

= Fisher ( animal ) =

The fisher ( *Martes pennanti* ) is a small carnivorous mammal native to North America . It is a member of the mustelid family ( commonly referred to as the weasel family ) and a part of the marten genus . The fisher is closely related to but larger than the American marten ( *Martes americana* ) . The fisher is a forest @-@ dwelling creature whose range covers much of the boreal forest in Canada to the northern United States . Names derived from aboriginal languages include pekan , pequam , wejack , and woolang . It is also called a fisher cat , although it is not a feline .

Males and females look similar . Adult males are 90 to 120 cm ( 35 ? 47 in ) long and weigh 3 @.@ 5 to 6 kilograms ( 8 ? 13 lb ) . Adult females are 75 to 95 cm ( 30 ? 37 in ) long and weigh 2 to 2 @.@ 5 kg ( 4 ? 6 lb ) . The fur of the fisher varies seasonally , being denser and glossier in the winter . During the summer , the color becomes more mottled , as the fur goes through a moulting cycle . The fisher prefers to hunt in full forest . Though an agile climber , it spends most of its time on the forest floor , where it prefers to forage around fallen trees . An omnivore , the fisher feeds on a wide variety of small animals and occasionally on fruits and mushrooms . It prefers the snowshoe hare and is one of the few animals able to prey successfully on porcupines . Despite its common name , the fisher seldom eats fish .

The reproductive cycle of the fisher lasts almost a year . Female fishers give birth to a litter of three or four kits in the spring . They nurse and care for their kits until late summer , when they are old enough to set out on their own . Females enter estrus shortly after giving birth and leave the den to find a mate . Implantation of the blastocyst is delayed until the following spring , when they give birth and the cycle is renewed .

Fishers have few predators besides humans . They have been trapped since the 18th century for their fur . Their pelts were in such demand that they were extirpated from several parts of the United States in the early part of the 20th century . Conservation and protection measures have allowed the species to rebound , but their current range is still reduced from its historic limits . In the 1920s , when pelt prices were high , some fur farmers attempted to raise fishers . However , their unusual delayed reproduction made breeding difficult . When pelt prices fell in the late 1940s , most fisher farming ended . While fishers usually avoid human contact , encroachments into forest habitats have resulted in some conflicts . There are anecdotal reports of fishers attacking pets and , in a 2009 case in Rhode Island , a 6 @-@ year @-@ old boy . In 2014 , a 12 @-@ year @-@ old boy was attacked by what was believed to be a fisher in Massachusetts .

= = Etymology = =

Despite the name fisher , the animal is not known to eat fish . The name comes from colonial Dutch *fisse* or *visse* due to its resemblance to the European polecat ( *Mustela putorius* ) . In the French language , the pelt of a polecat is also called *fiche* or *fichet* .

In some regions , the fisher is known as a pekan , derived from its name in the Abenaki language . Wejack is an Algonquian word ( cf . Cree *wuchak* , *otchock* , Ojibwa *ojiig* ) borrowed by fur traders . Other American Indian names for the fisher are Chipewyan *thacho* and Carrier *chunihcho* , both meaning " big marten " , and Wabanaki *uskool* .

= = Taxonomy = =

The Latin specific name *pennanti* is named for Thomas Pennant , who described the fisher in 1771 . Buffon had first described the creature in 1765 , calling it a pekan . Pennant examined the same specimen but called it a fisher , unaware of Buffon 's earlier description . Other 18th @-@ century scientists gave it similar names , such as Schreber , who named it *Mustela canadensis* , and Boddaert , who named it *Mustela melanorhyncha* . The fisher was eventually placed in the genus *Martes* by Smith in 1843 .

Members of the genus *Martes* are distinguished by their four premolar teeth on the upper and lower jaws . Its close relative *Mustela* has just three . The fisher has 38 teeth . The dentition formula is : 3

@.@ 1 @.@ 4 @.@ 12 @.@ 1 @.@ 4 @.@ 2

= = = Evolution = = =

There is evidence that ancestors of the fisher migrated to North America during the Pliocene era between 2 @.@ 5 and 5 million years ago . Two extinct mustelids , *M. palaeosinensis* and *M. anderssoni* , have been found in eastern Asia . The first true fisher , *M. divuliana* , has only been found in North America . There are strong indications that *M. divuliana* is related to the Asian finds , which suggests a migration . *M. pennanti* has been found as early as the Late Pleistocene era , about 125 @,@ 000 years ago . There are no major differences between the Pleistocene fisher and the modern fisher . Fossil evidence indicates that the fisher 's range extended farther south than it does today .

Three subspecies were identified by Goldman in 1935 , *M.p. columbiana* , *M.p. pacifica* , and *M.p. pennanti* . Later research has debated whether these subspecies could be positively identified . In 1959 , E.M. Hagmeier concluded that the subspecies are not separable based on either fur or skull characteristics . Although some debate still exists , in general it is recognized that the fisher is a monotypic species with no extant subspecies .

= = Biology and behavior = =

= = = Physical characteristics = = =

Fishers are a medium @-@ sized mammal , comparable in size to the domestic cat , and the largest species in the marten genus . Their bodies are long , thin , and low to the ground . The sexes have similar physical features but they are sexually dimorphic in size , with the male being much larger than the female . Males are 90 to 120 cm ( 35 ? 47 in ) in length and weigh 3 @.@ 5 to 6 kg ( 8 ? 13 lb ) . Females measure 75 to 95 cm ( 30 ? 37 in ) and weigh 2 to 2 @.@ 5 kg ( 4 ? 6 lb ) . The largest male fisher ever recorded weighed 9 kg ( 20 lb ) .

The fisher 's fur changes with the season and differs slightly between sexes . Males have coarser coats than females . In the early winter , the coats are dense and glossy , ranging from 30 mm ( 1 in ) on the chest to 70 mm ( 3 in ) on the back . The color ranges from deep brown to black , although it appears to be much blacker in the winter when contrasted with white snow . From the face to the shoulders , fur can be hoary @-@ gold or silver due to tricolored guard hairs . The underside of a fisher is almost completely brown except for randomly placed patches of white or cream @-@ colored fur . In the summer , the fur color is more variable and may lighten considerably . Fishers undergo moulting starting in late summer and finishing by November or December .

Fishers have five toes on each foot , with unsheathed , retractable claws . Their feet are disproportionately large for their legs , making it easier for them to move on top of snow packs . In addition to the toes , there are four central pads on each foot . On the hind paws there are coarse hairs that grow between the pads and the toes , giving them added traction when walking on a variety of surfaces . Fishers have highly mobile ankle joints that can rotate their hind paws almost 180 degrees , allowing them to maneuver well in trees and climb down head @-@ first . The fisher is one of relatively few mammalian species with the ability to descend trees head @-@ first .

A circular patch of hair on the central pad of their hind paws marks plantar glands that give off a distinctive odor . Since these patches become enlarged during breeding season , they are likely used to make a scent trail to allow fishers to find each other so that they can mate .

= = = Hunting and diet = = =

Fishers are generalist predators . Although their primary prey is snowshoe hare and porcupine , they are also known to supplement their diet with insects , nuts , berries , and mushrooms . Since they are solitary hunters , their choice of prey is limited by their size . Analyses of stomach contents

and scat have found evidence of birds , small mammals , and even moose and deer . The latter food sources shows that they are not averse to eating carrion . Fishers have been observed to feed on the carcasses of deer left by hunters . While uncommon , fishers have been found to kill larger animals , such as wild turkey , bobcat and lynx .

Fishers are one of the few predators that seek out and kill porcupines . There are stories in popular literature that fishers can flip a porcupine onto its back and " scoop out its belly like a ripe melon " . This was identified as an exaggerated misconception as early as 1966 . Observational studies show that fishers will make repeated biting attacks on the face of a porcupine and kill it after about 25 ? 30 minutes .

#### == = Reproduction == =

The female fisher begins to breed at about one year of age and her reproductive cycle is an almost year @-@ long event . Mating takes place in late March to early April . Blastocyst implantation is then delayed for 10 months until mid @-@ February of the following year when active pregnancy begins . After gestating for about 50 days , the female gives birth to one to four kits . The female then enters estrus 7 ? 10 days later and the breeding cycle begins again .

Females den in hollow trees . Kits are born blind and helpless . They are partially covered with fine hair . Kits begin to crawl after about 3 weeks . After about 7 weeks they open their eyes . They start to climb after 8 weeks . Kits are completely dependent on their mother 's milk for the first 8 ? 10 weeks , after which they begin to switch to a solid diet . After 4 months , kits become intolerant of their litter mates , and at 5 months , the mother pushes them out on their own . After one year , juveniles will have established their own range .

#### == = Social structure and home range == =

Fishers are generally crepuscular , being most active at dawn and dusk . They are active year @-@ round . Fishers are solitary , associating with other fishers only for mating purposes . Males become more active during mating season . Females are least active during pregnancy and gradually increase activity after birth of their kits .

A fisher 's hunting range varies from 6 @.@ 6 km<sup>2</sup> ( 3 sq mi ) in the summer to 14 @.@ 1 km<sup>2</sup> ( 5 sq mi ) in the winter . Ranges of up to 20 @.@ 0 km<sup>2</sup> ( 8 sq mi ) in the winter are possible depending on the quality of the habitat . Male and female fishers have overlapping territories . This behavior is imposed on females by males due to dominance in size and a male desire to increase mating success .

#### == = Parasites == =

Parasites of fishers include *Baylisascaris devosi* , *Taenia sibirica* , nematode *Physaloptera* sp . , *Alaria mustelae* , trematode *Metorchis conjunctus* , nematode *Trichinella spiralis* and *Molineus* sp .

#### == = Habitat == =

Although fishers are competent tree climbers , they spend most of their time on the forest floor and prefer continuous forest to other habitats . Fishers have been found in extensive conifer forests typical of the boreal forest but are also common in mixed hardwood and conifer forests . Fishers prefer areas with continuous overhead cover with greater than 80 % coverage and will avoid areas with less than 50 % coverage . Fishers are more likely to be found in old @-@ growth forests . Since female fishers require moderately large trees for denning , forests that have been heavily logged and have extensive second growth appears to be unsuitable for their needs .

Another factor that fishers select for are forest floors that have large amounts of coarse woody debris . In western forests , where fire regularly removes understorey debris , fishers show a preference for riparian woodland habitat . Fishers tend to avoid areas with deep snow . Habitat is

also affected by snow compaction and moisture content .

= = Distribution = =

Fishers are widespread throughout the northern forests of North America . They are found from Nova Scotia in the east to the Pacific shore of British Columbia and Alaska . They can be found as far north as Great Slave Lake in the Northwest Territories and as far south as the mountains of Oregon . There are isolated populations in the Sierra Nevada of California and the Appalachian Mountains of Pennsylvania and West Virginia .

In the late 19th century and early 20th century , fishers were virtually eliminated from the southern and eastern parts of their range including most American states and eastern Canada including Nova Scotia . Over @-@ trapping and loss of forest habitat were the reasons for the decline .

Most states had placed restrictions on fisher trapping by the 1930s , coincidental with the end of the logging boom . A combination of forest regrowth in abandoned farmlands and improved forest management practices increased available habitat and allowed remnant populations to recover . Populations have since recovered sufficiently that the species is no longer endangered . Increasing forest cover in eastern North America means that fisher populations will remain sufficiently robust for the near future . Between 1955 and 1985 , some states had allowed limited trapping to resume . In areas where fishers were eliminated , porcupine populations subsequently increased . Areas with a high density of porcupines were found to have extensive damage to timber crops . In these cases , fishers were reintroduced by releasing adults relocated from other places into the forest . Once the fisher populations became reestablished , porcupine numbers returned to natural levels . In Washington State , fisher sightings were reported into the 1980s , but an extensive survey in the 1990s did not locate any .

Scattered fisher populations now exist in the Pacific Northwest . In 1961 , fishers from British Columbia and Minnesota were re @-@ introduced in Oregon to the southern Cascades near Klamath Falls and also to the Wallowa Mountains near La Grande . From 1977 @-@ 1980 , fishers were introduced to the region around Crater Lake . Starting in January 2008 , fishers were reintroduced into Washington State . The initial reintroduction was on the Olympic peninsula ( 90 animals ) , with subsequent reintroductions into the south Cascade mountains . The reintroduced animals are monitored by radio collars and remote cameras , and have been shown to be reproducing . From 2008 to 2011 , about 40 fishers were re @-@ introduced in the northern Sierra Nevada near Stirling City , complementing fisher populations in Yosemite National Park and along California 's northern boundary between the Pacific Coast Ranges and the Klamath Mountains . Fishers are a protected species in Oregon , Washington , and Wyoming . In Idaho and California , fishers are protected through a closed trapping season , but they are not afforded any specific protection ; however , it is expected that in California the fisher will probably be granted listing under the Endangered Species Act in 2014 . In June 2011 , the U.S. Fish and Wildlife Service recommended that fishers be removed from the endangered list in Idaho , Montana , and Wyoming . It also recommended further study to ensure that current populations are managed properly .

Recent studies , as well as anecdotal evidence , show that fishers have begun making inroads into suburban backyards , farmland , and periurban areas in several US states and eastern Canada , as far south as most of northern Massachusetts , New York , Connecticut , and even rural New Jersey . Some reports have shown that populations have begun even on Cape Cod , although the populations are likely smaller than the populations in the western part of New England .

= = Fishers and people = =

Fishers have had a long history of contact with humans , but most of it has been to the detriment of fisher populations . Unprovoked attacks on humans are extremely rare , but fishers will attack if they feel threatened or cornered . In one case , a fisher was blamed for an attack on a six @-@ year @-@ old boy . In another case , a fisher is believed to be responsible for an attack on a twelve @-@ year @-@ old boy .

In 2003 , a new minor league baseball team based in Manchester , New Hampshire held a " Name The Team " contest ; the name New Hampshire Fisher Cats was chosen by the public from a list of suggestions reflecting the local culture and environment .

= = = Fur trade and conservation = = =

Fishers have been trapped since the 18th century . They have been popular with trappers due to the value of their fur , which has been used for scarves and neck pieces . The best pelts are from winter trapping with secondary quality pelts from spring trapping . The lowest @-@ quality furs come from out @-@ of @-@ season trapping when fishers are moulting . They are easily trapped , and the value of their fur was a particular incentive for catching this species .

Prices for pelts have varied considerably over the past 100 years . They were highest in the 1920s and 1930s , when average prices were about \$ 100 US . In 1936 , pelts were being offered for sale in New York City for \$ 450 ? 750 per pelt . Prices declined through the 1960s but picked up again in the late 1970s . In 1979 , the Hudson 's Bay Company paid \$ 410 for one female pelt . In 1999 , 16 @,@ 638 pelts were sold in Canada for \$ 449 @,@ 307 ( CAN ) at an average price of \$ 27 .

Between 1900 and 1940 , fishers were threatened with near @-@ extinction in the southern part of their range due to overtrapping and alterations to their habitat . In New England , fishers , along with most other furbearers , were nearly exterminated due to unregulated trapping . Fishers became extirpated in many northern U.S. states after 1930 , but were still abundant enough in Canada to maintain a harvest of over 3 @,@ 000 fishers per year ( see figure ) . Limited protection was afforded in the early 20th century , but it was not until 1934 that total protection was finally given to the few remaining fishers . Closed seasons , habitat recovery , and reintroductions have restored fishers to much of their original range .

Trapping resumed in the U.S. after 1962 once numbers had recovered to sufficient numbers . During the early 1970s , the value of fisher pelts soared , leading to another population crash in 1976 . After a couple of years of closed seasons , fisher trapping re @-@ opened in 1979 with a shortened season and restricted bag limits . The population has steadily increased since then , with steadily increasing numbers of trapped animals , despite a much lower pelt value .

= = = Captivity = = =

Fishers have been captured live for fur farming , zoo specimens , and scientific research . From 1920 ? 1946 , pelt prices averaged about \$ 137 CAN . Since pelts were relatively valuable , attempts were made to raise fishers on farms . Fur farming was popular with other species such as mink and ermine , so it was thought that the same techniques could be applied to fishers . However , farmers found it difficult to raise fishers due to their unusual reproductive cycle . In general , knowledge of delayed implantation in fishers was unknown at the time . Farmers noted that females mated in the spring but did not give birth . Due to declining pelt prices , most fisher farms closed operations by the late 1940s .

Fishers have also been captured and bred by zoos , but they are not a common zoo species . Fishers are poor animals to exhibit because , in general , they hide from visitors all day . Some zoos have had difficulty keeping fishers alive since they are susceptible to many diseases in captivity . Yet there is at least one example of a fisher kept in captivity that lived to be ten years old , well beyond its natural lifespan of 7 years .

In 1974 , R.A. Powell raised two fisher kits for the purpose of performing scientific research . His primary interest was an attempt to measure the activity of fishers in order to determine how much food the animals required to function . He did this by running them through treadmill exercises that simulated activity in the wild . He compared this to their food intake and used the data to estimate daily food requirements . The research lasted for two years . After one year , one of the fishers died due to unknown causes . The second was released back into the wilderness of Michigan 's Upper Peninsula .

### == Interactions with domestic animals ==

In some areas , fishers can become pests to farmers when they raid chicken coops . There have been a few instances of fishers preying on cats and small dogs ; but in general , the evidence suggests these attacks are rare . A 1979 study examined the stomach contents of all fishers trapped in the state of New Hampshire ; cat hairs were found in only 1 of over 1 @, @ 000 stomachs . More recent studies in suburban upstate New York and Massachusetts found no cat remains in 24 and 226 fisher diet samples ( scat and stomach contents ) respectively . While there is popular belief for more frequent attacks on pets , zoologists suggest bobcats or coyotes are more likely to prey upon domestic cats and chickens .

### == Poisoning ==

In 2012 , a study conducted by Integral Ecology Research Center , UC Davis , US Forest Service , and the Hoopa Tribe showed that fishers in California were exposed to and killed by anticoagulant rodenticides associated with marijuana cultivation . In this study , 79 % of fishers that were tested in California were exposed to an average of 1 @. @ 61 different anticoagulant rodenticides and four fishers died directly attributed to these toxicants . A 2015 follow @- @ up study building on this data determined that the trend of exposure and mortality from these toxicants increased to 85 % , that California fishers were now exposed to an average of 1 @. @ 73 different anticoagulant rodenticides , and that nine more fishers died , bringing the total to 13 . The extent of marijuana cultivation within fishers ' home ranges was highlighted in a 2013 study focusing on fisher survival and impacts from marijuana cultivation within the Sierra National Forest . Research showed that fishers had an average of 5 @. @ 3 individual grow sites within their home range . One fisher had 16 individual grow sites within its territory .

### == Literature ==

One of the first mentions of fishers in literature occurred in *The Audubon Book of True Nature Stories* . Robert Snyder relates a tale of his encounter with fishers in the woods of the Adirondack Mountains of New York . He recounts three sightings , including one where he witnessed a fisher attacking a porcupine .

In *Winter of the Fisher* , Cameron Langford relates a fictional encounter between a fisher and an aging recluse living in the forest . The recluse frees the fisher from a trap and nurses it back to health . The fisher tolerates the attention , but being a wild animal , returns to the forest when well enough . Langford uses the ecology and known habits of the fisher to weave a tale of survival and tolerance in the northern woods of Canada .

Fishers are mentioned in several other books including *The Blood Jaguar* ( an animal shaman ) , *Ereth 's Birthday* ( a porcupine hunter ) and in *The Sign of the Beaver* , where a fisher is thought to have been caught in a trap .