APPLYING A BIOACOUSTIC SURVEY METHOD TO THE AUSTRALIAN MASKED OWL

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BACKGROUND

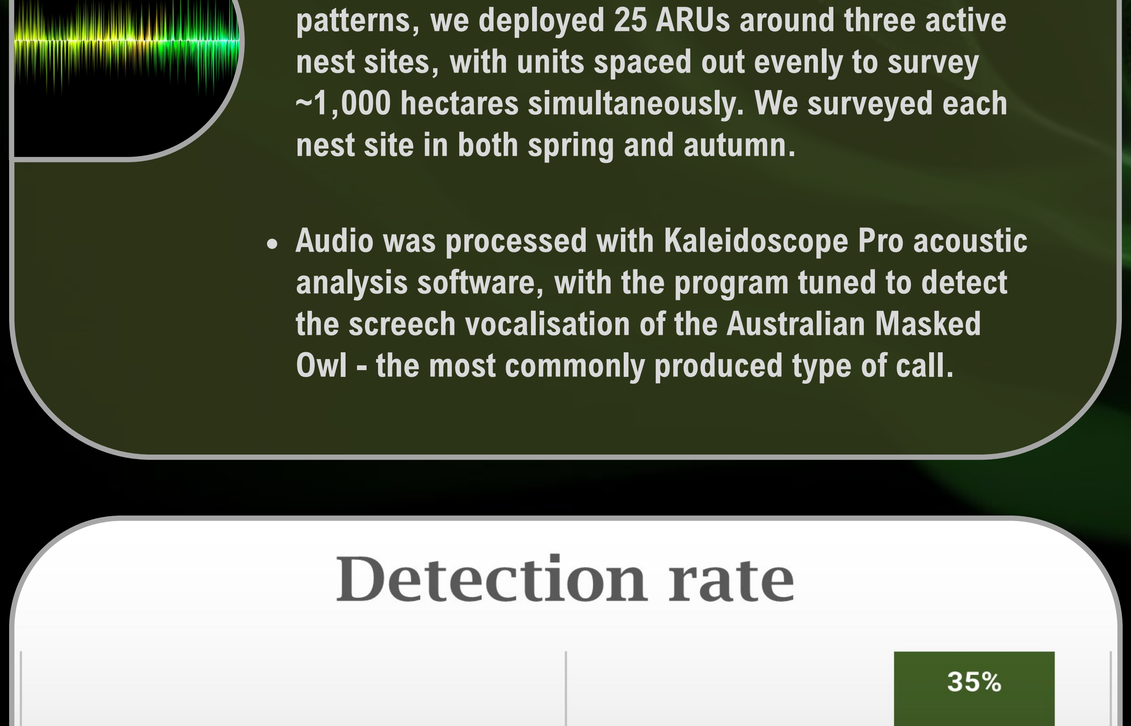
- The Australian Masked Owl (*Tyto novaehollandiae*) is a large nocturnal raptor inhabiting dense forests in the southwest of Western Australia (SWWA). Populations of this species in the SWWA are poorly studied.
- Many owl species have conventionally been surveyed for using play-back, which involves the broadcast of conspecific calls to elicit responses from nearby birds. However, this methodology can be ineffective for Tytonid owls and has other factors to take into account, such as ethical concerns, behavioural considerations, and surveyor bias.
- With the aim of improving on play-back techniques, we designed and tested a new methodology centred around the use of autonomous recording units (ARUs) and acoustic recognition software.
- We hypothesised that the new survey methodology would have an equal or higher detection rate for Australian Masked Owl compared to playback, and would be particularly effective in autumn months in the SWWA.

METHODS

- We performed 160 surveys across spring and autumn, using two techniques (play-back and passive acoustic monitoring). We compared results of different methodologies and different seasons.
- To learn more about temporal and spatial behavioural patterns, we deployed 25 ARUs around three active nest sites, with units spaced out evenly to survey ~1,000 hectares simultaneously. We surveyed each nest site in both spring and autumn.
- Audio was processed with Kaleidoscope Pro acoustic analysis software, with the program tuned to detect the screech vocalisation of the Australian Masked Owl - the most commonly produced type of call.

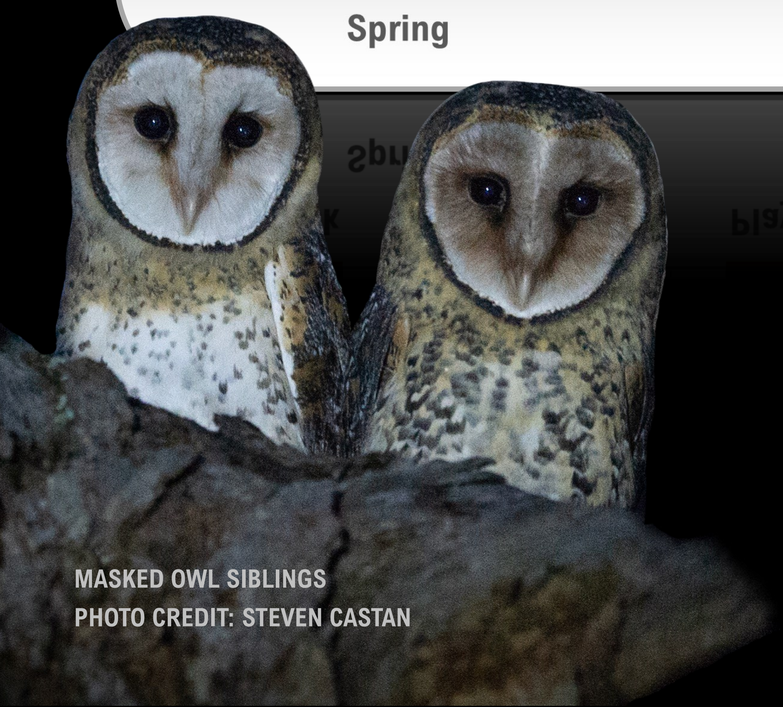
RESULTS

- 12,840 hours of audio and 907 separate screech vocalisations were recorded.
- Play-back surveys resulted in a similar detection rate across both seasons, which was around 15%. Passive acoustic surveys demonstrated a detection rate of 5% in spring. However, in autumn this increased to 35%.
- Passive acoustic nest site surveys revealed that breeding pairs of owls vocalised more frequently and at broader spatial scales in autumn, potentially explaining the higher detection rate during this season. Courtship displays were recorded five times in autumn, but never in spring.
- Owls were frequently detected at ecotones, such as those found between forest and open fields, which they may use for hunting purposes.



CONCLUSIONS

- In the right season, passive acoustic monitoring appears to be twice as effective as play-back for surveying Australian Masked Owl. However, there are many considerations when choosing between methodologies as each offers certain advantages and produces intrinsically different data.
- Our data indicates that there may be a structured breeding season for this species in the SWWA, with courtship in autumn followed by fledglings in spring.
- The Australian Masked Owl appears to have demonstrated adaption to a fragmented, semi-urban environment, by exploiting features such as ecotones.



MASKED OWL SIBLINGS
PHOTO CREDIT: STEVEN CASTAN

ACKNOWLEDGEMENTS

I am particularly grateful to Edith Cowan University, Birdlife Australia, Owl Friendly Margaret River, and the Department of Biodiversity, Conservations, and Attractions (DBCA) for their support.

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