

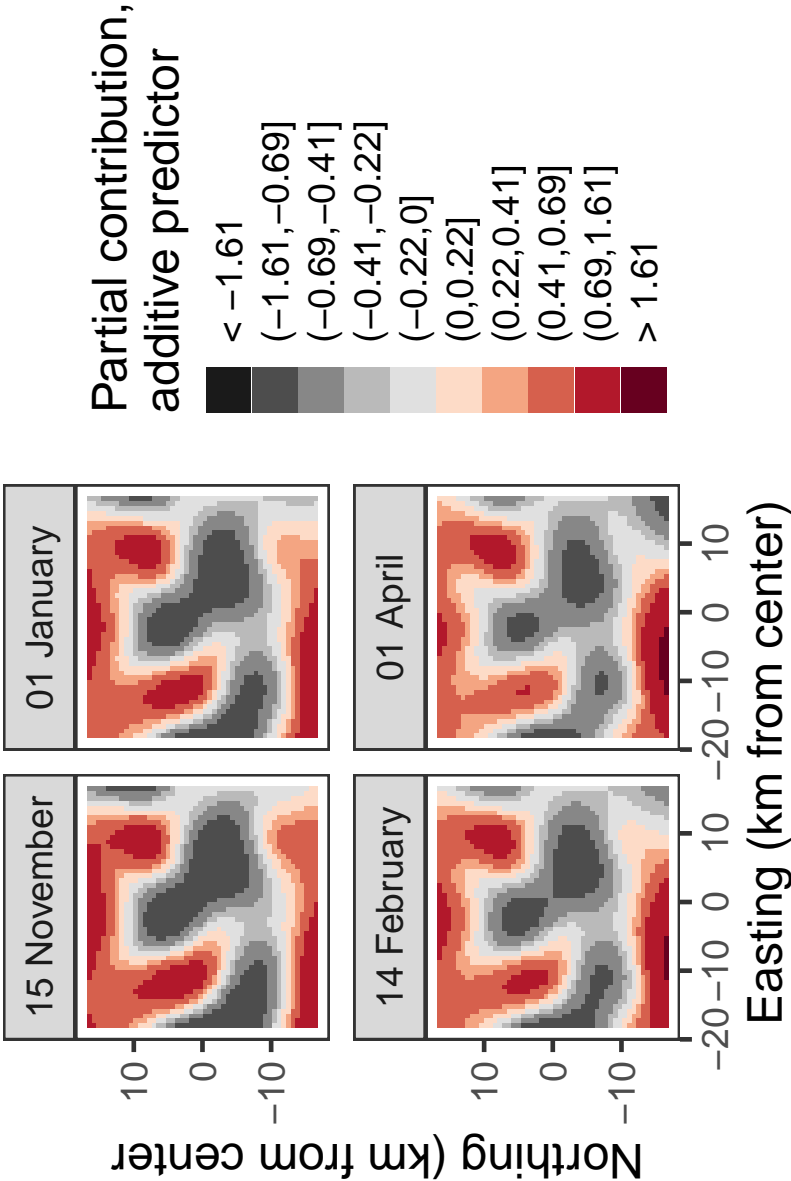
### S.3 Stable covariate effects

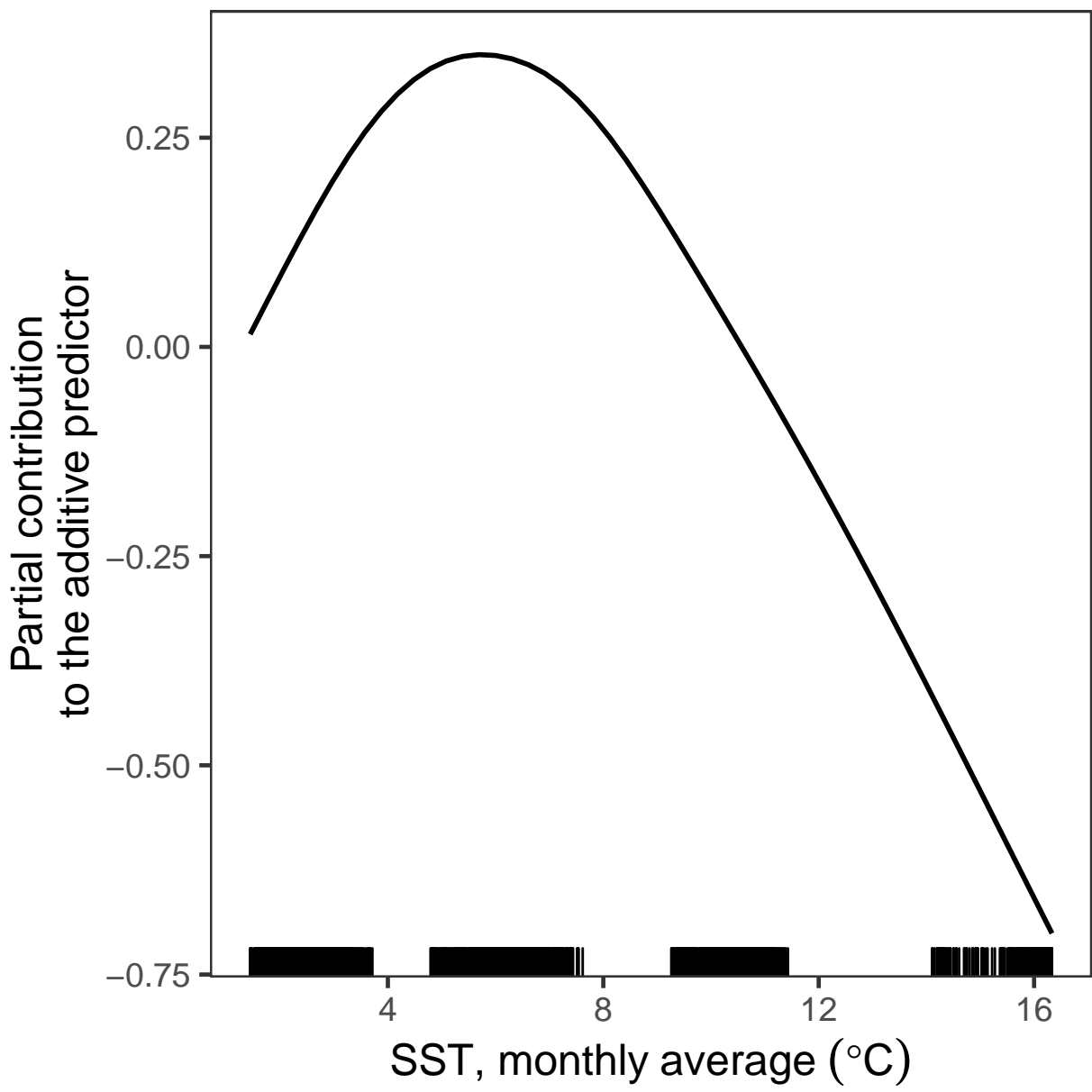
Common Eider . . . . .	2
Occupancy . . . . .	2
Conditional mean . . . . .	11
Conditional overdispersion . . . . .	17
Black, Surf, and White-winged Scoter . . . . .	23
Occupancy . . . . .	23
Conditional mean . . . . .	34
Conditional overdispersion . . . . .	39
Long-tailed Duck . . . . .	45
Occupancy . . . . .	45
Conditional mean . . . . .	54
Conditional overdispersion . . . . .	57

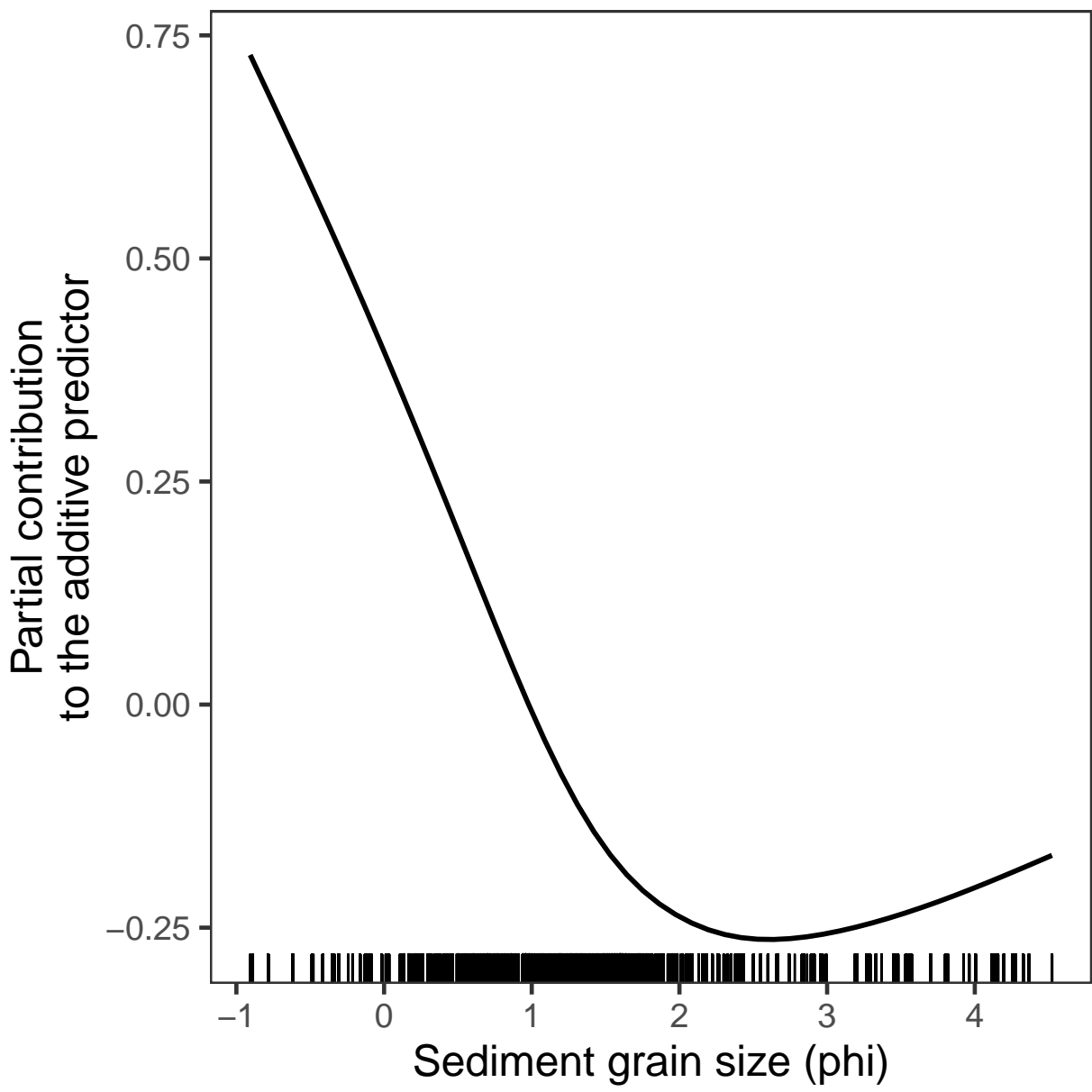
Here we provide marginal functional plots of the relationships between stable covariates and the occupancy, conditional mean abundance, and conditional overdispersion of abundance of sea ducks in Nantucket Sound, Massachusetts, USA. By ‘marginal’ we mean holding all other variables at their mean or reference values. Covariate plots are ordered roughly in descending order of the magnitude of their influence on the additive predictor in each model (or model parameter for count models). Vertical lines along the  $x$ -axis (i.e., rug plots) indicate observed covariate values. Covariates (and any abbreviations) are defined in detail in Table 1 in the manuscript; only effects selected to be stable are depicted (see Supplemental Information S1).

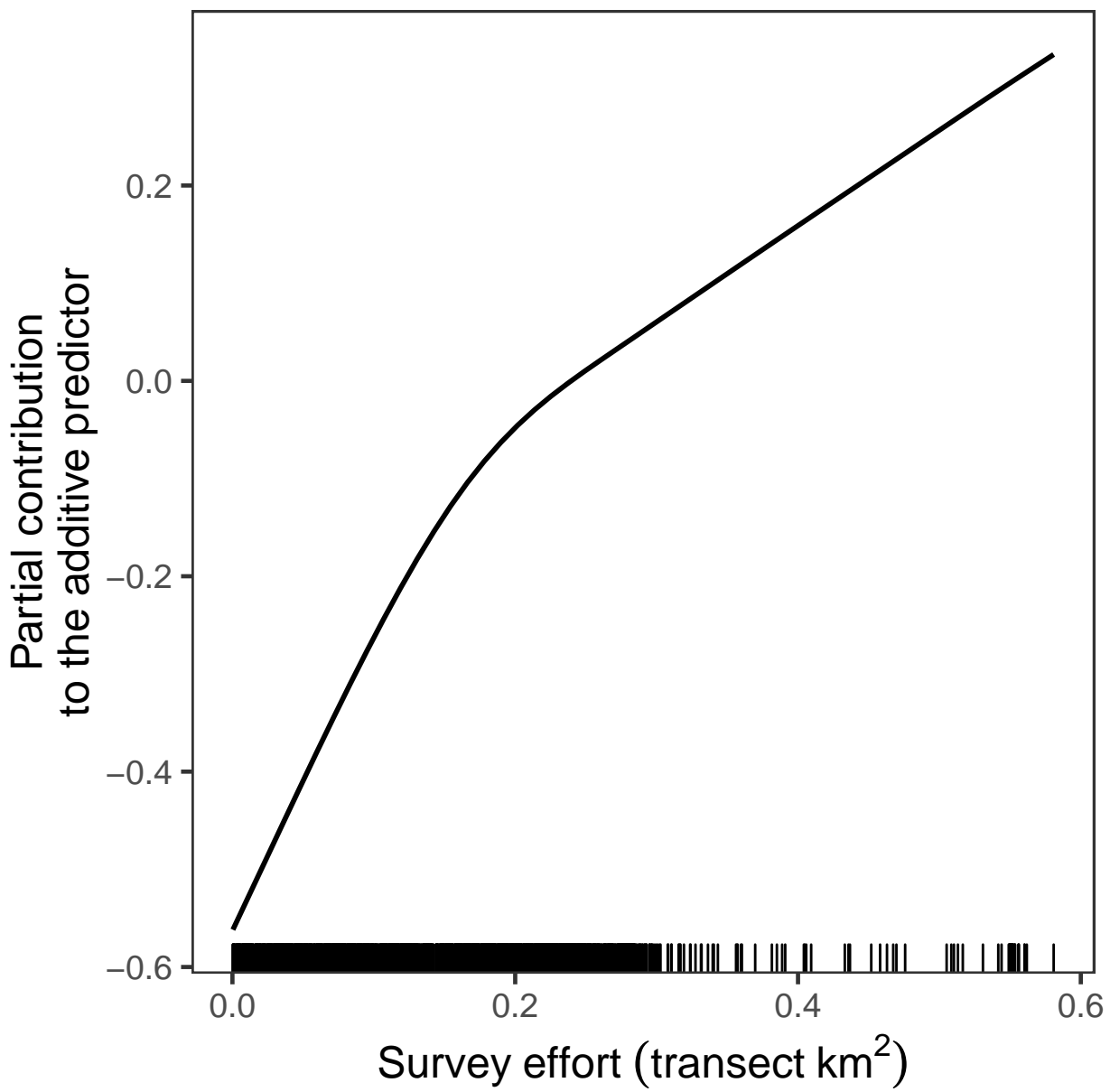
Common Eider

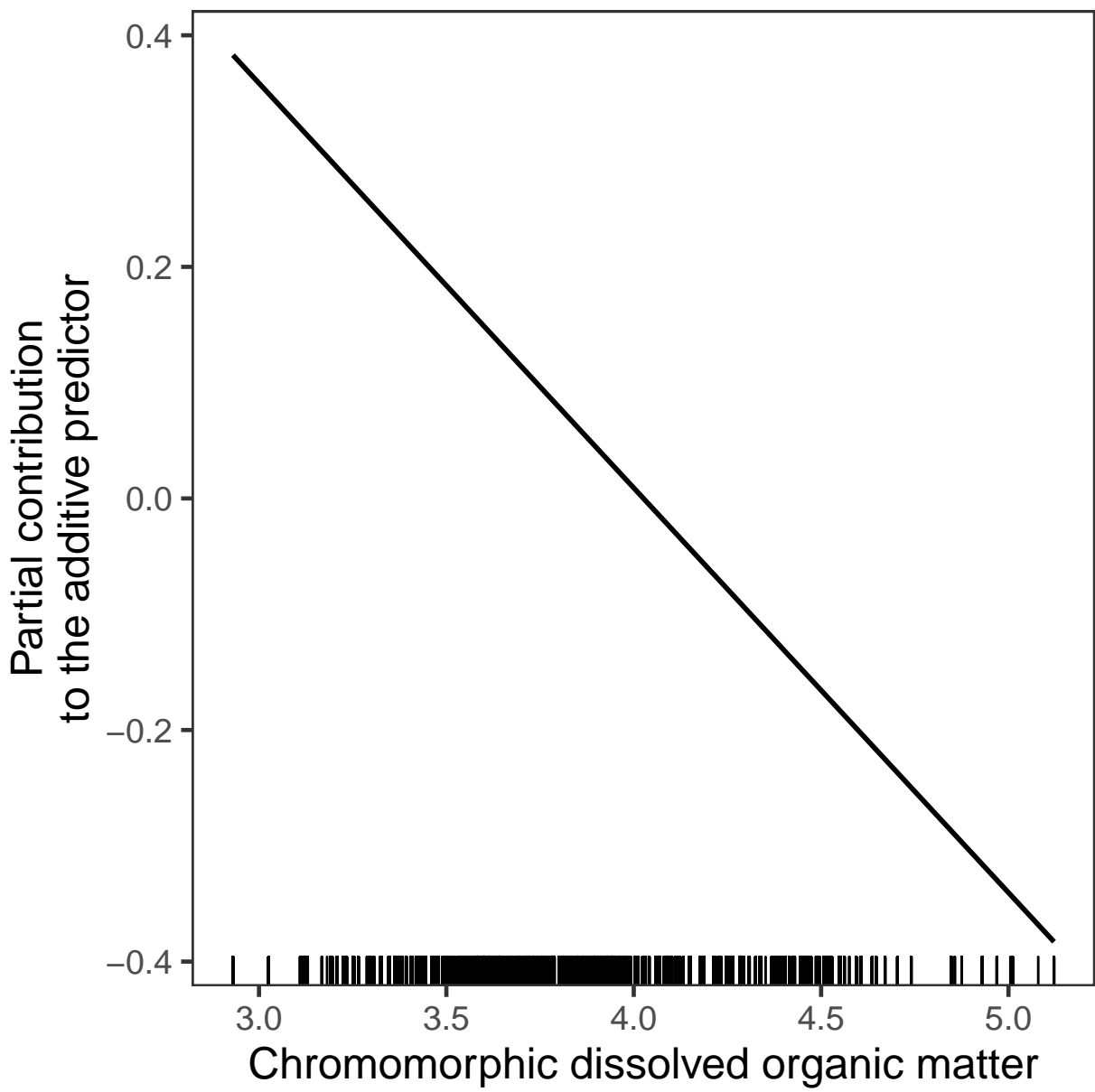
Occupancy

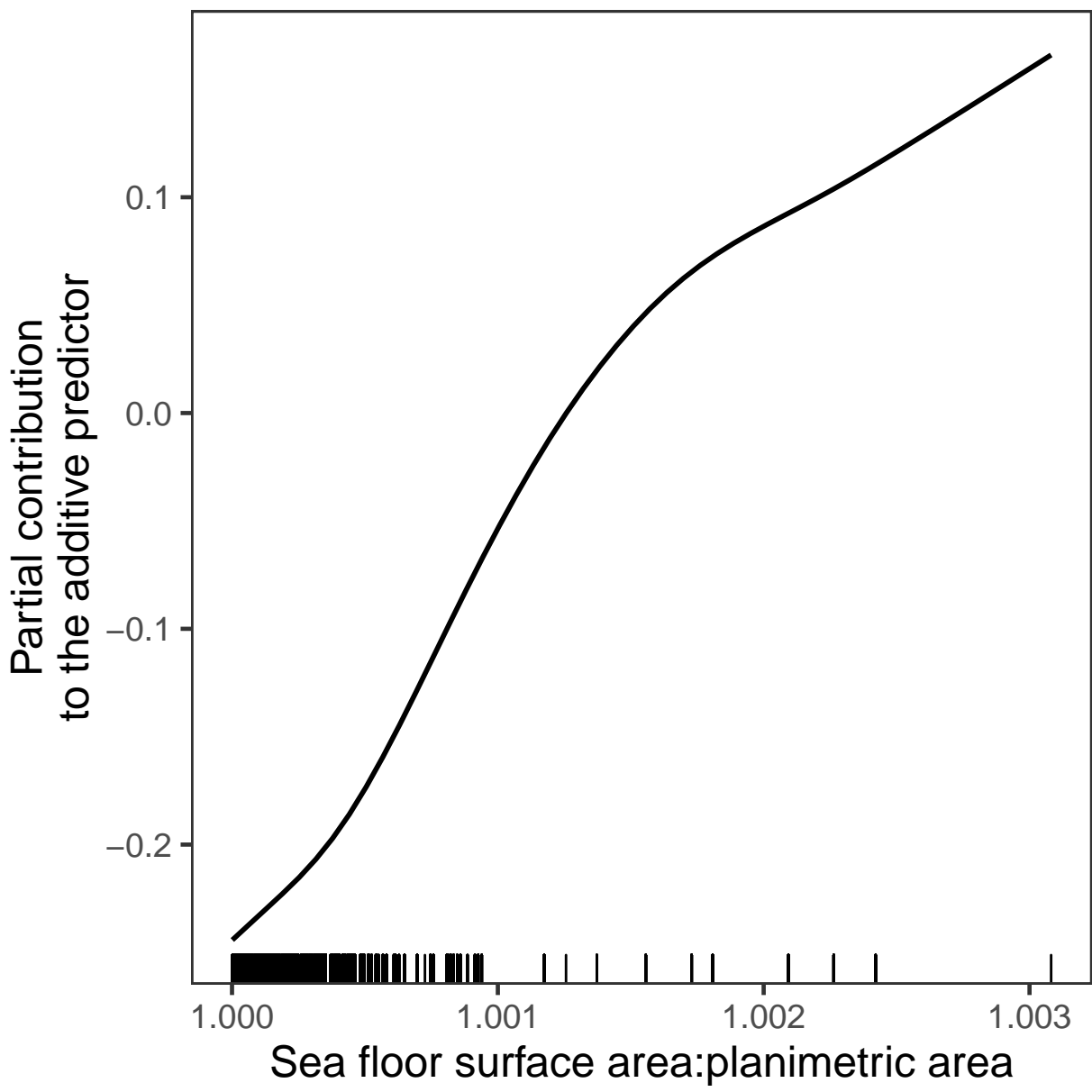


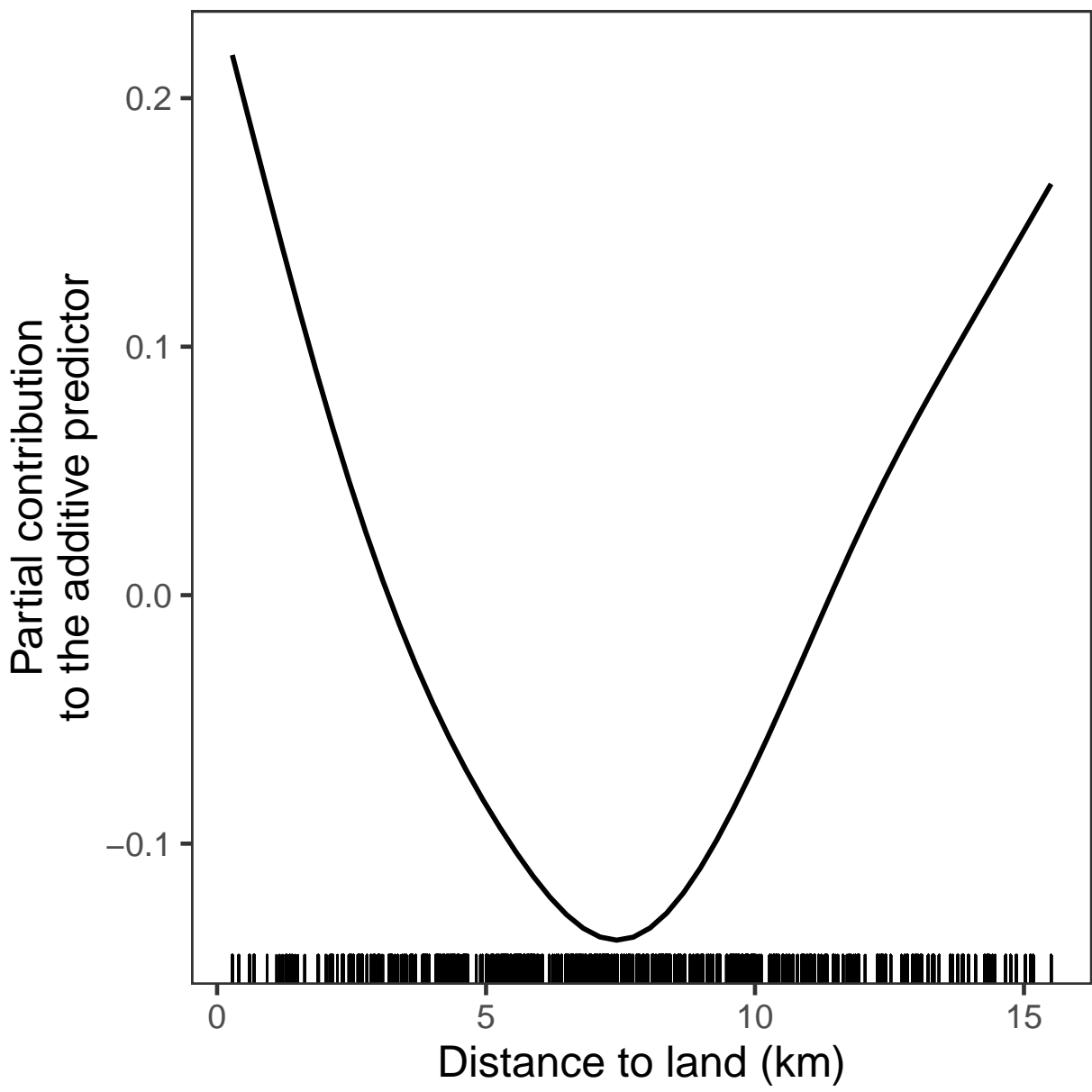




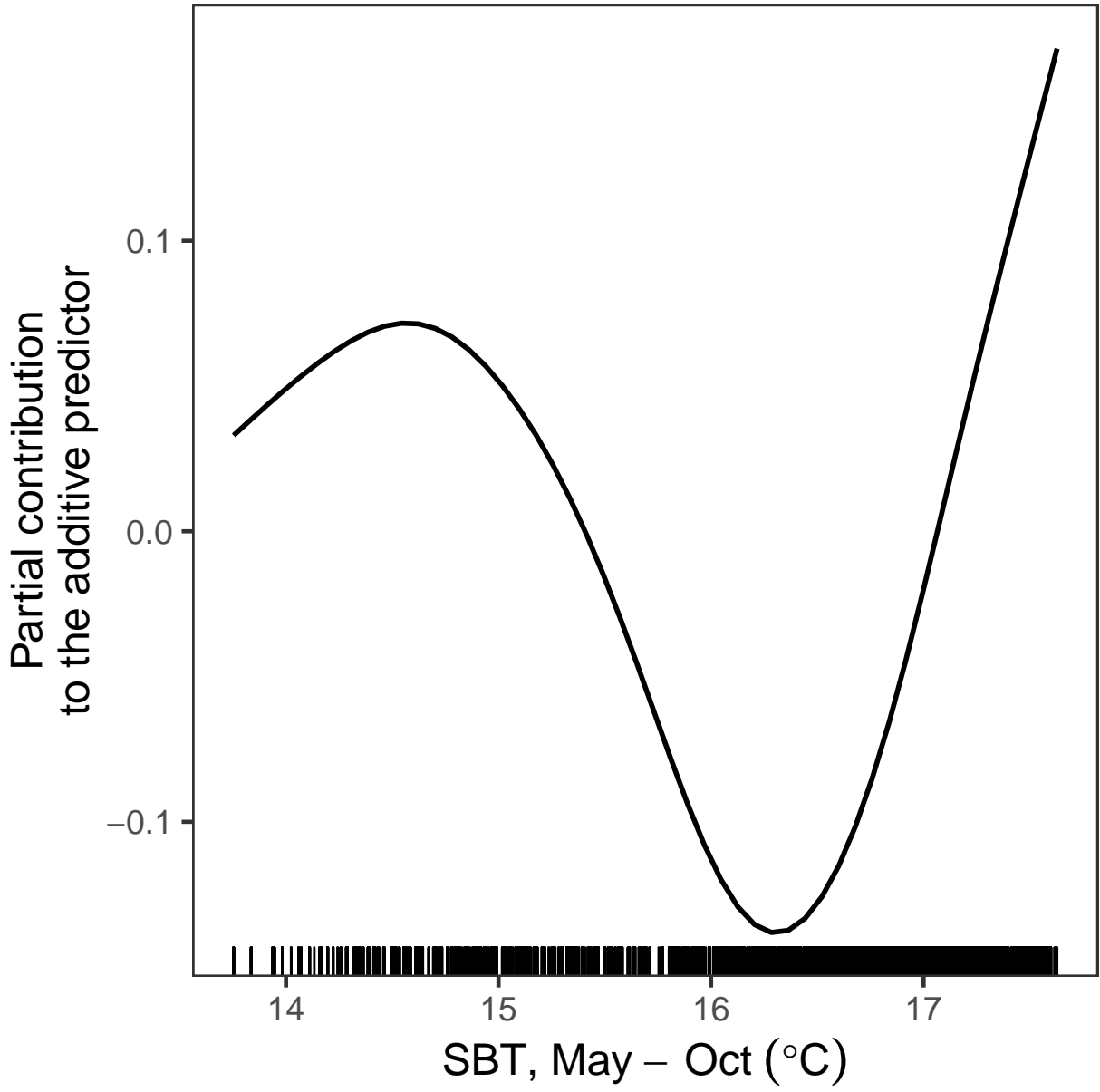


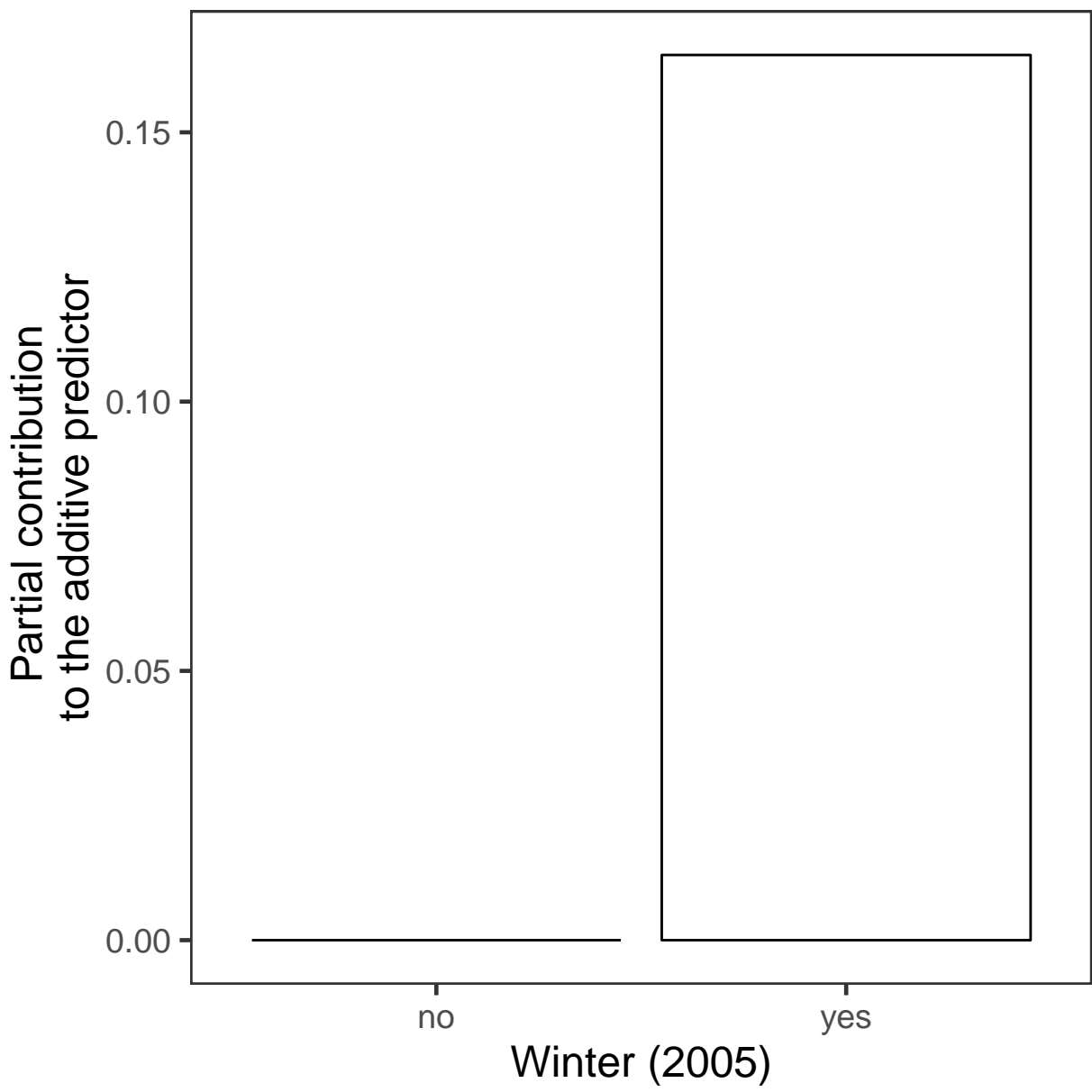




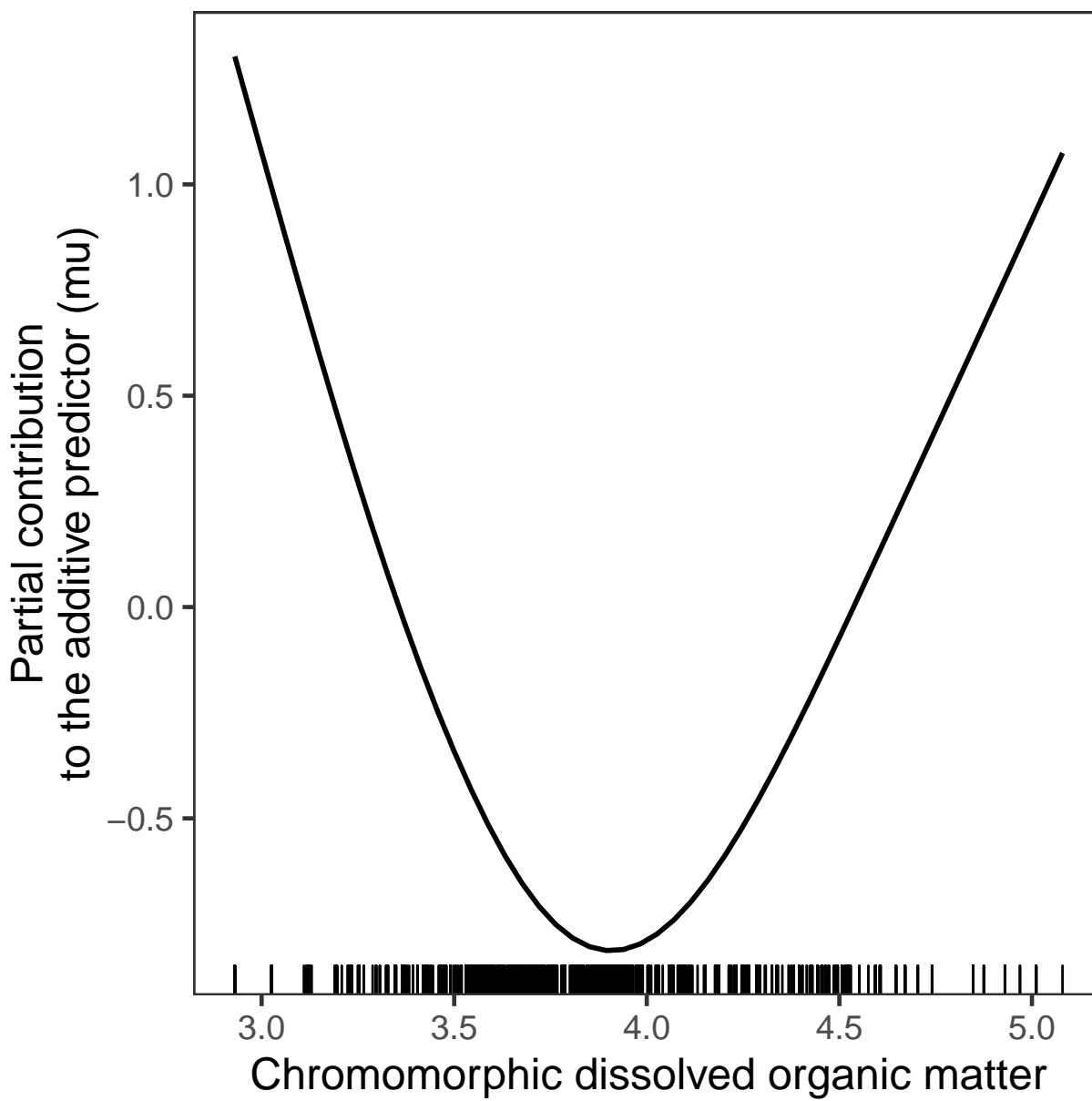


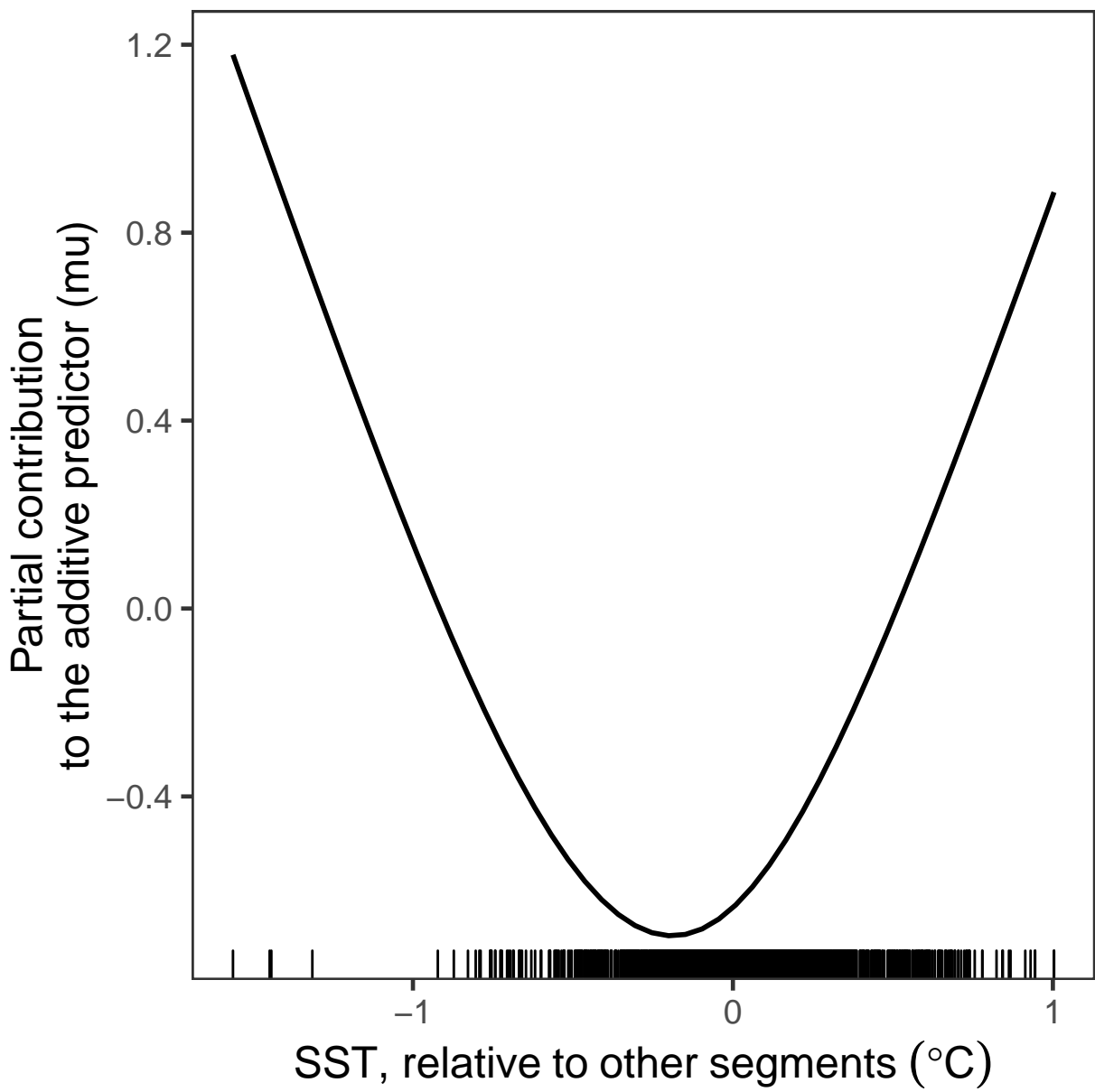


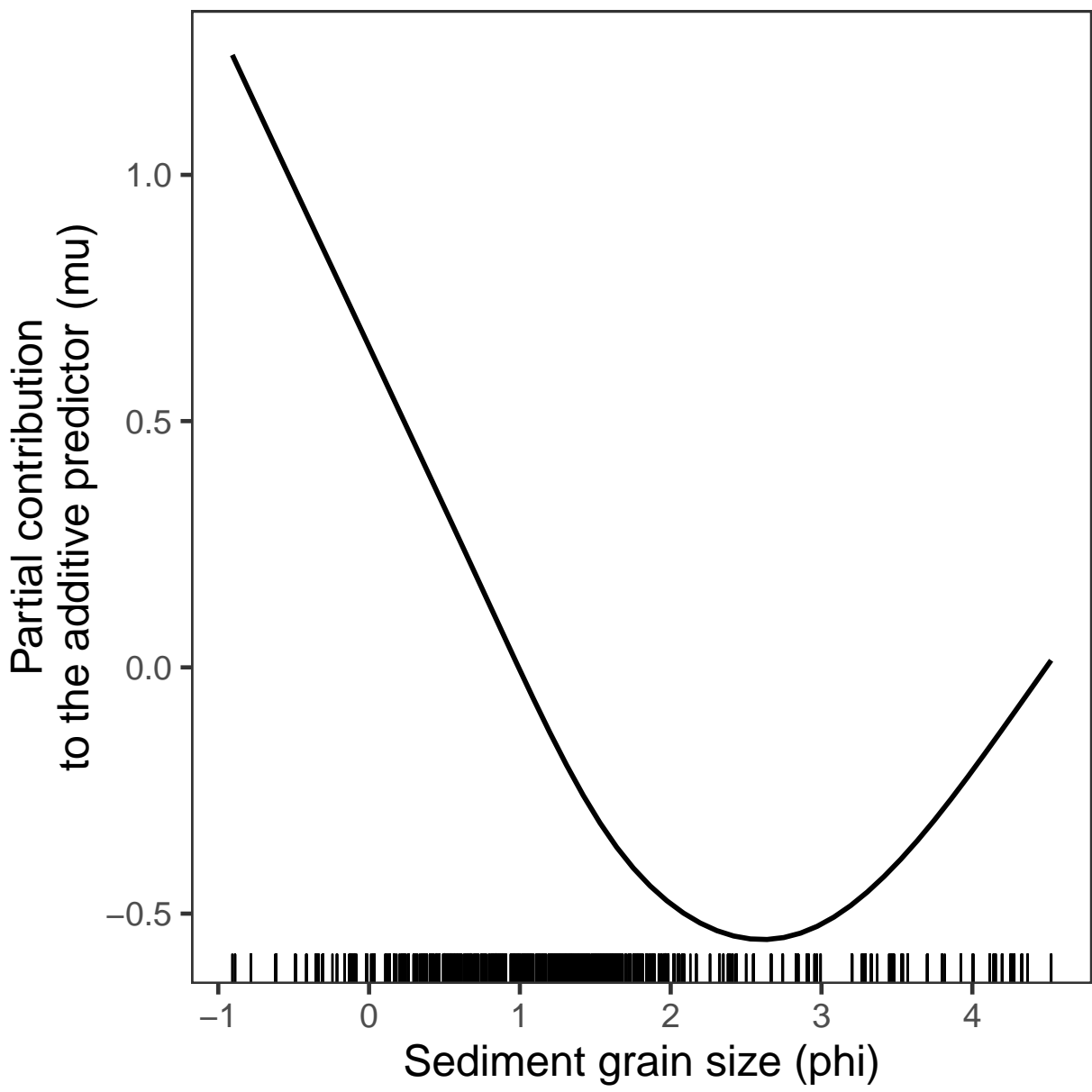


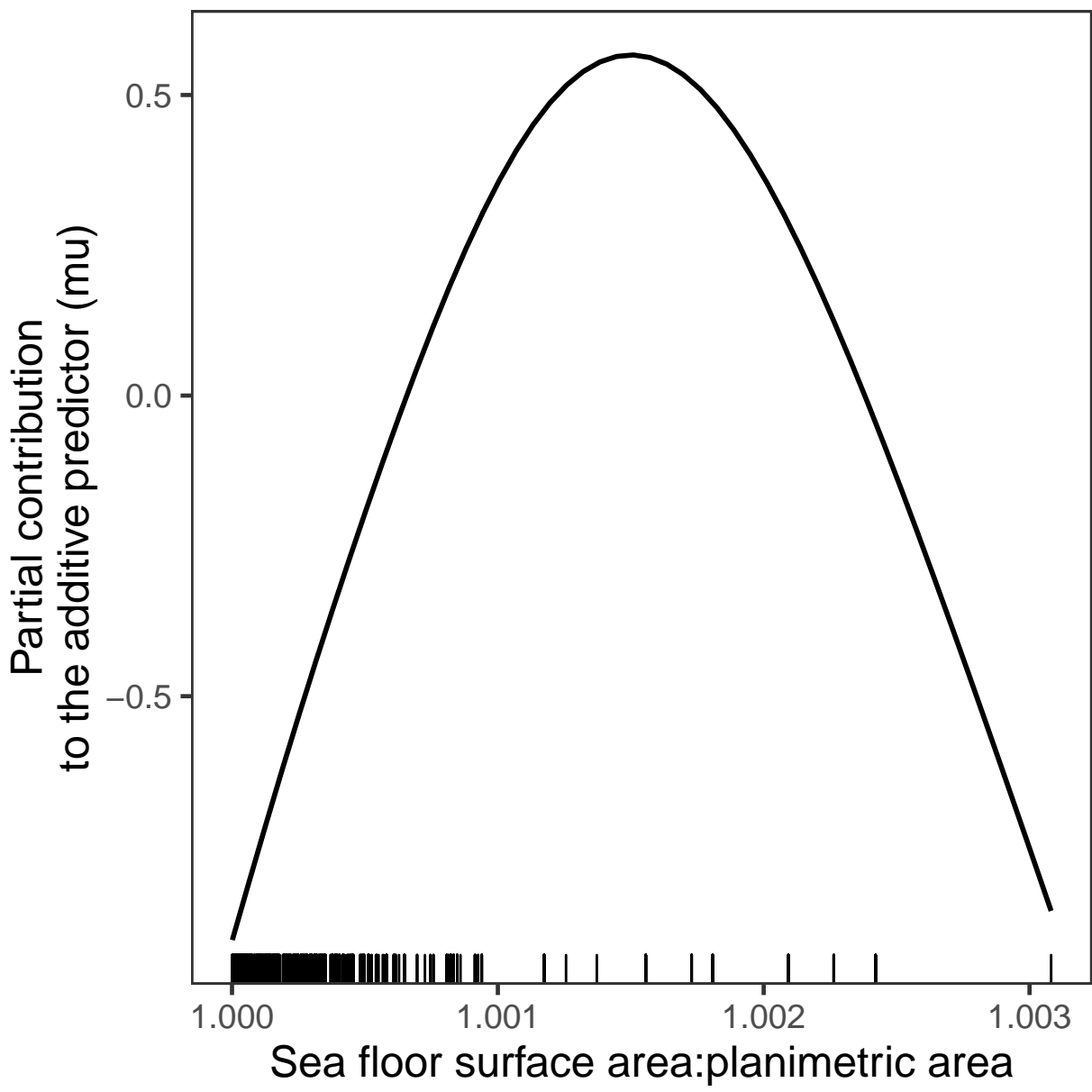


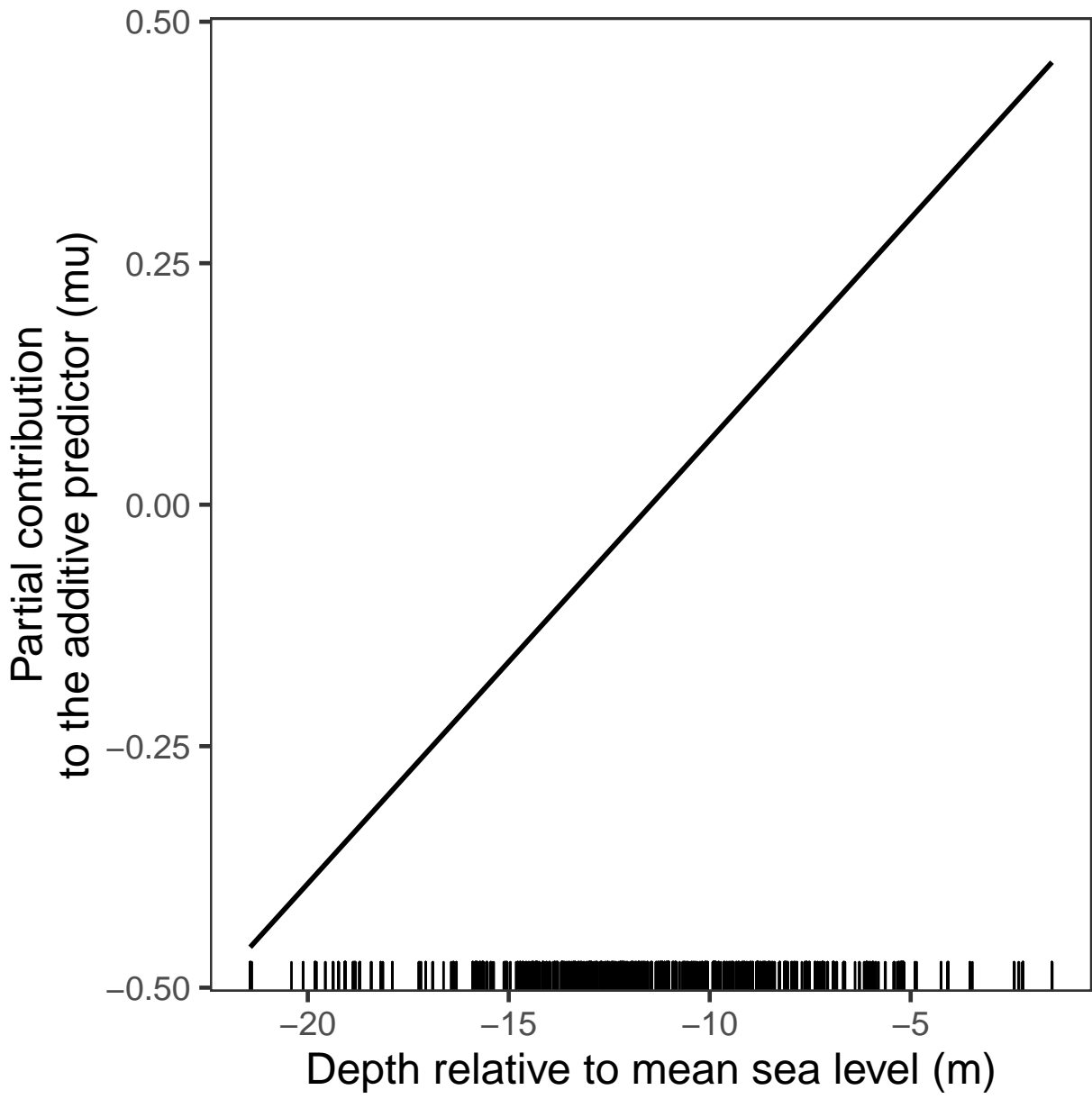
Conditional mean

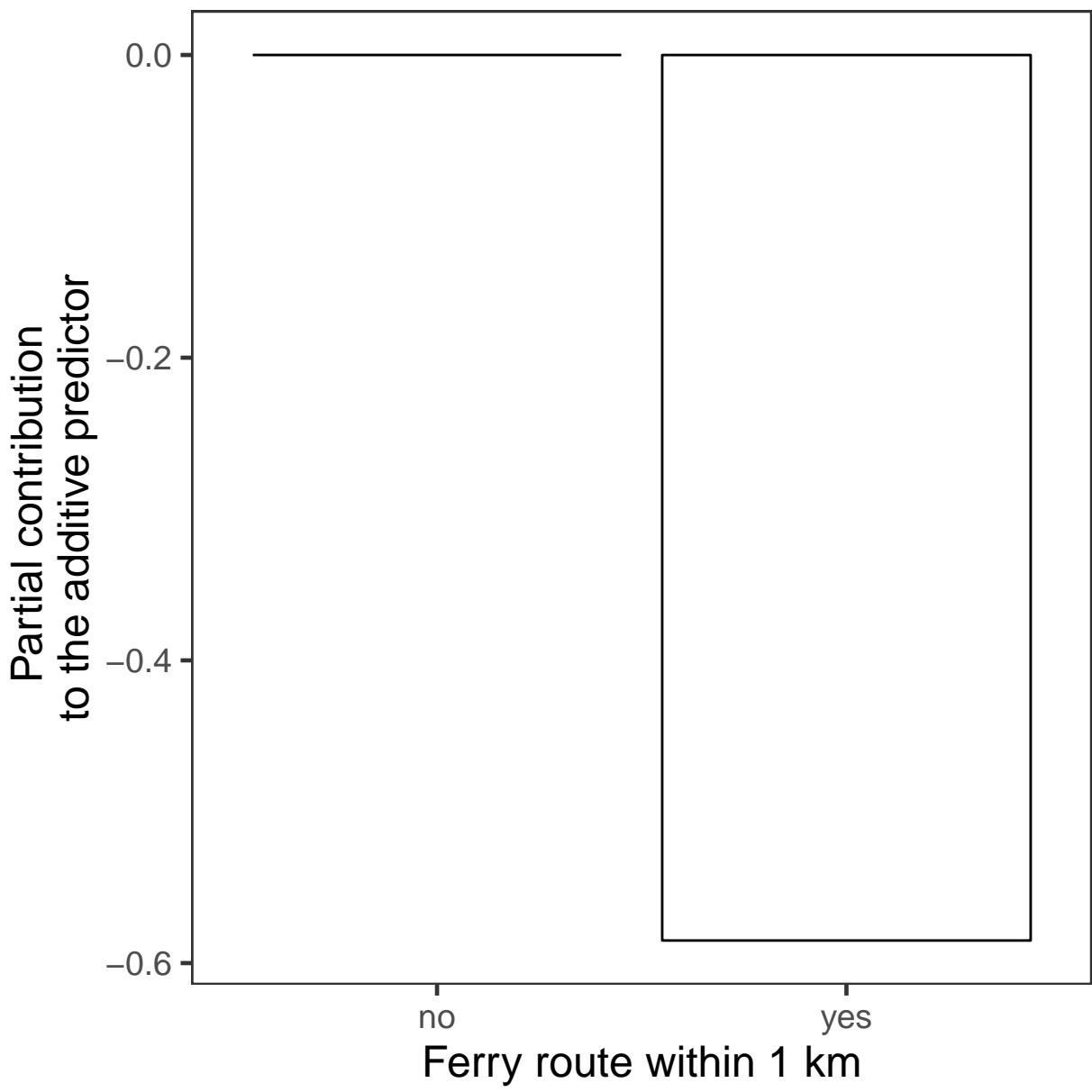






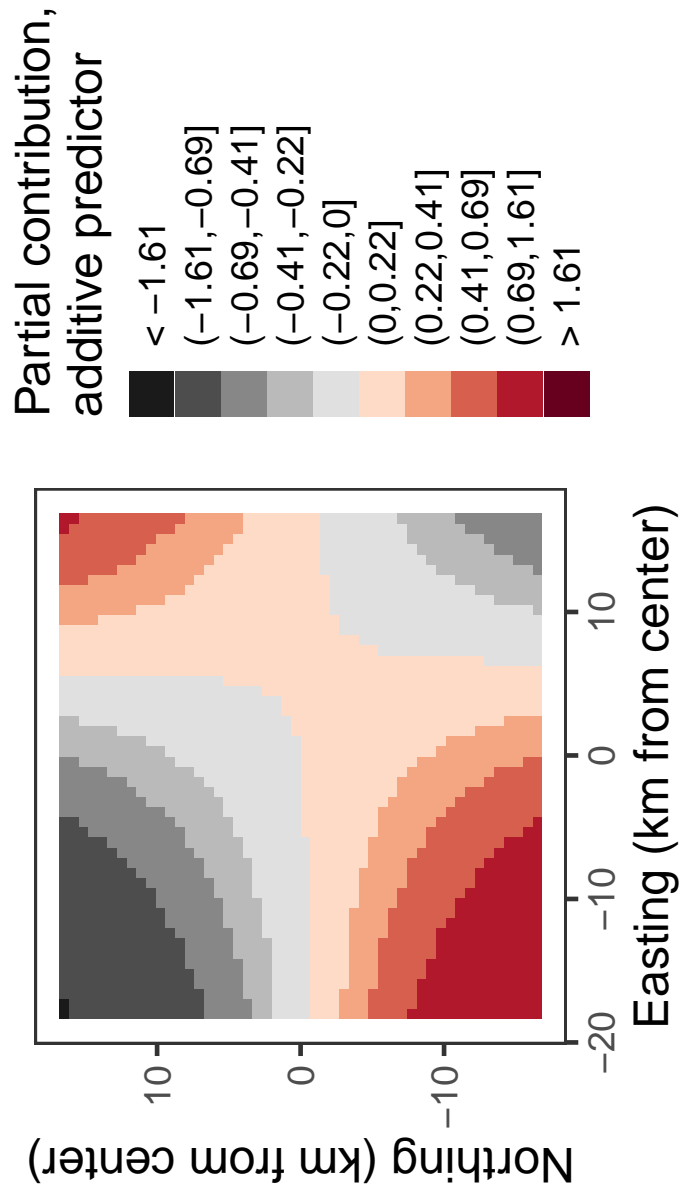


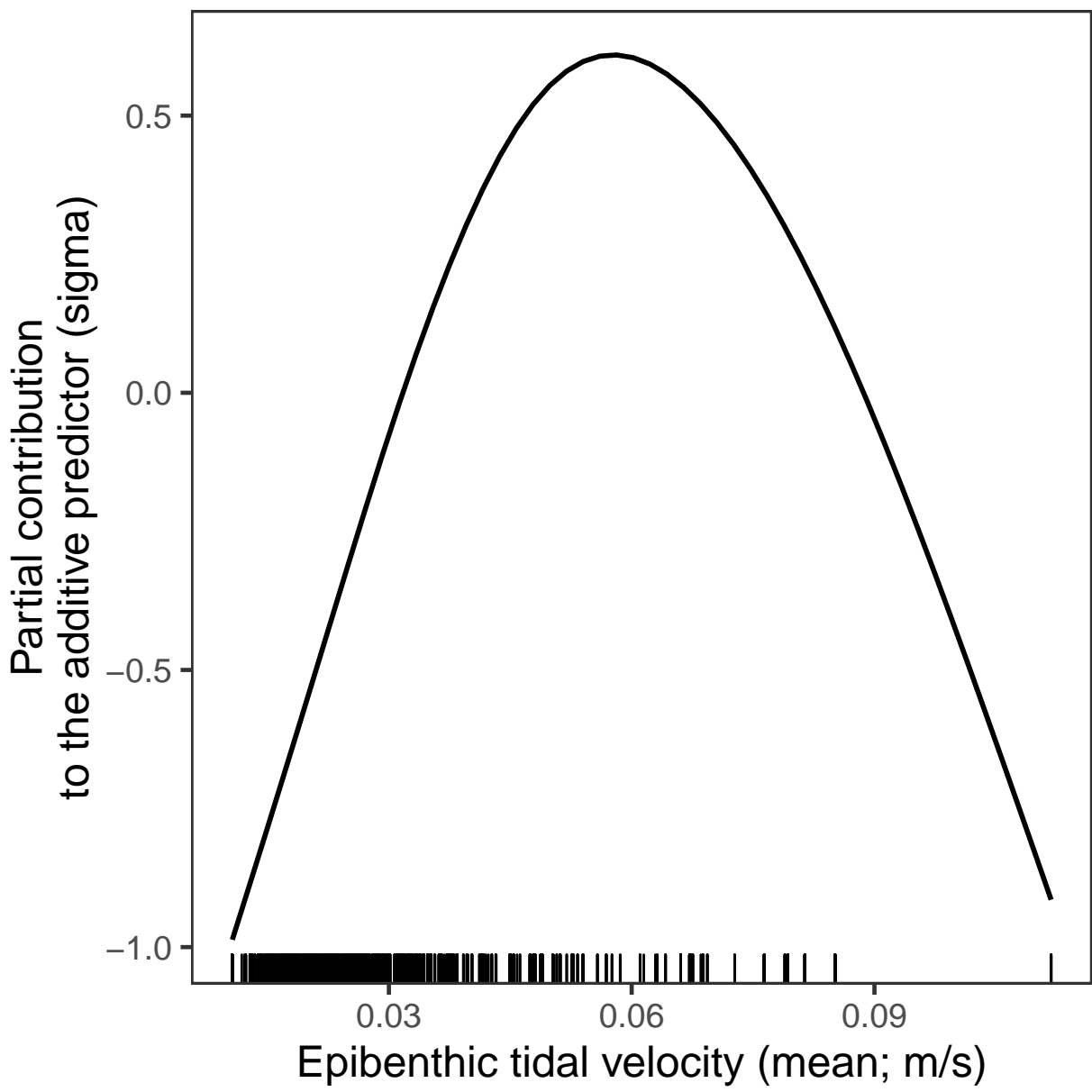


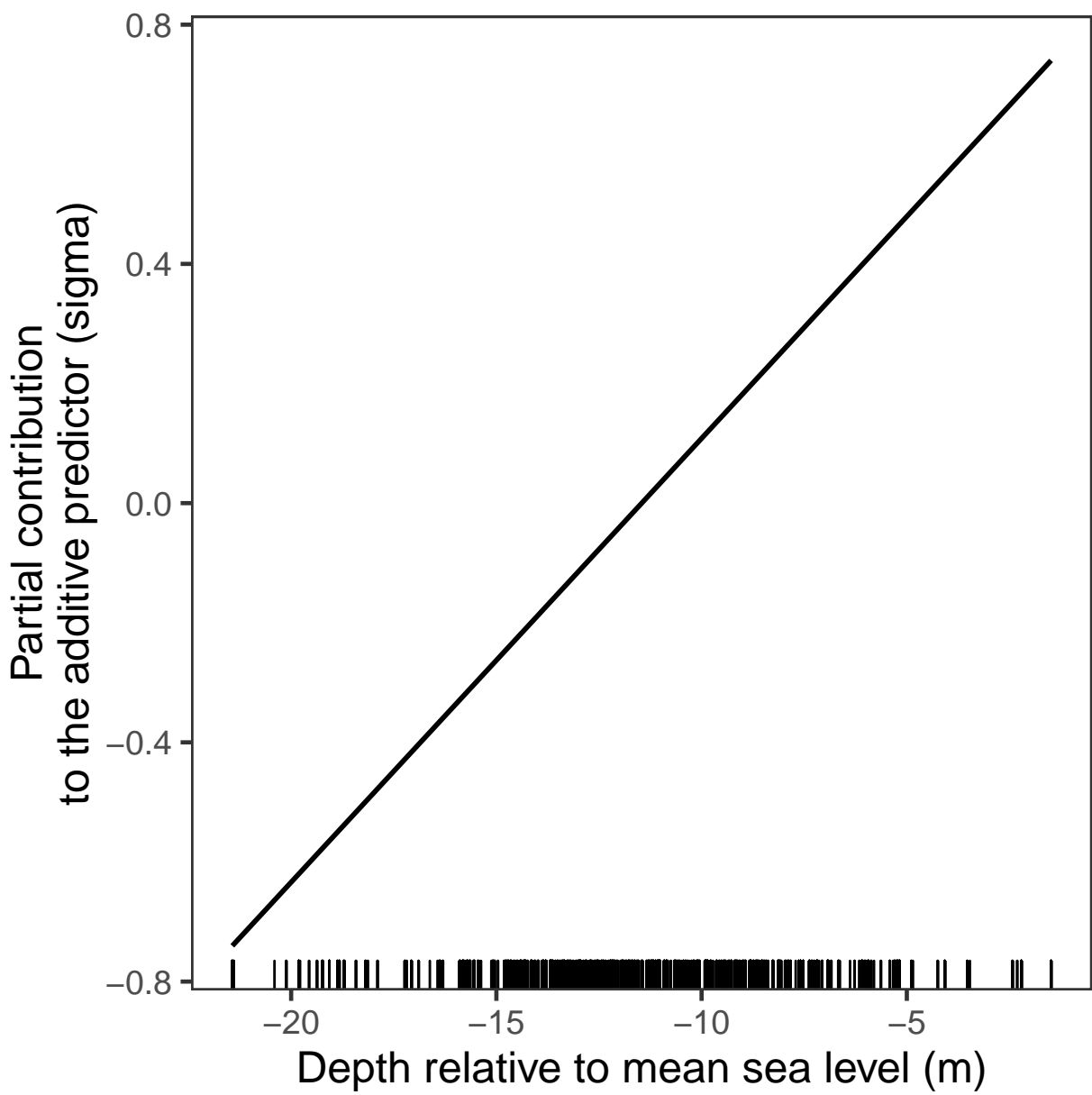


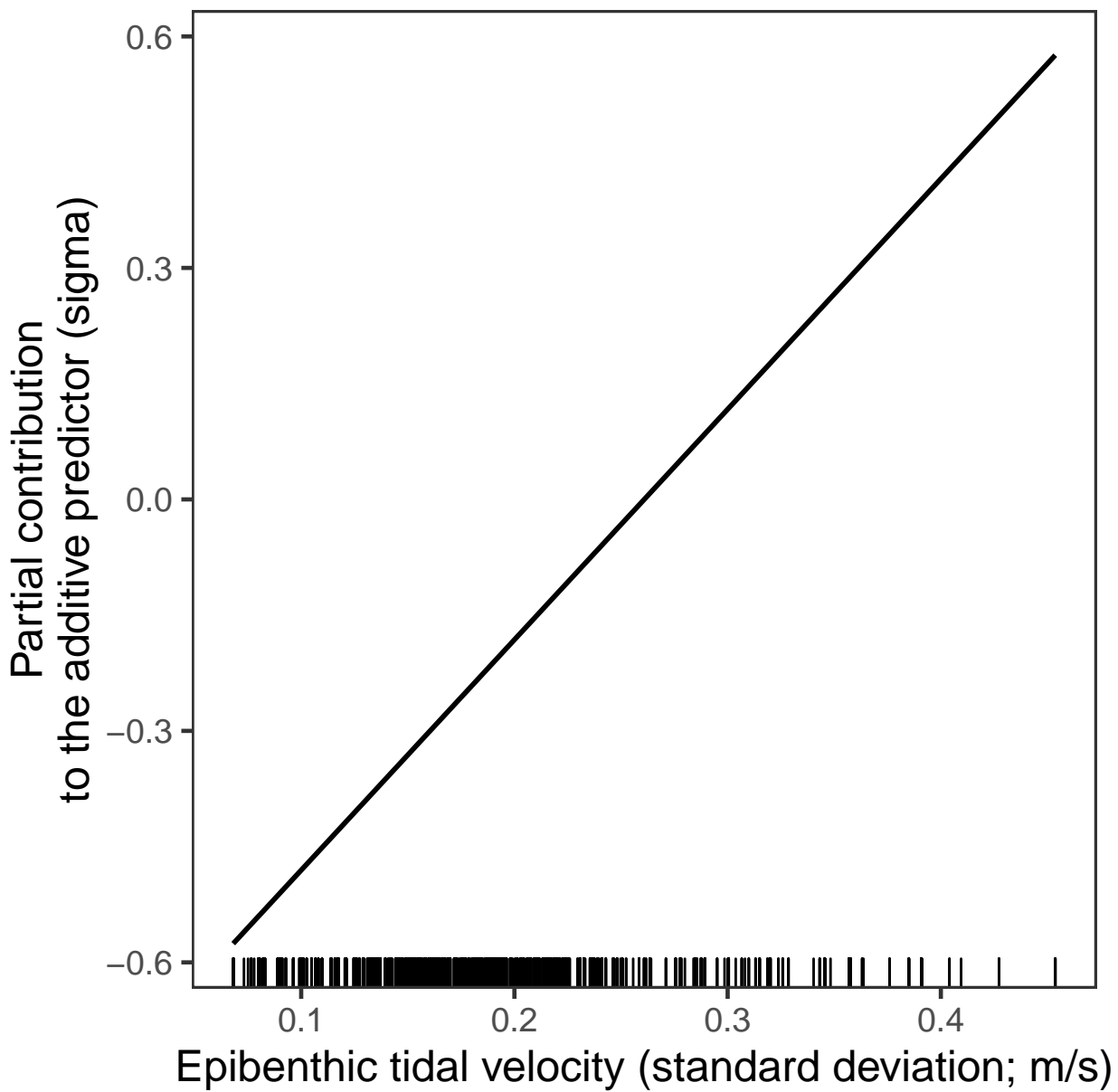


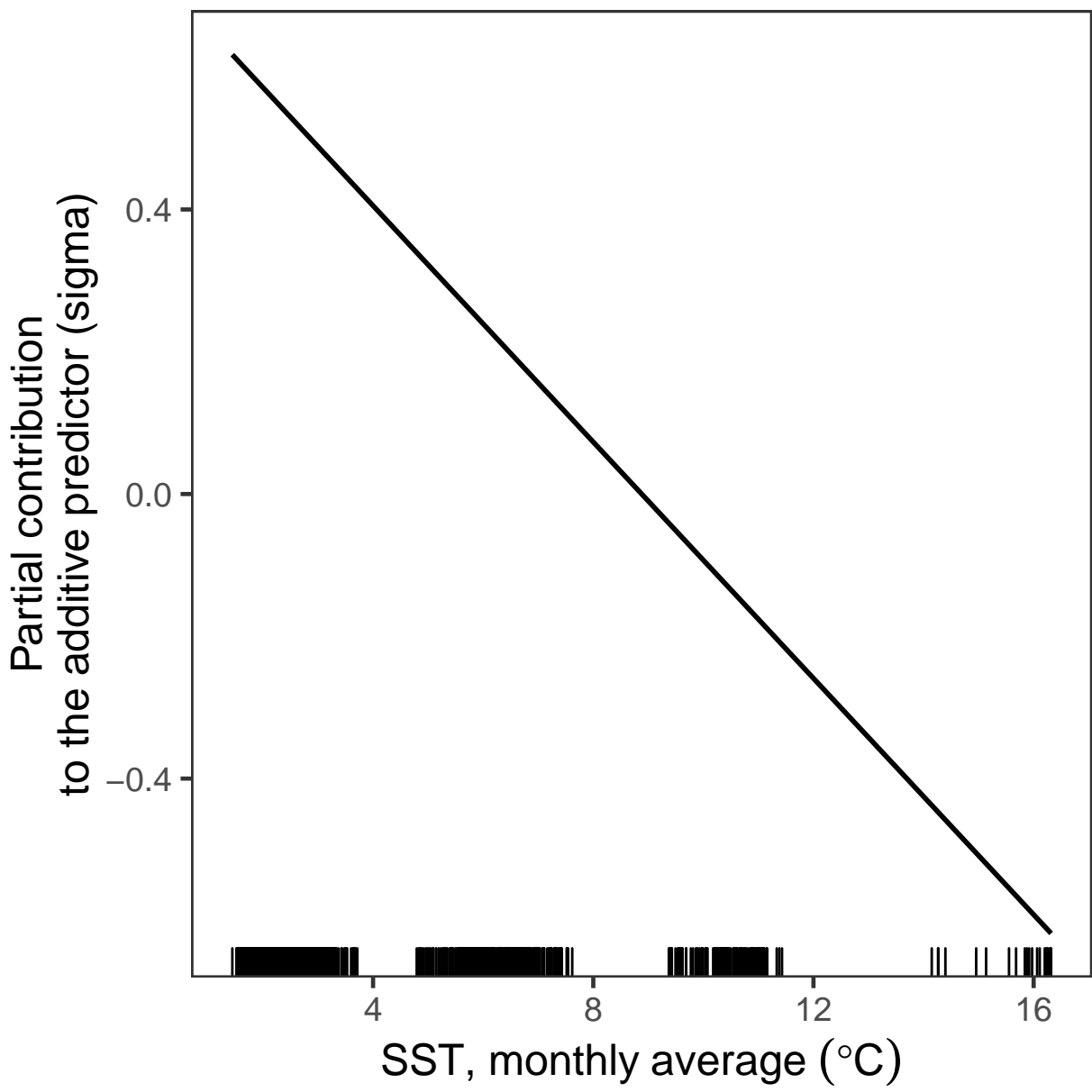
Conditional overdispersion

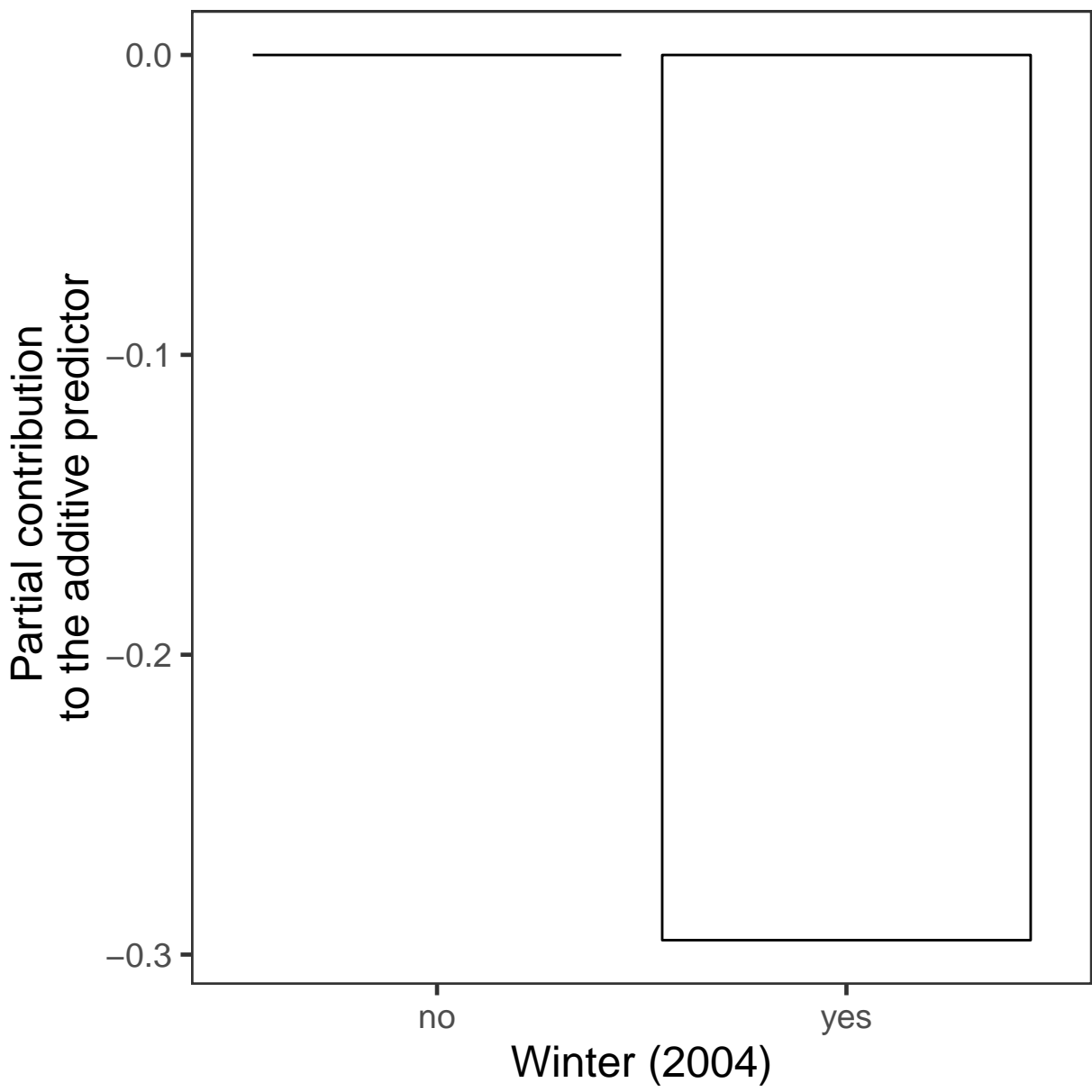






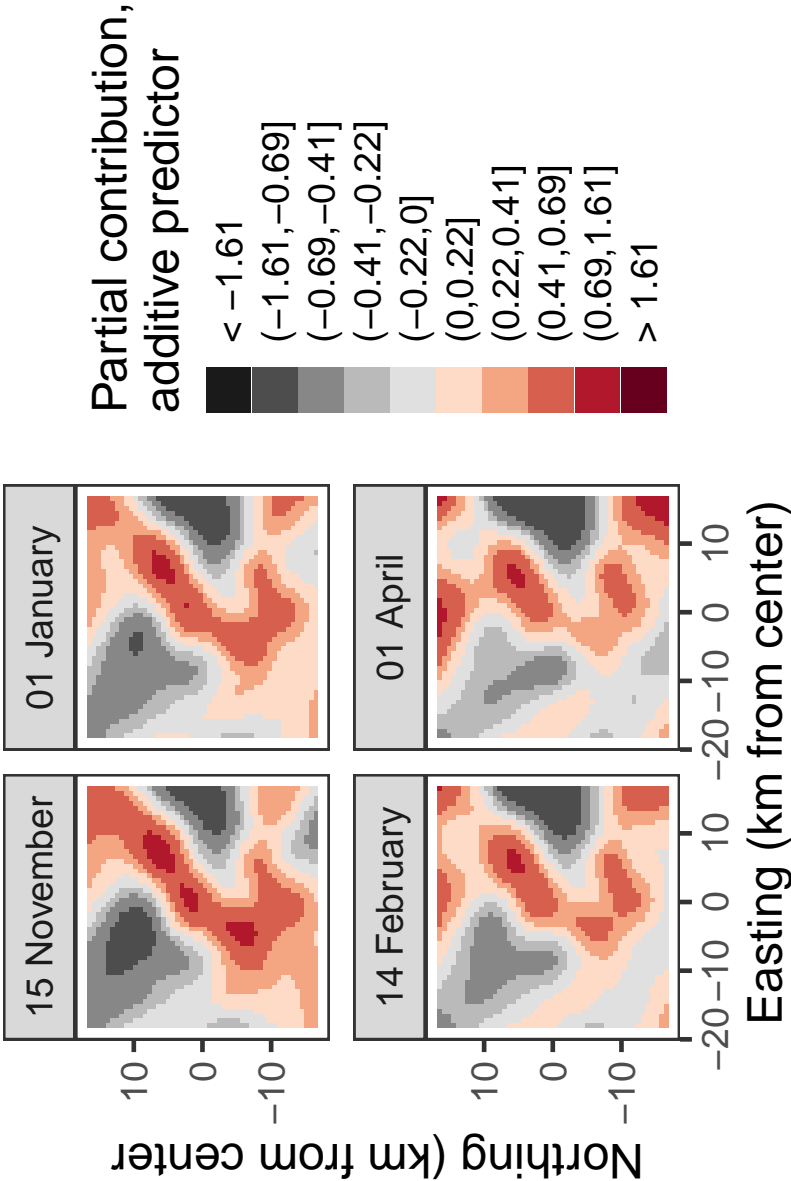


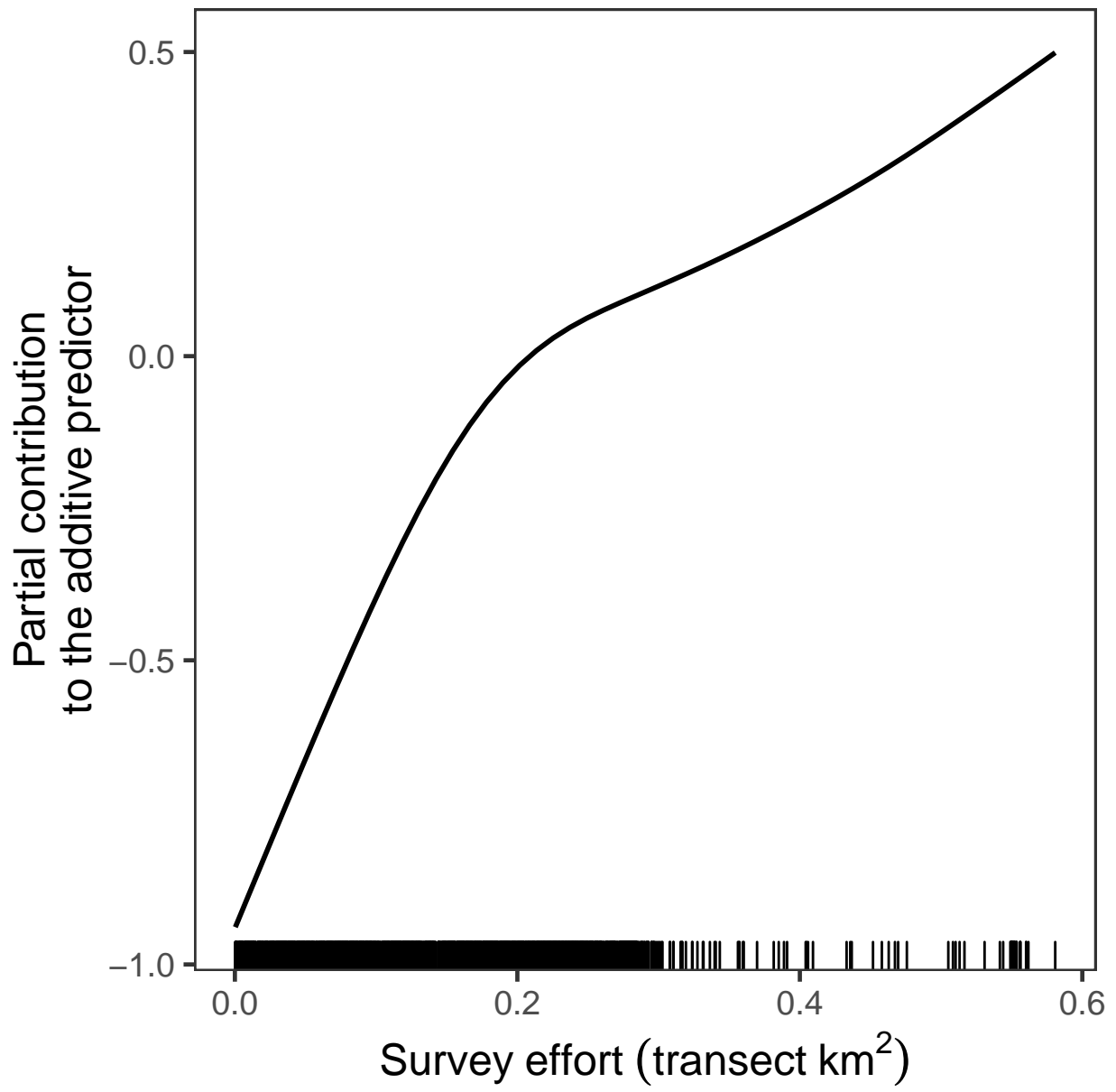




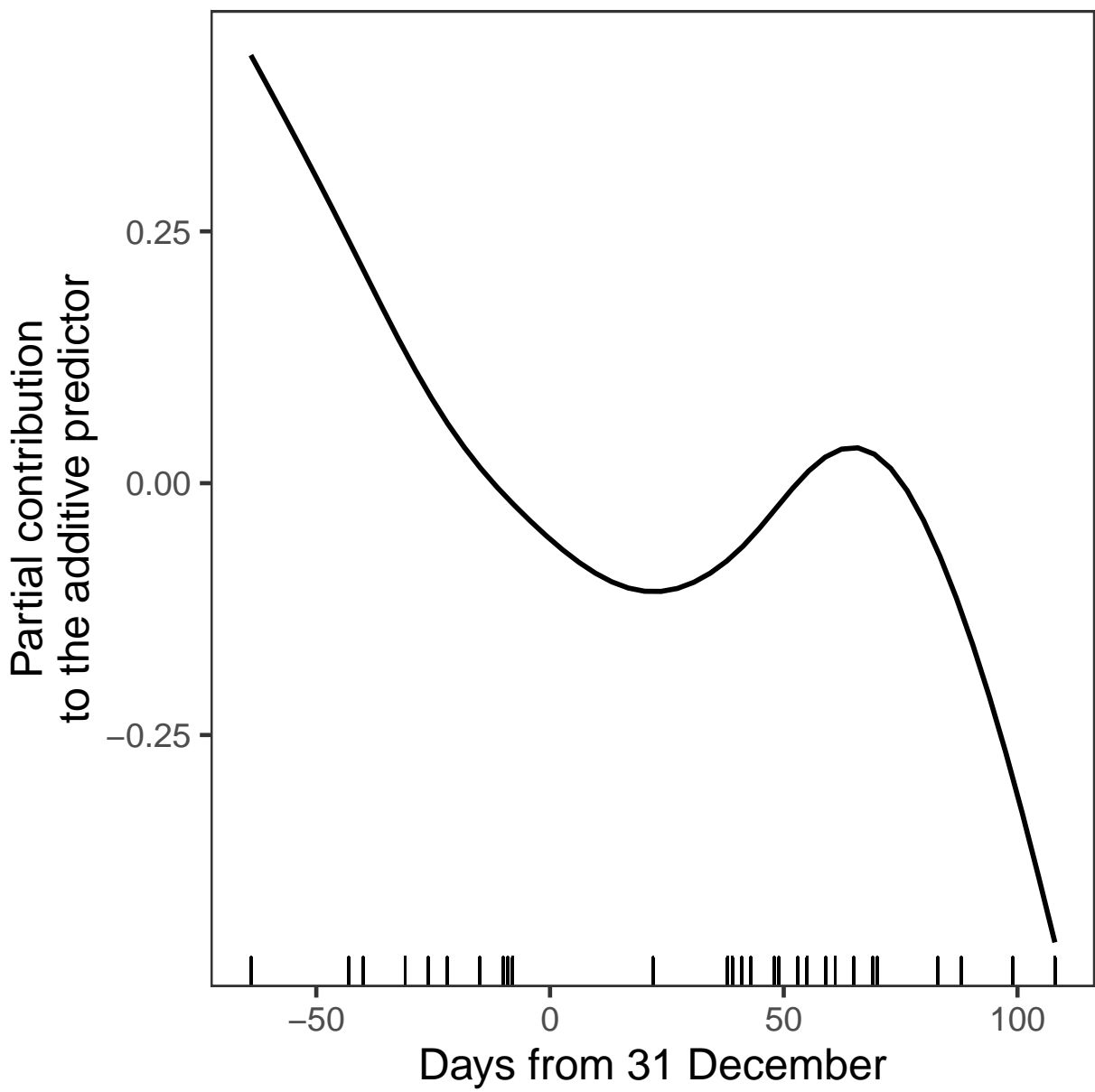
Black, Surf, and White-winged Scoter

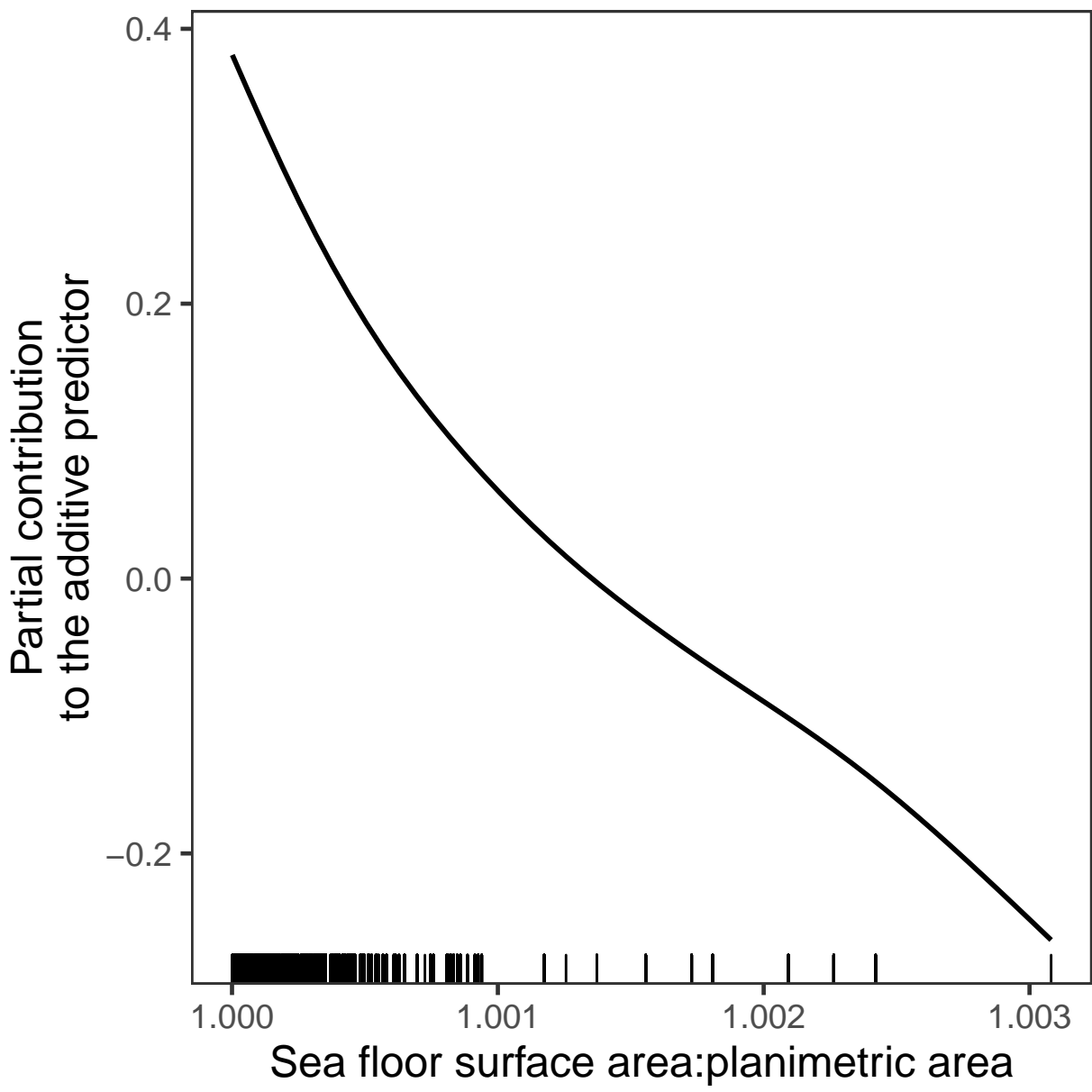
Occupancy

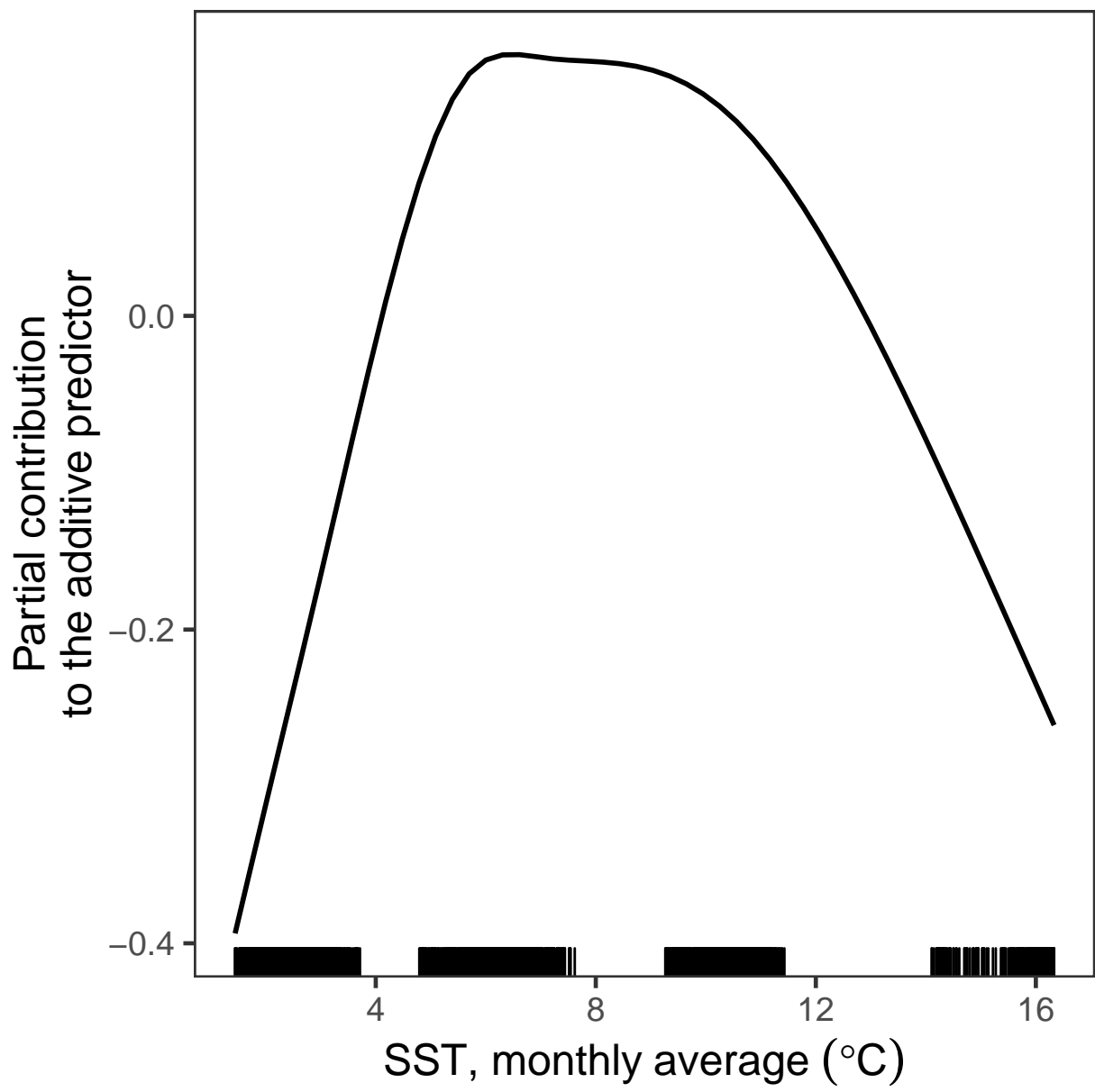


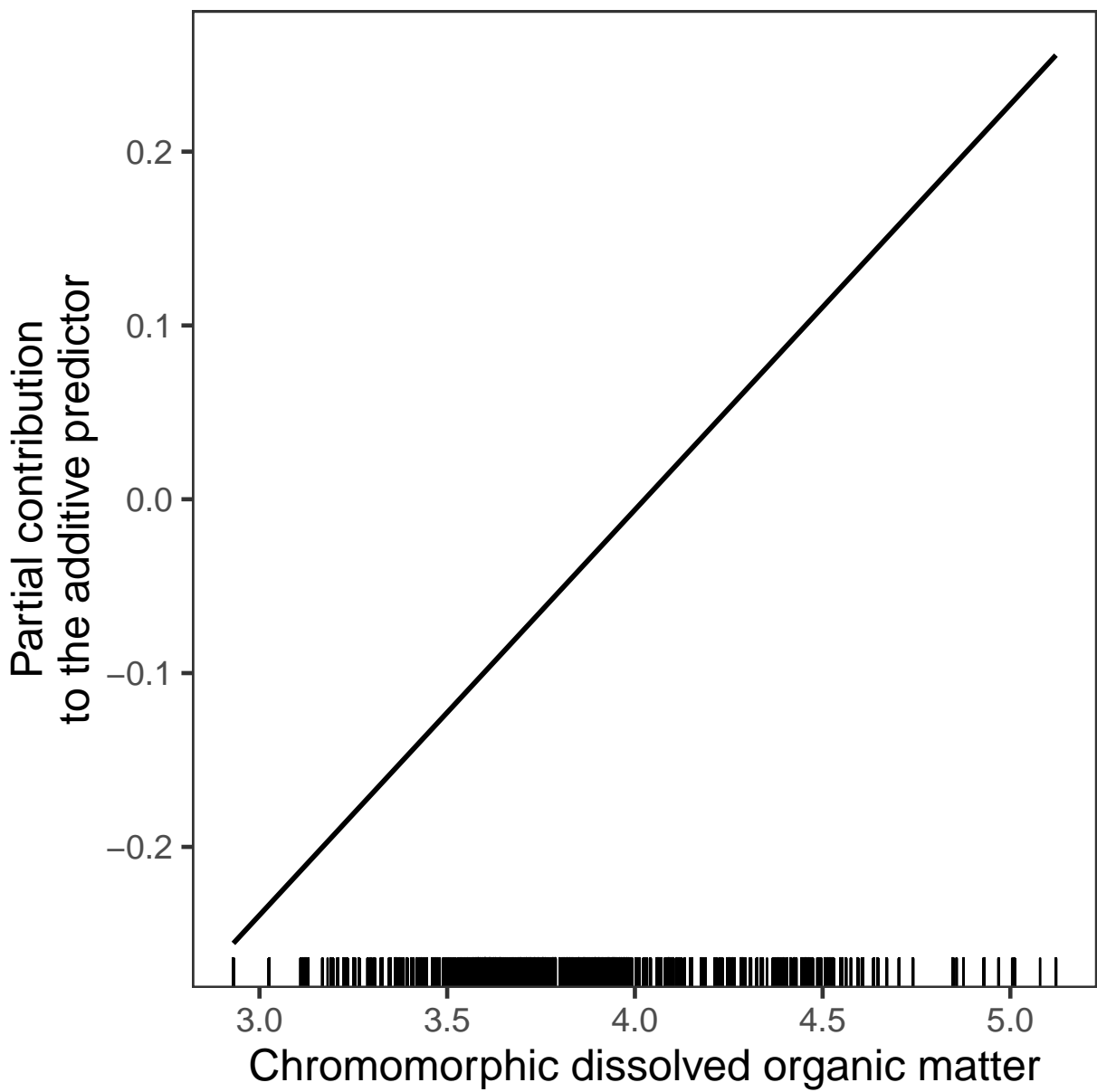


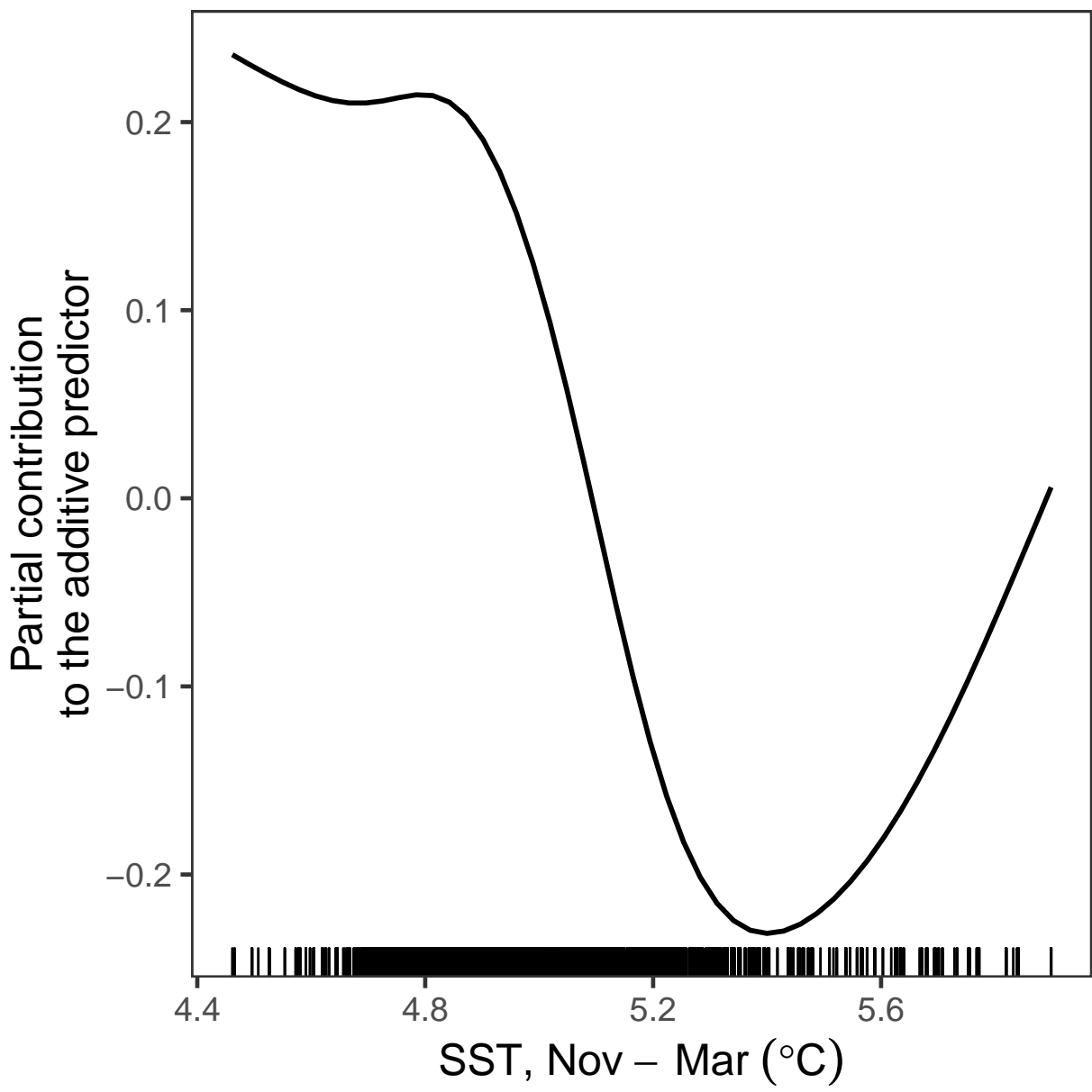


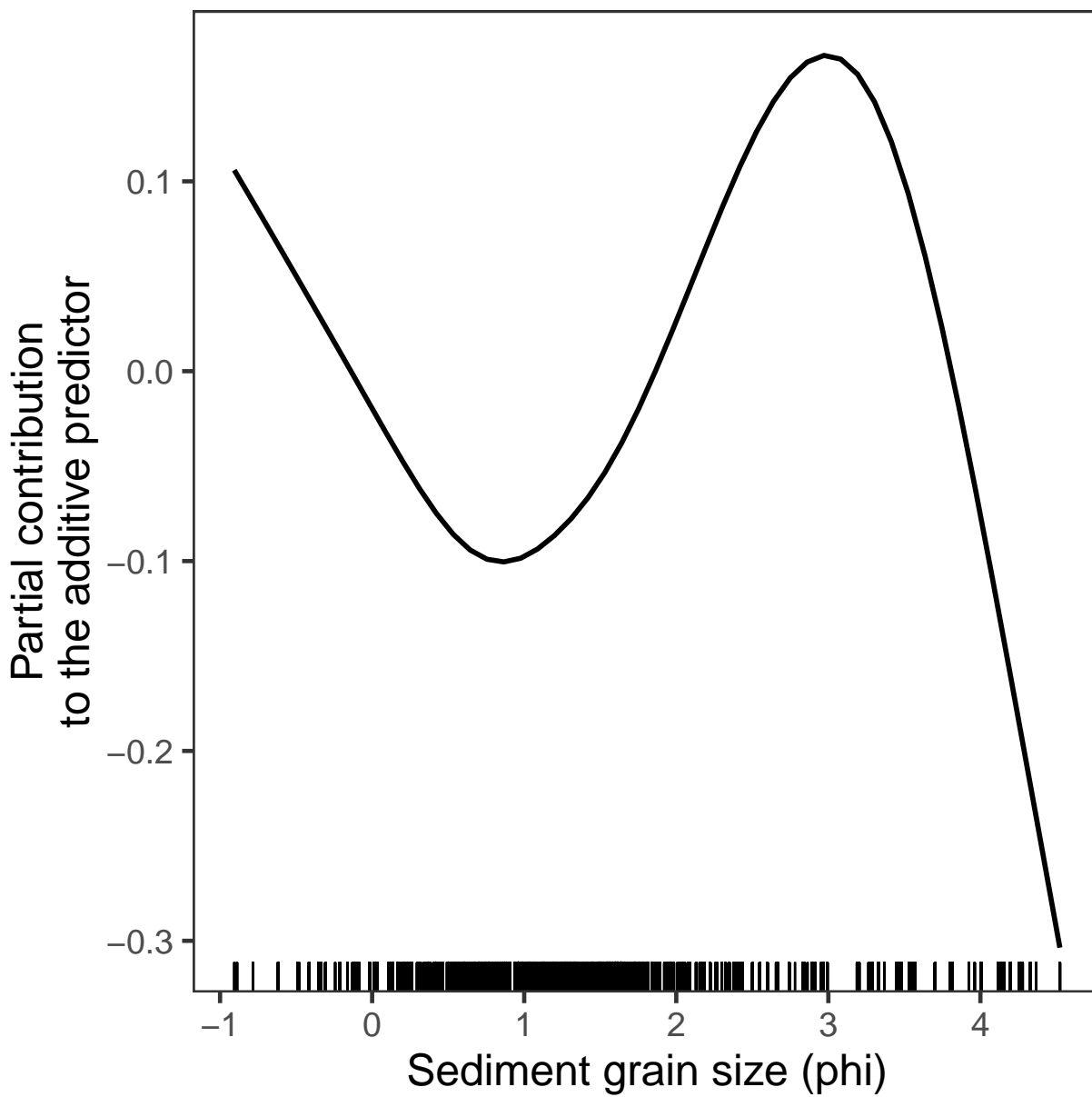


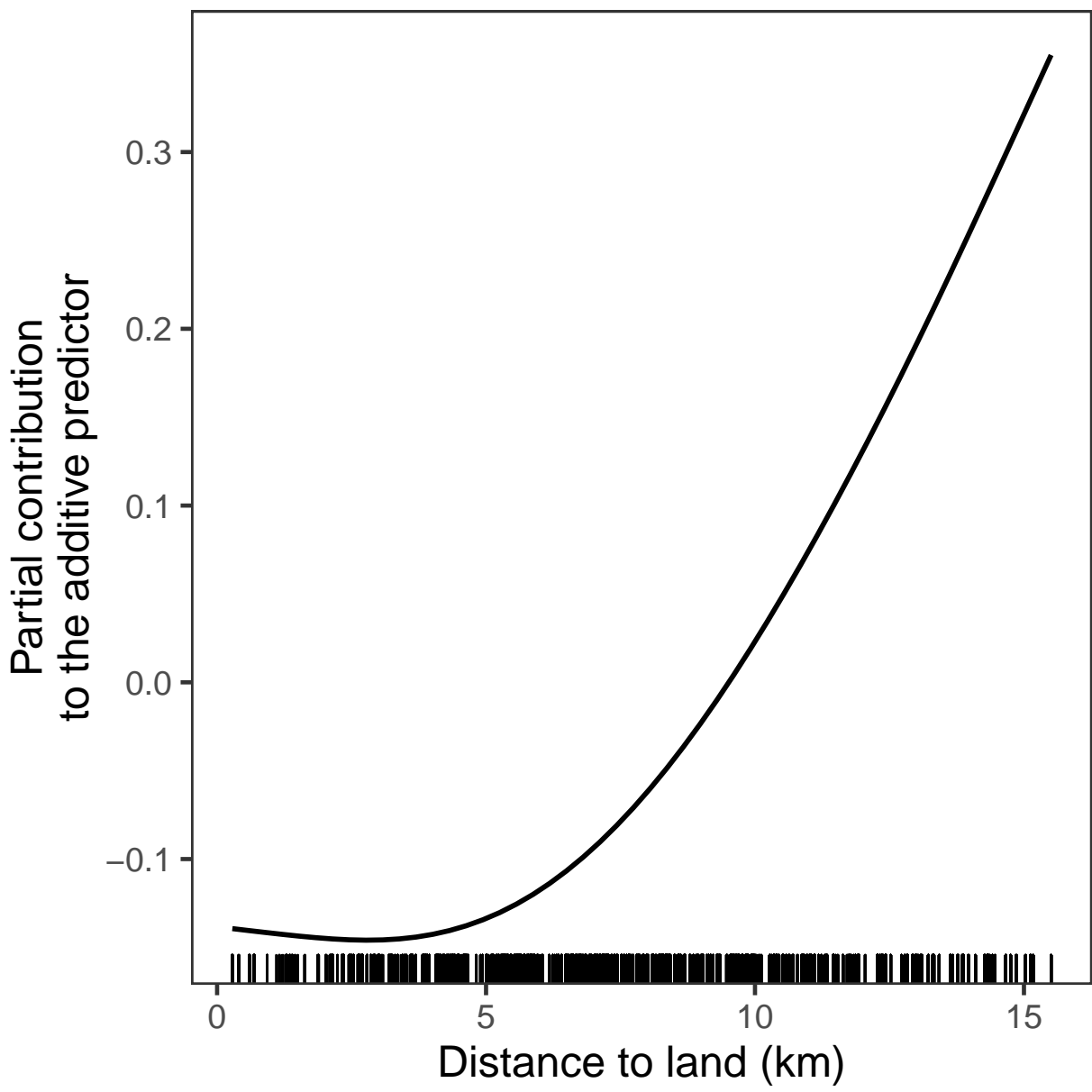


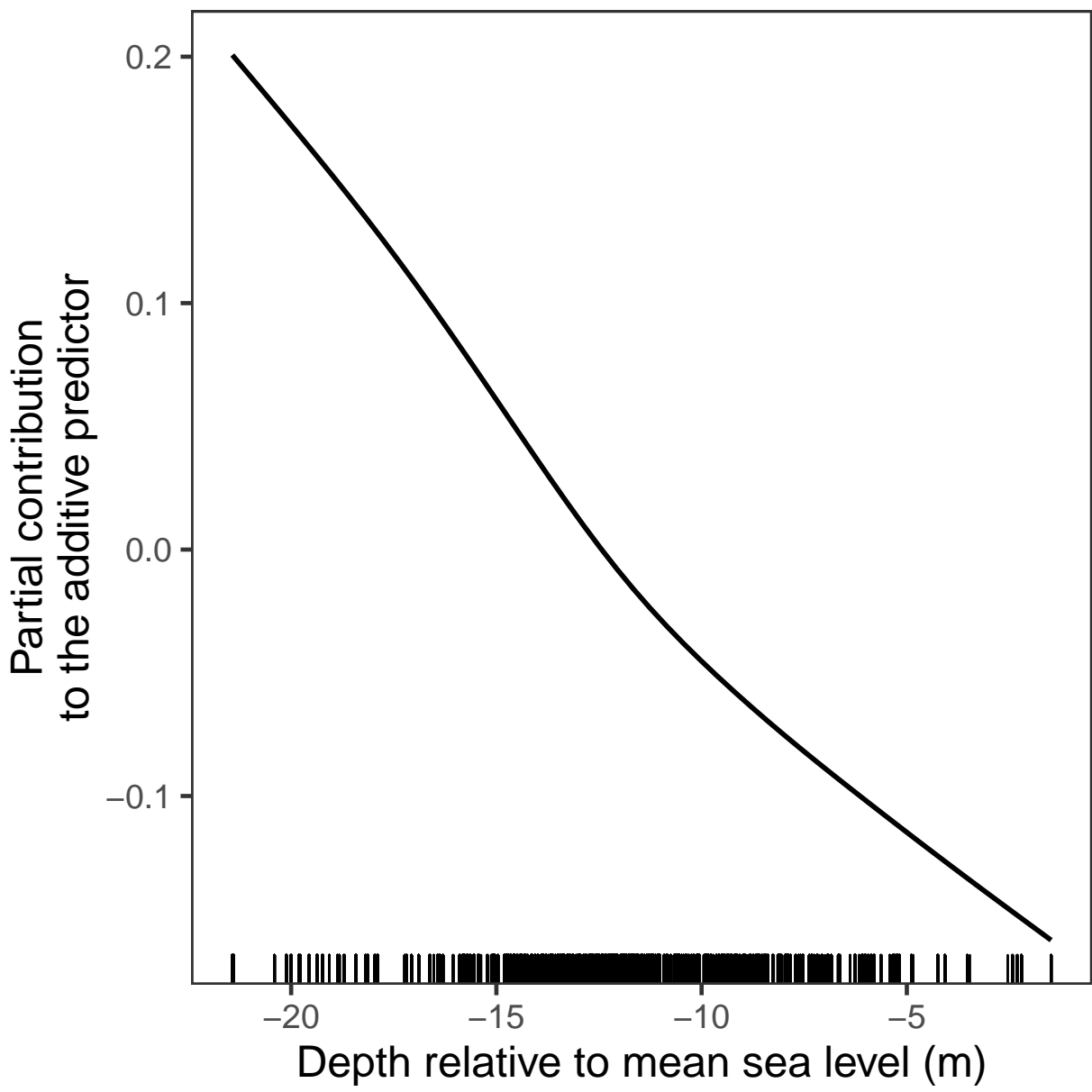




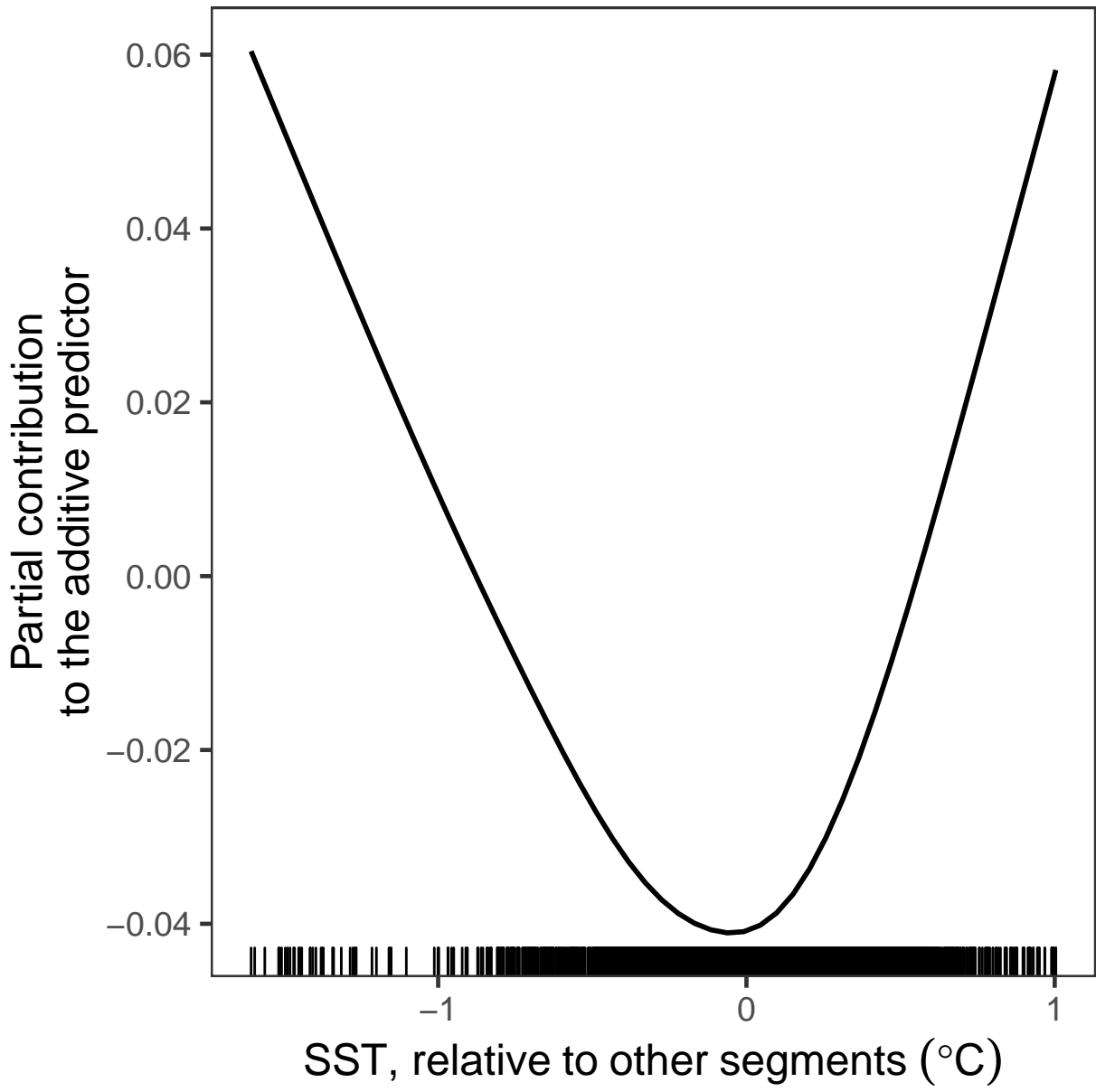




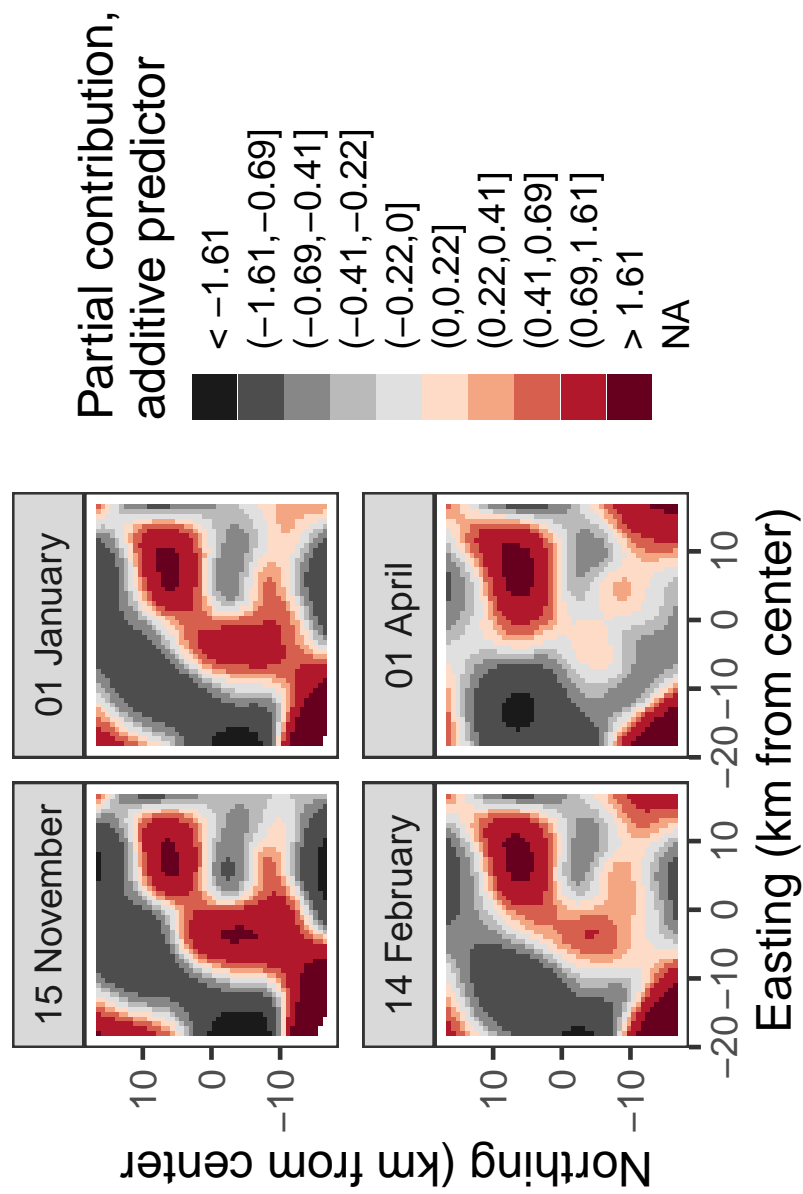


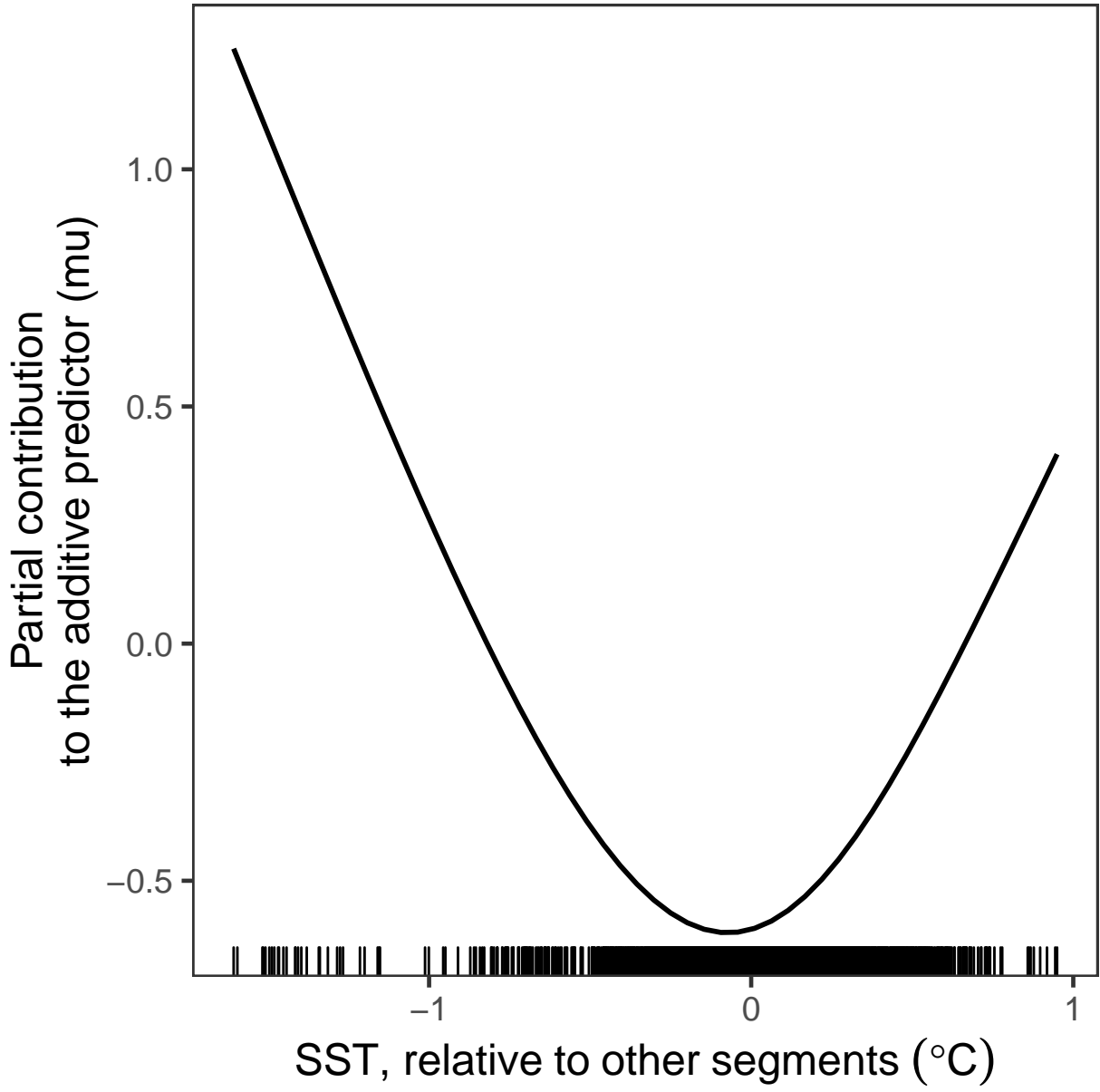


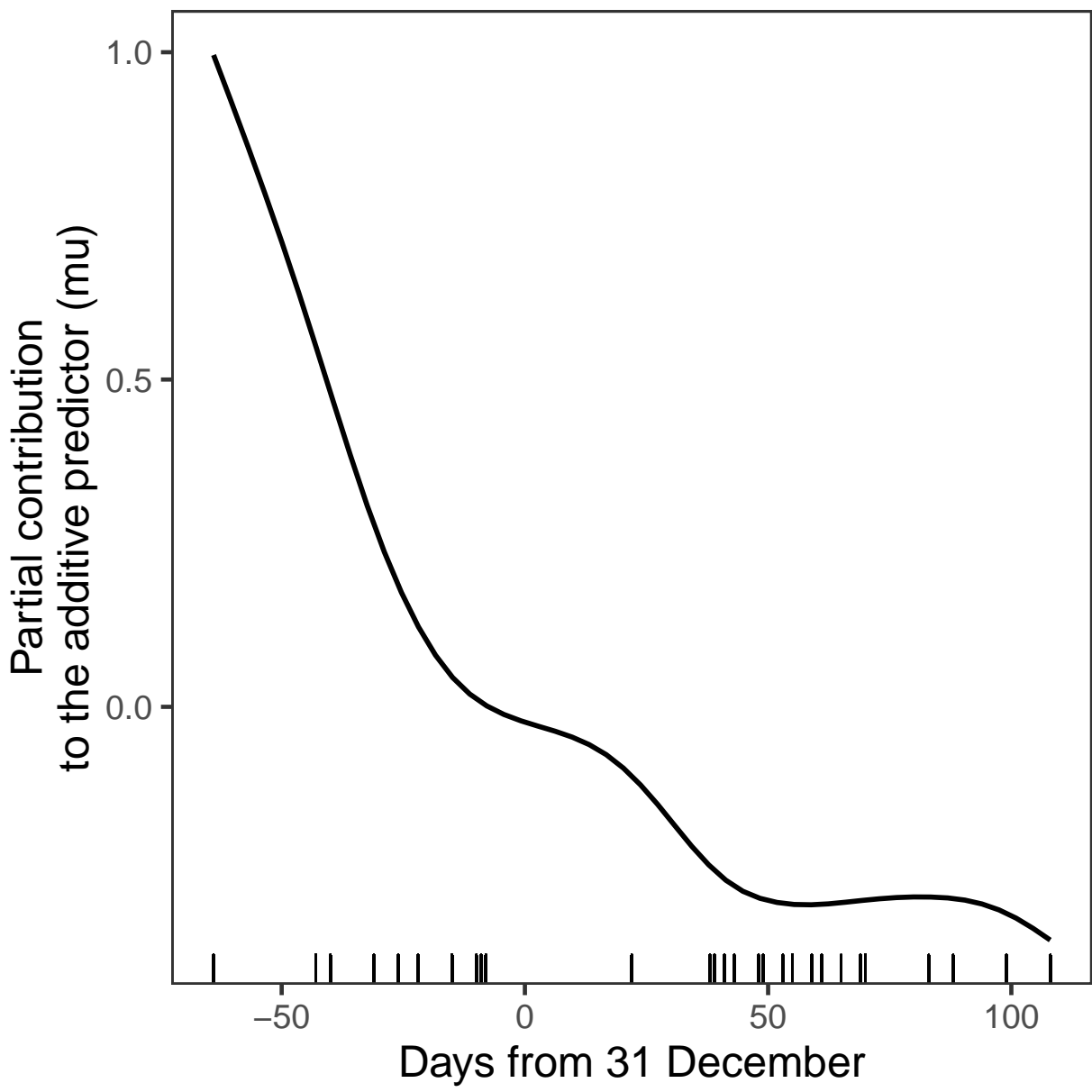


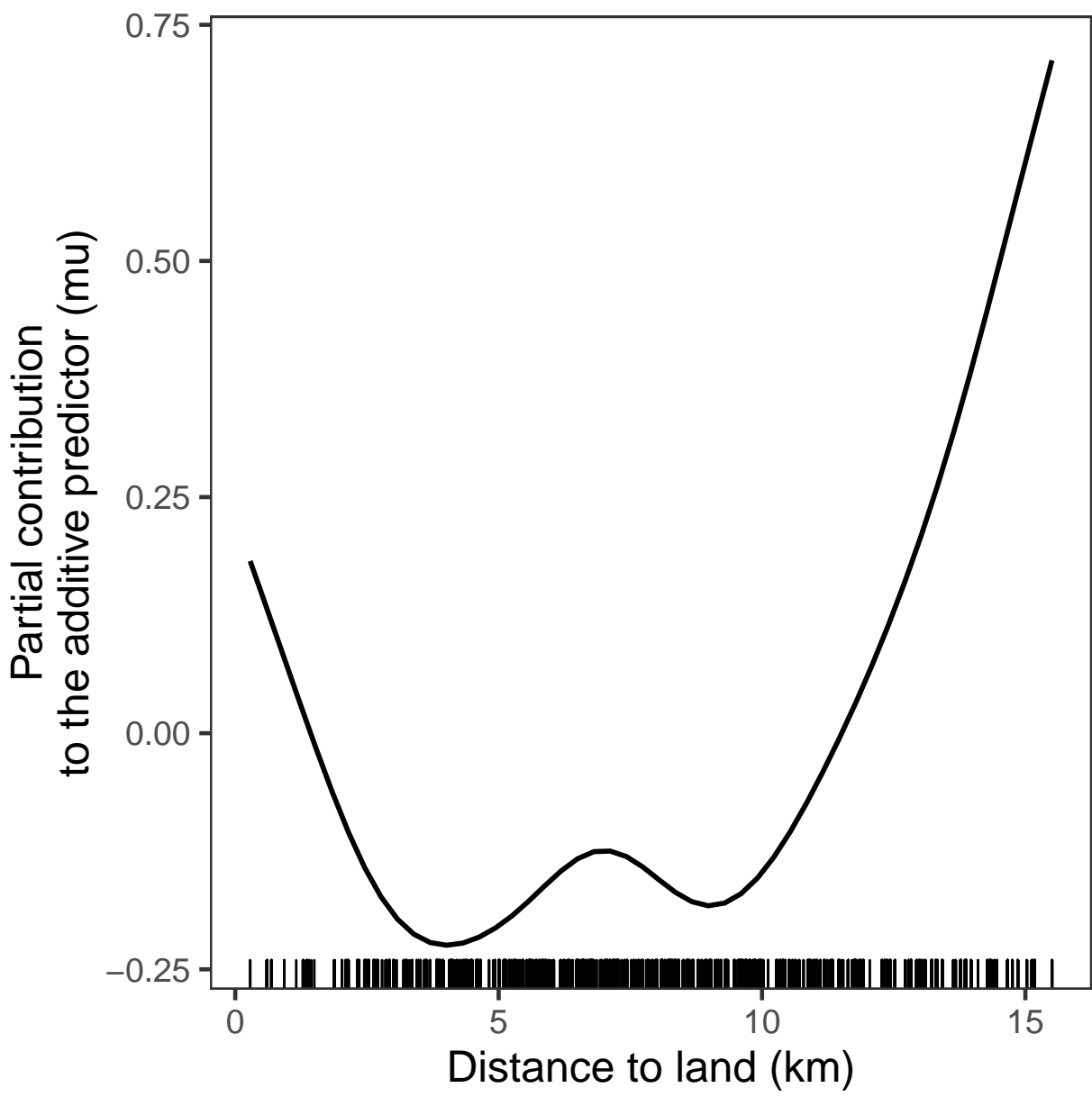


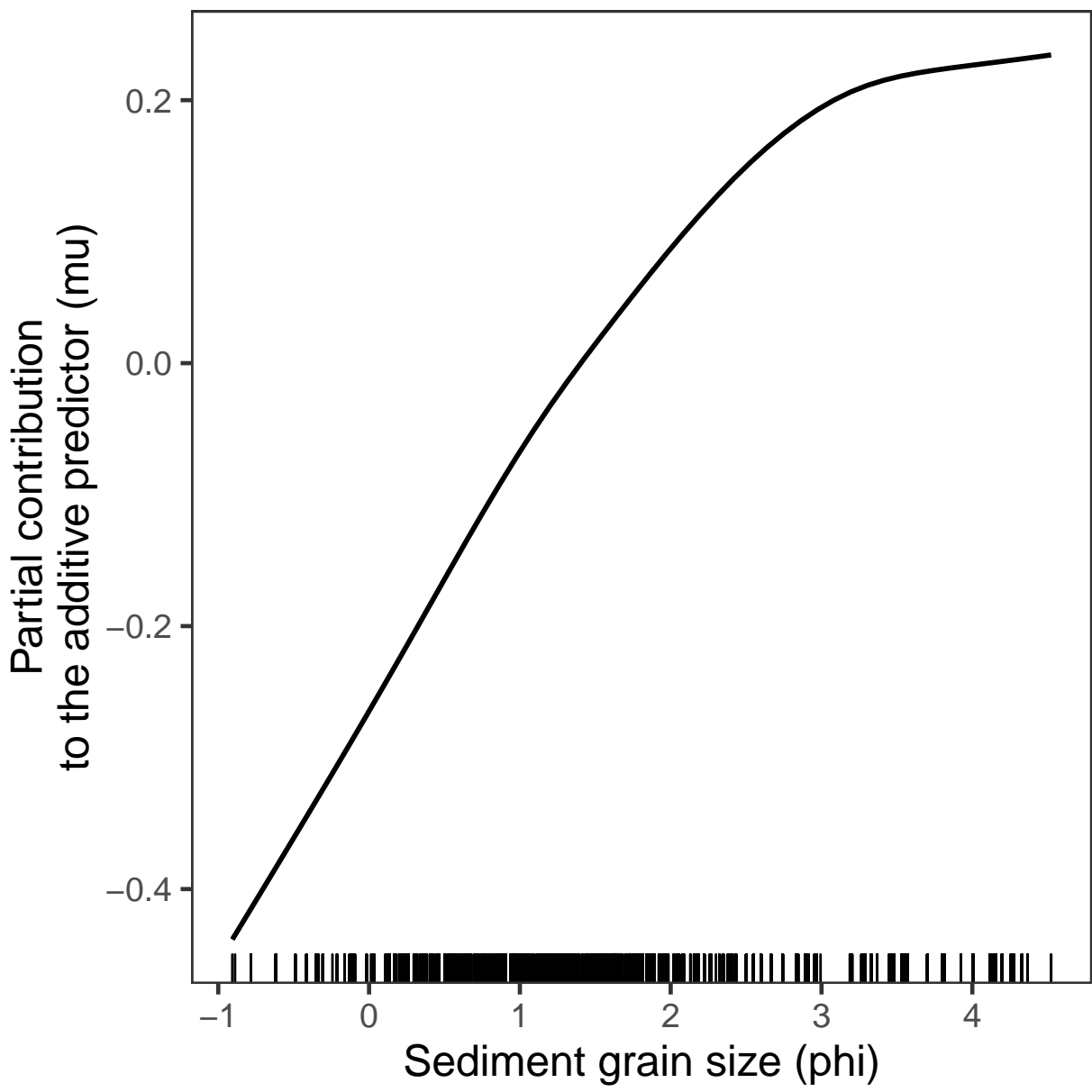
Conditional mean



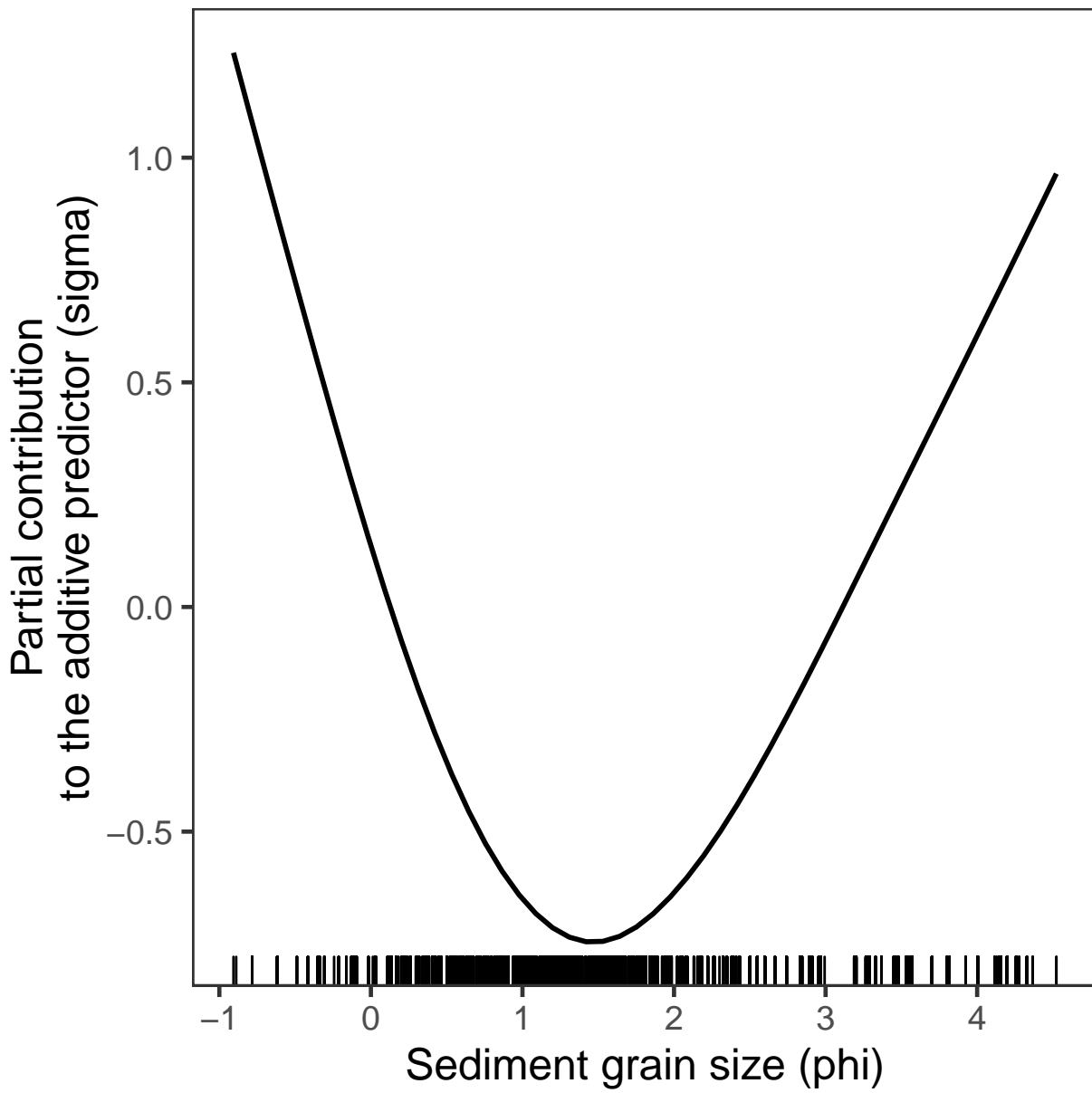


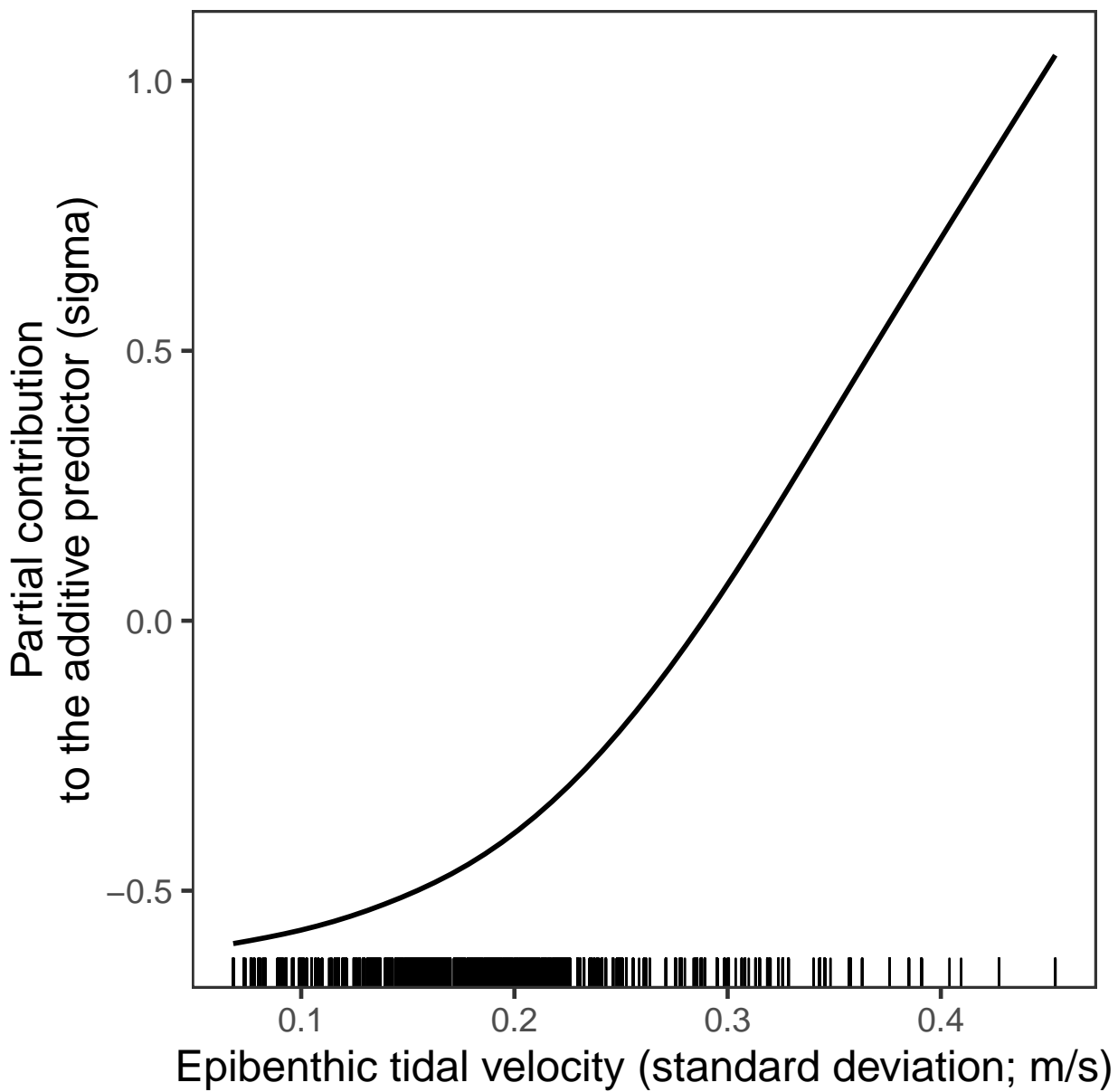




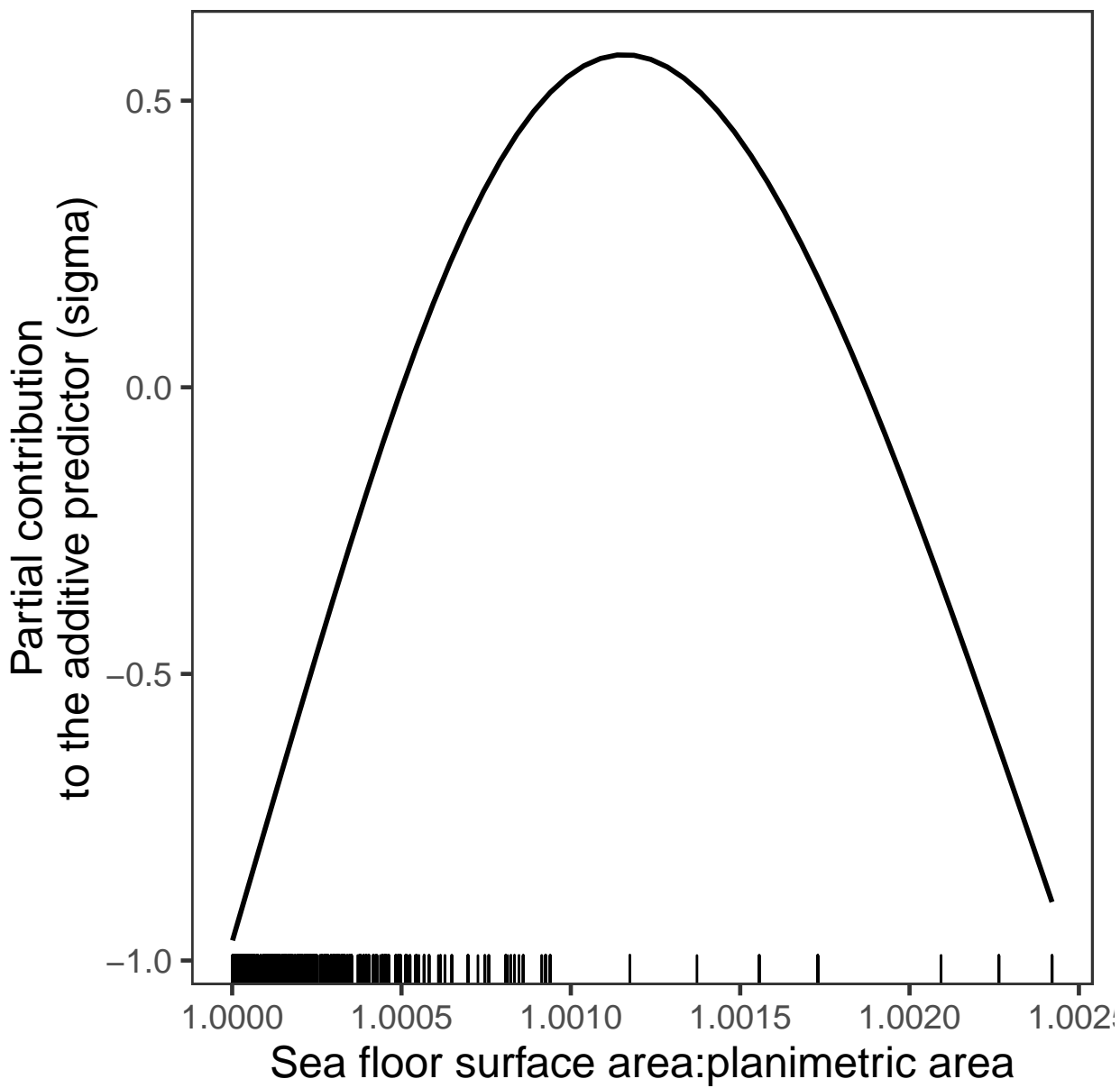


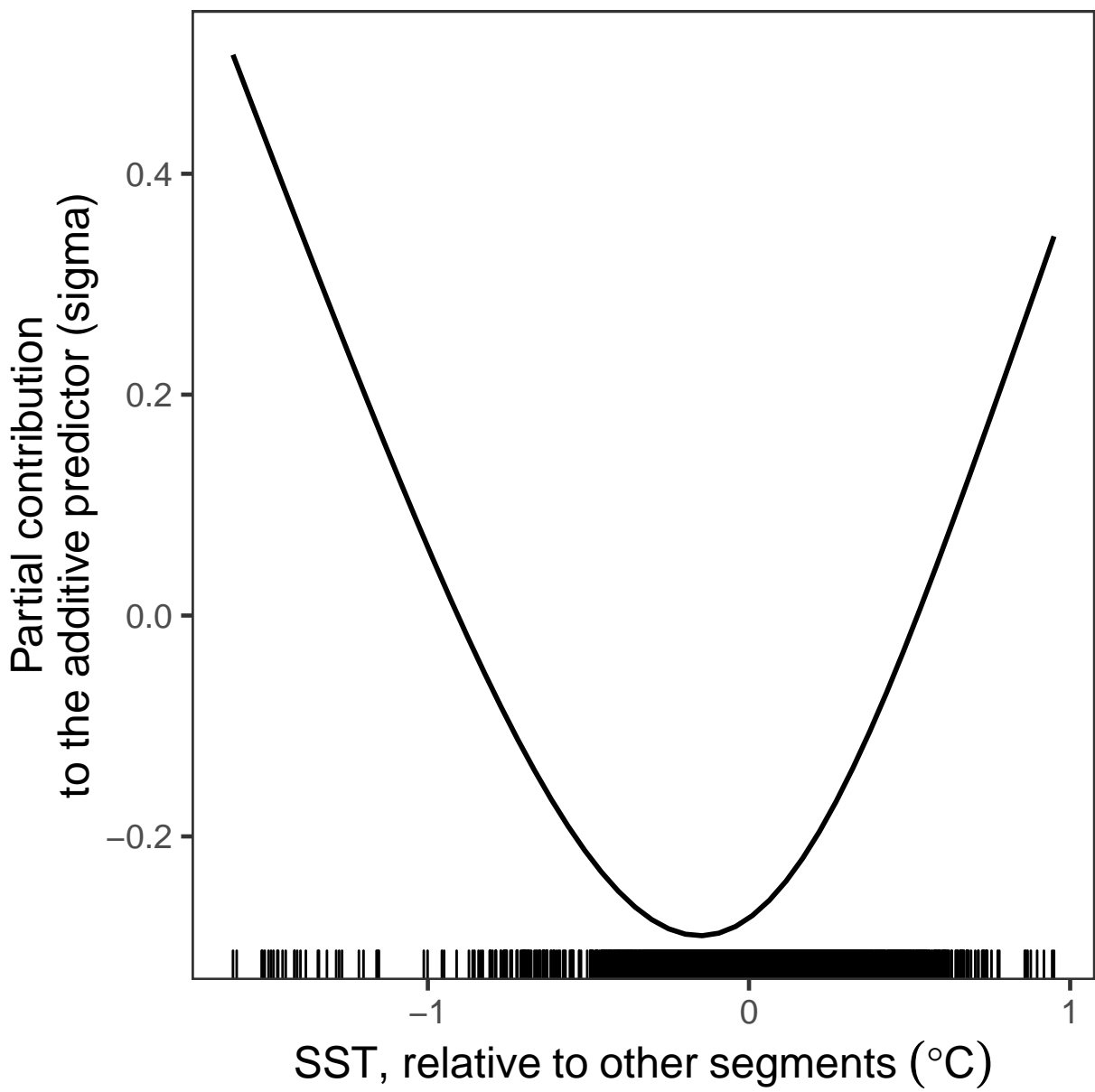
## Conditional overdispersion

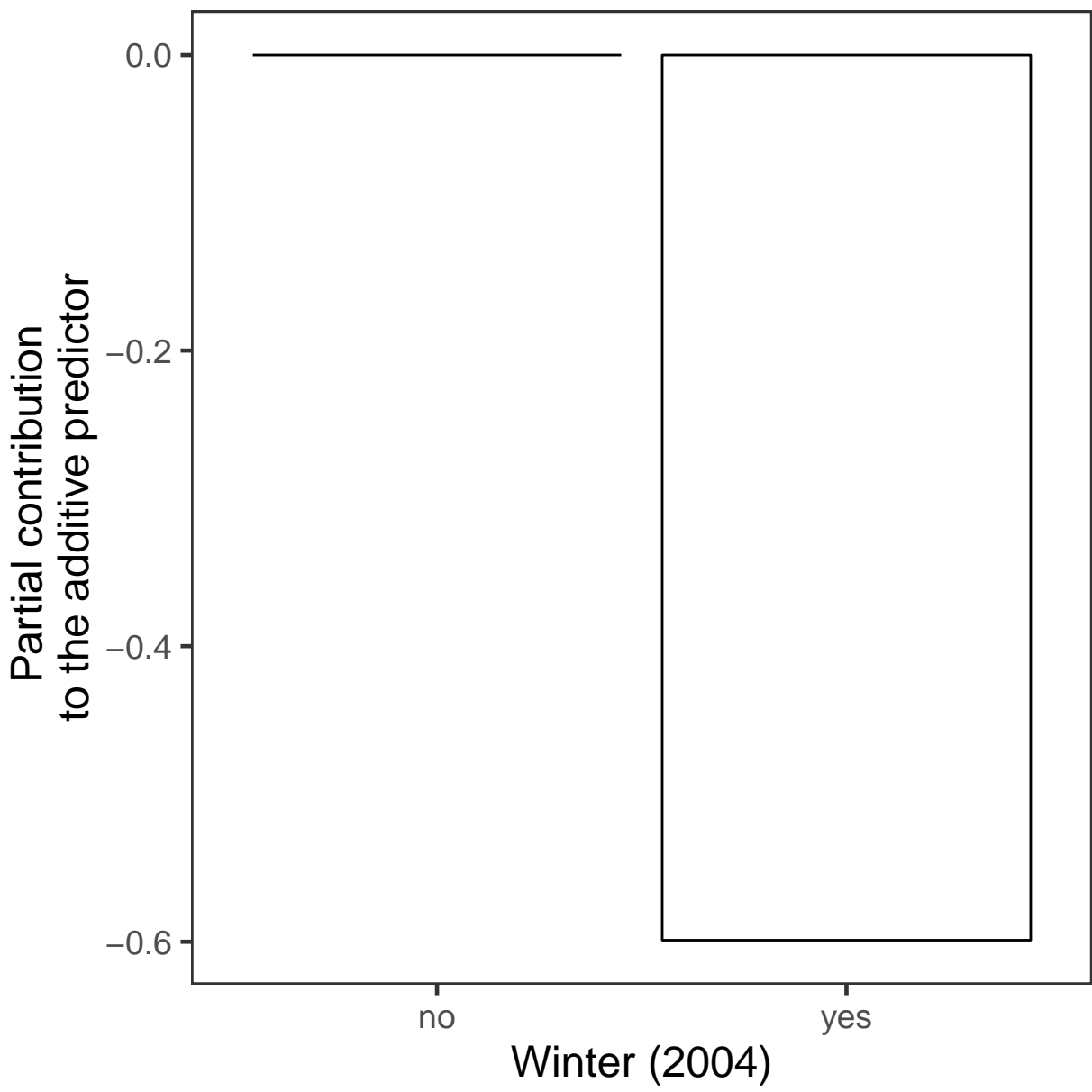


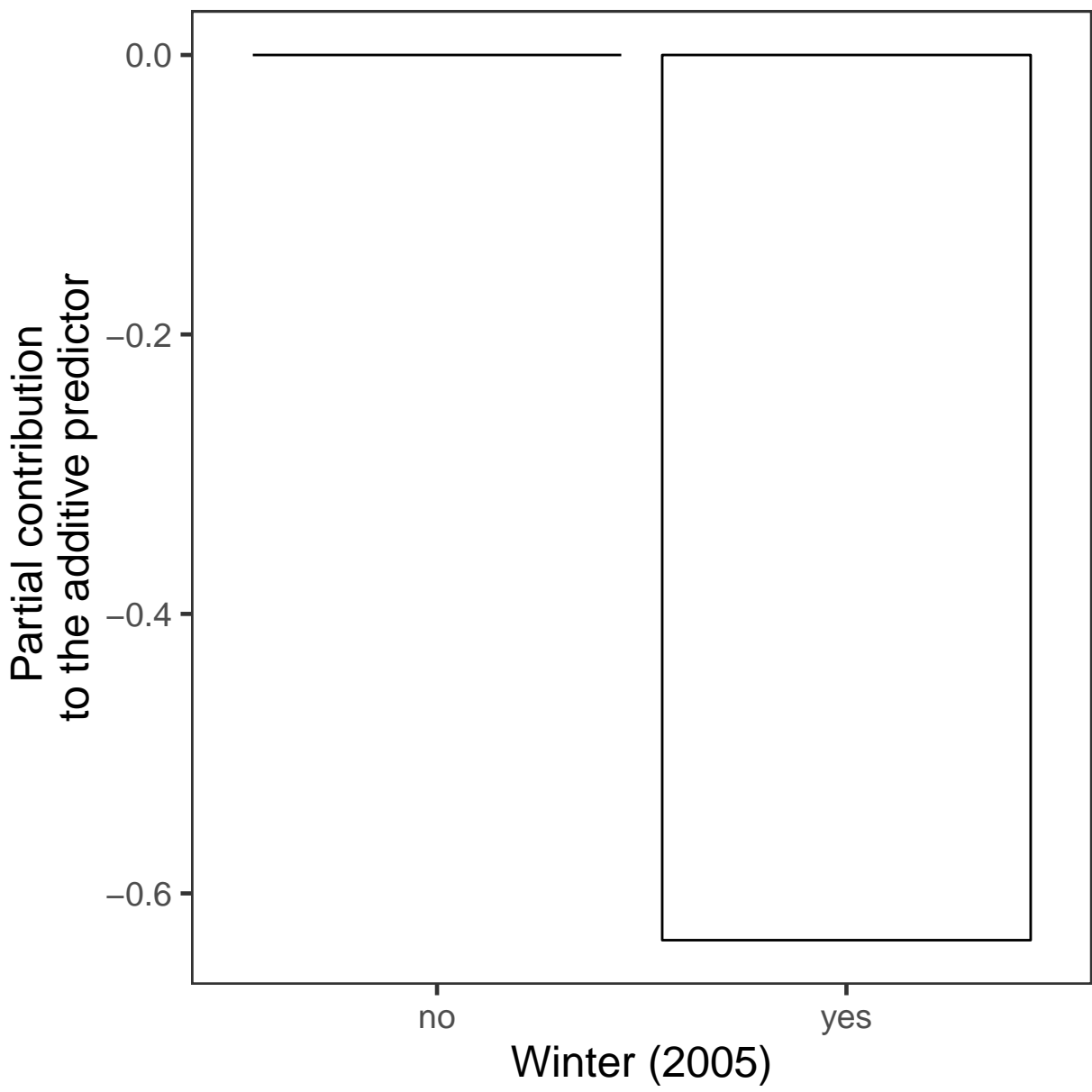






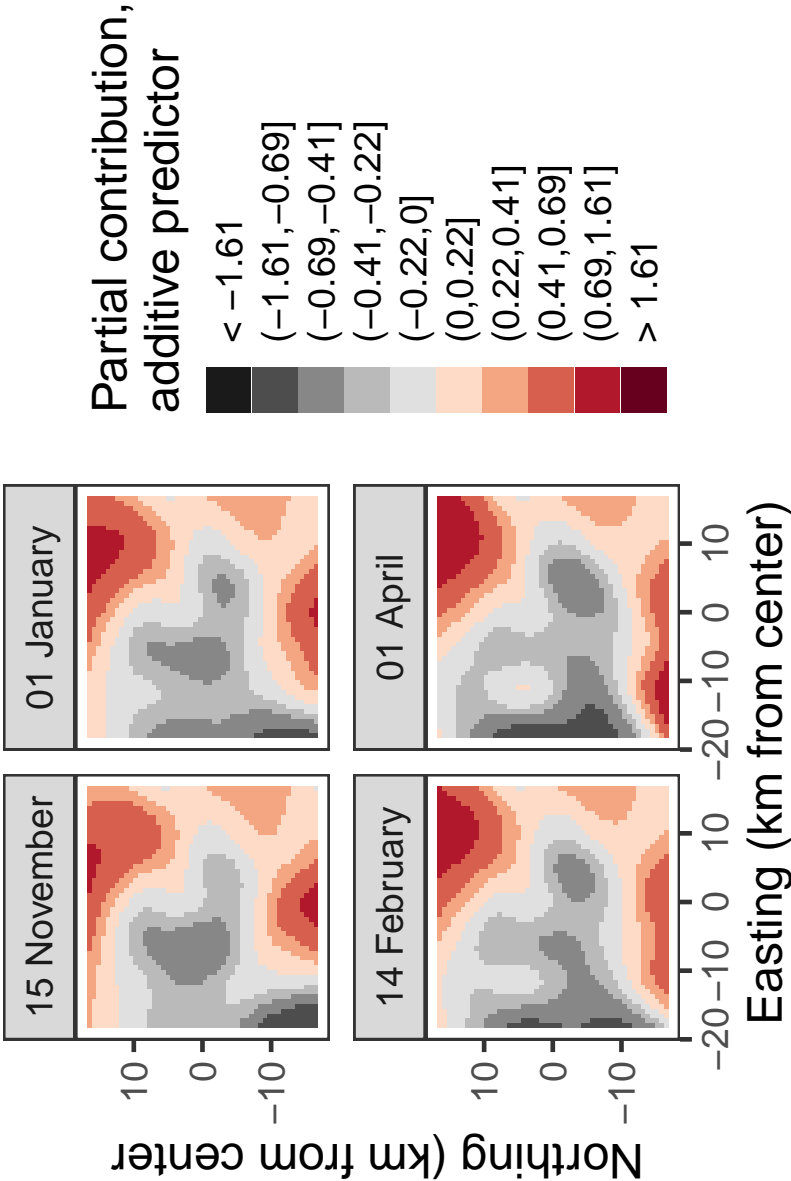


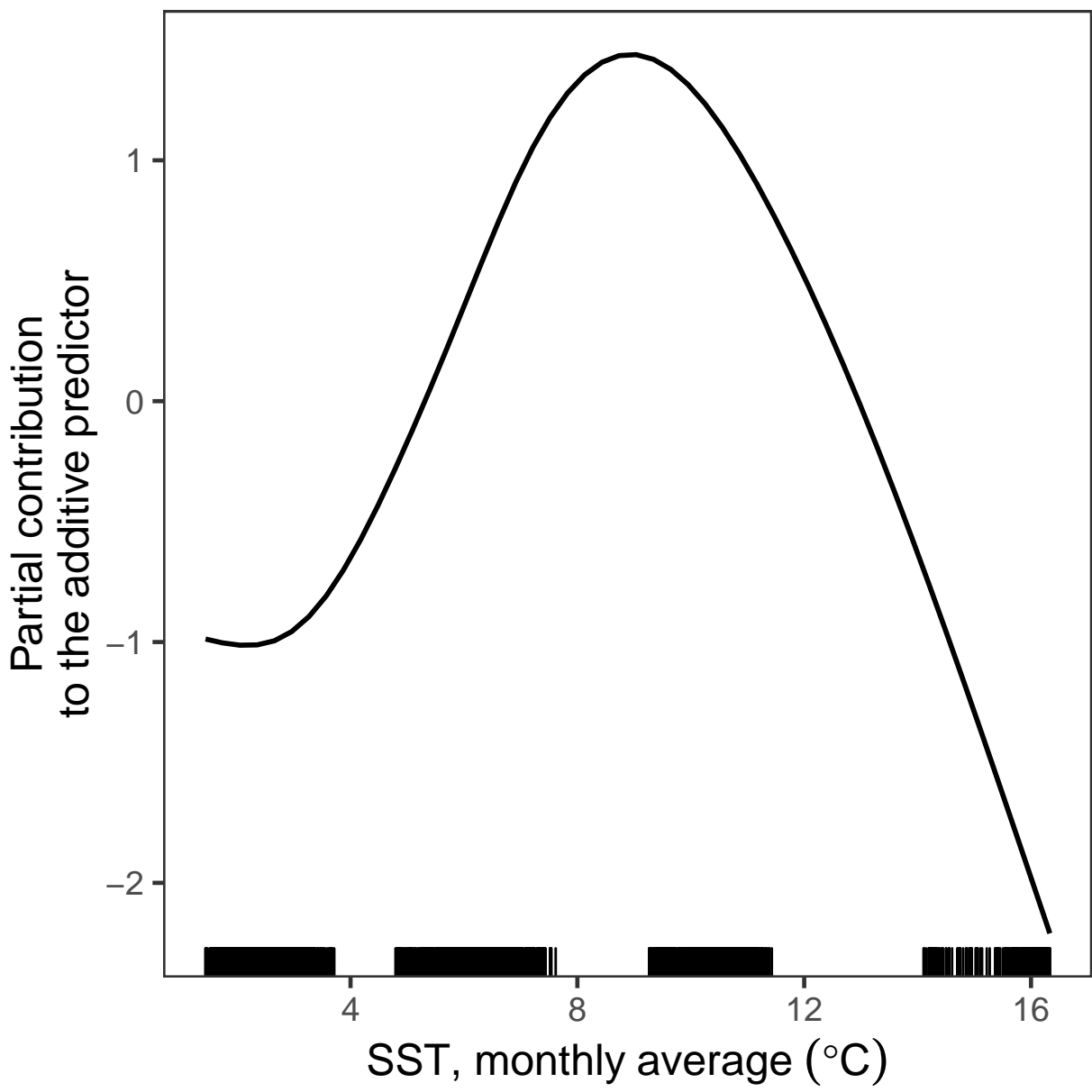


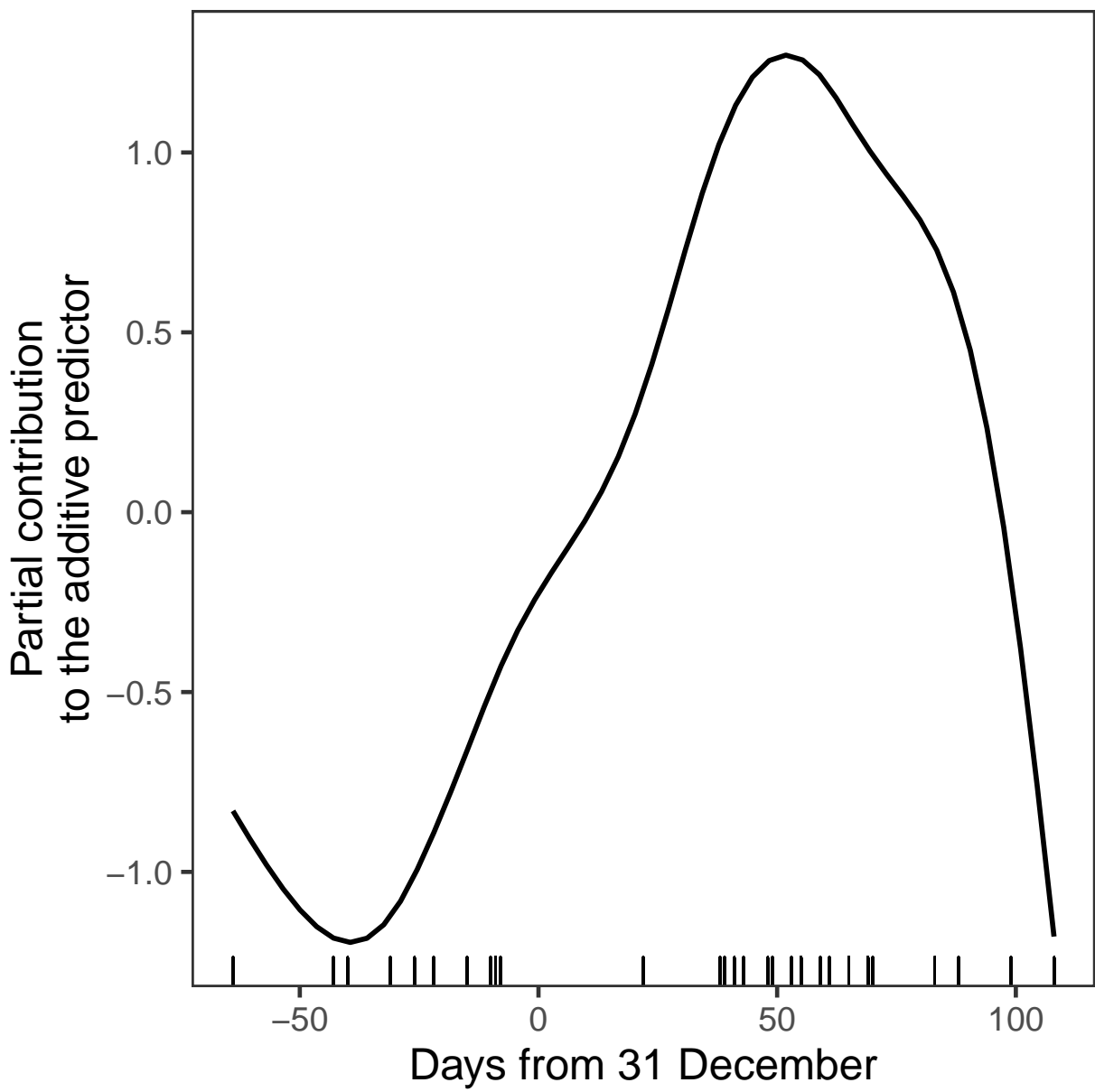


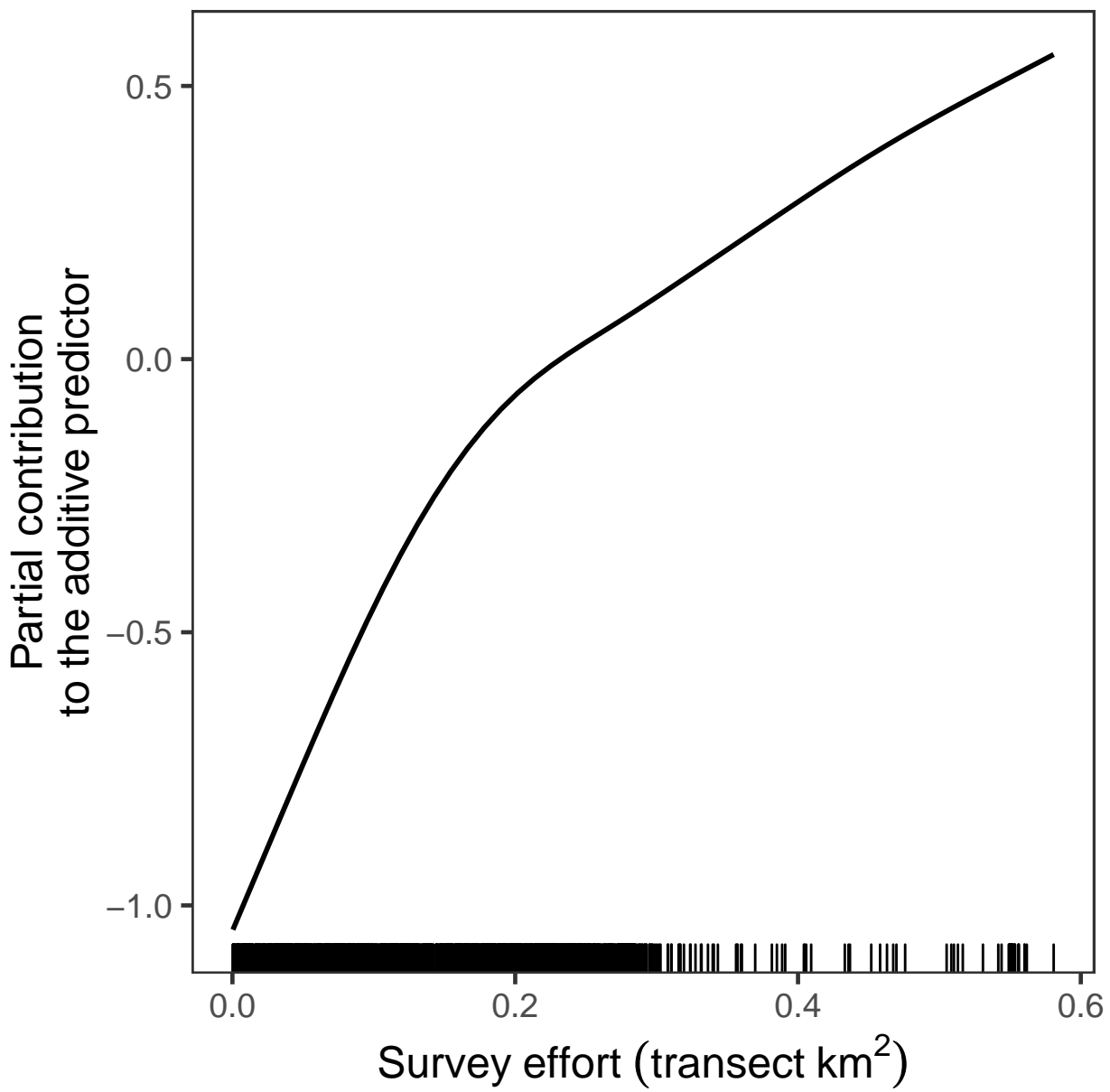
Long-tailed Duck

Occupancy

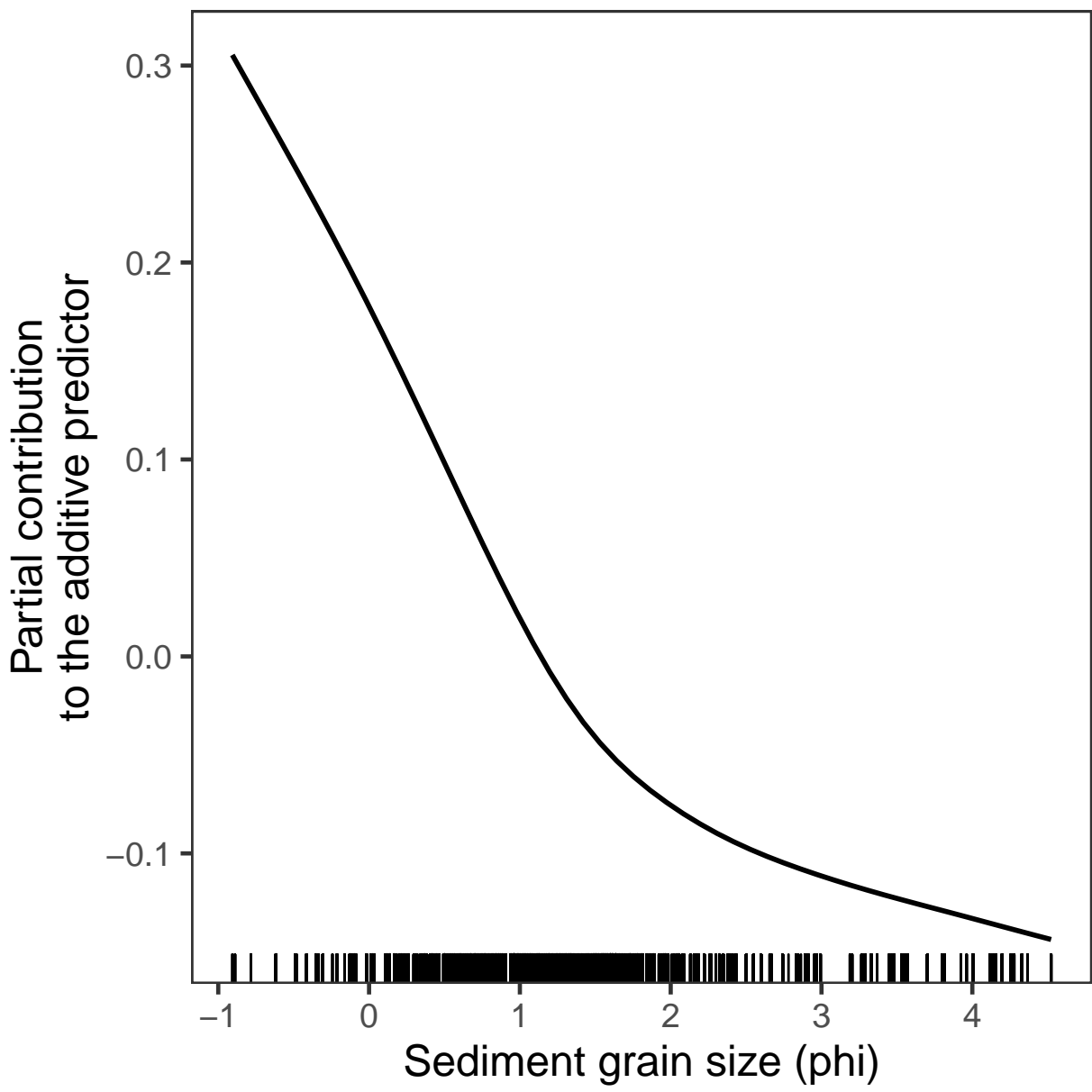


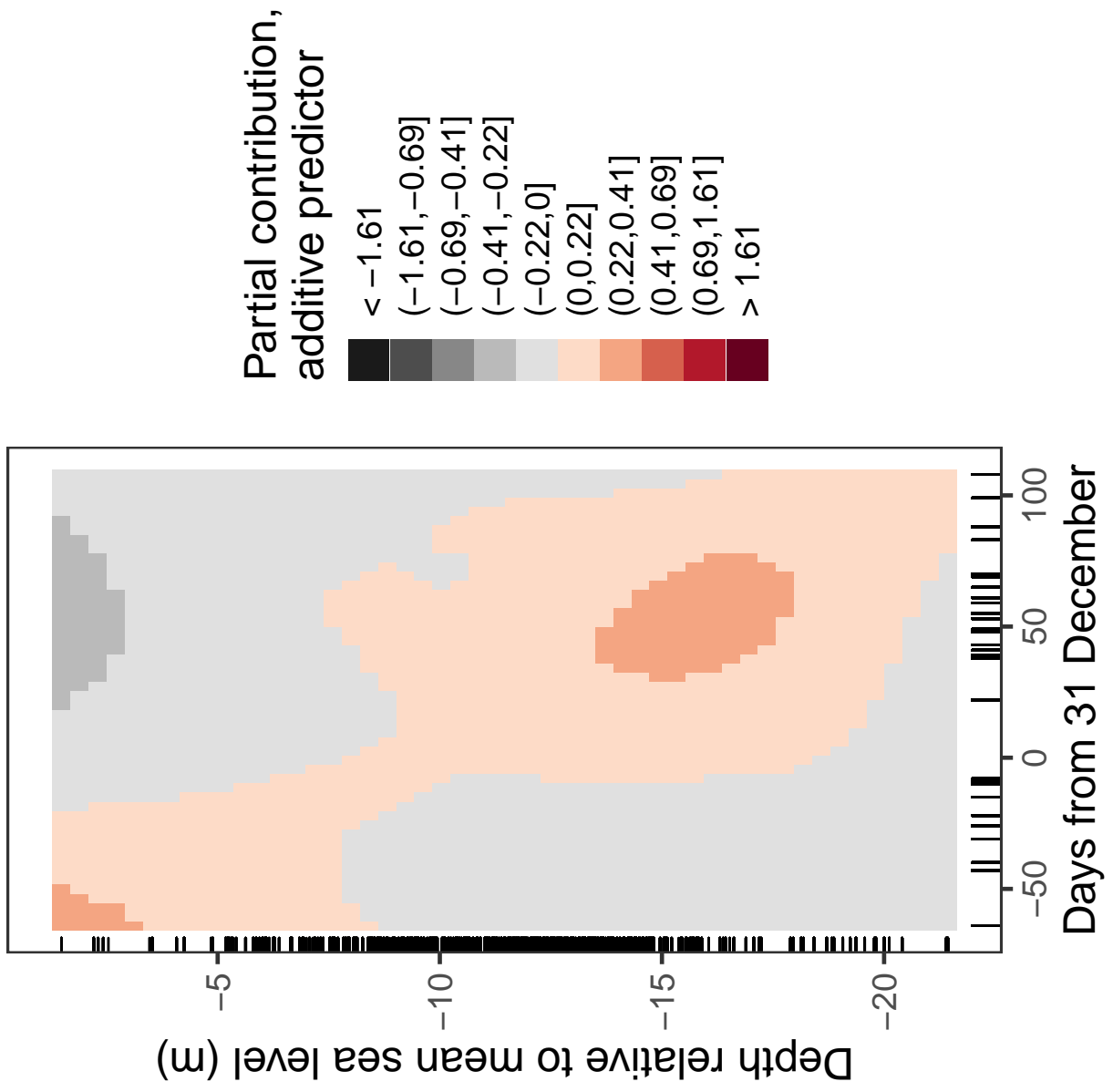


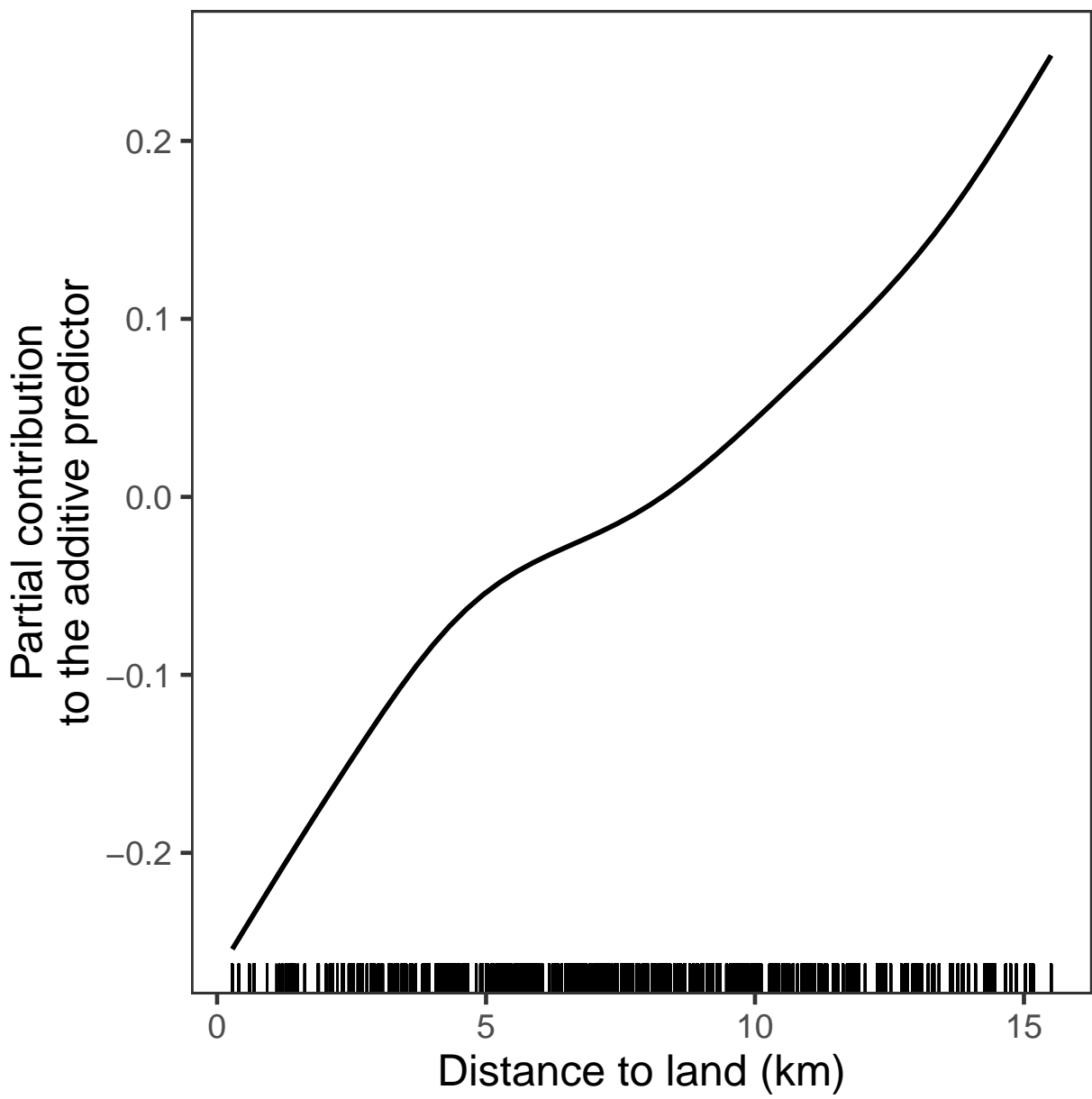


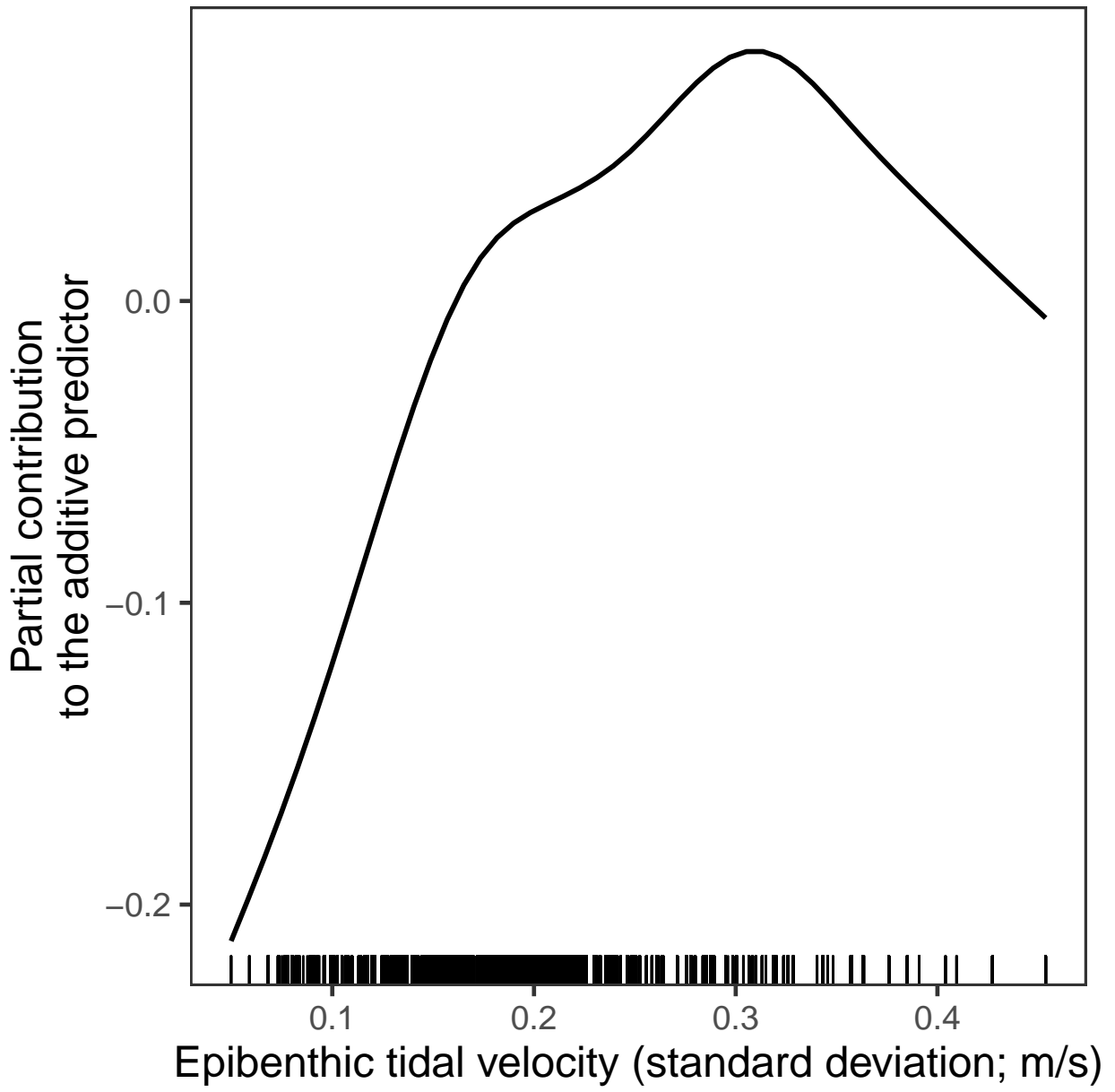


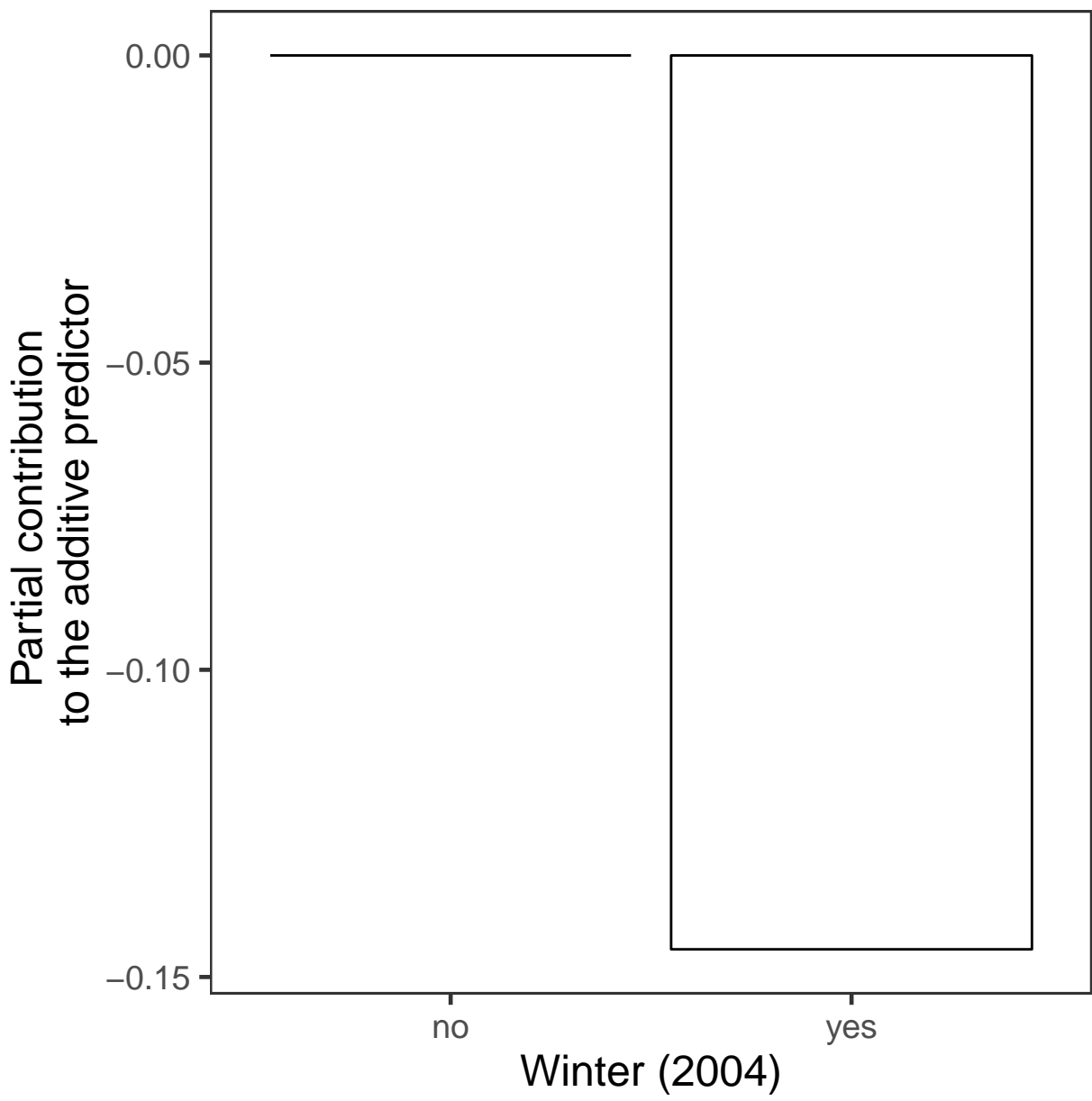




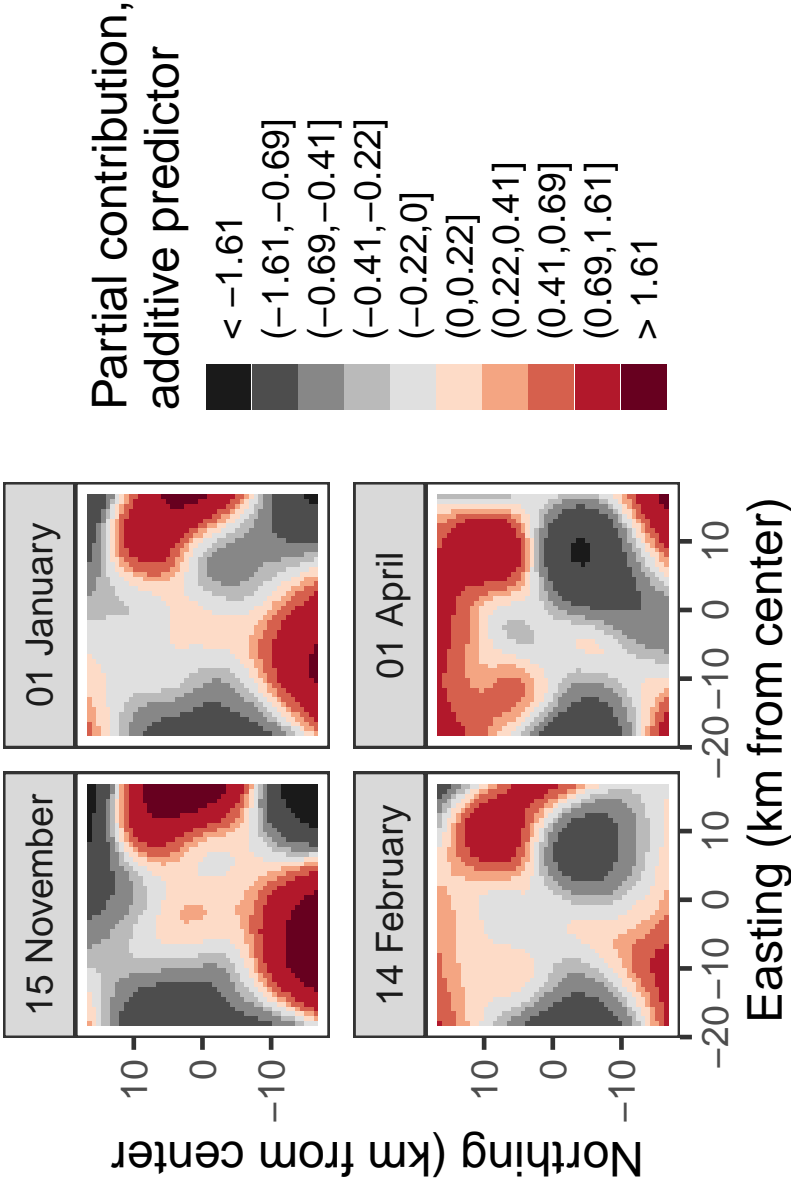


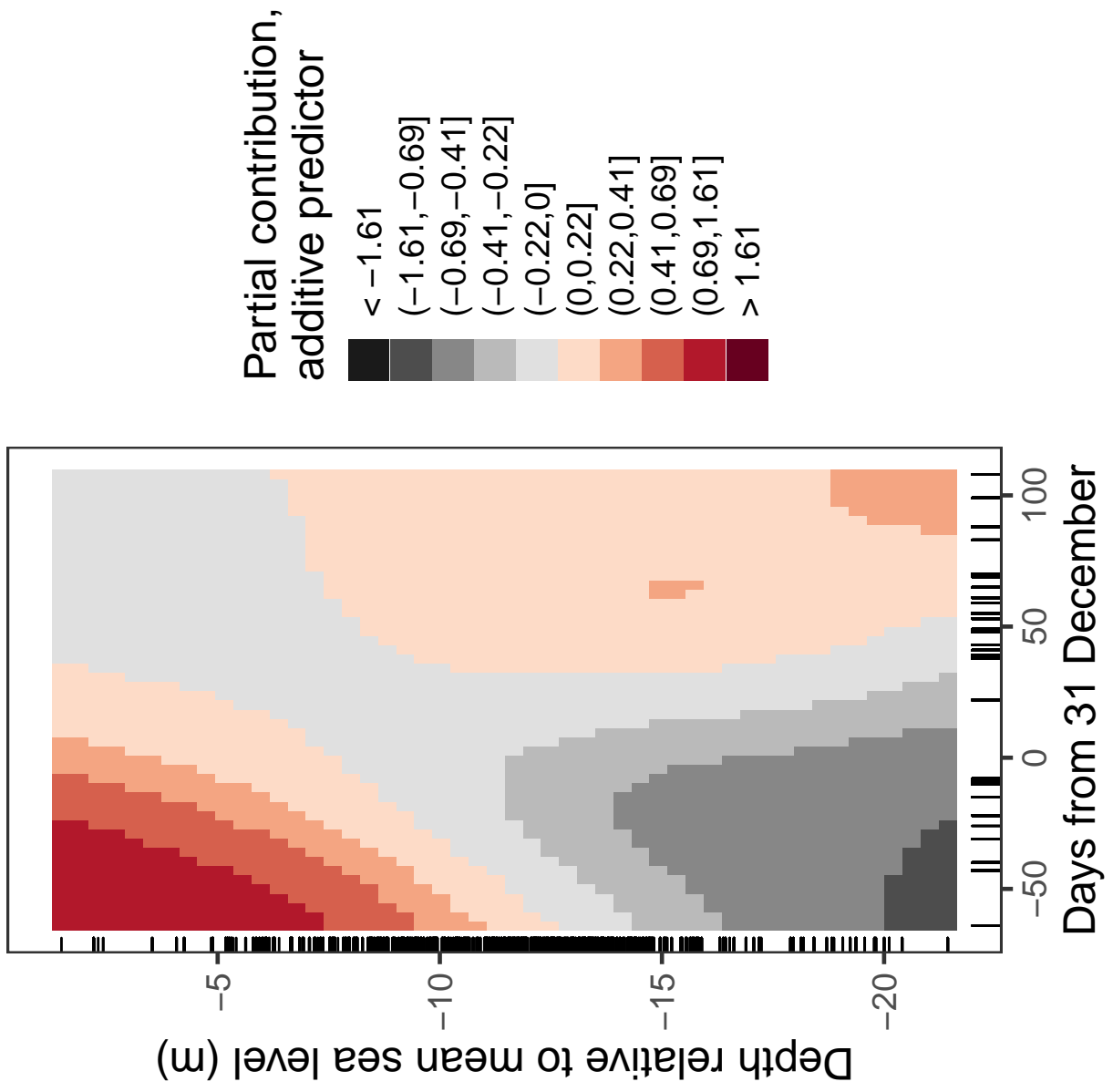


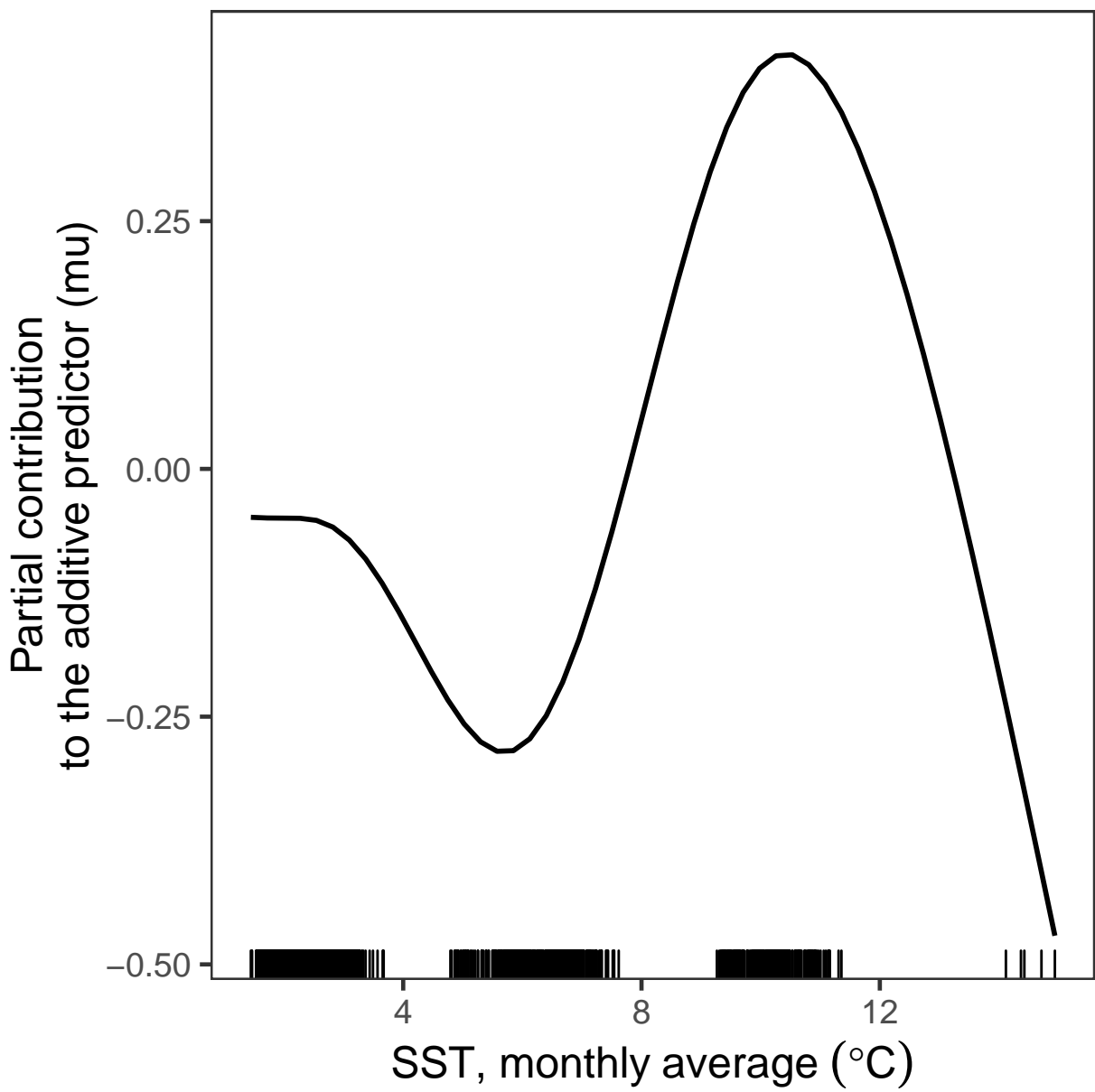




Conditional mean









## Conditional overdispersion

