Endoparasites

Claudia Hochleithner, DVM
Manfred Hochleithner, DVM, Dipl. ECAMS

Tierarztpraxis Strebersdorf
VETERINARIA
Mühlweg 5, 1210 Vienna
Austria

Reptiles

Reptiles frequently harbor endoparasites, especially:

- Nematodes
- Protozoa
  These are the most common parasites encountered in veterinary practice.

Predisposing Factors

- Stress of captivity
- Closed environments
- Poor hygiene lead to heavy parasite burdens, especially with parasites that have direct life cycles

Prevention:

- Strict quarantine
- Screening and treatment before introducing animals into collections

Major Parasite Groups

Trematodes (Flukes)

- Turtles: vascular system
- Snakes: oral cavity, respiratory system, kidneys, ureters
- Treatment: limited success with chemotherapy
- Praziquantel shows partial efficacy

Cestodes (Tapeworms)

- Present in most reptile orders (rare in crocodilians)
- Reptiles may be definitive, intermediate, or paratenic hosts
- Usually nonpathogenic, but weight loss and death reported

Diagnosis:

- Proglottids near the cloaca
- Typical cestode ova in feces

Treatment:

- Praziquantel, repeat after 2 weeks

Special case:

- Spirometra plerocercoids → subcutaneous swellings → surgical removal

Nematodes (Roundworms)

Strongyloides spp.

- Intestinal tract
- Larvae in respiratory tract
- Can penetrate skin
- Severe infections in contaminated environments

Rhabdias spp.

- Lung parasites in snakes
- Often subclinical
- May cause secondary bacterial pneumonia
- Severe cases → death

Ascarids

- Common in reptiles
- Severe disease in snakes:
    - Anorexia
    - Regurgitation
    - Granulomatous intestinal masses
    - Perforation
    - Death

Other nematodes:

- Capillarids
- Trichurids
- Oxyurids

Prevalence:

- 50–80% in captive reptiles
- Highest in chelonians (turtles & tortoises)

Protozoa

Entamoeba invadens (Most serious protozoal pathogen)

Especially dangerous in snakes

Clinical signs:

- Anorexia
- Weight loss
- Vomiting
- Mucoid/hemorrhagic diarrhea
- Death

Transmission:

- Direct contact with cyst form

Susceptibility:

- Highly susceptible: boas, colubrids, elapids, vipers, crotalids
- Resistant carriers: garter snakes, kingsnakes, box turtles, crocodiles, cobras

Pathology:

- Intestinal ulceration
- Caseous necrosis
- Hemorrhage
- Hepatic abscesses
- Multisystemic disease

Diagnosis:

- Trophozoites or cysts in fresh feces
- Tissue impressions
- Histology

Treatment:

- Metronidazole (drug of choice)
- Also: tetracycline, paromomycin

Important:
Turtles and snakes must not be housed together

Flagellates (e.g. Hexamita spp.)

- Urinary disease in chelonians
- Intestinal disease in snakes
- Often misidentified as Giardia

Treatment:

- Metronidazole
- Benzimidazoles (promising alternatives)

High-dose metronidazole → neurotoxicity in some species

Coccidia

Reported genera:

- Klossiella (kidney)
- Isospora (gallbladder, intestine)
- Eimeria (gallbladder)

Intranuclear coccidiosis (major tortoise pathogen)

- Especially in Old World tortoises
- Severe multisystemic disease
- High mortality

Clinical signs:

- Anorexia
- Lethargy
- Weight loss
- Diarrhea
- Respiratory distress
- Oral/GI ulcers
- Ascites
- Ocular/nasal discharge

Key features:

- Direct life cycle

- Rapid population expansion
- Oocysts highly resistant to desiccation

Control & Hygiene:

- Daily cleaning
- Immediate feces removal
- Remove food insects daily
- Strict environmental sanitation

Key Takeaways

- Endoparasites are extremely common in reptiles
- Captivity greatly increases infection risk
- Quarantine, hygiene, screening, and treatment are essential
- Some parasites are highly pathogenic and fatal
- Management is as important as medication

A limited number of ectoparasites are present on reptiles, except on wild and newly acquired ones. Mites are distributed worldwide, and most reptilian species can be affected. Decreased vitality and, in heavy infestations, death due to anemia or bacterial or viral infection may occur.
Skin of affected reptiles appears coarse, and dysecdysis is frequent. The common snake mite (*Ophionyssus natricis*) and lizard mite (*Hirstiella* spp) are generally < 1.5 mm (0.06 inch) long and are often found around the eyes and skin folds, which should be examined carefully
There are many methods of treatment; however, a permethrin is specifically licensed for use in reptiles, whereas ivermectin is also frequently effective in squamates.

Birds

Birds, particularly those with access to ground or in outdoor enclosures, are prone to various parasites.

Protozoal Parasites

Haemoproteus was previously documented with great frequency in imported *Cacatua* spp. *Leucocytozoon*, *Plasmodium*, and *Atoxoplasma* spp are all seen occasionally in various species, most commonly in raptors, canaries, and Columbiformes, and are currently not of major significance in psittacines. Atoxoplasmosis is still diagnosed in canaries.

Gastrointestinal Parasites

Giardiasis has been reported in many species of birds but is most commonly seen in cockatiels. Adult birds may be latent carriers. Transmission is presumably direct

(ingestion of infective cysts). Affected cockatiels occasionally exhibit feather pulling in the axillary and inner thigh regions, along with vocalization. A true causal relationship between giardiasis and these clinical signs has not been proved. Droppings of affected cockatiels may be voluminous and aerated (a “popcorn” appearance).

Diagnosis:
direct saline smear of fresh feces to detect motile trophozoite
ELISA test for *Giardia* spp antigen in feces

Treatment:
Metronidazole (20-25 mg/kg, PO, every 12-24 hours for 5-7 days)
Carnidazole (20-30 mg/kg/day, PO, for 1-2 days)

Trichomoniasis: A common protozoal disease (*Trichomonas* spp.) causing oral, crop, and systemic infections.

Intestinal Parasites: Roundworms are common in birds, especially in species with high contact with feces.

Common Endoparasites in Small Mammals

Rodents (Mice, Rats, Gerbils, Hamsters): Common infections include pinworms (*Aspiculuris tetraptera*, *Syphacia obvelata*), tapeworms (*Hymenolepis* spp.), and protozoa like *Entamoeba muris* and *Spironucleus muris*.

Tapeworms

Dwarf tapeworms are the most common **internal hamster parasite**; when contracted they live in the small intestine often without causing major issues. Caroline advises that large tapeworm burdens can cause internal blockages/constipation, which you would see as a reduction in stools or a swollen/discoloured abdomen or anus, and weight loss, which need to be dealt with promptly.

Pinworms

Mouse pinworms are less common that tapeworms and will live in part of the large intestine if your hamster becomes a host. The most common issue with pinworms is itching of the anus.

Rabbits:

Nematode, cestode, protozoan, microsporidian, and pentastomid parasites affect domesticated and wild rabbits, hares, and jackrabbits of the genera *Brachylagus*, *Lepus*, *Oryctolagus*, *Pentalagus*, and *Sylvilagus*. Some endoparasite infections are of limited or no significance, whereas others have potentially profound consequences.

Stomach nematodes *Graphidium strigosum* and *Obeliscoides cuniculi* are infrequently pathogenic but may cause gastritis and gastric mucosal thickening. Nematodes *Passalurus ambiguus*, *Protostrongylus* spp., *Trichostrongylus* spp., and *Trichuris* spp. are rarely associated with disease.

When the rabbit is an intermediate host for carnivore cestodes, the space-occupying effects of *Cysticercus pisiformis* and *Coenurus serialis* may have pathologic consequences.

Eimeria stiedai is a major cause of white-spotted liver in *O. cuniculus*, particularly in juveniles. Enteric coccidiosis is a noteworthy cause of unthriftiness in young animals, and frequently manifests as diarrhea with grossly appreciable multifocal off-white intestinal lesions. *O. cuniculus* is the natural host for the zoonotic microsporidian *Encephalitozoon cuniculi*. Infection may be acute and focused mainly on the kidneys, or it may follow a chronic disease course, frequently with neurologic lesions. A latent carrier status may also develop.

Guinea Pigs & Chinchillas:

Endoparasites in European guinea pigs primarily include the nematode *Paraspidodera uncinata*, coccidia like *Eimeria caviae*, and various protozoa, with surveys showing up to 31.7% prevalence. Infections often cause diarrhea, weight loss, or remain asymptomatic; treatment typically involves benzimidazoles or ivermectin, heavily relying on hygiene.