

Plum update

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0.1 Basic model

- subset data to include only observations of flowers (BBCH 60-67) [could drop to 65]
- model: $BBCH.v \sim \text{doy.observation.centered} + (1|\text{species})$.

In this situation we are “controlling for” doy. Performed a LOO comparison vs. Intercept only, and pooling on slopes and intercepts. I also ran a no-pooling model for species only to understand how the partial pooling is impacting results.

- Ran several different kinds of models.
 - Gaussian with BBCH as is (7,9,11,15,17 etc)
 - Gaussian with scaled BBCH (0,1,2,3,4 etc)
 - Poission with scaled BBCH
 - Ordinal (cumulative distrubution with logit link function)

0.2 Trait correlation and hypotheses

- pdsi (drought tolerance hypothesis)

- petal length (insect visibility hypothesis)
- fruit diameter (early flowering hypothesis)
- min T (drought tolerance to cold tolerance hypothesis)
- soil type (drought tolerance or resource allocation)
- phylogeny (emailed Joey Shaw on 14 DEC 2020 for newick file...no response)

0.3 Some plots

Teaser

FLS and Climate Change

	species	Wight_1915	FNA	Agree
1	angustifolia	B	B/W	N
2	gracilis	B	B/W	N
3	umbellata	B	B/W	N
4	nigra	B	B/W	N
5	alleghaniensis	B	B	
6	geniculata	B	B	Y
7	maritima	B	B	Y
8	texana	B	B/W	N
9	rivularis	B/W	B/W	Y
10	mexicana	B/W	B	N
11	munsonia	B/W	B/W	
12	americana	W	B/W	N
13	hortulana	W	B/W	N
14	subcordata	W	W	Y

Figure 1: The two main sources that describe FLS in American plums do it pretty differenty

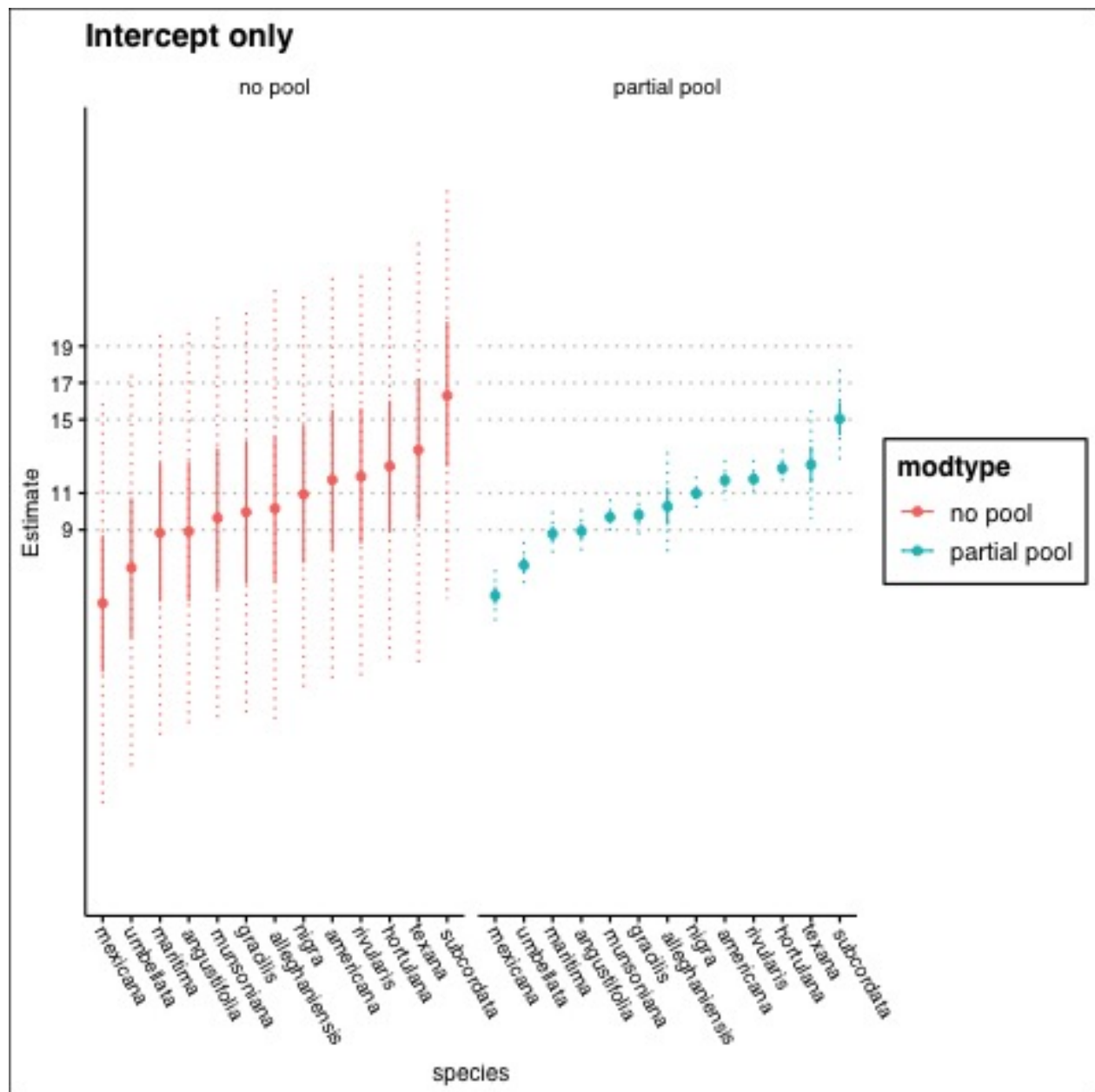


Figure 2: Basic model comparing no-pooling and partial-pooling. Seems like the uncertainty intervals are the main differences

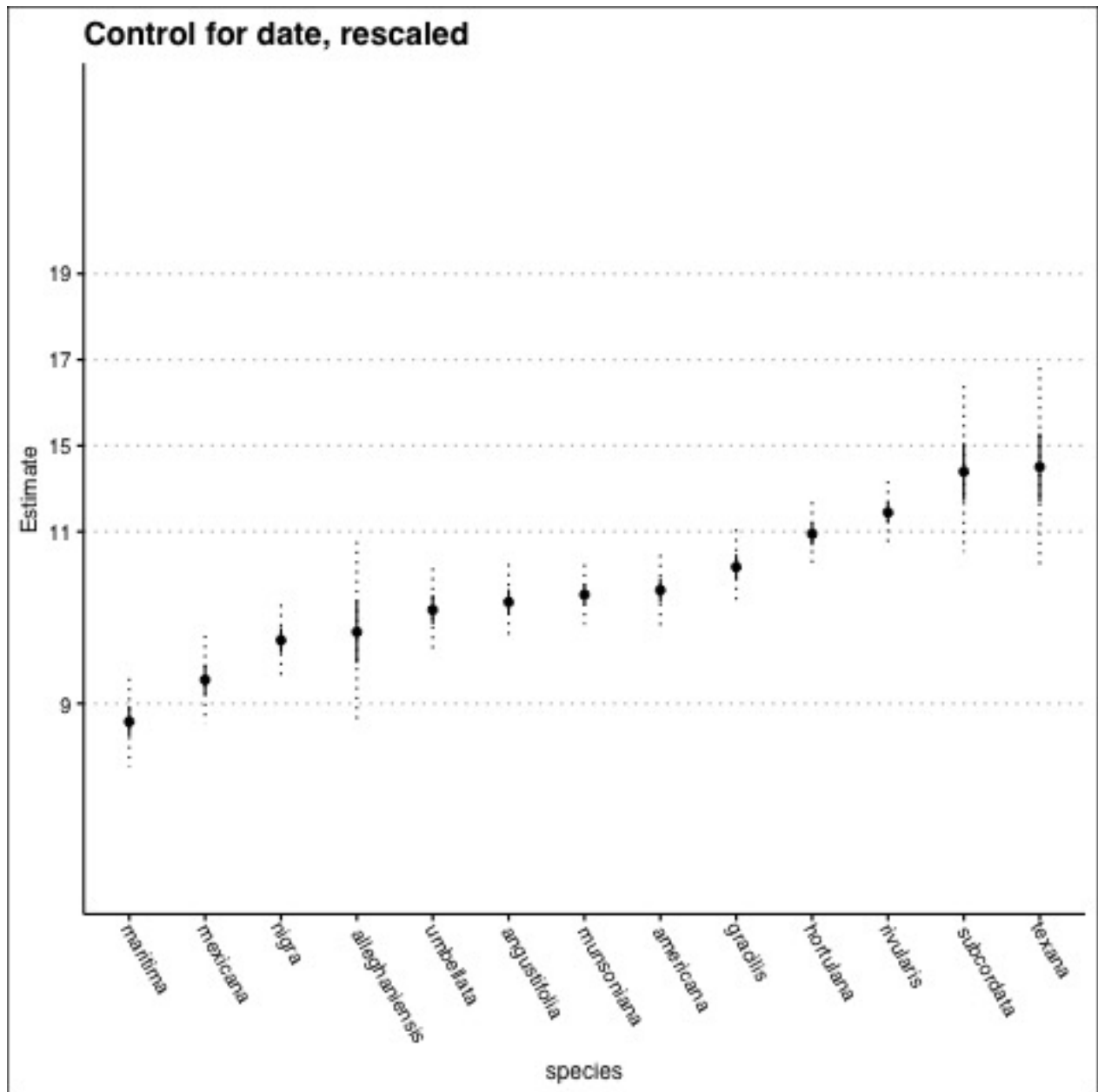


Figure 3: This is gaussian rescaled (BBCH 0,1,2,3 etc), but y axis transfored back to origianl BBCH. Controlling for DOY.

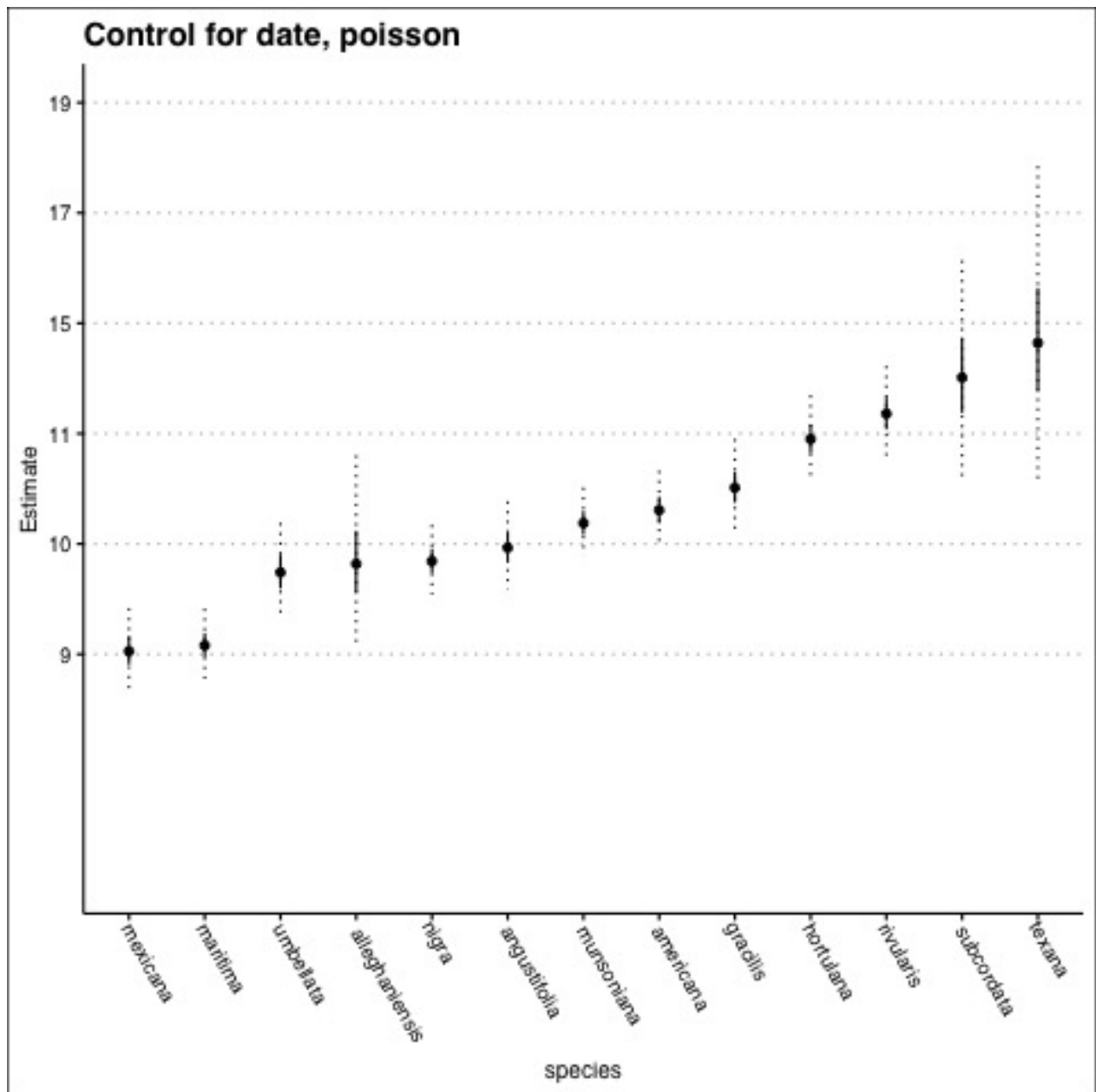


Figure 4: Same as above but poisson

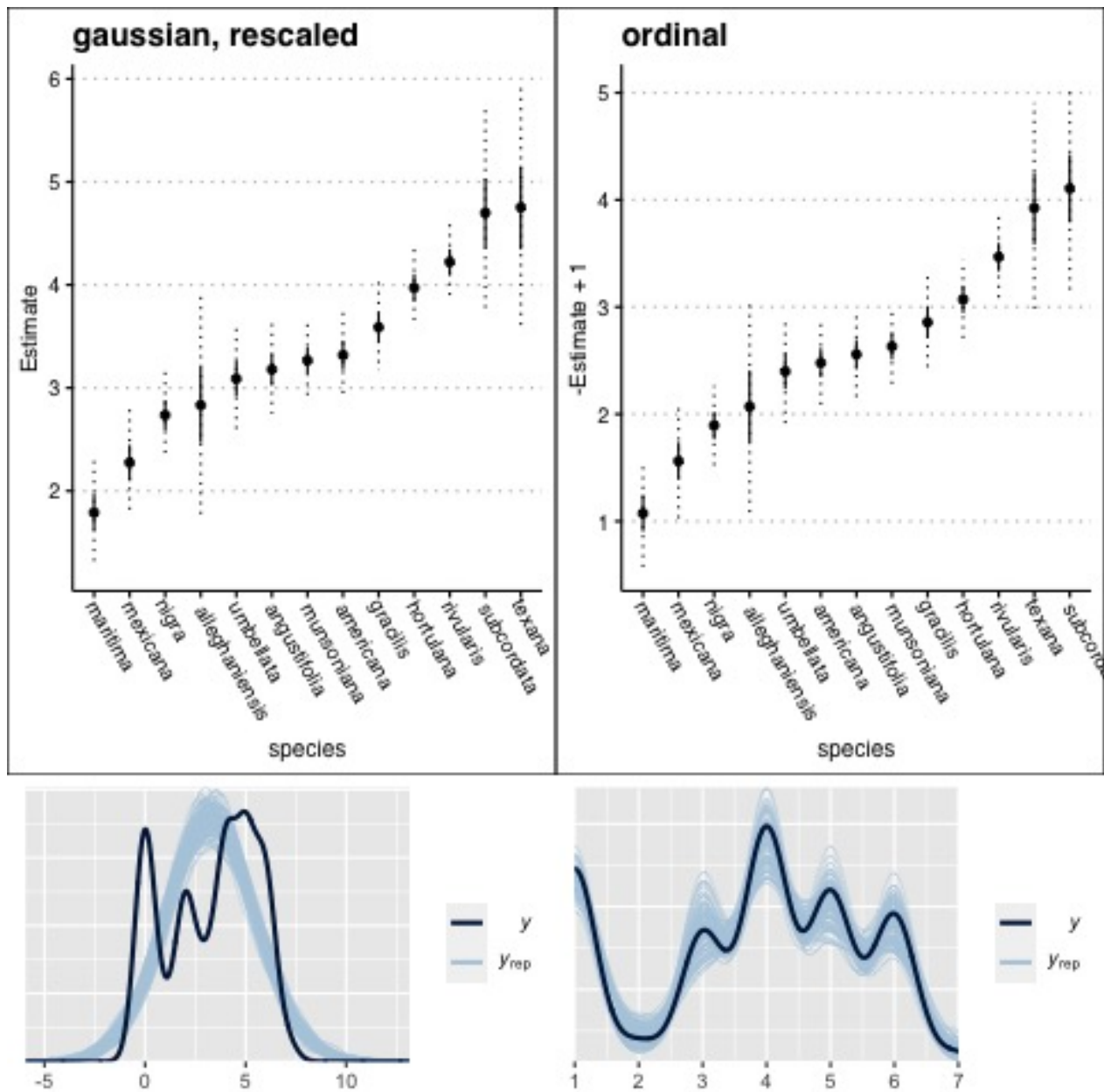


Figure 5: Ordinal vs. rescaled gaussian. (need to fix y axes)

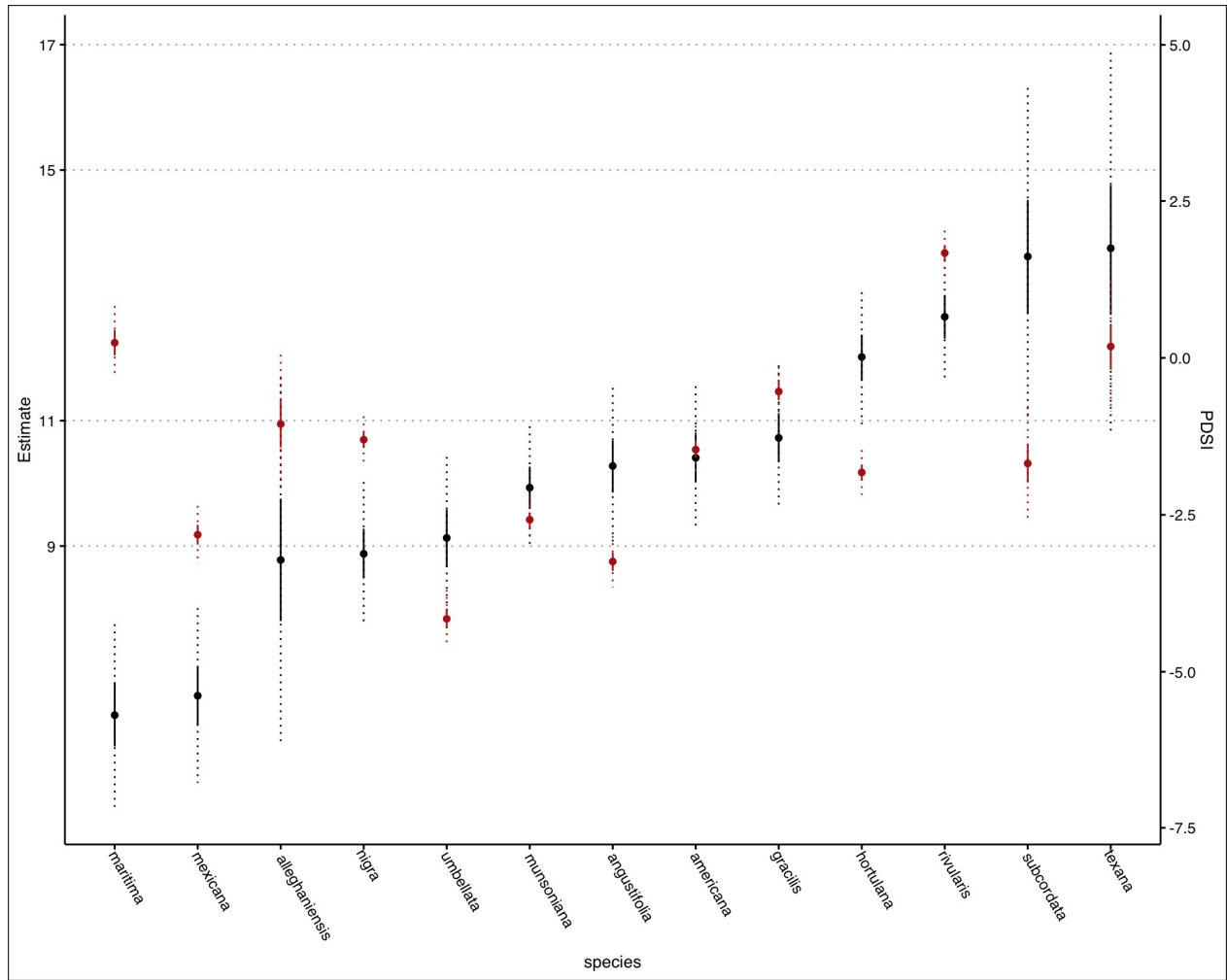


Figure 6: Modeled PDSI (red) and FLS (black) for each species plotted on same axis.
Next step: Joint model

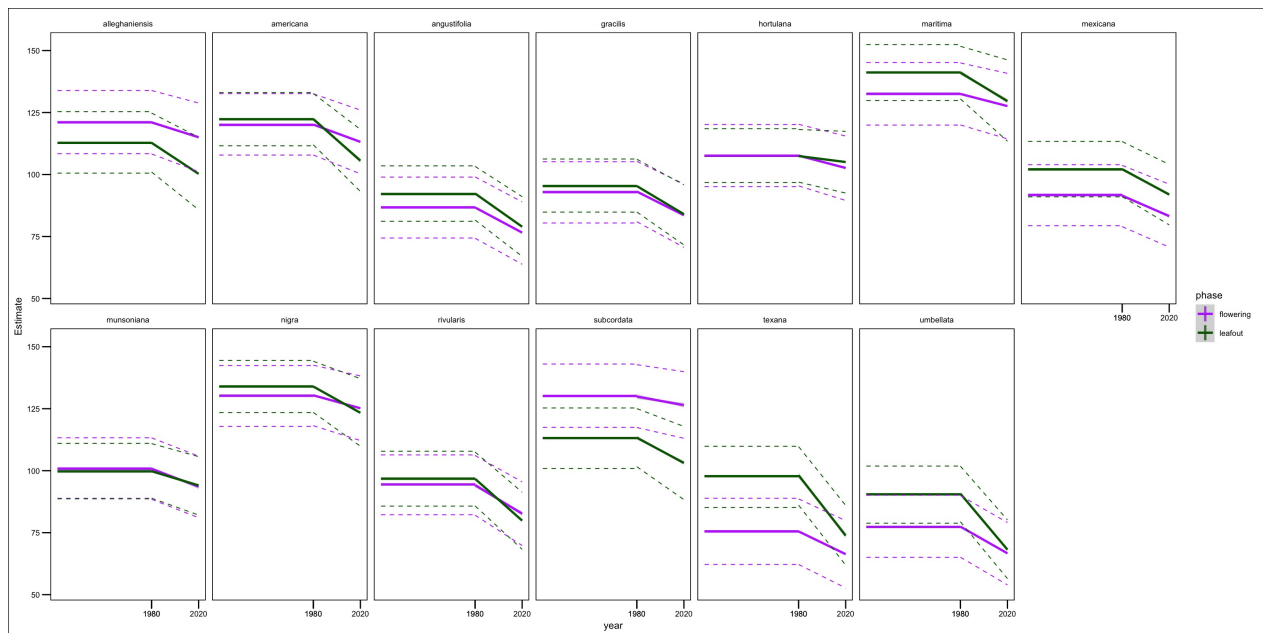


Figure 7: Seems like leaves are more sensitive than flowers