Scientific Classification

Otters

Scientific Classification

Order - Carnivora

1. The scientific order Carnivora includes all mammals belonging to the dog, cat, and bear families, as well as raccoons and otters.

Family - Mustelidae

1. All otters belong to the family Mustelidae, along with weasels, skunks, minks, and badgers. Mustelids are characterized by generally long, streamlined bodies; fine, dense hair; and scent glands at the base of the tail.

Genus, Species

1. Genus - *Lutra* (river otters).

   North American river otter (*Lutra canadensis*)

   marine otter (*Lutra felina*)

   neotropical/long-tailed otter (*Lutra longicaudus*)

   Eurasian otter (*Lutra lutra*)

   spot-necked otter (*Lutra maculicollis*)

   smooth/smooth-coated otter (*Lutra perspicillata*)

   southern river otter (*Lutra provocax*)

   hairy-nosed otter (*Lutra sumatrana*)

2. Genus - *Pteronura* (giant otter).

   giant otter (*Pteronura brasiliensis*)

3. Genus - *Aonyx* (clawless otters).

   Cape clawless otter (*Aonyx capensis*)

   Asian small-clawed otter (*Aonyx cinerea*)

   Congo clawless otter (*Aonyx congica*)

Species in the genus Aonyx have digits that are either clawless or have very small, often blunt claws.

4. Genus - *Enhydra* (sea otter).

    sea otter (*Enhydra lutris*)

    Sea otters are further divided into three subspecies: *E.l. lutris* - the Russian or Asian sea otter; *E.l. kenyoni* - the northern or Alaskan sea otter; and *E.l. nereis* - the southern or California sea otter. The subspecies are separated geographically, and vary slightly in their size, diet, use of tools, and the amount of time they spend on land.

Sea otters are in the genus *Enhydra*.

Fossil Record

1. The fossil remnants of many freshwater otters date back to the Miocene (5 to 23 million years ago).
2. Scientists believe that sea otters descended from fish-eating, otter-like ancestors about five to seven million years ago, during the late Miocene and early Pliocene period.

Habitat & Distribution

Otters

Habitat & Distribution

Distribution

1. Otters are widely distributed. They are found on all continents except Australia and Antarctica.
2. North America.

   North American river otters are found throughout the United States and Canada.

   Sea otters inhabit coastal areas and islands of the eastern and western North Pacific Ocean.

   - Alaska sea otters inhabit the coast of Alaska, including the Aleutian Islands, and south along British Columbia and Washington.
   - The range of the Russian or Asian sea otter extends from northern Hokkaido, Japan to the Commander Islands in the western North Pacific.
   - California sea otters are found off the coast of central California; between Half Moon Bay and Pt. Conception. There is also a small experimental population that originated from relocated animals at San Miguel Island off the coast of Santa Barbara.
   - Historically, sea otters occupied a contiguous range from northern Japan, across the North Pacific, and down to Baja California, Mexico. They were hunted nearly to extinction, but conservation measures have allowed some populations to recover.

3. South America.

   Marine otters live along the Pacific coast of South America, ranging from northern Peru to Tierra del Fuego.

   Neotropical otters range from Uruguay north to Central America and Mexico.

   Southern river otters are found in Argentina and Chile.

   Giant otters are found throughout almost all of South America.

4. Africa.

   Cape clawless otters inhabit the southern two-thirds of the African continent.

   Congo clawless otters inhabit equatorial Africa, from southeastern Nigeria to Gabon, down to Uganda and Burundi.

   Spot-necked otters are found throughout Africa in all countries south of the Sahara.

5. Eurasia.

   Asian small-clawed otters, smooth otters, and hairy-nosed otters all are found in Southeast Asia, to the Malay Peninsula.

   Eurasian otters are found throughout most of Europe, Asia, and North Africa (Morocco, Algeria, and Tunisia).

Habitat

1. Otters are usually found no more than a few hundred meters from water. Most species are entirely dependent on aquatic habitats for food.

    River otters (genus *Lutra*) inhabit all types of inland waterways, as well as estuaries and marine coves. In southern Chile the marine otter is found almost exclusively along exposed rocky seashores; farther north it may inhabit estuaries and fresh water.

    Giant otters (genus *Pteronura*) are found mainly in slow-moving rivers and creeks within forests, swamps, and marshes. They prefer waterways that have gently sloping banks and good cover.

    Clawless otter (genus *Aonyx*) habitats vary greatly among the species and between individuals.

        Asian small-clawed otters occur in fresh and brackish water habitats including rivers, creeks, estuaries, and coastal waters.

        Congo clawless otters appear to inhabit only small, torrential mountain streams in heavy rainforest areas. They are thought to be more terrestrial in nature than other otter species.

        Cape clawless otters are found in widely varying habitats, from dense rainforest to open coastal plain and semi-arid zones. Most seem to prefer quiet ponds and sluggish streams. In coastal areas, they are known to forage both at sea and in adjoining streams and marshes.

    Sea otters (genus *Enhydra*) are found in coastal waters of the North Pacific, rarely more than 1 km (0.6 mi.) from shore.

        They are capable of spending their entire life at sea, but sometimes rest on rocky shores. The Alaska otter has a greater tendency to haul out (come to shore) than the California otter.

        California otters often prefer kelp beds, probably because of the protection and food resources they provide.

2. With the exception of sea otters, all otters spend a great deal of time on land, often traveling considerable distances between waterways.

    Most otter species have at least one permanent burrow (den) by water. The burrow's main entrance may be under water. It then slopes upward to a nest chamber above the high-water level. River otters dig their own burrows.

    Cape clawless otters do not dig burrows. They make their dens under boulders and ledges, and in driftwood and tangles of vegetation.

    Besides burrows, many river otters establish and use a variety of land "facilities" for a number of their daily activities.

        Rolling places are bare patches of ground where otters roll and groom.

        Slides offer quick access to water or other facilities. Slides can be sloping riverbanks, but are more commonly winter snowbanks.

        Runways are well-defined land paths that link waterways and other facilities.

        Spraint stations are areas designated by otters for routine, systematic defecation.

Home Ranges

1. A home range is the portion of land and water that an animal frequently visits during its daily and seasonal activities.
2. All otter species occupy a home range.
3. Home ranges vary in size with species, location, and resource distribution, and are generally larger for males

    Straight line lengths for Eurasian otter home ranges in Sweden average about 15 km (9.3 mi.) for males and about 7 km (4.3 mi.) for females. A male's range often overlaps that of one or more females.

    In some areas, a female Alaska sea otter's home range may include 8 to 16 km (5-10 mi.) of coastline.

4. Territories differ from home ranges. Territories are generally smaller than home ranges. Otters mark

their territories with scent. Same-sex territories do not overlap, and they are patrolled and defended by their owners.

Migration

1. Many otter species undergo seasonal movements, but no extensive migrations.

Population

1. Very little information is available on worldwide population figures for freshwater otters. Most otters have widespread distributions, but relatively sparse populations. Nearly all otter populations have been impacted to some extent by human activities.
2. There may be fewer than 1,000 marine otters left throughout their range.
3. The Alaskan sea otter population numbered more than 100,000 in the 1980s. Since the 1990s, the southwestern stock of Alaskan sea otters has experienced a dramatic (up to 70% population) decline, most likely due to increased predation by killer whales. The decline in more typical killer whale prey species has led some killer whales to switch to feeding on sea otters.
4. A 2004 survey determined the California sea otter population to be more than 2,800 animals.

Physical Characteristics

Otters

Physical Characteristics

Size

1. River otters range in size from about 87 to 153 cm (34-60 in.) and 3 to 14 kg (7-31 lb.).

   The largest river otter is the North American river otter, ranging from 100 to 153 cm (39-60 in.).

   The smallest river otter is the marine otter, averaging 87 to 115 cm (34-45 in.).

2. The giant otter averages 145 to 180 cm (57-71 in.), with a maximum recorded length of 240 cm (94 in.). Male giant otters average 26 to 34 kg (57-75 lb.), while females average 22 to 26 kg (49-57 lb.).
3. The Asian small-clawed otter is the smallest of all otters, measuring 65 to 94 cm (26-37 in.) and weighing just 1 to 5 kg (2.2-11 lb.). The other two clawless otters are similar in size to river otters.
4. Alaska sea otters are slightly larger than California sea otters.

   Male Alaska sea otters measure up to 148 cm (58 in.) and average about 27 to 39 kg (60-85 lb.). Large males have been known to reach a weight of 45 kg (100 lb.).

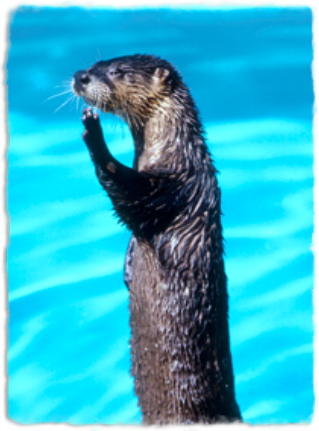
   Female Alaska sea otters measure up to 140 cm (55 in.) and average 16 to 27 kg (35-60 lb.). Large females may reach 33 kg (72 lb.).

   Male California sea otters average 122 cm (4 ft.) and 29 kg (64 lb.).

   Female California sea otters average 20 kg (44 lb.).

Body Shape

1. River otters typically have slender, streamlined, serpentine bodies. Clawless and giant otters have similarly shaped bodies.



River otters are slender with streamlined, serpentine bodies.

2. In comparison to other otter species, sea otters are somewhat stockier with larger ribcages.

3. All otters have very flexible bodies. This flexibility allows them to groom almost every inch of their fur.

Coloration

1. In general, otters exhibit various shades of brown (light cinnamon to dark brown), with a darker dorsal (back) surface and much lighter ventral (underside) surface. In some species, the color boundaries are sharp and distinct; in others, they are less clearly defined.
2. The hairy-nosed otter is very dark brown with a creamy white throat.
3. Giant and spot-necked otters have creamy white splotches on their throats and chests, sometimes blending to form a "bib".

Limbs

1. All otters have four relatively short legs. They enable otters to swim, walk, groom, and manipulate prey. Paws have bare sole pads on the undersides, with the exception of the sea otter, which has no sole pads on its hind feet.
2. River otters have webbed digits and strong, nonretractile claws on all four feet.

River otters have webbed digits and strong, nonretractile claws on four feet.

3. Clawless otters have partial webbing on their feet. Congo and Asian otters have small, blunt, peg-like claws. Cape clawless otters have similar claws on the three middle toes of their hind feet; claws are absent on the other toes.

Asian otters have partial webbing and small, blunt, peg-like claws.

4. Giant otters have large, fleshy feet with thick webbing that extends to the tips of the digits. Claws are well developed.
5. Sea otters have small dexterous forefeet with retractile claws. They use their forefeet for grooming, finding food, and eating, but not for swimming. The sea otters' flipper like hind feet are large, broad, and webbed. The outer digits of the hind feet are the longest.

Tail

1. The tails of river otters and clawless otters are long, and about one-third of total body length. They are thick at the base, muscular, flexible, and taper to a point.
2. The giant otter's tail is similar to those of other freshwater otters. However instead of tapering to a point it becomes lance-shaped - flattened top-to-bottom, with a noticeable flange on each side.
3. A freshwater otter uses its tail to propel itself when swimming at high speed, to steer when swimming slowly, and to help balance when standing upright on its hind legs.

4. Compared to other otters, sea otters have shorter and less muscular tails, with no marked tapering. While floating on its back, a sea otter can scull with its tail to turn.
5. Like most other mustelids, freshwater otters have subcutaneous anal scent glands at the base of the tail. Sea otters lack scent glands.

Head

1. Otters have flattened heads and short, thick necks. A sea otter has a blunter muzzle than those of other otters.
2. Eyes are located toward the front of the head.
3. Ears are very small, and either rounded or pointed. The valve-like structure of the ears enables them to close when in the water.
4. The nose pads of otters vary considerably with the species.

   The nose pads of most otters are flat and bare with some variation on a spade or anvil shape.

   Most river otters have black nose pads. The smooth otter and clawless otters have nose pads that are dusky or pinkish in color.

   The nose pads of hairy-nosed and giant otters are partially or completely covered with hair.

   A sea otter's nose pad is large, bare, black, and diamond-shaped. An adult female's nose pad often bears pink scars from wounds inflicted during mating, when the male grasps her nose with his teeth.

   Like the ears, an otter's nostrils close when under water.

5. Teeth vary with diets.

   Fish-eating otters that catch prey with their mouths have sharp teeth. Shellfish-eaters have more blunt teeth, adapted for crushing shells.

   Sea otters have 32 teeth, mostly post-canine molars. They are designed for crushing and grinding the shells of invertebrates, not for tearing flesh. Sea otters are the only carnivores with just two pairs of incisors in the lower jaw. Their incisors appear to function in scraping the soft parts of molluscs from their shells. All other otters have three pairs of incisors, which are probably used for grooming.

Sea otters have 32 teeth, mostly post-canine molars designed for crushing and grinding.

6. Vibrissae.

   An otter is equipped with vibrissae (whiskers) on its muzzle. Vibrissae are sensitive to touch and to underwater vibrations. Otters use their vibrissae to detect the movements of prey.

Fur

1. The fur of all otters is fine, dense, and velvety.
2. Like other mammals, otters have two types of fur: long, stout guard hairs, and a more dense arrangement of short, fine underhairs.
3. Fur length varies considerably with the species.

   Most otters have guard hairs that average about 12 to 17 mm (0.47-0.67 in.) in length. The underhairs average 7 to 9 mm (0.28-0.35 in.).

   The marine otter has the second longest fur of all otters, with guard hairs measuring 20 mm (0.79

in.) and underhairs measuring 12 mm (0.47 in.).

With 8 mm (0.32 in.) guard hairs and underhairs measuring just 4 to 5 mm (0.16-0.2 in.), giant otters have the shortest fur of all otters.

4. Sea otter fur.

   Sea otters have the longest fur of all otters, but length varies greatly with location on the body. Guard hairs and underhairs range from 8.2 to 26.9 mm (0.32-1.06 in.) and 4.6 to 15.8 mm (0.18-0.62 in.) in length, respectively. The longest hairs are on the back, stomach, and sides.

   Sea otters have the densest fur of any mammal. Hair density varies dramatically with location on the body, ranging from about 26,000 to 165,000 hairs per square centimeter (170,000-1,062,000 per square inch). The highest density occurs on the forearms, sides, and rump; the lowest density is on the chest, legs, and feet. A single large male may have 800 million hair fibers covering its body.

   One guard hair may have from 12 to 108 underhairs bundled with it, depending on the location.

Senses

Otters
Senses

Hearing

1. All otters have very good hearing. Some scientists believe that an otter's sense of hearing is more important than smell for sensing danger.

Eyesight

1. Eyesight is probably the most important sense for hunting.
2. A specialized lens and cornea correct for the refraction of light caused by the transition from aerial to aquatic vision.
3. Vision studies conducted on Asian small-clawed otters suggest that, in bright light, visual resolution is equally good in water and air; in dim light, resolution is better in air than in water.

Tactile

1. Clawless otters and sea otters have very sensitive forepaws. The areas of their brains that receive tactile sensory information from the forelimbs are enlarged. These otters use their forepaws for foraging.
2. An otter's vibrissae are very sensitive to tactile stimulation and to underwater vibrations.

   A substantial nerve network at the base of the vibrissae transmits tactile information to the brain.

   In river otters and giant otters, species that forage with their mouths, the area of the brain receiving tactile information from the facial area is larger than in other species.

Taste

1. Otters show preferences for certain foods, but researchers don't know if taste is important in these preferences.

Smell

1. Otters have an acute sense of smell. It is probably the most important sense for communication about territories and assessing breeding readiness.

Adaptations

Otters
Adaptations

Swimming

1. Otters are excellent swimmers. They swim with movements of the hind legs and tail. Freshwater otters "dog paddle" with all four feet when swimming slowly or floating. When swimming at a high speed, the entire body, including the tail, undulates up and down and the hind feet steer.
2. Researchers have observed giant otters swimming at speeds up to 14.4 kph (9 mph).
3. Sea otters spend a great deal of time floating on their backs at the surface. They move by paddling their hind limbs and sculling with their tails. For rapid swimming and for diving, they swim similarly to other otters, using up-and-down undulations of the body. Sea otters can reach speeds of 1.5 kph (0.9 mph) on the surface and 9 kph (5.6 mph) under water.

Sea otters spend a great deal of time floating on their backs at the surface.

Diving

1. River otters can remain under water for 6 to 8 minutes.
2. Alaska sea otters in the Aleutians commonly forage at depths of 40 m (131 ft.) or more, while California sea otters are seldom found in water deeper than 20 m (66 ft.). Sea otters usually remain submerged for 52 to 90 seconds; the longest recorded dive was 4 minutes, 25 seconds. Such extended dives are probably a response to danger. The deepest confirmed dive for a sea otter was 97 m (318 ft.).

Locomotion On Land

1. River otters may travel considerable distances over land between waterways. Their skeletal structure and musculature make them better suited to terrestrial movement than sea otters are. River otters can attain running speeds up to 47 kph (29 mph). They travel over snow and ice using a combination of running and sliding.
2. Sea otters are quite awkward on land, and spend the majority of their lives in the water.

Thermoregulation

1. Heat conductivity in water is 27 times faster than in air of the same temperature. Even in temperate water mammals lose body heat rapidly.

2. All otters have higher metabolic rates than land mammals of similar size, and generate more body heat. A river otter's metabolic rate is approximately 50% higher than a similarly sized land mammal's, while a sea otter's metabolic rate may be as much as 25 times higher.
3. The higher metabolic rate necessitates a higher caloric intake.
4. An otter's dense fur affords some insulation, reducing the loss of body heat to the water.

Otters have dense, insulating fur that reduces the loss of body heat to the water.

5. For sea otters, maintaining a constant body temperature is particularly challenging. Alaska otters typically inhabit water that may be as much as 15.5°C (60°F) below their core temperature.

    Unlike other marine mammals, sea otters lack an insulating layer of fat. They rely on a higher metabolic rate and air trapped in their dense fur.

        The cuticle of each hair is scaly and ratchet-like. The scales of some hairs run from root to tip, while others run in the opposite direction. This arrangement allows hairs to interlock.

        Minute spaces between the hairs trap air effectively. Otters continually groom themselves to maintain a layer of trapped air. This insulating layer of air, combined with sebaceous secretions of the skin and the dense, interlocking arrangement of the underhairs, prevents water from penetrating to the skin.

        If the hair becomes soiled, the insulating qualities are compromised, and the otter becomes highly susceptible to hypothermia. Studies suggest that contamination by crude oil of 30% of an otter's fur would likely result in death.

    Sea otters may have a countercurrent heat exchange system. Arteries and veins in the extremities are very close together. Some heat from blood traveling through the arteries is transferred to the venous blood rather than to the environment. This system may aid otters in conserving body heat.

    Sea otters often hold their feet out of the water. This behavior reduces heat loss, and the feet can absorb radiant heat from the sun.

Communication

Otters

Communication

Vocalizations

1. All otters produce sounds and communicate vocally.
2. Giant otters are the most vocal of all otters, vocalizing frequently and with great volume. Researchers have distinguished nine different vocals, including screams that indicate excitement, and coos associated with interaction.
3. A Cape clawless otter produces powerful, high-pitched shrieks when disturbed or when trying to attract attention. The Asian small-clawed otter has a repertoire of at least 12 different vocalizations.
4. Researchers have identified nine vocalizations for sea otters, including distress screams and contented coos, as well as whines, whistles, growls, and snarls.

Scent Markings

1. Scent is the most important sense for communication in all freshwater species. River otters have scent glands at the base of the tail. They deposit their musky scent on their spraint.
2. Spraint stations tend to be evenly spaced throughout an otter's range, about 40 to 70 m (131–230 ft.) apart. These stations can be ten times more common along the coast than further inland, where otter movements are channeled along particular routes. Spraint is deposited in conspicuous locations including tree trunks, boulders, trails, and pool edges.
3. Otters spend a great deal of time exploring their own spraint as well as that of others.
4. Each otter's characteristic scent is as unique as a fingerprint and conveys such information as identity, age, sex, and breeding condition.
5. Scent is especially important for marking territorial boundaries.

Sign Heaps

1. Sign heaps are small mounds of sand, gravel, grass, or mud scraped up by otters. They are visual indicators of an otter's presence.

Behavior

Otters
Behavior

Activity Cycles

1. River otters may be either diurnal or nocturnal; most are generally more active at night.
2. Giant otters are strictly diurnal.
3. Clawless otters are mainly nocturnal, though some individuals may be active during the day in remote areas that are free of human disturbance.
4. Sea otters are generally diurnal. Daily activities focus on feeding and grooming, interspersed with rest periods.

Individual Behavior

1. Grooming.

   All otters must continually groom their fur to maintain its insulating qualities. Otters spend a substantial amount of time grooming, and many species of river otters have designated areas on land for drying and grooming their fur. Most vigorously dry themselves by rolling on the ground or rubbing against logs or vegetation.

   Researchers have observed sea otters spending at least 11% to 48% of their day grooming. They use their paws and claws to remove debris and to comb their fur. They may also aerate their fur by blowing air into it and beating the water with their feet to whip it into foam. An otter's flexible body and loose-fitting skin allow it to reach every part of its fur.

2. Sprainting.

   River otter feces, commonly referred to as spraint by otter researchers, is enormously important in otter communication. Spraint is a visual and olfactory indicator of an otter's presence. Otters produce small amounts of spraint several times a day, depositing it in conspicuous designated areas and spraying it with scent.

3. Play.

   Some researchers believe that sliding is a form of play in river otters. For some species, otters of all age classes have been observed sliding. Others believe otters only use these slides for low-energy travel, maintaining that otters generally do not climb to the top of a slope for another slide. These latter researchers have observed very little behavior they interpret as play.

4. Sleep.

   Freshwater otters generally rest and sleep on land, either above ground or in dens. They are not particular about where they sleep and often do so even in areas of moderate disturbance. Individual animals often have several resting places.

   Sea otters sleep at sea, floating on their backs on the surface. They often sleep in strands of kelp which keeps them from drifting.

Social Structure

1. Most male and female river otters form separate dominance hierarchies. The highest ranking males occupy the most favorable ranges. Males and females normally tolerate - but do not accompany - each

other. A female with young may become dominant to males.

2. In Southeast Asia, smooth otters typically occur in social groups consisting of an adult male-female pair and their young.
3. Spot-necked otters have been observed in groups of more than 6, and as many as 20, animals. On Lake Victoria in East Africa, spot-necked otters may undergo a cycle of aggregation and dispersal, with males and females forming separate groups. A female group may contain 8 to 20 individuals, but become smaller during mating when females pair off with males.
4. A giant otter social group consists of an adult pair, one or more subadults, and one or more juveniles. Groups with as many as 20 individuals have been reported, but groups of 4 to 8 are more common. Giant otters exhibit a high degree of pair bonding and group cohesiveness.
5. Cape clawless otters have a clan-type social organization, with groups of related animals associating with one another and defending joint territories. Males may maintain a loose association with a female and her young.
6. Asian small-clawed otters live in loose family groups of about 12 animals.

Asian small-clawed otters live in loose family groups.

7. Sea otters are basically solitary, but in Alaska they aggregate in large groups of as many as 2,000 animals. Males and females occupy separate sections of coastline, and only come together briefly for mating.

Social and Territorial Behavior

1. River otters tend to be solitary and fairly territorial. Avoidance is a very significant factor in river otter social behavior.

   River otters defend their territories by marking, scratching, and occasionally fighting.

   Male river otters ignore females and young through most of the year.

2. Giant otters are more social than river otters, but separate groups tend to avoid each other.
3. Clawless otters are relatively social.
4. Male sea otters set up territories in female areas, and attempt to mate with any female that enters their territory. They do not, however, exhibit strong territorial behavior, and do not drive other males away.

Diet & Eating Habits

Otters

Diet & Eating Habits

Food Preferences and Resources

1. Food habits vary significantly according to species, location, and season.

   River otters' diets consist largely of crayfishes, crabs, and other aquatic invertebrates; fishes; and frogs. Despite concern that otters compete with game fishers, the fishes that otters consume are mainly non-game species. Otters may also occasionally prey on birds, rabbits, and rodents.

   Giant otters eat mainly fishes and crabs.

   Cape clawless and Asian small-clawed otters feed mainly on crabs and other crustaceans, molluscs, and frogs. Fish are relatively insignificant in their diets. Congo clawless otters probably feed on fairly soft prey items such as small land vertebrates, frogs, and eggs.

   A sea otter's diet consists mainly of slow-moving fishes and marine invertebrates including crabs, sea urchins, abalones, clams, mussels, and snails. Food preferences vary among individuals.

2. Two or more otter species occupying the same geographical area usually have different food habits.

   In Thailand, the ranges of at least three otter species overlap. Of these, scientists have determined that the Asian small-clawed otter eats mainly crabs, the smooth otter relies primarily on large fishes, and the Eurasian otter feeds mainly on smaller fishes and amphibians.

   In South America, the neotropical otter preys on small fishes, while the giant otter preys on larger species.

   In some areas where two or more species overlap, one may be a marine species and the other a freshwater species, such as the marine and southern otters of southern South America.

   In Monterey Bay, California, researchers found that each sea otter tends to specialize in only a few types of the more than 50 available invertebrates. This behavior may reduce competition in the California population.

Food Intake

1. An otter's high metabolic rate - important for generating body heat - requires a substantial amount food.
2. River otters eat 15% to 20% of their total body weight each day.
3. Sea otters eat about 25% to 30% of their weight. A large male may consume as much as 11 kg (25 lb.) of food daily.

Methods of Collecting Food

1. River otters and giant otters hunt by using their vibrissae to detect movements of prey in the water. They catch prey with their teeth.
2. Giant otters often hold their prey in their paws while eating it. They normally eat small fishes in the water, and bring larger prey to shore.
3. Shellfish-eating clawless otters catch prey with their paws. Cape clawless otters have been observed using rocks and other hard objects to break open mussel shells.

4. Sea otters dive to the ocean floor to retrieve food. They catch prey in their forepaws then bring it to the surface.

   A sea otter eats in the water, lying on its back, with its food on its chest. Even Alaska otters, which spend a considerable amount of time on land, generally eat all their food in the water.

A sea otter eats in the water, lying on its back, with its food on its chest.

   A sea otter may remove an abalone by repeatedly hitting it with a rock. It also uses a flat rock to break open the shells of crustaceans and molluscs. Holding the rock on its chest, the otter pounds the animal on the rock until it breaks or opens.

   Researchers have observed a feeding hierarchy among sea otters. Larger, dominant animals take food from smaller ones. Smaller animals often eat less desirable food than larger animals, including discarded bits of food.

Reproduction

Otters

Reproduction

Activity Cycles

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   Researchers have observed sea otters spending at least 11% to 48% of their day grooming. They use their paws and claws to remove debris and to comb their fur. They may also aerate their fur by blowing air into it and beating the water with their feet to whip it into foam. An otter's flexible body and loose-fitting skin allow it to reach every part of its fur.

2. Sprainting.

   River otter feces, commonly referred to as spraint by otter researchers, is enormously important in otter communication. Spraint is a visual and olfactory indicator of an otter's presence. Otters produce small amounts of spraint several times a day, depositing it in conspicuous designated areas and spraying it with scent.

3. Play.

   Some researchers believe that sliding is a form of play in river otters. For some species, otters of all age classes have been observed sliding. Others believe otters only use these slides for low-energy travel, maintaining that otters generally do not climb to the top of a slope for another slide. These latter researchers have observed very little behavior they interpret as play.

4. Sleep.

   Freshwater otters generally rest and sleep on land, either above ground or in dens. They are not particular about where they sleep and often do so even in areas of moderate disturbance. Individual animals often have several resting places.

   Sea otters sleep at sea, floating on their backs on the surface. They often sleep in strands of kelp which keeps them from drifting.

Social Structure

1. Most male and female river otters form separate dominance hierarchies. The highest ranking males occupy the most favorable ranges. Males and females normally tolerate - but do not accompany - each

other. A female with young may become dominant to males.

2. In Southeast Asia, smooth otters typically occur in social groups consisting of an adult male-female pair and their young.
3. Spot-necked otters have been observed in groups of more than 6, and as many as 20, animals. On Lake Victoria in East Africa, spot-necked otters may undergo a cycle of aggregation and dispersal, with males and females forming separate groups. A female group may contain 8 to 20 individuals, but become smaller during mating when females pair off with males.
4. A giant otter social group consists of an adult pair, one or more subadults, and one or more juveniles. Groups with as many as 20 individuals have been reported, but groups of 4 to 8 are more common. Giant otters exhibit a high degree of pair bonding and group cohesiveness.
5. Cape clawless otters have a clan-type social organization, with groups of related animals associating with one another and defending joint territories. Males may maintain a loose association with a female and her young.
6. Asian small-clawed otters live in loose family groups of about 12 animals.

Asian small-clawed otters live in loose family groups.

7. Sea otters are basically solitary, but in Alaska they aggregate in large groups of as many as 2,000 animals. Males and females occupy separate sections of coastline, and only come together briefly for mating.

Social and Territorial Behavior

1. River otters tend to be solitary and fairly territorial. Avoidance is a very significant factor in river otter social behavior.

   River otters defend their territories by marking, scratching, and occasionally fighting.

   Male river otters ignore females and young through most of the year.

2. Giant otters are more social than river otters, but separate groups tend to avoid each other.
3. Clawless otters are relatively social.
4. Male sea otters set up territories in female areas, and attempt to mate with any female that enters their territory. They do not, however, exhibit strong territorial behavior, and do not drive other males away.

Birth & Care of Young

Otters

Birth & Care of Young

Gestation

1. All clawless and river otters have a gestation period of about two months.
2. North American, smooth, spot-necked, and marine otters in North American zoological parks have demonstrated delayed implantation for as long as 10 months. When the fertilized egg has divided into a hollow ball of cells one layer thick (blastocyst stage) it stops developing, and floats in the uterus. After several months the blastocyst implants in the uterine wall and continues to develop. Actual embryonic development takes only about two months. Delayed implantation ensures that the pup will be born when environmental conditions are optimal for its survival. It also allows some recovery time for the mother from her last pregnancy.
3. The giant otter's gestation period lasts about 65 to 70 days
4. Reports on sea otter gestation range from four to nine months, with an average of six months. This probably includes a period of delayed implantation of two to three months.

Birth Seasons

1. In the subarctic climates of Sweden and Siberia, Eurasian otters give birth in April and May; in more temperate climates there is no distinct birth season.
2. North American, smooth, spot-necked, and marine otters give birth in winter and spring, one year following mating.
3. Giant otters are born late August to early October, during the dry season. If a female loses her first litter to predators or other natural causes, she may sometimes produce a second litter between December and April.
4. Birth seasons for Cape clawless otters are highly variable, and depend largely on location.
5. Sea otters give birth throughout the year, with peaks in late May and June for Alaska otters, and March and September for California otters.

Frequency of Birth

1. Most freshwater otters produce one litter each year. Some Eurasian and Asian small-clawed otters produce two litters in a year.
2. Sea otters are capable of giving birth every year, but females usually experience much longer birth intervals.

Litter Size

1. Freshwater otters usually have litters of one to three young. River and giant otters may have as many as five young in a litter, and Asian small-clawed otters may have six.

Freshwater otters can have litters of one to six young.

2. Sea otters normally have a single offspring. About 2% of all otter births are multiple, but only one pup can be successfully cared for.

Birth

1. Freshwater otters give birth on land, in dens. Birthing dens are secure and undisturbed.
2. Most sea otter births occur in the water.

Otters at Birth

1. River otter pups average about 130 grams (4.6 oz.).
2. Giant otters weigh about 200 grams (7 oz.) at birth.
3. Freshwater otter pups are born blind, toothless, and practically immobile. They remain in their birthing dens, and spend their first few weeks nursing and sleeping.
4. Sea otter pups measure 56 to 61 cm (22-24 in.) in length and weigh 2 to 2.3 kg (4.5-5 lb.). They are somewhat precocial; born with eyes open, first teeth already emerging, and a full coat of dense fur that enables them to float. They are, however, completely dependent on their mothers for care and protection.

Sea otter pups are born with a full coat of dense fur that enables them to float.

Care of Young

1. Nursing.

   A female river otter has four nipples on her lower abdomen. River otters' milk is 24% fat. Pups nurse every three to four hours for 10 to 15 minutes at a time. They are fully weaned at 14 weeks.

   A female sea otter carries and nurses her pup on her belly as she floats on her back. She holds her pup belly down so it can nurse from her two abdominal nipples. Sea otter milk is 20% to 25% fat. Sea otters nurse for six to eight months.
2. All female otters aggressively defend their young against intruders.
3. A female sea otter carries her pup on her belly and spends a great deal of time grooming it for the first three months. When she dives for food, the mother often wraps her pup in strands of kelp to keep it

from drifting. If she senses danger, she grabs the pup by the loose skin of the neck with her teeth and dives until they reach safety.

A female sea otter carries her pup on her belly and spends a great deal of time grooming it.

Pup Development

1. River otter pups open their eyes at about one month, and most species first emerge from the den and begin to swim at two months. By four months of age, most river otters can swim and dive well enough to catch their own food.
2. Giant otter pups eat solid food at three to four months.
3. Clawless otters open their eyes at about 40 days, and first swim at nine weeks. They take their first solid food at about 80 days.
4. All freshwater otter pups stay with their mothers for a year, until the next litter is born.
5. Sea otter pups may begin to swim and take solid food at about four weeks, and dive at six weeks. Pups remain dependent on their mothers for an average of six months.
6. Growth rates in otters vary considerably between species, litters, sexes, and individuals.

Longevity & Causes of Death

Otters

Longevity & Causes of Death

Longevity

1. Otters live an average of 10 to 15 years. Some individuals have lived more than 20 years in zoological parks.

Some otters have lived more than 20 years in zoological parks.

2. Mortality for river otter pups has been estimated at about 32% in the first year, and 54% the second year (when most attain independence). Mortality drops after that, but less than one-quarter of all female otters survive long enough to reproduce.

Disease and Parasitism

1. Otters are susceptible to many diseases, and several have been reported in river otters, including kidney stones, tooth decay, and cirrhosis of the liver.
2. River otters are also susceptible to parasitic infestations by flukes, roundworms, tapeworms, and possibly ticks.
3. In the late 1990s the California sea otter population mysteriously declined. Many of the recovered and rescued animals had a higher than normal rate of parasitic, bacterial, or fungal infections that were probably major factors in the slow population recovery rate. The three most common parasites found in California sea otters are Toxoplasma gondii, Sarcocystis neurona, and Acanthocephalans.

   Toxoplasma gondii (Toxaplasmosis) is a protozoan parasite that is found in a large number of stranded sea otters. This is the same parasite that cats can shed in their feces. *T. gondii* probably enters water systems by runoff from storm drains and from people flushing cat litter. This parasite lays its eggs in filter-feeding invertebrates, which are then consumed by sea otters. While not toxic to the invertebrate host, infected sea otters can develop *encephalitis* (infection of the brain) leading to seizures or even death.

   Sarcocystis neurona is a protozoan parasite found in opossum feces. This parasite also lays its eggs in the otter's food source. Sea otters infected by *S. neurona* develop encephalitis.

   Acanthocephalans, or thorny headed worms, are intestinal parasites of sea otters. Seabirds shed

acanthocephalan eggs in their feces. The eggs are then ingested by invertebrates, which can then be consumed by sea otters. In sea otters, acanthocephalans puncture the intestinal wall and cause *peritonitis* (bacterial infection of the abdominal cavity).

Predators

1. Healthy adult otters have few predators. Very old otters and pups may fall prey to a number of land predators, including wolves, birds of prey, and large reptiles.

Otter pups may fall prey to a number of land predators.

2. Surprisingly, one possible threat to the Alaskan sea otter population is predation by killer whales.

   Scientists estimate that since 1990, killer whales have preyed on more than 40,000 Alaskan sea otters. It is believed that because of recent population declines of the killer whales' typical prey of Steller sea lions and harbor seals in the North Pacific, a small number of killer whales have shifted their main diet to sea otters.

   Researchers estimate that a single killer whale can feed on up to 1,825 Alaskan sea otters in a year.

   Killer whales do not currently pose a threat to California sea otter populations.

3. Sea otter carcasses in California have been found bearing wounds and tooth fragments identified as those of white sharks, but there is no direct evidence that white sharks consume sea otters. These findings suggest that white sharks may attack, but not prey on, sea otters.
4. The bald eagle is a significant predator of young sea otters in Alaska.

Human Impact

1. All otter species have been hunted for their thick, velvety fur. Excessive fur trapping during the 19th and 20th centuries caused severe declines in many populations.

   During the 1976-77 trapping season 32,846 North American river otter pelts were reported taken in the U.S. The average selling price was $53 per pelt. In 1991-1992 more than 10,000 pelts were reported taken and sold for a much lower average selling price of $22.34.

   Sea otters endured a long history of intensive exploitation. In 1741, Russians began hunting sea otters. They were joined by English and American hunters in the latter part of the century, and uncontrolled hunting continued until 1799. That year, some conservation measures were established, but unregulated killing resumed in 1867, when the U.S. purchased Alaska. During the 1880s, sea otter pelts on the London Market went for as much as $165, but by 1903 the price of a large, good quality pelt shot up to $1,125. By then the species had been nearly wiped out; probably only 1,000 to 2,000 survived worldwide.

2. Oil spills are devastating to sea otter population.

   When crude oil penetrates the fur, it disrupts the interlocking arrangement of the underhairs and displaces the air layer. The fur loses as much as 70% of its insulation.

   Otters may reduce heat loss by leaving the water, but unable to forage, starvation occurs rapidly.

   When sea otters ingest crude oil they experience numerous severe physiological problems including anemia, shock, seizures, and hypoglycemia (low blood sugar), as well as damage to several internal organs. Toxic crude oil is particularly damaging to the liver.

   In March 1989, 11 million gallons of crude oil spilled in Prince William Sound, Alaska. The spill resulted in the deaths of approximately 2,650 Alaska otters - a figure greater than the total California population. Scientists estimate that a similar spill off the Monterey Peninsula would

destroy at least half of the California population.

3. In the mid 1970s and 1980s the California sea otter population declined as a result of sea otters drowning in nearshore, set gill nets. The population recovered slightly after the California Department of Fish and Game banned gill net fishing in shallow, coastal waters within the California sea otter's range.
4. Other threats to otters include pollution, habitat destruction, and persecution - commercial and game fisheries see otters as competition for resources.

Conservation & Research

Otters

Conservation & Research

Legal Protection

1. The Endangered Species Act, 1973 (ESA).

   The Endangered Species Act of 1973 (ESA) is administered by the U.S. Departments of Interior and Commerce. It seeks to stop the extinction of wild animals and plants in the United States, other nations, and at sea.

   Under the ESA, the neotropical, southern, marine, giant, and Congo clawless otters are listed as "endangered" (species faces a very high risk of extinction).

   The California sea otter is listed as "threatened" (species faces a high risk of extinction).

2. IUCN/The World Conservation Union.

   IUCN/The World Conservation Union is a worldwide conservation organization. This organization links together government agencies, non-government agencies, and independent states to encourage a worldwide approach to conservation.

   IUCN/The World Conservation Union lists the marine, giant, southern river, and sea otters are listed as "endangered" (species has a very high risk of extinction). The smooth-coated otter is listed as "vulnerable" (has a high risk of extinction), and the Eurasian and Asian small-clawed otters as "near threatened" (has a potential future risk of extinction). The Congo clawless, neotropical, and hairy-nosed otters are listed as "data deficient" (not enough data are available to determine the species' risk of extinction).

   IUCN

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

3. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

   CITES is an international treaty, developed in 1973, to regulate trade in certain wildlife species.

   CITES Appendix I lists species identified as endangered. The neotropical, southern, marine, giant, and California sea otters, as well as some subspecies of Eurasian otters and A.c. microdon, are listed on CITES Appendix I.

   All other otter species and subspecies are listed on Appendix II, in which the species is identified as threatened.

Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES)

4. Sea otters have been protected by the International Fur Seal Treaty since 1911. This treaty between U.S., Russia, Japan, and Great Britain was established to ban large-scale commercial hunting of sea otters and fur seals and to allow their populations to recover. Since then, sea otter numbers have increased. The California population, thought to be extinct in 1920, has grown to its current figure of about 2,800 (USFWS 2004).
5. Sea otters also are protected by the Marine Mammal Protection Act of 1972 (MMPA).

   The MMPA, with certain limited exemptions, makes it illegal to hunt, harm, or harass any marine mammal in U.S. waters.

   The primary objective of the MMPA is to maintain the health and stability of the marine ecosystem and to obtain and maintain an optimum sustainable population of marine mammals.

Reintroduction

1. Three species of otters - North American river otters, Eurasian otters, and sea otters - have been reintroduced into historical habitats, in an attempt to repopulate them. These introduction efforts have met with some success.
2. Reintroductions of wild-caught sea otters to southeast Alaska, British Columbia, and Washington have been successful, although efforts to reintroduce California sea otters to the Channel Islands off the coast of Southern California were not as successful.

Zoological Parks

1. The unique opportunity to observe and learn directly from live animals increases public awareness and appreciation of wildlife.
2. In the protected environment of a zoological park, scientists can examine aspects of otter biology that are difficult to study in the wild.
3. SeaWorld parks rescue and rehabilitate orphaned, ill, and injured otters.

   Scientists from the Hubbs-SeaWorld Research Institute (HSWRI), in cooperation with other facilities and volunteers, coordinated efforts to rescue and treat sea otters affected by the 1989 oil spill. About 360 sea otters were rescued and treated at nearby rehabilitation facilities. Of these, 195 were successfully rehabilitated and released.

   Scientists removed the oil from the otters' fur with dishwashing detergent. The otters then required a long rehabilitation period to regain the natural oils that protect their fur and to build up an insulating layer of air.

   For ingested oil, scientists administered a treatment of activated charcoal, given orally, to bind to the hydrocarbons in the crude oil and allow them to pass through the intestine.

SeaWorld parks rescue and rehabilitate orphaned, ill and injured otters.

At the request of the U.S. Fish and Wildlife Service (USFWS), some rescued California sea otters are being monitored in long-term studies in zoological parks such as SeaWorld San Diego.

SeaWorld Orlando occasionally rescues orphaned North American river otter pups. Animal experts bottlefeed the pups, then wean them on a diet of fish before they are released.

4. In cooperation with the American Zoo and Aquarium Association (AZA), SeaWorld breeds Asian small-clawed otters as part of AZA's Species Survival Plan (SSP). The goal of the SSP is to preserve, in zoos and aquariums, animals that are threatened or endangered in the wild.

Books for Young Readers

Otters

Books for Young Readers

Book List

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