

Good from bad: is there an up side to roadkills?

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Wildlife deaths as a result of roads have been associated with the decline in numbers of several species of native fauna including koalas *Phascolarctos cinereus* (ANZECC 1999), eastern quolls *Dasyurus viverrinus* and Tasmanian devils *Sarcophilus harrisii* (Jones 2000). Despite the large losses of animal life as a result of road mortality, road kill data and associated specimens can provide useful information for wildlife conservation management and education. An example of the benefits that can be gained from the death of animals on NSW roads is the animals that have died from cars within the Brisbane Water National Park on the Central Coast (Fig 1).

The location and species data from individuals that have been killed by cars can be used to identify significant fauna corridors that occur along major roads so that the Roads and Traffic Authority, Gosford Council and the Department of Environment and Climate Change can develop strategies to reduce road deaths in these areas.

Roadkill observations from this location have also helped with the planning and implementation of a spotted-tailed quoll *Dasyurus maculatus* survey (Oakwood *et al.* 2007), by allowing a more targeted approach, and aided with

mapping the distribution of species. Of the 73 spotted-tailed quoll records contained within the Atlas of NSW Wildlife for the Gosford City area, 17 of these records were from road kill records (data as at 12 February 2007).

Apart from helping with fauna survey planning, roadkill specimens have a variety of other uses. The Central Coast Hunter Range Region of Department of Environment and Climate Change sent a consignment of specimens to the Australian Museum. Of these, 15 of the 27 specimens were the result of roadkills. The roadkill specimens included mammals (five Spotted-tailed Quolls, one long-nosed potoroo *Potorous tridactylus*, one squirrel glider *Petaurus norfolcensis*, one short-beaked echidna *Tachyglossus aculeatus* and two long-nosed bandicoots *Perameles nasuta*), birds (two yellow-tailed black-cockatoos *Calyptorhynchus funereus*) and reptiles (one marsh snake *Hemiaspis signata* and one blackish blind snake *Ramphotyphlops nigrescens*). The specimens came from a variety of road types, including major roads, such as the F3 Freeway, to isolated infrequently used dirt roads, such as in Mt Royal National Park.

The skins of specimens such as these can be treated by taxidermists and displayed for educational purposes, while

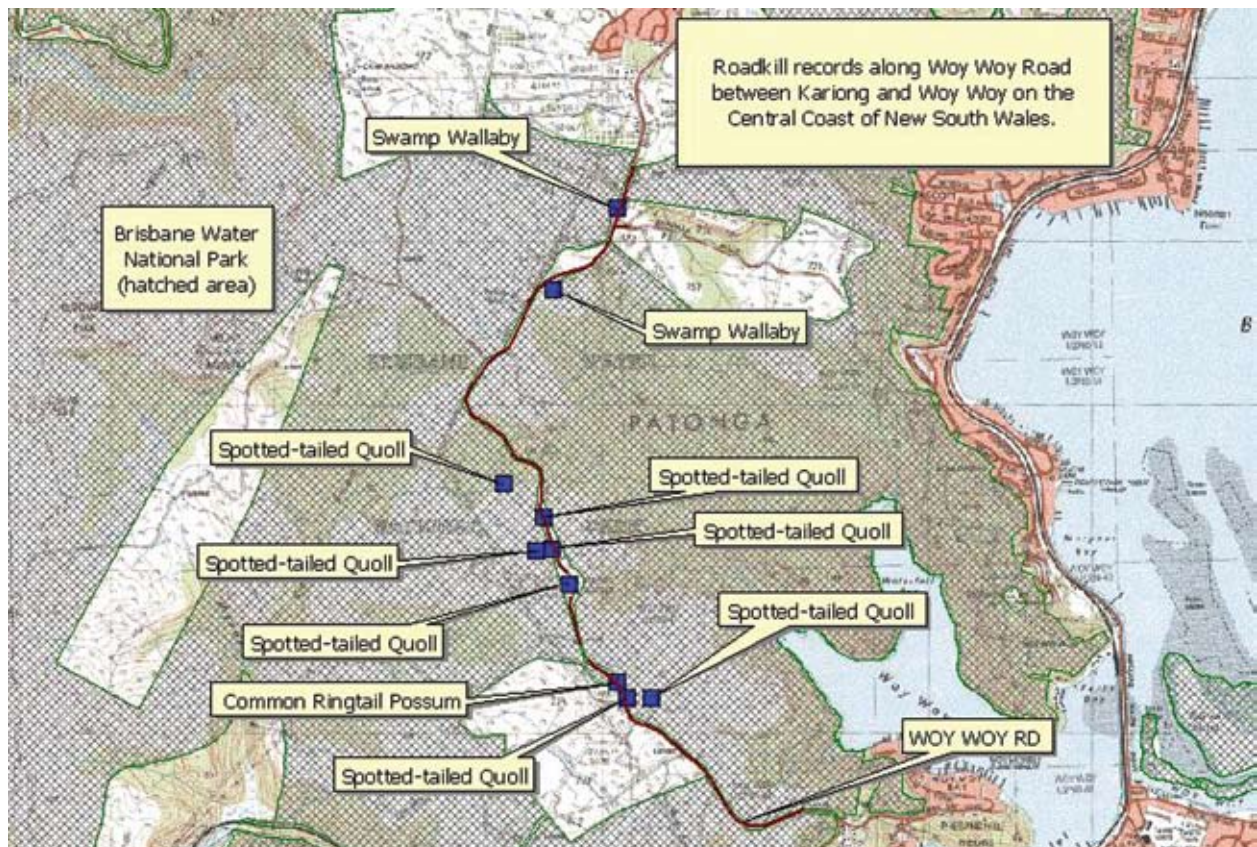


Figure 1. Location of large mammal roadkill records on the Woy Woy Road within Brisbane Water National Park, near Gosford NSW.

the skeletal material can be used for teaching animal structure and function and as reference specimens for morphometric studies. Tissue and other samples can be obtained to provide DNA for genetic studies, and stomach contents can reveal dietary preferences and the occurrence of prey species. The hair and bones have been used to extract carbon isotopes for the detection of changes in diet and other factors associated with climate and vegetation change (S. Ingleby, Australian Museum, pers. comm.). Tissue samples from specimens are sent around the world for DNA analysis, tissues from old specimens also can reveal past history of disease with viruses being captured within DNA.

Tissue samples of all the quoll specimens collected by the Central Coast Hunter Range Region are being used for DNA analysis which will assist in helping with recovery planning to aid in the conservation of the species. Two of the spotted-tailed quoll specimens (Fig. 2), of the total of seven dead animals collected on roads in the Brisbane Water National Park on the Central Coast, have been treated by taxidermists and are being used by local Primary Schools for environmental education, and as display animals for National Parks and Wildlife education programs.

Roadkill specimens can also be used to improve the knowledge of the distribution, habitat, relative abundance and biology of species. These include a male long-nosed potoroo roadkill specimen that was collected from Mt Royal National Park in 2003 that revealed the animal to have a weight of 1860g (NPWS unpublished data). This weight is outside the published weight range of 740 – 1640g for the species (Johnston 1995), which adds to the biological knowledge of the species. This specimen was the first of the species to have the weight



Figure 2. Martin Woulfe and Mark Dixon with a roadkill quoll specimen they collected from Woy Woy Road, Kariong NSW. The specimen had a DNA sample taken for analysis by Dr Karen Firestone (University of New South Wales/Taronga Zoo) to aid the species recovery program. The specimen was also prepared by a taxidermist for educational purposes and displays.

recorded for the area, and only the 4th observation for the species recorded in the Atlas of NSW Wildlife for the area. Subsequent trapping of the species in Mt Royal has revealed most captures are outside of the published weight range, with seven male specimens weighing between 1700 and 2050g (NPWS unpublished data). Five females have also been captured weighing between 1500 and 2600g (NPWS unpublished data), all of which are outside of the published weight range of 660-1350g (Johnston 1995).

Fauna records contained within the Atlas of NSW Wildlife are regularly utilised for conservation planning by a wide variety of State Government departments, Local Government, consultants and developers for aiding in the assessment of the impact of proposed developments for conservation management and strategies and land use planning. As at the 13 January 2007, the Atlas of NSW Wildlife contained 1,124,422 fauna records. Of these records, 5639 were recorded as roadkill, and 880 of these roadkill records were of threatened species (Atlas of NSW Wildlife). However, the proportion of these records attributed to roadkill is almost certainly under reported. Many records submitted to the Atlas do not have an observation type indicated. Such records are entered as one of the default observation types either O, observed or M, miscellaneous, thus indicating any observations entered in this way that are in fact roadkills, are not recorded as such. The quality and quantity of reporting can be improved and local wildlife rescue volunteers who have skills in fauna identification could be enlisted to help with more accurate recording of roadkill specimens.

The roadkill records that do exist in the Wildlife Atlas, for example in the Gosford Local Government area, indicate many of the records are of threatened species. The high incidence of roadkills may have significant effects on local fauna populations. For example, the spotted-tailed quolls in Brisbane Water National Park may be affected greatly by losses due to roadkill because population numbers are likely to be very low, as revealed by the very low capture rates from recent survey work (Oakwood *et al.* 2007). Nevertheless, roadkill specimens and data can be used for conservation and educational gain, as long as good information is recorded and maintained, and there is a will to extract as much information as possible from such tragic events.

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