**Data Description**

The folder structure and contents of the SI data files are detailed below.

All data matrix and tree files will open in plain text editors and the relevant analytic packages as identified below. Note that nexus files which cannot be formatted as generalised nexus should only be opened in the specific programs used in this study to run them e.g. PAUP or MrBayes (these files are identified below).

**Dataset 1**

Data: Data files only.

- Morphology: the morphological data, including the character list and modifications (word), current matrix (generalised nexus), and former matrix (generalised nexus).
- Molecular: the molecular data, including loci information (word) and matrix (generalised nexus).
- Combined: the morphological and molecular data (PAUP nexus format).

Analyses: Data files with analysis scripts.

- Combined (morph + molec data)
    - Bayesian: MrBayes run file (MrBayes nexus format), and consensus tree with posteriors (pdf and generalised nexus).
    - Parsimony: PAUP run file (PAUP nexus format), and strict consensus of most-parsimonious trees (pdf and generalised nexus) and majority-rule bootstrap consensus bootstrap percentages (pdf and generalised nexus).
- Morphology
    - Bayesian: MrBayes run file (MrBayes nexus format), and consensus tree with posteriors (pdf and generalised nexus).
    - Parsimony: PAUP run file (generalised nexus), and strict consensus of most-parsimonious trees (pdf and generalised nexus) and majority-rule bootstrap consensus with bootstrap percentages (pdf and generalised nexus).
- ModelFit: Bayesian model fit for morphological clock
- Stepping stone analyses of alternative morphological clock models - MrBayes run file (MrBayes nexus format), and outputs (plain text).

**Dataset 2**

Data: Data files only.

- Morphology: the morphological character list (word) and data (generalised nexus format).
- Combined: the morphological and molecular data (PAUP nexus format).

Analyses: Data files with analysis scripts.

- Combined (morph + molec data)
    - Bayesian: MrBayes run file (MrBayes nexus format), and consensus tree with posteriors (pdf and generalised nexus).
    - Parsimony: PAUP run file (PAUP nexus format), and strict consensus of most-parsimonious trees (pdf and generalised nexus) and majority-rule bootstrap consensus bootstrap percentages (pdf and generalised nexus).

- Morphology
    - Bayesian: MrBayes run file (MrBayes nexus format), and consensus tree with posteriors (pdf and generalised nexus).
    - Parsimony: PAUP run file (generalised nexus), and strict consensus of most-parsimonious trees (pdf and generalised nexus) and majority-rule bootstrap consensus bootstrap percentages (pdf and generalised nexus).