1 Experimental designs for testing the interactive effects of

2 temperature and light in ecology: the problem of periodicity

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# 15 Conflict of Interest Statement:

16 The authors declare no conflict of interest.

# 17 Author contributions

18 DMB, MD and EMW conceived of the manuscript; MD and EMW developed the algebraic solution;

19 DMB performed the comparative analysis of the published studies; DMB led the writing of the

20 manuscript. All authors contributed to writing and gave approval for the submission.

# 21 Data Availability

22 Data from the Flynn & Wolkovich (2018) study is available at the Harvard Forest Data Archive

23 (https://harvardforest1.fas.harvard.edu/exist/apps/datasets/showData.html?id=HF314) and from

24 the Buonaiuto & Wolkovich (2021) study available at Knowledge Network for Biocomplexity

25 (https://knb.ecoinformatics.org/view/doi:10.5063/PG1Q4B). The R code used to analyze the data

26 is available on zenodo (https://zenodo.org/record/7765007).

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