

Reptile patients have many unique qualities that are important to understand. This Power Page discusses the housing needs, nutritional requirements, restraint techniques, and diseases in various reptiles.

Housing

- Housing requirements differ by species, depending on biology and natural habitat
- **Enclosures** made of synthetic nonporous material, sealed wood, plexiglass
- **Vertical** for **arboreal species**, **horizontal** for **terrestrial species**
- **Larger** enclosures are better
 - Consider adult size for the species
- Monitor **temperature** closely
 - Diurnal **temperature range** (tropical and desert lizards) **85°F-95°F**,
 - Provide **basking** light reaching maximum temperature of **100°F-105°F**
 - Temperature monitoring is important to avoid thermal burns and achieve optimum temperature ranges
- Recommended **humidity** for tropical species **80-90%**, desert species require **30-50%**
- **UVB** lighting is necessary for **vitamin D synthesis** and **calcium** absorption
- **Substrates**: newspaper, artificial turf (sturdy, good quality), recycled paper products, aspen bedding, cypress, mulch, ornamental bark chips

Nutrition: Unique for Each Species

Herbivores (Lizards)

- **Grasses, leaves, vegetables and fruit.**
- Feed diet with **moderate to high fiber** content and **moderate to low fat and protein.**
- **Alfalfa** should be part of diet to provide **protein source**, should be fed in moderation.
- **Don't feed** dog and cat food.
- **Avoid parsley, spinach and chives** (oxalic acid may bind calcium and **reduce calcium level**).

Carnivores (Lizards, Snakes)

- **Prey, small mammals, birds or other reptiles**
- **High protein diet with moderate fat and low fiber**
- **Immature rodents** should be coated with a **calcium supplement**
 - Increase calcium intake
- **Avoid** feeding live prey, may cause injury to reptile

Insectivores (Lizards)

- **Crickets, mealworms and waxworms**
- **Insects must be fed a nutrient rich diet** for up to 2 days before being offered to the reptile
 - **Gut loading**
 - **Insects do not provide enough nutrition** without gut loading

Omnivores (Lizards)

- **Plant and prey items**
- **Combination of food items for herbivores, carnivores and insectivores**
- **Water:** depending on the species water may be offered in a dish, misting or dripping system

Handling/Restraint

Lizards

- Lizards may **bite**; restrain **head first**.
- Secure the head by placing the **index finger and thumb around base of mandible** (dominant hand). Use free hand to **hold rear legs and tail**.
- **Do not grab the tail.** Some lizards can lose the distal part of their tail as a defense mechanism (**this is called tail autotomy**).
- **Calming trick:** some species will calm down when **both eyes are covered** (use **cotton balls or gauze**) and **wrap around head** with bandaging material. This technique produces **vagal stimulation** resulting in a calming effect.
- **Venipuncture sites:** **ventral coccygeal (tail) vein, jugular vein, ventral abdominal vein.**

Chelonians (Turtles & Tortoises)

- **Nonaggressive chelonians:** safe handling by **grasping both sides of shell**
- **Restrain head** by grasping **base of skull** at the **mandible** with index finger and thumb. Use gentle traction to **extend head and neck**. **Excessive pressure may lead to injury** of cervical spine.
- Seek **professional training** for tips to handle **aggressive species** (e.g. freshwater snapping turtles and marine turtles).
- Venipuncture sites: **jugular vein**, **subcarapacial venous sinus** (just above head and underneath shell at midline), **dorsal coccygeal vein** (dorsal midline of tail)

Snakes

- Main defenses: bites and constriction
- Restrain by grasping head at level of mandible, support body with the other hand.
- There needs to be an additional handler for every 3-4 feet of snake to support the snake's spine.
- Never drape snakes over a person's neck.
- Only trained professionals should handle venomous snakes.

Toxins

Do not administer ivermectin to **chelonians, indigo snakes** or **debilitated snakes**. Ivermectin is **extremely toxic** to **turtles** and **tortoises**. Toxicity leads to neurologic defects and often death.

Diseases

Lizards

- **Metabolic Bone Disease**
 - Malnutrition and lack of exposure to **UVB light** (either from **sunlight** or **artificial bulbs**) leads to **decreased synthesis of vitamin D3**.
 - **Vitamin D3** is essential for **calcium absorption** and **metabolism**.
 - Low levels of vitamin D3 **impair calcium absorption** and **metabolism**.
 - Patients with **metabolic bone disease** may exhibit the following **clinical signs: weakness, lethargy, stunted growth, muscle fasciculations, abnormal gait or posture, fractures, soft mandible (rubber jaw)**.
 - Without **treatment** and **correct husbandry** this condition is **fatal**.

Lizards (Cont.)

- **Renal Disease**
- **Urinary Calculi (Bladder Stones)**
- **Gout:** elevated levels of uric acid in the blood lead to insoluble uric acid crystals in tissues
- **Parasites**
 - **Ticks, mites**
 - **Trematodes (flukes), cestodes (tapeworm), nematodes (roundworm)**
 - **Oxyurids:** thought to be a **commensal** in most species. Often present in low numbers without causing disease. **Treatment** only if associated with **clinical disease**.
 - **Entamoeba invadens (protozoal):** may cause **severe gastrointestinal disease**
 - **Cryptosporidium spp (protozoal):** when associated with disease, **does not respond to therapy and fatal**.
 - **Blood parasites:** usually **do not cause disease, rarely anemia** in some patients.
- **Bacterial:** **Gram-negative** bacteria most common, occasionally **gram-positive**.
- **Fungal:** localized and **systemic infections** have been associated with ***Aspergillus spp.*, *Candida spp.*, *Cryptococcus spp.* and *Chrysosporium spp.***
- **Zoonotic Diseases**
 - **Salmonella**
 - **Normal inhabitant** of reptile **gut flora**, intermittently **shed in feces**.
 - **No successful technique to eliminate shedding of these organisms**.
 - May result in **severe gastrointestinal disease in humans**.
 - Infection often associated with **poor husbandry &/or poor hygiene**.
 - **Young children and immune compromised individuals most susceptible**.
- **Viral**
 - **Adenovirus:** nonspecific clinical signs (**neurologic, poor body condition, death**).
 - **Transmission** thought to be **fecal oral route**. **No treatment** currently available.
 - **West Nile Virus:** recently identified in **crocodiles**, unsure role of reptiles in route of transmission.
 - **Herpes Virus:** may cause **wart-like growths on skin**, associated with **stomatitis, disease in the liver, lung or spleen**. **No treatment**.

Snakes

- **Malnutrition:** often due to **inappropriate food** or **frequency** of feeding.
- **Obesity:** too much feeding and lack of exercise.
- **Parasitic**
 - **Ticks, snake mites** (may lead to **anemia**).
 - **Cryptosporidium serpentis** (protozoal), either **asymptomatic carrier** or **gastroenteritis** (weight loss, regurgitation). **Antibiotics** reduce shedding.
 - **Coccidian parasites** (*Eimeria* spp., *Isospora* spp., *Caryospora* spp). Treatment: **sulfonamides**.
 - **Entamoeba invadens** (protozoal), **fecal-oral** transmission. Clinical signs: **hemorrhagic diarrhea, dehydration, muscle wasting, death**.
- **Bacterial:** most infections associated with **opportunistic gram-negative bacteria**, sometimes **gram-positive** bacteria.
- **Fungal dermatitis:** often associated with **poor husbandry**.
- **Viral**
 - **Inclusion Body Disease:** suspect cause **retrovirus**. Causes **neurologic disease, weight loss, abnormal shedding, and secondary infections**. **No treatment**. Transmission suspected association with **snake mites**.
 - **Herpes virus:** isolated from lesions in **liver, pancreas, kidney and adrenal cortex**. **No treatment**.
 - **Adenovirus:** associated with **liver damage**.
 - **Paramyxovirus:** transmission through contact with **contaminated respiratory secretions**. Clinical signs **nasal discharge, pus and blood tinged discharge from glottis, neurologic disease**. **No treatment**.
- **Cancer**
- **Zoonotic diseases**
 - **Salmonellosis**
 - **Campylobacter spp.:** bacteria naturally **harbored by snakes**. May cause disease in humans. **Wear gloves** when **cleaning cages**, and clean with **sodium hypochlorite**.
 - **Common Snake Mite:** can **bite people** (leading to **dermatitis**), does **not stay on humans**.

Chelonians

- **Hypovitaminosis A:** vitamin A deficiency. Many clinical signs associated with **degeneration of epithelial surfaces.**
- **Metabolic Bone Disease**
- **Gout:** Increased production of uric acid results from **ingestion of excessive protein.**
 - Decreased excretion of uric acid may be due to **dehydration** or **kidney disease.**
- **Hepatic lipidosis (fatty liver)**
 - **Normal physiologic process** during **hibernation** or during **egg formation.**
 - **Lipidosis** can also be a **pathologic process** in **obese** or **anorexic chelonians.**
 - Clinical signs: **obesity, lethargy, weight loss, infertility, abnormal feces, anorexia.**
- **Accelerated Growth or Early Maturity**
 - Occurs in **juveniles** or **hatchlings** fed **high protein diets.**
 - Associated with **renal disease, skeletal deformities** and **high mortality.**
- **Zoonotic Diseases**
 - ***Salmonella* spp., *Mycobacterium* spp., *Campylobacter* spp, *Chlamydia* spp., *Yersinia* spp, *Vibrio* spp., *Aeromonas* spp. and *Escherichia coli.***

References

- Mitchell, M.A. and T.N. Tully. Exotic Pet Practice. 2009, Saunders, St Louis MO. pp. 136-249.