Operation Foxglove:
Large scale fox control in the northern jarrah forest of southwest Western Australia

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Summary

Western Australian fox research has shown baiting at an intensity of 5 baits/km^2 will result in an 80% or greater uptake of 1080 meat baits by foxes. However, the most efficient and cost effective baiting frequency is unknown. Baiting frequencies known to be effective over small areas are cost prohibitive if implemented over large areas.

The northern jarrah forest fox control and research project (***Operation Foxglove***) is designed to reduce fox density over large areas. The project's primary objectives are:

- to enable native fauna populations to increase and be sustained over large tracts of multiple use forest;
- to determine efficient and cost effective 1080 baiting regimes for fox control over large tracts of conservation estate and multiple use forest;
- to determine the level of fox density reduction required to allow native fauna populations to increase and be sustained; and
- to determine whether fox predation is a major limiting factor to native fauna abundance.

The study area covers approximately 544,000ha. and has 3 baited treatments and an unbaited control. 1080 dried meat baits are aerially delivered at 5 baits/km^2. Supplementary baiting, also at 5 baits/km^2, is carried out using conventional vehicle delivery in areas at the interface with agricultural land. Treatments and areas covered by each treatment are:

- 2 baitings per year: 221,400ha.
- 4 baitings per year: 130,400ha.
- 6 baitings per year: 88,600ha.
- Unbaited control: 103,500ha.

Fauna response to baiting is monitored in each baited treatment and the unbaited control. Native fauna monitoring falls within the following areas:

- radio-telemetry monitoring of survivorship of translocated populations of woylies, *Bettongia penicillata*;
- radio-telemetry monitoring of survivorship of, and habitat use by, resident populations of the common brushtail possum, *Trichosurus vulpecula*; and
- conventional trapping of the suite of native fauna.

Fox density is monitored in each treatment by deriving an annual index to density through the use of sandplots.

Results and management implications

The results from the intensive monitoring of woylies indicate the requirement for increased levels of fox control at the forest/agricultural land interface. Fox density was shown to be significantly and inversely correlated with distance from agricultural land. Re-invasion of forest areas was shown to occur within two weeks of baiting. Implications are that the fox population was regularly "turned over" (reduced and re-stocked).

The results from fox monitoring and the woylie survivorship study indicate an 80 per cent reduction in fox density may be necessary to maintain viable populations of predation sensitive native fauna [80% value is subject to final analysis]. The frequency of baiting needed to achieve this level of reduction will be determined by the boundary to area ratio of the area to be baited, the proximity of potential points for fox re-invasion and the predation sensitivity of the species to be protected. The implication is current large area operational baiting regimes require modification. Subject to final analysis (later this year), a revised aerial baiting prescription will be available.

Trapping data are highly skewed and implicate site specific habitat variables as co-limiting native fauna abundance. The implication is that habitat management may be as important as predator control. Final analysis will assess the relative importance of fox control and habitat management, specifically, the importance of vegetation structure and floristics. The importance of habitat management concurs with the results from the brushtail possum survivorship and habitat use study.

A WORKSHOP ON ENVIRONMENTAL EFFECTS OF TIMBER HARVESTING IN THE JARRAH FOREST

Perup Forest Ecology Centre
7&8 May 2001

A synthesis of recent research by the Science Division, Department of Conservation & Land Management

1. Objectives of the workshop

a) To provide forest managers and policy-makers with a comprehensive overview of research findings relevant to the environmental effects of timber harvesting in the Jarrah forest;

b) To identify mechanisms by which current research findings can be incorporated in the revision of silvicultural guidelines and the next Forest Management Plan (FMP).

2. Format for sessions

Presenters were asked to:
- Briefly overview the methodology used in their study, sufficient to make results interpretable.
- Summarise the key findings, giving priority to those that have implications for management and that can be manipulated by future silvicultural practices.
- Make recommendations for changes to management practices that could be considered in the context of the next Forest Management Plan.

3. Summary of presentations

Attached are brief summaries of most presentations made at the workshop, together with a statement from the authors regarding the key management implications of their findings:

- *Short term impacts of logging on understorey vegetation in the Jarrah forest* (Neil Burrows, Bruce Ward & Ray Cranfield).
- *Evaluation of key soil indicators of sustainability in Australian Mediterranean forests* (Kim Whitford)
- *Using electromagnetic induction to estimate soil salt storage* (Joe Kinal)
- *Hydrological response to logging in the intermediate rainfall zone of the jarrah forest* (Joe Kinal)
- *Logging and burning impacts on cockroaches, crickets and grasshoppers, and spiders in Jarrah forest* (Ian Abbott and colleagues)
- *Short-term Impacts of Logging on Birds in a Jarrah Forest at Kingston* (Graeme Liddelow)
- *Tree hollows in Jarrah and Marri* (Kim Whitford)
- *Response of terrestrial vertebrates to timber harvesting at Kingston* (Adrian Wayne and colleagues)
- *Brushtail Possum (Koomal) responses to timber harvesting at Kingston* (Adrian Wayne and colleagues)