

Assessment of amelioration measures and ecological impacts associated with a World Championship Rally event in parts of the Tweed & Kyogle LGAs, August – September 2009.



Prepared for Repco Rally Australia

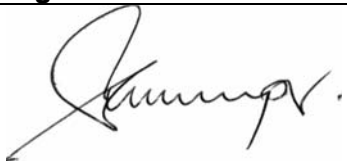
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Project Team*Principal Consultant**Senior Ecologist*

Dr. Stephen Phillips

Marama Hopkins

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Summary

A World Championship Motor Rally event was run in parts of the Tweed and Kyogle Local Government Areas over the period 4 – 6 September 2009 in accord with recommendations arising from previously prepared ecological assessments and associated Koala Plans of Management. A variety of measures including the installation of pollution booms and sediment traps along watercourses, bird scarers, temporary fencing, human environmental monitors and/or guardians were deployed over the period of rally activity. A key requirement of the ecological assessments was the need for pre- and post-rally surveys in order to locate any animals deemed to be at risk of motor vehicle strike, but also to document the extent of any road-kill directly attributable to rally activity.

Survey work was accomplished by two core teams of three individuals being directly engaged in pre-rally surveys, a dedicated road-kill sweeper and an experienced reptile handler. Eight personnel in three motor vehicles operated continuously over the course of the rally period, collectively accumulating over 100 person hours of formal survey and monitoring effort. No threatened flora species were affected by rally activity. Approximately fifty meters of pollution boom were installed on the downstream side of watercourses at 8 localities along three stages, supported by straw-bale sediment traps where water crossed the road. We observed some dust settlement on still-water bodies following completion of rally activity but none in areas of moving water. With one exception we did not observe any noticeable changes in water clarity in areas where water crossings were undertaken by competitive vehicles. Approximately 7 kms of temporary wildlife exclusion fencing was also erected; four adult koalas including two females with joeys were detected in trees along the roadside within rally stages during the course of pre-rally surveys. No koala mortalities were recorded.

Road-kill surveys were completed for all of the 28 competitive special stages run over the three day course of the event. Fresh road-kill was recorded from 5 of the 14 stages, the deaths of 11 – 12 animals (4 reptiles, 6-7 birds and 1 mammal) considered to be directly attributable to rally activity, while a further two animals were determined to have been killed in the preceding few hours leading up to rally activity, one of which has some uncertainty associated with its identity and origins. No threatened fauna species were recorded as road-kill. A variety of other species were reported as road-kill outside of the special stages. While this is unfortunate, it is also difficult to partition individual road-kill events that occurred outside of the designated special stages. Thus any apportionment of blame and/or responsibility must not just be carefully considered, but also borne across a greater spectrum of the community than just the event itself.

The report concludes with a number of recommendations relating to the running of any future events; these include the need to maintain a high standard of ecological assessment, monitoring and reporting, specialized training for those interested in the role of environmental monitors and/or guardians, and broader measures relating to the matter of peripheral road-kill

that may have wider application than that simply arising from a motor rally event.

Preamble

A World Championship Motor Rally event was run in parts of the Tweed and Kyogle Local Government Areas over the period 4 – 6 September 2009. From a biodiversity perspective the event was conducted in accord with recommendations arising from ecological assessments and associated Koala Plans of Management in order to minimise any impact on threatened species of flora and fauna. These reports recommended measures including the installation of pollution booms and sediment traps along watercourses in areas known to contained threatened amphibians, bird scarers, temporary fencing, monitors and koala guardians to be enacted over the three day period of rally activity, and selectively over an additional 2 days (31/08/2009 & 03/09/2009) in one area where rally vehicles were being tested prior to the competitive stages.

A requirement of both the ecological assessments and koala plans of management was the need for pre- and post-rally surveys in order to assist with both the locating of any animals deemed to be at risk of motor vehicle strike on the day of rally activity, but also to document the extent of any road-kill directly attributable to rally activity, specifically along the 344 kilometers of the 15 competitive special stages where high vehicle speeds effectively negated the ability of drivers to avoid animals crossing the road.

This report discusses the implementation aspects and results of the various ameliorative measures that were applied during the course of the rally, in addition to the matter of road-kill directly attributable to rally activity. Some data and commentary on what may be perceived as indirect rally-related road-kill is also provided, this being the likely increase in road-kill generally as a direct consequence of increased competitor and spectator and official vehicle movements between designated stages.

Methods

Various aspects of the amelioration process have already been detailed in the aforementioned reports.

Pre- and Post-rally surveys

Surveys were undertaken no more than 60 minutes prior to commencement of rally activity, and generally within 15 – 30 minutes following conclusion of rally activity. Pre-rally surveys were undertaken by three observers in a slow moving vehicle and intended to locate “at risk” animals such as koalas immediately adjacent to the roadside verge, but also to document existing road-kill, in which case the species (where known) and location (distance from start of stage) was noted, the specimen flagged and then moved off to the side of the road.

A further survey was undertaken by a single observer traveling in a safety vehicle immediately prior to the commencement of rally activity. This measure was undertaken given rumors about the possibility of dead animals being thrown on to the road, but also to afford a ‘last chance’ opportunity to remove other wildlife (e.g. snakes) off the road.

Post-rally road-kill surveys were generally undertaken by a single observer in a slow moving vehicle, usually following immediately behind one of the two sweep vehicles. Where a stage was to be used on more than one occasion, again the species and location was recorded, the specimen flagged and then moved off to the side of the road.

Road-kill was generally classified as “*fresh*” if it had clearly been recently killed and/or lacked odor indicative of putrefaction, “ ≥ 24 hours” old if relatively fresh looking but odiferous and/or bloated, and “*old*” if the decay process was clearly well advanced (weeks/months).

Non-competitive stages

We did not undertake any formal survey of road-kill on non-competitive stages but encouraged local wildlife care groups and/or individuals to provide detail.

Results

Survey work was undertaken by two core teams of three individuals being directly engaged in pre-rally survey activity, a dedicated road-kill sweeper and an experienced reptile handler. Eight personnel in three motor vehicles operated over the course of the rally period, collectively accumulating over 100 person hours of formal survey effort.

No threatened flora species were affected by rally activity. To the best of our knowledge there were 4 occasions during the course of rally activity where a competitive vehicle left the road, none of which occurred in an area known to support threatened flora populations. In an unrelated incident however, the population of the threatened species Slender Knotweed *Persicaria elatior* that we recorded along the liaison stage between Capeen/Gondwana and Upper Clarence was inadvertently disturbed during August by routine management activities being undertaken by the NSWNPWS. One of the implications of this disturbance was the required translocation of a single juvenile specimen from the middle of the track to the trackside verge; the plant survived and was subsequently observed to be in bud during rally related surveys through this area in September (Figures a & b Appendix 1 refer).

Approximately fifty meters of pollution boom specifically designed to absorb fuel, oil and hydrocarbons were installed on the downstream side of watercourses at 8 localities along three stages (Capeen/Gondwana, Peacock/CTEK West & Byrriil/CTEK East), supported by straw-bale sediment traps where water crossed the road (Figures c & d, Appendix 1 refer). We observed some dust settlement on still water bodies following completion of rally activity but none in areas of moving water. With one exception (a recently constructed water crossing in Richmond Range State Forest along the Peacock/CTEK West stage) we did not observe any significant changes in water clarity (a *de facto* measure of sediment load/turbidity) in areas where water crossings were undertaken by competitive vehicles. (Note: with the exception of Byrriil Creek/CTEK East stage, booms and sediment traps have been left *in situ* to be collected following the first significant rain event.)

Koala fencing was erected in the 2 days leading up to rally activity. Collectively, approximately 7 kilometers of fencing were erected along parts of the 12 stages within which the presence of resident koala populations (i.e. Core Koala Habitat) had been identified, remaining parts being monitored by rally officials and/or community volunteers. Four adult koalas (2 x female + joey, 1 x female and 1 x male) were detected in trees along the roadside within rally stages at Dunloe Park, Cob O Corn/Kyogle and Sargents/Armor All during the course of pre-rally surveys. A single female + joey, the single female and the single male were detected in areas previously identified by the ecological assessments to be supporting resident koala populations. Each of the four koalas was allocated a guardian in accord with recommended measures, two also being afforded fencing as an additional measure. No koala mortalities were recorded.

Road-kill surveys were completed for all of the 28 competitive special stages run over the three day course of the event; with a further two surveys undertaken following the completion of vehicle testing at the shakedown area at Dunloe Park. Surveys were not undertaken along one stage (Byrrill/CTEK East) due to its cancellation. Fresh road-kill was recorded from 5 of the 14 stages, the deaths of 11 – 12 animals (4 reptiles, 6-7 birds and 1 mammal) considered to be directly attributable to rally activity, while a further two animals (1 Bearded Dragon *Pogona barbata*, 1 Duck) were determined to have been killed in the immediate few hours leading up to rally activity; one of which – the duck – has proved difficult to identify (body: Wood Duck?, Head: Grey Teal/Mallard? Figures e & f, Appendix 1 refer). Relevant details for each of the road killed animals are provided in Table 1. Full details of all road-killed animals observed during the event can be supplied if required. No threatened species were recorded as road kill.

Table 1. Road-kill determined to be directly attributable to rally activity along each of the 14 special stages used by competitive vehicles.

Common Name	Scientific name	n	Stage
Reptiles			
Lace Monitor	<i>Varanus varius</i>	1	Toonumbar/Repco
Green Tree Snake	<i>Dendrolaphus punctulatus</i>	1	Cudgera/Kidney Health
Carpet Python	<i>Morelia spilota</i>	1	Peacock/Castrol Edge West
Eastern Brown Snake	<i>Pseudonaja textilis</i>	1	Eden/Bosch
Birds			
Grey Butcherbird	<i>Cracticus torquatus</i>	1	Toonumbar/Repco
Red-browed Finch	<i>Neochmia temporalis</i>	2	Lynches/Dayco
Australian Magpie	<i>Gymnorhina tibicen</i>	1	Eden/Bosch
Pheasant Coucal	<i>Centropus phasianinus</i>	1	Eden/Bosch
Unid. Bird (feathers only)	-	?	Toonumbar/Repco
Brown Quail	<i>Coturnix ypsilophora</i>	1	Peacock/Castrol Edge West
Mammals			
Red-necked Wallaby	<i>Macropus rufogriseus</i>	1	Toonumbar/Repco

In the two weeks *post* rally and in addition to our own observations we received various reports (some accompanied by photographs) of injured or road-killed animals that had been observed either immediately prior to or over

the 3 day rally period. While by no means comprehensive nor the result of a systematic survey, these reports ranged across a variety of taxa from a Koala at Wooyung (B. Dobner, Friends of the Koala, pers comm.), Echidna (A. Gustavsen pers comm.), Carpet Pythons (G. Seznec, Tweed Valley Wildlife Carers, A. Gustavsen pers comm.), Wallabies (Biolink, K. Milne, pers comm.) Red-bellied Black Snakes (Biolink), Rough-scaled Snake (K. Milne pers comm.) and a number of Lace Monitors (Biolink). There is also a yet to be validated report of a Rufous Bettong + joey road-kill from somewhere near Peacock Creek/Cambridge Plateau. This latter record comes from a web message attributable to the name of "Congdon" that was posted on the website of rally driver Sebastien Loeb which reads as follows:

"For twenty five years I have dedicated my life to saving Bettongs in Nth NSW (peacock creek/cambridge plateau). Last night I found a road kill it was a female with a joey pouch also dead. Everytime you look at your trophy I hope you think about how you have undone 25 years of my life's work in four days and how you and your lifestyle and friends have helped the demise of a threatened sp. CONGRATULATIONS"

For the record, Dr. Brad Congdon is a research ecologist based at James Cook University who has co-authored a number of published works on Bettongs; I personally contacted Dr. Congdon and he has confirmed that he is not the author of the material posted on the website. While it is possible that another "Congdon" may exist, neither the real Dr. Congdon nor myself are aware of anyone else with such a surname who has been actively engaged in Bettong research. Thus this particular record lacks veracity and may in fact be a hoax; investigations are continuing.

Discussion

In ecological terms and in spite of earlier predictions to the contrary, our data and associated observations suggest that the impacts of the rally event on biodiversity values of the Tweed & Kyogle LGAs have been relatively minor. In terms of statutory considerations relating to the extent of impact on populations of threatened flora and fauna species, there does not appear to be any empirical or inferential data that would lead us to conclude or otherwise infer that a significant impact occurred, nor would the potential appear to exist for any future events.

In an event such as this it invariably remains difficult to accurately ascertain whether or not specific ameliorative measures that were put in place such as the presence and movement of people (environmental monitors) through areas of key habitat, the use of bird deterrents and/or temporary fencing actually do what they were intended to. This will forever remain problematical given that the alternative – to trial a rally event without such measures – may actually provide data to the contrary. On this basis we presume the efficacy of these measures to be largely untestable but a nonetheless necessary and desirable requirement for any future events.

With one possible exception (and excluding the incident reported by TSC Council Rangers along Clothiers Creek Road) we found no evidence of

animals being thrown onto the special stages as had been rumored in weeks leading up to the rally weekend. It is in this context though that the aforementioned duck presents something of a mystery; the bird was found in two parts (head some distance from body) and appeared on the road between the pre-rally survey of one team and that of a following official's vehicle immediately prior to commencement of rally activity. While photos (Appendix 1) leave no doubt that the bird is a fresh specimen, differences between body and head plumage are sufficiently unusual as to make identification to species problematical. Circumstances regarding both the species involved and the extent of its dismemberment are also unusual and lead to some speculation that the animal may have been either placed on the roadside verge by a person or persons unknown, or possibly dropped by a predator. The fact that it is (metaphorically speaking) - a dead duck - is not entirely lost on me, but I find myself disinclined to embrace the arguable humor of the circumstance (if such was intended).

A by-product of any large spectator event involving increases in traffic flow and volume along country roads is road-kill. However unfortunate this is, it is difficult to partition individual road-kill events that occurred outside of the designated special stages in terms of what may be indirectly attributable to the event *per se*, and what might otherwise have occurred as a consequence of normal traffic movement. All that can be said is that the incidence of road-kill will likely be proportional to the number of vehicles using the road and that the probability of road strike must increase commensurately. Thus any apportionment of blame and/or responsibility must not just be carefully considered, but also borne across a greater spectrum of the community than just the event itself. With this in mind we have proposed some measures (see below) that we believe could assist in reducing the extent of indirect or peripheral road-kill generally and which may also have some application to other large spectator events.

Logistically, there were some problems with rally stages being re-opened to the public while post-rally road kill survey was being completed. On the longer stages the consequence of this was that our survey teams would be overtaken by non-rally vehicles and thus any data collected after this has happened cannot be unequivocally attributed to rally activity. While our data would suggest that the influence is minimal there was at least one instance where data collection was compromised and the item of interest (feathers on the road) were dispersed by following non-rally vehicles; there is also the matter of personnel safety to consider, the above instance not allowing the monitor onto the road until the vehicles had passed by which time no evidence remained.

Lastly, the use of National Park estate to conduct rally activity remains an anathema even for more moderate members of the community. While the results of this survey indicate that no rally-attributable road-kill was recorded in the national parks that were used, we consider this to be more a measure of probabilistic factors affecting the likelihood of a motor vehicle strike than any other factor. Regardless, it is a positive outcome which demonstrates that some activities normally perceived as incompatible with conservation can be

undertaken (if carefully managed) in a sustainable way. That aside, national parks also have other values and for this reason we can do no more than encourage Rally Australia to continue to work to keep to a minimum their use of national park estate; we see this as another positive step that would also be strongly supported at the broader community level.

The following recommendations are proposed in order to assist planning for future events:

1. Ecological Assessment

a) Notwithstanding nullifying provisions of the *Motor Sports (World Rally Championship) Act 2009 No. 55*, ecological assessments to a standard no less than that prepared for the 2009 event should be prepared for all future rally events (rationale: current methodological approach to fauna survey appears to have adequately informed the event in terms of identifying areas of habitat occupied by threatened fauna species).

b) The approach to flora survey has also adequately informed the event but would not appear necessary for future assessments except in areas where road works are envisaged.

2. Ameliorative Measures

a) The ameliorative measures deployed for the 2009 event, specifically the use of boom barriers ± sediment traps in watercourses, the use of temporary fencing in conjunction with environmental monitors, bird deterrents and the use of koala guardians ± specialized fencing (if required) should be adopted as the minimum measures to be applied for all future events.

b) In terms of the use of boom barriers ± sediment traps in watercourses, we advocate their placement a minimum of 7 – 10 days prior to commencement of rally activity.

c) The presence of a specialist reptile handler to be present at pre-rally survey stage would not appear to be necessary for future rally events.

3. Use of rally officials as environmental monitors

a) We suggest that the designation of environmental monitor/guardian be included amongst the formal roles allocated to volunteer officials, and that recruitment into such roles be actively solicited through rally's normal communications channels (e.g. website). A minimum core group of 30 – 50 individuals would appear to be required.

b) In conjunction with the above, a more detailed pre-rally briefing/training program could be developed and provided for those rally officials acting in the capacity of environmental monitor/guardian.

c) The Environmental Monitor Training Manual drafted for purposes of the 2009 event by Rally officials/Biolink should also be reviewed, updated and issued well in advance of future events.

4. Monitoring

a) We advocate continuation of pre- and post-rally surveys as undertaken for the 2009 event, with a particular focus on koala survey, reptile removal and the documentation of rally related road-kill. Subject to availability some rally officials working and trained in the role of environmental monitor/guardian could be co-opted to assist in these key tasks.

5. Peripheral Road kill

a) In collaboration with local and state government authorities there be an enforceable lowering of the statutory speed limits through known wildlife areas for a minimum period of 10 days up to and including the rally event.

b) That a proportion of the electronic signage utilized for the rally period be dedicated to reminding drivers of the risk of road strike and the need to drive carefully.

c) That the issue of wildlife road-kill be specifically highlighted in the local media throughout the rally period.

6. Reporting

a) Given the interest in various ecological aspects of the rally event, we propose for purposes of the 2009 event that copies of this report be provided to the General-Managers of Tweed & Kyogle Councils, the Director-General of the NSW DECCW, and the compliance section of the Approvals & Wildlife Division of DEWHA.

b) that the authorities mentioned in 6 a) above receive forward copies (incl. drafts) of all future ecological assessments.

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APPENDIX 1

