Supplementary material for

Changes in bat activity over 10 years in silviculturally treated wet sclerophyll forest

B. Law[A,B], M. Chidel[A], M., T. Brassil[A], and T. Potter[A]

[A]Forest Science Unit, NSW Department of Primary Industries, Locked Bag 5123, Parramatta, NSW 2124, Australia.

[B]Corresponding author. Email: brad.law@dpi.nsw.gov.au

Text S1. Pilot sampling of invertebrates at thinned and unthinned plots, Chichester State Forest

Invertebrate sampling

To provide a preliminary assessment of prey availability for bats across the thinned/unthinned treatments, sampling for nocturnal flying insects was carried out immediately after thinning (February 2010). Two sites were sampled off-tracks in unthinned regrowth (Raingauge 9 and Kokata) and two sites were sampled off-tracks in thinned regrowth (Kokata) in 2011. Data were collected on warm and still nights. Flying nocturnal insects were sampled at ground height at each site for a single entire night using a black-light insect trap with an 8-W fluorescent tube (Australian Entomological Supplies, Bangalow, Australia) and a pest strip inside the collecting bucket. Insect samples were frozen until identification. Individuals were sorted to order and then allocated to size classes and their abundance recorded. A regression equation was used to estimate biomass from abundance of invertebrates per sample night in each treatment ($0.0305 \times$ (median of size class)$^{2.62}$) (Rogers et al. 1977). Because of limited sampling, data are presented graphically and were not statistically analysed.

Results: insect biomass

A total of 10569 insects was collected at light traps during pilot sampling, 66 % of which were collected at thinned sites. A graphical representation of total insect biomass suggests biomass was almost three times greater in the thinned than the unthinned regrowth treatment. Additionally, biomass was higher in the thinned treatment for most key orders sampled, though standard errors often overlapped indicating variable data and limited sampling (Fig. S1).
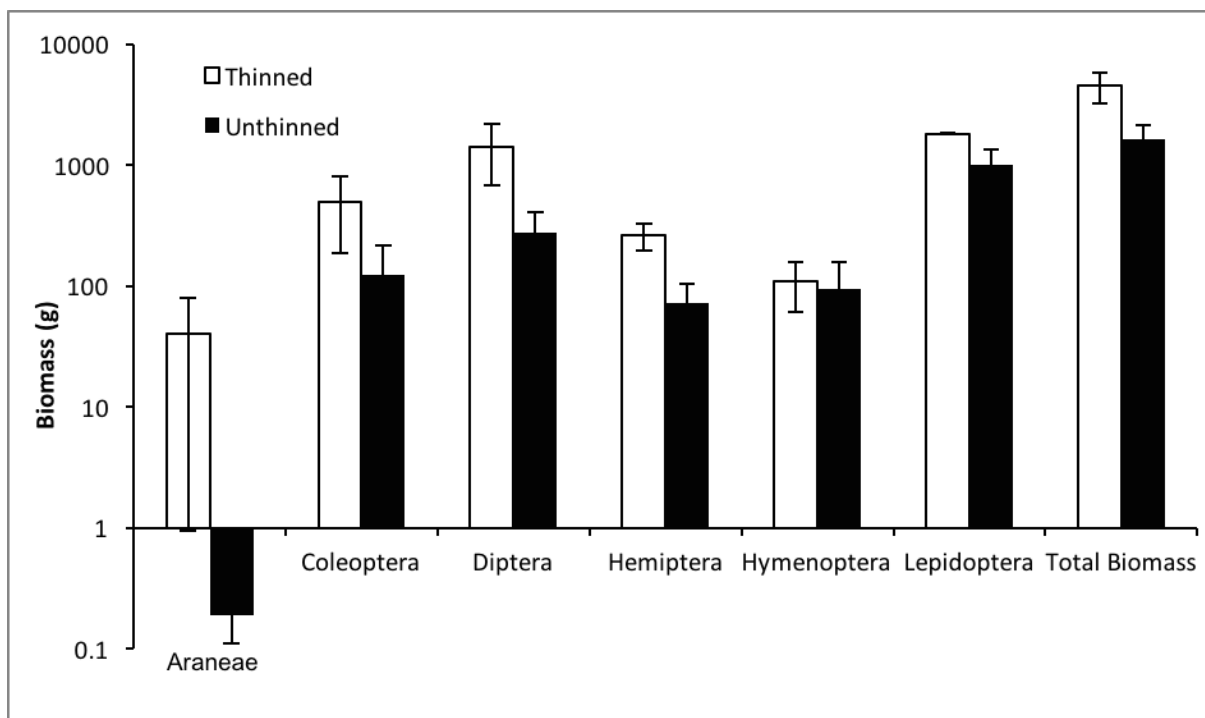

Fig S1. Log_{10} transformed mean ($\pm$ s.e.) total insect biomass (g) and key insect orders from light-trapping in thinned and unthinned treatments in 2010 (immediately after thinning).

References

Rogers, L.E., Buschbom, R.L., and Watson, C.R. (1977). Length-weight relationships of shrub-steppe invertebrates. *Annals of the Entomological Society of America* **70**, 51-53

Table S1. Model summary investigating total bat activity (no. calls night^{-1}) and species richness in relation to logging treatments (unlogged, unthinned regrowth, thinned regrowth), and time relative to thinning (pre-thin, 1-year and 6-years post-thinning) in Chichester State Forest, NSW Australia. Significant results ($P < 0.05$) are highlighted in bold.

Response	Flyway (track)	Model term	Test statistic	df	*P*
Total Activity	Off	Treatment	11.682	2,11	**0.002**
		Time	0.723	2,11	0.505
		Treatment × Time	2.469	4,11	0.101
	On	Treatment	6.879	2,10	**0.013**
		Time	1.324	2,10	0.309
		Treatment × Time	3.515	4,10	**0.049**
Species Richness	Off	Treatment	8.766	2,11	**0.005**
		Time	4.665	2,11	**0.032**
		Treatment × Time	4.929	4,11	**0.014**
	On	Treatment	6.423	2,10	**0.016**
		Time	4.193	2,10	**0.048**
		Treatment × Time	17.033	4,10	**<0.001**

Table S2. Results from multivariate models examining whether silvicultural practices (treatment) and year relative to thinning regrowth (pre-thin, 1-year and 6-years post-thin) influenced the composition of bat taxa on and off tracks in Chichester State Forest, NSW, Australia. Only species with significant univariate test results are shown.

Flyway (track)	Model/Species	Factor	Test Statistic	*P*
Off	Bat taxa	Treatment	72.66	**0.008**
		Year	50.31	0.084
		Treatment × Year	40.71	**0.020**
	R. megaphyllus	Treatment	0.071	0.963
		Year	8.802	0.370
		Treatment × Year	22.314	**0.013**
	V. darlingtoni	Treatment	16.928	**0.003**
		Year	0.685	0.959
		Treatment × Year	1.379	0.729
	V. regulus	Treatment	12.862	**0.015**
		Year	0.959	0.959
		Treatment × Year	1.906	0.711
On	Bat taxa	Treatment	50.40	**0.016**
		Year	39.72	0.154
		Treatment × Year	50.56	0.525