International Journal of Veterinary Sciences and Animal Husbandry 2025; 10(9): 354-357

ISSN: 2456-2912
NAAS Rating (2025): 4.61
VET 2025; 10(9): 354-357

www.veterinarypaper.com
Received: 12-08-2025
Accepted: 15-09-2025

A Balmik
M.V. Sc. Student, School of Wildlife Forensic and Health, Nanaji Deshmukh Veterinary Science University, Jabalpur, Madhya Pradesh, India

KP Singh
School of Wildlife Forensic and Health, Nanaji Deshmukh Veterinary Science University, Jabalpur, Madhya Pradesh, India

Corresponding Author:
A Balmik
M.V. Sc. Student, School of Wildlife Forensic and Health, Nanaji Deshmukh Veterinary Science University, Jabalpur, Madhya Pradesh, India

Prevalence of gastrointestinal parasites in free ranging Gaur (*Bos gaurus gaurus*) population of Madhya Pradesh

A Balmik and KP Singh

DOI: https://www.doi.org/10.22271/veterinary.2025.v10.i9f.2583

Abstract
During the health monitoring and diseases diagnosis of free ranging wild animals, 227 faecal samples of free ranging gaurs were collected and analysed by following the qualitative and quantitative coprodiagnostic techniques. Overall prevalence of gastrointestinal parasitism in gaurs was revealed (73.5%) in different tiger reserves. Highest occurrence of Nematodes (73.5%), moderate Coccidia (30.4%) and Trematodes (20.7%) and lowest Cestodes (9.2%) was recorded. Seasonal prevalence of gastrointestinal parasites was recorded low in May June (8-36%) while highest peak of the same infections were recorded from September-October (48-72%). The park wise prevalence of parasitic infections was highest in Bandhavgarh (80%), followed by Pench (78.9%), Satpura (72.7%) and lowest (61.8%) in Kanha tiger reserve. The predominant parasites were found as *Trichostrongylus* spp. (54.1%) followed by *Eimeria* spp. (30.4%), *Amphistomes* spp. (14.9%), *Strongyloides* (9.6%), *Moniezia* spp. (9.2%), *Toxocara* spp. (5.9%), *Fasciola* spp. (5.7%), *Trichuris* spp. (3.9%) and *Balantidium* spp. (2.6%) in different tiger reserves of Madhya Pradesh.

Keywords: Indian Bison, gaur, coproculture, seasonal prevalence, gastrointestinal parasites

Introduction
The gaur is referred as native wild animal (*Bos gaurus gaurus*) known as largest living bovine of oriental biogeographical region (Pabla *et al*., 2011) [8]. Taxonomically, gaur placed under order Artiodactyla along with wild oxen, Asiatic and African buffaloes of Bovidae family. They are distributed in and around Western Ghats of south Maharashtra, hill forest of central and south-eastern Peninsula and West Bengal including eastwards to Burma and Malay Peninsula (Prater, 2005) [10]. Gaur mostly prefers semi wet evergreen bamboo forest; tropical moist deciduous forest and tropical dry deciduous forest including tropical forest in the eastern hill of Western Ghats in India. Now they are facing critical threats in protected and non-protected forest areas due to habitat loss, disease manifestations and unwarranted poaching etc. However, the past record evident with viral, bacterial and parasitic infections owing to cross transmission of disease through domestic animals of adjoining areas (Shrivastav *et al*. 2014) [13]. Scanty information is available on prevalence of pathogenic parasites in free ranging gaurs (Allwin *et al.* 2016) [1]. Therefore, the present study was focussed on health monitoring and diseases diagnosis of free ranging gaurs using non-invasive coprodiagnostic techniques pertaining to assess the occurrence of pathogenic parasites in different tiger reserves of Madhya Pradesh.

Materials and Methods
During the entire course of study period, 227 free ranging gaurs of either sex were taken into account and freshly laid faecal samples were collected from Bandhavgarh, Kanha, Satpura and Pench Tiger Reserves. These faecal samples were individually divided into two parts, one part remains without preservative for coproculture study while second part was preserved in 10% formalin to assess the prevalence of gastrointestinal parasites of gaurs in different tiger reserves of Madhya Pradesh.

The screening of faecal samples was done using flotation and sedimentation method while EPG estimation was commenced by Mc master and Stoll methods as per the guidelines of Soulsby (1982) [15] and Bowman, (2014) [3].

Results and Discussion

Of 227 faecal samples of free ranging gaurs, 167 (73.5%) were found positive for gastrointestinal parasites either singly or mixed infection encountered in gaurs of different tiger reserves. Highest occurrence of nematodes (73.5%), followed by Coccidia (30.3%), trematodes (20.7%) and cestodes (9.2%) was encountered (Table 1). Gupta *et al.* (2011) [6] have also reported 80% infection of gastrointestinal parasites (GIP) in gaur population in central India. However, Allwin *et al*. (2016) [1] found 63.3% prevalence of gastrointestinal parasites in wild gaur of Nilgiri hills of Tamil Nadu. Likewise, also reported 41.1% gastrointestinal parasites in free-ranging population of Satpura tiger reserve. The occurrence of gastrointestinal parasites was found highest in Bandhavgarh tiger reserve (80.0%) followed by Pench tiger reserve (78.9%), Satpura tiger reserve (72.7%) and lowest (61.8%) in Kanha tiger reserve (Table 1). The observation emphasized that intensity of infection is based on the close proximity with source of infection including epidemiological factors i.e. grazing pasture, water resources, relative humidity, rain falls and distribution of wild ruminants in an area as per the zoo-geographical conditions. Shah (1987) [12] also emphasized that the admixture of species and edge effects are vital factors for bilateral dissemination of parasitic infections between domestic and sylvatic cycles. Hence, the highest prevalence recorded at Bandhavgarh tiger reserve with plausible facts that Bandhavgarh tiger reserve has limited boundaries for dispersal of wild animals as the area is less (1536km^2) than that of Kanha tiger reserve (1945 km^2) where lowest prevalence of GIP was encountered. Thus, limited grasslands, water resources and frequent interaction between wild and domestic animals are key factors for high percentage of gastrointestinal infections. Likewise, Satpura and Pench tiger reserves have close affinity with ancient geographical corridor which facilitates frequent wander of free-ranging animals from one place to another. Hence, the occurrence of parasitic infections was reported in more are less in similar trend. Also screened 90 fecal samples of free-ranging gaur and found 41.1% parasitic infection in Satpura tiger reserve while in the present study, it was recorded as 72.7% in gaur population. Allwin *et al*. (2016) [1] also noticed that existence of favorable climatic conditions has also been supporting the prolonged survival of parasitic infections such as source of infection, humid sub-tropic climate and grazing pasture with temporary shallow stagnant water pits. In such circumstances, gaurs congregate at the greens pasture available around the periphery of such areas, hence acquires more infections. The differences in recording the parasitic infestation in the present study may also be due to seasonal variations as it was conducted after the monsoon season when infections reaches on the peak level. Have also observed that the climate of the area regulates the increase or decrease in the parasitic load as highest in rainy season followed by winter and summer owing to grazing pasture and intake of infective stage of parasites. Additionally, the temperature and humidity plays an important role in maintaining the high rate of parasitic infestation in wild and domestic animals. Moreover, the advancement in agriculture farming and irrigation system have also affecting the animal husbandry practices in rural areas because farmers leaving cattle around periphery of protected areas which straying without human influence now became feral (Singh *et al*. 2016) [14]. These feral cattle have made proximity with the population of wild animals and their habitat. Such closer contact of feral cattle enhances the bilateral spreading of infectious agents and parasites. Jonna and Johnson (2012) [7] also observed the effect of complex linkages among domestic animals and wildlife with transdisciplinary factors which gradually increase the cross-transmission of pathogens in sylvatic cycle. Notwithstanding, new relationship between host and parasites has been evolved that altering ecological niches provoking the disease transmission chain in the protected and non-protected areas. However, human menace and their encroachment attitude in the protected forest areas are not only responsible for shrinkage of wilderness while assisting in dissemination of fatal diseases between domestic and wild animals.

The rise in EPG of nematodes (1520±239.6) followed by coccidia (1307.41±102.21), trematodes (1300±61.90) and cestodes (1138.88±127.6) be attributed to more favourable temperature and humidity with frequent intake of infection available on the grazing pasture (Table 2). However, on the basis of egg morphological identities the occurrence of *Trichostrongylus* spp. (54.1%) followed by *Eimeria* spp. (30.3%), *Amphistome* spp. (14.9%), *Strongyloides* spp. (9.6%), *Moniezia* spp. (9.2%), *Toxocara* spp. (5.7%), *Fasciola* spp. (5.7%), *Trichuris* spp. (3.9%) and *Balantidium* spp. (2.6%) were reported in free-ranging gaurs of different tiger reserves of Madhya Pradesh (Table 3). The present observation was in accordance with Allwin *et al*. (2016) [1] who observed gastrointestinal parasites in free raging gaurs of Nilgiri hills of Tamil Nadu. The intensity of infection of gastrointestinal parasites basically depends on the habits and habitat of a particular host species while prevalence of infections including trematodes, nematodes, cestodes and pathogenic species of coccidia may also lead to clinical manifestation (Soulsby, 1982) [15]. The present investigation during body evaluation they were observed as dull and depressed with emaciated body conditions. During entire period of surveillance such clinical phase was observed particularly in sub-adults and calves of gaur population in different tiger reserves of Madhya Pradesh. According to Prater (2005) [10], free-ranging gaurs are habitant of hilly region or highlands in the protected forest areas while come down on plains preferably on winter season. Thus seldom uses of marshy land and stagnant water ponds to quench the thrust or in quest of pasture in certain seasons hence gaurs have lesser chances to pick the trematodes and cestodes infection as compared to nematodes which was recorded highest in the present study. In contrast, Coccidia is the leading pathogenic parasite of free-ranging gaurs causes high morbidity and recorded as 38.18% in Satpura tiger reserve followed by 31.6% in Bandhavgarh tiger reserve, 26.3% in Pench tiger reserve and lowest 25.45% in Kanha tiger reserve. Similar findings were also recorded by Rahman *et al.* (2010) [11] and Pal *et al.* (2015) [9] in yaks whilst Allwin *et al*. (2016) [1] in gaurs. The prevalence of pathogenic trematodes and cestodes were encountered in low intensity in the present study which may be due to seasonal impact as the low prevalence of gastrointestinal parasites was recorded in May June (8-36%) while highest peak of the same infections were recorded from September-October (48-72%). Bhahdiya (2018) also encountered *Amphistome*s (8.8%) and *Fasciola spp.* (2.9%) in free-ranging gaur population (Figure 1). The present study is an attempt to gather the information about the status of gastrointestinal parasitism in gaurs to formulate the appropriate strategy to overcome the diseases burden in free ranging guars of Madhya Pradesh.

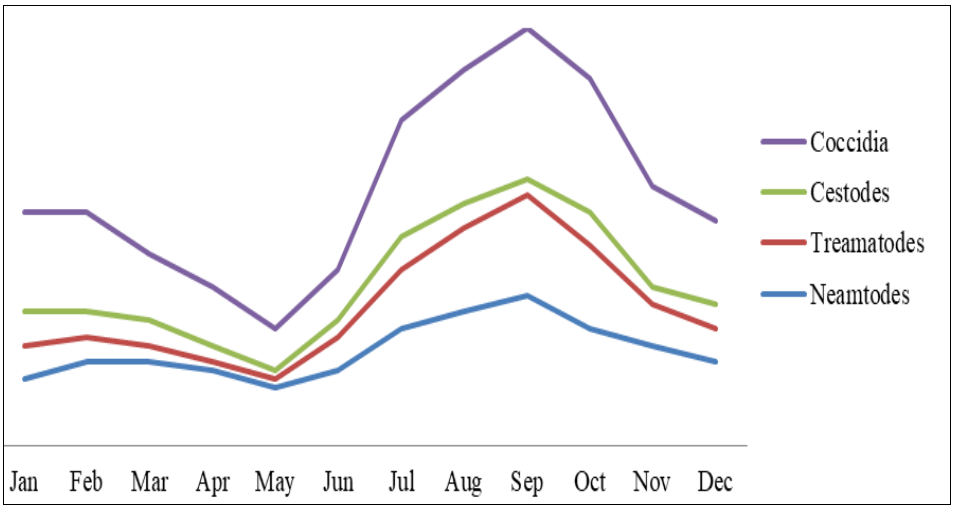

Fig 1: Seasonal prevalence of gastroinestinal parasites in free ranging Gaur population of Madhya Pradesh

Table 1: Overall occurrence of gastrointestinal parasitism in free-ranging gaurs

S. No.	Tiger reserves	Samples examined	Found positive for GIP (%)	Nematodes (%)	Cestodes (%)	Trematodes (%)	Coccidia (%)
1.	Satpura	55	72.7	61.8	3.6	21.8	38.2
2.	Bandhavgarh	60	80.0	73.3	8.3	26.6	31.6
3.	Kanha	55	61.8	70.9	7.2	10.9	25.4
4.	Pench	57	78.9	87.7	17.5	22.8	26.3
	Overall	227	73.5	73.5	9.25	20.7	30.3

Table 2: Overall mean EPG/OPG value of gastrointestinal parasites in free-ranging gaurs

S. No.	Parasites	Kanha tiger reserve	Bandhavgarh tiger reserve	Satpura tiger reserve	Pench tiger reserve	Mean ± SE
1.	Nematodes	1400-1600	1800-2000	1600-2200	2000-2400	1520.00±239.60
2.	Cestodes	600-1100	900-1400	300-2300	800-2000	1138.88±127.60
3.	Trematodes	800-2100	800-2100	600-2000	800-2000	1300.00±61.90
4	Coccidia	600-2200	500-1800	1000-2400	400-2000	1307.41±102.21

Table 3: Park-wise occurrence of gastrointestinal parasitism in free-ranging gaurs

S. No.	Parasites	Satpura Tiger Reserve (%)	Bandhavgarh Tiger Reserve (%)	Kanha Tiger Reserve (%)	Pench Tiger Reserve (%)
1	*Trichostrongylus* spp.	50.9	51.6	45.4	68.4
2	*Strongyloides* spp.	5.4	11.6	10.9	10.5
3	*Trichuris* spp.	3.6	5.0	1.8	5.2
4	*Toxocara* spp.	1.8	5.0	12.7	3.5
5	*Amphistome* spp.	14.5	18.3	5.4	21.0
6	*Fasciola* spp.	7.2	8.3	5.4	1.7
7	*Moneizia* spp.	3.6	8.3	7.2	17.5
8	*Balantidium* spp.	1.8	3.3	3.6	1.7
9	*Eimeria* spp.	38.1	31.6	25.4	26.3

The most pathogenic nematodes *viz.* Haemonchus and Bunostomum were recorded (28-31%) in free ranging gaur population of different tiger reserves of central India. Allwin *et al*. (2016) [1] have also recorded these parasites in free ranging gaurs which is an indicative that these parasites are abundant and needs preventive measures to overcome the diseases burden particularly protected forest areas to avoid any outbreaks though the parasites are less pathogenic but provoke the immunosuppressive factors leading to pathogenic infectious diseases (Bowman, 2014) [3].

Acknowledgement
Authors are highly thankful to PCCF (Wildlife), Govt of M.P for providing all facilities to conduct the M.V.Sc. Thesis research work in free ranging gaurs of different tiger reserves.

Ethical Approval
The non-invasive techniques were used to collect the biological samples of free ranging gaurs hence, no matter of conflicts.

Conflict of Interest
Not available

Financial Support
Not available

Reference

1. Allwin B, Balakrishnana S, Kumar N, Jayathangraj MG, Vedamanickam S, Gopal S. Prevalence of gastrointestinal parasites in gaur (*Bos gaurus*) and domestic cattle at interface zones of Tamil Nadu, India. J Vet Sci Technol. 2016;7(1):2-6.
2. Bhaydiya N. Gastrointestinal parasitism in wild herbivores of Satpura Tiger Reserve [MVSc. Thesis]. Jabalpur: Nanaji Deshmukh Veterinary Science University, School of Wildlife Forensic and Health; 2018.
3. Bowman DD. Georgis' parasitology for veterinarians. 9th Ed. St. Louis, MO: Saunders Elsevier; 2014.
4. Collinge SK, Ray C. Disease ecology: community

structure and pathogen dynamics. New York: Oxford University Press; 2006, p. 227.
5. Dharmarajan G, Raman M, Mathew JC. Effect of season on helminth loads of wild herbivores and cattle in Mudumalai Wildlife Sanctuary, Southern India. Zoos Print J. 2005;20:1766-1769.
6. Gupta A, Dixit AK, Dixit P, Mahajan C, Shrivastav AB. Incidence of gastrointestinal parasites in wild ruminants around Jabalpur, India. J Threat Taxa. 2011;3(11):2226-2228.
7. Jonaa AK, Mazet J, Johnson CK. Approaching health problems at the wildlife-domestic animal interface. In: Miller RE, Fowler ME, editors. Fowler's zoo and wild animal medicine. St. Louis, MO: Saunders Elsevier; 2012, p. 153-68.
8. Pabla HS, Carlisle L, Cooper D, Cooke J, Nigam P, Shankar K, *et al*. Reintroduction of gaur (*Bos gaurus* gaurus) in Bandhavgarh Tiger Reserve, Madhya Pradesh, India. Tech Rep; 2011, p. 73.
9. Pal P, Chatlod LR, Awasthe RK. Gastrointestinal parasites of yaks from Katoo Valley in North Sikkim, India. Indian J Anim Sci. 2015;84(7):747-9.
10. Prater SH. The book of Indian animals. 3rd Ed. Mumbai: Bombay Natural History Society; 2005, p. 234-242.
11. Rahman H, Pal P, Bandyopadhyay S. Occurrence of gastrointestinal parasites in domestic yaks in Sikkim. Indian J Anim Sci. 2010;80(3):195-198.
12. Shah HL. An integrated approach to study of zoonoses. J Vet Parasitol. 1987;1(1-2):7-12.
13. Singh KP, Shrivastav AB. Incidence of sarcocystosis in the heart muscles of gaur (*Bos gaurus* gaurus). J Vet Parasitol. 2014;28(1):72-73.
14. Singh KP, Shrivastav AB, Rajput N, Nigam P, Agarwal S, Gupta S, *et al*. Occurrence of Paragonimus spp. in free ranging tiger and leopard. J Vet Parasitol. 2016;30(2):98-100.
15. Soulsby EJL. Helminths, arthropods and protozoa of domesticated animals. 7th Ed. London: Bailliere and Tindall; 1982, p. 261-270.

How to Cite This Article
Balmik A, Singh KP. Prevalence of gastrointestinal parasites in free ranging Gaur (*Bos gaurus gaurus*) population of Madhya Pradesh. International Journal of Veterinary Sciences and Animal Husbandry. 2025;10(9):354-357.