



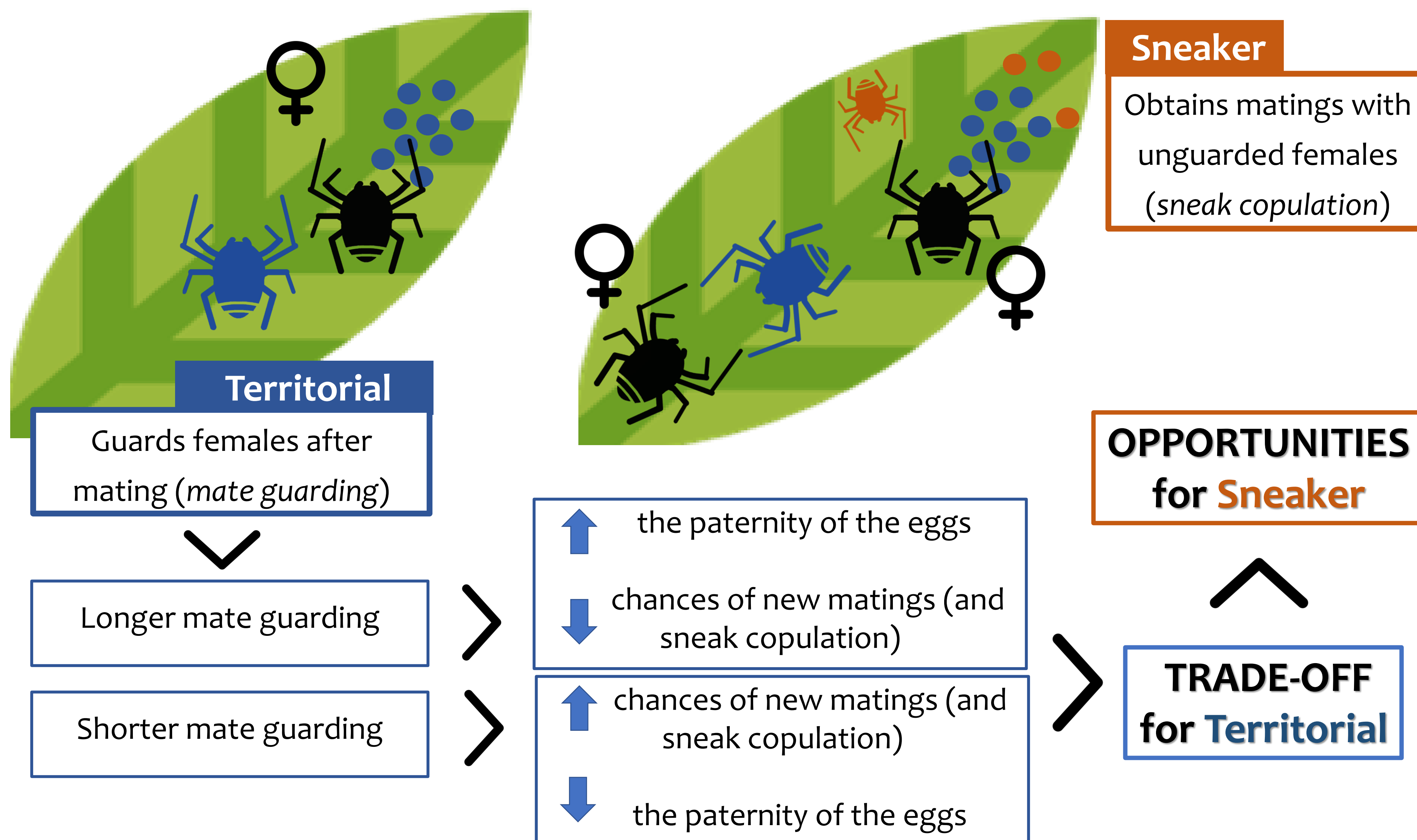
Slices of the paternity pie: how mate-guarding by territorial males may affect mating opportunities of sneaker males in a harvestman with alternative reproductive tactics



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BACKGROUND

Species with alternative reproductive tactics and male dimorphism:



Serracutisoma proximum (Laniatores: Gonyleptidae)

Territorial Guards females up to 5 days after mating

Sneaker Obtains matings because females do not lay all of their eggs during the mate guarding period

But how does mate guarding affect the mating opportunities of sneaker males?

FIELD AND LAB WORK

Fieldwork at Intervales State Park (São Paulo, Brazil) on February 2023.

Clutches of *S. proximum* were collected, taken to the laboratory and kept until the nymphs hatched.

We recorded the number of hatched nymphs per day as a proxy for eggs laid per day by females during oviposition.

MALE REPRODUCTIVE SUCCESS

We estimated the mean reproductive success (RS) of territorials and sneakers based on the mate guarding duration. This equation assumes that territorial males fertilize only the eggs laid during mate guarding period.

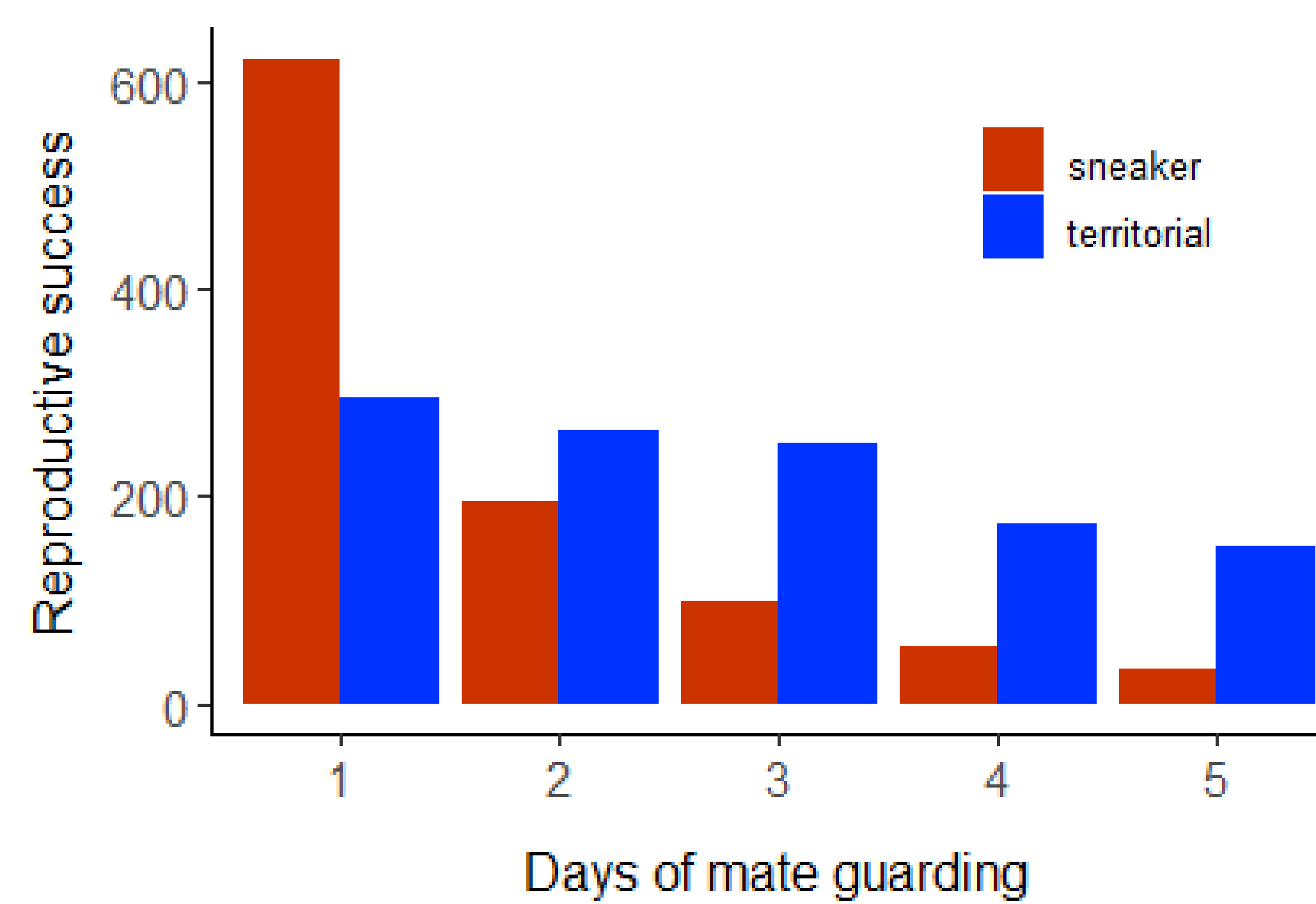
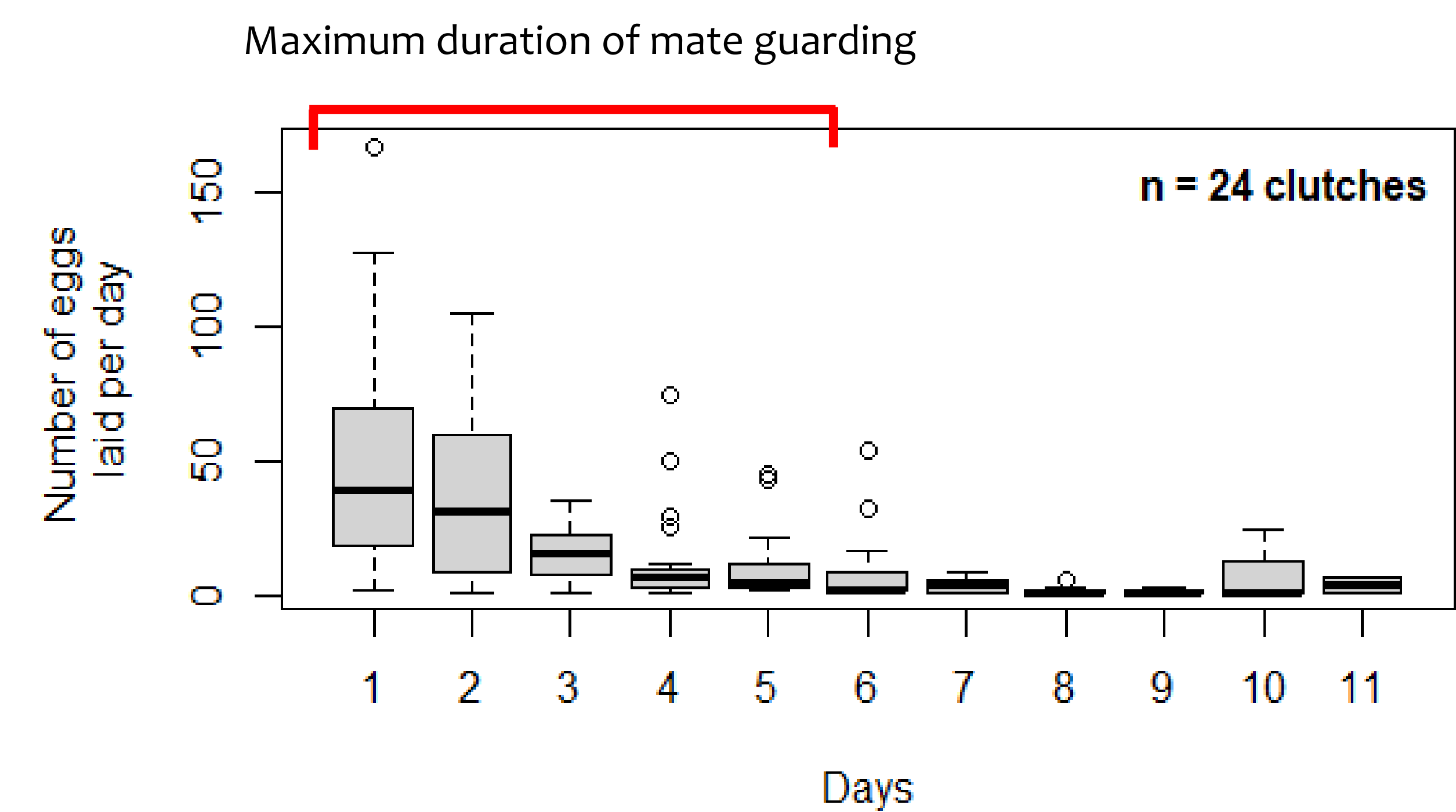
$$RS_{territorial} = \left[\left(n_x * \frac{10}{MG_x} \right) * 0.05 \right] * 12$$

$$RS_{sneaker} = \left[\left((n_t - n_x) * \frac{10}{MG_x} \right) * 0.05 \right] * 12$$

n_x = number of eggs laid by day x (x is a value ranging from 1-5)
 MG_x = mate guarding duration (x is a value ranging from 1-5)
 n_t = average total number of eggs laid by females
0.05 = the average daily female arrival rate over a 10-day period
12 = because the breeding season lasts 120 days, we estimate the overall reproductive success of the morphs (10*12).

RESULTS

Oviposition period extends from 1 to 11 days.



The reproductive success of territorial males that mate guard the females for 5 days is half of the reproductive success of territorial males that mate guard the females for only one day.

On the other hand, when territorial males mate guard the females only for one day, **sneaker males** have the opportunity to achieve a higher reproductive success.

CONCLUSION

The **long oviposition period** in *S. proximum*, along with the **trade-off** between mate guarding and the acquisition of additional mates experienced by territorial males, provides an opportunity for sneak copulations, allowing sneakers to sire at least a portion of the eggs laid by the females.