soil enclosure which cannot be easily disinfected. The survivability of the helminth parasites is highly influenced by climatic factors. Other parasites mainly trematodes and some cestodes require intermediate host for their transmission and or less likely to accumulate in the captive environment (Atanaskova *et al.* 2011). Present findings are also in accordance with the above report that helminthic infections like nematodes and some cestodes recorded in present studies were geohelminths and do not require intermediate host. That is why the prevalence of nematodes was higher among all the helminths.

**Table 1.** Prevalence of gastro-intestinal parasitic infection in captive wild animals of Kanan Pandari Zoo, Bilaspur

Type of animals (Host)	No. of animals examined	No. of samples positive for GI parasites	Samples showing single infection	Samples showing mixed infection	Type of infection	Intensity of infection	EPG
Carnivores							
Lion ( <i>Panthera leo</i> )	6	1	1	-	<i>Toxocara sp.</i>	+	200
Leopard ( <i>Panthera pardus</i> )	7	1	1	-	<i>Toxocara sp.</i>	+	200
Tiger ( <i>Panthera tigris</i> )	2	1	1	-	<i>Toxocara sp.</i>	+	100
Bear ( <i>Melursus ursinus</i> )	7	3	3	-	<i>Toxocara sp.</i>	+	100-200
Hyaena ( <i>Hyaena hyaena</i> )	6	Nil	-	-	-	-	-
Jackal ( <i>Canis aureus</i> )	7	5	5	-	<i>Toxocara sp.</i>	+	100-300

Ratel ( <i>Mellivora capensis</i> )	2	Nil	-	-	-	-	-
Fox ( <i>Vulpes bengalensis</i> )	10	Nil	-	-	-	-	-
Jangle cat ( <i>Felis chaus</i> )	5	Nil	-	-	-	-	-
Mangoose ( <i>Herpestes javanicus</i> )	2	2	-	2	<i>Taenia sp.</i> <i>Diphyllobothrium sp.</i>	+	200-400
Palm civet ( <i>Paradoxurus hermaphrodites</i> )	6	4	4	-	<i>Diphyllobothrium sp.</i>	+	100-200
Herbivores							
Barking deer ( <i>Muntiacus muntjak</i> )	6	4	4	-	<i>Ascaris sp.</i>	+	100-300
Chausingha ( <i>Tetracerus quadricornis</i> )	8	3	3	-	<i>Ascaris sp.</i>	+	200-500
Spotted deer ( <i>Axis axis</i> )	42	15	15	-	<i>Ascaris sp.</i>	+	100-200
Blue bull ( <i>Boselaphus tragocamelus</i> )	2	Nil	-	-	-	-	-
Black buck ( <i>Antilope cervicapra</i> )	16	10	10	-	<i>Ascaris sp.</i>	+	100-400
Sambar ( <i>Cervus unicolor</i> )	7	5	4	1	<i>Ascaris sp.</i> <i>Strongyloides sp.</i>	+	200-300
Primates							
Common langur ( <i>Semnopithecus entellus</i> )	4	Nil	-	-	-	-	-

In order to detect the severity of parasitic infection, EPG level will be helpful in knowing the amount of infection the animal is suffering from. In comparison to domestic animals, the captive animals do not show any alarming signs of parasitic infection (Parsani *et al.* 2001). Parasitism specially endoparasitic infection produces ill effects like weakness, emaciation, inappetance and predisposes the animals for various potential pathogens.

Therefore a regular programme of disease surveillance and control measures based on correct diagnosis, effective treatment and proper prophylaxis would certainly reverse the situation.

In conclusion, the prevalence of GI parasites in captive wild animals of Kanan Pandari Zoo was 37.24%. Among different helminthic infections, the prevalence



of nematodes was higher than cestodes. Among captive wild animals the prevalence of GI parasites was higher in herbivores (45.68%) followed by carnivores (28.33%). Majority of captive wild animal had mixed infection of *Toxocara sp.* and *Dipyllobothrium sp.*

## REFERENCES

- Atanaskova E., Kochevski Z., Stefanovska J. and Nikolovski G. 2011. Endoparasites in wild animals at the zoological garden in Skopje, Macedonia. *J. Threat. Taxa.*, **3** (7): 1955-58.
- Fagiolini, M., Riccardo, P.L., Laricchuita, P., Cavicchio, P., Mannella, R., Cafarchia, C., Otranto, D., Finotello, R. and Perrucci, S. 2010. Prevalence of gastrointestinal parasites in mammals of Italian zoological gardens. *J. Zoo and Wildlife Med.*, **41**(4): 662-70.
- Ghoke, S.S., Naikwade, B.S., Thorat, K.S., Jogdand, N.K. and Kalaskar, P.S. 2012. Incidence of helminthic infection in captive carnivores of Sidharth Municipal Zoo, Aurangabad, Maharashtra. *Zoo's Print J.*, **27**(3): 25-26.
- Parsani, H.R., Momin, R.R., Maradia, M.G. and Singh, V. 2001. A Survey of gastrointestinal parasites of captive animals at Rajkot Municipal Corporation Zoo, Rajkot, Gujarat. *Zoo's Print J.*, **16**(10): 604-606.
- Rao, A.T. and Acharjyo, L.N. 1984. Diagnosis and classification of common diseases of captive animals at Nandankanan Zoo in Orissa, India. *Indian J. Anim. Health.*, **12**: 147-52.
- Singh, S., Shrivastav, A.B. and Sharma, R.K. 2009. The epidemiology of gastrointestinal parasitism and body condition in herbivores in the Van Vihar National Park, Bhopal. *J. Threat. Taxa.*, **1**(10): 535-37.
- Sloss, M.W., Kemp, R.L. and Zajac, A.M. 1994. *Veterinary Clinical Parasitology*. 6<sup>th</sup> edn. International Book Distributing Co., Lucknow, India.
- Varadharajan, A. and Kandasamy, A. 2000. A survey of gastrointestinal parasites of wild animals in captivity in the V.O.C. Park and Minizoo, Coimbatore. *Zoo's Print J.*, **15**(5): 257-58.