



Use of road underpasses for feral cat control

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Introduction and project aims

Road underpasses at Alcoa's mine sites are a proven method to enable native fauna to move between fragmented landscapes.

However, as well as providing viable paths for native fauna, introduced predators including feral cats utilise these underpasses for shelter and opportunistic hunting.

A research project was undertaken with three key aims:

- Assess the use of road underpasses by native and feral fauna
- Identify what underpass characteristics are associated with use patterns
- Determine if underpasses could serve as lures for targeted cat control

Methods

A total of 16 underpasses beneath haul roads, access roads and conveyers were monitored at Alcoa's Huntly and Willowdale bauxite mines in the Peel and Upper South West regions of WA.

Both box culverts, intentionally designed and installed for use as fauna underpasses, and pipe culverts installed for water drainage were included in the study.



Remote motion sensor cameras were positioned at each end of the culverts to determine if animals passed entirely through the underpasses or remained at one entrance.

Additionally, cameras were placed in adjacent areas to compare the number of animals using culverts compared to those in surrounding forest.

Key results

- 31 different vertebrate species were identified from the cameras; 25 were native and 6 were feral
- Native species were more often detected than feral species

FERAL SPECIES

- Feral species used underpasses to traverse the landscape
 - » Feral species, including cats, pigs, rats, mice and foxes, used the underpasses as movement corridors
 - » 14 different cats were identified using underpasses
 - » Cats travelled substantial distances; one cat was regularly observed at underpasses 5km apart
 - » In addition to using the underpasses as movement corridors, cats also used them for refuge from the rain
 - » Cats were detected far more at underpasses than at forest cameras; 96% of detections at underpasses
- While no images were captured of cats hunting native species, there were regular detections of cats at several underpasses. This increased activity suggests greater predation risk for native species



NATIVE SPECIES

- Underpasses facilitated the movement of several native species beneath roads
 - » Some native species (echidnas, chuditch, rakali and mardo) used underpasses as movement corridors to cross beneath roads and were more often detected at the underpass than at the paired forest camera
 - » Quokkas and quenda were reluctant to enter or travel the entire length of underpasses, often investigating the entrance but rarely traversing through. These species were more often detected at the forest camera than the underpass. Quokkas and quendas are most often found in densely vegetated areas such as stream zones, so traversing such a long open area is unlikely
 - » Chuditch were detected at underpasses significantly more than at the forest camera (94% of detections at



underpasses). Chuditch are predators, so underpasses may serve as hunting grounds. They are also habitat generalists and will readily traverse large open areas, so moving through long open tunnels is not unusual compared to behaviour elsewhere

- » Echidnas were the most commonly detected native mammal, with most detections occurring at underpass cameras (92%). The lack of any distinguishing physical features makes it difficult to tell individuals apart, so it is not clear how many different echidnas are using them
- Larger animals such as kangaroos and wallabies were rarely detected at underpass cameras, and did not use underpasses as movement corridors

FINDINGS AND NEXT STEPS

- There were no key underpass characteristics that were consistently correlated with high use by native or feral species
 - » Preferred characteristics were species specific
 - » None of the underpasses had fences that funneled animals towards them, however many had steep bunds which may have persuaded some animals to enter
 - » There were no characteristics more associated with feral or native species so designing an underpass that is more appealing to natives is challenging
- Underpasses can be used as lures for targeted cat control
 - » Particularly during the drier months as cats will not utilise underpasses that are wet
 - » Cats frequent underpasses so are more likely to encounter control methods at these structures

