

ASVP DIAGNOSTIC EXERCISE No. 24

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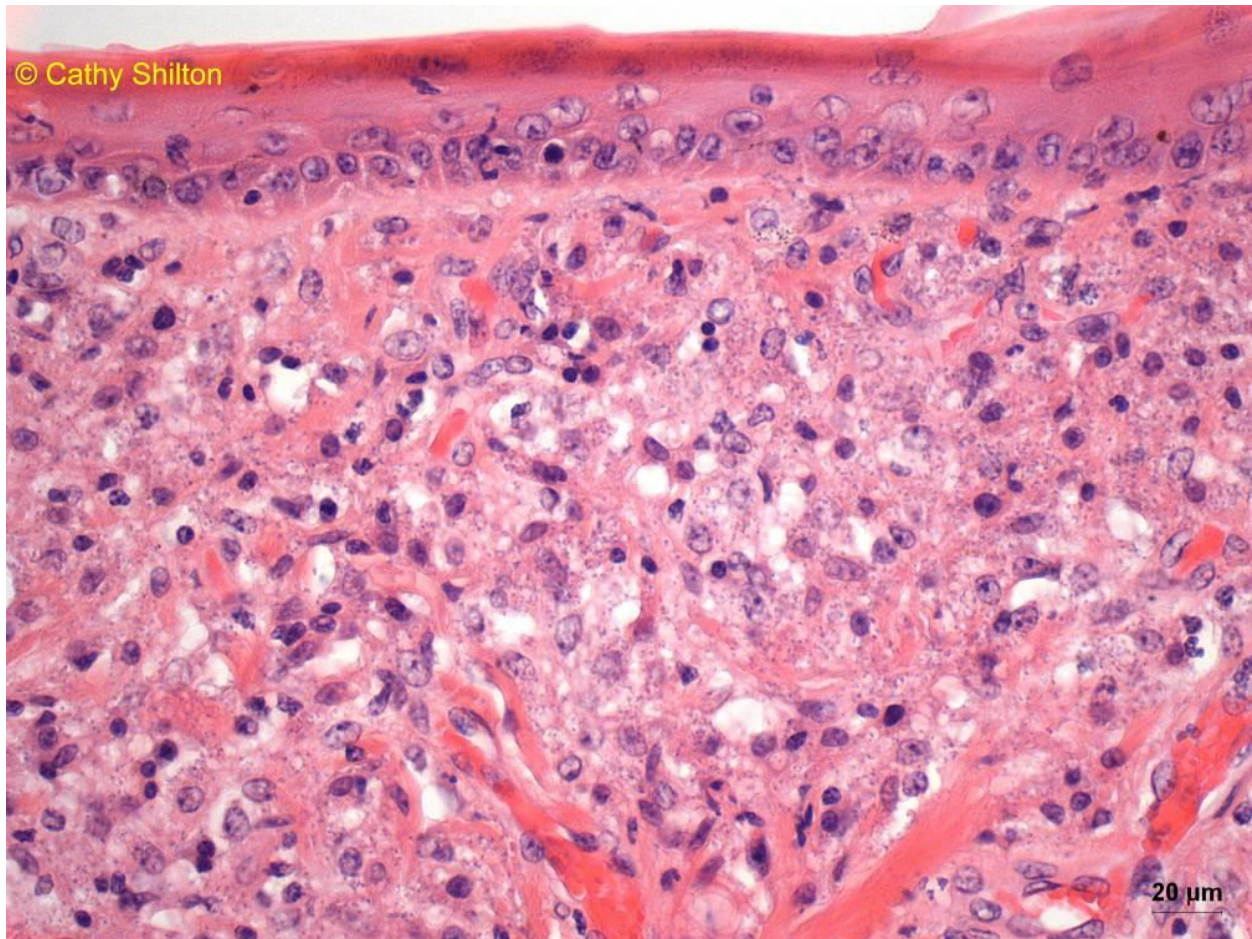
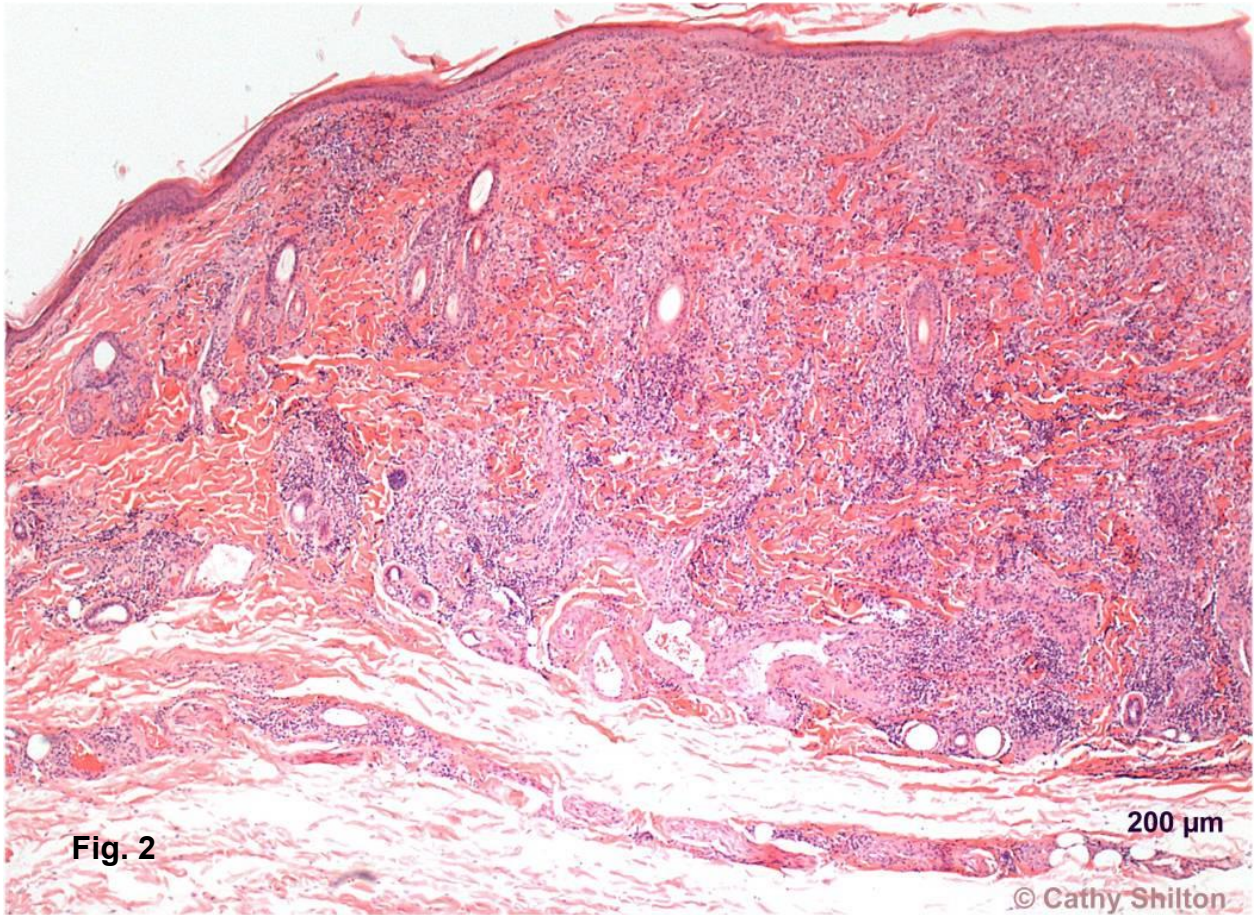
History and clinical findings:

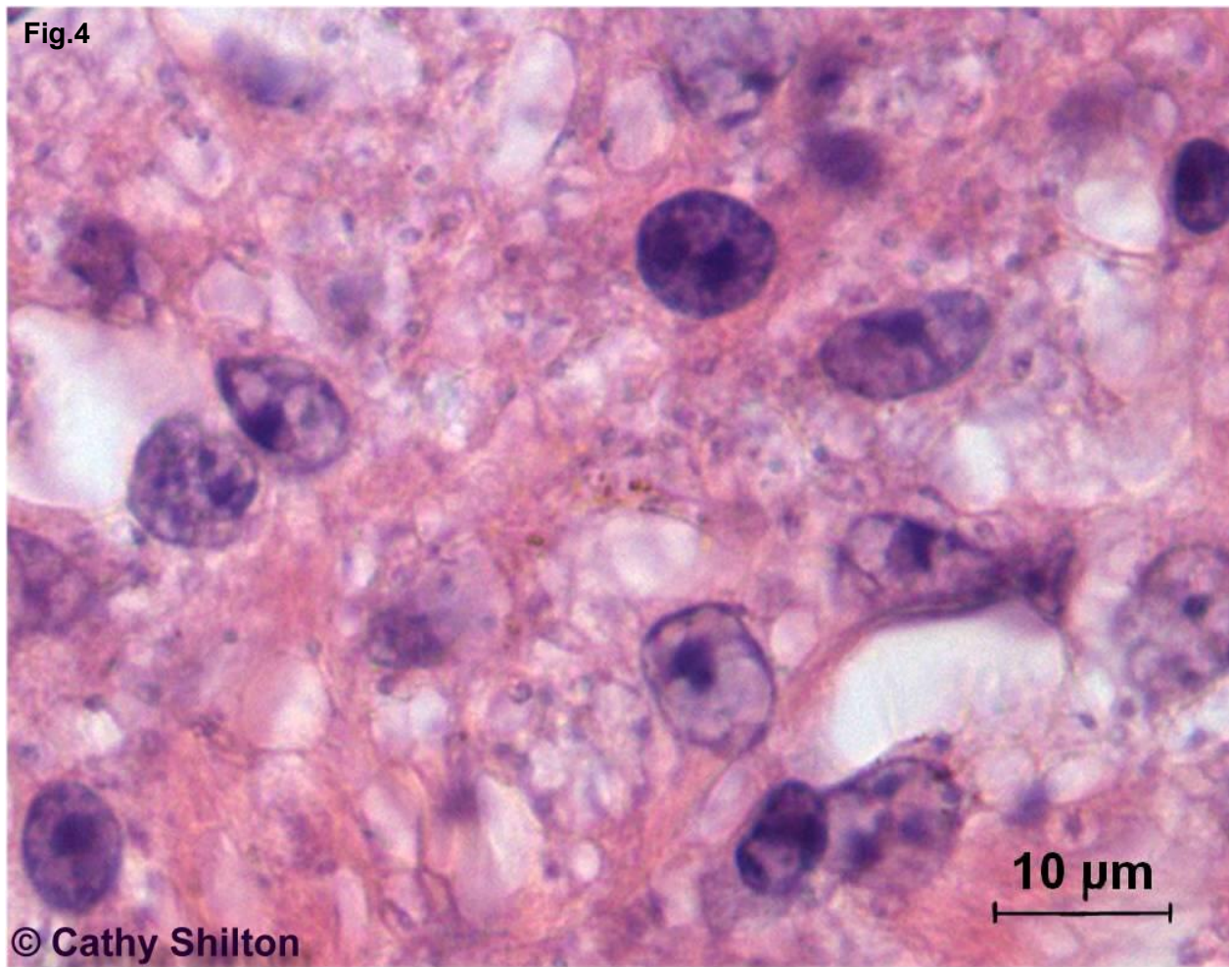
Northern wallaroos (*Macropus robustus woodwardii*) are endemic to the Darwin region. Three animals in captivity developed nodular skin disease concentrated on the tail, distal limbs and ear pinnae. Lesions varied from 0.5-2 cm diameter coalescing regions of thickened skin to raised variably encrusted or ulcerated nodules (Fig. 1). On section, most nodules appeared as white/tan dermal masses, some with necrotic caseous yellow cores.



Figure 1: hock of *Macropus robustus woodwardii*

1. Describe the abnormalities
Focal ulcerated and non-ulcerated, fairly sharply demarcated nodular skin swellings; range from 5 to 15mm
2. What basic disease processes might be present?
Inflammation (chronic, proliferative); or neoplasia
3. Pathological diagnosis (give other possibilities in order of preference)?
Chronic nodular dermatitis
4. Possible causes of this change (in order of preference)?
Chronic fungal or parasitic (demodex?) infection





Figs. 2-4: H&E-stained section; skin nodule on leg of Northern Wallaroo

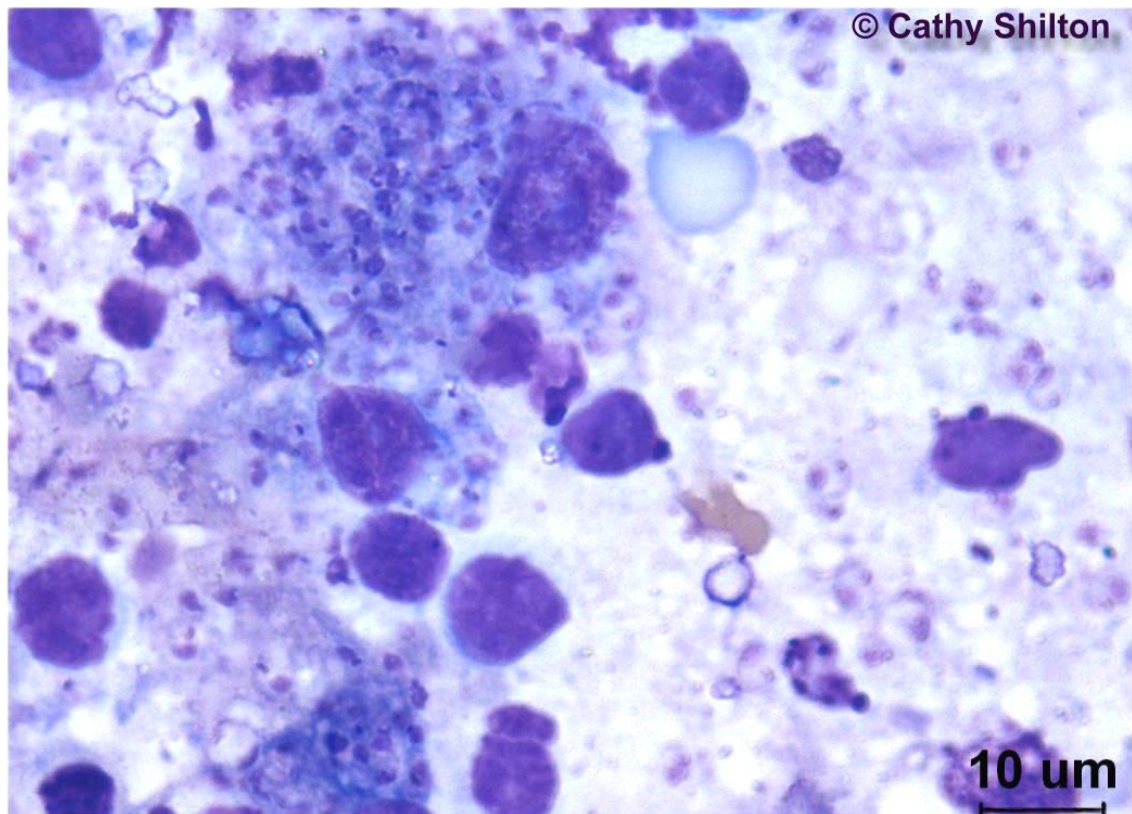


Figure 5: Dif-Quik-stained smear (oil immersion); skin nodule on leg of Northern Wallaroo

Histopathology:

Histologically, lesions are characterised by expansion of the superficial and/or deep dermis by moderate to marked infiltration with macrophages containing abundant intracytoplasmic 1-2 um diameter basophilic organisms (*Leishmania sp.* amastigotes). There are moderate numbers of plasma cells and lymphocytes intermingled with macrophages and present in the dermis at the margins of lesions (**Figs. 2-4**). In ulcerated lesions, a serocellular crust covers the ulcer bed and there is neutrophil infiltration of the superficial dermis. In lesions composed of large solid sheets of macrophages, central areas are occasionally necrotic and partially mineralised (not depicted). Organisms are best detailed in impression smears of the lesions in which the darkly basophilic comma-shaped kinetoplast associated with each organism is appreciable (**Fig. 5**).

Researchers at the Menzies School of Health Research confirmed the identity of the organism by PCR and culture and demonstrated antibodies against kangaroo *Leishmania* antigen in the affected wallaroos using ELISA. Gene sequencing is underway to confirm that the *Leishmania sp.* in these Northern wallaroos is the same as previously identified in red kangaroos. Cutaneous leishmaniasis caused by a new species of *Leishmania* was first recognised in the Darwin region several years ago by Karrie Rose (Australian Registry of Wildlife Health) in skin lesions from captive red kangaroos (*Macropus rufus*) that had been displaced from their endemic range.