Cuniculus paca (Lowland Paca or Lappe)

Family: Cuniculidae (Pacas)
Order: Rodentia (Rodents)
Class: Mammalia (Mammals)

Fig. 1. Lappe, *Cuniculus paca.*

[http://shutterbud.smugmug.com/Zoos/San-Diego-Zoos-Safari-Park/Animal-Encounters-and-Goodwill/4C2I3207/1002055638_QCQCi-L.jpg, downloaded 18 November 2011]

TRAITS. The lowland paca is also known as the spotted paca. Throughout its range it is known as the lowland paca but in a few territories it is known by other local names; gibnut in Belize, labba in Guyana and locally in Trinidad as lappe. This shy and rarely seen animal is the second largest rodent in the world after the Capybara (*Hydrochoerus hydrochaeris*) (Ramdial, 1978). The lowland paca is similar in size to a raccoon but is more robust or heavily built. Adults can grow to 24-31 inches long and they typically weigh in at between 6-12 kg (Jrank.org, 2011). It is has a coarse dark brown to blackish brown coat that lacks underfur and has a very small tail. The lowland paca typically has four to five horizontal rows of white spots on its sides and also features a yellowish-white underbelly (Ramdial, 1978) (Fig. 1). The lowland paca has a forward sloping back and possesses well developed hind quarters. They have thick strong legs that are well adapted for terrestrial movement (Wikipedia, 2011). The fore-feet feature four digits while the hind feet have five with the first and fifth digits being reduced as evidenced in tracks of the animal (Fig. 2). The functional digits are subungulate and terminate in thick, blunt claws that are hoof-like (Ramdial, 1978).

ECOLOGY. Found within the neotropical biogeographic region, inside this range it is limited by the low temperatures at the northern and southern edges. This may be due to the fact of lowland paca not having underfur (Ramdial, 1978). In terms of habitat, lowland pacas often occur in a wide range of forest types in moist areas, they are often found in gallery forests near rivers and standing waters (Eisenberg and Redford 1999). However, it has been said that they often prefer swift moving rivulets and streams (Fox, 1999). Lowland pacas forage around their home range at night for seeds, stems, roots, fruits and so on to feed on. In the day they live in their burrows that they either dig themselves or take over from other animals. In Trinidad, the entrances to these burrows can sometimes harbor the deadly mapepire balsain (*Bothrops*) with which it is speculated to possibly have some mutually beneficial relationship (Ramdial, 1978). The burrows themselves are usually shallow and of a simple tubular design (Fox, 1999). Burrows are usually located in slopes or the banks of rivers (Ramdial, 1978). Lowland paca burrows also usually have more than one exit; a main exit/entrance that is regularly used and less used 'emergency' exit that is commonly well camouflaged and plugged up with leaves or sticks (Ramdial, 1978). Apart from having burrows as places of refuge, lowland pacas also utilize rock piles, dense roots and hollowed trees and logs (Ramdial, 1978) (Fig. 3).

SOCIAL ORGANIZATION. Lowland pacas are solitary, nocturnal, territorial and monogamous. A mated pair shares a territory that can be up to 8.6 acres in size and may overlap with the territories of other mated pairs (Jrank.org, 2011). Absent mating, they live singly with each individual having their own burrows and paths. There are limited extensive studies into the range sizes and populations of lowland pacas but one study reports that they occur at population densities of 84 to 93 individuals per square kilometer in suitable habitat in that study's research area of Colombia (Eisenberg and Redford 1999). It is understood that lowland pacas try to stay close to a water source the majority of times, even when they are out foraging in the night they tend to stick close to river or stream. In cases where water is plentiful such as in rainy season, they may stray a little further away from their home area (Ramdial, 1978). Lowland pacas do not vocalize much and this may be a reflection of the little interaction between individuals. They have often been described as unsociable animals that can show great aggression when cornered (Ramdial, 1978).

ACTIVITY. Predominantly nocturnal, lowland pacas leave their burrows at night to forage for food along pathways and in the underbrush close to their burrows and a water source. They are less active and less seen in the day when they are thought to mostly sleep in their burrows.

FEEDING. Lowland pacas have been once described as "animated garbage pails" because of their tendency to eat large amounts of a huge variety of foods. Lowland pacas come out at night to forage for a wide array of plants, herbs, nuts, fruits, seeds, tubers and roots on which they feed. Locally, they have been known to feed on coco macaque, balata, wild chataigne, hog plum, pomerac, guava, avocado and mango (the last two mentioned being favorites). They lack the ability to hold up food with their paws to eat unlike other rodents (Fig. 4) (Ramdial, 1978). It is speculated by some that lowland pacas do not favor climbing trees in search of fruit and seeds and rather "depend on tree-climbing animals such as monkeys, to drop fruit from trees" (Jrank.org, 2011).

COMMUNICATION. Lowland pacas are known to have a sharp sense smell and hearing (Jrank.org, 2011), this can in some aspect give a hint as to what are their main methods of communication. These methods are olfactory communication and vocal communication.

Olfactory communication has not been extensively studied in the lowland paca thus little is known about the various behaviors in this area. However, given that they exhibit a keen sense of smell the use of scent marking is fairly presumable.

Although lowland pacas do not vocalize much, vocal communication plays its own part in the everyday lives of lowland pacas. They have a large, specialized skull that features a laterally and dorsally expanded zygomatic arch which functions as a resonating chamber. This peculiar formation allows for the formation of two cheek pouches by the skin, on each side of the head of the animal. Although these pouches are unsuitable for the storage of food, they to aid in producing of the unique rumbling sound that lowland pacas make when they are angered or in fear (Ramdial, 1978). This sound is one of the main vocalization that the lowland paca makes. It is made with the mouth closed, it is low in frequency (20-30 hz) and is made by the blowing of air from the external to the internal cheek pouch (Ramdial, 1978). Lowland pacas are also known to click and snap their teeth repeatedly when excited, most likely to intimidate or warn possible attackers (Ramdial, 1978).

SEXUAL BEHAVIOUR. The details of lowland paca behaviour and reproduction are somewhat vague with many differing views and reports. However, some aspects seem are clear and show uniformity in reports. Females reach sexual maturity and reproduce from one year of age. Gestation lasts on average one hundred and eighteen (118) days, which is unusually long for rodents. Females usually produce one offspring at a time (as can be seen in Fig. 5) with twin being a rare occurrence (Fox, 1999). Usually the females have two litters a year. Juveniles stay with females for just under three months before going off on their own (Helium.com, 2011). Some mating behavior has been described; male stands on hind legs with erect penis and sprays urine at female's rear, male attempts to mount female (this is repeated until accepted), male is observed to lick back and shoulders of female while mounted (Ramdial, 1978). Also it is known in Mexico, lowland pacas mate primarily in water (Fox, 1999).

ANTIPREDATOR BEHAVIOUR. Often under threat by predators (such as the ocelot, puma, boa constrictor and man), lowland pacas tend to stay close to water and readily try to escape their predators by taking to water. They are very good swimmers and can remain under water for a relatively long time in an attempt to escape a predator (Ramdial, 1978). Lowland pacas will also make rumbling sounds and snap and click their incisors when in danger or excited, this may be an intimidation tactic to dissuade possible attackers (Ramdial, 1978).

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Posted online: 2011

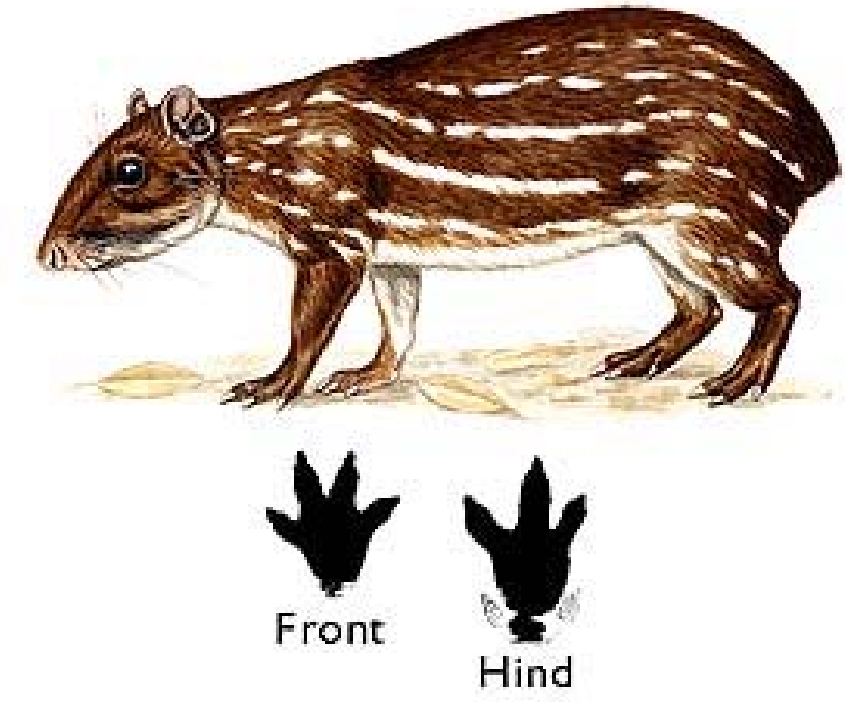

Fig. 2. Lowland paca and tracks showing the fore-feet with four digits printed and the hind feet with only three clearly printed due to the first and fifth digits being reduced.
[http://www.iwokrama.org/mammals/guides/images/agpa.jpg, downloaded 18 November 2011]

Fig. 3. A lowland paca taking refuge in hollowed log.

[http://courses.washington.edu/tesc404/barbara/lgpaca.JPG, downloaded 18 November 2011]

Fig. 4. A lowland paca eating a fallen Malay apple.
[http://agoutienterprise.files.wordpress.com/2009/10/paca.jpg?w=510&h=382, downloaded 18 November 2011]

Fig. 5. A female lowland paca nursing single juvenile.

[http://media.sandiegozoo.org/wp-content/uploads/2011/08/PacaBaby_HTML.jpg, downloaded 18 November 2011]