

Evidence of nightjar disturbance distances during construction works at an upland wind farm site.

MIKE SHEWRING AND DAN CARRINGTON

Introduction

- European Nightjar is a crepuscular and nocturnal, insectivorous, cryptic nesting bird species listed on Annex 1 of the EC Birds Directive
- Nightjars in South Wales largely associated with commercial coniferous forestry²
- Pen y Cymoedd wind farm is a 76 turbine scheme in South Wales in an area of commercial forestry
- Nightjar were regularly recorded at Pen y Cymoedd and nightjar mitigation measures were agreed as part of the project consent (consented 2012).
- Construction phase February 2014 to March 2017.

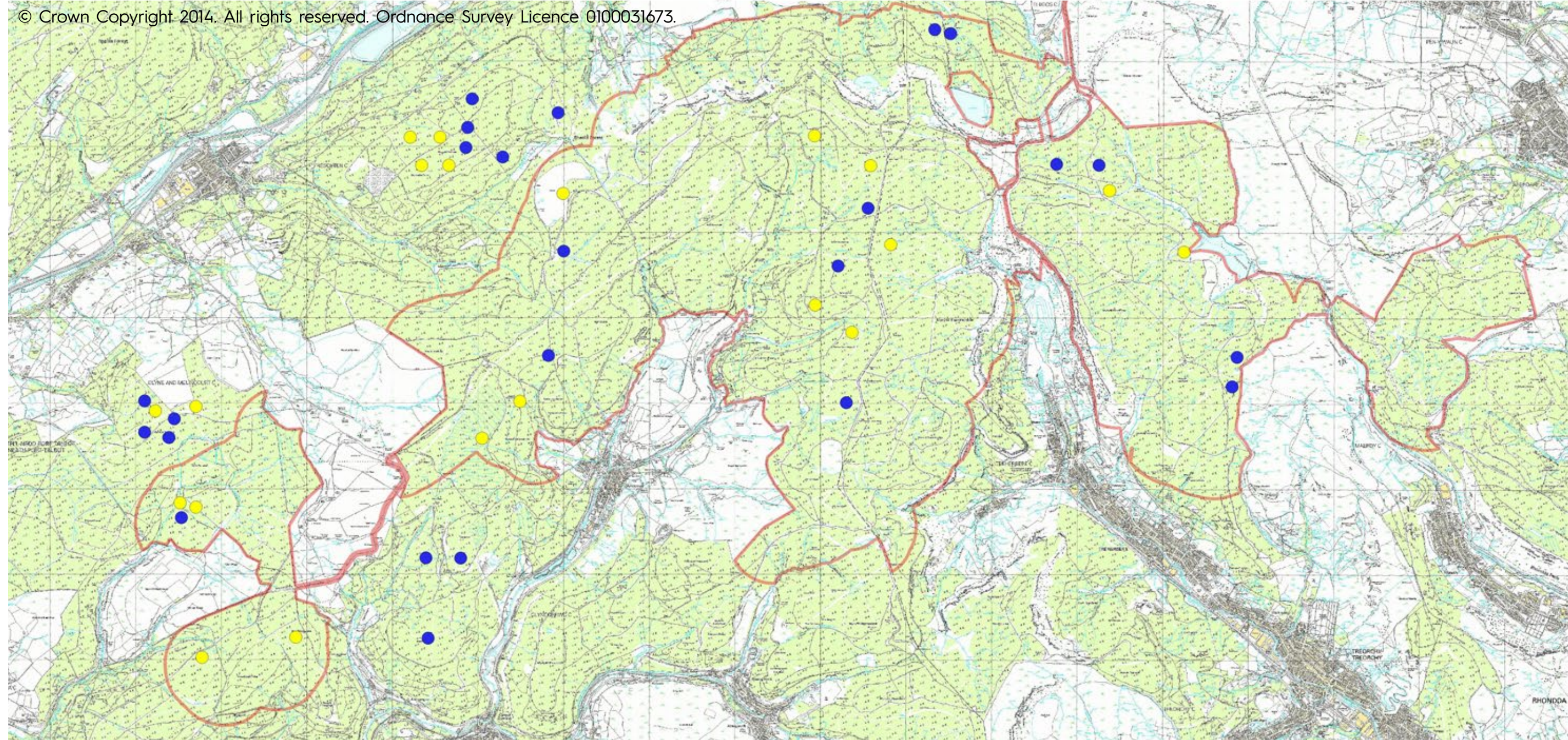


Figure 1: Baseline survey - 2011 (Blue) & 2013 (Yellow) churring male locations



Figure 2-4: Nightjar egg, adult Nightjar and Nightjar chick

Methods

- Combination of territory finding, capture, radio tracking and GPS tracking utilised to locate nests.
- Where nest sites were located disturbance buffers were implemented as per Ruddock et al⁴ and Currie et al⁵ (i.e. 200m at egg stage, 50-100m at chick stage). Distances in these publications were based on expert opinion.
- Where these distances were not achievable then works were progressed under a watching brief.
- Evidence of disturbance collected via observation
- Nest productivity collected (no. chicks) for monitored nests
- Productivity compared between treated (disturbed) and untreated (undisturbed) nest sites using a poisson GLM and Pearson's Chi-squared test.
- Nest success in treated and untreated compared using a binomial GLM

Results

Year	Territories	Nests located	Nests monitored	Nests in construction footprint/buffer
2014	16	6	4	2
2015	14	5	3	2
2016	12	7	1	1

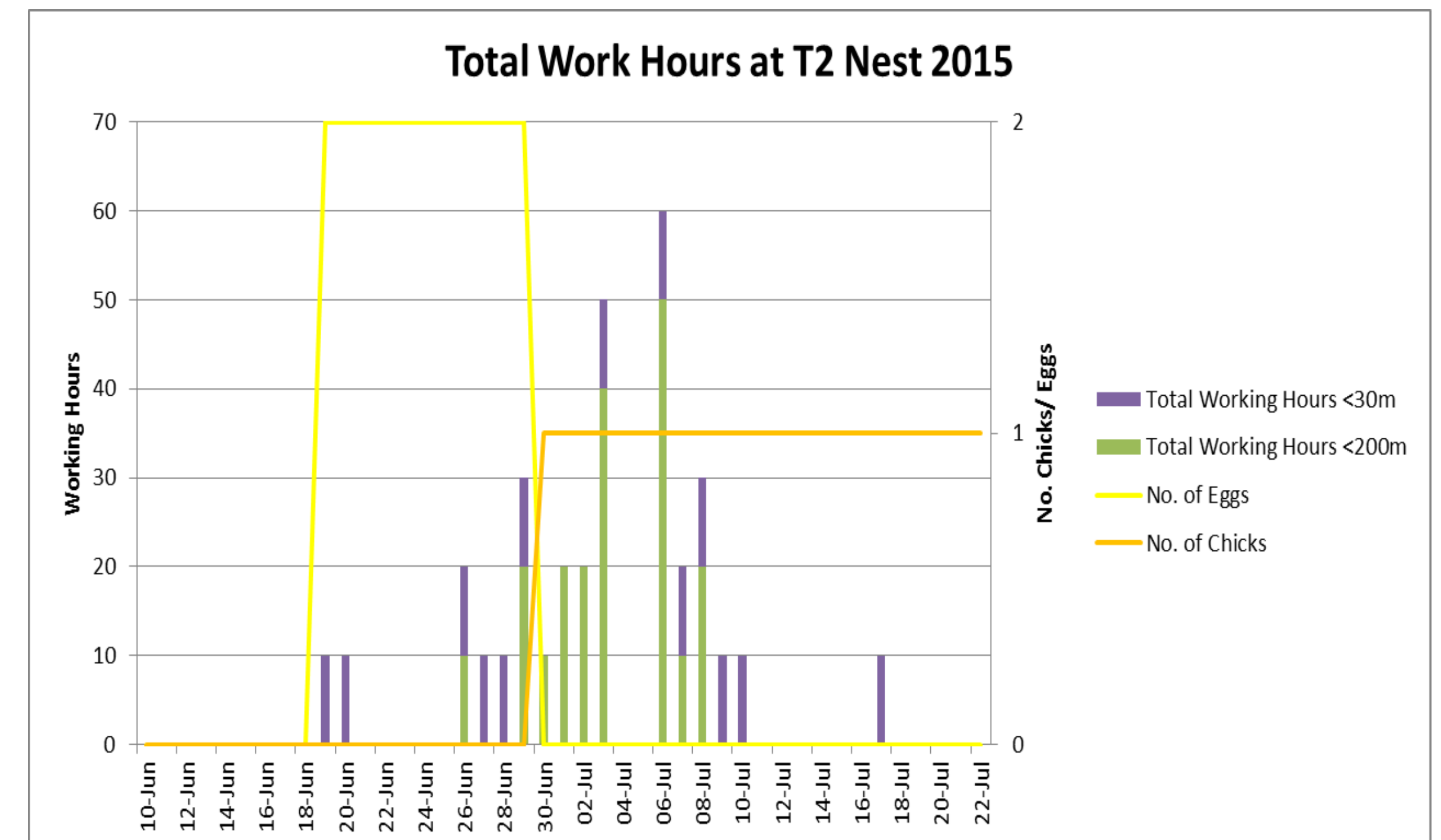
Table 1: Nest sites by year

2014

- 4 monitored nests (T39, T58, T71 & T75)
- Approximately 90hrs of machine work within 150-200m at chick stage (T71)
- Approximately 30hrs machine work within 100m at chick stage (T71)
- Regular (hourly) 40 ton dumper traffic and site traffic within 150m through egg and chick stage (T39)
- No active disturbance noted (radio tag monitored)
- 2 chicks fledged

2015

- 3 monitored nests (T2, T6 & T81)
- T2 - 270 hours of machine work within 200m (130hrs <30m; 50hrs of which at egg stage)
- T2 - ~1000 40 ton dumper loads within 200m (265 <30m)
- T81 - 100hrs+ of machine work completed within 100-150m at egg and chick stage
- No active disturbance noted (Camera and radio tag monitored)
- 3 chicks fledged
- In excess of 100hrs of machine work



2016

- 1 monitored nest (T6)
- 30hrs crane work within 150m at chick stage
- No active disturbance noted (live camera feed monitored)
- 1 chick fledged

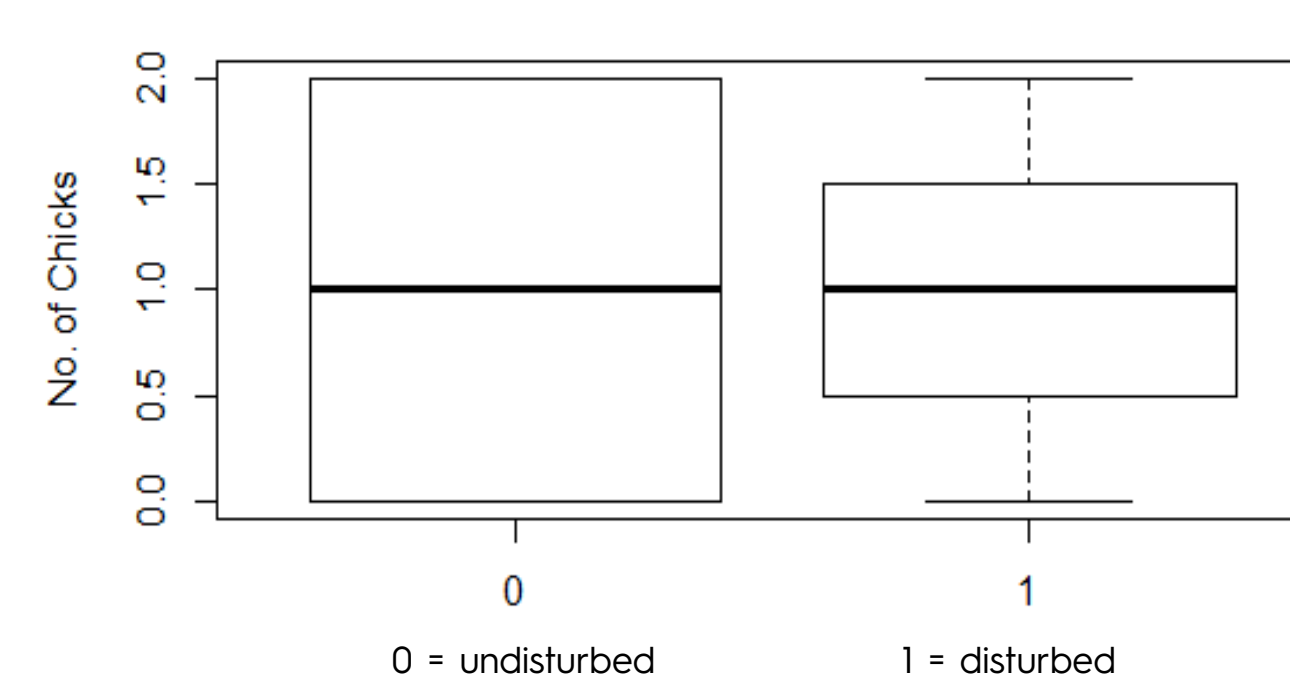


Figure 5: Young Nightjar chick

Year	Location	Hrs work <200m	Hrs work <30m	Chicks Fledged	Average chicks fledged per successful nest attempt South Wales monitored sites ⁶
2014	T39	?	?	2	1.3
	T58	0	0	0	
	T71	90	30	0	
	T75	0	0	2	
2015	T2	270	130	1	1.6
	T81	100+	0	2	
2016	T6	30	0	1	1.8

Table 2: Summary of results

Analysis



- No significant difference between no. chicks in treated (disturbed) and untreated (not disturbed) - (Chi-Squared $X^2 = 2.6667$, $df = 2$, $p\text{-value} = 0.2636$; Poisson GLM, Pseudo-R² = 0, P-Value = 1)
- No significant difference between nest success in treated and untreated (Binomial GLM, Pseudo-R² = 0.051, P-Value = 0.472)

Conclusion

- No significant difference detected between chick numbers in disturbed and undisturbed groups.
- No significant difference between nest success in disturbed and undisturbed groups.
- More data on nest sites in disturbed treatments is needed to increase confidence (plan to collect additional data in 2017 to allow BACI analysis)
- Current standard 200m disturbance buffer likely to be excessive and not cost effective

References

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- Personal communication with Paddy Jenks and Tony Cross.



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naturalpower.com
sayhello@naturalpower.com

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