

Refining ARKS

Areas of Regional Koala Significance

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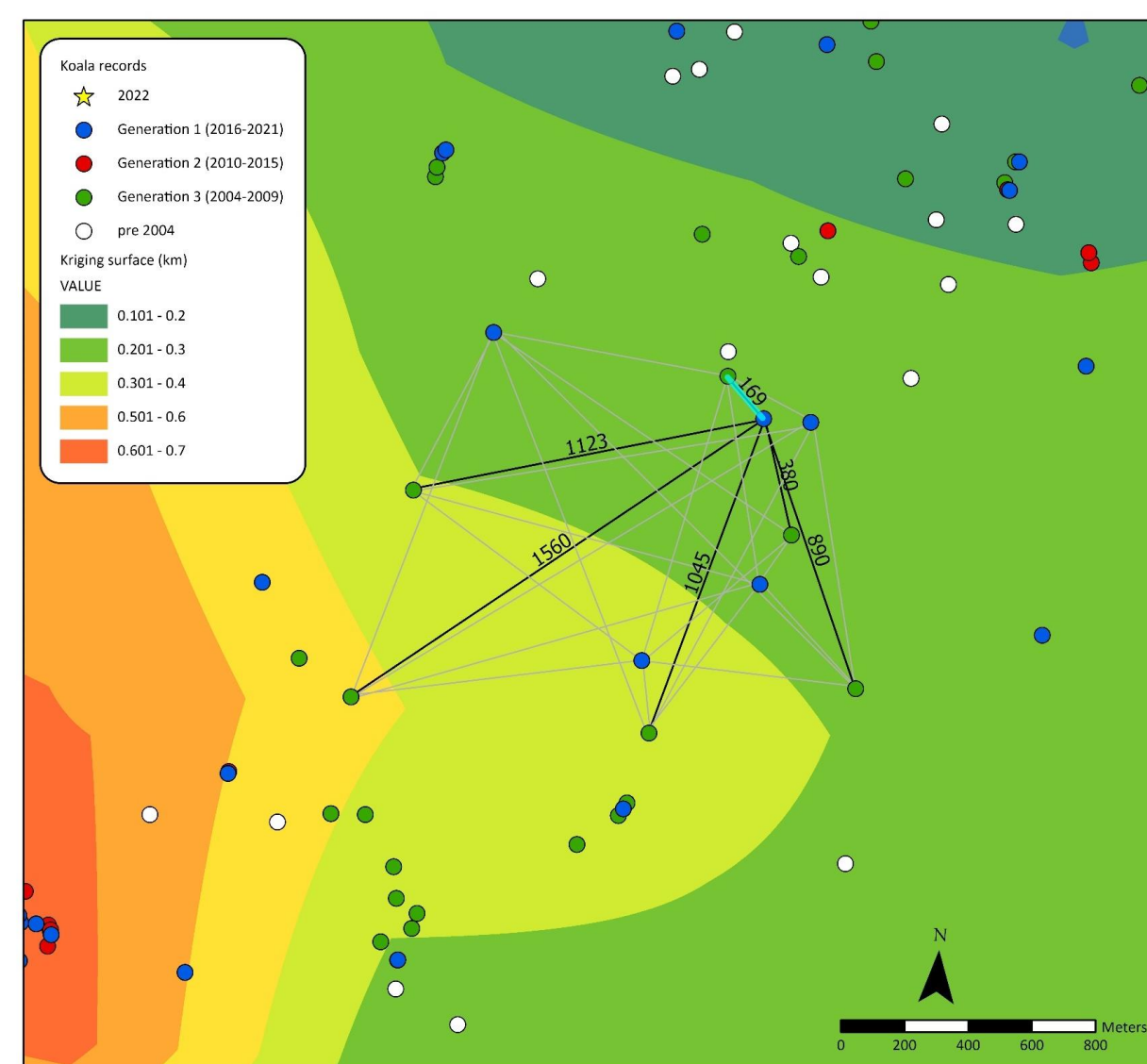
ARKS spatially identifies regionally important koala populations. This refined methodology for ARKS identification uses koala generational timeframes to update and track ARKS boundaries through time.

Introduction

- ARKS identify the locations and extent of important koala populations across NSW
- ARKS framework guides conservation efforts including land acquisition priorities.
- Previous ARKS identification uses a records density approach, filtering of non-habitat features and perceived barriers to movement
- Using a records density approach may disadvantage areas with low survey effort (observer bias). ARKS are spatio-temporally dynamic - there is a need for their boundaries to reflect current koala distribution.

Methods

- ~50,000 BioNet koala sightings records chronologically partitioned into 6 year timeframes consistent with koala generation time.



- Re-occurrence of records within a localised area from each generation 1 (2016 - 2021), generation 2 (2010 - 2015) and generation 3 (2004 - 2009) = Generational Persistence.
- 'Localised area' defined according to Nearest Neighbour approach to create a kriging surface (see figure above).
- 5km, 10km and 20km radial buffers applied according to the underlying records density to account for areas with low survey effort.

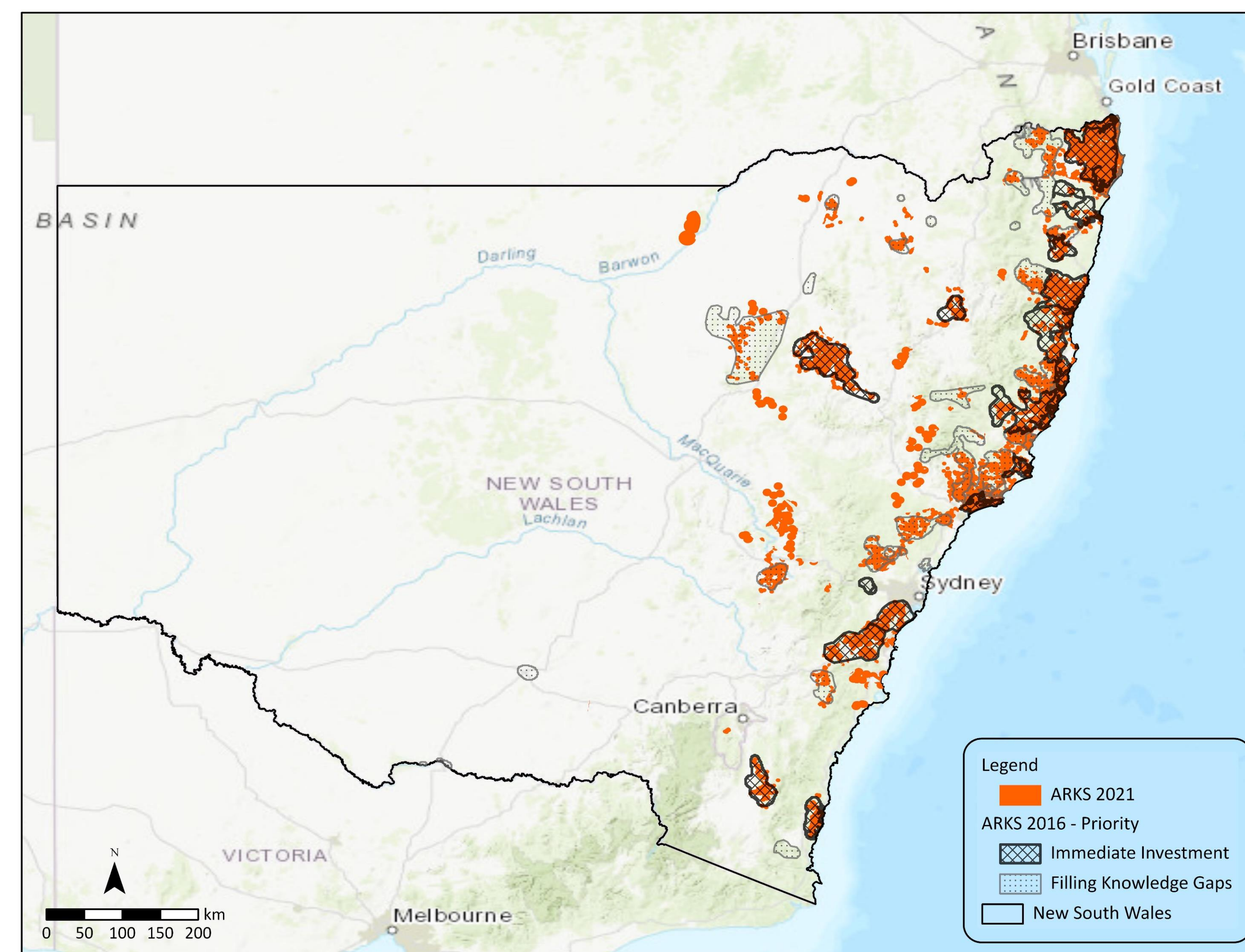


Figure above displays ARKS current to 2021 (orange) and 2016 ARKS classified as either immediate investment (cross hatch) or filling knowledge gaps (grey dots).

Results and Discussion

- Nullica, Gibraltar Range, Severn River NR, Blaxland, Brisbane Waters and Kwiambil ARKS have substantially moved or are unviable.
- The adjoining ARKS of Mt Pikapene and Banyabba are greatly reduced in size by 68% collectively.
- Bungonia ARKS has expanded and now extends its range into Conjola and Kangaroo Valley.
- Queen Charlottes Creek ARKS now extends north into Bathurst and Orange.
- The amount of land covered by updated ARKS (3,982,133 ha) is similar to previous amount (4,195,549 ha).
- Generational coding allows time-series to be created, providing a flexible, responsive approach in-keeping with the original intent.

Pilliga ARKS: a case study (figure to left)

The Pilliga previously comprised the largest koala population west of the Dividing Range, though survey *post* 2014 evidenced dramatic decline. We created a time series to show temporal changes in koala distribution, illustrating the changing fortunes of a spatially dynamic ARKS in the Pilliga. The ARKS can be seen to decrease *post* 2016, particularly along the western edge.

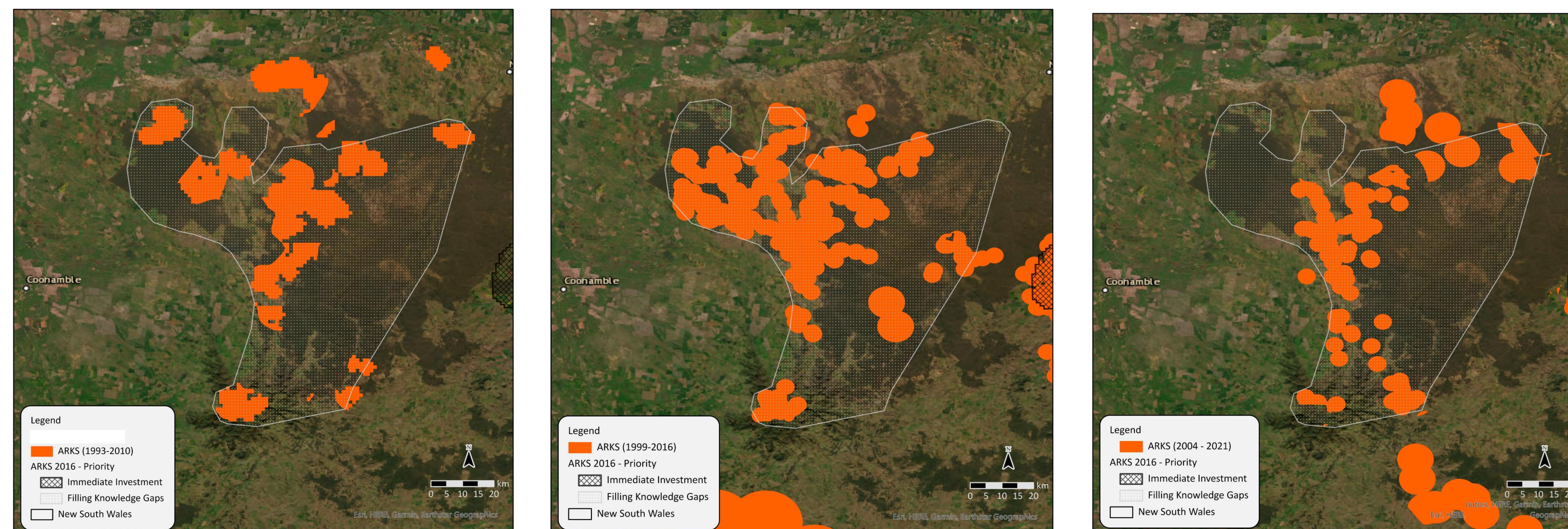


Figure above displays the Pilliga ARKS. Left to right shows temporal changes in koala distribution, as of 2010, 2016 & 2021.