GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Equus asinus***

Equus asinus **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Mammalia	Perissodactyla	Equidae

Common name asino (English), ass (English), African wild ass (English), burro (English)

Synonym

Similar species

Summary Equus asinus (donkeys) resemble horses and are characterised by their large head, long ears and cow-like tail. They can be found in tropical savannas and arid hill country in Australia and other arid and desert habitats elsewhere in its range. In its invasive range, Equus asinus have deleterious and potentially irreversible impacts on native flora and fauna. Damage has been documented in plant communities, soils, wildlife and water quality. Management of this species can be difficult. Cultural pressures prevent lethal methods of management from being used. Typical management techniques involve removing the species from their natural habitat and placing them in reserves where they will not pose a threat. The growing number of feral donkeys, roaming free across Sudan, Eritrea and Somalia propitiate extensive hybridisation with their wild relative Equus africanus and thus contribute to the extinction of the E. africanus.

view this species on IUCN Red List

Species Description

Equus asinus resemble horses and are characterised by their large head, long ears and cow-like tail. Colours can very from black, white, paint and all shades of brown and grey, however the most common is a mousey grey colour (called dun grey). Many *E. asinus* are spotted, speckled or striped. Most solid-colour *E. asinus* have a dark dorsal stripe from mane to tail and a dark stripe across their shoulders. They have an erect mane and lack the forelock of a horse. The hair can be straight, curly, short and wiry, or long and woolly. Wild *E. asinus* average 200cm in body length, 45cm in tail length, 125cm at the shoulder, and weigh 250kg. Domestic breed size varies greatly, depending on breed. Miniatures, the smallest breed of *E. asinus*, stand less than 92cm (36 inches) at the shoulder and weigh less than 180kg (400 pounds). Standard *E. asinus*, the average-sized breed, range from 92cm to 123cm (36 inches to 48 inches) and weigh 180 to 225kg (400 to 500 pounds). Mammoth stock, the largest breed of *E. asinus*, stand at an average height of 143cm (56 inches) and weigh about 430kg (950 pounds). There is generally very little sexual dimorphism in *E. asinus*. Wild *E. asinus* have the longest and narrowest hooves of any *Equus* species (Huggins 2002).

Notes
Rudman (1998) states that in the United States, \"*Equus asinus* populations are descended from domestic donkeys, who are in turn descended from the African wild ass. The social organization of *E. asinus* can therefore be compared to that of true wild asses as well. One population inhabits the Death Valley area of California. This region is a large open desert characterized by a harsh temperate climate and hyperdispersed vegetation but with a few permanent and reliable water sources (Moehlman, 1974 and Moehlman, 1979). *E. asinus* population in Death Valley exhibits no long-term social bonds except those between mother and offspring. Breeding is seasonal and dominant males are conditionally territorial. The other population lives on Ossabaw Island off the coast of Georgia, which is a small, relatively flat island with plentiful donkey food and water resources and a mild temperate climate (Moehlman, 1979; McCort, 1980). These donkeys live in either harem bands consisting of multiple females with offspring plus one or more adult males or in multiple adult male groups (bachelor herds). Breeding is non-seasonal and harem males defend territories year-round.\"

Lifecycle Stages
Female Wild *Equus asinus* give birth to one colt each year, which grows to an average weight of about 350 pounds. Since feral *E. asinus* have no natural predator, competitor or common diseases, most young *E. asinus* reach maturity and may live as long as 25 years in the wild (Royo UNDATED).

Uses
In Australia *Equus asinus* serve as pack animals and in haulage teams. *E. asinus* played a very important role in developing long-distance trade in Egypt, because of their weight-bearing capacity and their adaptation for desert travel. In ancient Egypt, female *E. asinus* were kept as dairy animals. *E. asinus* milk is higher in sugar and protein than cow's milk. The milk was also used for cosmetic and medicinal purposes. *E. asinus* meat was eaten as food by many people. There were domesticated *E. asinus* in Europe by the second millenium B.C. and the first *E. asinus* came to the New World with Christopher Columbus in 1495. *E. asinus* were introduced to the United States with Mexican explorers. Many of the wild *E. asinus* in the southwestern United States are descendants of escaped or abandoned *E. asinus* brought by Mexican explorers during the Gold Rush. Miniature *E. asinus* are very popular as companion animals and for show (Department of the Environment and Heritage 2004; Huggins 2002).

Habitat Description
Huggins (2002) states that, \"Domestic *Equus asinus* are widely distributed and can be found almost everywhere in the world. However, true wild *E. asinus* originated in the hilly, undulating deserts of northern Africa and the Arabian peninsula and are well-adapted for life in the desert. Domestic *E. asinus* prefer warm, dry climates and, if left to become feral, they will return to such a habitat, like the feral *E. asinus* of Death Valley National Park in California. Deserts are characterized by low, unpredictable rainfall and sparse vegetation.\" The Department of the Environment and Heritage (2004) states that in Australia, \"Feral *E. asinus* prefer tropical savannas and arid hill country. Drought and severe bushfires are the only significant natural threats to feral *E. asinus*.\" In Europe, the donkey is considered to be the most threatened livestock species and is now under protection of the European Union and its measures to conserve local animal resources.

Reproduction
Feral and free-ranging *E. asinus* have a territorial social system (McDonnell 1998). The composition and degree of stability of territorial groups varies with particular populations studied. In some populations, each breeding male holds his own territory through which solitary females with their young pass (Woodward, 1979). Jennies in estrus are bred by the breeding male holding the particular territory. Populations have been identified in which jennies tend to stay within particular territories and have a more stable affiliation with the breeding male and other jennies in the territory, in a semi-harem type territorial breeding group (McCort, 1980). In some populations, there are groups in which subordinate males are allowed to breed some of the jennies within the territory of a dominant jack, usually following mating by the dominant jack (McCort, 1980). Territorial boundaries appear to be announced acoustically and in some instances marked with fecal piles.\"
Studies show that ovarian activity, pregnancy and parturition appear to be much less seasonal in domestic and feral *E. asinus* than in wild asses. The short-day anovulatory season in domestic jennies is approximately 165 days, with a high incidence of anovulatory estrus which is brief and frequent. The long-day ovulatory season then is approximately 200 days. The interovulatory interval is approximately 24-25 days. The mean length of ovulatory estrus is about 6 days, with ovulation within the last 1-2 days of estrus. Gestation length is 12 months (McDonnell, 1998).

Nutrition
Equus asinus are grazing herbivores, with large, flat-surfaced teeth adapted for tearing and chewing plant matter. Their primary food is grass, but they also eat other shrubs and desert plants. Like many other grazing animals, they grasp the plant first with their muscular lips, pull it into their mouth, and then tear it off with their teeth. In a study of feral *E. asinus* in Arizona, they were found to eat 33% forbs and 40% browse (Huggins 2002).

General Impacts
Feral *Equus asinus* populations in Mojave are having deleterious and potentially irreversible impacts on native flora and fauna. Damage has been documented in plant communities, soils, wildlife, and water quality. Of particular concern is the competition for forage, which is negatively affecting the threatened desert tortoise (see *Gopherus agassizii* in IUCN Red List of Threatened Species). An adult *E. asinus* consumes as much as 2,722kg (6,000 pounds) of forage per year, and the herds reproduce at an alarming rate. Reproduction estimates for Mojave National Preserve suggest that the population grows an average of 25% each year (Stubbs, 1999).
Heavy grazing on the native vegetation by feral populations of *E. asinus* allows non-native annuals to displace native perennials, and costs the nation an estimated $5 million per year in forage losses, implying that these species eat forage worth US$100 per animal per year. They also diminish the primary food sources of native bighorn sheep (*Ovis canadensis*) and seed-eating birds, reducing the abundance of these natives (McNeely (undated); Pimentel *et al.* 2000).
The Department of the Environment and Heritage (2004) Australia classify feral *E. asinus* as serious environmental pests. They cause erosion and damage vegetation with their hard hoofs. They damage and foul waterholes, and introduce weeds through seeds carried in their dung, manes and tails. *E. asinus* may also compete for food and water with native animals. The impact of *E. asinus* on native grasses, herbs, shrubs and drinkable water is most pronounced during drought. They can quickly degrade areas close to remote waterholes, which during a drought become refuges critical to the survival of many native animals and plants. Without these refuges, native plants and animals may become locally extinct. *E. asinus* also have an impact on the productivity of farming land.
Results of a study in the high altitude Spiti Valley, Indian Trans-Himalaya, on the competition between seven species of livestock (*Equus asinus* being one of the seven) and the wild herbivore mountain ungulate bharal (*Pseudois nayaur*) showed that there is dietry overlap among these herbivore species. The study concluded that this high diet overlap between livestock and bharal, together with density-dependent forage limitation, results in resource competition and a decline in bharal density (Mishra *et al.* 2004).

Management Info
Physical: The Mojave National Preserve have been provided with funding from the Natural Resource Preservation Program to capture and remove all of its 1,300 remaining burros over a three-year period from 1999 through 2001. Geographic barriers and existing highway fences outside the park are designed to keep other *E. asinus* out of the preserve (Stubbs 1999). Stubbs (1999) observes that, \"The greatest challenge and potential impediment to a successful *E. asinus* removal program is placement of the animals once they are captured\".
In Australia, drought has a severe impact on *E. asinus*. During drought many individuals can die, mainly from starvation, lack of water and eating toxic plants that they usually avoid. They gather round waterholes where they are often culled for humane reasons (Department of the Environment and Heritage 2004). Herds are often mustered and usually some of the younger are turned into pets. Trapping may be less stressful than mustering, but there are animal welfare concerns about the handling of feral *E. asinus* in traps and during transport to abattoirs.
Biological: Fertility control is a non-lethal approach to feral horse management but it is currently of limited use. Fertility control techniques are difficult to administer to large numbers of feral *E. asinus* and the treatment would need to be repeated often to be effective. It is not yet known whether such techniques can reduce the environmental damage caused by a population of feral *E. asinus* in an area of high conservation value.

Principal source: Stubbs, C. J. 1999. Feral burro Removal: New Solutions to an Old Problem. Natural Resource Year in Review: publication D-1346.
Department of the Environment and Heritage. 2004. Feral horse (*Equus caballus*) and feral donkey (*Equus asinus*). Invasive Species.
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Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)
Updates with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

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Pubblication date: 2010-09-15

ALIEN RANGE

[1] ALGERIA
[1] ARGENTINA
[1] BAHAMAS
[1] BRITISH INDIAN OCEAN TERRITORY
[1] CHAD
[1] CYPRUS
[1] EGYPT
[1] MEXICO
[2] SAINT HELENA
[1] SAUDI ARABIA
[1] SOUTH AFRICA
[3] TURKS AND CAICOS ISLANDS
[1] VIRGIN ISLANDS, BRITISH
[1] ANTIGUA AND BARBUDA
[10] AUSTRALIA
[1] BES ISLANDS (BONAIRE, SINT EUSTATIUS AND SABA)
[3] CAYMAN ISLANDS
[1] CHILE
[1] ECUADOR
[1] INDIA
[1] PERU
[1] SAINT KITTS AND NEVIS
[1] SINGAPORE
[1] SRI LANKA
[6] UNITED STATES
[1] YEMEN

Red List assessed species 16: CR = 8; EN = 2; VU = 4; NT = 1; DD = 1;

Acacia anegadensis **CR**
Aloe pillansii **CR**
Bulimulus albermalensis **DD**
Bulimulus cinerarius **EN**

Bulimulus darwini **VU**
Cordia rupicola **CR**
Equus africanus **CR**
Metastelma anegadense **CR**
Mimus trifasciatus **CR**
Puffinus opisthomelas **NT**
Capra nubiana **VU**
Cyclura carinata **CR**
Gopherus agassizii **VU**
Mimus macdonaldi **VU**
Pterodroma phaeopygia **CR**
Rhionaeschna galapagoensis **EN**

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Summary: This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.

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Summary: English:
The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (http://www.conabio.gob.mx/invasoras/index.php/Portada), under the section Novedades for information on updates.
Invasive species - mammals is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Mam%C3%ADferos [Accessed 30 July 2008]
Spanish:
La lista de especies del Sistema de informaci﷿n sobre especies invasoras de m﷿xico cuenta actualmente con informaci﷿n aceca de nombre cient﷿fico, familia, grupo y nombre com﷿n, as﷿ como h﷿bitat, estado de la invasi﷿n en M﷿xico, rutas de introducci﷿n y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la p﷿gina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualizaci﷿n, por favor consulte la portada (http://www.conabio.gob.mx/invasoras/index.php/Portada), en la secci﷿n novedades, para conocer los cambios.
Especies invasoras - Mam﷿feros is available from:
http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Mam%C3%ADferos [Accessed 30 July 2008]
ITIS (Integrated Taxonomic Information System), 2005. Online Database *Equus asinus*
Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
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