

# North American Porcupine

*Erethizon dorsatum*

**Class:** Mammalia **Order:** Rodentia (rodents) **Family:** Erethizontidae

(New World porcupines)

**Other names:** Common Porcupine, Canadian porcupine, porcupine

**Other subspecies:**

**Other Relatives:** There are 4 species listed in the family Erethizontidae



## Zoo Porcupine(s)

### 0.1 Juniper

Born 5/4/2015 Aq: 9/3/2015

*About Juniper:*

Was born in captivity and came to us from a private collection. She currently weighs 4.08 kg (about 9 lbs.) but is still young and growing!

## Status

Least Concern [1]

## Geographic Region

NA porcupines have the northern most range of all porcupines [2]

They inhabit much of North America between the Arctic Ocean and northern Mexico. Porcupines are found throughout most of Alaska and Canada, in the northern part of the Great Lakes region, all throughout the west and northeast regions of the United States. Populations have been studied extensively in the eastern deciduous forests of New York and Massachusetts, the Great Basin Desert, and the woodlands of Texas [2]

## Habitat

Live in open tundra, deciduous forests, and desert chaparral. Porcupine habitat varies geographically. [2]

## Characteristics

**Size:** *Weight range:* 18000 g (40lbs)

*Body length:* 93cm (36.6in.) *Tail length:* 7-11 inches (17.5-28 cm). [6]

**Longevity: Wild** 6 -18 years **Captivity:** May reach 20+ years, average 10-20 yrs.

## Physical Description

- Porcupine **quills** are modified hairs. Just like human hair, they are made out of **keratin**. The semi-hollow quills are tricolored and are barbed at the end like a fishing hook – this helps the spines to stick into a predator when the porcupine must defend itself.
- The **dorsal** side is covered with short spines. Coloration of dorsal side varies from yellow to black, while the underneath is usually gray.
- The feet have long-clawed digits which assist in climbing trees.
- The young have a dense covering of reddish brown guard hairs (each about 35 millimeters in length) on their heads and bodies that will later harden to quills [2].
- Like other rodents, porcupines possess constantly growing rootless incisors that have a hard enamel layer on the front of each tooth and softer dentine behind.

## Dimorphism

**Males:** males are slightly larger than females

**Females:**

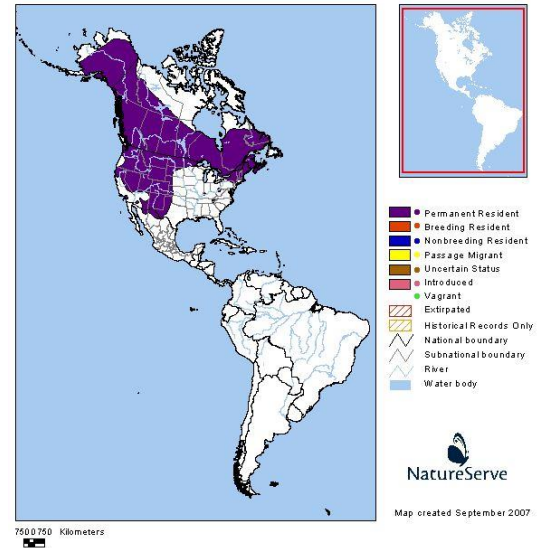
## Diet: Herbivore

**Diet in the Wild:** The diet is primarily vegetation, including leaves, tender, stems, fruits, blossoms, and roots. They get at the cambium layer of trees by peeling away the bark. They also have been found to raid guava, bananas, and corn from plantations.

**Diet in the Zoo:** corn, bananas, apples, sweet potatoes, leafy greens, peanuts, and leaf-eater biscuits

## Behavior

- *Nocturnal* – night active and *arboreal*.
- Spend most of their time alone and are strongly territorial
- Females are *philopatric* - (Of an animal or species) tending to return to or remain near a particular site or area. [3] [4]
- Both males and females defend their territories



### Social Structure & Communication

- Use a combination of acoustic, chemical, visual, and tactile communication [3]
- When threatened, a porcupine will chatter its teeth and produce a chemical odor, intended to warn off any predator. [3]
- Females communicate their readiness to mate by vaginal secretions, urine marking, and high pitched vocalizations[3]
- Males compete using fierce vocalizations[3]
- Visually, the porcupine communicates the presents of its weaponry by displaying the white on black markings on its back and tail[3]
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### Defense Mechanisms

- Despite what movies and cartoons present, porcupines *cannot* shoot their quills. Spines only come off when shedding (like hair) or when the tip is stuck into something like a predator.
- A porcupine's first line of defense is escaping from danger by climbing up a tree. However, if such an escape is not possible, the porcupine has many options. Porcupines are the only mammal in North America to use quills to deter predators. [3]
- Have developed several warning signs to precede their use of their ultimate weapon: [3]
  - First are the aposematic colorations on the animal. The white-tipped quills on a black band on the tail and back stand out, and warn possible assailants of danger.
  - Second, porcupines emit an auditory warning: a quiet clattering of the teeth
  - If both visual and acoustic warnings fail, a porcupine will erect its quills, and simultaneously release a nasty scent. Quills are only used if the threat has not been deterred by these other means
- When frightened, porcupines can make their spines stand up, called *piloerection* – just like we when get goose bumps or a scared cat's hair stands up on end. [2]

### Reproduction

- Males defend a pre-estrous female from 1 to 4 days prior to copulation. Porcupines breed only once a year.
- Females advertise their readiness to mate by vaginal secretions, urine marking, and high pitched vocalizations, well before the time of ovulation. This means that several males converging on an advertising female will have to compete for, and then defend, the female
- Mating will only happen after a female has chosen a male and is receptive to him.
- Gestation in this species is 210 days, after which a female gives birth to a single offspring
- North American porcupines breed only once a year [3]

### Conservation

- **Use & Trade:**
- **Threats:** No major threats to the species as a whole.
  - However, because of the damage caused to property, including trees, crops and car tires, porcupines are often hunted or trapped. In Mexico, it is considered in danger of extinction due to hunting. More effective population controls may be the management of a healthy population of fishers, the porcupine's main predator. Mortality is also known to be caused by collisions with automobiles. [1]
- **Predators:** Mountain Lions, Lynx, bobcats, coyotes, gray wolves, wolverines, great horned owls [3]; Mountain lions supposedly make no attempt to avoid the quills of porcupines; instead they attack at will and deal with the consequences. [3]

### Did You Know?/Fun Facts

- Their tail has 30-32 vertebrae and is almost as long as their body
- “Porcupine” means “spiny pig” in Middle French
- The beaver is the only larger rodent in North America [5]
- Bilaterally symmetrical
- The crucial nutritional resource for porcupines is nitrogen. Winter sources of nitrogen include bark, twigs, and evergreen needles
- The quills are used by Native Americans to decorate articles such as baskets and clothing. Porcupines are edible and were an important source of food, especially in winter, to the Natives of Canada's boreal forests. [5]
- Due to its dangerous quills, the North American porcupine is often avoided as prey and even their largest predators (like wolves and cougars) have been known to be harmed or killed by their quills [5]
- Quills present some dangers to porcupines. Falling out of trees is quite common for porcupines, and self-impalement is definitely a hazard. [3]

**Glossary:** List of definitions of the most important recurrent technical terms used in the text.

**Dorsal** - of or relating to the upper side or back of an animal,

**estrus** - a recurring period of sexual receptivity and fertility in many female mammals; heat.

**guard hairs** - Most mammals have three distinct kinds of hairs: Guard hairs protect the rest of the *pelage* (fur) from abrasion and frequently from moisture, and they usually lend a characteristic color pattern. The thicker underfur (*down*) is primarily insulating and may differ in color from the guard hairs. The third common hair type is the *vibrissa*, or whisker, a stiff, typically elongate hair that functions in tactile sensory reception.

**Iteroparous** - offspring are produced in groups (litters, clutches, etc.) of more than one at a time and across multiple seasons (or other periods hospitable to reproduction). The term iteroparity comes from the Latin *itero*, to repeat, and *pario*, to beget.

**Keratin** - a family of fibrous structural proteins that compose the key structural materials found in human skin, hair and nails, as well as the scales, claws and shells of reptiles, the beaks, talons and feathers of birds, as well the hair and claws of mammals, among other things.

**Natal** – referring to features animals are born with that are different from their mature form.

**Precocial** - hatched or born in an advanced state and able to feed itself almost immediately

**Quill** – are hardened, semi-hollow spines that can be released by contact with them, or they may drop out when the porcupine shakes its body. Technically, *spines* are hard pointed, needle-like anatomical structure typically used for defensive projection. Spines are found in a wide range of animals, both vertebrate and invertebrate. Not all spines are capable of being released on contact like the porcupine's quills are.

## References

- [1] "Erethizon dorsatum," The IUCN Red List of Threatened Species, 2008. [Online]. Available <http://www.iucnredlist.org/details/8004/0> . [Accessed December 2015].
- [2] Griesemer, S., T. Fuller, R. Degraaf. 1998, "Erethizon dorsatum", Animal Diversity Web. [Online]. Available: [http://animaldiversity.org/accounts/Erethizon\\_dorsatum/](http://animaldiversity.org/accounts/Erethizon_dorsatum/). [Accessed December 2015]
- [3] Animal Diversity Web, "North American Porcupine". [Online]. Available: [http://animaldiversity.org/accounts/Erethizon\\_dorsatum/#physical\\_description](http://animaldiversity.org/accounts/Erethizon_dorsatum/#physical_description)
- [4] Oxford Dictionaries. "Philopatric" [Online]. Available: [http://www.oxforddictionaries.com/us/definition/american\\_english/philopatric](http://www.oxforddictionaries.com/us/definition/american_english/philopatric). [Accessed December 2015]
- [5] Encyclopedia of Life. "Erethizon dorsatum: North American Porcupine", [Online]. Available: <http://eol.org/pages/328469/overview#Behavior>. [Accessed December 2015]
- [6] Woodland Park Zoo. "PORCUPINE (NORTH AMERICAN)" [Online]. Available: [https://www.zoo.org/page.aspx?pid=1894#.Vo\\_BFkrIdU](https://www.zoo.org/page.aspx?pid=1894#.Vo_BFkrIdU). [Accessed January 2016]