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## Feeding Insectivorous Reptiles and Amphibians <sup>12/25</sup>

Thomas H. Boyer, DVM, DABVP-Reptile & Amphibian Practice

9888-F Carmel Mountain Road, San Diego, CA 92129

858-484-3490 [www.pethospitalpq.com](http://www.pethospitalpq.com) [www.facebook.com/pethospitalpq](http://www.facebook.com/pethospitalpq)

### What is an Insectivore?

An insectivore is an animal whose diet consists primarily of insects, but they can also eat spiders, scorpions, crustaceans and worms. There are many species of insectivorous lizards: bearded dragons, chameleons, geckos, tegus, monitors, skinks, and water dragons, among others, fall into this group. Amphibians and some turtles also eat insects, as do certain species of snakes.

### Preparing Insects for Feeding

While rich in protein and fat, insects are naturally deficient in calcium and vitamins A, B, D, and E, and are not a nutritionally balanced reptile diet without supplementation. Reptiles and amphibians that eat only non-supplemented insects will not get enough calcium in their diet. When dietary calcium level is low, the body tries to compensate by taking calcium from the bones. The animal's bones will subsequently become weaker and more susceptible to fractures. The animal becomes painful, moves and eats less, and eventually stops eating altogether. Calcium deficiency, also called metabolic bone disease, or nutritional secondary hyperparathyroidism, as well as Vitamin A deficiency, are entirely avoidable diseases in insectivores. Gut loading insects, dusting with calcium and multivitamins, and offering a wide variety of prey insects will ensure that your reptile/amphibian receives the proper nutrition and avoids these all too common diseases.

- **Gut loading insects** – Insects are often in poor nutritional condition at purchase. Feeding starved insects to your reptile will lead to nutritional deficiencies over time. Gut loading is feeding insects a calcium and multivitamin enriched diet to change the nutritional profile of the insect. By gut loading the insect for several days prior to being fed, their digestive tract becomes filled with calcium and vitamins that are then passed on to the reptile. We recommend Mazuri or Flukers Hi-Calcium Gut Loading Diet (for crickets), Flukers's Hi-Calcium Mealworm diet (for mealworms & superworms) and Flukers High-Calcium Dubia Roach Diet (for Dubias) as the sole source of food for prey insects. The term "gut loading" refers to loading the gut of the insect with important nutrients – it does not simply mean feeding the insect something prior to offering it to a reptile. In fact, fruits, vegetables, dog or bird foods, and even calcium fortified gel water cubes, are all ineffective at increasing the calcium and multivitamin content of the insect.

Do not offer other foods to the insects as they will eat the tastier alternatives preferentially over the high calcium gut loading diet, which probably tastes like chalk. Water cubes only became popular because crickets drown in standing water, they offer no nutrition and should be avoided. Instead of gel water cubes, offer water, either as water-soaked cotton balls (for crickets and roaches), or damp paper towels (for mealworms or super worms) in a small container, such as a small bowl, or plastic lid. Not all commercially available gut loading diets are the same, and some contain no more calcium than unfortified diets, despite contrary label claims, hence our recommendation on certain brands.

- **Dust with Calcium** – Even after gut loading, insects may still be deficient in calcium. All insects should be dusted with calcium carbonate powder at every feeding, such as Repashy SuperCal Lo D, for indoor animals, or Repashy SuperCal No D, for outdoor animals. We recommend these products because they have safer lower levels of vitamin D. To dust the insects, place them in a plastic bag or container with calcium powder and gently shake. The dusted insects should be offered right away as they will groom off the calcium after several hours. Twice a month one can dust with multivitamins (make sure there is vitamin A on the label) instead of the Ca. Ultraviolet lights, or exposure to direct sunlight (not filtered through glass or plastic), are also recommended. Never dust with bee pollen as it is primarily sugar and not indicated.
- **Feed a wide variety of insects** - In the wild, insectivores consume hundreds of different insect species, not just a few. Store-bought or internet purchased insects such as crickets, waxworms, mealworms, super mealworms, Dubia cockroaches, silkworms, black soldier fly larvae (Phoenix worms), tomato horn worms, bean beetles, fruit flies, springtails, and wood lice, as well as wild-caught, seasonally available insects such as flies, moths, cicadas, grasshoppers, katydids, honey bees with stingers removed, cockroaches, and crustaceans, such as pill bugs. Insects are easily collected at night around lights, with funnel traps, and pill bugs accumulate in damp soil under a piece of shaded plywood. Pesticides are rarely ever a problem, but if the environment was just treated with a pesticide/insecticide, or the insects appear to be dying, avoid using these bugs as a food source. Fireflies are toxic and should never be fed. Larval insects are high in fat and should be less than half the insect total, except silkworms and tomato hornworms, which are lower in fat. In addition to insects, many reptiles can be trained to, or will naturally take, baby mice (1–2-day old pinkies), worms, slugs and small snails, which are excellent dietary supplements.

Sound nutrition is essential to the long-term health of your insectivore, whether reptile or amphibian. Make sure all purchased insects are properly gut loaded and dust all insects with calcium (or multivitamins twice a month) just before feeding. Provide a diverse variety of insects, both purchased and wild caught. Good nutrition is essential to ensure a healthier longer life. If you suspect your reptile or amphibian is already suffering from a calcium or vitamin A deficiency, seek veterinary care right away!