

PESTSMART

Indicative 10 Project National Resource Material

Savannah Cat
(*Leptailurus serval x Felis catus*)

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An Invasive Animals CRC Project



Department of
Primary Industries and
Regional Development



Australian Government
Department of Industry and Science

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Cooperative Research
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Summary

Species on VPC List 2007?	Yes. Serious (Massam et al. 2010)
Species on the live import list (EPBC Act 1999)?	No
Risk of establishment:	Extreme (Csurhes 2012)
Pathways:	Intentional (pet trade)

Key Messages

Introduction pathway - Intentional introduction via pet trade. Savannah cats were traded in Australia until import was banned 2008 (Csurhes 2012; Markula et al. 2009). Since then, cats have been imported illegally, posing as domestic cats given their resemblance (Csurhes 2012).

Impact to Economy -

Impact to Environment - Ability to breed with domestic or feral cats to create a supercat - serval genes enter the wild population. New genes can 'supercharge' a feral population. There are numerous examples of new genetic lines leading to feral populations taking off, most likely through hybrid vigour and/or by generating advantageous phenotypes outside the previous range.

Classification

Leptailurus serval x Felis catus

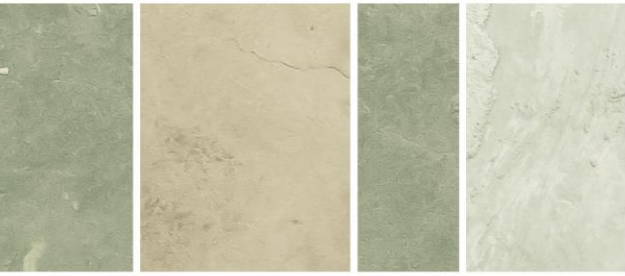
Class:	Mammalia
Order:	Carnivora
Suborder:	Feliformia
Family:	Felidae
Genus:	<i>Leptailurus and Felis</i>
Species:	<i>serval and catus</i>



Common names

Savannah cat

Figure 1. Savannah Cat. Photo: Rocky Cardwell (CC BY 2.0)



Biology and Ecology

Identification

The savannah cat is larger than a domestic cat (Csurhes 2012). Size is dependent on generation and sex; males are generally larger than females and the earlier the generation the larger they are, with F1 male cats usually being the largest. Early generation savannah cats weigh 4.5 to 11 kg. . . Later generation savannah cats are usually between 3.5 and 7.7 kg, similar in size to many breeds of domestic cat. There can be significant variation in size, even in a single litter, although this size variation is not restricted to savannah cats (the same can be true of most mammalian species), it appears more common in early generational crosses. Some breeders report savannah cats in excess of 13.5 kg, with at least one breeder claiming a male over 18 kg. This may, however, be dependent on the generation. There are no reported F5 generation individuals recorded at this large size. One potential importer has claimed that the F5 generation only grows to 6 kg, but there is no confirmation of this.



Figure 2. Savannah kitten. Photo: Michael Broad (CC BY-NC-ND 2.0)

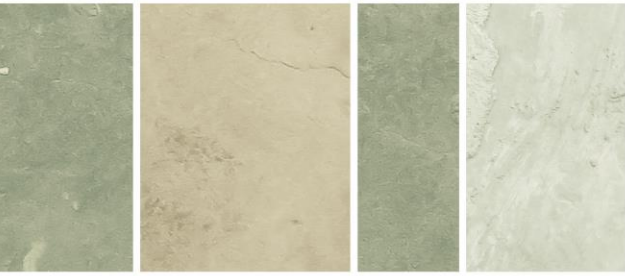


Figure 3. Pet savannah cat. Photo: Alana (CC BY-NC 2.0)

Behaviours and Traits

Bred for their stately and majestic appearance and perceived manageability, the savannah cat is a cross between a domestic cat (*Felis catus*) and an African serval (*Leptailurus serval*). They are smaller than servals but retain some of the serval's features. Savannah cats are not a species itself; the taxon would be *F. catus* × *F. serval* due to the absence of a stable generational cross that does not vary substantially in the phenotypes (temperament and appearance) of the offspring (García-Díaz 2014).

Due to random factors in savannah cat genetics, there can be significant variation in size of offspring within one litter (breeder claims of adults weighing 13.5 - 18 kg). Selection pressures on feral cats already produce animals of greater size, ferocity and agility above the more domestic phenotypes, and mate selection by feral cats may be biased towards larger feral savannah cats over the smaller feral domestic cat, although breeding success does generally decrease as size disparity increases.



Savannah cats are very active and can leap 2.5 m high from a standing position. Wild-type behaviour can be observed in early generation or non-socialised savannah cats. For example, they may hiss and growl at strangers.

Food and Foraging

Savannah cats are generalists with no specific dietary requirements. All cats are obligate carnivores. Since they cannot synthesise sufficient amounts of the essential amino acids taurine and arginine from other amino acids, they acquire these from animal protein (Sunquist et al.).

In Africa, servals feed on mammals such as small antelopes, squirrels, rats, and hares; reptiles including snakes and lizards, frogs, small birds and poultry, insects, and fish (Sunquist et al.). Servals maintain a high rate of hunting success with almost 50% of attempts resulting in a kill, compared with 30% for lions, and only 10% for most other cat species (Geertsema 1985).

Feral cats in Australia also have a generalised diet that comprises of small mammals (including rabbits), lizards, frogs, birds, insects, and fish (Long 2003).

Reproduction and Lifecycle

Savannahs are produced by crossbreeding servals and domestic cats. F1 generation savannahs are difficult to produce because the two species being crossbred have significantly different gestation periods (75 days for a serval and 65 days for a domestic cat), and sex chromosomes. Pregnancies are often absorbed or aborted, or kittens are born prematurely.

Servals are particular when choosing a mate and often will not mate with a domestic cat.

Global Range

The Savannah cat does not occur naturally in the wild; it is a hybrid that is the result of selective breeding in captivity (DEWHA 2008). The exact range and extent of captive savannah cats is unknown. Countries where registered breeders sell the cats include USA, Canada, Mexico, Japan, Sweden, UK, Czech Republic, France and Germany (DEWHA 2008).

Potential for Introduction

Savannah cats were traded in Australia until import was banned in 2008 (Csurhes 2012; Markula et al. 2009). Since then, cats may have been imported illegally, posing as domestic varieties given their resemblance (Csurhes 2012; Henderson et al. 2011). However captive breeding could still be occurring.

Savannah cats can easily be misidentified as feral or domestic cats and this may facilitate their introduction into Australia. This may not represent a serious issue in non-urban areas as



feral cats are considered a pest in Australia. However, reporting may be hampered if people assume they are an already established cat breed and fail to report (García-Díaz 2014).

Although this hybrid has been imported into Australia in the past, there is no evidence to suggest it is at large on the continent (Henderson et al. 2011; Long 2003; Markula et al. 2016; van Dyck and Strahan 2008). The primary incursion pathway will likely be through the illegal pet trade or legally imported for exhibition purposes.

Potential for Eradication

Australia has no effective technique available for widespread management of feral or hybrid cats across large geographic areas and varied habitats (García-Díaz 2014) and over 75% of successful eradication programs have occurred in areas less than 5 hectares (Bode et al. 2013; Nogales et al. 2004). Eradication in mainland areas could be more difficult and may require the use of interior fencing (Bode et al. 2013).

Studies on home range and dispersal patterns of cats indicate that individuals can disperse rapidly, over significant distances, and maintain large, overlapping home ranges (e.g., Bengsen et al. 2012; Fitzgerald and Karl 1986).

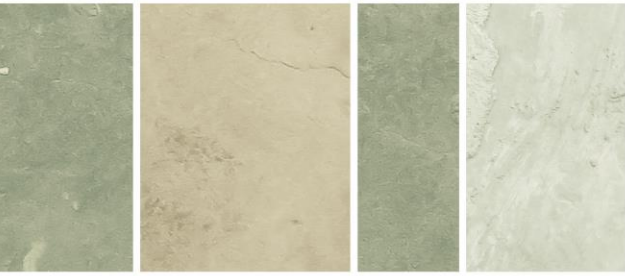
Although progress in developing new methods for feral cat control is being made, no technique is yet available that would remove cats faster than they can propagate (Denny and Dickman 2010). Further, a feral cat population containing serval genes may increase survivorship and lead to established populations that are more difficult to detect and eradicate.

The primary control methods for feral cats in Australia are trapping, baiting, or a combination of both (Denny and Dickman 2010); in other localities hunting is also extensively used (Nogales et al. 2004). Sodium monofluoroacetate (1080), diphacinone and paraaminopropiophenone (PAPP) are currently the most effective toxicants used for feral cats (Denny and Dickman 2010; Nogales et al. 2004). Most of these methods have been effective in eradicating cats from small, offshore islands and therefore using these techniques may have animal welfare concerns that could hamper savannah cat eradication. The affinity that is created between humans and domestic cats may also cause a barrier to eradication.

Impacts

Economic

Savannah cats cause injuries and transmit diseases to humans (Markula et al. 2009). In 2004, the management, research and environmental costs of feral cats in Australia was estimated at AU\$146 million per year (McLeod 2004).



Environmental

An extensive amount of evidence demonstrating the devastating environmental effects of invasive cats on the environment has amassed over the past few decades (Abbott 2002; Dickman 1996a, b; Long 2003). The main impact is predation on native fauna (Csurhes 2012). Feral cats are an identified threat to seventy four mammal species and sub-species (Woinarski 2014), species listed as threatened under the EPBC Act - composed of 40 species of birds, 21 reptile species and 4 amphibian species, and 19 species of migratory or marine species of bird (Department of the Environment 2014).

Hybrid cats could be larger and more powerful hunters than domestic or feral cats, and be able to access a larger variety of native prey.

Social

There is a possibility that the introduction of serval genetic material could enhance physical characteristics of feral cats in Australia. Other large breeds of domestic cat (Maine coons, bengals) already present in Australia could be used by breeders in later generational crosses of savannah cats. Potential domestic and feral savannah cats could have mixed ancestral lineages that include these very large breeds (especially Main coons) in addition to the serval.

There will be difficulty in containing savannah cats, as they appear to be highly agile, intelligent and able to leap upwards about 2 m from a standing position. With these enhanced physical abilities, in addition to a possibly long lifespan (servals in the wild live for about 23 years whereas most domestic cats live about 15 years), the pet savannah cat could have significant impact on suburban wildlife alone. Although otherwise suggested by cat breeders, it would be inevitable that on occasion the cats would escape confinement resulting in opportunities to interact with neighbouring domestic cats, as well as feral cats, and for unplanned breeding to occur. Even though savannah cats are expensive, this is unlikely to cause any variation in irresponsible behaviour of their owners.

Legislation

The savannah cat is prohibited under the *Biosecurity and Agriculture Management Act 2007* (Western Australia), the *Natural Resource Management Act 2004* (South Australia), high risk under the Non-Indigenous Animals Regulation (New South Wales), Class 1 declared animal (Queensland), prohibited pest animal under the *Catchment and Land Protection Act 1994* (Victoria), and it is not included in the List of Animals Suitable to Live Import (EPBC Act, 1999).

Because of the similarities with domestic cats, it would be difficult to ensure savannah cat incursions do not occur. How will the agencies regulating the entry of species to Australia be able to ensure that only savannah cats, and not more unstable and unruly earlier filial hybrids, enter the country? Alternatively, how will they ensure that no domestic cats containing serval genetic material enter the country? Under the current legislative procedure any breed of domestic cat imported under a permit enters the country without genetic identification.



Alternative controls over those who keep savannah cats would be impossible to apply across Australia given the range of state and territory, and local government legislation. There are no restrictions or conditions that are demonstratively effective or that can be effectively monitored or enforced to be able to achieve enforcement of conditions for keeping imported savannah cats.

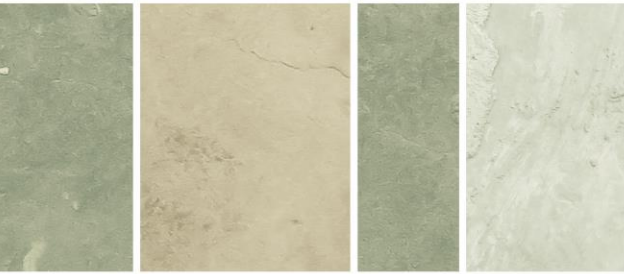


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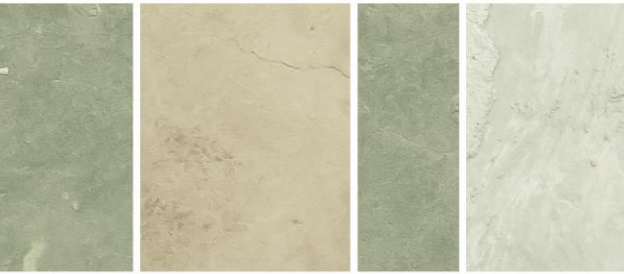
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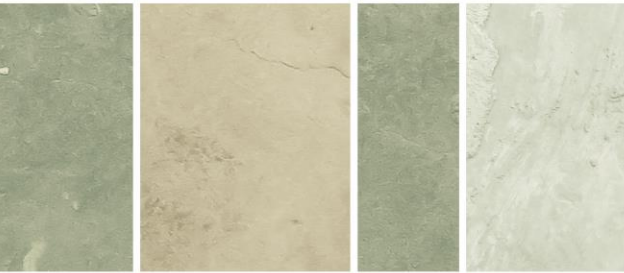
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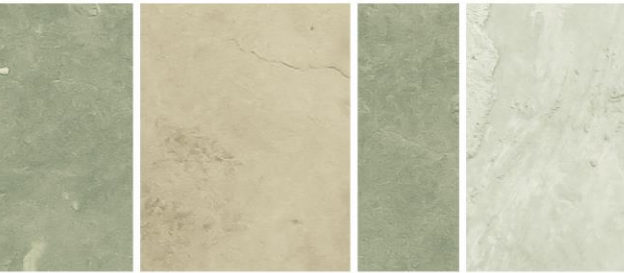
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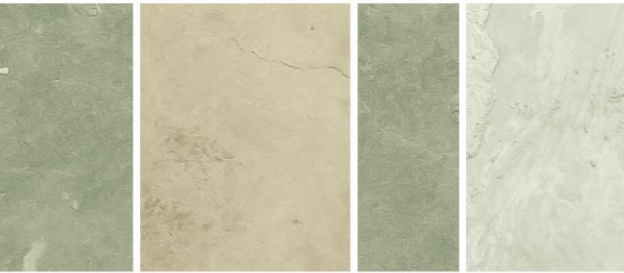
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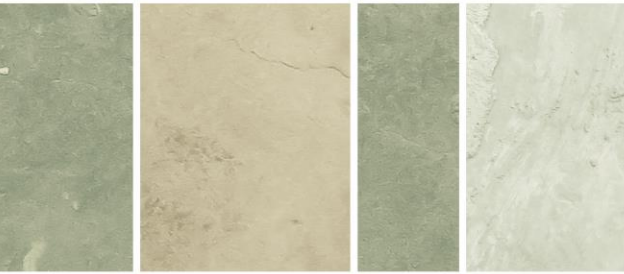
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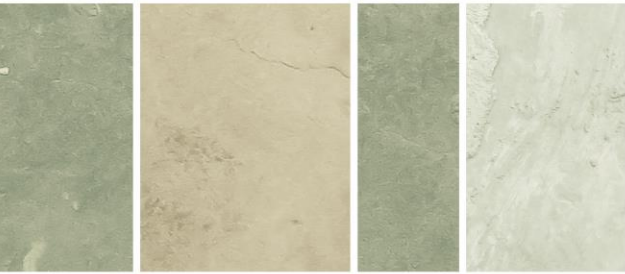
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