Friends of Pallister's Reserve Inc.

Pallister's Reserve is a 254 ha wetland reserve on Masons Road, Orford, owned by Trust for Nature, & managed by the Friends of Pallister's Reserve Inc. Established January 1990

August 2026

TRUST FOR NATURE

Next Meeting: Sunday, August 23 2026

10am: Working bee *Noon: Lunch* *12:30pm: General Meeting*

Cancellation of Incorporation

Discussion at the July 26 meeting focussed on issues arising from the vote to formally cancel the incorporated status of the Friends of Pallister's Reserve.

- It was voted to transfer the bank funds of the existing Friends into a new account under the of signature authority of members nominated by the new unincorporated group. This arrangement satisfies current bank policies.
- Except for two laptop computers used by Committee members for Pallister's business, all equipment assets of the Friends will be transferred to TfN.
- Emily Dillon, Senior Manager of TfN Conservation Reserves stated that because TfN owned Pallister's Reserve, the registration form needed to have more stringent conditions than a typical volunteer form.
- A majority of currently-active members expressed that they are willing, in principle, to sign a volunteer's registration form.
- One active member considers that the drafted registration form runs counter to the co-operative spirit of volunteerism and would be a strong deterrent against the recruitment of new volunteers.
- If volunteers are to work under the direction of TfN, will there be regular TfN representation at Reserve working bees? It is now over three years since a TfN staffer mixed with volunteers undertaking Reserve maintenance activities.
- Clarity is required regarding Friends transferring Intellectual Property rights to TfN ownership.
- Emily stated that, with prior approval, all costs relating to the maintenance of Pallister's tools and equipment would be covered by TfN.
- Without having signed a volunteer agreement, visitors will still be welcome as participating guests during koala counts and planting days. Conditions for such visits remain to be formalized.
- Although discouraged, Emily outlined conditions that will permit volunteers to work alone on the Reserve.
- TfN will provide training so that volunteers are authorized to use chainsaws on the Reserve. Without authorization, chainsaw use is not permitted.
- Secretary Trevor Kennedy will submit an application to Consumer Affairs for cancelling the incorporation of the Friends of Pallister's Reserve.

End-of-year barbecue lunch at Pallister's woolshed (29/11/1998). Left-to-right: Tom Hyland, Joan Shanahan, —, —, —, Peter Carrucan (sitting), Mark Kearney (standing), Bill & Barbara Garrett, Nancy Kearney.

August Working Bee Tasks

- Mow
- Kennedy koala count. Bring binoculars.
- Read bores.
- Collect plant signs for recycling.
- Weeding: Bridal creeper, Italian arum, Coast wattle, amaryllis belladonna, thistle, … .

Links to On-line Resources

- Management Plans
- Newsletters
- Bird Surveys
- Camera Trap Videos
- Koalas
- Canopy
- Powerpoint Presentations

Pallisters Reserve lies in the traditional Country of the Gunditjmara and Eastern Maar peoples, who never ceded their sovereignty of the Land. We are indebted for their past and ongoing custodianship.

Meetings are held at the Reserve; usually every fourth Sunday except July and December.

Co-leaders: Julia Schlapp 0427 778 265 & Anthony Leddin 0408 333 046 Sec./Treasurer: Trevor Kennedy 5565 8692;
Minute Sec.: Nick Glover; Newsletter Editor: Ross Hicks (pallisters_newsletter@proton.me).

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New Paradigms for Koala Demographics and Genetic Resilience

Takeaways:

1. Australian koala populations began to diminish 120,000 years ago, long before the arrival of modern humans. When First Nations Peoples arrived the koala population was already reduced to just 10% of its historic maximum of 1 million or more.
2. Victorian koalas have low genetic diversity but it appears that this is offset by rapid population expansion and a lack of detrimental mutated genes.

Only a decade ago it was commonly accepted that until the arrival of modern humans – about 65,000 years ago – Australia's koala population had for millennia been relatively stable – of the order of 100,000 – but, due to hunting – first for food; later for fur – and habitat destruction, numbers declined precipitously.

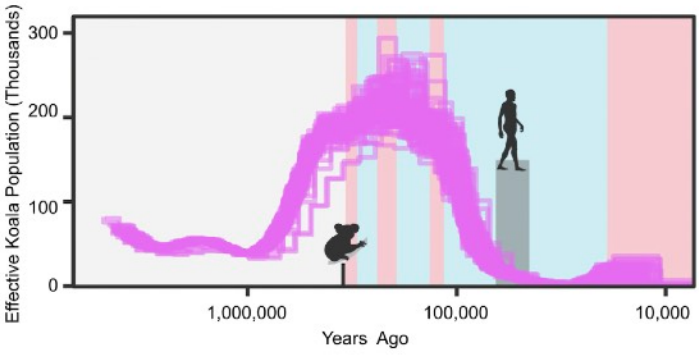
Scotch that notion; there are new paradigms!

The fresh interpretations are largely inspired by the work of a University of Sydney group sequencing the DNA of 418 koalas from 27 different populations, creating a resource that stands as one of the largest whole-genome datasets in existence.

As with all living creatures, koala DNA includes neutral mutated genes – altered genes that do not significantly affect the koala's ability to survive and reproduce. Accumulating with each koala generation, these mutated genes describe a demographic history for how koala populations have changed with time.

In order to decode this information scientists need to know the the *rate* at which total genetic material changes – the 'genomic mutation rate'. Each species has its own characteristic genomic mutation rate. It was previously guessed that for koalas the rate should be close to that observed in humans.

A second required parameter is the 'recombination rate'. Recombination is defined as the interchange of DNA segments between inherited maternal and paternal chromosomes prior to passing on new variations via sexual reproduction.



Estimated historical effective population of koalas in Victoria. ("Effective population" is a conceptual number dependent on the rate of genetic change. It is usually less than the true population.)

The width of the mauve band reflects the uncertainty of the analysis. Pink backgrounds indicate warmer and wetter interglacial periods; blue backgrounds are for cooler and drier glacial times. The gray column represents the period in which humans are believed to have arrived in and spread across Australia – 65,000 to 47,000 years ago. The koala silhouette corresponds to the earliest known modern koala fossil.

Work by geneticists from the Universities of Sydney and Texas A&M provides improved values of these rates. The revised genomic mutation rate – determined from museum specimens and captive koalas – amounts to only half of that seen in humans. The recombination rate is also lower. In other words, *per generation*, koala genes are more resistant to mutation and genetic change: evolution is slowed down for koalas.

Using these reduced rates, the collaboration reconstructed the demographic history of koalas reaching back beyond 100,000 years. The results for Victoria, represented by the mauve band in the chart, present a picture fundamentally different from the previous conception. According to the new analyses, after holding steady for half a million years, the koala population began a sharp decline about 120,000 years ago – long before the arrival of humans: when First Nations Peoples arrived the koala population was already reduced to about 10% of its long-term peak value.

The contraction in koala numbers is seen to follow the onset of the last glacial epoch. It has been speculated that the available koala habitat was much reduced during this time.

Queensland and New South Wales koalas were also analyzed, and similar results obtained although, in contrast to the existing situation, it was found that at their historic high values, koalas in these states were more populous than in Victoria. At its peak, the total koala population – distributed across the entirety of mainland Australia – would have likely been in excess of 1 million.

A second point to emerge from the new investigations concerns the vulnerability of Victoria's koala population owing to its observed low genetic diversity. The low diversity dates back to the population collapse that started 120,000 years ago: population crashes diminish the gene pool available for future generations. Geneticists call this a "genetic bottleneck".

Low genetic diversity is commonly considered to make populations vulnerable to new diseases and environmental changes: if one koala succumbs, having closely similar DNA sequences, multitudes of others follow and the population risks spiraling into extinction.

It is feared that this may be the fate of endangered koala populations of northern states – NSW and Queensland – with widespread and ongoing habitat reduction accelerating the process.

But not so in Victoria, where, if it were not for habitat restrictions, the koala population would be escalating. Yet the diversity measured for Victorian koalas is even less than in the northern states!

The explanation for this apparent paradox seems to be that even though Victorian koalas have a smaller gene pool, the genes they carry have superior genetic fitness, that is, Victorian koalas have fewer mutated genes detrimental to their breeding success. With a faster increase in koala populations, fit genes are mixed and matched in new ways, creating novel genetic variations favourable to the population's ability to adapt. In this way, despite their low genetic diversity, Victorian koalas have survived – and even prospered from – the historic genetic bottleneck.

This heretical idea has aroused keen interest and geneticists are searching for other instances where this dynamic may be present. One candidate may be the Black-necked Crane, a flagship bird species of East Asia.

As Pengcheng Wang has pointed out, the concept transcends mere theoretical interest: it has far-reaching potential applications for the recovery of critically endangered species – of all types.

Provocative though they are, the two findings described above demand scrutiny. The analysis of genomic data is complex and necessarily relies upon simplified models. For example, it has been assumed that the genomic mutation rate is constant, but this is not necessarily the case. Exposure to radiation, toxins, and dietary mutagens all have the potential to impact this rate. Changes may also accrue from changes in lifespan or reproductive age or other genes that blunt DNA repair mechanisms.

Furthermore, despite its enticement, the conjecture that species with low genetic diversity species can survive bottlenecks is only rudimentary. Additional examples must be identified in order to develop predictive measures for the outlook of species following bottlenecks.

To summarize, during the past decade research into koala demographics has been intensive and interpretations have advanced markedly. Nonetheless, the sensitivity of the analyses to the input parameters and methods is a sign that current interpretations will be modified as new data are obtained. The increasing availability of DNA sequencing data combined with modern computing power makes this an exciting time to be a geneticist!

…ross hicks

H5N1 Clade 2.3.4.4b: The Deadliest Bird Flu

First observed in China in 1996, the H5N1 avian influenza virus has been spread globally by bird migrations. Multiple genetic strains of the virus have been identified, but the H5N1 clade 2.3.4.4b that arrived in Australia in June 2026 has proved to be the most brutal of all. Its global impact has been unprecedented: millions of wild birds have died and, in contrast to earlier strains, the new variant has spread to many mammal species.

Due in part to their migratory movements and tendency to cluster in common areas, seabirds and waterbirds are notably susceptible to infection. A new table concocted by the Australian DCCEEW – Department of Climate Change, Energy, the Environment, and Water – presents risk assessments for hundreds of bird and mammal species.

As described in the June 2026 issue of the Newsletter, Friends of Pallister's Reserve having been conducting bird surveys at the Reserve for over 30 years. With the advent of the Australian H5N1 crisis, records from these surveys provide a valuable baseline for assessing the impact of the virus on Pallister's bird visitors.

H5N1 has been widely covered in the media. An instructive FAQ has been assembled by Birdlife Australia. Several of the questions and answers are reprinted below.

How does H5 bird flu differ from other highly pathogenic strains of avian influenza?.

The speed and scale of H5 bird flu outbreaks around the world since 2021, and the fact that these outbreaks occurred in wild bird and mammal populations, is unprecedented. Over 600 species of bird and 100 mammalian species have been affected.

What does H5 bird flu's arrival in Australia mean for Australian birds and other wildlife?

A major outbreak of H5 bird flu in Australian birds could cause large numbers of birds to become infected and die. This could have disastrous consequences, as one in six Australian birds are already facing the threat of extinction. The impact of H5 bird flu can be particularly devastating in birds that have small populations and/or are restricted to a small number of locations. In some populations of birds overseas, outbreaks of H5N1 have caused over 50% of the species to be wiped out, including the Sandwich Tern in Europe and the Peruvian Pelican in South America. H5 bird flu is also known to be deadly to other animals, including marine mammals such as seals. The sudden loss or reduction of any species is likely to have negative flow-on effects for the wider ecosystem.

How will bird flu impact bird conservation efforts?

Conservation efforts are often targeted toward helping species that are suffering from low or declining populations to return to healthier levels. H5 bird flu has the potential to substantially reduce populations even further. In some cases, a drop in numbers could reduce a population of birds to a level that is no longer viable for that species to recover, leading to their possible extinction. An unmitigated outbreak could therefore undo years of investment in threatened species recovery and set Australia back in its trajectory toward achieving biodiversity targets.

Which species are most at risk of significant losses caused by H5 bird flu?

All species of birds are potentially susceptible. Birds which gather in high densities to feed or roost, and those which share habitats with several other species (typical of many shorebirds and waterbirds) have a greater chance of contracting and spreading the virus. Species that nest in colonies, particularly those that occur at only a few sites, are at the greatest risk because close contact helps the virus spread, and being restricted to a small number of locations means any outbreak will impact a large proportion of the population. In Australia, several threatened species fit this profile of greatest concern, including the Christmas Island Frigatebird, Abbott's Booby and Gould's Petrel. Other species that are currently not listed but which may be at risk include the Black Swan and Australian Pelican. Birds of prey and other birds which scavenge on deceased animals, including skuas and petrels also have a higher risk of encountering the virus due to their feeding habits.

Can I still feed wild birds during a bird flu outbreak?

To be extra cautious at this time, we strongly advise against feeding wild birds. Bird baths may still be used, provided they are cleaned frequently. This advice may change as the presence of H5 bird flu in Australia escalates.

Is it safe to visit bird sanctuaries and reserves?

Yes. H5 bird flu typically only spreads to people who are in close contact with sick birds.