Synchrony-Fitness Meta-analysis 2.0

*Started July 2020*

Plan

1. Literature search for August 2020 (*originally conducted in November/December 2012, updated 2013, 2014, June 2017*)
   1. Search terms: phenolog\* AND mismatch\* OR synchron\* AND interact\* AND (fitness\* OR performance\*)
   2. 2017 criteria, include only those studies that:
      1. Measure phenology directly (exclude those derived measures like NDVI)
      2. Measure phenology on both species
      3. Quantitatively link consumer fitness or performance to relative timing between consumer and resource
      4. Explicitly state that the two species interact
      5. Direct estimates of consumer fitness or performance (exclude diet proportions e.g.,)
      6. Resolved to family-level and below
      7. Long-term data, >= 5 years (24 observational studies, 9/30 interactions were terrestrial) \* did not include this criteria for papers included in K&W 2020
   3. 2020 criteria, include only those studies that:
      1. *will include studies that don’t measure phenology directly*
      2. Measure phenology on both species
      3. Quantitatively link consumer fitness or performance to relative timing between consumer and resource
      4. Explicitly state that the two species interact
      5. Direct or modelled estimates of consumer fitness or performance (exclude diet proportions e.g.,)
      6. Resolved to family-level and below
      7. Have a minimum of 3 site-year combinations
      8. Additional criteria
         1. Observational
         2. Only trophic interactions
         3. Terrestrial
2. Notes to make on individual studies
   1. Data collected in 2017:
      1. Sampling frequency, phenological phase and whether modelled or directly observed, fitness component and type
      2. Interaction level: biome, interaction type, mismatch scale (positive and/or negative) and interpretation
      3. Species level: role (C or R), taxonomic group
   2. Individual-level data available,
   3. Resource and/or consumer seasonal distributions available
3. Analysis
   1. First pass filter- 1st assumption of Cushing hypothesis (*papers are most likely to have*)
      1. Reasonable evidence in paper OR from atlas-type descriptions that length of resource season < consumer (*Samplonius et al. criteria*)
   2. Second pass filter
      1. Define match (true 0 where peak of most energetic phase overlaps with peak of resource)
   3. Third filters (*papers are least likely to have*)
      1. Reasonable evidence in support for second assumption (consumer fitness determined by resource)
      2. Total fitness