



Getting the house in order: Burrow establishment and incubation activity in a long-lived seabird

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Introduction

- Incubation is a particularly costly phase of reproduction in seabirds
- Leach's Storm Petrels are long-lived, pelagic, colonial birds that have high site and mate fidelity
 - Breeding pairs divide time spent in the underground burrow during the 40-44 day incubation period (Huntington et al. 1996)
 - Adult storm-petrels budget their time between activities at the burrow (digging out, sitting in, incubating egg once laid) and foraging trips (Ricklefs et al. 1986)
- Little is known about nest activity of burrowing seabirds prior to incubation period
 - Individuals make burrow choice decisions
 - Adults attend and prepare the nest prior to egg laying
- Data from Cory's Shearwater suggest that burrow activity is higher prior to egg laying than during incubation (Granadeiro et al. 1998)
- We studied a population of Leach's Storm Petrels at the Bowdoin Scientific Station on Kent Island, New Brunswick, Canada (Figure 1)
- Timing of arrival at the nest and subsequent activity level were investigated
 - When do birds first start attending their burrow?
 - How does burrow activity level change over the breeding period?
 - Does activity level vary between burrows with or without a mating pair?

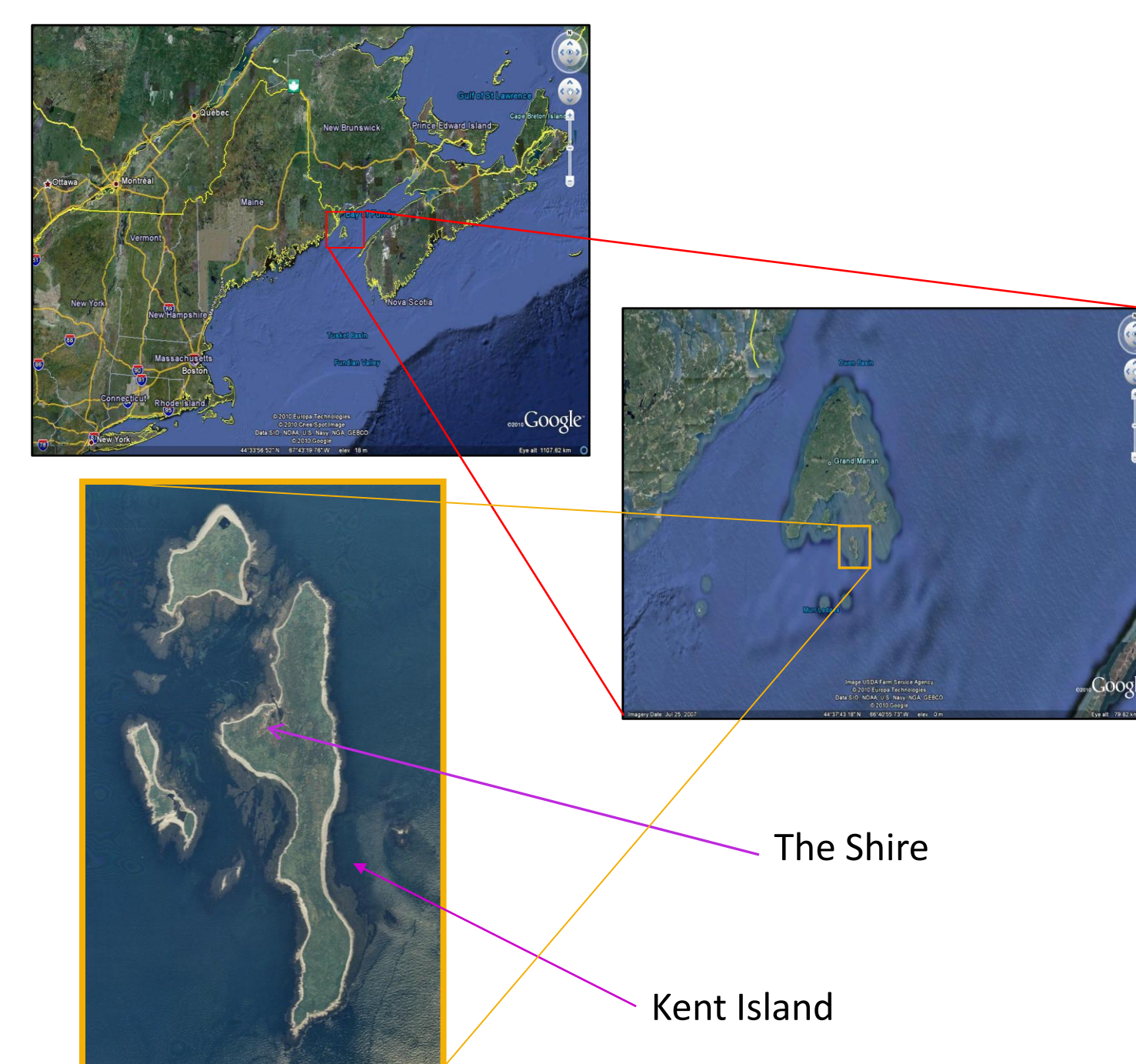


Figure 1: Location of Kent Island and the study site, "The Shire".

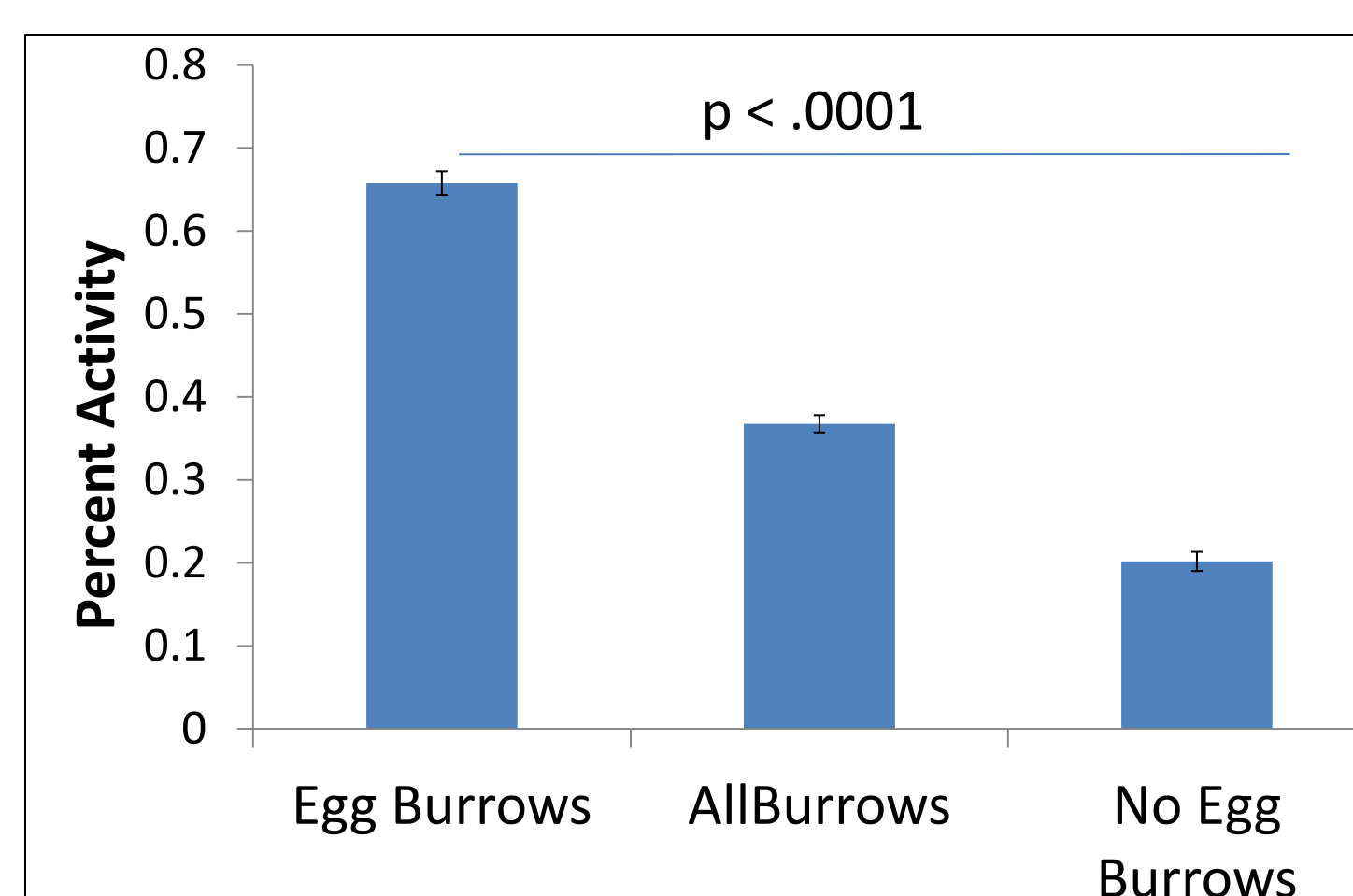


Figure 3: Burrows with eggs are more active than those without.

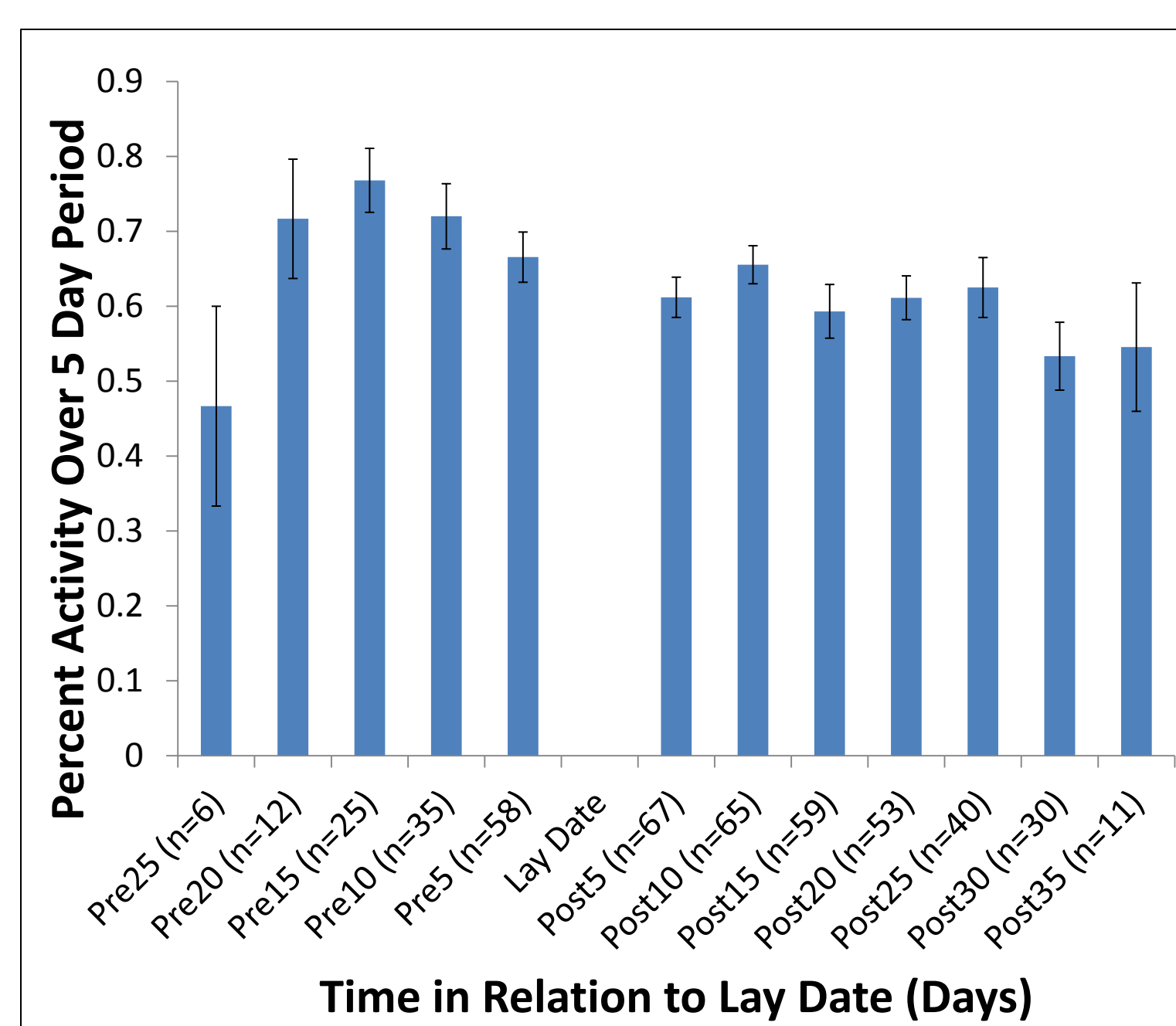


Figure 5: Activity level was highest in periods prior 2-3 weeks prior to the lay date.

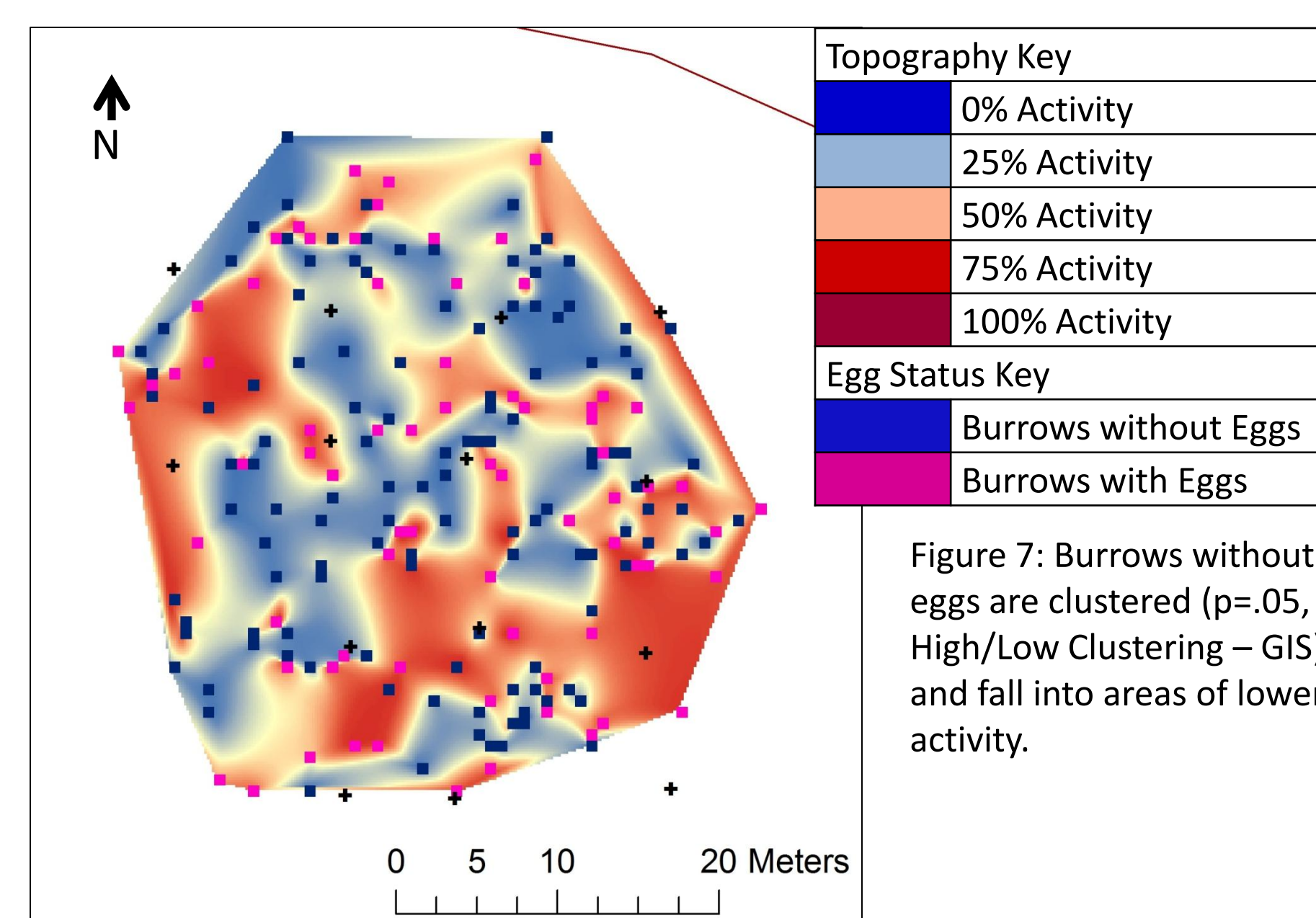


Figure 7: Burrows without eggs are clustered ($p=.05$, High/Low Clustering - GIS) and fall into areas of lower activity.

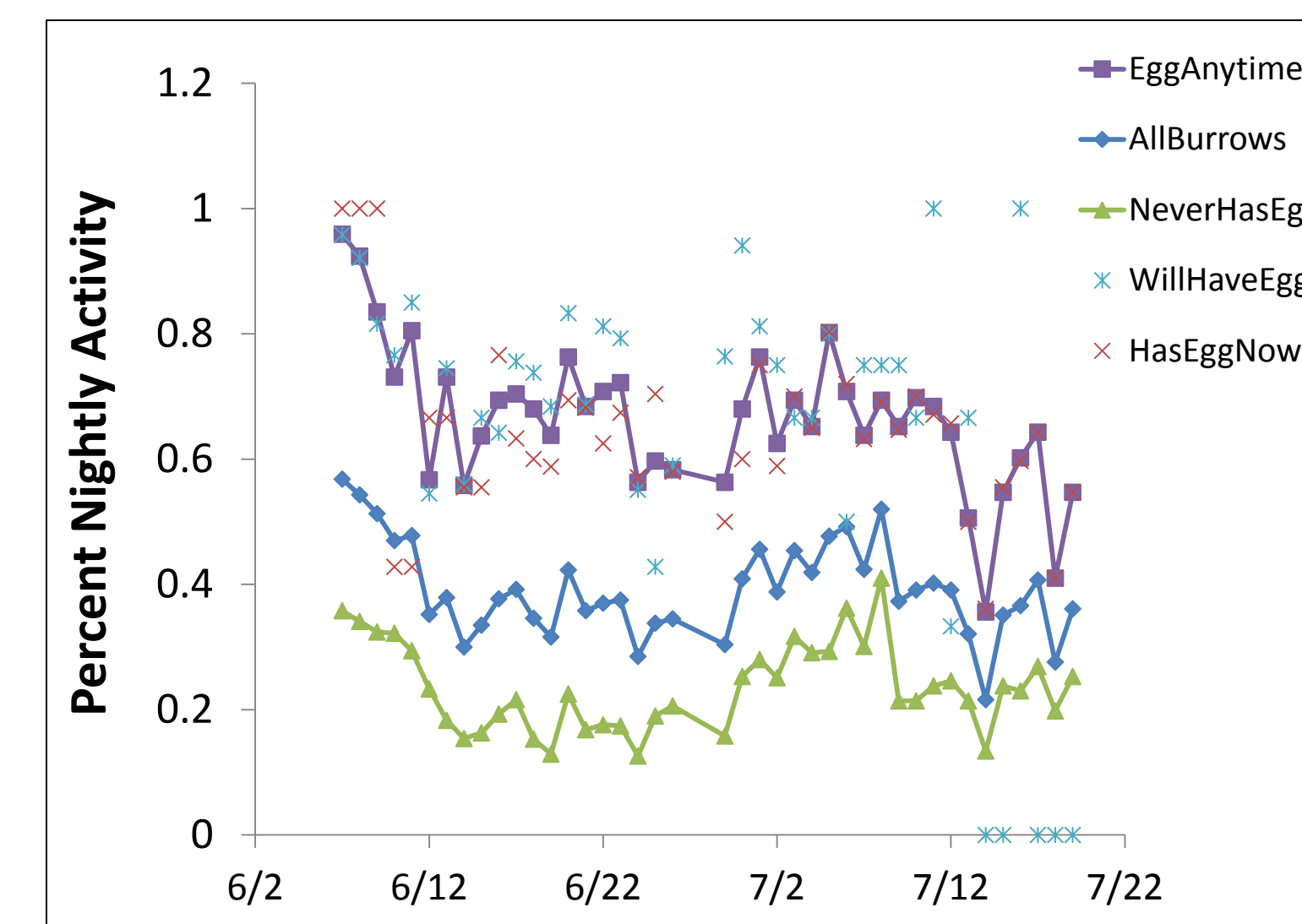


Figure 2: Comparison of activity level between burrow subsets throughout study period.

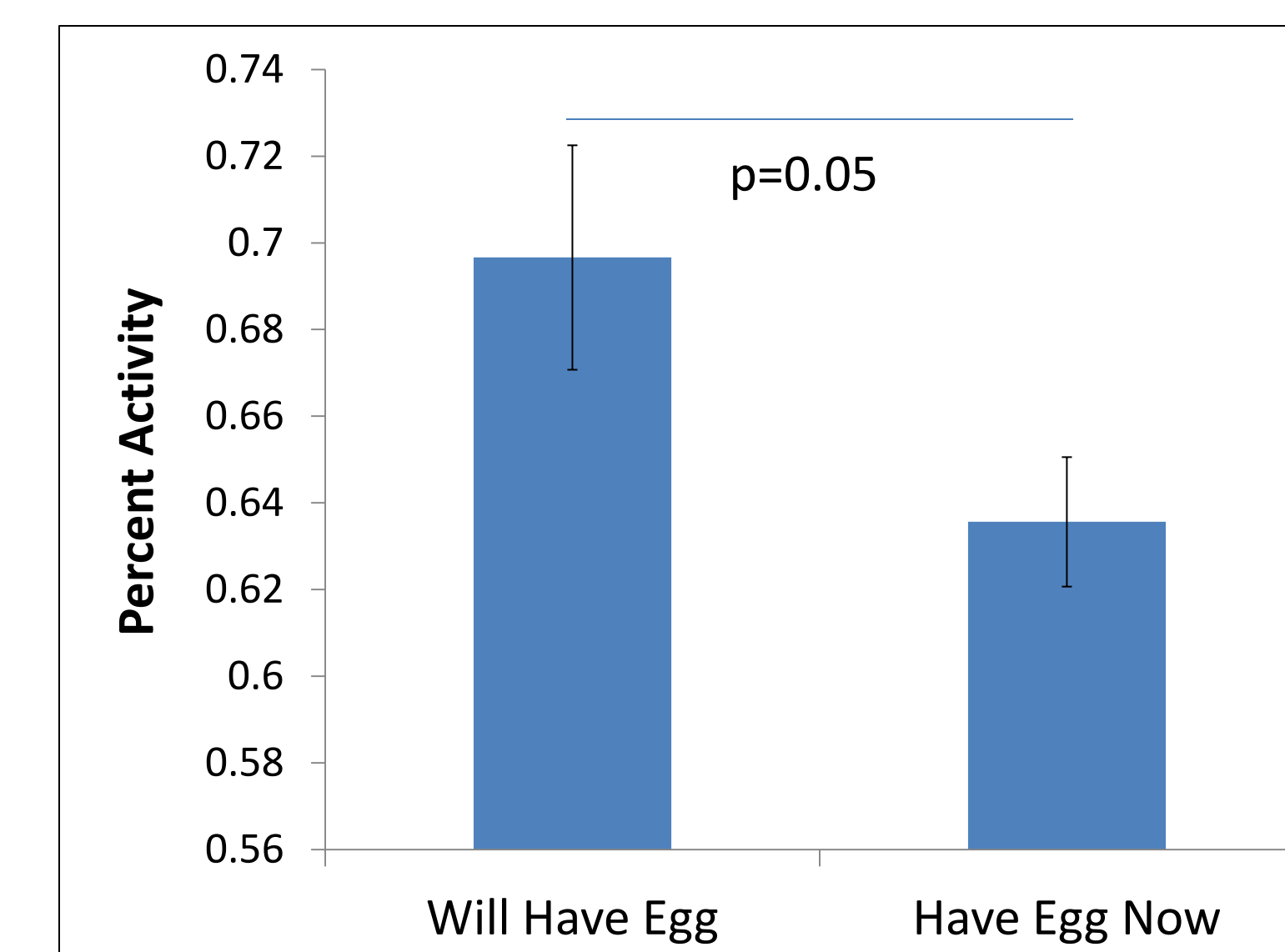


Figure 4: Burrows that will have an egg are more active before the egg is laid.

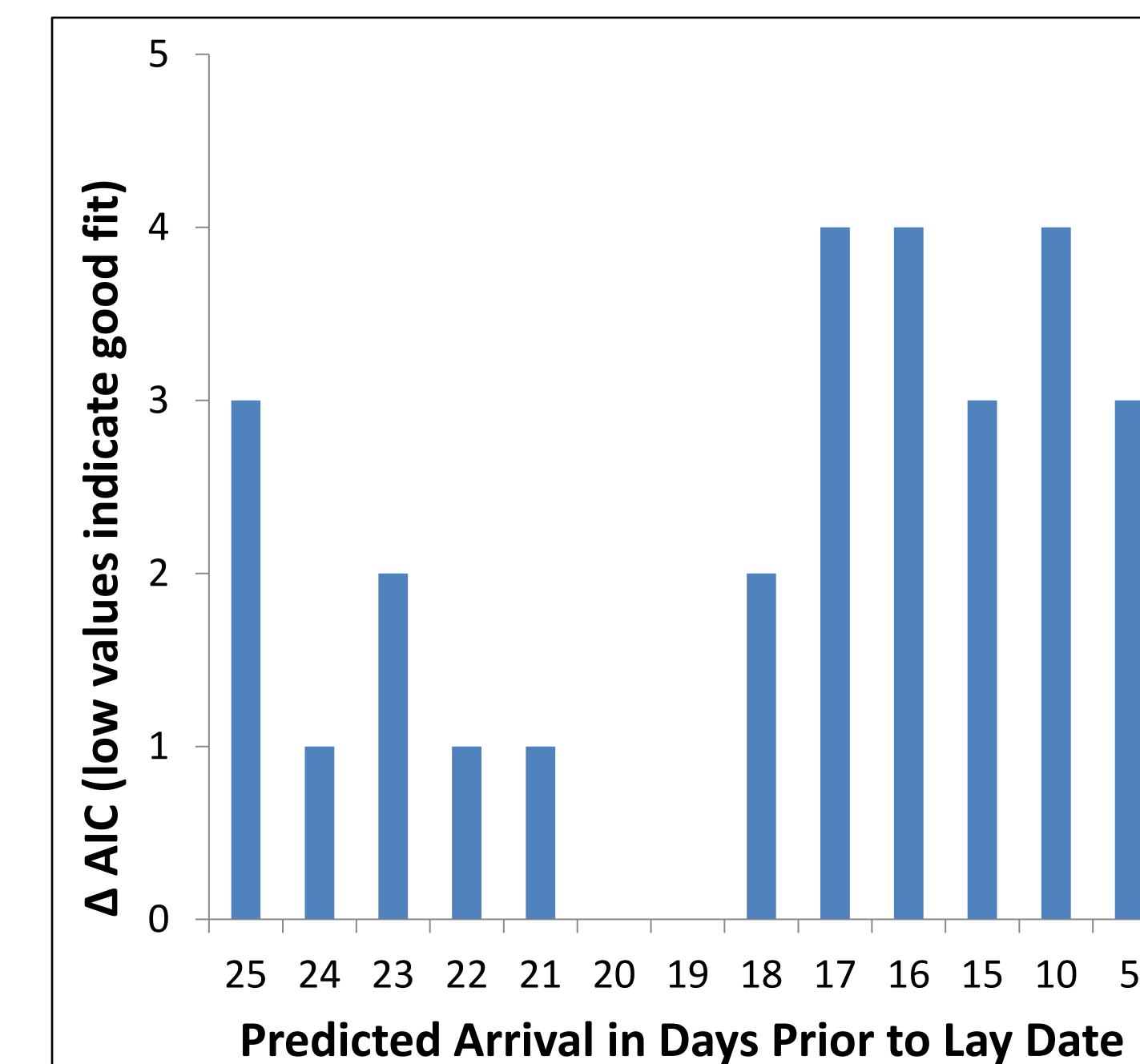


Figure 6: Models predicting arrival 19 or 20 days prior to lay date best fit the data.



Results

- Eventual presence of an egg was a strong predictor of activity in burrows throughout the summer (Figure 2)
- Burrows with eggs are more active than those without (Figure 2,3) and activity in those burrows is highest prior to the lay date (Figure 4)
 - Grouping burrows by Never Have Egg, Pre-Egg, and with Egg Now best explains variation in burrow activity
- Activity in burrows with eggs is highest 2-3 weeks prior to lay date (Figure 5)
- Models predicting burrow arrival 19 or 20 days prior to egg best explain variation in activity of burrows (Figure 6)
- Burrows without eggs are found in clustered areas of lower success (Figure 7)

Conclusions

- All burrows are attended or investigated during nesting period
 - Possible pre-breeder activity in those burrows without eggs
- Burrows with eggs more active than those without
 - Breeding pairs more active than pre-breeders
 - Birds may not investigate burrows other than own
- Breeding pairs most active in period prior to laying
- Storm-petrels appear to first arrive 19-20 days prior to the date of egg laying; date of arrival was previously unknown

Acknowledgments

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