Murdoch University
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WA Wildlife Health Perspective: Sarcoptic Mange in Quenda

Background

Sarcoptic mange is an infection of the skin caused by the burrowing mite *Sarcoptes scabiei*. Affecting over 100 species of mammals globally (including humans), mange is considered an emerging infectious disease and continues to spillover into new host species (1,2). Sarcoptic mange is believed to have been introduced to Australia by European settlers and now affects several native mammals, most notably wombats, which have experienced severe welfare impacts and population declines due to infestation (3,4). Until 2019, sarcoptic mange had been detected only rarely and sporadically in quenda (*Isoodon fusciventer*), although it was commonly reported in mammals such as foxes and domestic species in WA. However an apparent epizootic of mange in quenda has been detected with approximately 53 cases detected in the Roleystone area since January 2019. The emergence of sarcoptic mange in quenda is concerning for multiple reasons. Quenda are listed as a priority 4 (rare/threatened) species under Western Australian legislation, being threatened by habitat loss, increased urbanisation and threats from introduced predators. It is unknown what the long term individual and population level impacts of this emerging disease may be for quenda, as well as other native species in the region. Additionally, mange can have severe impacts on animal welfare, and *S. scabiei*. are transmissible to humans (scabies) and domestic species, thereby constituting a public and domestic animal health risk.

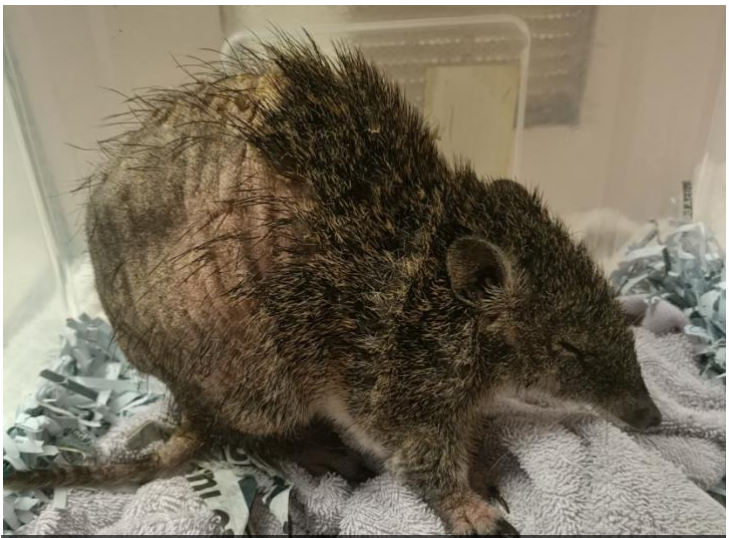

Image source: Darling Range Wildlife Rehabilitation Centre

Clinical signs

The following clinical signs have been seen in quenda diagnosed with sarcoptic mange:

- Skin irritation/inflammation
- Alopecia
- Hyperkeratosis
- Pruritis (itching)
- Emaciation
- Lethargy

Treatment

Consult with your veterinarian to determine the best course of treatment. Darling Range Wildlife Shelter has recorded a 40% mortality rate in admitted individuals, despite treatment, during the current epizootic in Roleystone. Treatment type (injectable vs topical) and duration (weeks or months) is usually based on the severity of clinical signs and response. National Guidelines for sarcoptic manage treatment of wildlife will be published soon at: https://www.nespthreatenedspecies.edu.au/projects/guidelines-on-how-to-treat-australian-wildlife-with-sarcoptic-mange and will advise further iterations of this fact sheet.

Biosecurity

It is important to note that sarcoptic mange is **zoonotic** and individuals working with confirmed or suspected mange cases should use gloves when handling animals and practice good hand hygiene. *S. scabiei* can be spread through direct contact with an infected individual or indirectly through contact with fomites (i.e. bedding). Infected quenda should be housed separately from other animals to prevent the spread of disease, with dedicated equipment and enclosure materials for each individual, and attention to cleaning and disinfection between handling of indviduals. or additional information on wildlife biosecurity, please access the following link:

https://www.wildlifehealthaustralia.com.au/Portals/0/Documents/ProgramProjects/National_Wildlife_Biosecurity_Guidelines.PDF

For additional information, access Wildlife Heath Australia's (WHA) sarcoptic mange factsheet:

https://www.wildlifehealthaustralia.com.au/Portals/0/Documents/FactSheets/Mammals/Sarcoptic_Mange_in_Australian_Wildlife.pdf

Warty Lesions in Quenda

Alongside the emergence of mange, quenda have also been presenting with unusual warty lesions. Initial PCR testing has been negative for bandicoot papilloma/carcinoma virus (BPCV-1 or 2). At this stage, nothing is known about the lesions and their cause. When caring for quenda with unexplained warty lesions, it is suggested that a precautionary approach is used in regard to biosecurity.

References

1. Pence DB, Ueckermann E. Sarcoptic mange in wildlife. Revue Scientifique et Technique-Office International Des Epizooties. 2002;21:385-398.
2. Tompkins DM, Carver S, Jones ME, Krkošek M, Skerratt LF. Emerging infectious diseases of wildlife: a critical perspective. Trends in Parasitology. 2015;31:149-159.
3. Fraser TA, Charleston M, Martin A, Polkinghorne A, Carver S. The emergence of sarcoptic mange in Australian wildlife: An unresolved debate. Parasites & vectors. 2016;9(1):316.
4. Martin AM, Burridge CP, Ingram J, Fraser TA, Carver S. Invasive pathogen drives host population collapse: effects of a travelling wave of sarcoptic mange on bare-nosed wombats. Journal of Applied Ecology. 2018;55:331-341.

Contact Email: Caitlin.Roberts@murdoch.edu.au

Reporting and sampling protocol: Sarcoptic Mange

1 Report

Report suspected cases of sarcoptic mange in **ANY MAMMAL** and cases of warty quenda to Wildlife Health Australia (WHA)'s WA state representative Siva at Sivapiragasam.Thayaparan@dpird.wa.gov.au
Please cc Amanda Ash (A.Ash@murdoch.edu.au) and Bethany Jackson (B.Jackson@murdoch.edu.au) on any communications, as we may be able to offer research support or diagnostics

2 Sample

IF DPIRD DO NOT REQUIRE BODY FOR INVESTIGATION.....

- **Live animal:** if a section of crust can be obtained, place into 70-95% ethanol
- **Live animal where vet is present/attending or appropriate ethics/permits in place for invasive sampling:**
  - 5-10mm biopsy of skin at leading edge of the lesion (e.g. the interface between affected and unaffected tissue) in 10% neutral buffered formalin
  - 5-10mm biopsy of skin at leading edge of the lesion in 70-95% ethanol for molecular and morphologic identification
- **Dead animal:** send whole body to Murdoch University

3 Sample storage

- **Samples in ethanol:** keep at room temperature
- **Samples in formalin:** keep at room temperature (do not place in fridge or freezer!)
- **Whole bodies for mange follow up:** store frozen until transfer (note: if histopathology is required by DPIRD for other reasons, bodies must be refrigerated and transferred within 48-72hrs)

4 Diagnostics

- Unusual cases such as warty lesions may warrant investigation by DPIRD, liaise with Siva to determine sampling and diagnostic requirements.
- If suspected mange cases or warty lesions are seen and are not of interest to DPIRD for investigation, please send samples as above to Murdoch University, by first contacting Amanda Ash and Bethany Jackson
- Samples sent to Murdoch will be screened for sarcoptic mange free of charge as a research priority, however will be batched and screened when time permits. If you require a rapid answer for diagnostic purposes, please discuss with Amanda and Bethany.