Kids Saving
The Rainforest
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KIDS SAVING THE RAINFOREST
Manuel Antonio, Costa Rica

KSTR MONTHLY NEWSLETTER

Animals in Rehabilitation Fall 2009
available for adoption!
You get to name the animal!
Go to www.kidssavingtherainforest.org for more info

This young male white face monkey was confiscated. 2 months in rehabilitation.

A young orphaned male squirrel monkey (titi monkey), 6 months in rehab center.

The parakeet below is an adult with a broken wing, 2 months at the rehab center.

A young male orphan two toed sloth, 3 months at the rehab center.

A young orphan porcupine, 1 month at the rehab center.

A young orphan male raccoon 2 months in rehab.

Read more about our animal adoption program on our website: kidssavingtherainforest.org!

Nutritional Disease in Wildlife and Pets

By Maria Pia Martin, DVM
KSTR Wildlife Vet

Recently, we received two agouti pacas who had been captive illegally in a house for a while. In Costa Rica, as in other places in the world, people hunt or keep agoutis for food. It is said that their meat is one of the best. However, this is illegal. Therefore, the Department of Natural Resources found them and they confiscated them. They were brought into the rescue center and examined. We found that they suffered from Nutritional Osteodystrophy.

This disease is very common with exotic pets too (especially reptiles). Due to lack of knowledge, owners give unbalanced diets to their pets, committing terrible mistakes and causing the animals to suffer.

Nutritional Osteodystrophy- **Etiology**

Nutritional osteodystrophy, or metabolic bone disease, is characterized by either failure to mineralize a growing skeleton, or demineralization of a mature skeleton. This condition is seen in wild animals that have been collected from the wild and held as pets. Nutritional osteodystrophy occurs primarily in animals that have been on a long-term diet deficient in calcium or containing excessively high concentrations of phosphorus. Osteodystrophy may also occur in reptiles when they have had insufficient dietary vitamin D3 and no exposure to the ultraviolet rays required to produce metabolically active vitamin D.

Ideally, most animal diets should contain a 2:1 ration of calcium to phosphorus. Lean beef meat contains a ratio of approximately 1:16 Ca:P, and beef heart contains approximately 1:38 Ca:P. Think of the green stuff as rich with calcium like: beet greens, beans, soybeans, mustard greens, dandelion leaves, broccoli, etc.

Clinical signs
Animals with nutritional osteodystrophy have soft, misshapen bones. They can have an abnormal posture, the mandible is pliable, the long bones, particularly the femurs, are often very swollen due to periosteal thickening around a thin, weakened cortex. The animal may have kyphosis, lordosis, scoliosis, or vertebral compression fractures. If spinal cord injury accompanies vertebral fracture, they will have rear limb paresis or paralysis. Every single bone is feasible to break.

Diagnosis
Nutritional osteodystrophy is diagnosed by visual inspection and palpation of the skeleton in conjunction with radiographic examination. Serum calcium and phosphorus concentrations are often normal. *(Continued on page 2)*

Some things you may not have known about Sloths

by Maria Pia Martin, DVM

The sloths are part of the Xenartha order which also includes anteaters and armadillos. This bizarre order is only found in Central and South America. They are different from all other animals in that they have an unusual lower back vertebrae and two vena cava (returns blood to the heart, the other mammals have only one).

Evolution
They are some of the most ancient mammals and have been on Earth for more than 60 million years ago. For example, they are so primitive that their reproductive tract and digestive tract open into a single chamber called cloaca, like birds and reptiles.

The Megatherium were 6 meters (20 foot) tall giant ground sloths.

Body
Sloths are mostly folivores (leaf-eaters). They have ten teeth on the upper jaw and eight on the lower jaw.

Sloths break down cellulose through a process of bacterial fermentation like deer, cows, howler monkeys, and manatees. A leaf diet poses another problem for sloths, such as low energy, and this requires a very large stomach (almost a third of body weight), yet sloths must stay light enough to move along tree branches without breaking them.

Sloths have another peculiar skeletal feature. While almost all other mammals consistently have seven neck vertebrae, two toed sloths have six to eight and three toed sloths have eight or nine. So sloths are able to rotate their heads an impressive 180°.

They have unusually low body temperatures and metabolic rates (24-33°C or 77-96°F) which burn less energy.

With their laziness they can spend up to 20 hours motionless, and most of it sleeping. Some scientists believe that by moving so slowly they avoid their biggest predators (eagle and jaguar).

Their hair is unique. It has corrugations and cracks that encourage the growth of algae and through a symbiotic relationship, the algae gains shelter and the sloth camouflage.

Senses
Their sense of sight and hearing is poor and it seems that their most effective is smell.

Behavior
They are middle size mammals, strictly arboreal, and spend most of their time hanging from the branches of trees; they even sleep, give birth and carry their young like this.
They are very clumsy on land but are great swimmers.
Sloths defecate once a week and this is the only time they come down to the floor.

Nutritional Disease in Wildlife and Pets
By Maria Pia Martin, DVM Continued from p. 1:

Treatment
Due to extensive bony deformity and the extensive time in a captive environment, some animals with osteodystrophy will not be suitable for release. When the lesions are mild, they are often treated with parenteral calcium and possibly also vitamin D3. The diet must be corrected to include a 2:1 ratio of calcium to phosphorus. Ultraviolet light should be provided through exposure to sun. Response to therapy should be monitored through radiographic examination every four to six weeks.

Saving Shells

By Janine Licare
Founder and Spokesperson KSTR

The art of shell collecting dates back thousands of years. Over time, shells have been used as currency, treasures and game pieces to different civilizations. In present times, shell collecting has led to the birth of conchologists, malacologists, among other words rarely used in the English language. The OCD reaction some might have towards picking up shells and storing them on their balcony or in vases in their living room is leading to a shortage in adequate sized homes for small sea creatures. Shells provide shelter to invertebrate animals with no mechanism of protection or self-defense. Every so often these creatures trade homes depending on how fast they out-grow their current homes. Those beautiful shells you keep on your shelves are actually the dead carcasses of sea creatures. When clams, oysters, starfish and mollusks die, their shells wash up on the beach with the tides and are taken as a shelter to those who do not have the mechanisms to create them themselves.

The art of shell collecting and the mortgage crisis in the US are two very distinct events that don't run too far from home. They share more similarities than Palin and McCain and resemble an issue neither one of them could solve. The economic crisis that has been affecting millions of families in the US for the past year, causing people to lose their homes, is just as much an issue for hermit crabs and similar creatures. It has been suggested that hermit crabs are on the verge of becoming in danger of extinction due to the destruction and loss of their habitats, stemmed by shell collectors and the loss of their homes. Shells are made by the excretion of calcium around the animal. Almost all genera of hermit crabs use or "wear" empty marine gastropod shells throughout their lifespan in order to have a strong shell to withdraw into if attacked by a predator. Each individual hermit crab is forced to find another gastropod shell on a regular basis; whenever it grows too large for the one it is currently using. Since suitable intact gastropod shells are a limited resource, there is frequently a heavy competition among hermit crabs for the best available shells. The availability of empty shells depends on the relative abundance of gastropods in the right range of sizes, as well as the frequency with which shells are collected by humans in the region.

Shells are indispensable to the survival of certain species because most species of hermit crabs have long soft abdomens which naturally have no form of self-protection. They obtain protection by the adaptation of carrying around a salvaged empty seashell into which the whole crab's body can retract. As the hermit crab grows in size, it has to find a larger shell and abandon the previous one. The shells used by hermit crabs originally come from mollusks which possess a fleshy mantle. They use this mantle to produce a shell by absorbing sodium carbonate and other ingredients from their habitat and food and secreting it in an orderly fashion to form a shell house. It is not terrible to collect shells, just do it in moderation. More and more shells are created as new animals are created to be used as protection, but nonetheless, you never know if the shell you pick up today could have been the perfect home for another creature tomorrow.

THANK YOU!!! To all those involved in the powerful rainforest saving projects we've worked on in the past and to all of those who are working together on our new projects we sincerely thank you!