

Overall, this is a well written and interesting study, I enjoyed reading it. The authors effectively use data from both historic (1990s) and current (2010s) time periods and present a novel study of range retraction due to lowered fecundity (and different aspects of this), likely associated with increases in temperature.

Different aspects of temperature in terms of variability and seasonality are well explored to help support the conclusions in this study, and alternate hypotheses around parasitism rates are well covered.

The one main issue I have is probably only a point for discussion. The climate clustering of the different egg masses relies on data that is collected quite a number of kilometres away from the sample sites. While this probably cannot be helped, it is worth mentioning that there is possibility of some margin of error around how the clusters are defined. On lines 149-160 the authors mention the use of gridded data to patch in missing weather information. It appears like this was just done at the eight weather stations? Wouldn't it also be worth looking at these gridded NASA data at each of the sampling localities? If these data are interpolated to 8km grid cells, then it may account for some of the distances between weather stations and sites, and perhaps give differences in clustering rather than relying on the values at 8 weather stations to define the clusters. While any interpolation would lose accuracy with distance away from stations, the smoothing of the temperature data in a gridded form may be more insightful than the raw station readings?

The Discussion is quite lengthy, mostly it is good however there are a couple of instances where results are presented before discussion of them. Some of these could be left in the results section, namely lines 338-342, 343-346, 363-365.

Some smaller points:

Line 57: Consider changing to "This average climate warming has already impacted phenology and the distributions of many...:

Line 68: Consider changing "their combination" to "the combination of these"

Line 70: Please add the name of the describer, and the year.

Line 75: this instance of "Lepidopteran" is not needed

Line 82: Consider changing to: "Contrary to the beneficial"

Line 95: "Authors found" is not clear if referring to the previous sentence or the one references at the end of this sentence.

Line 140, Table 1 caption: add "climate" before clusters, it wasn't clear at this stage of the MS what a cluster was.

Line 333: comma after "in Tunisia"

Figure 3 – is it possible to reverse the axes and then have a single column of the 4 clusters? This would potentially make it easier to compare between clusters. If it makes it too cluttered, then this way is ok, just a little harder to compare across columns.

Figure 4: Is it possible to make the x-axis titles clearer, perhaps group under 1 – 4 and then have subtitles for time periods.

Figure 5: Please make the axis text larger