Zoological Parks Board of New South Wales

## Australian Registry of Wildlife Pathology

The following are some interesting cases that have passed through the Registry recently. These reports originate from free-ranging animals, and native fauna held in a variety of zoos, fauna parks and private collections.

JUNE 2000

- NZ Fur Seal – found stranded on Bondi Beach. Euthanased due to its emaciated state. Gross post mortem examination revealed enlarged lymph nodes throughout the body. Acid fast bacteria were present within impression smears of several lymph nodes, yet various attempts to identify mycobacterial species using PCR and mycobacterial culture were unsuccessful. Culture was attempted at Taronga Zoo, the human mycobacterial reference laboratory in QLD, and at Agriculture WA. There is a "Southern Ocean Mycobacterium" which has been isolated within five pinnipeds. Although routine diagnostic tests identify this organism as *M. bovis*, Agriculture WA indicated that sequencing data places the organism somewhere between *M. bovis* and *M. tuberculosis*. Although no definitive diagnosis was reached in this case, at least *M. bovis, M. tuberculosis*, and Southern Ocean Mycobacterium infections were ruled out.
- Northern Brown Bandicoot – captive, Northern Territory – multisystemic granulomas, Mycobacteriosis
- Little Penguins (6) – from Manly penguin colony – 2 predated by foxes, 2 attacked by large dogs, 2 decomposed
- Ringtail possum (2) – euthanased due to neurological signs. No significant findings upon gross and microscopic post mortem examination. Possible toxicity (unfortunately we do not have funding or collaborative links to conduct toxicological testing).
- Brushtail possum – euthanased due to the presence of a very large mammary adenoma.
- Swamp Wallaby – QLD, private veterinary practice – juvenile being hand raised euthanased due to neurological signs. Multiple brain abscesses
- Diamond Python – captive, NSW – inclusion bodies found within the cytoplasm of several nerve cells. Suspected inclusion body disease
- Western Grey Kangaroo – emaciated, intestinal worms, hepatic amyloidosis, intranuclear inclusion bodies within hepatocytes, protein losing nephropathy
- Sulphur Crested Cockatoo – captive, NSW – died after a squamous cell carcinoma originating from a wound on the wing spread throughout the coelomic cavity and into the muscles of the heart and ventriculus
- Diamond Python – large retrobulbar mass. Adenocarcinoma of the salivary gland. Intracytoplasmic inclusion bodies were evident within many tissues possibly reflecting the presence of an underlying viral infection.
- Murray Cod – chronic renal disease associated with infection with a single-celled parasite, Myxosporidia

JULY 2000

- Blue-mountain tree frogs – 2 captive frogs died with ascites and had nodular kidneys on gross post mortem examination. Intracytoplasmic basophilic inclusions were evident within endocardial cells and small numbers of macrophages within the kidneys. Collaboration with Dr. Peter Timms confirmed the presence of *Chlamydia pneumoniae*. This organism is increasingly being identified as a significant pathogen of reptiles and amphibians. The organism is very similar to that identified within human *C. pneumoniae* infection

- Koala – captive, NSW - died with massive umbilicated ulcers and masses in the stomach. Lymphoid tumours.
- Grey-headed flying fox – captive, NSW - biopsy of ulcerative and alopecic skin wounds over the chest and chin were consistent with eosinophilic collagenolytic dermatitis (an unusual steroid responsive skin disorder of cats). The wounds resolved with triamcinolone treatment, but then recurred despite ongoing treatment with corticosteroids
- Blossom bat - captive - died due to a large purulent liver abscess that had broken out into the abdomen. The abscess was caused by *Mycobacterium avium*.
- Little Penguin – 3 birds from the Manly colony – one died with bite wounds (fox or small dog), one died with septicaemia, and a third bird suffered severe blunt trauma to the chest.
- Major Mitchell's Cockatoo – confiscated by NSW NPWS from pet shop. Physical examination of the bird revealed a small number of poorly developed feathers in the crest. Haemagglutination and haemagglutination inhibition tests revealed the presence of psittacine circovirus antigens and antibodies. Psittacine Beak and Feather Disease.
- Long-nosed bandicoot - found injured during a trapping and tagging project as part of the recovery program. Euthanased due to severe traumatic injuries, most likely inflicted by a dog several days before being trapped.
- Ringtail possum - found dead and partly predated. Numerous filarial nematodes found within the coelomic cavity and microfilaria found within a smear of heart blood.
- Agile Wallaby – Northern Territory - one year old hand raised wallaby had chronic renal disease and evidence of possible previous exposure to toxic plants
- Southern Giant Petrel - Found emaciated and exhausted on a beach. Died shortly after being found. The bird was suffering from a stomach impacted with a balloon, feather and fur. It is suspected that this sub-adult bird ate inappropriate foods as a result of hunger and poor hunting skills.

AUGUST 2000

- Broad-headed snake – died with severe gastritis infiltrated with large numbers of trichomonad parasites. Microscopic examination of the tissues revealed severe, mineralisation of many tissues. Several similar cases are filed in the Registry, yet the cause of the mineralisation is unclear.
- Quokka – captive – infiltrative liposarcoma in the mesentery and retroperitoneal tissues, pulmonary cryoptococcosis, and a large mediastinal abscess.
- Blue-faced parrot finch – captive – Died with foci of intestinal and hepatic necrosis caused by infection with *Salmonella typhimurium.*
- Tammar wallabies (5) – died suddenly one night during storms. Gross post mortem examinations were consistent with Tammar Sudden Death Syndrome, however, histopathology, viral and bacterial cultures were consistent with septicaemia and/or acute bacterial pneumonia.
- Southern Giant Petrel - Juvenile bird found with an unidentified foreign body in gizzard.
- Ringtail possum – died with enteritis 14 days after treatment with a broad-spectrum antibiotic. Anecdotal reports of this serious side effect of antimicrobial therapy are common, yet it has not commonly been seen here.
- Long-nosed bandicoot - NSW NPWS – thoracic puncture wounds inflicted by a fox or small dog.
- NZ fur seal – euthanased due to debility and stranding. Pneumonia.
- Green sea turtle – euthanasia due to debility. Intestinal tract obstructed with dry and hard sea grass. We have seen several obstipated young sea turtles and I have been told that this may occur as young turtles change their diet from primarily fish and squid to sea grasses.
- Brush-tailed phascogale – Northern Territory - congestive heart failure.

SEPTEMBER 2000

- Ground Cuscus – captive – euthanasia after a sudden onset of paralysis. Degenerative disc disease in the cervical and lumbar spine. Herniated cervical disc.
- Carpet python – captive - died with severe inflammation throughout the oesophagus. A dead rat had become lodged in the oesophagus several days after being fed.

Histopathology revealed a multisystemic lymphoid tumour. Neoplastic nodules appeared to be compressing the oesophagus.

- Little Penguin – Manly colony – dislocated spine due to severe blunt trauma.
- Hawksbill Turtle – euthanased when found severely debilitated. Gross post mortem examination revealed bacterial pneumonia and stomatitis.

OCTOBER 2000

- Western Barred Bandicoots – independent reports from Western Australia and South Australia of ulcerative and proliferative lesions along the mucocutaneous junctions of the ears, eyelids, oral cavity, cloaca, pouch margin, and on the soles of the feet. Possible herpes or papilloma virus infections are being investigated. This infection may have an impact on the species translocation and recovery program.
- Black Flying Foxes (3) and Grey Headed Flying Foxes (3) submitted by both RSPCA and NSW NPWS in an attempt to press charges against an orchard owner who has installed a 2 story tall fence laden with 13 strands of electric wire. Electrocution was confirmed in 2 bats, one bat was shot, one infant died from inanition when separated from its mother, and the other 2 bats had injuries of uncertain origin. Electrocution injuries tend to cause paired wounds, created as the current enters and exits the body. The electrical current causes damage to blood vessels resulting in fibrinoid vasculitis, degeneration of dermal collagen bundles and avascular necrosis of the epidermis. Depending on the current and voltage involved electrocution can also result in terminal cardiac arrhythmias and pulmonary oedema.
- Little Penguin - coup-contre-coup injury to brain as a result of being pecked on the head by an adult penguin
- Brushtail possum - aged captive female - uterine cystic endometrial hyperplasia and chronic interstitial nephritis
- Cunningham's skink - captive - transmural colonic necrosis - amoebiasis
- Southern Giant Petrel - two fishing hooks found within the ventriculus.
- Hawkesbill Turtle - euthanased after being found washed up on a beach near Newcastle. Extensive fungal pneumonia and nephritis
- Hawkesbill Turtle - found floating upside-down in the water. Died shortly afterwards with an infection secondary to a large foreign body protruding from the colon. The foreign body appeared to be an antenna from a crayfish. Multiple incidental parasites in the blood stream and intestinal tract (Spirorchid flukes in the blood stream shed ova that become lodged in capillaries resulting in multisystemic granulomas. Intestinal trematodes)
- Brushtail possum - found blind with a pouch young - non-suppurative meningo-encephalitis and optic neuritis, suggestive of a previous viral infection affecting the eyes and brain.
- Eastern Grey Kangaroo - ACT - aspiration pneumonia, terminal systemic haemorrhage due to DIC.
- Long-nosed Potoroo - multisystemic cryptococcosis causing large tumour like nodules throughout the lungs and one kidney.
- Long-nosed bandicoot - North Head - dog bite, numerous incidental parasites. Pulmonary nematodiasis, capillariasis within the mucosa of the tongue, and splenic amyloidosis (a common finding in aged long-nosed bandicoots)
- Brushtail possums - two wild juvenile possums found alive but emaciated with congenital eye deformities. Microphthalmia.
- Barn owl tissues and reports of increased accessions of Barn owls from several wildlife rehabilitation facilities in NSW. There appears to have been an increase in barn owl accessions to rehabilitation facilities, which may be the result of a decline in mouse numbers in NSW following last years plague.
- Short-tailed shearwaters - large numbers being found dead along the coastlines of QLD, NSW, and VIC. Numerous shearwaters were examined at the Registry. Shearwaters were also examined at Currumbin Sanctuary and Melbourne Zoo. Clinically, the birds presented emaciated, weak, dehydrated, markedly anaemic (PCV 8 - 15%), and some were hypoproteinaemic. Common necropsy findings included ectoparasitis (lice and mites), emaciation, serous atrophy of fat, marked hepatic and pancreatic atrophy, renal pallor, ventricular nematodiasis (*Anisakis* and *Contracaecum* spp.), small intestinal

cestodiasis, and often haemorrhage into the proventriculus, ventriculus and small intestine. Approximately 10% of birds examined had cranial fractures and severe brain damage. Microscopic examination of tissues confirmed the presence of acute gastrointestinal ulceration and haemorrhage, and identified that renal pallor was caused by either urate nephrosis or renal coccidiosis and associated mild to moderate inflammation.

There was some concern raised that the melaena in the gastrointestinal tract may have been oil, however, when blood mixes with gastric acids it becomes very black and tarry. It can be difficult to differentiate ante mortem gastrointestinal ulceration and haemorrhage from post mortem leakage of red cells from blood vessels, however, histopathology confirmed the presence of acute gastrointestinal ulceration and haemorrhage in at least a proportion of the birds.

Effectively, all of the lesions that we have seen in the shearwaters are either incidental underlying parasitism, or are associated with emaciation, dehydration and ischaemia/shock. The pattern of mortality is inconsistent with toxicity, where you would expect to find many birds dead in one location in excellent body condition and with few necropsy lesions. There was no evidence of viral infection in any of the birds examined.

NOVEMBER 2000

- Osprey - Died due to a systemic bacterial infection (*Pseudomonas aeruginosa*) that had spread from an infection that had been walled off in the abdominal air sacs for some time.
- Weedy Sea Dragon - euthanased due to ongoing buoyancy problems and an ulcer on the snout. Had severe intestinal parasitism with an unusual single celled organism resembling Sarcocystis, and a mild bacterial infection in the gills with another single celled parasite
- Barking Owl - died with septicaemia
- Pomerine Jaeger - a sea bird that is rarely seen in NSW. Euthanased due to severe injury to one eye.
- Short-tailed shearwaters - more birds found emaciated, anaemic and dehydrated at the end of migration.
- Western Grey Kangaroo - Western Australia - Bacterial spondylitis.