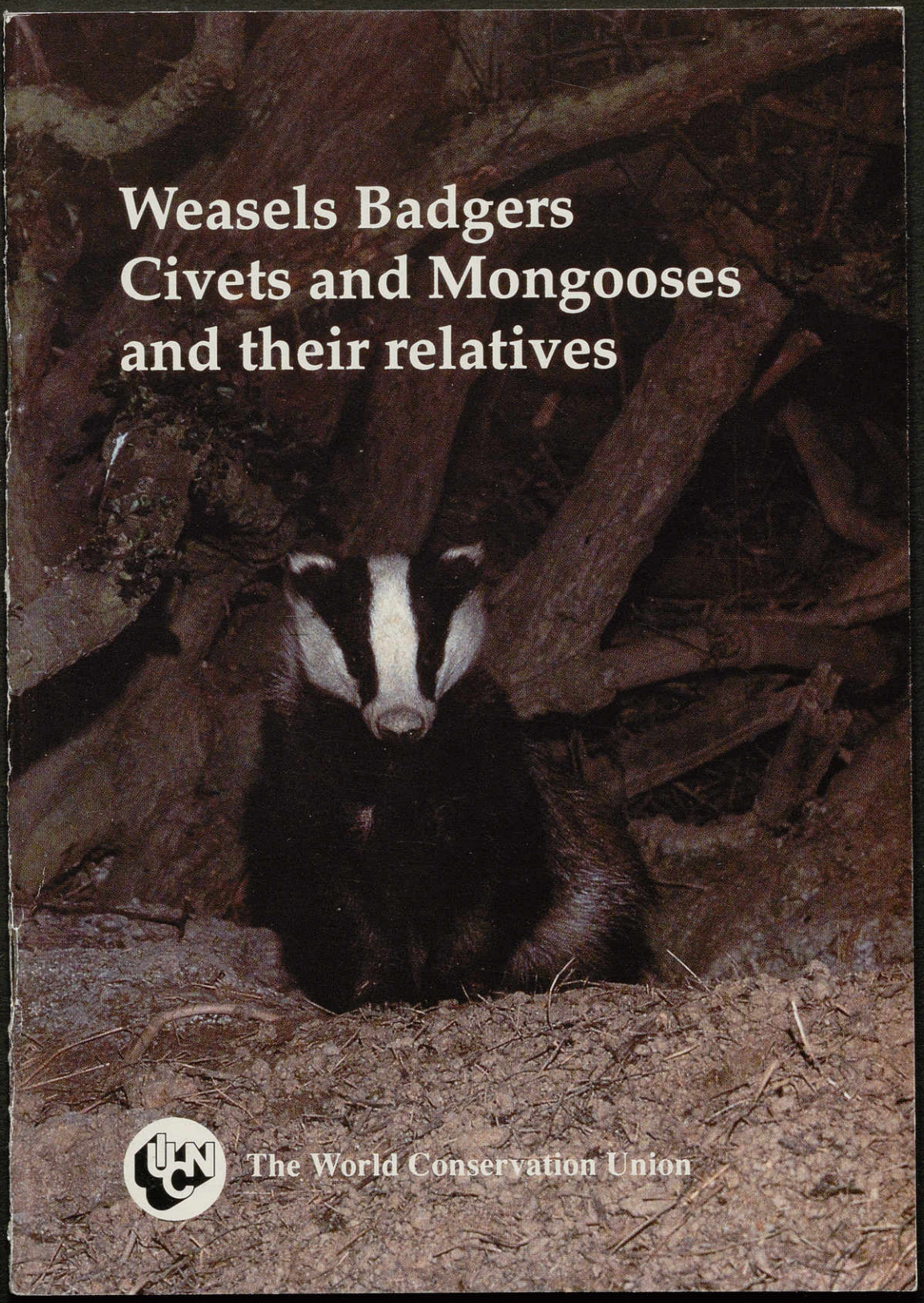
Weasels Badgers Civets and Mongooses and their relatives



The World Conservation Union

Foreword

Wild animals and people are both part of the natural environment, and there has always been a close relationship between them. From earliest times that inter-relationship has ranged from the practical to the aesthetic; from nourishment of the body to nourishment of the spirit. Although most of our animal protein now comes from domesticated species, wild animals are still an important source of protein for local populations in some parts of the world. The same continuity can be seen today in the artistic representation of wildlife found in many societies, which can trace its lineage from Stone Age cave paintings.

From prehistoric times, animal skins and furs have been used for protection and, later, for adornment. The fur trade evolved in response to these needs. Today, 85-90% of the world trade now involves farm-raised species, mainly mink and fox, which are considered part of normal agriculture.

Nevertheless, several wild fur bearers have dramatically declined in numbers. Conservation is imperative if some of the threatened species are to survive and sustained yields are to be maintained. Indeed, the World Conservation Strategy points out the importance of wild animals and plants as a source of income for rural communities. This is especially true of the wild fur trade in Canada. There are, therefore, very practical reasons for the fur trade becoming involved in conservation, which it has by close association with wildlife management.

Involvement of the fur trade in conservation on a major scale dates from the early 1970s when one particular species was the focus of concern. Following the sharp decline in the flow of leopard skins from producing areas, the International Fur Trade Federation took the unprecedented step of introducing a voluntary ban on handling leopard and some other species - several years, in fact, before the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) came into force.

The Fur Trade has contributed to funding research into the status of leopard and cheetah in subsaharan Africa, in cooperation with the International Union for Conservation of Nature and Natural Resources (IUCN). This interest in cats continued with support for a survey of the status of South American species, again in cooperation with IUCN.

IUCN is pleased to acknowledge the substantial financial support and cooperation of the International Fur Trade Federation (IFTF), which has made possible the preparation and publication of conservation action plans for fur-bearing mammals, and has also provided for this series of public education booklets. Conservation of the world's biological diversity is dependent upon all of us. We welcome your support.

International Union for Conservation of Nature and Natural Resources (IUCN)

Weasels Badgers Civets and Mongooses and their relatives

Contents

Cover: ***European badger*** *(Meles meles) Mark Boulton/ICCE*

The Stone marten *(Martes foina), is found in coniferous and deciduous woodlands from Europe to Central Asia. It is an efficient hunter preying on rodents, rabbits and ground living birds, such as grouse.*

Introduction 1

Cats, dogs and bears are well-known carnivores. But they are far outnumbered on earth by a host of small animals, known as mustelids and viverrids. Many are little known and rarely seen. Weasels, martens, badgers, skunks and otters are mustelids, and civets, genets and mongooses are viverrids.

Mustelids and viverrids have adapted to life on land, in water, and in trees. Their varied diets include mammals, birds, fish, invertebrates, fruit and insects. Their impact on populations of rodents and insects has considerable influence on the ecology of the areas in which they live. People have tamed them to keep their dwellings free of pests, to assist in hunting and to enjoy as pets. Mustelids are exploited for furs, and civets for their musk-like secretion. Some viverrids are caught for food. Mongooses have figured in art from ancient times.

There are about sixty seven species of mustelids (including otters, which are the subject of a separate booklet). They are found principally in the northern temperate zone in Eurasia and North America, but some species are found in the tropics. On the other hand, viverrids, of which there are about seventy species, live mainly in the Old World tropics, with some species in the temperate zone.

Despite their numbers and their association with people, mustelids and viverrids generally live secretive and nocturnal lives and have been rarely studied by scientists. Some species have seldom been seen in the wild.

Some mongooses are quite well-known because they are active during the day. However, the viverrid family is of particular interest because the species are considered the precursors of modern carnivores, as the lemurs are of monkeys, apes and people. They closely resemble small mammals called miacids, which appeared in the Palaeocene after the extinction of the dinosaurs, sixty five million years ago, and it has been suggested that viverrids are only advanced members of the same family.

Many mammals use scent to mark the territory, but in some mustelids and viverrids the facility has evolved into a defence, and evil smelling fluids can be fired from the anal area at an attacker. The skunks of North America are, of course, most famous for this ability. On the other hand, the secretions of civets, although the odours are not themselves pleasant, are valued as bases for perfume because of their long-lasting effects. ■

The Mustelids 2

'Now you see it, now you don't' might be the best description of all most people see of a weasel, a stoat, or a marten. They are common in many places, but because they are small, secretive, fast moving, and usually nocturnal, they are difficult to observe.

The Ermine or Stoat *(Mustela erminea) with characteristic summer coat. In winter this changes to almost pure white, providing excellent camouflage, particularly for populations living in the snow-covered regions of Canada, Scandinavia and Siberia.*

The most widespread mustelid is the **ermine** or **stoat**, which is found across northern Asia and Europe, and in Greenland and North America. It is a fierce hunter and there are indications that people in the Bronze Age may have kept ermine to kill rats and mice. This same value was exploited by European settlers in New Zealand, who introduced it to control rabbits.

Ermine vary greatly in size, ranging from 170-325 mm in head and body length, plus a tail of 42 to 120 mm, and they may weigh from 42 to 258 grammes. Males are bigger than females, and Eurasian animals are larger than American. In summer, the upper parts of the body are chocolate brown in contrast to white underparts. In autumn, with the approach of winter snows, the coat becomes white, except for the black-tipped tail. This winter coat has been highly valued, and ermine trimmings have traditionally been used as symbols of royalty and aristocracy. Canada sent 50,000 ermine pelts for the coronation of Britain's King George VI in 1937.

Ermine inhabit open tundra, forests and semi-deserts, where they make their dens in crevices, tree roots, hollow logs or in abandoned rodents' burrows. Although they spend most of the time on the ground, ermine are adept at climbing trees and

swimming. They bound along as they hunt, often in a zigzag fashion, and can run over snow, even moving under the surface if necessary. Although sharp-eyed, ermine rely heavily on scent and hearing to track prey, which consists of mice and rats, as well as birds, eggs, frogs and insects. A slender body enables ermine to move easily through burrows. The killing bite is at the base of the skull. Ermine will tackle animals larger than themselves and as big as adult hares. Food may be stored for winter consumption.

Ermine mark their territories with scent that warns potential intruders and acts as a precaution against confrontations and clashes between neighbours. The territories vary according to the availability of prey, and may extend over 10 ha in good conditions. Male ranges overlap those of females, who generally stay close to their birthplaces.

Ermine mate in late spring or early summer, but implantation of the fertilized egg in the uterus is delayed until the following March. Young are born in April and May, which is the most favourable time for catching prey for food. Ermine give birth to between three and eighteen young, with an average of about six in North America and eight or nine in the Old World. Although blind and helpless at birth, the young develop fast and start to accompany the mother on hunts by the time they are eight weeks old. Females are sexually mature and able to breed when only two to three months of age.

Young ermine *(Mustela erminea).*
Though blind and helpless at birth, development is rapid and females can breed by the time they are ten weeks old.

In America, ermine are also called **short-tailed weasels**. Another ermine, the **long-tailed weasel**, is found there and in northern South America. It has a head and body length of 203-228 mm, and a tail 76-127 mm, and weighs 85-198 grammes. Mexican specimens are rather larger. The coat turns white in winter in Canada and the northern USA, with a black tip to the tail, a fur also known as ermine in the fur trade.

Weasels

True weasels inhabit Eurasia and North America. The **common weasel** is found in both areas and also in North Africa. It is considerably smaller than the ermine, and does not have a black tip to the tail. Its upper coat remains brown throughout the year, except in northern areas. The North American form is the smallest carnivore. It may be only 15 cm long with a 3 cm tail, and weigh barely 30 grammes.

The weasel's life is very similar to that of the ermine, but it does not have such large ranges and feeds almost entirely on small rodents. When voles are plentiful as prey, it may produce two or even three litters in a year. Unlike the ermine, the weasel does not delay implantation of the fertilised egg in the uterus (when development starts). The gestation period is between thirty five and thirty seven days, when an average of five young

The European polecat *(Mustela putorius) is found throughout Europe as far as southern Sweden. Polecats have a strong body smell which accounts for their Latin name - 'putorius.'*

are born. In just over three weeks they are weaned and at four months they become sexually mature.

The masked raider on chicken runs is the **European polecat** and its relatives in Asia and North America. They are notable for the black mask across the eyes. The common name may have come from the French 'poulet' for chicken, because of their predatory habits. They have a strong body smell, which accounts for the Latin name 'putorius'. The domesticated form of the polecat is the **ferret**, which is used for hunting rabbits. Among the other polecats is the **black-footed ferret** of the American prairies, which is totally dependent on prairie dogs for food. It survives only in captivity, but reintroduction to the wild is proposed if a captive breeding programme continues to be successful.

Some of Africa's mustelids have patterns similar to those of the American skunks. They also emit malodorous secretions when attacked. The **zorilla** is black, with white stripes down the back, and white facial markings. It may be 280-385 mm long plus a tail of 200-305 mm. It hunts small rodents and large insects at night in a variety of habitats from the Sahelian region, south of the Sahara, to South Africa.

Mink

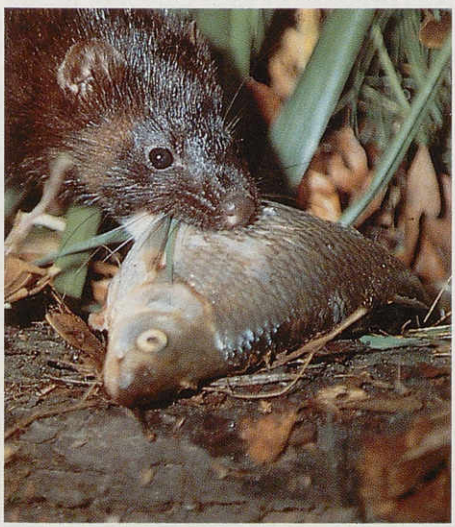
Mink are probably better known as expensive furs than as weasels. There is one species in North America, which measures 330-430 mm plus tail 158-230 mm, and another, slightly smaller, in Europe. However, the American mink, imported for fur farming[1] because its pelt is considered better, has escaped to the wild in Europe and become naturalised. The **European mink**, once widespread, is now found only in western France, northwestern Spain, Romania and the USSR, and may survive also in Finland.

1 *Farming involves the raising of species born in captivity, as opposed to ranching, which is defined by The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as the rearing in a controlled environment of specimens taken from the wild.*

Unlike stoats and weasels, mink are semi-aquatic and have partly webbed feet, which provide good propulsion when they dive for fish, crayfish and crabs. On the banks of streams and in marshy areas they prey on small burrowing mammals, muskrats and rabbits and birds.

Mink have adapted to habitats ranging from the Arctic to the sub-tropics in Florida, and even to turbulent coastlines. There was a species called the **sea mink** on the coasts of Maine, New Brunswick and Nova Scotia, but it was trapped to extinction by about 1880 because its large size - half as big again as the American mink - made it very attractive.

Mating among mink is promiscuous, but it has been found that it is the last male to copulate which impregnates the female. Implantation of the fertilised egg is delayed for a week or two, and gestation takes between twenty seven and thirty three days. The four to six young are born blind and naked, but are weaned after two months and become sexually mature at about ten months.



The American mink *(Mustela vison) has a widely varied diet including fish, crustaceans, small mammals and water-birds.*

Skunks

The **American skunks** are generally larger than weasels, and their black and white patterns of spots and stripes are extremely variable. There are about nine species in three genera varying in size from 115-490 mm, plus tail 70-410 mm, and weighing from 0.5-4.5 kg. Forest edges and open areas are favourite habitats, but skunks, especially the widespread and common **striped skunk**, also live in towns. Small mammals and insects make up most of their diet, but they also take eggs, fruit and grubs.

Skunks do not normally discharge their famous sprays without giving a warning by raising the tail and walking around stiff-legged, displaying the anal area where the glands are found. The **spotted skunks** dramatize the display by performing 'hand-stands'. The sulfurous-smelling fluid can be fired accurately up to about two metres, and is usually aimed at the face. The smell is persistent for days. However, skunks themselves, and their dens, do not give off the same odour. While most animals avoid skunks, the great horned owl is not deterred from attacking them..

Martens

Few animals rival martens for agility in the trees, where they leap gracefully from branch to branch, following scent-marked trails or pursuing prey. They are equally at home on the ground. Martens are found across Eurasia and in North America, and are divided into eight species. They may be called **stone, beech** or **house martens** and they are often found near houses. Chocolate brown, with an extensive white bib and light underparts, the marten has a

The Pine marten *(Martes martes). The combined effects of hunting pressure and habitat loss have resulted in a decline in numbers throughout much of Europe.*

bushy tail and large hairy-soled feet with semi-retracted claws. It is 400-540 mm in length, with a tail 220-300 mm and weighs 1.1-2.3 kg. The **pine marten, sable, Japanese marten** and the **North American marten** are very similar. They are found mainly in northern coniferous forests, but also in deciduous forest and Mediterranean habitats. They hunt mice, squirrels, rabbits and birds, and will eat fruit and nuts, as well as carrion.

North America is the home of the **fisher,** a large marten (490-630 mm, plus tail 253-425 mm), which has been a mainstay of the fur trade. It is remarkable for its ability to kill porcupines, whose quills deter most would-be predators. The fisher goes for the face and cripples the porcupine so that it can turn it over and feed from the belly. Despite its name, the fisher's diet consists mainly of mammals, including hares, birds and carrion. The name is thought to have been bestowed by early European settlers who knew the polecat as 'fiche' - 'fitch' is still the trade name for polecat pelts.

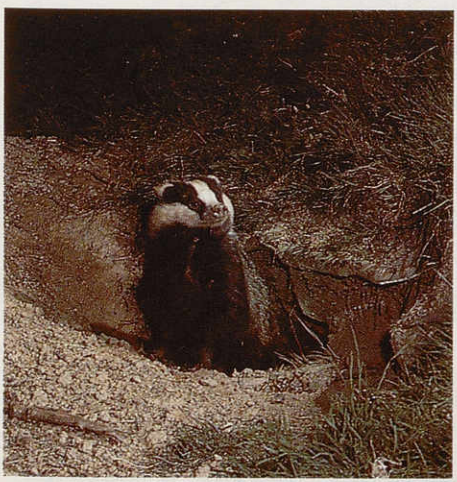
Another marten prominent in the fur trade is the **sable** found in coniferous and deciduous forests through northern Asia and the northern islands of Japan. Its winter coat is long and silky, with the colour varying from pale grey brown to dark black brown. The soles of the feet are covered with dense stiff hairs, which provide traction and insulation against cold.

Excessive trapping eliminated fisher from most of the USA, and sable from vast areas of Asia, by the early years of this century. However, conservation measures undertaken by the US and Soviet authorities, including establishment of farms and reintroductions, have led to substantially increased numbers and wider distribution.

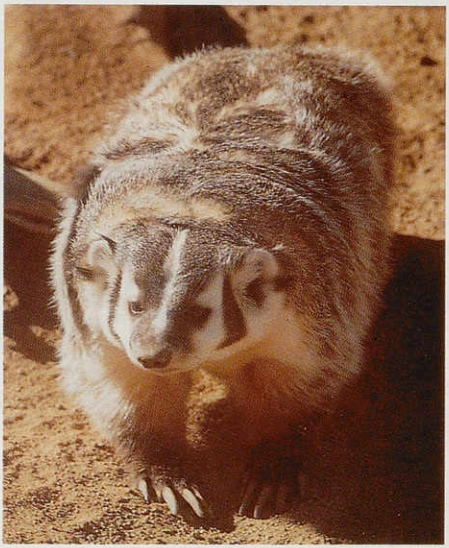
Badgers

In contrast to the slender bodies of weasels and martens, badgers are thickset and powerfully built. They have strong jaws with carnassial teeth adapted to crushing, which they use to eat small vertebrates, invertebrates, fruit and roots.

Eurasian badgers are found throughout Europe and through temperate Asia as far as Japan. With a length of 560-900 mm, plus tail 115-202 mm, they may weigh 10-16 kg. These badgers are highly social, living in families and clans of up to a dozen or more in networks of burrows called 'setts'. However, except for females (called 'sows') with young, they usually move around singly, often using conspicuous, long-used pathways. Territories contain latrine areas, which are located especially near the boundaries. The latrines consist of many small pits, where badgers have defecated and left scent marks. Badgers may stand up on their forefeet to scent-mark trees. In some areas, badgers are particularly partial to earthworms. They may catch several hundred in a night.



The European badger *(Meles meles) is still common throughout much of Europe.*



The American badger *(Taxidea taxus). Smaller than its European cousin, the white facial stripe extends back to the shoulders.*

The **American badger** is smaller than the Eurasian and has a flatter profile. The face mask is less vivid, but also includes a prominent white stripe from the nose to the shoulders. In southern parts of the range in the USA and Mexico, the stripe goes as far as the rump. This badger is especially adept at digging and burrowing, using its skill to prey on ground squirrels and burrowing rodents, as well as taking birds, reptiles and insects.

A pig-like snout gives the **hog badger** its common name. About the size of the American badger it lives in forests up to 3,500 m from Sikkim in the eastern Himalayas to southern China, peninsular Thailand and on the island of Sumatra. Two smaller species are the **stink badgers,** one found in Sumatra, Java, Borneo and the Natuna Islands, and another on the Palawan and Calamian Islands. Both species fire foul-smelling secretions from anal glands at intruders.

Ferret badgers also secrete offensive odours. They are savage and fearless if provoked. They have conspicuous black and white face patterns. One species ranges from Assam to southern China, Indo-China, Hainan and Taiwan; another from Nepal to Indo-China. A third lives in Java; and a fourth in Borneo. Their omnivorous diet includes small vertebrates, insects, earthworms and fruit.

Honey Badger

The **honey badger**, despite its name, is not one of the badger family. It is a unique species found in most of Africa. Its range extends to Turkestan, India and Nepal. It has a striking white to whitish grey upper coat, with black underparts. Honey badgers are slightly smaller than Eurasian badgers. The weight is 7-13 kg. The honey badger has a remarkably tough skin, which is so loose that the animal can even bite an attacker that has got it by the nape. Porcupine quills and bee stings have little effect, and even a dog can make little impression, except on the belly. Honey badgers are pugnacious and have been known to attack and injure cattle, buffaloes and large antelopes. Like other mustelids, honey badgers have malodorous anal gland secretions.

***The Honey badger** (Mellivora capensis) seen here investigating a refuse bin at a Zambian tourist lodge is a notorius scavenger.*

Honey badgers live among rocks and in hollow trees and burrows - they are strong diggers. Their omnivorous diet includes the young of large mammals, small mammals, birds, reptiles, arthropods, carrion and vegetation. They often scavenge at camp sites. But they are known especially for their association in tropical Africa with a bird, the honey guide. The bird makes an agitated and characteristic call when it discovers a bees' nest. The honey badger recognizes the call, follows the bird to the comb, and breaks open the nest to the profit of both. Although other species of honey guide exist elsewhere alongside honey badgers, similar behaviour has not been seen. Unfortunately, the honey badger also attacks domestic bee hives and, as a result, is persecuted by man.

Wolverine

The **wolverine** is larger than the Eurasian badger, and up to twice its weight. It has blackish-brown fur and a light brown band along the sides extending over the rump. The wolverine's original range ran from Scandinavia and eastern Europe to north-eastern Siberia, throughout Alaska and Canada, and south to Pennsylvania, southern Colorado, Indiana and central California, but it has disappeared from large areas. In Eurasia it is now confined to parts of Scandinavia and the northern USSR. It inhabits forests,

The wolverine *(Gulo gulo) is now vulnerable over most of its range.*

mountains or open plains in tundra and taiga zones, where it makes its bed of grass and leaves in caves or rock shelters, or in the burrows of other animals. Mainly terrestrial, the wolverine can, nevertheless, climb and swim with ease. It is very powerful and has been known to drive bears and puma from their prey. In winter it kills reindeer, roe deer and wild sheep, being more mobile than they are over snow. It jumps on the backs of larger mammals and clings on until they collapse. In summer, wolverines eat carrion, eggs, lemmings and berries. They cache food, sometimes in trees.

Wolverines are solitary and may have winter ranges as large as 2,000 km^2. Defended territories are marked with scent and urine. Mating occurs between late April and July, but implantation is delayed until winter, with births of two to four young from January to April.

A description dated 1518 indicates why the wolverine came to be called 'glutton'. It was said to eat until its stomach was as tight as a drum, and then to squeeze itself between two trees to disgorge the food. It could then continue to feed and completely consume the prey. ■

The Viverrids 3

To see what the precursor of the world's living carnivores looked like, examine a civet. Civets and their allies closely resemble fossils of the miacids, which evolved in the shadow of the dinosaurs. After the demise of the great reptiles, the miacids evolved into the many different carnivores we know today. Some scientists consider them to be the same family. True or not, viverrids still provide evidence of the form of an ancestral stock of modern carnivores.

The Small Indian mongoose *(Herpestes auropunctatus) is considered a pest in the Hawaiian Islands and many parts of the West Indies where it was introduced in an attempt to control rats in the sugar cane plantations.*

***Indian grey mongoose** (Herpestes edwardsi).*

The viverrid family includes about seventy species. They range in size from the dwarf mongoose, 35 cm long, including the tail, and weighing about 400 grammes, to the African civet, which is twice the length and may be up to forty times as heavy. They have long bodies, which may be striped, spotted or uniform, short legs, and a long bushy tail, which is sometimes banded or ringed. The head is elongated with a pointed muzzle. Most have scent glands in the anal region, which are used primarily for marking. People have long exploited the secretions to form the basis of scents, and for medicinal use.

Mongooses are undoubtedly the best known of the viverrids. Many are active by day, and they achieved literary fame through Rudyard Kipling's Rikki Tikki Tavi. Rikki was an **Indian grey mongoose**, which is also native to Arabia and Sri Lanka. This mongoose was introduced to the Malay peninsula, Mauritius and the Ryuku Islands to kill snakes and rats. The length is 230-650 mm plus tail 230-510 mm and weight 0.4-4 kg. The grey to light brown coat is speckled with black.

Rikki Tikki Tavi demonstrated the mongoose's skill at killing the deadly cobra, a scene commonly re-enacted for tourists in India with a harmless rat snake. Contrary to a widely-held belief, mongooses are not immune to snake venom. In a fight with a snake, they rely on their agility and fluffed up fur to avoid bites, finally grabbing the tiring snake behind the head.

Europe's only mongoose is the **Egyptian** or **Ichneumon mongoose**, which resembles Rikki Tikki Tavi, but is larger. It is actually an African species, which may have been introduced in ancient times to southern Spain and Portugal to kill rodents and snakes.

Related species of mongooses range through tropical Asia and Africa. Some are active mainly at night, others by day. Although they include skilful climbers, most remain on the ground. Foraging behaviour differs. Some species are seen singly or in pairs, and others in larger groups as they hunt small mammals, reptiles, fish, crabs, fruit and insects. Where they have been introduced to islands to control pests they have sometimes become pests themselves. They can devastate local wildlife, which has not evolved any defence against a fierce alien predator, and they kill poultry.

***Indian grey mongoose** (Herpestes edwardsi) attacking cobra.*

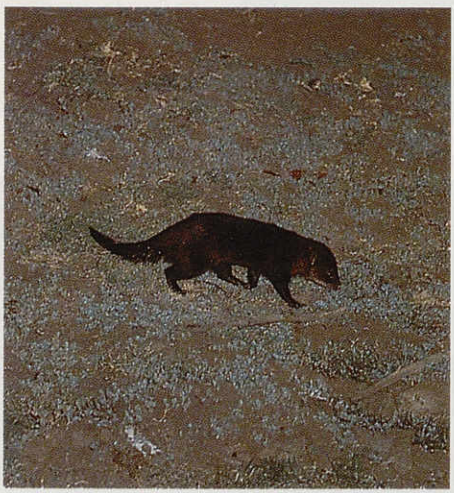
A troop of ***Banded mongooses*** *(Mungos mungo) on the African plains. They are active during the day and seem to have a strong social structure.*

In Africa, troops of mongooses are often seen. The **banded mongoose**, which is distinguished by alternate dark and light rings across the back, goes in chittering groups of between ten and twenty, even as many as forty, individuals. They often live in old termite mounds and hollow logs. Early in the morning they emerge to forage for beetles and millepedes and other invertebrates, as well as small vertebrates. Like other mongooses, they break eggs by hurling them between their hind legs at a rock. Banded mongooses have been seen to aid companions in trouble, and, faced with a jackal, will bunch and advance, looking like a large animal.

Two species of **African dwarf mongoose** are among the smallest carnivores. They live in groups, led by a matriarch, in savannas, woodlands, brush and mountain scrub. The matriarch and her mate are monogamous, and they actively prevent others from breeding. Young ones have priority for food over their elders. This assures them of sufficient nourishment while growing. Females are dominant in every age group. Dwarf mongooses, which are speckled brown to greyish, make dens in termite mounds, among tree roots or in crevices, from which they emerge to forage by day, mainly for insects, but also for small vertebrates, eggs and fruit. They may have several dens and change them frequently. They post sentries to watch for predators while foraging.

Dwarf mongooses *(Helogale parvula) often frequent old termite mounds.*

Southern Africa has three mongooses which live in colonies in burrows and enjoy sunbathing. They attract attention by their habit of sitting up on their haunches to look around. The **yellow mongoose** is found in open country, and often associates with the **suricate**, which has black transverse bars across the lower back, and a white head.



***Marsh mongoose** (Atilax paludinosus) feeds on frogs and crabs.*

The **marsh** or **water mongoose** of sub-Saharan Africa is aquatic, but has no webbing between the toes. It is thought that this permits the mongoose to feel for prey under mud and stones. Just as other mongooses break eggs by throwing them against a hard surface, the marsh mongoose does the same to break bones.

Viverrids are the only carnivores found in Madagascar, a large island noted for unique species, which evolved during a long isolation after it broke away from Africa. Five of them are mongooses, and all are omnivorous, taking insects, eggs, fruit, frogs, small reptiles and rodents.

In rain forests and marshes in Madagascar lives the **falanouc,** distinguished by a very pointed muzzle and a rather bushy appearance. It has both civet and mongoose features, and small teeth resembling those of insectivores. The falanouc hunts in the twilight or at night, mainly for earthworms, but also other invertebrates and frogs.

The largest viverrid in Madagascar is the **fossa.** Some scientists have included the fossa in the cat family because it resembles the jaguarundi or a small puma. But, unlike cats, which walk on their toes, the fossa is flat-footed. A fossa may be up to 800 mm long, plus a tail of equal length, and weigh 12 kg. It is a powerful predator, using its tree-climbing ability to catch lemurs. Reptiles, frogs and insects also figure in its diet.

Most of the Malagasy viverrids have suffered from excessive hunting and habitat loss.

***The Fossa** (Cryptoprocta ferox) is a tree climbing viverrid found in Madagascar.*

Black-footed ferret
(Mustela nigripes)

The black-footed ferret was brought back from the verge of extinction by captive breeding.

Malagasy ring-tailed mongoose
(Galidia elegans)

These diurnal mongooses which live in Madagascar have characteristic dark bands on the tail.

Dwarf mongooses
(Helogale parvula)

Like many related species, dwarf mongooses break eggs by hurling them between their hind legs at a rock.

Meerkats
(Suricata suricatta)

These group-living mongooses, also called suricates, may work together to drive away potential predators.

Polecat
(Mustela putorius)

Polecats feed mainly on small rodents and rabbits and have been heavily persecuted because of their predation on game and poultry.

White-tailed mongoose
(Ichneumia albida)

A large nocturnal mongoose which occurs throughout subsaharan Africa.

***Small-toothed palm civet** (Arctogalidia trivirgata), Java, Indonesia.*

Civets, genets and linsangs

Civets, genets and linsangs are mostly spotted and striped, and have ringed tails. **Oriental civets** inhabit tropical and subtropical Asia from India eastwards. They are mainly solitary and terrestrial, staying in cover by day and emerging at night to hunt small mammals, birds, snakes, frogs, insects, eggs and fruit. They often live near villages. The four species have body lengths of 585-950 mm, plus tails 300-482 mm, and weigh 5-11 kg.

The **African civet,** which inhabits savannas and forests in subsaharan Africa, is larger than the oriental civets. It has long, coarse hair, which is thick on the tail. It lies up during the day in long grass and thickets, and hunts at night for rodents, birds, eggs, reptiles, frogs, crabs, insects and fruit. It also eats carrion, and may prey on poultry and lambs. The African civet has long been a prime source of civet musk for perfumes, and has been exploited, especially in Ethiopia.

Genets, numbering ten species, are almost entirely confined to Africa. One species is found also in France, Spain, Portugal and the Balearic Islands, where it may have been introduced, as well as in southwestern Arabia. With pointed faces, and mostly with spotted coats, they resemble civets, but are smaller, having a maximum body length of 580 mm with a tail up to 530 mm long.

Genets live in forests, savannas and grasslands, and live mainly on small mammals, reptiles and insects.

***African civet** (Viverra civetta), Zambia.*

***Spotted genet** (Genetta genetta), Luangwa Valley, Zambia.*

Still smaller than the civets and genets, but with spots and a ringed tail, the **African linsang** occurs from Sierra Leone to northern Zaire and on the island of Fernando Po. The linsang lives in the forest and builds nests of vegetation in which several individuals sleep for a few days before moving elsewhere. It eats plants, insects and cola nuts.

Two **oriental linsangs**, the banded and the spotted, also live in forests from Nepal to Indo-China and make tree nests. In the banded linsang the spots are replaced by broad transverse brown or black bands, except on the flanks and legs.

Apart from the **African palm civet** of Central Africa, palm civets are found in tropical and subtropical Asia. They have spots, stripes and rings, but these are not so bright as in other civets. The **masked palm civet** has markings only on the head.

Largest of the palm civets is the **binturong**, which is as large as the Eurasian badger. It is notable for its muscular prehensile tail, which it uses like an extra hand to cling to branches as it moves through the trees. Apart from birds, fruit and leaves, binturongs are reported to dive and catch fish and to eat carrion. They have a shaggy appearance, with black fur and a white edge to the ears.

The **palm civet** or **toddy cat** of India and southeast Asia gets its common name from its reputed liking for the fermented juice of the palm, called toddy, which people collect as an alcoholic drink. They may make their dens in the roofs of buildings and in drains.

Because of their nocturnal activity and secretive habits, most viverrids are little known. Thus the **Sulawesi giant palm civet** was not seen by scientists for thirty years. Recently, it was found to be quite common in some areas.

Otter civets, found from North Vietnam through the Malay peninsula to Sumatra and Borneo, are active at night and get most of their food in the water. However, they also climb trees and may take birds and fruit. They have a broad mouth and brown, soft, dense hair like otters. Their nostrils open upwards and have flaps which close, as do the ears, to exclude water. ■

*The little known **Otter civet** (Cynogale bennettii) has a broad mouth and webbed feet.*

Mustelids, Viverrids and People 4

Mustelids and viverrids have not been so prominent in human culture as wild dogs and cats, which were domesticated in early times. Nevertheless, they have featured in religious myths and legends. In folklore they have been credited with courage and cunning, strength and ferocity, and sometimes even bloodthirstiness. Badgers, however, have been regarded as handsome and kind in some parts of the world. For example, in Britain Badger is a leading character in the favourite book by Kenneth Grahame, The Wind in the Willows. Germans admire 'Meister Grimbart', and the Japanese God of Wine, Tamuki, is a badger.

Dwarf mongooses *(Helogale parvula) have often been kept as pets and are very affectionate and friendly.*

Hunters have made use of mustelids and viverrids. In South America, the grison was trained to catch chinchillas. In some regions of tropical America, the tayra was kept to protect houses and belongings from rodents. Weasels, polecats and genets are occasionally still kept for the same purpose in the Old World. Although the cat largely replaced these species, the polecat became domesticated as the 'ferret' and is still used in hunting rabbits in parts of Europe and north-west Africa.

Mongooses are still kept as pets, being very affectionate and lively. They have achieved the greatest fame among viverrids through their ability to kill venomous snakes, and were immortalised by Rudyard Kipling in his story of Rikki Tikki Tavi and the cobra. They were introduced to many islands to control rodents or snakes. But, in several cases, especially on some Caribbean islands, where they were introduced to kill pests, they not only did so, but also wiped out native animals not adapted to coping with such efficient predators.

Ancient Egyptians kept the ichneumon mongoose to kill snakes. They believed that mongooses broke crocodile eggs to reduce crocodile numbers so that people could approach the Nile. It is not surprising, therefore, that the mongoose was a sacred animal, and that a great number of ichneumon mummies have been found. Mongooses appear as bronze figures, on coins, and with their heads on human figurines. The sun-god Ra once transformed himself into a mongoose to fight Apophis, the serpent of the underworld. On the other hand, the ichneumon god in the mortuary temple of Amenemhet III (Dynasty XII: 1991 - 1786 B.C.) represented the spirits of the underworld. In Letopolis, the mongoose was equated with the falcon-god Horus, and, in Heliopolis, with the creator-god Atum.

Mongooses also feature prominently in Middle and Far Eastern religions, frequently as guardians of wealth. In Hindu mythology, Kubera is the God of Wealth, and Guardian of all the Treasures of the Earth. Already in the 1st century B.C., Kubera was sculpted with a mongoose-shaped purse in his left hand. The mongoose is the natural foe of the nagas (serpents), who are regarded as the guardians of jewels and treasures under the earth.

In Buddhist mythology, Kubera is known as Jambhala and was sculpted most often with a mongoose in his left hand. The mongoose, when pressed, disgorges streaks of wealth or rounded coins from its mouth. In Tibet, the goddess Hariti, as 'Giver of Children', feeds a child at her right breast, and, as 'Bestower of Wealth', presses a mongoose to her left breast.

Viverrids play a prominent role in myths and culture of the Bakumu people in Zaire. Their skins are used for tailoring spiritual dancers' adornments and the hats of village chiefs. Skins of the African striped weasel are also used in traditional African ceremonies.

Badger watching has become popular in some parts of Europe. However, in earlier times, badgers were enclosed in pits and forced to fight for their lives as a spectacle. Badger fighting against dogs is still practised illegally in Britain.

In view of the generally ferocious aspect of mustelids and viverrids, it is not surprising that internal organs, fat or other body parts have been attributed with magical powers and used as medicine or amulets. ■

Furs, Meat and Scent 5

Furs and scents have long been part of the human way of life. Use of animal skins for warmth and protection must have been one of the first steps making possible human colonisation of colder areas of the earth. Their use purely for adornment came much later, but it had already begun in prehistoric times. By then, fragrant scents must also have been appreciated. In due course, it was discovered that animal secretions with a long-lasting, but not pleasant, scent could be used as a base for perfumes. Mustelids have been major providers of furs, and viverrids of bases for perfumes.

Apart from their impact on pests, the major economic value of mustelids and viverrids is derived from their fur. Together with cats, canids, seals, and racoons, they support large industries and commerce, as well as local communities, who have traditionally caught them for their own use and for trade. Many such communities, especially in Canada, have virtually no other support.

True furs are characterised by a thick, insulating undercoat, known as 'ground hair', with longer hairs called 'guard' or 'top hairs' providing a protective covering. Mustelids from cold or arctic regions, such as sable, marten, mink and fisher, produce some of the finest and most appreciated furs, which reach their peak quality when the winter frosts begin.

Fur trapping has a long history in northern latitudes, and the colonization of the vast forests of Siberia, Canada and Alaska by Europeans was largely influenced by the search for furs. Fears of losing the monopoly or dominance in the trade of certain fur species, or pelt qualities, influenced political decisions in a number of countries. The potentiality of the fur trade played a part in the United States' decision to buy Alaska from Czarist Russia for US $7,200,000 dollars in 1867. This was recouped very soon afterwards by the new state's pelt production.

The fur trade today is a major industry. According to the Fur Institute of Canada, it employs over 100,000 people in Canada alone, and generates some $C600 million a year. Of the 80,000 or more trappers, half are Indians, Inuits and Metis. In recent years, trappers have had an annual income of $C50 million to $C85 million, which, the Institute says, is especially important in many rural and remote areas of Canada, where there are few alternative ways of earning a living.

The fur trade today is a major industry.

Trims on ceremonial clothing made of ermine pelts have been widely used as signs of royal dignity.

Fur skins are sold at auctions, the major centres being Copenhagen, Helsinki, Hong Kong, Leipzig, Leningrad, New York, Oslo, Toronto and Seattle. Prices depend on size, colour, texture and fur density.

Trims on ceremonial clothing made of ermine pelts have been widely used as signs of royal dignity, and sable, mink and marten furs are still among the most valuable products of large areas of the north. Prices depend on size, colour, texture and fur density. In the 1970s, single prime quality pelts reached $14 (American mink), $410 (female fisher martens), $126 (male American martens) and $182 (wolverine) on the U.S. market. With an average annual harvest, in North America alone, of 256,000-373,000 wild mink and 10,000-15,000 fisher martens, the economic impact of these species is evident.

Sable, mink and marten are the best known and most popular mustelid furs. The USSR is the principal producer of sable pelts; mink comes mainly from farmed animals in USSR, North America and Europe; and marten is produced primarily in North America.

Foxes became the first successfully ranched animals over a century ago in Canada. Today, a substantial part of Canada's fur production comes from farmed animals. There are nearly 600 mink farms and 700 fox farms.

Among mustelids, mink, marten, sable and wolverine have been farmed. Mink pelts have been produced in captivity since the late 19th century, at first to supplement the harvest from the wild. Later, selective breeding produced furs of desired qualities, densities and colours. At present, the American mink is the most important farm-bred species, and is the only domesticated mustelid or viverrid, apart from the ferret. There are races known as Black Cross, Pastel and Silver Blue. The majority of mink pelts come from farmed stock. From 1953 to 1988, world mink pelt production rose from 2,500,000 to 40,000,000 skins. The main producing countries in 1988/89 were Denmark (11,500,000 pelts annually), Finland (3,200,000), the U.S.A. (5,000,000) and the USSR (exporting 5,000,000 and retaining a substantial quantity for home use). This tremendous development has caused a drop in the price of mink furs.

The sable was once seriously overhunted, and declined markedly throughout its vast range in the USSR. But, since 1929, fur farms have raised considerable numbers, and animals have been released to strengthen or rebuild wild populations. By 1956, the USSR was again able to export 68,500 pelts.

Trapping of fur-bearers towards the end of the last century contributed to the decline of several species, and even led to the extinction of the sea mink, which lived along the New England coast. The main trapping countries today have regulations aimed at ensuring a sustainable yield, while protecting the species.

Viverrids have been, and are, hunted throughout the tropics for meat. This protein supply may be crucial for local communities, especially in wide areas of the African moist tropics, where the tsetse fly handicaps cattle breeding by spreading the disease trypanosomiasis. Carnivore meat makes up 15% of all 'bush meat' consumed by the Bakumu people, who live in an area near Kisangani, in Zaire, where cattle are almost entirely absent. Genets and cusimanses feature prominently, as well as civets and other mongooses.

The African civet is the source of the musk-like substance called 'civet'. This yellowish secretion has the consistency of butter and comes from the scent glands located near the civet's anus. Civet musk comes mainly from Ethiopia, where 'civet farmers' keep wild-caught male civets in cylindrical cages made of branches. Musk is collected every nine to twelve days with a horn spatula, each collection amounting to 10-15 grammes per animal. There are an estimated 180 civet farmers in Ethiopia, holding over 2,700 animals. An animal produces about 800 grammes of civet per year, representing a value of US$350 in early 1988. During 1975-1978, Ethiopia exported a total of 5,830 tons of civet musk, mainly to France, where it is used as a raw substance in the perfume industry.

The secretions of other species are also used for perfumes. Javanese sultans favoured a perfume based on the anal gland fluid of the Malayan stink badger.

Only one species of mustelid or viverrid, the wolverine, can become a problem in its native range in Scandinavia, northern USSR and North America by preying on livestock. However, the countries involved are capable of reimbursing stock owners for losses. Several mustelids and viverrids take poultry, but predator-proof fencing, or killing identified raiders, is usually effective. Problems have arisen mainly when weasels and mongooses have been introduced on islands to control pests and have devastated local species. ■

Threats to Mustelids and Viverrids 6

The most important reason for the decline of mustelids and viverrids, as for other animals and plants, is destruction of their habitat. This is mainly by human encroachment for settlement and agriculture, and the draining, filling and pollution of wetlands.

Habitat destruction resulting from commercial logging, as well as forest clearance for settlement and agriculture, is causing a serious decline in the populations of mustelids and viverrids.

Most threatened mustelids and viverrids live in the tropical and subtropical regions of the earth. This is where an area of 50,000 km^2 is destroyed every year, mostly for settlement and collection of wood for cooking fuel and construction materials, as well as to establish commercial plantations. Logging may directly destroy only a small proportion of forest, but it often opens up forests to settlers, who may move on frequently and clear more and more areas as soil fertility declines. Only a few mustelids and viverrids, such as the common palm civet and some mongooses, are known to adapt easily to life around human settlements. Some species eat only fruit, and when deprived of wild fruits might become pests in plantations.

Mustelids and viverrids are unevenly distributed within the tropical rain forest belt. There are centres of diversity, often coinciding with those of other animal and plant groups. Unfortunately, these include some of the most endangered forests on earth. The Upper Guinea forests (centred on Liberia and Ivory Coast), and East African forest patches, are disappearing rapidly. The same is happening in the forest belt along the eastern escarpment of Madagascar; in the forests of the Western Ghats in south-west India; in northern Vietnam; and in humid western Java. These few regions alone contain about two-fifths of the mustelids and viverrids thought to be threatened. This habitat fragmentation

and loss means that conservation action is urgent. The situation is particularly serious, because the destruction of the forests is occurring to create more arable land. The only long-term hope for mustelids and viverrids in these areas can come from development which enables people to live in harmony with the forests.

The problem in the case of the large wolverine is that individuals have home ranges of several hundred square kilometres, and therefore require huge areas of suitable habitat to ensure the long-term survival of a population. Existing reserves are not big enough to provide for the wolverine.

Diseases can be a serious menace to mustelids and viverrids, which are susceptible to a number of common diseases of domestic dogs and cats. An outbreak of canine distemper brought the only known wild population of the black-footed ferret to the edge of extinction. At one time fewer than twenty ferrets survived from a former remnant population of approximately one hundred and thirty. Fortunately, these animals were collected and successfully captive-bred so that reintroduction to the wild is now possible.

Several mustelids and viverrids are hunted in considerable quantities for fur or food. Trapping of fur-bearing mustelids in the major producing countries in Eurasia and North America appears to be sustainable at present and not to threaten their survival. However, ineffective control of trade in pelts of South American hog-nosed skunks could endanger certain populations.

Hunting of viverrids for food, which is widespread in parts of Africa, has not so far jeopardised the survival of species. But the impact is growing with the rapid increase of the human population. This leads to a decrease in habitat quality, and the fragmentation of viverrid populations. The problem seems to be greatest in the Upper Guinea rain forests, but also occurs in parts of Asia, such as China, Taiwan and Vietnam, where hunting must also be considered a threat to several species.

'Incidental' killing of animals in traps set for other species can also endanger species already reduced in number. For example, the European mink in France is killed in traps set for musk rats, coypus and feral American minks.

Persecution of prey species also threatens their carnivore predators, including mustelids and viverrids. The black-footed ferret, wholly dependent on prairie dogs as prey, is considered to have declined to near extinction because of eradication by farmers of prairie dogs in American prairies. ■

For many years stoats and other mustelids were destroyed by gamekeepers who believed them to be a major threat to game-birds.

Why Conserve Mustelids and Viverrids? 7

'Of the many ways of measuring a land's wealth, one of the surest signs of ecological richness and diversity is an abundance of predator species. Because each species sits at the top of a different food chain, belonging to a different cycle of organic matter, we can be certain of the existence of a larger animal community for every predator. This is, in turn, sustained by vegetation. The existence of carnivores carries the implications of a larger ecological community and of millions of years of evolutionary struggle.'

These words of the distinguished British wildlife biologist, Jonathan Kingdon, explain the overall reason for conservation of all carnivores, including mustelids and viverrids. They are indeed indicators that our world is functioning as Nature intended. The accelerating decline of all carnivores in recent decades has paralleled the destruction of the world's wild lands and their former teeming wildlife.

Scientifically, most viverrids and many mustelids, particularly the tropical forms, are among the least known carnivores. An appreciable number of species are only known from a few museum skulls or skins, and even such distinctive monotypic genera as the Liberian mongoose, the aquatic genet, Owston's palm civet and Hose's palm civet have never, or rarely, been observed alive by biologists. In view of this, it is not surprising that new subspecies and even species continue to be discovered. The most recent was the giant striped mongoose from south-west Madagascar.

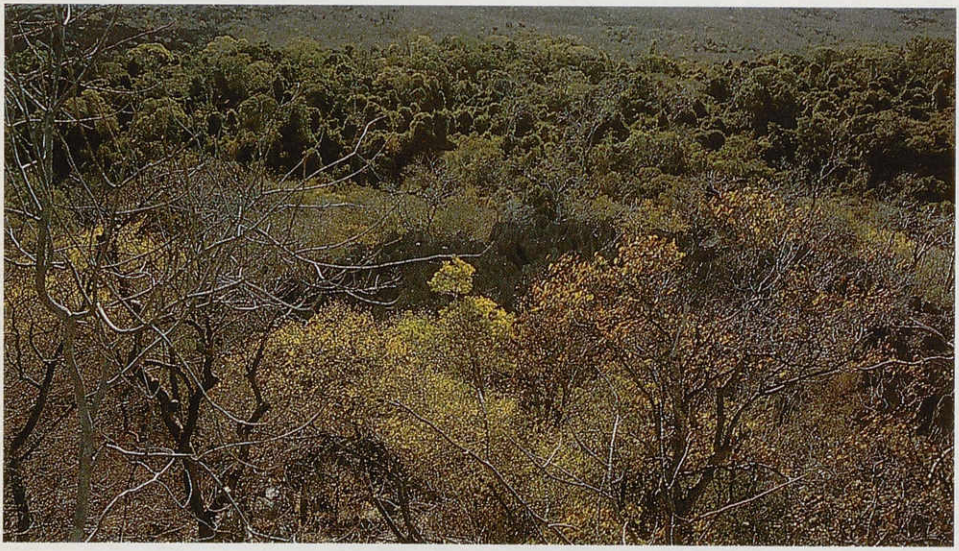
However, the scientific interest in mustelids and viverrids is not confined to their natural history. It is also their evolutionary significance which makes both families so intriguing. Since the miacids - the stem group of modern Carnivora - appeared some fifty million years ago, this mammalian order has evolved into such spectacular forms as bears, cats, dogs, hyaenas and, probably, seals. Primitive characters in some mustelids and several viverrids can help us to understand the evolution of increased size, development of the brain, and specializations in the organs of locomotion and of catching and handling prey.

The small carnivores may well become suitable models from which to understand chemical communication in mammals. Scent glands are especially well developed in mustelids and viverrids. Recent research has shown that dwarf mongooses, for example, are able to recognize the scent marks of individual group members, even after several days.

There is evidence that some species, such as snake-killing mongooses, are less sensitive to snake venoms than other mammals, even to the strong neurotoxins that are contained in cobra venom. Hog-nosed skunks are reported to sustain a dose of rattlesnake poison ten times higher than rabbits do. This may be of interest to immunologists, neurologists or even pharmacologists. ■

Conserving Mustelids and Viverrids 8

Conservation of natural habitat must have the highest priority in ensuring the future of mustelids and viverrids, as of all wild animals and plants. Unless this is achieved, there is no hope that other conservation programmes can be effective. Furthermore, conservation cannot be successful as an isolated programme for wildlife, but must provide for the human population, which will continue to expand for at least several decades.



Since forests and woodlands are the homes of most mustelids and viverrids, every effort must be made to save these habitats, such as this natural forest in Madagascar.

Forests and woodlands are the home of most mustelids and viverrids, while some live in grasslands and wetlands. Every effort has to be made to save these habitats. Wildlife reserves can play a key role, but they are seldom large enough to provide for the natural evolution of animal populations. Therefore corridors of natural habitat need to be maintained between reserves, as well as large buffer zones, where wildlife can live alongside people. There may be some conflict, though very limited as far as mustelids and viverrids are concerned. It is the task of wildlife managers to keep it at acceptable levels. Those who suffer loss and damage while abiding by the rules should receive reasonable compensation.

The network of protected areas around the world is growing, but is still far from adequate. Specialists have still to identify many key areas to ensure species conservation. The Mustelid and Viverrid Specialist Group of IUCN - The World Conservation Union - has already identified seven core areas, which cover approximately 50% of species of conservation concern.

Species and Areas of Concern

Madagascar

Habitat
Tropical and subtropical lowland rain forest, deciduous forests, baobab savanna, spiny bush.

Species
Fanalouc
Giant striped mongoose
Malagasy civet
Malagasy brown-tailed mongoose
Malagasy broad-striped mongoose
Malagasy narrow-striped mongoose
Fossa

Northern Vietnam

(including adjacent areas in China, Laos and Thailand)

Habitat
Tropical semi-evergreen and deciduous forest, mountain forests.

Species
Lowe's otter civet
Back-striped weasel
Spotted linsang
Owston's palm civet
Large-spotted civet

Java

(Indonesia)

Habitat
Mountain and lowland rain forests, tropical deciduous forests.

Species
Javan small-toothed palm civet
Javan yellow-throated marten
Javan ferret badger
Indonesian mountain weasel

Upper Guinea rain forests

(including parts of Liberia, Ivory Coast and Guinea)

Habitat
Tropical evergreen and semi-evergreen lowland rain forest, mountain rain forest.

Species
Liberian mongoose
Johnston's genet
Leighton's linsang

Western Ghats

(south-west India: provinces of Kerala, Karnataka and Tamil Nadu)

Habitat
Tropical evergreen rain forest.

Species
Malabar civet
Nilgiri marten
Brown palm civet

Northern Borneo

(East Malaysia and adjacent parts of Indonesian Borneo)

Habitat
Tropical evergreen lowland and mountain rain forests. Possibly heath forests.

Species
Otter civet
Hose's palm civet
Kinabalu ferret badger

Sumatra

(Indonesia)

Habitat
Tropical lowland and mountain rain forests.

Species
Otter civet
Indonesian mountain weasel
Sumatran collared mongoose

These areas are also important for conservation of many other threatened species living in similar habitats.

In order to plan further reserves, surveys are necessary to establish the distribution and status of various species, as well as their ecological and conservation requirements.

Excessive hunting and trapping needs to be carefully controlled to ensure that wild populations are not driven towards extinction.

No species of mustelid or viverrid currently in use by the international fur trade is thought by scientists to be in danger (except for otters, which are dealt with in a separate booklet). Fortunately, since the extinction of the sea mink, near extinction of the sea otter, and dangerous reduction of the sable, fur traders have taken measures to control harvests so that they are sustainable. Some species, such as the American mink and sable, are to a large extent farmed.

Although it is no substitute for conservation of species in nature, captive breeding must also be considered. A large-enough captive population needs to be established before the wild population declines to a critically low level. The black-footed ferret is a classic example of failure to create a breeding group at an early stage of decline. The ferrets were even thought to have become extinct. When a group was found, it was almost wiped out by canine distemper. Fortunately the few survivors were captured and have bred so successfully that specimens may soon be reintroduced to the wild.

The aim of any captive breeding programme has to be reintroduction to the wild, or restocking, where a low population survives. But, as the IUCN Species Survival Commission has laid down, such programmes should only be carried out when the reasons for local extinction or decline have been identified and eliminated, and they must be controlled and monitored.

International trade in wildlife is covered by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), to which over one hundred countries now subscribe. Under CITES, the black-footed ferret and the spotted linsang cannot be traded. Fossa, otter civet, falanouc, Malagasy civet, banded palm civet, banded linsang and Patagonian hog-nosed skunk are subject to licensed trade, so that over-exploitation can be prevented if necessary. Tropical American countries have called for international cooperation to control trade in the greater grison. Botswana has made a similar demand on behalf of the African civet and the honey badger. Ghana also wants help to save the honey badger.

Mustelid and viverrid specialists have drawn attention to the danger of hybridisation and competition if species or subspecies are transported to habitats of closely-related populations. In Europe, the American mink has established itself after escaping from farms. There is a need to find out whether it might be interbreeding with the already-endangered European mink.

People need to know about the role of mustelids and viverrids in ecosystems. Seldom seen in the wild, these animals should be shown to the public as the lively and beautiful animals they are. Most zoos could improve their displays with more imaginative and interpretative approaches, which would enormously increase public interest and support for conservation. ■

Mustelids and Viverrids of Concern 9

Palearctic Realm

(Eurasia and N. Africa, except Indian region and S.E. Asia)

Mustelids

European mink
(Mustela lutreola)

European marbled polecat
(Vormela peregusna peregusna)

Tsushima marten
(Martes melampus tsuensis)

Wolverine
(Gulo gulo)

Viverrids

Ibiza small-spotted genet
(Genetta genetta isabelae)

Nearctic Realm

(North America)

Mustelids

Black-footed ferret
(Mustela nigripes)

Wolverine
(Gulo gulo)

Big-thicket hog-nosed skunk
(Conepatus mesoleucus telmalestes)

Indomalayan Realm

(Indian subcontinent and southeast Asia)

Mustelids

Indonesian mountain weasel
(Mustela lutreolina)

Back-striped weasel
(Mustela strigidorsa)

Taiwan yellow-throated marten
(Martes flavigula chrysospila)

Javan yellow-throated marten
(Martes flavigula robinsoni)

Nilgiri marten
(Martes gwatkinsi)

Javan ferret badger
(Melogale orientalis)

Kinabalu ferret badger
(Melogale everetti)

Viverrids

Malabar civet
(Viverra civettina)

Large-spotted civet
(Viverra megaspila)

Spotted linsang
(Prionodon pardicolor)

Javan small-toothed palm civet
(Arctogalidia trivirgata trilineata)

Kangean common palm civet
(Paradoxurus hermaphroditus kangeanus)

Mentawai palm civet
(Paradoxurus lignicolor)

Golden palm civet
(Paradoxurus zeylonensis)

Brown palm civet
(Paradoxurus jerdoni)

Sulawesi palm civet
(Macrogalidia musschenbroekii)

Mentawai banded palm civets
(Hemigalus derbyanus minor and H. d. sipora)

Hose's palm civet
(Diplogale hosei)

Owston's palm civet
(Chrotogale owstoni)

Otter civet
(Cynogale bennettii)

Lowe's otter civet
(Cynogale lowei)

Sumatran collared mongoose
(Herpestes semitorquatus uniformis)

Malagasy Realm

(Madagascar)

Viverrids

Malagasy civet
(Fossa fossana)

Fanalouc
(Eupleres goudotii ssp.)

Malagasy broad-striped mongoose
(Galidictis fasciata ssp.)

Giant striped mongoose
(Galidictis grandidieri)

Malagasy narrow-striped mongoose
(Mungotictis decemlineata ssp.)

Malagasy brown-tailed mongoose
(Salanoia concolor)

Fossa
(Cryptoprocta ferox)

Afrotropical Realm

(Africa south of the Sahara)

Viverrids

Abyssinian genet
(Genetta abyssinica)

Johnston's genet
(Genetta johnstoni)

Giant genet
(Genetta victoriae)

Aquatic genet
(Osbornictis piscivora)

Leighton's linsang
(Poiana richardsoni liberiensis)

Ansorge's cusimanse
(Crossarchus ansorgei)

Liberian mongoose
(Liberiictis kuhni)

Pousargues' mongoose
(Dologale dybowskii)

Sokoke bushy-tailed mongoose
(Bdeogale crassicauda omnivora)

Jackson's mongoose
(Bdeogale jacksoni)

Neotropical Realm

(South and Central America)

Mustelids

Colombian weasel
(Mustela felipei)

Tropical weasel
(Mustela africana ssp.)

Grey-headed tayra
(Eira barbara senex)

Pygmy spotted skunk
(Spilogale pygmaea ssp.)

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Text: *Peter Jackson*

IUCN

Founded in 1948, IUCN - the World Conservation Union - is a membership organisation comprising governments, non-governmental organisations (NGOs), research institutions, and conservation agencies in 120 countries. The union's objective is to promote and encourage the protection and sustainable utilization of living resources.

Several thousand scientists and experts from all continents form part of a network supporting the work of its six commissions: threatened species, protected areas, ecology, sustainable development, environmental education and training. Its thematic programme includes tropical forests, wetlands, marine ecosystems, plants, the Sahel, Antarctica, population and sustainable development, and women in conservation. These activities enable IUCN and its members to develop sound policies and programmes for the conservation of biological diversity and sustainable development of natural resources.

Species Survival Commission

Role of the SSC

The Species Survival Commission (SSC) is IUCN's primary source of the scientific and technical information required for the maintenance of biological diversity through the conservation of endangered and valuable species of fauna and flora, whilst recommending and promoting measures for their conservation, and for the management of other species of conservation concern. Its objective is to mobilize action to prevent the extinction of species, sub-species and discrete populations of fauna and flora, thereby not only maintaining biological diversity but improving the status of endangered and vulnerable species.

Objectives of the SSC

1. To participate in the further development, promotion and implementation of the World Conservation Strategy: to advise on the development of IUCN's Conservation Programme; to support the implementation of the programme; and to assist in the development, screening, and monitoring of projects for conservation action.

2. To maintain an international network of independent volunteer members selected for their expertise in species conservation and to provide a forum for the exchange of views and scientific information on species and populations of conservation concern.

3. To cooperate with the World Conservation Monitoring Centre (WCMC) in developing and evaluating a data base on the status of, and trade in, wild flora and fauna, and to provide policy guidance to WCMC.

4. To provide advice, information, and expertise to the Secretariat of the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) and other international agreements affecting conservation of species or biological diversity.

5. To carry out specific tasks on behalf of the Union, including:

- coordination of a programme of activities for the conservation of biological diversity within the framework of the IUCN Conservation Programme.
- promotion of the maintenance of biological diversity by monitoring the status of species and populations of conservation concern.
- development and review of conservation action plans and priorities for species and their populations.
- promotion of implementation of species-oriented conservation action plans and response to related issues.
- provision of guidelines, advice and policy recommendations to government, other agencies and organisations with respect to conservation and management of species and their populations.
- periodic evaluation of the status of species and biological diversity conservation initiatives.

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