**Summary**

*Sus scrofa* (feral pigs) are escaped or released domestic animals which have been introduced to many parts of the world. They damage crops, stock and property, and transmit many diseases such as Leptospirosis and Foot and Mouth disease. Rooting pigs dig up large areas of native vegetation and spread weeds, disrupting ecological processes such as succession and species composition. *Sus scrofa* are omnivorous and their diet can include juvenile land tortoises, sea turtles, sea birds, endemic reptiles and macro-invertebrates. Management of *Sus scrofa* is complicated by the fact that complete eradication is often not acceptable to communities that value feral pigs for hunting and food.
Species Description
Pigs are large omnivorous mammals with powerful bodies and coarse hairy coats. Their thick necks, wedge-shaped heads and mobile snouts are used in feeding to uproot the ground and find prey or plant material. Feral pigs are easily distinguished from domestic pigs via a smaller leaner and more muscular stature, shorter hind quarters, longer snouts and tusks. Older boars usually develop a thick keratinous shield over their shoulders, which provides some protection during fights with other boars. Feral pig hair is longer and coarser than a domestic pigs and sometimes forms in a tuft along their back (hence, the name razorback). The tails of feral pigs are not curly as in domestic pigs, they are instead long and straight with a bushy tip. Ecological characteristics of feral pig activity, group size and home range size should be considered in any management strategy aimed to control pig numbers or reduce their negative impact. Feral pig activity varies between different habitats and climates. High activity has been reported to occur in early morning and late afternoon in tropical climates (Diong 1982). However, in India pigs have been reported to feed nocturnally to raid croplands (Sekhar 1998, in Wolf and Conover 2003). On Santa Cruz Island (California) the milder weather of fall and late winter causes pigs to be more active in the morning and evening, while the short cool and often rainy days of winter causes midday activity. Pigs on the island were active at night mostly when conditions were warm and dry (Van Vuren 1984, in Wolf and Conover 2003).

In terms of group structure, in North-western Australia mob sizes are generally about 12 or less, although occasionally mobs of 30 pigs are seen. Adult boars are mostly solitary. In South Carolina the average home range of boars is 226 hectares, while the average for sows is 181 hectares (Wood and Brenneman 1980, in Wolf and Conover 2003). Whereas in Australia average home range can vary from 140 hectares for a boar in Namagdi National park, Australian capital territory (McIlroy and Saillard 1989), to 430 hectares for a boar in Western New South Wale (Giles 1980). Feral pigs are polyoestrous, adult sows have a 21 day oestrous cycle and a gestation period of 112-114 days (Choquenot et al. 1996). Estimated litter size is 4.5-6.3 viable young per sow (Twigg et al. 2005, Choquenot et al. 1996) but in good conditions 10 piglets can be born to one sow.

Lifecycle Stages
Pigs are normally social animals but adult boars over 18 months old are invariably solitary (McIlroy 1990).

Uses
Captain Cook used the pig in trading with the natives as early as 1777. "A small pig of 10 or 12 pounds" was traded for a spike but a "hoq" was exchanged for a hatchet (Cook 1784, in Diong 1982).

In central Europe the false spruce webworm (Cephalcia abietis) causes defoliation of Norway spruce trees; high densities of boars are able to cause high mortality to insect larvae by up to 70%, however they also cause damage to tree roots making the perceived benefit negligible (Fuhrer and Fischer 1991, in Wolf and Conover 2003).

In many highland areas of New Guinea pigs are deliberately placed into gardens at the end of a harvest sequence and prior to gardening to remove remaining sweet potato tubers and to assist in turning and aerating the soil before replanting (Westermann 1968, Paglau 1982, Wood and Humphreys 1982, Tucker 1986, Kohun in hide 2003).
Habitat Description
The feral pig adapts to a variety of environments from Mediterranean oak woodland forests to the semi-arid rangelands of Eastern Australia, from the flood plains, billabongs and grassland savannas of tropical North-western Australia to the gray beech forests of the Smoky Mountains in America and from the wetland and lowland evergreen monsoon forests of Australia to the fresh water marshes and brackish water marshes of South Carolina (Wood and Brenneman 1980, in Wolf and Conover 2003). Wild pigs are rarely found over 1650m (Bulmer and Bulmer 1964, in hide 2003), but are known to be found at altitudes as high as 3000m in New Guinea (Flannery 1995, in Hide 2003).

Home ranges of pigs are smaller during the dry season than during the wet season. During the dry season on Santa Catalina pigs preferred cool moist canyon bottoms due to a physiological need for free water. Dense vegetation was more actively sought after than open areas such as grasslands (Baber and Coblentz 1986, in Wolf and Conover 2003).

The presence of crops in the near area (for example palm dates or oat hay cultivations) provide a food supplement and may greatly increase feral pig density; the close location of cereal crops in one study increased the density of feral pigs almost four-fold (Caley 1993, in Wolf and Conover 2003). Similarly the presence of adjacent palm cultivations in Malaysia was found to increase pigs density by 10 to 100 times (Ickes Paciorek and Thomas 2005).

High densities of pigs may also be attributed to water availability. The recent expansion in feral pig distribution in Australia has been attributed to the increase in suitable habitats, in particular, an increase in water availability from farm dams and developing forest industries (Spencer and Hampton 2005).

Reproduction
Feral pigs are polyoestrus: adult females have a 21-day oestrus cycle and a gestation period of about 112-114 days. In New Zealand they probably breed throughout the year, though mainly in spring and summer (Wodzicki 1950; J. McIlroy unpublished). Their litter size is usually between 6 and 10 piglets, but usually only half this number survives. They reach breeding age at between 10 and 12 months (Wodzicki 1950).

In one study females were found to have about 5 young every 0.86 years with some females having two litters per year. In this study fertility continued to increase with age until it peaked at two to three years of age. 58% of piglets died before weaning (Baber and Coblentz 1986, in Wolf and Conover 2003).
Nutrition
Pigs lack the multiple stomachs found in ruminants such as cattle and goats. Feral pigs are omnivores with an opportunistic diet, including high-fibre (> 25%) low-protein grasses, legumes, herbs and roots. They readily feed on crops, fallen fruits, seeds and small animals (McIlroy 1990). Pigs regularly root the ground in search of roots, fungus, nuts, seeds and grubs (Frederick 1998, Sicuro 2002, in Wolf and Conover 2003). In their native Mediterranean woodland the wild boar compensates for the reduced supply of acorns in the spring by raiding underground hoards of acorns collected and buried by small mammals (the availability of acorns is critical to female boars as they need the extra nutrition for lactation) (Focardi Capizzi and Monetti 2000, in Wolf and Conover 2003).

Pigs adapt their diet to best utilise local resources. In the semi-arid rangelands of eastern Australia and in New Guinea feral pigs will regularly hunt and devour lambs (particularly twin lambs (which are weaker) (Choquenot, Lukins and Curran 1997, in Wolf and Conover 2003; Hide 2003). On Horn Island, Mississippi, hogs take advantage of high seasonal abundances of insects, crabs and dead fish (Baron 1982, in Wolf and Conover 2003). On Santa Cruz Island, California, acorns and new growth of grasses and forbs are major components of the feral pig’s diet (Van Vuren 1984, in Wolf and Conover 2003).

In South Carolina fruits, especially acorns are the most common food type consumed in fall and winter; herbage and foliage are most common in the spring; roots are most common in the summer. Invertebrates and vertebrates are also consumed, though they were not as important. The consumption of woody plants may be underestimated in stomach contents surveys as the starches and sap obtained from the roots of such plants go undetected (Wood and Roark 1980, in Wolf and Conover 2003).

In the western South Texas Plains (introduced range) feral pigs have a spring-summer diet that consists mainly of vegetation, while acorns are their winter food source. Their autumn diet consists of roots and corn. Animal matter consisting of deer, morning doves, reptiles and other birds represents a small portion of the hog’s diet. Of these, reptiles were the most susceptible to predation (Taylor and Hellgren 1997, in Wolf and Conover 2003).

In one study conducted in Hawaii by Diong 1982, food habits were characterised by (1) an omnivorous diet consisting mainly of plant matter, (2) a staple of tree ferns, (3) a seasonal switch from tree ferns to strawberry guava, and (4) a strong reliance of earthworms as a source of animal protein. The dietary range covered 40 plant species (63% herbaceous species, 33% trees and woody vine). Tree ferns were the most concentrated source of sugar and starch.

General Impacts
Please follow this link for details on the general impacts of *Sus scrofa* compiled by the ISSG.
Management Info
Poisoning with sodium monofluoracetate (1080) is the most popular method used to control feral pigs. Most pigs vomit within four hours of ingestion. This may be potentially hazardous to nontarget organisms and may result in the survival of the pig. The use of anti-emetics such as metoclopramide, thiethylperazine and prochlorperazine may prevent vomiting at high doses (O’Brien et al. 1986, in Wolf and Conover 2003). A vaccine for pseudorabies and swine brucellosis in fish meal bait may be used in late summer (when natural food supplies are low) to control these diseases (Fletcher et al. 1990, in Wolf and Conover 2003).

In the mid 1900s New Zealand conservation practitioners applied mainland hunting techniques to eradicate feral pig populations from small islands (<200 ha, Veitch and Bell, 1990, in Cruz et al. 2005). More recently poisoning techniques have been developed to control or eradicate feral pig populations (Choquenot et al., 1990; O’Brien and Lukins, 1990, in Cruz et al. 2005). Hunting and poisoning techniques used in combination, now facilitate pig eradication efforts on larger islands (Lombardo and Faulkner, 2000, Schuyler et al., 2002, Veitch and Bell, 1990, in Cruz et al. 2005).

In Hawaii, snaring has been used to control pigs within 600–800 km2 fenced enclosures located in remote areas of rain forest in the Haleakala National Park (Maui) (Anderson and Stone 1993). Many people place a high cultural value on pigs (ie: using them as a food convenient food source) so that removing them from designated areas may not be acceptable without a clear idea of the benefits. Snaring would is not always an acceptable method of control. In addition, the fact that pigs are highly mobile means it is uneconomic for an individual landowners or controlling agency to control them (as pigs as they quickly move in from adjacent properties to replace the removed ones).

Much wisdom and insight can be gained from the case study of pig removal from Santiago Island in the Galapagos Archipelago (off the coast of Ecuador). Factors that proved critical to the successful eradication of the feral pig on the island were: (1) a sustained effort, (2) an effective poisoning campaign, (3) a hunting program, (4) access to animals by cutting more trails and, (5) an intensive monitoring program. Throughout the 1970s and 1980s, hunting effort was low (<500 hunter-days/year), while in the early 1990s effort increased but fluctuated. In contrast, the revised campaign in the mid-1990s resulted in a continuous, minimum annual effort of 1500 hunter-days/year. Hunter access to pigs was critical. Extra trails were cut and goats were not hunted in order to keep vegetation suppressed (allowing hunters and dogs access to all areas of the island). Motivating hunters was a continual challenge, especially when pigs were at low densities. However, social, moral boosting events and financial incentives maintained hunter motivation. While the poisoning campaign killed relatively few pigs compared to hunting, the low cost of the poisoning made such efforts especially cost-effective. The compounds used were toxic to most species, and thus the pros of using them for eradication had to be balanced with the potential impact on non-target species (Donlan et al., 2003a, in Cruz et al. 2005). In 2000, six months after the last pig was shot, the last pig was poisoned following an intensive monitoring effort. A sustained monitoring effort was critical to successful eradication. The lack of such an effort is responsible for many eradication failures (Campbell et al., 2004, in Cruz et al. 2005).

Pathway
Expansion into new areas can result from transport for hunting, escape from confined facilities, dispersal of wild populations and escape of domestic swine from free ranging commercial ranches (Gipson Hlavachick And Berger 1998, in Wolf and Conover 2003). Released as food.

Principal source:

Compiler: IUCN SSC Invasive Species Specialist Group
Updates with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

Review:

Publication date: 2010-05-18
FULL ACCOUNT FOR: *Sus scrofa*

**ALIEN RANGE**

[1] AMERICAN SAMOA
[7] AUSTRALIA
[1] BRAZIL
[7] COOK ISLANDS
[1] DOMINICA
[2] ECUADOR
[1] FRANCE
[1] FRENCH SOUTHERN TERRITORIES
[1] INDIA
[9] KIRIBATI
[2] MAURITIUS
[1] MEXICO
[1] MONTSERRAT
[7] NEW CALEDONIA
[8] NEW ZEALAND
[4] NORTHERN MARIANA ISLANDS
[1] PALAU
[1] PITCAIRN
[1] REUNION
[2] SAMOA
[1] SOUTH AMERICA
[22] UNITED STATES
[1] WALLIS AND FUTUNA

Red List assessed species 281: EX = 7; EW = 5; CR = 109; EN = 81; VU = 54; LR/nt = 1; NT = 14; DD = 1; LC = 9;

- Abutilon sandwicense
- Alectryon macrococcus
- Alsinidendron lychnoides
- Alsinidendron trinerve
- Anas aucklandica
- Alectryon macrococcus
- Alsinidendron obovatum
- Alsinidendron viscosum
- Anas wyvilliana
- Aphelocoma insularis
- Aragoxiphium kauense
- Astelia waialealae
- Bidens conjuncta
- Bidens populinolala
- Bonamia menziesi
- Bulimulus darwini
- Calamagrostis expansa
- Callerya neocaledonica
- Canavalia molokaiensis
- Casuarina bennettii
- Chamaesyce deppeana
- Chamaesyce remyi
- Chamaesyce sparsiflora
- Cheirodendron dominii
- Christella boydiae
- Clermontia drepanomorpha
- Clermontia lindseyana
- Clermontia pyrularia
- Clermontia waimeae
- Coenocorypha aucklandica
- Acacia koaia
- Alphonasia ponderosa
- Alsinidendron obovatum
- Alsinidendron viscosum
- Anas wyvilliana
- Apteryx haastii
- Argyroxiphium kauense
- Astelia waialealae
- Bidens smoeides
- Bobea sandwicensis
- Branta sandwicensis
- Buteo solitarius
- Calamagrostis hillebrandii
- Camarhynchus pauper
- Caretta caretta
- Chamaesyce halemanii
- Chamaesyce rockii
- Charpentiera densiflora
- Chelonia mydas
- Clermontia calophylla
- Clermontia hawaiensis
- Clermontia peleana
- Clermontia tuberculata
- Coccycus ferrugineus
- Colubrina oppositifolia
FULL ACCOUNT FOR: *Sus scrofa*

Ctenitis squamigera CR
Cyanea asarifolia CR
Cyanea cripsa CR
Cyanea eleleensis CR
Cyanea horrida CR
Cyanea st-johnii CR
Cyanea truncata EW
Cyculra cornuta VU
Cyrtandra giffardii EN
Cyrtandra polyantha CR
Dasyornis brachypterus EN
Diomedea antipodensis VU
Diomedea epomophora VU
Ducula galeata EN
Engaeus martigener EN
Engaewa similis LC
Epocrates monensis EN
Erythrina gouldiae EN
Euastacus australasiensis LC
Euastacus bidawalis EN
Euastacus brachythorax EN
Euastacus claytoni EN
Euastacus dalaqarbe CR
Euastacus diversus EN
Euastacus fleckeri EN
Euastacus gourmulayn CR
Euastacus hirsutus EN
Euastacus jaqabar CR
Euastacus maccai EN
Euastacus mirangudjin CR
Euastacus pilosus EN
Euastacus rieki EN
Euastacus setosus CR
Euastacus spinichelatus EN
Euastacus suttoni VU
Euastacus valentulus LC
Euastacus yanga LC
Euastacus yigara CR
Euphoria haeleeleana EN
Gallinula sanctaeclarrucis EN
Gallicolumba salamonis EX
Gallicolumba sanctaeclarrucis EN
Geocrinia vitellina VU
Gymnomyzza aurbyana CR
Hemignathus parvus VU
Hesperomannia arbuscula CR
Hibiscus clavyi CR
Hypericum corsicum LC
Labordia cyrtandrae CR
Leptodactylus fallax CR
Lioscincus steindachneri EN
Litoria loricu CR
Litoria nyakalensis CR
Litoria acuminata CR
Cyanea aspleniifolia CR
Cyanea dunbariae CR
Cyanea glabra CR
Cyanea pinnatifida EW
Cyanea superba EW
Cygula collei CR
Cygula steineggeri EN
Cyrtandra kaulantha CR
Cyrtandra waiolani EW
Dermochelys coriacea CR
Diomedea dabbenena CR
Diploglossus montiserrati CR
Emoia adpersa EN
Engaeus urostricrux VU
Engaewa walpolea EN
Eretmochelys imbricata CR
Euastacus armatus DD
Euastacus balanus EN
Euastacus bindal CR
Euastacus clarkei CR
Euastacus crassus EN
Euastacus dharawalas CR
Euastacus eungella CR
Euastacus gamilaroi CR
Euastacus gumar EN
Euastacus guinus CR
Euastacus hystricosus EN
Euastacus jaqara CR
Euastacus maidag CR
Euastacus monteithorum CR
Euastacus polsetosus EN
Euastacus robertsi CR
Euastacus simplex VU
Euastacus sulphatus VU
Euastacus urospinosus EN
Euastacus wiowuru NT
Euastacus yarreensis VU
Eugenia koolauensis EN
Gallinula nesiotis VU
Gallirallus lafresnayensi CR
Gardenia mannni CR
Gouania vitifolia CR
Hemignathus lucidus CR
Hesperomannia arborescens CR
Hibiscadelphus woodii CR
Himantoglossum adriaticum LC
Icterus oberi CR
Laterallus spilonotus VU
Lewinia muelleri VU
Litoria dayi EN
Litoria nannotis EN
Litoria pearsoniana NT

### BIBLIOGRAPHY

90 references found for *Sus scrofa*

#### Management information
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- Center for Aquatic and Invasive Plants, University of Florida (IFAS), 2010. Chinese privet: *Ligustrum sinense*
- Summary: Available from: [http://plants.ifas.ufl.edu/node/231](http://plants.ifas.ufl.edu/node/231) [Accessed 10 March 2010]
- Department of Primary Industries, Victoria, 2009. Impact Assessment - Small-leaf Privet (*Ligustrum sinense*) in Victoria
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- Ding, Jianqing; Reardon, Richard; Wu, Yun; Zheng, Hao; Fu, Weidong, 2006. Biological control of invasive plants through collaboration between China and the United States of America: a perspective. Biological Invasions. 8(7). OCT 2006. 1439-1450
- Greene, Brian T. and Bernd Blouwes, August 5, 2009. COS 58(1): Patterns of privet: Why is the invasive plant *Ligustrum sinense* Lour associated with urban watersheds in the southeastern United States. Wednesday, August 5, 2009 - 8:00 AM, 94th ESA Annual Meeting Sunday August 2 - Friday, August 7 2009 Albuquerque, New Mexico.

### Table of Species

<table>
<thead>
<tr>
<th>Common Name</th>
<th>IUCN Status</th>
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<tr>
<td><em>Tinostoma smaragdita</em></td>
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<td><em>Xylosma crenatum</em></td>
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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 XT603 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.


Summary: Eradication case study in Turning the tide: the eradication of invasive species.


Summary: Eradication case study in Turning the tide: the eradication of invasive species.


Summary: The feral pig management strategy outlines the best practises for the management of feral pigs to minimise their impact on the environment, economy and health of Queensland.


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Summary: Illegal Translocation and Genetic Structure of Feral Pigs in Western Australia, Thetford, Mack; Berry, James B., 2000. Response of five woody landscape plants to Primo and pruning. Journal of Environmental Horticulture.


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