

Husbandry and Mortality Data on Malagasy Leaf-Tailed Geckos (*Uroplatus* sp.)

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Abstract

Leaf-tailed geckos of the genus *Uroplatus* are found only on the islands of Madagascar. There are 10 recognized species of *Uroplatus*: *U. fimbriatus*, *U. sikorae*, *U. lineatus*, *U. eburni*, *U. alluaudi*, *U. guentheri*, *U. phantasticus*, *U. malaheta*, *U. malama*, and *U. henkeli*. In the wild, *U. fimbriatus*, *U. sikorae*, and *U. phantasticus* are relatively abundant while the other species have localized distributions and are rare.³ According to the International Species Information System (ISIS) Reptile Abstract (December 1995), the captive North American population of *Uroplatus* consisted of 245 individuals representing six of the 10 species, with *U. henkeli*, *U. fimbriatus*, and *U. sikorae* the predominant captive species.¹ *Uroplatus* are nocturnal active feeders (versus ambush feeders). They rest in a vertical position with head facing downward and tail flattened. Stress responses include color changes, high-pitched vocalization, and dropping of the tail. Males can be distinguished from females by thick hemipenial bulges.²

Husbandry surveys and requests for medical records and necropsy reports were sent to 28 public institutions in North America that currently maintain or that have maintained *Uroplatus* sp. in the past. A 52% response rate was achieved and a total of 85 necropsy reports were reviewed. Health problems identified by keepers/curators included dehydration, reluctance to feed, anorexia, injuries to the rostrum due to aggressive feeding behavior, and dysecdysis with retained skin on digits. Keepers noted a high mortality rate in recently imported species and in hatchlings. Common medical problems identified by veterinarians included anorexia of unknown etiology, weakness, ocular disease, general unthriftiness, paresis, problems related to oviposition secondary to calcium and phosphorous imbalances, *Salmonella* sp. infections, and early neonatal death. The majority (80%) of respondents felt that medical problems were related to husbandry and nutrition. Diagnostic procedures included cloacal cultures, radiology, fecal examinations, and blood work.

Of the 32 necropsy reports which contained a final diagnosis, 19 (59%) of these diagnoses were infectious in nature and included septicemia, hepatitis, pneumonia, colitis, enteritis, inflammation of the hemipene, egg yolk coelomitis, cloacitis, oviductitis, nephritis, salpingitis, and ophthalmitis (Tables 1, 2, and 3). A majority (49%) of infections involved the gastrointestinal and/or reproductive system. Noninfectious diseases included renal and articular gout, nutritional osteodystrophy, cystic ovaries, hepatic fibrosis, impaction, and trauma. Mortality in hatchlings was attributed to premature utilization of yolk sac prior to pipping possibly related to incubation humidity and temperature; congenital defects including contracted limbs, scoliosis, and schistothorax; impaction from vermiculite ingestion; and ocular infections. Gastrointestinal parasites were identified as pathological agents in several cases and protozoal flagellates and unidentified amoeba were implicated. Although *Coccidia* was a frequent finding on fecal exams, no pathology was attributed to their presence. Little is known about the distribution, natural history, and diseases of *Uroplatus* sp. in the wild. Captive husbandry and medical management of these animals could be enhanced by applied research in this area.

Table 1. Most common findings in 41 necropsy reports from adult leaf-tailed geckos

Category	Finding	Percent (occurrence) ^a
Infectious	Colitis/enteritis	29.3 (12/41)
	Egg yolk coelomitis/salpingitis/oophritis	21.4 (6/28) of all females
	Balantitis/hemipenal prolapse and infection	15.3 (2/13) of all males
	Hepatitis	17 (7/41)
	Bacterial pneumonia	14.6 (6/41)
	Septicemia	7.3 (3/41)
Metabolic nutritional	Hepatic lipidosis	14.6 (6/41)
	Articular and/or visceral gout	14.6 (6/41)
	Metabolic bone disease	4.8 (2/41)
	Inanition	7.3 (3/41)
Other	Normal tissues	14.6 (6/41)
	Traumatic	4.8 (2/41)
	Mechanical: impaction	7.3 (3/41)
	Degenerative: hepatic fibrosis, cirrhosis	4.8 (2/41)
	Neoplastic	2.4 (1/41)

^aPercentages do not equal 100% because more than one lesion could be reported per animal.

Table 2. Histopathological diagnosis in 32 adult leaf-tailed geckos

Category	Percent (occurrence)
Infectious	59 (19/32)
Metabolic/Nutritional	15.6 (5/32)
Trauma/Impaction	9.4 (3/32)

Degenerative	6.2 (2/32)
Neoplastic	3.1 (1/32)
Normal Tissue	3.1 (1/32)

Table 3. Specific problems found in leaf-tailed geckos at necropsy

Tissue	Disease
Liver	Hepatitis, lipidosis, granulomas, melanomacrophagic melanosis, biliary trematodiasis, microfilariae, hydropic degeneration, hepatocellular degeneration, cirrhosis, fibrosis, lipofuscinosis
Adipose	Steatitis, atrophy, cellulitis
Eye	Cataract, progressive corneal opacities associated with keratitis and subspectacular abscessation, ophthalmitis, iridocyclitis, and ulcerative keratitis
GI	Enteritis, colitis, peritonitis, foreign body impaction, colibacillosis, mycobacteriosis
Kidney	Visceral gout, nephritis, ureteritis, acute tubular necrosis, lipofuscinosis
Integument	Cutaneous melanosis
Musculoskeletal	Articular gout, myositis, osteomyelitis, osteopenia, osteodystrophy, fracture
Reproductive	Balantitis, egg yolk coelomitis, oviductitis, oophoritis, salpingitis, abscessed musk glands, cystic ovaries, xanthogranulomas
Cardiovascular	Epicarditis, visceral gout, xanthoma, myocarditis
Spleen	Splenitis, splenic necrosis, hemorrhagic splenopathy
Pulmonary	Bacterial pneumonia, parasitic pneumonia, thromboembolic pneumonia, tracheobronchitis, xanthogranulomas
Brain	Xanthogranulomas
Other	Septicemia, inanition, intestinal obstruction

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