



• Reptile Welfare and Diseases

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ILOs

- Explain the breeding, management, nutrition, animal welfare and common causes of disease among selected species of small mammals and reptiles
- Describe the role of veterinarians within the exotic and unusual pet industries
- Describe the ethical and legal frameworks – licences

Reptiles in Australia

- Laws vary between states and territories in regard to which species can be kept and if licences are required.
- Species that are exotic to Australia cannot be kept as pets or sold in the pet trade.
- Captive breeding and capture from the wild is regulated.
- Common Squamate (lizard and snake) pets include lizards from the dragon, skink, monitor and gecko taxa, snakes from the python family, and less commonly venomous snakes
- Common Chelonians kept include long necked turtles and Murray basin turtles.
- Crocodilians such as fresh water and estuarine crocodiles are kept in much smaller numbers.

Addressing the welfare of captive reptiles

Physical/Functional Domains							
Survival-Related Factors						Situation-Related Factors	
1: Nutrition		2: Environment		3: Health		4: Behaviour	
<i>Negative</i>	<i>Positive</i>	<i>Negative</i>	<i>Positive</i>	<i>Negative</i>	<i>Positive</i>	<i>Negative</i>	<i>Positive</i>
Restricted water & food; poor food quality	Enough water & food; balanced and varied diet	Uncomfortable or unpleasant physical features of environment	Physical environment comfortable or pleasant	Disease, injury and/or functional impairment	Healthy, fit and/or uninjured	Behavioural expression restricted	Able to express rewarding behaviours
Affective Experience Domains							
5: Mental State							
<i>Negative Experiences</i>				<i>Positive Experiences</i>			
Thirst	Breathlessness	Anger, frustration		Drinking pleasures	Vigour of good	Calmness, in control	
Hunger	Pain	Boredom, helplessness		Taste pleasures	health & fitness	Affectionate sociability	
Malnutrition malaise	Debility, weakness	Loneliness, depression		Chewing pleasures	Reward	Maternally rewarded	
Chilling/overheating	Nausea, sickness	Anxiety, fearfulness		Satiety	Goal-directed	Excited playfulness	
Hearing discomfort	Dizziness	Panic, exhaustion		Physical comforts	engagement	Sexually gratified	
Welfare Status							

Figure 1. An abbreviated version of the Five Domains Model. It summarises survival-related and situation-related factors and their associated physical/functional domains, and provides examples of negative or positive affects assigned to the mental domain. The overall affective experience in the mental domain equates to the welfare status of the animals. For full details see [37].

Why do we want to keep them as pets?



Why do vets want to work with reptiles?

- Incredible variation in structure, function and ecology
- Forging new ground/ frontier science
- Gaining skills few others have
- Contact with tame wonderful animals
- Finding solutions for difficult or unquantified problems

Reptile veterinary frustrations

- Paucity of high quality research
- Few evidence based academic or lay references
- Poor resources: equipment, medication, established evidence based theory and practice
- Community education by social media

- Our knowledge base is small and we are often working from first principals.
- Many vets do not know what they don't know and a little knowledge can loom large in an industry where little is known.
- Speciesism

Let's think beyond the cage

- Where do they come from?
- Is there an organised and regulated retail industry for supplies?
- Where does the pet care information come from and who judges its quality?
- What happens when they are lost or unwanted?
- Can and should their welfare be regulated and enforced?

The Reptile Trade in Victoria

- Licensing through the state government (DELWP currently)
- Captive breeding
 - Morbidity and mortality
 - Selective breeding for beauty/strength/longevity in captivity versus their own habitat
- Swap meets
- Harvesting from the wild

Do the reptiles benefit from captivity?

- Reptiles often attract highly engaged owners
- This should mean that
 - Pet needs immediately noted and provided for
 - Not fighting to survive for themselves
 - Plenty of attention and food
- Humans directing selection to make them better pets

Veterinary Roles in the Reptile Trade

- Working on welfare
- Promoting the sharing of evidence based care
- Encouraging people to explore beyond the petshop or forum
- Learning from and with the Herpetology community

Health Problems in Reptiles

- Commonly related to a lack of understanding of the ectotherm
- Husbandry is often deficient in one or more of the following
 - Accessible appropriate thermal range
 - UVB of the right strength, within the right distance and large enough area
 - Visible light colour, type and day/night cycle
 - Balanced diet and appropriate supplementation of minerals
- Opportunities for traumatic injury during
 - Feeding in groups or leaving uneaten live prey with the pet
 - Vivarium doors and tails, escape attempts
 - Gardening and turtles
- Contagious diseases and parasites

Reptile common diseases

- Dietary/heat/UVB relationship failing
 - Metabolic bone disease
- Malnutrition (over or underfeeding nutrients)
 - Gout (excessive protein in diet- urate crystals build up in organs and joints)
 - Hypovitaminosis A (in herbivores lacking orange and red vegetables)
- Poor hygiene (of substrate/air/water) or inappropriate humidity
 - Dermatitis
 - Dysecdysis (difficulty shedding)
 - Stomatitis
 - Sepsis
- Lack of quarantine and biosecurity protocols/outdoor enclosures
 - Ectoparasites
 - Neurorespiratory viral infections
- Trauma

The risks of offering live prey.
This python has become the
prey and the rat the predator.

It is illegal to feed live
mammalian or avian prey in
Victoria.

Live insects and live fish can be
offered. However they still
pose a significant risk to their
predators if they are not eaten.

Crickets can chew ulcers into
Bearded Dragons.
Feeder fish can chew toes off
small or lethargic turtles.



Trauma by fellow household pets

This turtle was chewed by the household dog.

This is a common problem in lizards too.



Issues of hygiene and malnutrition

This is a middle ear abscess in a tortoise (top image).

It can arise from an infection in the mouth, stomatitis (bottom image of turtle) or from the respiratory system.

Immunity is compromised by inadequate temperature gradient, poor diet and lack of the appropriate access to ultraviolet light, UVA and B.



Nutritional secondary hyperparathyroidism

Also known as metabolic bone disease.

It is caused by a single or multiple deficits in the complex interaction between

- UVB exposure
- Dietary calcium provision
- Access to thermal gradient appropriate to species to enable the animal to reach the preferred body temperature for metabolism
- Successful absorption and metabolism of calcium and Vitamin D



Proliferative lesions like this
could be viral or neoplastic.

Papilloma virus.

Excessive UV exposure.



Reptile zoonoses

- Faeco-oral transmission such as
 - Enteric bacteria such as salmonella
 - Protozoans such as Giardia
 - Flukes, tapeworms, roundworms
- Ectoparasites- direct or environmental contact
 - Mites such as *Ophionyssus natricus* (direct contact)
 - Ticks (indirect contact from the habitat of the reptile)
- Vector borne diseases such as Rickettsia
- Puncture wounds allowing introduction of infection such as Mycobacteria

Helenki.

Jungle Jag (colour morph) carpet python.

