

Heteromys anomalus (Trinidad Spiny Pocket Mouse)

Family: Heteromyidae (Pocket Mice and Kangaroo Rats)

Order: Rodentia (Rodents)

Class: Mammalia (Mammals)



Fig. 1. Trinidad spiny pocket mouse, *Heteromys anomalus*.

[<http://www.mammalogy.org/heteromys-anomalus-086>, downloaded 1 November 2012]

TRAITS. The Trinidad spiny pocket mouse (or Caribbean spiny pocket mouse) has light brown fur on its back with streaks of thin hairs of a darker-shaded brown along the spinal column (Anderson & Timm, 2006). This is how part of the name spiny pocket mouse is derived. Their underbellies are an even lighter shade of brown (Fig. 1) and their long tails (almost longer than their body length) also have these contrasting light-brown colours. The adults in this species have long, slender bodies with large, round ears; large hind legs and feet (Anderson & Timm, 2006). *H. anomalus* are characterized by long, tough skulls and are one of the biggest types of pocket mouse in existence (Anderson 1999). Anderson (1999) explained that the shapes of their skulls change over time as the mice grow, even past the point of reaching adult age. He also explained that the males and females differ in shapes and sizes (Anderson, 1999). Their bodies range from 3-12 inches in length (Pioneer, 2012) or approximately 275 mm.

ECOLOGY. Apart from Trinidad, this species is also found in South America (Anderson & Timm, 2006) in countries such as Colombia, Venezuela and Margarita as studied by Anderson (1999). They are usually located in habitats such as mostly dry and sometimes wet forests as well as farm lands near the coastline of the Caribbean (Anderson, 1999). Anderson (1999) speculated that altitude and climatic conditions appear to influence the distribution of these mice in different habitats. This coincides with the research article by Anderson et al. (2002) which stated that the mice tend to be at areas of low altitudes; below approximately 1500 m above sea level.

SOCIAL ORGANIZATION. These mice are usually found existing in large numbers together (Encyclopedia of Life, 2011). In order to evaluate the social organization of these mice, the home area must be observed. Females were observed to travel longer distances in the non-rainy season as opposed to the rainy season (Genoways & Brown, 1993, 610-611). The size of the female home ranges also spanned a larger area in the dry season compared to the rainy season. The males exhibited the opposite behaviour in that their home range covered a larger area in the rainy season than in the dry season. However, males and females had the same size of home ranges on average (Genoways & Brown, 1993, 610-611). Data has shown that these rodents do not necessarily form a strict social organization since they tolerated coexistence with other individuals of the same species within the same habitat (Genoways & Brown, 1993, 610-611). One can therefore assume that these mice are social organisms to some extent but it was observed that increased levels of rainfall decreased this level of tolerance of other individuals (Genoways & Brown, 1993, 611).

ACTIVITY. This type of mouse is nocturnal, meaning that it is most active at night, and is terrestrial, meaning that they live on land (Encyclopedia of Life, 2011). These mice have the ability to climb small trees and bushes with their long legs in a brisk manner. They build burrow systems underground in which they create their nests (Encyclopedia of Life, 2011). These nests are built underground as a means for a cool territory in regions that have hot climates. Like other species of pocket mice, most of the activity that takes place above ground is usually for foraging which takes place at night.

FORAGING BEHAVIOUR. These mice were often found nesting close to areas inhabited by humans and in cultivated lands with rice and corn (Anderson, 1999). Their diet consists mainly of seeds, fruits, grains and other crops (Encyclopedia of Life, 2011) which are made convenient by living in habitats near farm lands as previously stated. These mice are known for putting food in their cheeks until their cheeks become filled up with the food to take it to another location in which it can be stored (Anderson, 1999). This food that has been stored can be used in times of food shortages. They are able to pack their cheeks double the size of their heads (Anderson 1999). This is why they are called pocket mice, because they use their cheeks as large pouches in which to store their food while foraging. While these mice feed, they spread the seeds about in their surroundings when they are eating (Pioneer, 2012). A key feature which allows these animals to survive in dry localities is that they obtain water from the moisture within the seeds while they are eating (Pioneer, 2012). Their long claws on their front legs are adapted for quickly finding seeds deep within soils and for digging up burrows.

COMMUNICATION. One study showed that before contact is made between two individuals, they gradually come closer to one another with their eyes slightly closed and their ears bent

backwards (Genoways & Brown, 1993, 576). Contact can then be made either by one individual lowering its head beneath the front paws of the other or by one individual crawling below the other (Genoways & Brown, 1993, 576). Another way in which contact can be made is when both of the animals investigate the other's body. They end up turning around in a circle while doing this investigation. They usually inspect the other's body for areas of moisture, such as from glands, to receive information about the other individual (Genoways & Brown, 1993, 576).

Aggressive or violent behaviour occurs when one individual rushes the other to assault it with the front paws (Genoways & Brown, 1993, 577). If the attacked opponent runs away, the first may chase it and continue to attack it by biting its rear end. If the opponent does not run away, they both may engage in a fight where they hold onto each other and scrape, bite or kick at each other (Genoways & Brown, 1993, 577). Fights like these usually last only for a short amount of time. These fights are known as locked-fighting (Genoways & Brown, 1993, 577). Sand-kicking is another threatening behaviour which occurs when one individual kicks sand in the face of the other (Genoways & Brown, 1993, 577).

An act of submission is exhibited by a arched back of one individual while its ears are bent backwards and its eyes are slightly closed (Genoways & Brown, 1993, 577). These behaviours all appear to generally occur in the *Heteromys* species. Studies in laboratories have shown that *Heteromys* have poor vision but they are still able to recognize the presence of another individual through sight when it is nearby (Genoways & Brown, 1993, 577). Olfactory communication (through scents or smells), is very crucial in *Heteromys anomalus*. Information for olfactory receptors can arise from behaviours such as sand-bathing, dragging of the rear on vegetation and urination (Genoways & Brown, 1993, 579). The animals drag their rear and/or urinate in their burrows. These scents are picked up by other individuals. A form of auditory communication involves the sound of constant foot-drumming with the hind legs from one individual that is aggravated (Genoways & Brown, 1993, 580).

SEXUAL BEHAVIOUR. Breeding has been observed in both adult males and females in the month of March, in the northern mountains of Venezuela (Rood & Test, 1968). Preference was made of the dry season for the mating period. Sexual behaviour is usually initiated when the male pocket mouse trails behind the female and continuously smells the chemicals she leaves behind (Genoways & Brown, 1993, 576). The female leaves these chemicals by dragging its rear (known as perineal drags) and sand-bathing while the male is sniffing (Genoways & Brown, 1993, 576). Eventually, the female stops in her position and lifts her rear end up for the male to climb on top of her. When he mounts, he pets her rear with his forelimbs then grabs onto her. Sometimes, the female may start the mating process by speeding towards the male and giving him a blow with her front legs, then assuming the position for him to mount her (Genoways & Brown, 1993, 577). These animals, in theory, exhibit monogamous relationships (Genoways & Brown, 1993, 624).

JUVENILE BEHAVIOUR. A common behaviour that the young heteromyids display is that they may put the wrong objects in the pouches of their cheeks. They occasionally put in objects such as stones, twigs or faeces instead of seeds or other food items (Genoways & Brown, 1993, 544).

ANTIPREDATOR BEHAVIOUR. This species of mice has long legs for evading predators. These legs aid in escape by giving the mice the ability to jump away quickly (Pioneer, 2012).

The Trinidad spiny pocket mice are hunted by a number of animals including the indigenous snakes of Trinidad and Tobago (Pioneer, 2012). Foot-drumming (Genoways & Brown, 1993, 577), as previously mentioned, is also a means of deterring predators as it demonstrates that the pocket mouse is aggravated. This may possibly in turn scare off a predator. Ear size and hind leg size are associated with anti-predator adaptations as bigger sizes would seem to be more advantageous to an individual in natural selection (Genoways & Brown, 1993, 301).

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