INNOVATIVE STRATEGY FOR THE HELMINTH INFECTIONS CONTROL IN WILD CARNIVORES

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Abstract. Wild and domestic canids are the primary definitive hosts or reservoirs for most parasitic zoonoses. The aim of this study is to develop a novel method for controlling/reducing parasitic infections in wild canids to strengthen bioecological and epidemiological security in both natural and anthropized ecosystems. The development of this new method began with an assessment of the fox population in the studied area (5400 ha), where the density was found to exceed the standard threshold by 14 times. The study of parasite communities in *Vulpes vulpes* revealed a high taxonomic diversity, encompassing 5 classes, 10 families, 10 genera, and 10 species. The helminth fauna epidemiological characteristics of foxes indicate that 9 (90.0%) of the identified parasitic species are zoonotic (*Alaria alata, Mesocestoides lineatus, Taenia* spp., *Syphacia obvelata, Strongyloides ratti, Toxocara canis, Ancylostoma caninum, Capillaria hepatica,* and *Trichuris vulpis*), while 1 species (10%) is specific to canids (*Isospora canis*). All 10 species (100%) can parasitize to other animal groups, including domestic and wild animals. The innovative process includes the homogenization of food and medicinal components, extrusion, and portioning into parallelepiped-shaped briquettes improves readability while keeping technical accuracy. The antiparasitic drug is incorporated as the active medicinal component, with each bait formulated according to the required dosage. The briquettes are individually packaged in heat-sealable filter paper bags and contain the following ingredients: wheat flour, meat and bone meal, an antiparasitic drug (*Albendazole 0.1%*), and vegetable oil. The innovative deworming method for canids can be successfully applied without the need for animal restraint, serving both curative and preventive purposes. It offers minimal costs and maximum efficacy (94.7%) in controlling and reducing parasitic infections in canids while enhancing bioecological and epidemiological security in both natural and anthropized ecosystems.

Keywords: carnivores, procedure, bait, helminthoses.

Rezumat. Strategie inovativă pentru controlul helmintozelor la carnivorele sălbatice. Canidele sălbatice și cele domestice sunt principalele gazde definitive sau rezervoare pentru majoritatea zoonozelor parazitare. Scopul acestei lucrări, care vizează elaborarea unui procedeu nou de combatere/diminuare a parazitozelor la canidele sălbatice, în vederea fortificării securității bioecologice și epidemiologice în ecosistemele naturale și antropizate. Elaborarea procedeului nou a demarat cu evaluarea populației de vulpi în arealul studiat (5400 ha), unde s-a constat depășirea normei densității de 14 ori. Studiul comunităților de paraziți la vulpi a pus în evidența diversitatea taxonomică care încadrează 5 clase, 10 familii, 10 genuri și 10 specii. Caracteristica epidemiologică a helmintăfaunei la *Vulpes vulpes* denotă 9 (90.0%) specii parazitare zoonotice (*Alaria alata, Mesocestoides lineatus, Taenia spp, Syphacia obvelata, Strongyloides ratti, Toxocara canis, Ancylostoma caninum, Capilaria hepatica, Trichuris vulpis*), 1 specie (10%) specifică canidelor (*Isospora canis*), iar toate 10 specii (100%) parazitează la alte grupe de animale (domestice, sălbatice). Procedeu inovativ de producere a momelelor pentru tratamentul canidelor sălbatice, ca formă medicamentoasă care include omogenizarea componentelor alimentare și medicamentoase, extrudarea și porționarea în brichete de forma paralelipipedică, iar în calitate de componentă medicamentoasă este utilizat medicamentul antiparazitar conform posologiei și respectiv dozei fiecărei momele, iar suplimentar brichetele se ambalează individual în pliculeț din hârtie de filtru termosudabilă, având următoarea compoziție făină de grâu, făină de carne și oase medicamentul antiparazitar (*Albendazol*) și ulei vegetal. Metoda inovativă de deparazitare a canidelor, poate fi utilizată cu succes (fără contenția animalelor) in scop curativ și profilactic, cu cheltuieli minime și eficacitate maximă (94,7%), în vederea combaterii/diminuării parazitozelor la canide și fortificare a securității bioecologice și epidemiologice în ecosistemele naturale și antropizate.

Cuvinte cheie: carnivore, procedeu, momeală, helminthoses.

INTRODUCTION

The red fox (*Vulpes vulpes*) is a widely distributed animal in the world, except Antarctica. This species is spread throughout the northern hemisphere. The range of its occurrence increases with human expansion, through which it was even introduced into Australia (in the nineteenth century). In central Europe it is the most numerous wild species of the family Canidae (BORECKA, 2008). This canid species is the most common among wild carnivores, exhibiting a tendency toward synanthropization and being widely distributed across all continents except Antarctica. As a predator, it plays a regulatory role in the population dynamics of rodents, which are considered potential hosts (definitive, intermediate, or paratenic) for a wide diversity of parasitic species, most of which have zoonotic and epizootic impacts (KARAMON et al., 2018; CHIHAI et al., 2021).

The fox population in the Republic of Moldova, has a reproductive stock of over 30,000 individuals, with 20,100 in agrocenoses, 13,700 in forest ecosystems, and 6,500 in human settlements, resulting in a density of 14–16 individuals per 1,000 hectares. In recent years (2019–2023), the population has remained at a very high level, significantly exceeding the ecologically acceptable threshold (by 6 to 14 times), which is set at 1–2 foxes per 1,000 hectares. The concentration of foxes in forested ecosystems and human settlements represents an eco-ethological adaptation driven by trophic factors and the environmental stability characteristic of these ecosystems (SAVIN, 2024).

Wild and domestic canids are the primary definitive hosts or reservoirs for most parasitic zoonoses (*echinococcosis, alveococcosis, trichinellosis, toxocariasis, ancylostomiasis, opisthorchiasis, dirofilariasis, capillariasis,*

syphaciosis, strongyloidiasis), with medical and veterinary significantion (DIDĂ et al., 2002). These animals contaminate the environment with parasitic forms, posing a major threat to ecology and public health (ȘUTEU et al., 2011; PETROV et al., 2012; ABDI et al., 2013; FADEEVA et al., 2016). Parasitic zoonoses are particularly dangerous for high-risk groups, especially for children and livestock breeders (BURROUGHS et al., 2002) and especially for immunocompromised individuals (TREVEJO et al., 2005). These data are consistent with reports from other studies, which confirm that foxes act as vectors for the invasive forms from wildlife to domestic animals (GHERMAN, 2002; DALIMI, 2006), having large individual territories, they can travel up to 20 km in search of food. The *V. vulpes* population in the Republic of Moldova has an increased density (7–10 times higher) over several years (2000–2017), with a tendency for further growth. (MUNTEANU et al., 2004; SAVIN et al., 2017), this can increase the human infection risk with vector-borne zoonotic pathogens, while wild mammals may serve as reservoirs for such pathogens in their proximity (OTRANDO et al., 2013).

The bioecological study on the role of wild canids (*Vulpes vulpes*, Linnaeus, 1758) in the transmission of parasitic species in the zoonotic and epizootic chain in natural and anthropized ecosystems highlighted 10 parasitic species with zoonotic impact (*Alaria alata*, *Mesocestoides lineatus*, *Taenidae spp.*, *Syphacia obvelata*, *Strongyloides ratti*, *Toxocara canis*, *Toxascaris leonina*, *Ancylostoma caninum*, *Capillaria hepatica*, *Trichuris vulpis*), which pose a major risk to public health, and one species (*Isospora canis*) specific to canids (CHIHAI et al., 2021).

According to reports from the World Health Organization, the majority of emerging and reemerging infectious diseases that affect humans are zoonotic in nature, transmitted from animals to humans (***. WORLD HEALTH ORGANIZATION, 2018). A detailed analysis of the specialized literature indicates that out of 1,415 species of infectious organisms known to be pathogenic to humans, 868 (61%) are considered zoonotic. This category includes 165 (19%) viruses and prions, 269 (31%) bacteria and rickettsiae, 113 (13%) fungi, 43 (5%) protozoa, and 278 (32%) species of helminths (TAYLOR et al., 2001). These reports indicate that zoonotic diseases, particularly those associated with wild canids, represent a significant risk to public health and human well-being (DASZAK et al., 2000; CLEAVELAND et al., 2001).

It is also important to note that fox populations, in the absence of or neglecting numerical regulation mechanisms, play a pivotal role in the epidemiological and epizootiological processes of many infectious and parasitic diseases common to both humans and animals (BUNEEVA, 1997). From these considerations, the objective of this study arises, which **aims** to develop a new method for controlling/reducing parasitic infections in wild canids, in order to strengthen bioecological and epidemiological security in both natural and anthropized ecosystems.

MATERIALS AND METHODS

The invention was tested in the "Codrii" Natural Reserve, covering an area of approximately 5400 ha. The research was conducted on foxes, as this species is the most abundant among carnivores, with large individual territories that vary depending on the season and food availability (15–20 km). The achievement of the objective began with assessing the fox population, conducting parasitological investigations, preparing and placing baits near active dens. The evaluation of the fox population during the winter period was carried out based on the number of active dens in the studied area (SAVIN et al., 2017).

The parasitological investigation is based on determining the prevalence (%) and intensity (specimens in multiple microscopic fields) of parasitic species in biological samples (feces) collected from foxes in the studied area. The prevalence of parasitic species was determined using the Popov, Baermann, Fuileborn, Darling methods, and successive washing techniques (KOTELNINICOV, 1984), were performed in the Parasitology and Helmintology Laboratory, Institute of Zoology, Moldova State University. In oocoproscopic diagnosis, oncospheres of *Taeneidae* (*T. hydatigena, T. pisiformis, M. multiceps, M. serialis E. granulosus, E. multilocularis*) are similar to each other, which is why they are noted as oncospheres of *Taeniidae* (MIRCEAN, 2011). Infection intensity with invasive forms was determined in 5g feaces examined in 10 visual microscopic (10x40) fields (KOTELNINICOV, 1984).

The innovative process is based on the production of baits for the treatment of wild canids, as a medicinal form for rationalizing the administration of drugs to wild canids. This process includes the homogenization of food and medicinal components, extrusion and portioning into parallelepiped briquettes and as a medicinal component the antiparasitic medicine is used, according to each bait dosage. The briquettes are individually packed in a heat-sealable filter paper bag, having the following composition: wheat flour 59.9 - 79.9%; meat and bone meal 10 – 20%; antiparasitic drug – Albendazole 0.1%; vegetable oil up to 10 – 20%. The bait was then placed around active dens corresponding to the number of foxes.

RESULTS AND DISCUSSIONS

The red fox (*Vulpes vulpes*, Linnaeus, 1758) is widely distributed in the world; in central Europe, it is the most numerous wild species of the family Canidae. It can play the role of a definitive host for many intestinal parasites, including zoonotic helminths (KARAMON et al. 2018). The establishment of effective strategies for zoonoses control is needed urgently in order to minimize infection risks to humans, because wildlife and human habitats are becoming rapidly overlapped (KUBO et al., 2014).

The research on developing new methods for controlling/reducing parasitic infections in wild canids began with the assessment of the fox population in the studied area. The evaluation of the fox population based on the number of reproductive dens in the "Codrii" Natural Reserve, covering approximately 5400 ha, revealed 28 active dens, each with one fox, which constitutes a density 14 times higher than the normal limit. Other canids (wolf, raccoon dog, jackal) were not observed, which is why the efficacy of the deworming method was tested on foxes, although the method can also be extended to other species of wild carnivores. The deworming process began with determining the numerical density of canid species, their spatial distribution, as well as the diversity of the parasitic fauna in the host species intended for deworming.

Fecal samples were collected from around each den both before and after the deworming procedure. As a result of laboratory parasitological investigations (Table 1), the initial prevalence index was found to be 85.7% (infested animals), with an intensity index of 9.5 specimens/animal. The considerably increased density and invasion indices confirm that the fox is the most abundant species and the most dangerous both epidemiologically and epizootiologically, which is why it was selected for the implementation of the invention example.

The study of parasite communities in foxes (*Vulpes vulpes*) revealed several parasite species. The taxonomic diversity of the parasitic species identified in foxes' spans 5 classes, 10 families, 10 genera, and 10 species. From the *Sporozoa* class, the species *Isospora canis* (Levine, 1977) was identified with a prevalence of 14.3% and an invasion intensity of 5 oocysts. The *Trematoda* class is represented by *Alaria alata* (Goeze, 1792) with a prevalence of 7.1% and an intensity of 2.0 eggs. From the *Cestoda* class, *Mesocestoides lineatus* (Goeze, 1782) was identified with a prevalence of 14.3% and an intensity of 2.0 eggs, and *Taeniidae spp.* with 21.0% prevalence and 2.7 oncospheres. Species from the *Secernentea* class are represented by *Syphacia obvelata* (Rudolphi, 1802) with 36.0% prevalence and an intensity of 5.4 eggs per microscopic field, *Strongyloides stercoralis* (Bavay, 1876) with 29.0% prevalence (4.0 larvae), *Toxocara canis* (Werner, 1782) with 29.0% prevalence (2.0 eggs), and *Ancylostoma caninum* (Ercolani, 1859) with 7.1% prevalence (2 eggs). Parasitic invasions from the *Adenophorea* class are represented by *Trichuris vulpis* (Froelich, 1789) with a prevalence of 7.1% and an intensity of 3.0 eggs per microscopic field, and *Capilaria hepatica* (Bancroft, 1893) with 7.1% prevalence (2.0 transit eggs). Thus, the distribution of species is as follows: 10.0% from the *Sporozoa* class, 10.0% from the *Trematoda* class, 20.0% from the *Cestoda* class, 50.0% from the *Secernentea* class, and 30.0% from the *Adenophorea* class. It is important to note that 100% of the total 28 fecal samples investigated were infected with parasitic forms.

Table 1. Parasitological indices in *Vulpes vulpes.*

Taxons		**Initially**		**Post-therapeutic**	
Family	**Species**	**Prevalence (%)**	**Intensity (ex)**	**Prevalence (%)**	**Intensity (ex)**
Eimeriidae	*Isospora canis*	14.3	5.0	-	-
Diplostomidae	*Alaria alata*	7,1	2,0	-	-
Taeniidae	*Taeniidae*	21,0	2,7	-	-
Mesocestoididae	*Mesocestoides lineatus*	14,3	2,0	-	-
Oxyuridae	*Syphacia obvelata*	36,0	5,4	-	-
Strongyloididae	*Strongyloides stercoralis*	29,0	4,0	3,6	1
Ascaridae	*Toxocara canis*	29,0	2,0	3,6	1
Ancylostomatidae	*Ancylostoma caninum*	7,1	2,0	-	-
Trichuridae	*Trichuris vulpis*	7,1	3,0	-	-
Capilariidae	*Capilaria hepatica*	7,1	2,0	-	-

The epidemiological characteristics of the parasitic species indicate 2 categories of parasitic diseases (zoonotic and specific to canids). Zoonotic parasitic diseases are caused by 9 (90.0%) parasitic species (*A. alata*, *M. lineatus*, *Taenia spp.*, *S. obvelata*, *S. ratti*, *T. canis*, *A. caninum*, *C. hepatica*, *T. vulpis*), while 1 species (10%) causes parasitic diseases specific to canids (*I. canis*). It is also important to mention that all the parasitic species identified (100%) have an epizootiological impact, which indicates that they can infest both domestic animals and wildlife, thus posing an imminent threat to the game heritage. These parasitic diseases cause economic damage to domestic animals, while wildlife suffers considerable harm to its population, including to the integrity of the main and complementary species that ensure the value of the hunting grounds. Therefore, the results obtained indicate a rich diversity of parasitic species with increased prevalence and intensity. This is due to the considerable increase in the number of foxes (10 times), as well as the ecological plasticity of this species, which exhibits a trend of synanthropization. These are the essential factors contributing to the emergence and persistence of parasitic zoonotic outbreaks in both natural and anthropized ecosystems.

Foxes migrate over large distances (approximately 20 km) and disperse the invasive forms of parasites in a mosaic pattern, thereby contaminating both natural and anthropized ecosystems, ultimately ensuring the stability of the evolutionary cycles of various parasitic species (SAVIN et al., 2017, CHIHAI et al., 2021). The number of foxes in the Republic of Moldova has reached a catastrophic level, up to 21 individuals per 1000 ha, and this alarming increase exceeds the permissible density of up to 2 individuals / 1000 ha by approximately 10 times (SAVIN et al., 2017).

Thus, the results of the parasitological investigations served as the basis for developing a new, efficient, harmless, cost-effective, and simple method for deworming wild canids. The method must be effective, easy to implement,

and provide efficient use at an affordable price, ensuring the effective sanitation of both natural and anthropized ecosystems from parasitic diseases common to humans and animals, transmitted by wild canids.

After the preliminary determination of the fox population based on the number of active dens and the establishment of the prevalence and intensity of parasitic invasions in the studied area, the new method was tested and evaluated during the harsh winter period with snow, when animals face food scarcity and the baits are consumed entirely in the shortest time. At the same time, the parasitic forms eliminated from the organism post-therapy are destroyed under the influence of low temperatures. For the experimental control of the method in order to evaluate its antiparasitic efficacy in canids, the baits intended for deworming the foxes were tested, which include excipient ingredients (wheat flour, meat meal, vegetable oil) and the active substance (albendazole) with antihelmintic effects, as previously described in the materials and methods section.

The developed method pertains to the fields of veterinary pharmacology and veterinary helminthology and can be used for the antiparasitic chemotherapy of wild carnivores. The deworming of foxes was carried out in January (with frost and snow), in two sessions at 14-day intervals, with a dose of 10 mg/kg body weight according to the dosage of the antiparasitic preparation Albendazole, which is a parasiticidal with a broad spectrum. Administered orally, it is rapidly absorbed and diffuses into all organs and tissues, causing the lysis of worms, regardless of the species and category of the treated animals, and regardless of the localization of the parasites (respiratory system, digestive system, tissues). It is active against parasites from the Trematoda and Cestoda classes, the phylum Nematoda in all developmental stages (eggs, larvae, adults). Its toxicity is low, with the maximum tolerated doses being five times higher than the therapeutic dose, and the lethal dose being fifty times higher (HSU et al., 2008; ROMVAC, 2008; RIVIERE et al., 2018;).

The antiparasitic efficacy was assessed 3 weeks after the deworming procedure, through the analysis of biological samples (feces) collected from foxes near the active dens where the baits were placed.

Table 2. Deworming effectiveness (n=28).

Host	Initially		Post-therapeutic		
	Examinated	Infected	Examinated	Infected	Noninfected
	nr	%	nr	%	%
Vulpes vulpes	28	100	28	5.3	94,7

The obtained parasitological investigations result after bait testing (Table 2) demonstrated that innovative deworming method for canids allows the successful use of baits as a medicinal form for both curative and prophylactic purposes, with minimal costs and maximum efficacy (94.7%), aiming to reduce parasitoses, including significant reduction in public health impacts by lowering zoonotic risks and damages caused to the national hunting heritage by reducing the epizootic impact.

Veterinary parasitology includes several deworming methods (oral, parenteral) for domestic canids (ȘUTEU et al., 1997; 1998). In this context, various oral administration methods of medications for animals are recommended, which involve the use of different medicinal forms such as powders, tablets, capsules, dragees, emulsions, and suspensions, based on various active substances with medicinal roles (HSU et al., 2008; ROMVAC, 2008; RIVIERE et al., 2018). The deworming method for domestic canids is well-known, consisting of the use of albendazole tablets at a dose of 10 mg per 1 kg of body weight. This drug has a broad-spectrum antihelmintic effect against parasites in the Protozoa, Trematoda, Nematoda, and Cestoda classes (ȘUTEU et al., 1998; ROMVAC, 2008). For this method to be effective, it is necessary to capture and restrain the animals (ȘUTEU et al., 1997). Restraint refers to limiting the movements or even immobilizing the animal for examination or therapeutic-surgical interventions (PAPUC, 2009). The disadvantage lies in the impracticality of using this method on wild canids, as capturing and restraining these animals, as well as administering the antihelmintic dose individually, is unfeasible. Moreover, this method results in excessive stress on the restrained animals.

A more technically similar model is the deworming procedure for wild canids (wolf, fox, jackal, raccoon dog) using the PASS-4 bait in the form of granules, made from meat by-products. This method involves using a mixture of meat by-products (such as spleen, udder, mashed potatoes) combined with antiparasitic preparations (politrem, azinox, albendazole, sulfen). The deworming procedure is recommended to be carried out in the autumn (October – November) and involves placing plastic dishes containing 100 g of granules near each den (BITTIROV, 2010). The disadvantage of this method lies in the fact that the preparation of the bait is cumbersome, as it requires additional costs for raw materials, time, and equipment for preparing the mixture. The baits are not protected from environmental factors (rain, sun, frost) and may deteriorate if not consumed promptly, thereby reducing the antihelmintic effectiveness.

The bibliographic study on the wild canids dehelminization reveals several models for comparison. Thus, field application of anthelmintic baits against *Echinococcus multilocularis* in red foxes (*Vulpes vulpes*) was conducted on Nemuro Peninsula at the eastern edge of Hokkaido, Japan. The total study area was 412 km^2, of which 135 km^2 were used for bait distribution. Com mercial baits containing 50 mg praziquantel were distributed by car along roads outside towns and villages in a density of 15/km^2. Prevalence in foxes collected in the baiting and non-baiting areas were determined by necropsy. Base prevalence (before baiting) was 49.4% (CI95%: 43.7–55.0) in the baiting area and 70.5% (CI95%: 60.2–79.2) in the non-baiting area. During the first and second half of the baiting period, the prevalence in the baited area

changed to 26.2% (CI95%: 14.4–42.3) and later to 15.8% (CI95%: 7.9–28.4), but remained at a high level in the neighboring non-baited area with 60.4% (CI95%: 45.3–73.9) and 65.0% (CI95%: 40.9–83.7). Thes data show, that significant prevalence reduction (but not elimination) of *E. multilocularis* in foxes can be achieved by this method under epidemiological conditions, which are fundamentally different from those in Europe where most previous studies have been done (TAKAHASHI et al., 2013).

The results of conducted study in the Zürich community, Switzerland, and its surroundings, show a significant final model (model $\chi 2=139.4$, df=11, $p<0.001$) with a highly significant influence of anthelmintic baiting, expressed by the interaction between the area type and period variables on the proportion of coproantigen-positive fecal samples (Wald Statistics 20.5, df=4, $p<0.001$). The proportion of coproantigen-positive fecal samples in bait areas decreased from 38.6% (95% CI 26.0% to 52.4%) during winter 1999 to 5.5% (95% CI 3.1% to 8.9%) in summer/autumn 2001 (HEGGLIN et al., 2003).

A pilot study on deworming wild foxes for *Echinococcus* spp. in Qinghai, China shows a frequency of *Echinocuccus multilocularis* – 2/11, of *Taenia crassiceps* – 1/11 before deworming, but 10 days after deworming frequency of *Echinocuccus multilocularis* was 0/11, of *Taenia crassiceps* – 0/11, 6 months after deworming frequency of *Echinocuccus multilocularis* was 0/11, of *Taenia crassiceps* – 0/11, 1 year after deworming frequency of *Echinocuccus multilocularis* was 1/11, of *Taenia crassiceps* – 0/11 (ZHIHONG et al. 2021). These models are quite effective and have served as models for the development of our decoy.

The technical result of the invention lies in the optimization of deworming wild canids, while also reducing costs and simplifying the procedure. The problem addressed by this invention consists in the simple implementation and effective use at an advantageous cost, contributing to the efficient sanitation of both natural and anthropized ecosystems from parasitic diseases common to humans and animals, transmitted by wild canids.

The advantages of applying the invention lie in the fact that the invented procedure is convenient and easy to administer, as it does not require the capture and restraint of wild canids. The bait, as a medicinal form, is effective due to its precise dosage and its ability to protect the active substance from the actions of environmental factors (rain, sunlight, frost), thus maintaining the duration of the antihelmintic preparation's effect. Additionally, it serves as an attractive means of consumption for foxes. Deworming during the snow-covered period of the year, when there is a trophic deficit, guarantees the consumption of the baits by the canids, and the frost favors the destruction of the invasive forms eliminated. Moreover, the recovery period (rest) of about 30 days before mating ensures the avoidance of teratogenic effects during the first trimester of pregnancy in females. The element that enhances the effectiveness and efficiency of the treatment is due to the simplification of the medication administration procedure, thus avoiding the stress caused by the capture and restraint of wild animals.

This new method seeks to address the significant health risks posed by zoonotic and parasitic diseases transmitted by wild canids, such as foxes, wolves, and jackals, which can impact both wildlife and domestic animals. By implementing a novel approach to deworming, the method ensures effective, low-cost, and non-invasive treatment, while mitigating the risks of parasitic transmission to other species and humans. Moreover, it contributes to the overall ecological balance by minimizing the impact of parasitic diseases on wildlife populations, thereby safeguarding biodiversity and reducing potential threats to public health and the national hunting heritage.

CONCLUSIONS

1. The population of foxes was evaluated based on the number of reproductive dens in the "Codrii" Nature Reserve, covering an area of approximately 5400 ha. This revealed 28 active dens, each hosting one fox, which represents a 14-fold increase over the normal density.
2. The study of parasite communities in foxes (*V. vulpes*) highlighted the taxonomic diversity, which encompasses 5 classes, 10 families, 10 genera, and 10 species. The distribution of species from the Sporozoa class accounted for 10.0%, from the Trematoda class 10.0%, from the Cestoda class 20.0%, from the Secernentea class 50.0%, and from the Adenophorea class 30.0%. Out of the total number of samples (28), 100% were found to be infected with parasitic forms.
3. The epidemiological characteristics of the parasitic species indicate 2 categories (zoonotic, specific to canids). Zoonotic parasitoses are caused by 9 (90.0%) parasitic species (*Alaria alata*, *Mesocestoides lineatus*, *Taenia* spp., *Syphacia obvelata*, *Strongyloides ratti*, *Toxocara canis*, *Ancylostoma caninum*, *Capilaria hepatica*, *Trichuris vulpis*), while 2 species (10%) cause canid-specific parasitoses (*Isospora canis*). All 10 species (100%) parasitize other animal groups (domestic and wild animals).
4. The innovative deworming method for canids can be successfully applied (without the need for animal containment) for both curative and preventive purposes, with minimal costs and maximum efficacy (94.7%), aimed at combating/reducing parasitoses in canids and strengthening bioecological and epidemiological security in natural and anthropized ecosystems.

Acknowledgements: *The research was carried out in the framework of sub-program: 010701, "Assessment of the structure and functioning of the animal world and aquatic ecosystems under the influence of biotic and abiotic factors in the context of ensuring ecological security and population well-being".*

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Received: March 13, 2025
Accepted: August 26, 2025