



### Exhibit message

Big cats (such as lion, leopards and cheetahs) leave different marks on the rump, neck and muzzle of hunted prey. They use their paws to grab and pull down prey, then they use their jaws to suffocate or tear and bleed their catch to death.

Nature park rangers can study the scratch and teeth marks on carcasses to work out which big cat made the kill.

### Quick fact

The bite force of animals is difficult to measure and compare between animals, but it has been estimated that the bite force of:

- humans and dogs is about 800 Newtons and
- lions is about 4000 Newtons.

An animal's bite force depends on many factors such as their jaw muscles, length of jaw bone (leverage) and area of their teeth. Sharp, pointy teeth (canines) have a small area and do more damage than flat molar teeth. Applying 1000 Newtons to a canine tooth (area about 1 mm<sup>2</sup>) does a lot more damage than applying 1000 Newtons to a molar tooth (area about 1 cm<sup>2</sup>).

However, some herbivores (animals with mostly flat molar teeth to grind plant material) can sometimes have stronger jaws than carnivores with sharp pointy teeth.

### Graphic panel text

**Did a cheetah do it? Cheetah (*Acinonyx jubatus* L.)**

#### Claws

Cheetahs trip up prey, leaving one straight slash from their thumb-like dew claw. This single mark is used to distinguish cheetah kills from other big cat kills.

#### Jaws

Cheetahs hold a single bite on the prey's throat to suffocate it. Cheetah bite marks are small and difficult to see.

#### How the carcass is treated (lift the flap)

Cheetahs rest before they eat their catch. They only eat soft tissue and gristle, leaving the ribcage, head and gut for scavengers.

**Did a lion do it? Lion (*Panthera leo*)**

#### Claws

Lions leave five claw marks on the prey's rump up to 3 centimetres deep and spanning more than 20 centimetres across.

#### Jaws

Lions leave many bites, including one massive throat bite where the canine puncture marks are greater than 15 centimetres apart.

#### How the carcass is treated (lift the flap)

Lions eat every part except the spinal column and pelvis. Lions do not usually leave carcasses alone once prey is dead.

**Did a leopard do it? Leopard (*Panthera pardus* L.)**

#### Claws

Leopards inflict many shallow wounds. The claw span is less than 15 centimetres and each claw mark is narrower and not as deep as the lion's.

#### Jaws

Leopards kill prey with a single bite to the throat. Leopard canine marks are usually 10–15 centimetres apart.

#### How the carcass is treated (lift the flap)

Leopards haul their prey up a tree. They eat the gut contents, leaving an intact skeleton behind.



## Want to know more about big cat claws and jaws?

Most big cats kill prey by suffocation (jaguars being an exception).

A carcass can leave many clues to show which big cat killed the animal. These clues include:

- the number, width and depth of claw scratch marks
- the width and depth of canine bite marks
- where these marks are found on the carcass (rump, mid-section, neck, muzzle)
- which parts of the carcass were eaten and
- where the carcass was found.

## Cheetahs

Cheetahs sneak up close to prey. Then they chase prey at great speed, running up to 110 km/h and covering almost 8 metres in a single stride.

Once the cheetah is within close range, they use their forepaws to trip up the prey. They hook their thumb-like dew claw into the rump of the prey and sometimes leave a single, long slash from the cheetah's dew claw on the prey's rump. This single mark is used to distinguish cheetah kills from other big cats.

Cheetah paws are intermediate between cat and dog paws. Because cheetahs can only partially retract their claws, they wear down. But the cheetah's dew claws remain sharp because it is high up on the side of the paw (like a thumb) and is protected from wear and tear.

As the prey trips and falls, the cheetah uses a single bite on the prey's throat to suffocate the prey. This single throat bite is very similar to a leopard's bite, but the cheetah's individual canines are smaller in diameter (this is a subtle difference, not easy to see unless you dissected the carcass).

Cheetahs are built for speed, not strength. They use up so much energy in the chase that they often rest for 20 minutes after the kill to eat their prey. This resting time can be risky, because lions and hyenas sometimes take the kill away from the cheetah or even kill the exhausted cheetah and their orphaned cubs.

Cheetahs are fussy eaters, consuming the soft tissue and gristle, but leaving the ribcage and head. They also don't like to eat gut contents.

Cheetahs tend to hunt during the cool parts of the day. They hunt a wide variety of prey, depending on the area and landscape (from open plains to dense woodlands). Their prey (usually less than 25 kilograms) includes small antelopes, porcupines, hares, bustards, guinea fowl, impala, Thomson's gazelle and even wildebeest and young zebra.

Some scientists are trying to educate African farmers about how cheetahs are an endangered species that don't cause much damage to farm stock and should therefore not be shot on sight.

## Lions

Lion kills are easy to spot because they do a huge amount of damage to their prey during the kill and after the carcass has been consumed.

Lions have very large paws and they leave five parallel scratch marks corresponding to their claws. The spread of a lion's paw is huge—more than 20 centimetres between the 'thumb' (dew claw) and the 'pinkie' claw. Individual claw marks can be 3 centimetres wide in very deep flesh wounds. Claw marks can be left over the prey's rump and mid-section.

Lions also leave many bite marks around the prey's rump and there will always be a massive throat bite where the lion's canine puncture marks are greater than 15 centimetres apart. Sometimes lions suffocate their prey, sometimes they bleed and exhaust the prey to death.

There may also be bites from other lions participating in the kill, usually around the base of the tail, rump, and hind legs.

It's difficult to get a lion to leave its prey once it has started eating. Lions will leave very little behind. They eat every part of the prey except for the spinal column and pelvis.



## Leopards

Leopards have powerful claws and inflict many wounds, but they are much smaller than lions and don't cause as much damage.

Leopard paw marks usually span up to 15 centimetres (compared to the lion's span of 20 centimetres). Individual leopard claw marks are narrower (measuring up to 2 centimetres at the widest point) and are more shallow.

Leopards usually apply a single bit to the prey's throat and the distance between their canines is usually 10–15 centimetres.

Once prey is dead, leopards cache their food by hauling it up a tree. They eat the gut contents, but they can't eat the largest bones and will tend to leave an intact skeleton behind.

Leopards eat a wide variety of prey and have even been observed to scoop fish out of water with their paw during the hot part of the day when the fish 'basked' near the surface. They mostly feed on medium sized ungulates (for example Thomson's gazelle, impala and duiker), but they can also kill adult wildebeest and on rare occasions they have killed humans.

## Further information

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- Lee Swoboda, Wild Foundation, Cheetah Conservation Fund, [www.wild.org](http://www.wild.org)

Claw retraction and protraction in the Carnivora: The cheetah (*Acinonyx jubatus*) as an atypical felid. *Journal of Zoology (London)*. Russell Anthony P, Bryant Harold N. 254 (1). May, 2001. 67–76.

Cheetah Conservation Fund  
<http://www.cheetah.org/>

The Wild Foundation  
<http://www.wild.org/sitemap.html>

The Carnivores. R.F. Ewer. 1998.

Cheetahs. Luke Hunter. 2000.