

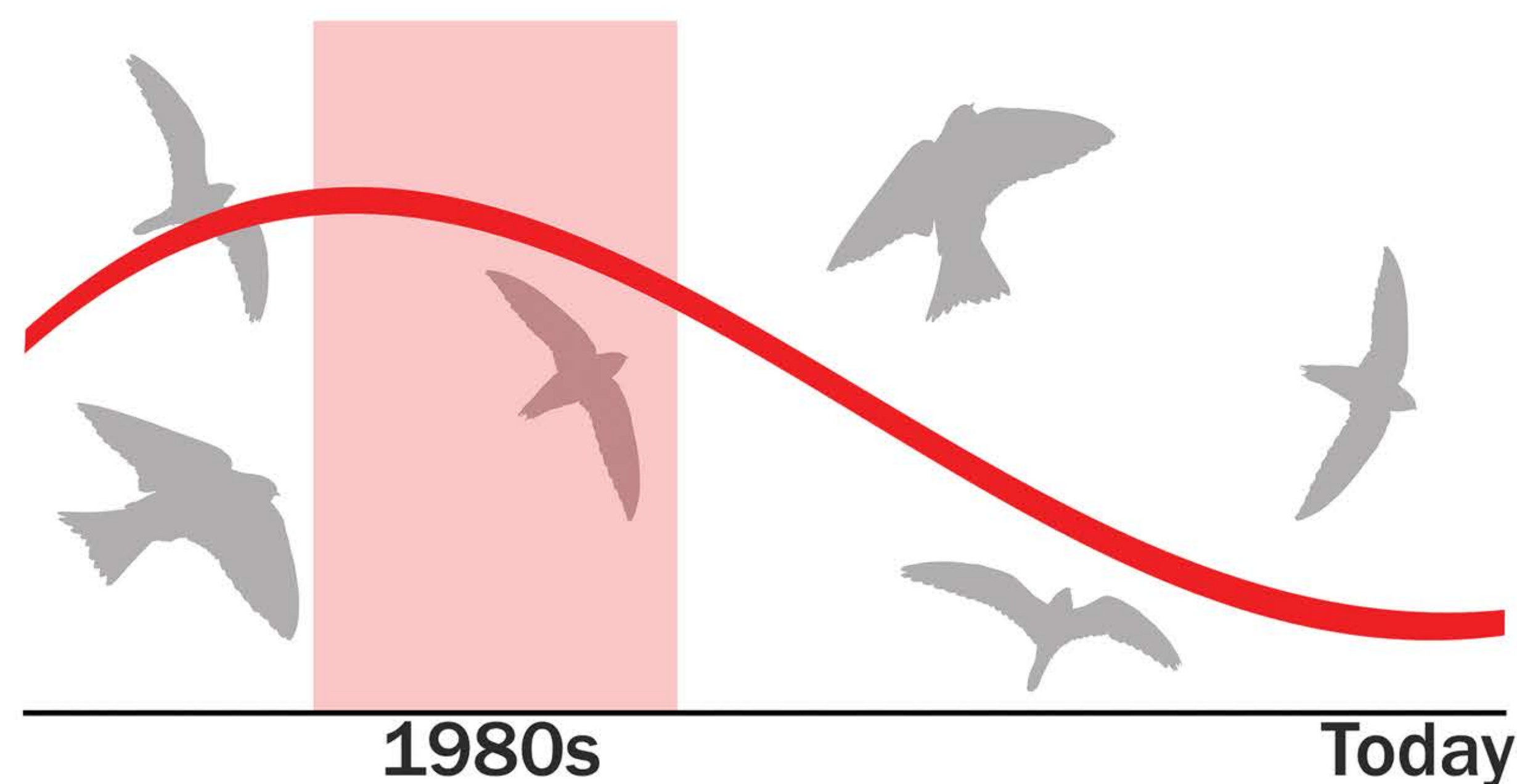
Improved population trajectories for North American swallows, swifts, and nightjars with a hierarchical Bayesian GAM

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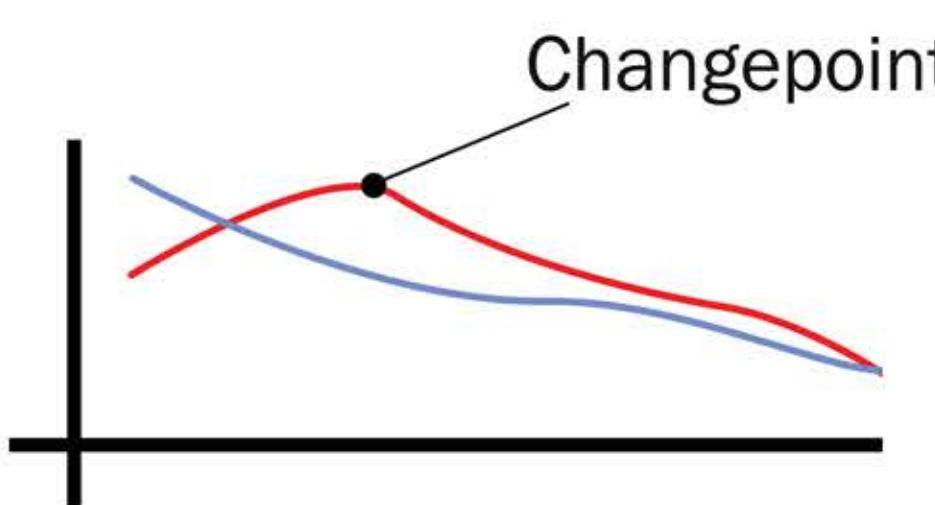
 @bedwards144

The Motivation



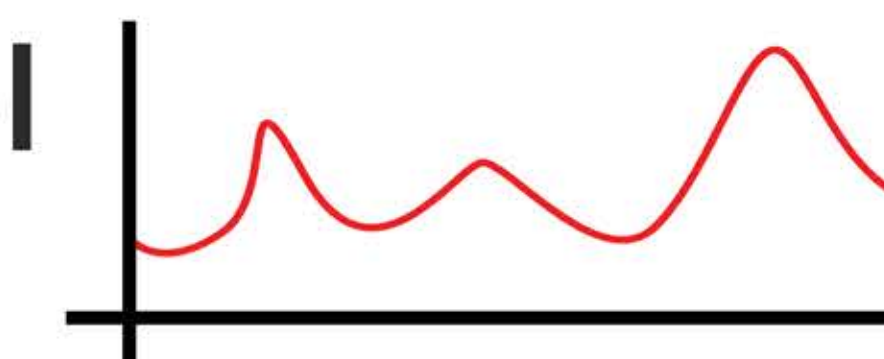
Aerial Insectivores

- A declining family of birds
- Population trends changed for the worse in the 1980s (Smith et al. 2015)
- Trajectories using the standard BBS model do not show the inflection point well



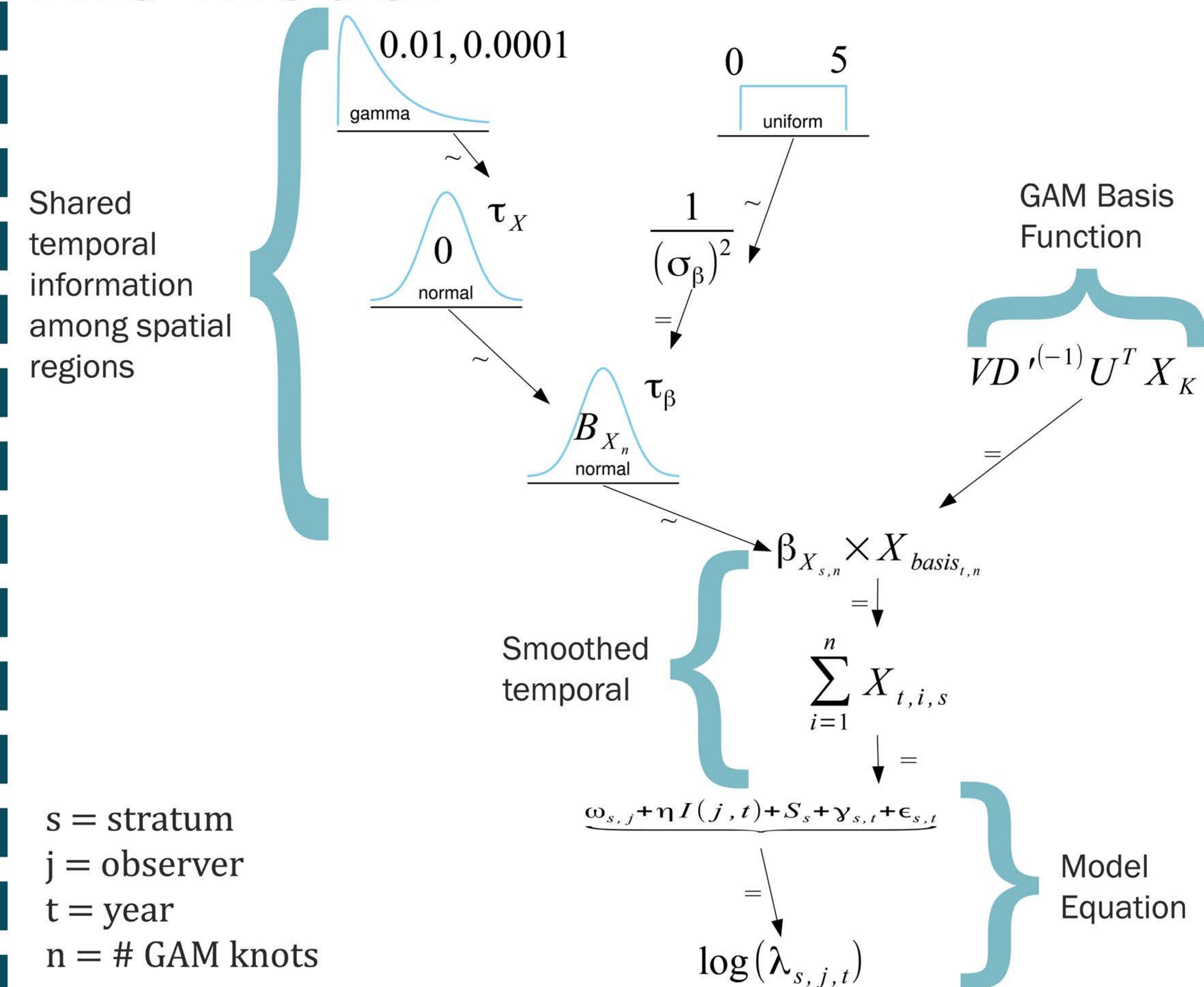
Generalized Additive Model

- Rather than fitting data to a fixed slope, allow for temporal flexibility
- Depend on fitted smooth functions
- Information on the shape of the population trajectory can be shared among even the most data-sparse regions (mixed model)

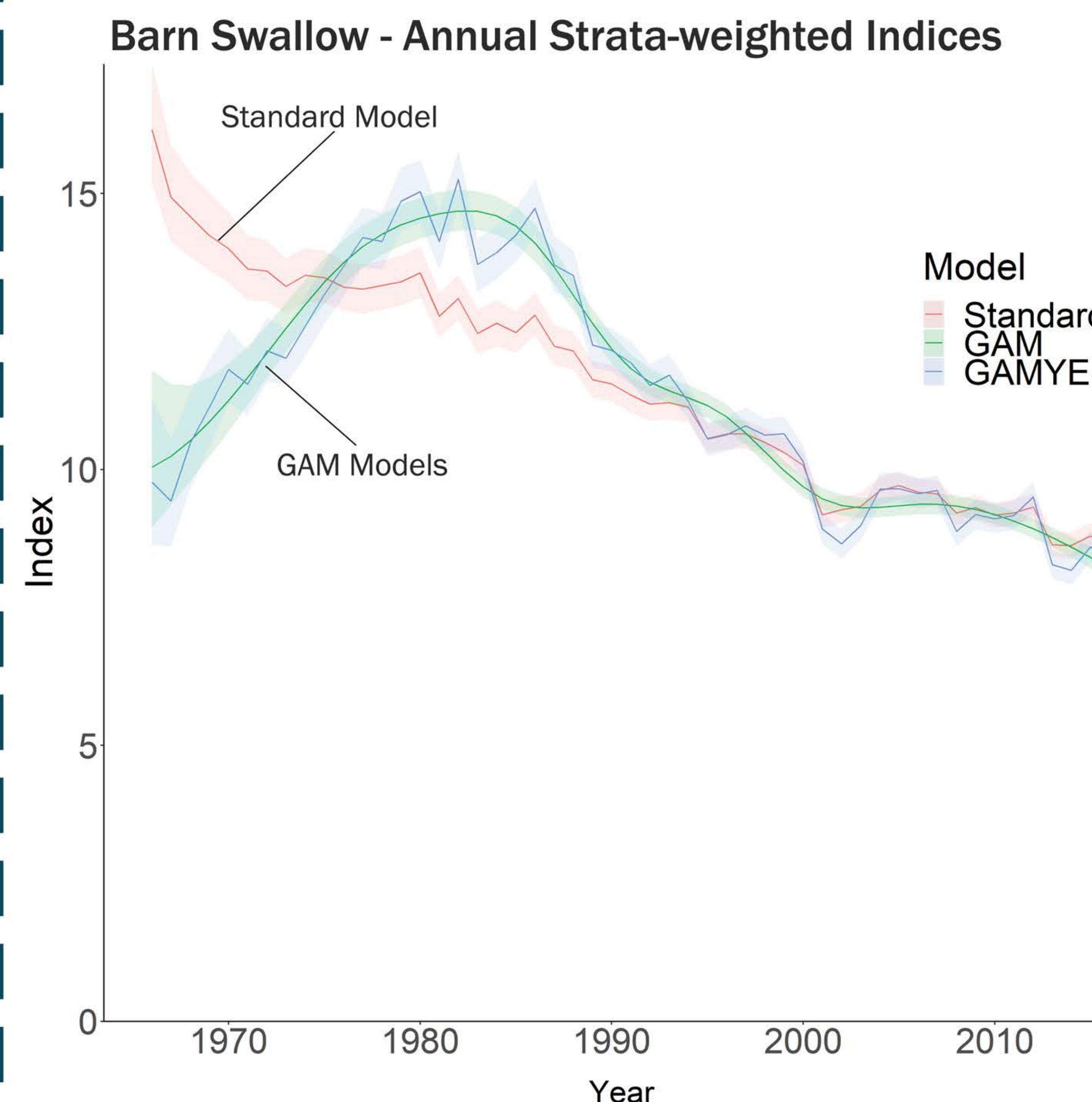


Can a hierarchical Bayesian GAM be used to improve inferences about population trajectories of aerial insectivores?

The Model



The Results



Population Change Across Models

	Standard	GAM	GAMYE
Overall Pop. Change 1966 - 2016	-47.35 %	-18.44 %	-14.96 %
Changepoint Pop. Change 1983 - 2016	-31.65 %	-44.97 %	-40.16 %

Scaled Leave-one-year-out Cross Validation Statistic



Mean Pairwise Differences of Leave-One-Year-Out Cross Validation Statistic

