

# Domestic pig

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The **domestic pig** (*Sus scrofa domesticus* or *Sus domesticus*), often called **swine** or **hog**, is a large, even-toed ungulate; it is variously considered a subspecies of the wild boar, or a distinct species. Its head-plus-body-length ranges from 0.9 to 1.8 m (35 to 71 in), and the adult can weigh between 50 to 350 kg (110 to 770 lb). Compared to other artiodactyls, its head is relatively long, pointed, and free of warts. Even-toed ungulates are generally herbivorous, but the domestic pig is an omnivore, like its wild relative.

Domestic pigs are farmed primarily for the consumption of their meat, called pork. The animal's bones, hide, and bristles are also used in commercial products. Domestic pigs, furthermore, and especially the pot-bellied pig, are sometimes kept as pets.

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## Description

The domestic pig typically has a large head, with a long snout which is strengthened by a special prenasal bone and a disk of cartilage at the tip.<sup>[2]</sup> The snout is used to dig into the soil to find food, and is a very acute

### Domestic pig



A domestic sow and her piglet

### Conservation status

Domesticated

### Scientific classification

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Artiodactyla

Family: Suidae

Genus: *Sus*

Species: *S. scrofa*  
Linnaeus, 1758

Subspecies: *S. s. domesticus*

### Trinomial name

*Sus scrofa domesticus*

Erxleben, 1777

### Synonyms<sup>[1]</sup>

- *Sus scrofa domestica*  
Erxleben, 1777
- *Sus domesticus* Erxleben,  
1777
- *Sus domestica* Erxleben, 1777

sense organ. The dental formula of adult pigs is  $\frac{3.1.4.3}{3.1.4.3}$ , giving a total of 44 teeth. The rear teeth are adapted for crushing. In the male the canine teeth can form tusks, which grow continuously and are sharpened by constantly being ground against each other.<sup>[2]</sup>

There are four hoofed toes on each foot, or trotter, with the two larger central toes bearing most of the weight, but the outer two also being used in soft ground.<sup>[3]</sup>

Most domestic pigs have rather a sparse hair covering on their skin, although woolly-coated breeds, such as the Mangalitsa, are raised.<sup>[4]</sup>

Pigs possess both apocrine and eccrine sweat glands, although the latter appear limited to the snout and dorsonasal areas.<sup>[5]</sup> Pigs, however, like other "hairless" mammals (e.g. elephants, rhinos, and mole-rats), do not use thermal sweat glands in cooling.<sup>[6]</sup> Pigs are also less able than many other mammals to dissipate heat from wet mucous membranes in the mouth through panting. Their thermoneutral zone is 16 to 22 °C.<sup>[7]</sup> At higher temperatures, pigs lose heat by wallowing in mud or water; although it has been suggested that wallowing may serve other functions, such as protection from sunburn, ecto-parasite control, and scent-marking.<sup>[8]</sup>

## Taxonomy

The domestic pig is most often considered to be a subspecies of the wild boar, which was given the name *Sus scrofa* by Carl Linnaeus in 1758; following from this, the formal name of the domestic pig is *Sus scrofa domesticus*.<sup>[9][10]</sup> However, in 1777, Johann Christian Polycarp Erxleben classified the domestic pig as a separate species from the wild boar. He gave it the name *Sus domesticus*, which is still used by some taxonomists.<sup>[11][12]</sup>

## History

Archaeological evidence suggests that pigs were domesticated from wild boar as early as 13,000–12,700 BC in the Near East in the Tigris Basin<sup>[13]</sup> being managed in the wild in a way similar to the way they are managed by some modern New Guineans.<sup>[14]</sup> Remains of pigs have been dated to earlier than 11,400 BC in Cyprus. Those animals must have been introduced from the mainland, which suggests domestication in the adjacent mainland by then.<sup>[15]</sup> There was also a separate domestication in China which took place about 8000 years ago.<sup>[16][17]</sup>

DNA evidence from sub-fossil remains of teeth and jawbones of Neolithic pigs shows that the first domestic pigs in Europe had been brought from the Near East. This stimulated the domestication of local European wild boar resulting in a third domestication event with the Near Eastern genes dying out in European pig stock. Modern domesticated pigs have involved complex exchanges, with European domesticated lines being exported in turn to the ancient Near East.<sup>[18][19]</sup> Historical records indicate that Asian pigs were introduced into Europe during the 18th and early 19th centuries.<sup>[16]</sup>

The adaptable nature and omnivorous diet of the wild boar allowed early humans to domesticate it readily. Pigs were mostly used for food, but early civilizations also used the pigs' hides for shields, bones for tools and weapons, and bristles for brushes.<sup>[20]</sup> In India, pigs have been domesticated for a long time, mostly in Goa and some rural areas, for pig toilets. Though ecologically logical as well as economical, pig toilets are waning in popularity as use of septic tanks and sewage systems is increasing in rural areas.

Pigs were brought to southeastern North America from Europe by de Soto and other early Spanish explorers.



Domestic pig skull

Escaped pigs became feral and caused a great deal of disruption to Native Americans who had no domesticated livestock.<sup>[21]</sup> Domestic pigs have become feral in many other parts of the world (e.g. New Zealand and northern Queensland) and have caused substantial environmental damage.<sup>[22][23]</sup> Feral hybrids of the European wild boar with the domestic pig are also very disruptive to both environment and agriculture (among the 100 most damaging animal species), especially in southeastern South America from Uruguay to Brazil's Mato Grosso do Sul (Center-West Region), and São Paulo (state) (Southeast Region), where they are known as *javaporcos* (from *javali* and *porco*, thus "boar-pigs").<sup>[24][25][26][27][28]</sup>

With around 1 billion individuals alive at any time, the domesticated pig is one of the most numerous large mammals on the planet.<sup>[29][30]</sup>

## Behaviour

The behaviour of domestic pigs is more like that of dogs and humans, rather than cattle or sheep; in many ways, their behaviour appears to be intermediate between that of carnivores and the more highly evolved artiodactyls.<sup>[31]</sup> Domestic pigs seek out the company of each other and often huddle to maintain physical contact, although they do not naturally form large herds.

If conditions permit, domesticated pigs feed continuously for many hours and then sleep for many hours, in contrast to ruminants which tend to feed for a short time and then sleep for a short time. Pigs are omnivores and are highly versatile in their feeding behaviour. They can survive well by scavenging on the same types of foods that humans and dogs can live on. In the wild, they are foraging animals, primarily eating leaves, grasses, roots, fruits and flowers. Domestic pigs are intelligent<sup>[32]</sup> and can be trained to perform numerous tasks and tricks.<sup>[33]</sup>

Very rarely, either naturally as a result of unusually aggressive behavior, or perhaps as the result of a pathological process which alters their disposition, domestic farm-based pigs have become aggressive and injured and eaten their handlers.<sup>[34]</sup>

## Nest building

A behavioural characteristic of domestic pigs which they share with carnivores is nest building and bed making (although modern production systems often prevent these). Pigs root out wallows or depressions (digging with their snout) and the females (sows) will build nests in which to give birth. First the sow digs a depression about the size of her body. She then collects twigs, grasses and leaves, and carries these in her mouth to the depression, building them into a mound. She digs in smaller, finer material to the centre of the mound using her feet. When the mound reaches the desired height, she places large branches, up to 2 metres in length, on the surface. She enters into the mound and roots around to create a depression within the gathered material. She then gives birth in a lying position, which again is different from other artiodactyls which usually give birth in a standing position.<sup>[31]</sup>

## Nursing and suckling behaviour

Compared to most other mammals, pigs display complex nursing and suckling behaviour.<sup>[35]</sup> Nursing occurs every 50–60 minutes, and the sow requires stimulation from piglets before milk let-down. Sensory inputs (vocalisation, odours from mammary and birth fluids and hair patterns of the sow) are particularly important immediately post-birth to facilitate teat location by the piglets.<sup>[36]</sup> Initially, the piglets compete for position at



Domestic pigs in a wallow

the udder, then each piglet massages around its respective teat with its snout, during which time the sow grunts at slow, regular intervals. Each series of grunts varies in frequency, tone and magnitude, indicating the stages of nursing to the piglets.<sup>[37]</sup>

The phase of competition for teats and of nosing the udder, lasts for about one minute, and ends when milk flow begins. In the third phase, the piglets hold the teats in their mouths and suck with slow mouth movements (one per second), and the rate of the sow's grunting increases for approximately 20 seconds. The grunt peak in the third phase of suckling does not coincide with milk ejection but rather the release of oxytocin from the pituitary into the bloodstream.<sup>[38]</sup> Phase four coincides with the period of main milk flow (10–20 seconds) when the piglets suddenly withdraw slightly from the udder and start sucking with rapid mouth movements of about three per second. The sow grunts rapidly, lower in tone and often in quick runs of three or four, during this phase. Finally, the flow stops and so does the grunting of the sow. The piglets may then dart from teat to teat and recommence suckling with slow movements, or nosing the udder. Piglets massage and suckle the sow's teats after milk flow ceases as a way of letting the sow know their nutritional status. This helps her to regulate the amount of milk released from that teat in future sucklings. The more intense the post-feed massaging of a teat, the greater the future milk release from that teat will be.<sup>[39]</sup>



A sow with suckling piglets. Note the greater use of the anterior teats thus forming the teat order

## Teat order

In pigs, dominance hierarchies can be formed at a very early age. Domestic piglets are highly precocious and within minutes of being born, or sometimes seconds, will attempt to suckle. The piglets are born with sharp teeth and fight to develop a teat order as the anterior teats produce a greater quantity of milk. Once established, this teat order remains stable with each piglet tending to feed from a particular teat or group of teats.<sup>[31]</sup> It has been shown that stimulation of the anterior teats appears to be important in causing milk letdown<sup>[40]</sup> so it might be advantageous to the entire litter to have these teats occupied by healthy piglets. Using an artificial sow to rear groups of piglets, it was determined that recognition of a teat in a particular area of the udder depended initially on visual orientation by means of reference points on the udder to find the area, and then the olfactory sense for the more accurate search within that area.<sup>[41]</sup>

## Senses

Pigs have panoramic vision of approximately 310° and binocular vision of 35° to 50°. It is thought they have no eye accommodation.<sup>[42]</sup> Other animals that have no accommodation, e.g. sheep, lift their heads to see distant objects.<sup>[43]</sup> The extent to which pigs have colour vision is still a source of some debate; however, the presence of cone cells in the retina with two distinct wavelength sensitivities (blue and green) suggests that at least some colour vision is present.<sup>[44]</sup> Pigs are inquisitive and this should be remembered when moving them. If they are not hurried and can explore as they go along, they can be driven with much less effort.

Pigs have a well-developed sense of smell and use is made of this in Europe where they are trained to locate underground truffles. Olfactory rather than visual stimuli are used in the identification of other pigs.<sup>[45]</sup> Hearing is also well developed, and localisation of sounds is made by moving the head. Pigs use auditory stimuli extensively as a means of communication in all social activities.<sup>[46]</sup> Alarm or aversive stimuli are transmitted to other pigs not only by auditory cues but also by pheromones.<sup>[47]</sup> Similarly, recognition between the sow and her piglets is by olfactory and vocal cues.<sup>[48]</sup>

## Breeds



Pigs are exhibited at agricultural shows, judged either as stud stock compared to the standard features of each breed, or in commercial classes where the animals are judged primarily on their suitability for slaughter to provide premium meat. According to The Livestock Conservancy,<sup>[49]</sup> seven breeds of swine in the US are critically rare (having a global population of fewer than 2000), as are the Auckland Island Pig (New Zealand) and woolly-coated grazing pig (Danube area).

## Human uses

The domestic pig is mostly used for its meat, pork. Other food products made from pigs include pork sausage (casings made from the intestines), bacon, gammon, ham and pork scratchings (cracklings or rinds). The head of a pig can be used to make a preserved jelly called head cheese (sometimes known as brawn). Liver, chitterlings, blood (for blood pudding or black pudding), and other offal from pigs are also widely used for food. In some religions, such as Judaism and Islam, pork is taboo food. *See* Religious restrictions on the consumption of pork.

The use of pig milk for human consumption does take place, but as there are certain difficulties in obtaining it, there is little commercial production. A rare cheese is produced in Tuscany called Porcorino.

Pigskin is used to produce seat covers, apparel, pork rinds, and other items.

## In farming

In some developing and developed nations, the domestic pig is a native species occasionally raised outdoors in yards or fields. In some areas, pigs are allowed to forage in woods where they may be taken care of by swineherds. In industrialized nations, domestic pig farming has shifted away from the traditional pig farm to large-scale intensive pig farms. This has resulted in lower production costs, but significant animal welfare concerns.

Pigs are particularly valued in China and on certain oceanic islands as their self-sufficiency allows them to be turned loose, although the practice is not without its drawbacks. Demand for pasture-raised pork in the United States has increased as consumers become concerned with humane treatment of livestock.<sup>[50]</sup>

## As pets

Asian pot-bellied pigs, a small type of domestic pig, have made popular house pets in the United States beginning in the latter half of the twentieth century. Domestic farmyard pigs have also been known to be kept indoors, but due to their large size and destructive tendencies, they typically need to be moved into an outdoor pen as they grow older. Most pigs have a fear of being picked up by the stomach, but will usually calm down once placed back on the floor. Pigs are rarely used as working animals. An important exception is the use of truffle pigs – ordinary pigs trained to find truffles.

Miniature pigs, also called micro or teacup pigs, which are specifically bred to be small, may weigh from 12–30 kg (26–66 lb). They gained in popularity in late 2009 after several mainstream press articles claimed they were a popular pet to celebrities such as Rupert Grint of Harry Potter fame.<sup>[51]</sup> Despite claims that the pigs will remain small their whole lives, these pigs may eventually grow to a large size comparable to other pet pigs.

Global pig stocks	
in 2007	
(million)	
<span><span></span></span> People's Republic of China	425.6
<span><span></span></span> United States	61.7
<span><span></span></span> Brazil	35.9
<b>World Total</b>	<b>918.3</b>
<i>Source:</i>	
<i>UN Food &amp; Agriculture Organisation (FAO) (<a href="http://faostat3.fao.org/home/E">http://faostat3.fao.org/home/E</a>)</i>	



Two pot-bellied pigs, a breed of domestic pig originating in Vietnam

## In entertainment

Miss Piggy, Babe, and Porky Pig represent the domestic pig in entertainment, and "The Three Little Pigs", Piglet in the stories of A. A. Milne, *Charlotte's Web*, *The Sheep-Pig*, Zhu Bajie and Napoleon in George Orwell's *Animal Farm* are prominent examples of the domestic pig in literature.

## Glossary of terms

Because the domestic pig is a major domesticated animal, English has many terms unique to the species.

- *barrow* - a castrated male swine
- *boar* - a mature, male swine; often a wild or feral swine
- *farrow* (verb) - to give birth to piglets
- *farrow* (noun) - a litter of piglets
- *gilt* - a female pig that has never been pregnant
- *hog* - a domestic swine, especially a fully-grown specimen
- *pig* - strictly, an immature swine; more generally, any swine, especially of the domestic variety
- *piglet* - a very young pig
- *shoat* - a young hog, especially one that has been weaned
- *sow* - a mature, female swine
- *swine* (singular and plural) - a hog; hogs collectively or generally
- *swineherd* - one who tends swine; a pig farmer
- *queen* - a female pig that has never been mated

## See also

- ECODIPTERA
- Exotic pet
- Extensive farming
- Factory farming
- Free range
- Intensive farming
- *Mycoplasma hyorhinitis*
- Peccary (domestication)
- Pig
- Taboo meat
- Truffle hog
- Xenotransfusion

## Footnotes

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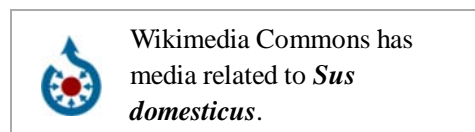
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## External links

- An introduction to pig keeping (http://www.accidentalsmallholder.net/articles/pigs/introduction/)
- JJ Genetics (http://www.pig-genetics.co.uk/gilt.htm), gilt pig breeders
- Swine Study Guide (http://ucce.ucdavis.edu/files/filelibrary/1385/2027.PDF) from UC Davis
- British Pig Association (http://www.britishpigs.org.uk)
- The process of pig slaughter (http://www.hyfoma.com/en/content/food-branches-processing-manufacturing/meat-fish-shrimps/pig-slaughtering/)
- Swine Care (http://www.pork.org/newsandinformation/quickfacts/swinecare1.aspx)
- Globe and Mail article Canada's transgenic Enviropig is stuck in a genetic modification poke (http://www.theglobeandmail.com/news/national/time-to-lead/global-food/canadas-transgenic-enviropig-is-stuck-in-a-genetic-modification-poke/article1812708/)



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