

# Does Food Supply Affect the Hatching Success of Tree Swallows ?

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## Introduction

Many songbirds, especially those that feed on aerial insects, are declining across North America.

One prominent hypothesis for this decline is that climate change is leading to declines in their food supply, which could affect reproductive success.

We examined the hypothesis that lower food supply might be related to lower reproductive success in tree swallows through its effect on hatching success (% eggs that hatch).

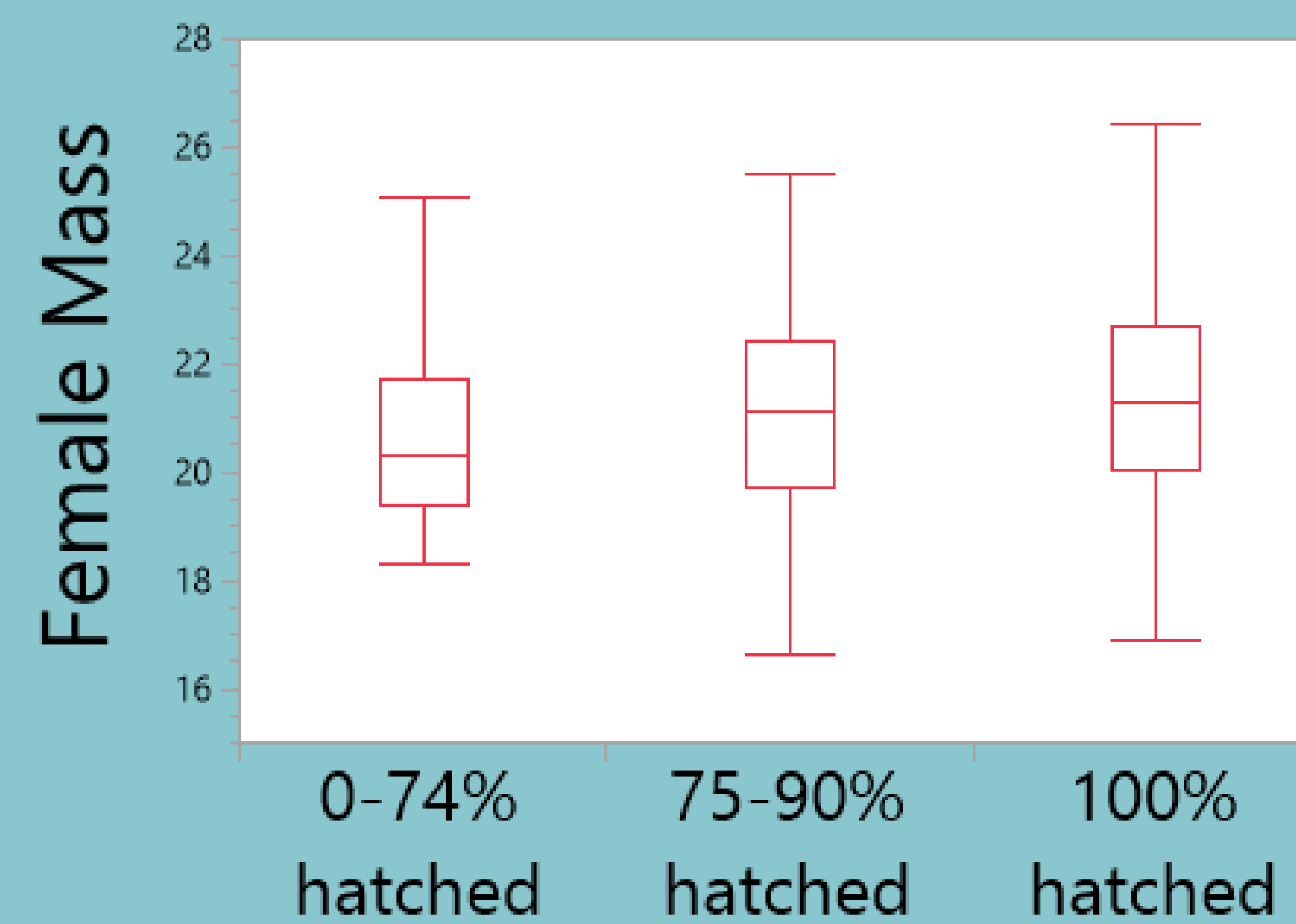
## Methods

Data were collected from a long-term study of tree swallows at the UWM Field Station in Saukville, WI (1997-2020). Female swallows were captured to measure body mass and nests were checked every other day to estimate reproductive parameters.

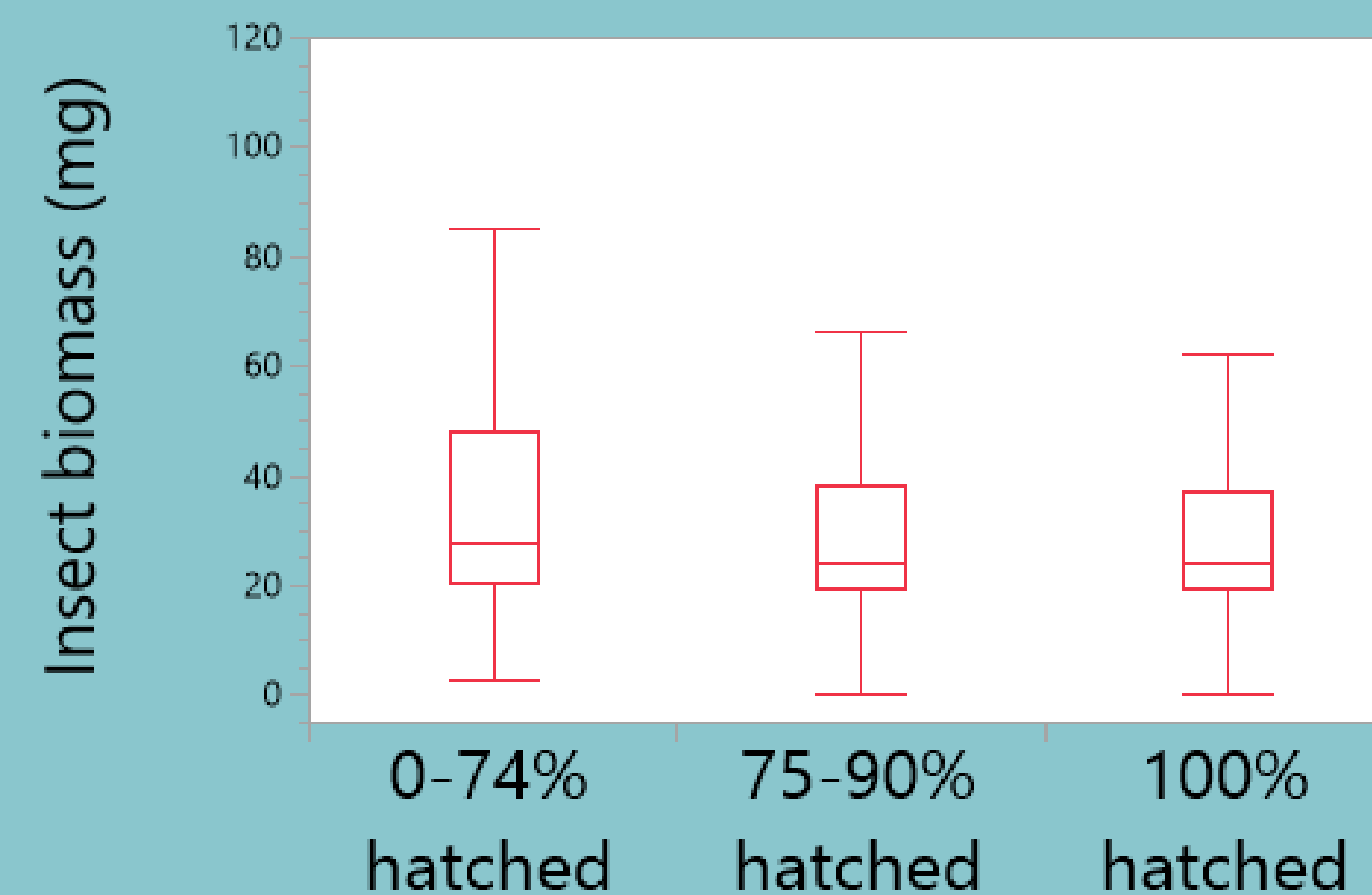
Biomass of flying insects was estimated from daily samples (May & June) collected by a suction trap.

## Results

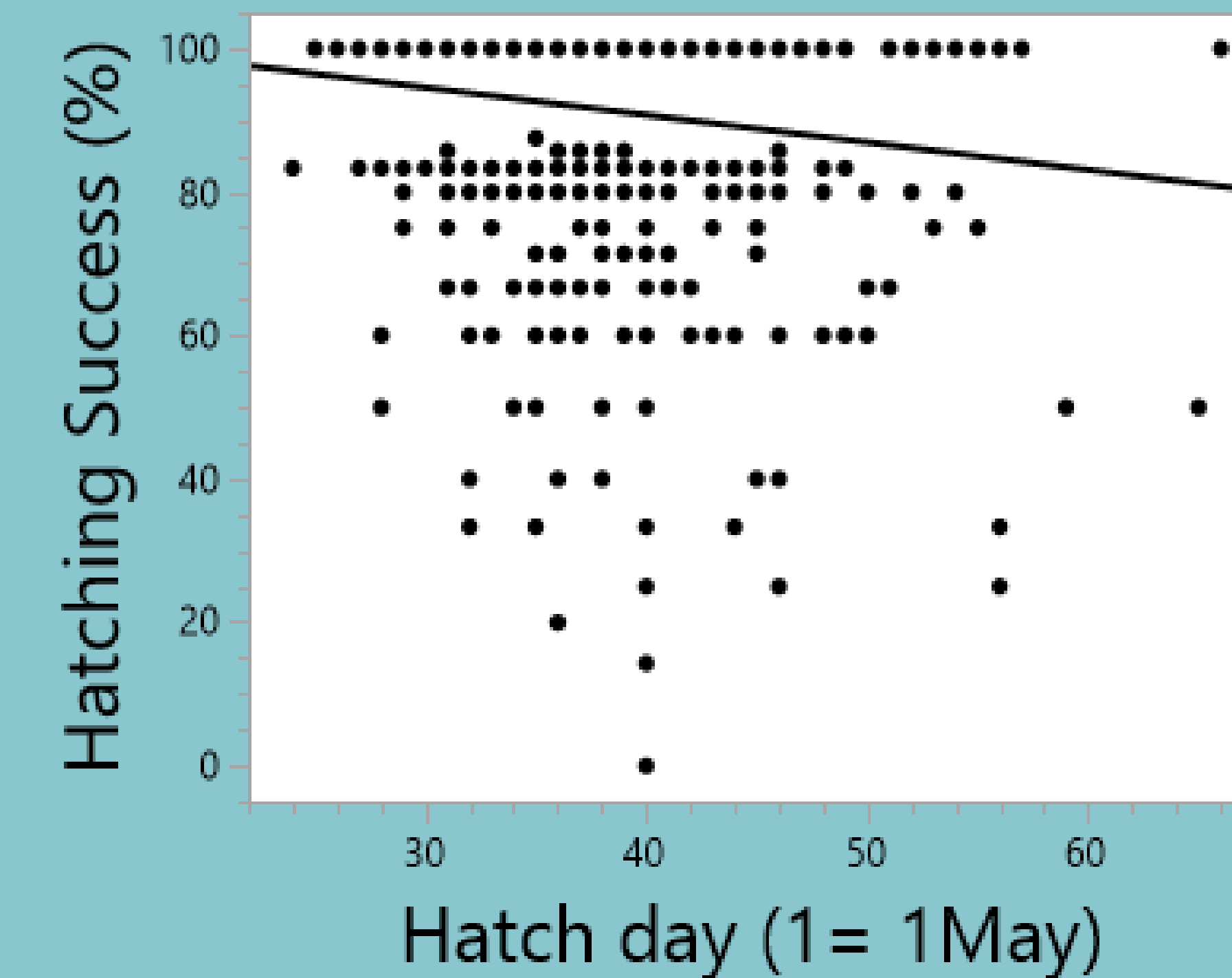
**Fig 1 : Heavier females had greater hatching success** (box plots indicate median, 25 & 75 th percentiles; whiskers are max and min)



**Fig 2 : Insect Biomass (5 d < hatch) was higher for birds with lower hatching success**



**Contrary to expectation, hatching success was lower for birds that had higher food availability (insect biomass). This result occurred because hatching success is also lower for birds that lay later in the season. Females in better body condition (higher mass) lay earlier and have higher hatching success despite the lower food supply.**



**Fig 3 : Analysis of Hatching Success by Hatch Day, beginning May 1.**

## Conclusion

Food supply and female body mass (an index of condition) were the most important correlates of hatching success. However, these variables only explained 2% of the variation in hatching success.

Weather variables had no significant effect (results not shown).

Females in better body condition (higher mass) lay earlier and have higher hatching success despite the lower food supply earlier in the season. Further studies are needed to determine what factors influence female condition and timing of egg-laying.