

Reptile Safety and Transmissible Diseases from Reptiles

Our topics for this week are:

- Keeping reptiles safe when handling
- Zoonotic diseases of reptiles
- Sanitary practices when handling reptiles

Reptile Safety

The international illegal wildlife trade is more lucrative than drug smuggling, because of easier bribery of wildlife and customs officials in many countries than drug enforcement officials and the ease of altering of documents, such as faking captive breeding. The risks of being caught are low and existing fines are insufficient deterrents. The preferred animals for smuggling are reptiles since most are small, resilient, and require infrequent access to food and water. Rare species command very high prices.

Pet reptiles have an extraordinary ability to escape, and many that do not will be abandoned by their owners. Several states, particularly in the southern U.S. are trying to deal with the problem of exotic reptiles escaping or being abandoned and released into the environment. For example, in south Florida 26% of all fish, reptiles, birds, and mammals are exotic. Feral Burmese and reticulated pythons are particularly a problem. They are ambush predators that have a bad disposition and survive well in environments like the cypress swamps of southern Florida.

In 2012, the U.S. Fish and Wildlife Service listed the Burmese python, yellow anaconda, and Northern and Southern African pythons as injurious invasive species under the Lacey Act. This makes it a federal crime to import these snakes or transport them across state lines. Thousands of pythons, a non-indigenous species, have been removed from the Everglades National Park, but they remain prevalent.

Chelonian Safety - Turtles, Terrapins, Tortoises

Aquatic chelonians have smaller *plastrons* (lower portion of the shell) compared to terrestrial species and are often unable to completely withdraw their head, neck, and limbs into shell. To compensate for this, aquatic chelonians, such as soft shell turtles and snapping turtles, are aggressive and capable of inflicting severe bites.

Squamata (Scaly Reptiles) Safety: Snakes and Lizards

Snakes

Snakes should not be handled within 24-48 hours after feeding. Otherwise, it may regurgitate as a defensive tactic and become malnourished.

Live food (mice/rats) should not be released in a box with a snake because the snake may be injured, especially if it is in the process of shedding its skin. Feeding of live prey to snakes is illegal in some European countries. Rodents as food should be humanely pre-killed and from captive colonies that are disease and parasite-free. Snakes should also not be fed in groups since

competition for the food may cause injuries. Tongs should be used to provide the food to keep human scent separated from the snake's thoughts of food.

Young snakes shed their skin about once per month. The frequency decreases with growth, and adult snakes shed about twice per year. Snakes should not be handled when their eyes are clouded by shedding skin. They do not eat, cannot see well, and will become agitated during shedding. Shedding in snakes begins by stretching the mouth open and typically the entire body from front to back will shed in one piece. The new skin of snakes just following shedding is fragile and can be damaged.

Handlers should never restrain a snake by its tail since there is risk of muscular injury to the snake. Ball pythons and corn snakes are bred strictly for unusual colors by some breeders, using inbreeding and subsequently weakening the species. Snake diets should also be assessed since brittle bones from malnutrition are common and require gentle handling to avoid fractures.

Lizards

Before handling lizards, handlers should be familiar with their species, their temperament, and diet. ***Metabolic bone disease*** (demineralized bones that fracture easily) caused by poor diets often occurs in pet lizards. In addition, most lizards have explosively quick movements that can put them in danger of being dropped during handling. Proper handling restraint and handling over tables can minimize the risk of the lizard being dropped and possibly breaking bones from the fall.

Live insect prey should not be left in the feeding enclosure. If the lizard loses interest, the insects may cause eye damage to the lizard by feeding on eye moisture.

Key Zoonoses

(**Note:** Apparently ill animals should be handled by veterinary professionals or under their supervision. Precautionary measures against zoonoses from sick animals are more involved than those required when handling apparently healthy animals and vary widely. The discussion here is directed primarily at handling apparently healthy animals.)

The risks of zoonoses from wild-caught reptiles are much greater than from captive-bred reptiles. Other than bites and claw wounds, the only zoonotic disease of great significance from captive-bred reptiles is salmonellosis. There is a high degree of risk of acquiring salmonellosis from reptiles, including those that appear healthy. The morbidity and mortality of salmonellosis can be high, particularly in humans who are young, elderly, or otherwise have impairment of their immunity. Reptiles captured in the wild, particularly if the reptile is an exotic species, can have many other zoonoses.

Reptiles can carry salmonella bacteria (*Salmonella enteritidis*) in their digestive tract without symptoms. Infected humans can have diarrhea, vomiting, and fever if confined to the gastrointestinal system. Invasion of the blood stream may occur and result in sepsis, abscesses in various organs, and meningitis.

Children, elderly, and immunocompromized people are at higher risk of infection.

Children less than 5-years-old should not handle reptiles, and households with children under 1-year-old should not keep reptiles in the house. The U.S. Centers for Disease Control and Prevention estimate that more than 70,000 people in the U.S. acquire salmonellosis from reptiles each year. Pet reptiles may be the cause for 5-11% of human salmonellosis in the U.S.

Transmission is by direct contact with the reptile or objects or surfaces which they have touched. Salmonella can remain infective on objects and surfaces for days and even longer in wet wooden enclosures. The risk of salmonellosis is greatest with aquatic reptiles that defecate in water. Federal regulations ban the sale of turtles with shells less than four inches in length due to the risk of transmitting salmonellosis, especially to small children.

Edwardseilosis is a disease of handlers' skin or digestive tract that can be acquired by exposure to reptile feces or feces contaminated water. Carrier reptiles can appear normal. Campylobacteriosis can be transmitted to humans from reptiles, but there is no evidence it can be transmitted to healthy adults with a normal immune system.

Pentastomiasis (tongue worms) is a disease caused by respiratory worms of large exotic snakes. The worms pass eggs in snake feces and respiratory secretions which, if ingested by humans, will penetrate the intestines, become encysted and calcify. Eating under prepared snake meat can also be a source of infection. The incidence is primarily in wild caught snakes in foreign countries.

Sanitary Practices

Reptile enclosures should not be located in or near human food preparation or storage areas. Enclosures should be spot cleaned daily with a thorough cleaning on a regularly scheduled basis. Cleaning should include disinfection with 5% bleach (sodium hypochlorite) followed by thorough rinsing before reintroducing the animal. Phenol or pine scent disinfectants should be avoided. All cleaning equipment such as sponges, buckets, and sinks should be cleaned and disinfected. Cleaning reptile enclosures should not involve soaking in bathtubs, basins, or laundry sinks. When cleaning reptile enclosures, gloves and protective glasses or goggles should be worn. Reptiles should not be allowed to roam freely in a home or living area, and they should be kept out of food preparation areas.

A handler of reptiles should wear appropriate dress to protect against skin contamination with skin scales or saliva, urine, and other body secretions. Reptiles should never be fed by hand nor allowed near a human's face. Hands should be washed after handling any reptile or objects touched by the reptile. Handlers should not eat or drink while handling reptiles. Young children, the elderly, pregnant women, and people with immunosuppressive diseases or on immunosuppressive medications should not handle reptiles due to risk of salmonellosis.

Now, let's recap the key points to remember from today's episode:

- Live food should not be fed to reptiles for their own safety
- Snakes should be fed individually in enclosures reserved just for feeding
- Salmonellosis is a significant risk when handling reptiles, particularly those that are aquatic or semi-aquatic
- Eye protection and gloves should be worn when cleaning reptile enclosures

Abby says it is time to wrap up this episode.

More information on animal handling is available in my book, *Animal Handling and Physical Restraint* published by CRC Press. It is also available on Amazon and from many other fine book supply sources.

Don't forget serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.