

# Biological Control

Biological control is the use of parasites, predators or pathogens (disease-causing organisms) to help control pests ranging from nematodes to weeds to vertebrates.

Natural Pest control using Bugs

[http://www.ted.com/talks/shimon\\_steinberg\\_natural\\_pest\\_control\\_using\\_bugs?language=en](http://www.ted.com/talks/shimon_steinberg_natural_pest_control_using_bugs?language=en)

# Biological Control

- Introduced organism must be tested and found to be safe before it is released.
- Pest Organisms – are species that have become troublesome and occur where they are not wanted.
- Biological control works best when a natural predator or parasite is used to limit the growth of species.

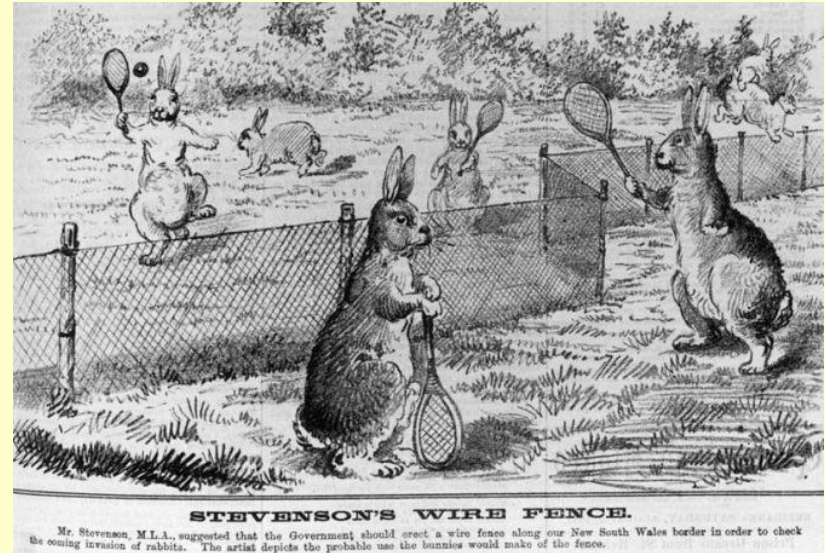
# Rabbit an example pf biologicalcontrol

- Rabbit was introduced with the arrival of First Fleet in 1788.
- By 1900 they had reached plague proportions.



# Rabbit

- Did some silly things to try and get rid of them.
- A 1833 km fence was built to try and keep rabbits out.
- It did not work! Why ?
- It did however kill kangaroos that got its legs stuck in the wires and migrating emus who could not get across.



# Rabbits and biological control

- In 1950 a virus called Myxoma from South America was introduced. The virus was carried by fleas and mosquitos, causes the disease myxomatosis.
- Killed 99% rabbits in a few years.
- However some rabbits where resistant to the disease and over the years the number of these rabbits increased.



# Successful Examples of biological control in Australia

**1930s - control of prickly pear (*Opuntia* spp.) by  
*Cactoblastis cactorum*.**



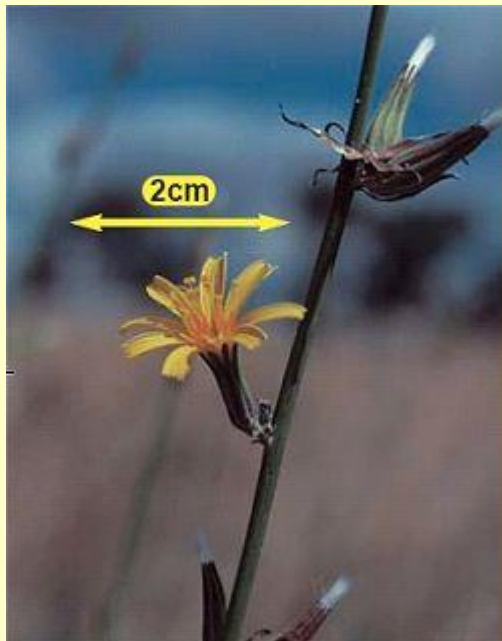
**Cactoblastis cactorum**  
grubs eating prickly pear





# Other examples

**1970s - control of narrow leaf form of skeleton weed using a rust fungus.**





# Other examples

**1970s and early 1980s - control of spotted alfalfa aphid in lucerne by parasitic wasps/**



<http://www.scienceimage.csiro.au/tag/aphids/i/2357/spotted-alfalfa-aphid-being-attacked-by-parasitic-wasp>

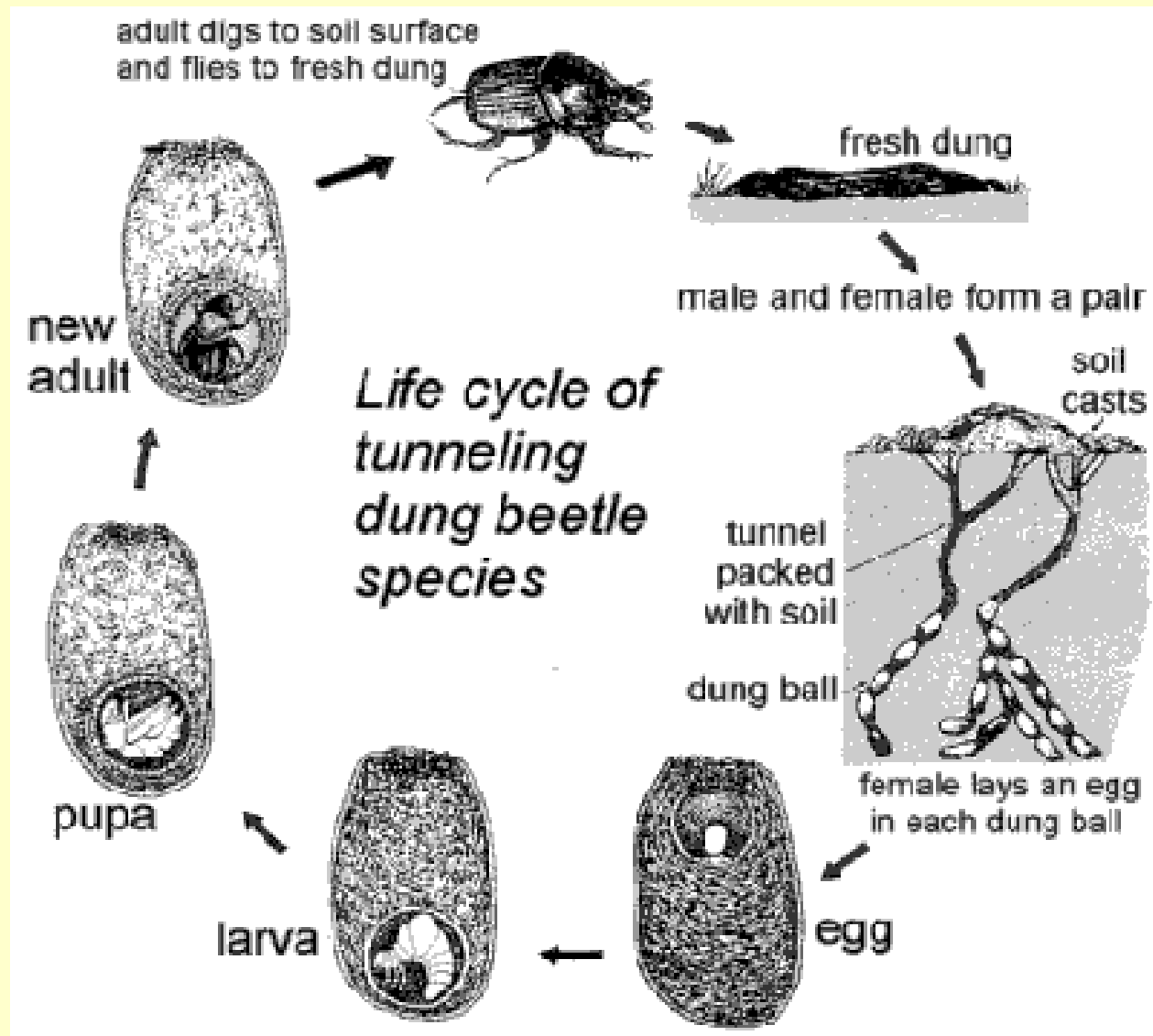
# Other examples

**1960s to 1980s - dung beetles to bury dung.** Stopped pest flies breeding and pasture fouling.



Bush Flies develop as maggots in the animal dung. Adults have two stripes on their back. The **Common House Fly** *Musca domestica* is also in this family.

# Life Cycle of Dung Beetle





# Dung Beetle At Work





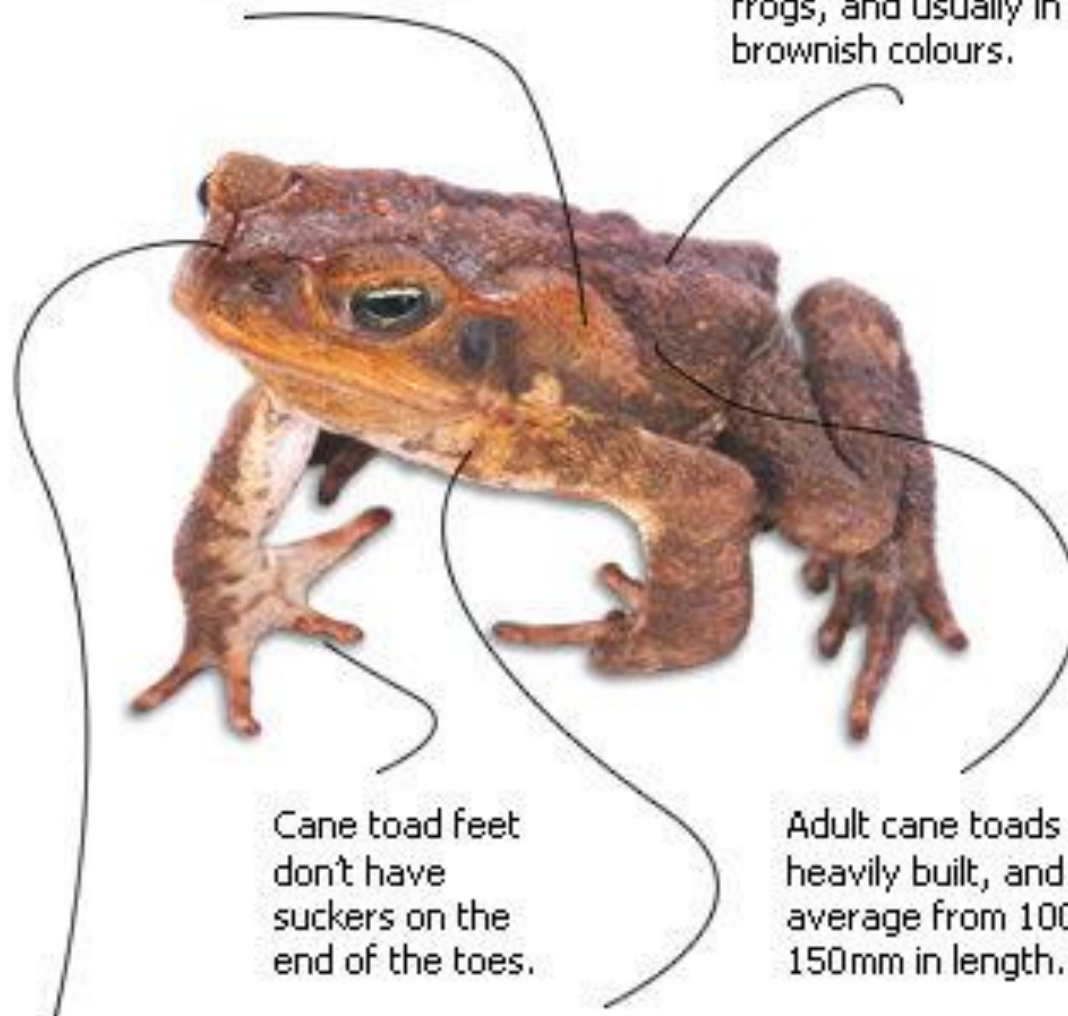
# Lessons to be learnt! Cane Toad

- The introduction of the cane toad is an example of biological control that turned out disastrous.
- Cane toads were introduced from South America to control cane beetles in Queensland.
- Cane toad is now a major pest organism.



The big glands behind a cane toad's eyes release a poisonous milky liquid when the toad feels threatened.

Cane toad skin is dry and warty, rather than moist and slippery like many native frogs, and usually in dull, brownish colours.



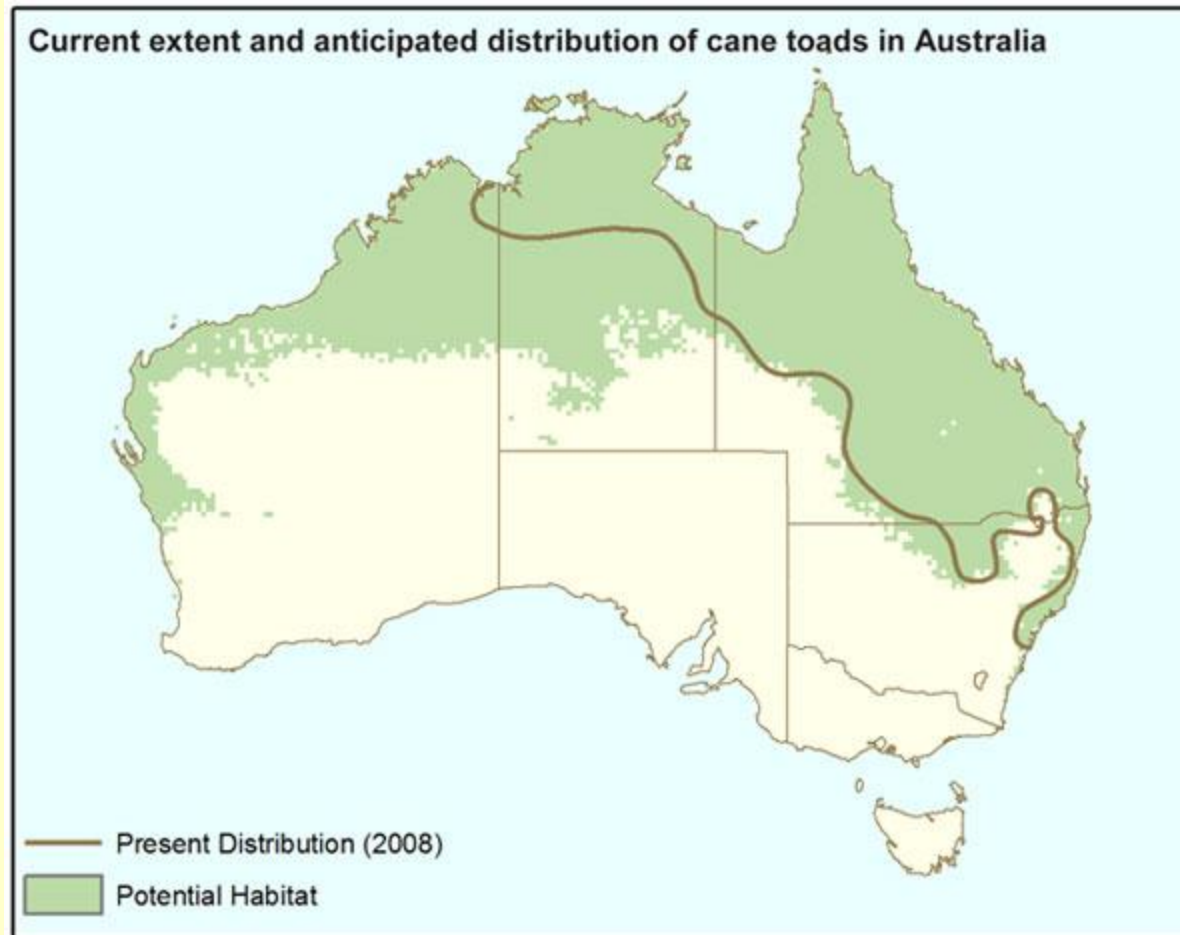
Cane toad feet don't have suckers on the end of the toes.

Adult cane toads are heavily built, and average from 100mm to 150mm in length.

Cane toads have very distinctive bony ridges over thier eyes. These ridges meet in the middle.

The call of a male toad is like a high-pitched purr – a bit like a telephone dial tone.

# Predicted spread of cane toads



# These animals die when they eat cane toads





# Procedures for developing biological Control

- Pest Organisms – are species that have become troublesome and occur where they are not wanted.
- Introduced organism must be tested and found to be safe before it is released i.e. extensive research in understanding feeding.
- Biological control works best when a natural predator or parasite is used to limit the growth of species.
- No biological control will be 100 % effective.

# Text reading

- Chapter 22.3