Practice makes perfect? Experience boosts foraging performance in a ponerine ant

Supplementary material

Table S1. Demographic information of different colonies at the beginning of the experiments.

Colony Identities	Workers
2	77
4	122
6.1	68
6.2	55
7	90
8	76

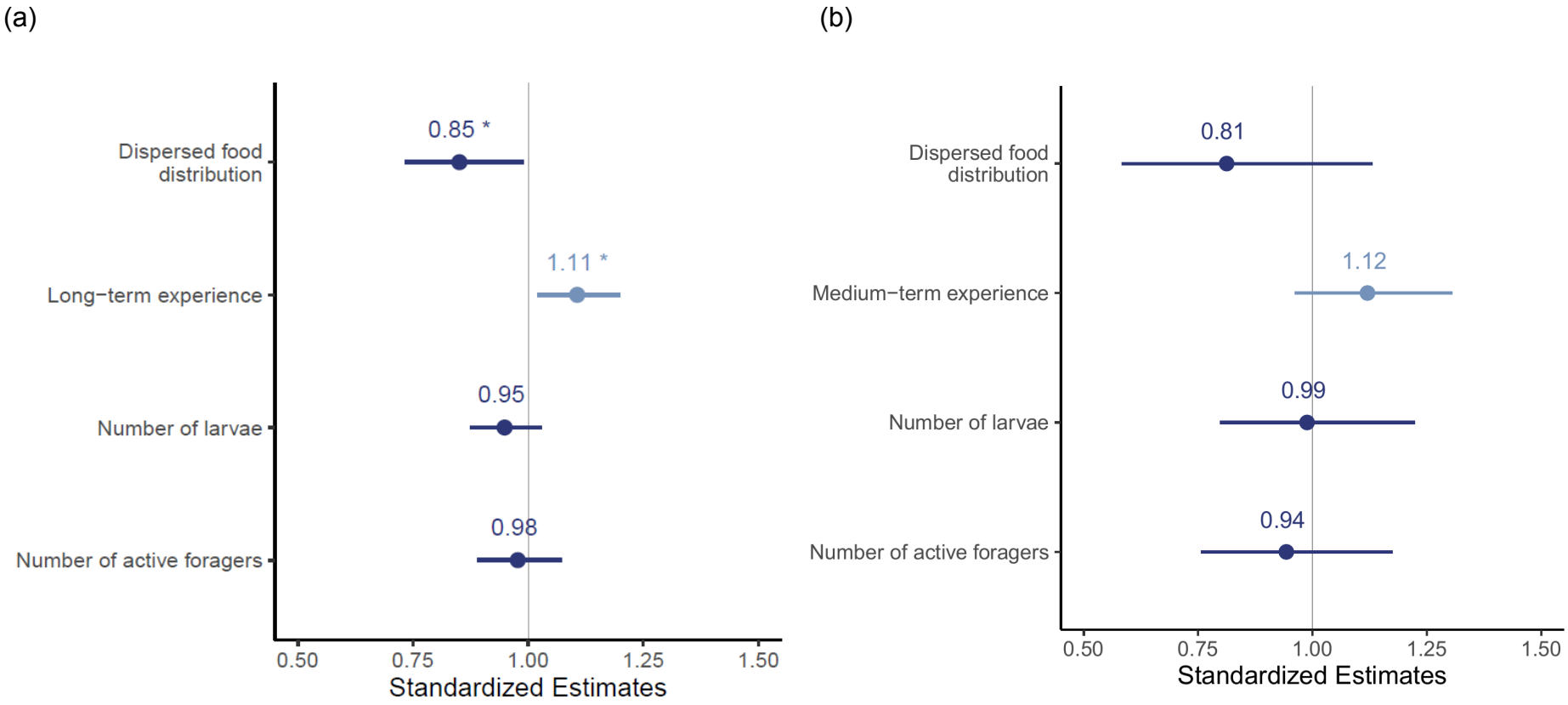

Figure S1. Standardised estimates coefficients with 95% confidence intervals and significance (p >= 0.05: none, p < 0.05*, p < 0.01**, p < 0.001***) of the foraging activity models. Positive coefficients are represented in light blue and negative ones in dark blue. (a) GLMM for Poisson distribution with activity as the response variable and long-term experience as a fixed variable (N = 431 foragers/day). (b) GLMM for Poisson distribution with activity as the response variable and medium-term experience as a fixed variable (N = 84 foragers in paired trials).

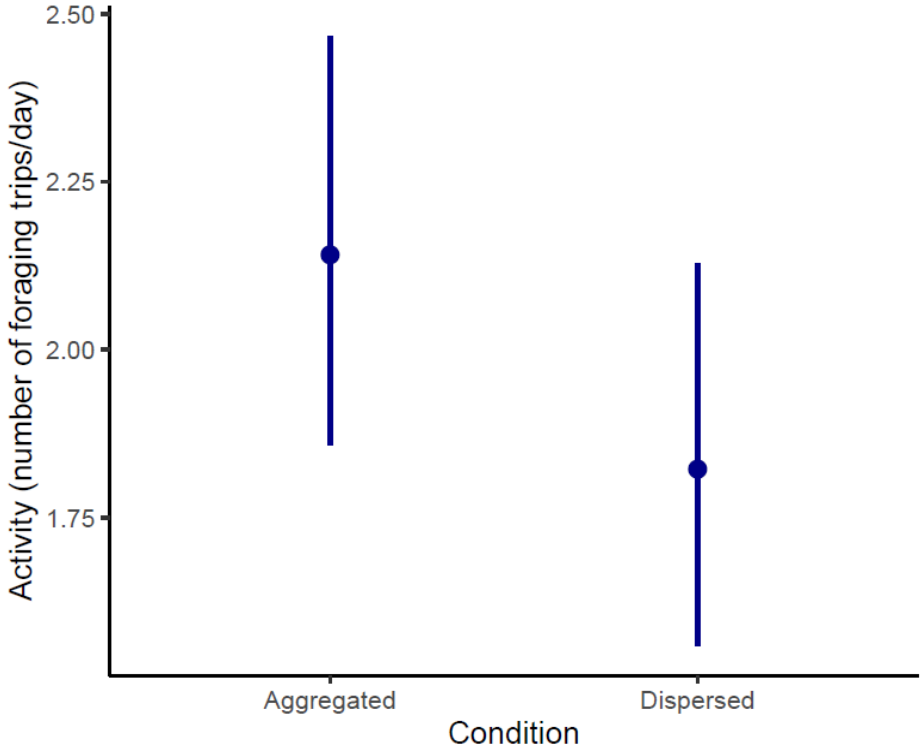

Fig S2. Predicted effects (with 95% confidence intervals) of food distribution (N aggregated = 216, N dispersed = 215) on the foraging activity of *P. striata*.

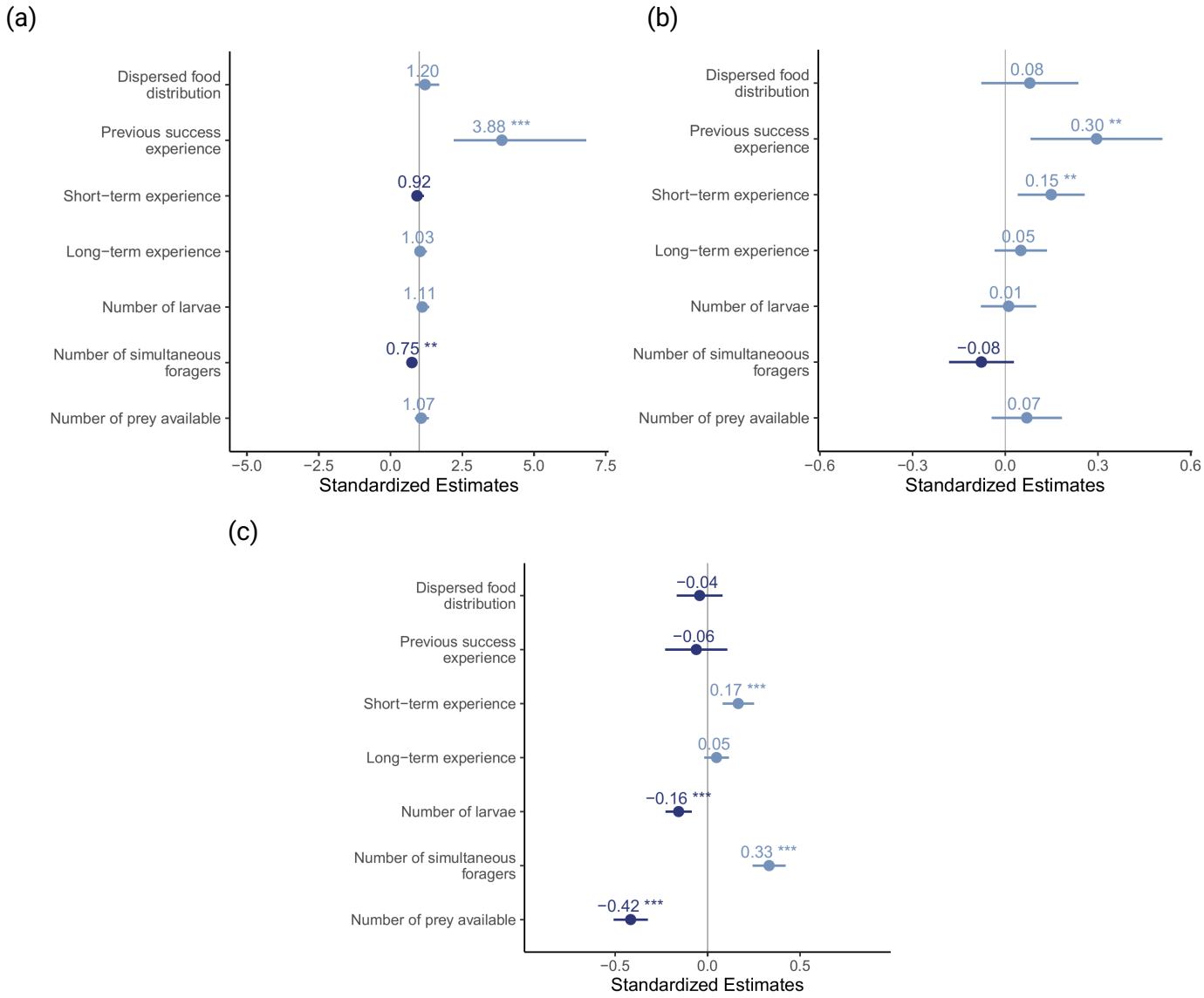
(a)
Dispersed food distribution
Previous success experience
Short−term experience
Long−term experience
Number of larvae
Number of simultaneous foragers
Number of prey available
1.20
3.88 ***
0.92
1.03
1.11
0.75 **
1.07
−5.0
−2.5
0.0
2.5
5.0
7.5
Standardized Estimates
(b)
Dispersed food distribution
Previous success experience
Short−term experience
Long−term experience
Number of larvae
Number of simultaneoous foragers
Number of prey available
0.08
0.30 **
0.15 **
0.05
0.01
−0.08
0.07
−0.6
−0.3
0.0
0.3
0.6
Standardized Estimates
(c)
Dispersed food distribution
Previous success experience
Short−term experience
Long−term experience
Number of larvae
Number of simultaneous foragers
Number of prey available
−0.04
−0.06
0.17 ***
0.05
−0.16 ***
0.33 ***
−0.42 ***
−0.5
0.0
0.5
Standardized Estimates

Figure S3. Standardised estimates coefficients with 95% confidence intervals and significance (p >= 0.05: none, p < 0.05*, p < 0.01**, p < 0.001***) of the exploration models. Positive coefficients are represented in light blue and negative ones in dark blue. (a) GLMM for binomial distribution with exploration (yes/no) as the response variable (N = 875 foraging trips). (b) LMM with exploration rate as the response variable (N = 646 foraging trips). (c) LMM with latency to start exploration as the response variable (N = 646 foraging trips).

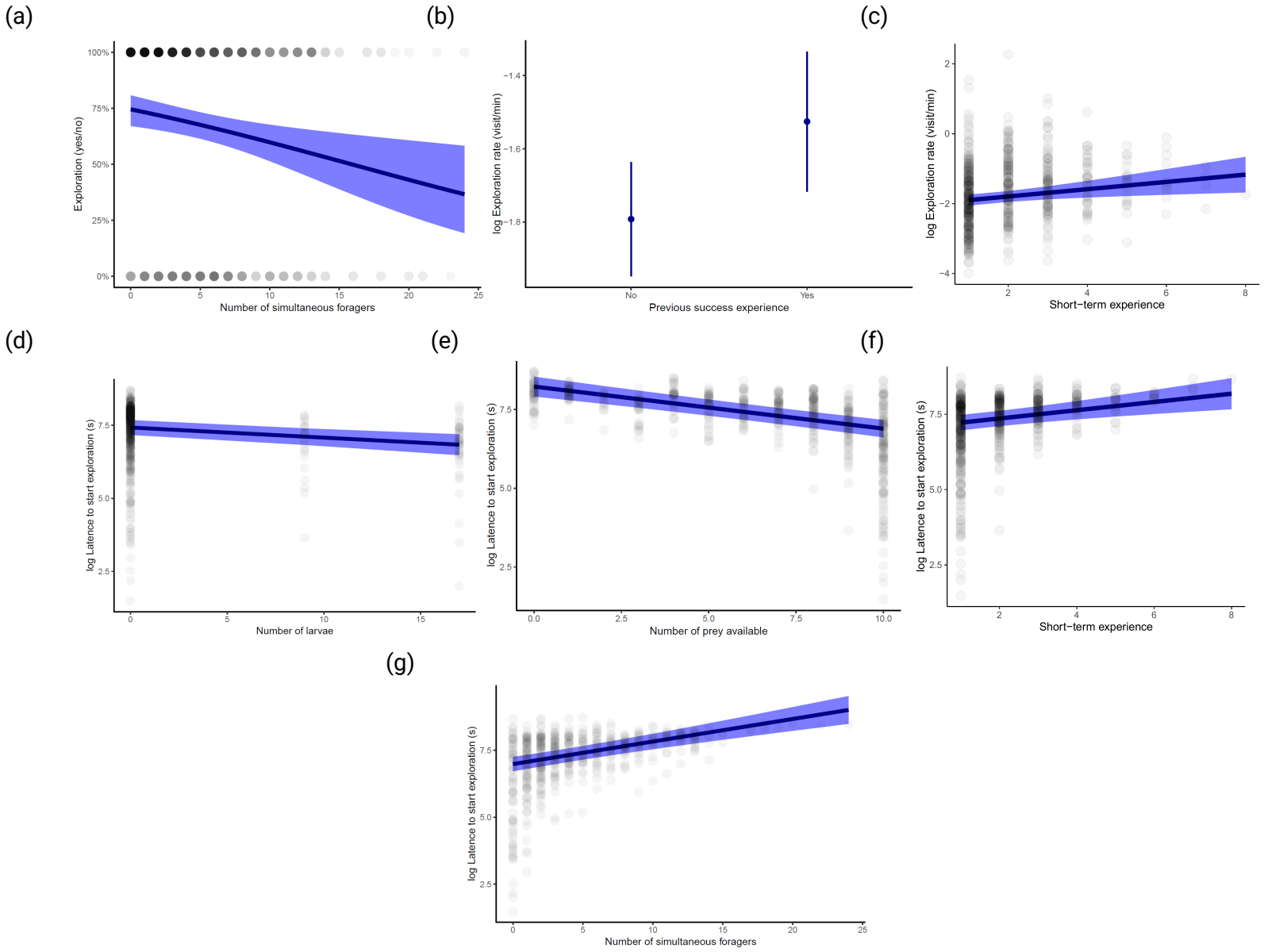
(a)
Exploration (yes/no)
100%
75%
50%
25%
0%
0
5
10
15
20
25
Number of simultaneous foragers
(b)
log Exploration rate (visit/min)
−1.4
−1.6
−1.8
No
Yes
Previous success experience
(c)
log Exploration rate (visit/min)
2
0
−2
−4
2
4
6
8
Short−term experience
(d)
log Latence to start exploration (s)
7.5
5.0
2.5
0
5
10
15
Number of larvae
(e)
log Latence to start exploration (s)
7.5
5.0
2.5
0.0
2.5
5.0
7.5
10.0
Number of prey available
(f)
log Latence to start exploration (s)
7.5
5.0
2.5
2
4
6
8
Short−term experience
(g)
log Latence to start exploration (s)
7.5
5.0
2.5
0
5
10
15
20
25
Number of simultaneous foragers

Figure S4. Predicted effects (with 95% confidence intervals) of external and internal variables on the exploratory behaviour of *P. striata* foragers. (a) Effect of the number of foragers on the propensity to explore. Effect of (b) previous success experience (N 'no' = 434, N 'yes' = 212) and (c) same-day experience on the log-transformed exploration rates. Effect of (d) number of larvae, (e) number of prey available, (f) same-day experience and (g) number of simultaneous foragers on the log-transformed latency to explore.

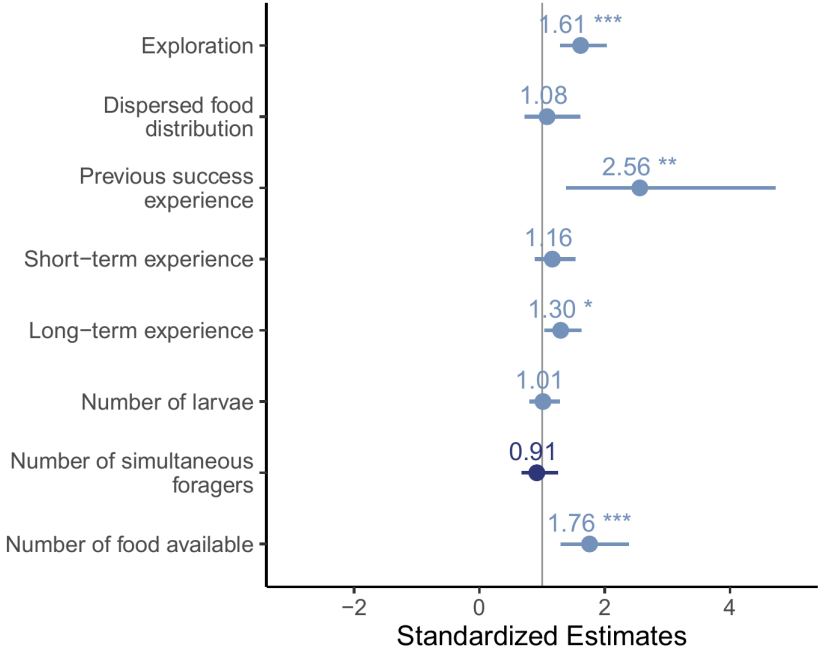

Figure S5. Standardised estimates coefficients with 95% confidence intervals and significance (p >= 0.05: none, p < 0.05*, p < 0.01**, p < 0.001***) of the GLMM for binomial distribution with foraging success as the response variable (N = 618 foraging trips). Positive coefficients are represented in light blue and negative ones in dark blue.

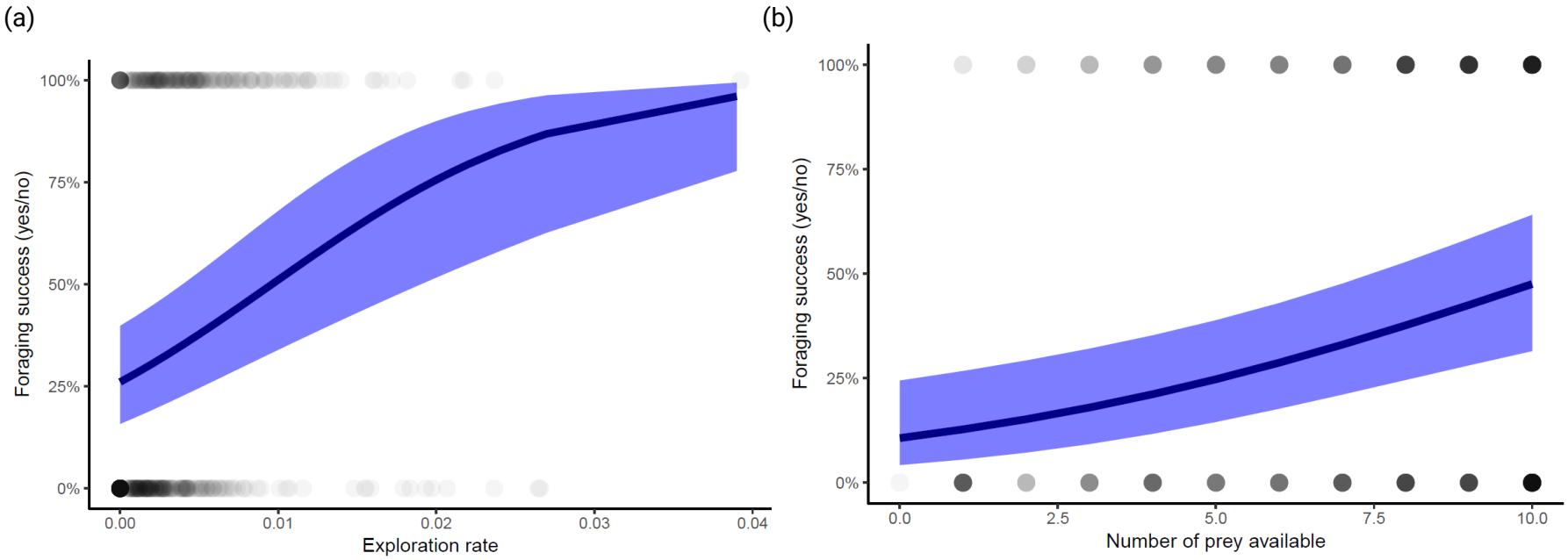

Figure S6. Predicted effects (with 95% confidence intervals) of exploration (a) and number of prey available (b) on the foraging success of *P. striata*.