

# Dead wombats walking:

## Seasonal Nutrition and Sarcoptic Mange in Free-Ranging Bare-nosed Wombats

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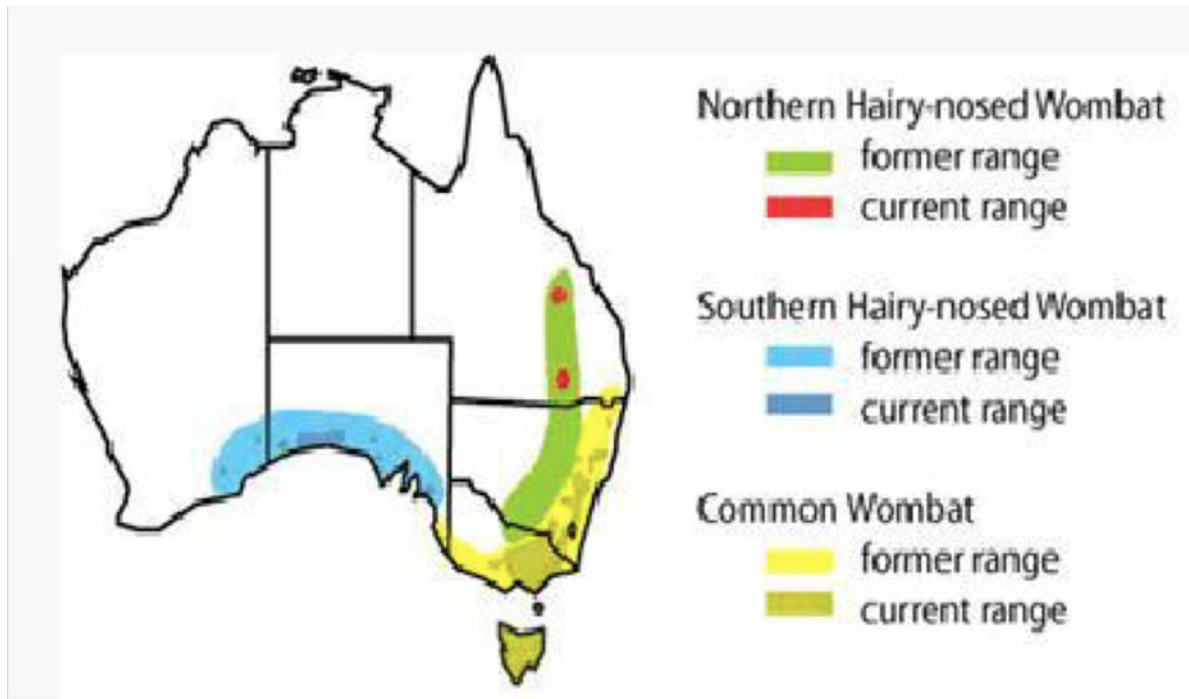
# Introduction

- Wombats are suffering from a disease caused by the sarcoptic mange mite, *Sarcoptes scabiei*
- Symptoms include: hair loss, thickening of the skin and can result in blindness and DEATH!
- While other animals suffer from sarcoptic mange, wombats are particularly vulnerable, why?



A wombat suffering from sarcoptic mange  
(Image: Vallin 2017)

# Wombat Distribution



“The distribution of wombat species”

(Department of Environmental and Heritage 2018)

There are three different species of wombats:

- Northern Hairy-nosed
- Southern Hairy-nosed
- Bare-nosed

# Wombat nutrition

Given the distribution of wombats throughout Australia factors that are going to have an impact on their nutrition include:

- Variety of habitats
- Climatic conditions
- Seasonality
- The abundance and nutritional composition of the grass and other vegetation

# Background: current knowledge



Seasonal variation in grasses i.e wombat food

Image: Vallin 2018

- Animal survival in different environments is linked to the challenge of obtaining food that provides the required macronutrients (Simpson & Raubenheimer 2012).
- However when an animal is affected by illness or disease, physiological changes such as immune responses require more energy.
- Allocating energy towards combating the illness can cause life history tradeoffs, disrupt behaviour and inhibit an animal's ability to forage access food.
- Thus, a diseased animal can be severely impacted and may die as a result of inadequate nutrition.

# Research Gaps

- Wombats consume mostly grass, with low protein & high carbohydrate content (Evans et al. 2006), however knowledge of specific macronutrient requirement is LACKING
- Wombats are selective with their diets, however how this selectivity relates to nutrient needs and regulation is UNKNOWN
- Understanding the dietary ecology of wombats is crucial to their management & conservation.

# Research question & aims

- Determine the nutritional composition of native grasses (wombat diet) commonly consumed by wombats in 5 locations to account for habitat, climate & weather differences over four seasons
- Conduct spotlighting surveys to assess sarcoptic mange prevalence at 5 locations
- Determine if there is a correlation between the nutritional content of wombat dietary items, wombat nutrition and the prevalence of sarcoptic mange in the wombat population at the 5 locations.



# Methods

I conducted my research at 5 locations: Wolgan Valley, Rylstone, Merriwa, Robertson & Coolagolite

Sample Collection:

- Scats
- Wombat foods (grass, herbage, shrubs)

Seasonally

Nutritional Analysis

- Energy
- Proteins
- Lipids
- Carbohydrates
- Fibre
- Minerals (Ca, P, Fe, Mg, Na & K)

These analyses will determine the nutritional changes in food available and nutrient uptake by wombats in the wild, and correlate seasonal changes to nutrition with the incidence of mange.



Field work, recording burrows and collecting samples  
Image: Vallin 2017



# Methods Cont. Spotlighting

Along with sample collection, spotlighting surveys will be conducted at each location in each season






Record every wombat observed &..

- Time
- Mange score
- GPS
- Bearing
- Distance

Other species are also recorded such as:

- Macropods
- Possums
- Rabbits etc

# Mange scoring

Mange Score	Description	Photograph
1	<ul style="list-style-type: none"> <li>No visible signs</li> </ul>	
2	<ul style="list-style-type: none"> <li>Ears and eyes free of mange</li> <li>Small, sparse patches of hair loss; skin appears slightly crusty in these spots, usually on the side of the body.</li> </ul>	
3	<ul style="list-style-type: none"> <li>Most of the hair is retained and appears normal.</li> <li>Ears appear normal.</li> <li>Area around eyes is beginning to appear crusty.</li> <li>Large portions of hair loss on the sides of the body, skin appears crusty in these regions. Mange is starting to spread to the limbs. Small lesions may be present.</li> </ul>	
4	<ul style="list-style-type: none"> <li>Slightly emaciated</li> <li>Ears are thick and crusty, appearing 'caulie-flowered'</li> <li>Eyes are crusty and closed</li> <li>Most of the hair on the sides, limbs and face is lost; skin is very thick and starting to appear blue/grey, lesions likely to be present</li> <li>Still has hair on the top of the body</li> <li>May be approached, slightly deaf and blind</li> </ul>	
5	<ul style="list-style-type: none"> <li>Extremely emaciated</li> <li>Ears are thickened and crusty, extensively 'caulie-flowered'</li> <li>Hair is still present on the head</li> <li>Almost all of the hair is gone, skin is very crusty and appears blue/grey, and lesions are present.</li> <li>Eyes are very crusty and cannot open or close</li> <li>May be completely deaf and blind, easily approached.</li> </ul>	

- This is the table used to allocate a score for each wombat
- If a wombat is too far away or disappears too quickly they are recorded as “mange unknown”

# Anticipated outcomes and benefits

- This study will determine the nutritional requirements of wombats, thus allowing us to develop & recommend appropriate diets for wombats held in captivity
- Identifying the specific dietary requirements of wombats will improve wombat health in captivity by maximizing their nutrition, hence aid the health and welfare & breeding programs in captivity
- By comparing the incidence & severity of sarcoptic mange to the nutritional content of wombat dietary items in the wild will allow us to determine if there is a correlation between nutritional content of dietary items and sarcoptic mange incidence and severity in the wild.

# Conclusion/future directions

- If we determine there is a correlation, we will be able to recommend supplementary food items that could be provided to threatened wombat populations to aid their nutrition and survival at times when it is required, hence aid the conservation of a small but vitally important populations of wombats, & minimise the incidence of sarcoptic mange

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