**Improper data practices erode the quality of global ecological databases and impede the progress of ecological research**

**Supplementary Information**

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# **Appendix A. TRY dataset descriptions**

What follows is a description of each of the 120 datasets that contained SLA data for the four plant groups within the study (conifers, *Plantago*, *Poa*, and *Quercus*). The bolded, underlined words are the title of the dataset that was provided to TRY. The numbered bullet point(s) is the reference(s) of the dataset if provided [*Database References(s)*] or the reference(s) that was cited by the database reference [*Data References(s)*], if any were cited. When a database reference was not provided, we labeled it as unpublished. We begin each summary by listing the plant groups that the dataset contained data for. For each dataset, we discuss overarching dataset issues (if present) as well as specific issues regarding certain data point sources within the dataset. We also list any assumptions that we made about the dataset during the data cleaning process.

**A Global Data Set of Leaf Photosynthetic Rates, Leaf N and P, and Specific Leaf Area**

*Database Reference(s)*

1. Walker et al. 2014. The relationship of leaf photosynthetic traits - Vcmax and Jmax - to leaf nitrogen, leaf phosphorus, and specific leaf area: a meta-analysis and modeling study. *Ecology and Evolution*.

*Data Reference(s)*

* 1. Aranda et al. 2005. Effects of the interaction between drought and shade on water relations, gas exchange and morphological traits in cork oak (*Quercus suber* L.) seedlings. *Forest Ecology and Management*.
  2. Bauer et al. 2001. Regenerating temperate forests under elevated CO2 and nitrogen deposition: comparing biochemical and stomatal limitation of photosynthesis. *New Phytologist*.
  3. Bown et al. 2007. Partitioning concurrent influences of nitrogen and phosphorus supply on photosynthetic model parameters of *Pinus radiata*. *Tree Physiology*.
  4. Han et al. 2008. Leaf-age effects on seasonal variability in photosynthetic parameters and its relationships with leaf mass per area and leaf nitrogen concentration within a *Pinus densiflora* crown. *Tree Physiology*.
  5. Manter et al. 2005. Growth response of Douglas-fir seedlings to nitrogen fertilization: importance of Rubisco activation state and respiration rates. *Tree Physiology*.
  6. Merilo et al. 2006. Leaf photosynthetic properties in a willow (*Salix viminalis* and *Salix dasyclados*) plantation in response to fertilization. *European Journal of Forest Research*.
  7. Merilo et al. 2009. Changes in needle nitrogen partitioning and photosynthesis during 80 years of tree ontogeny in *Picea abies*. *Trees*.
  8. Porté and Loustau. 1998. Variability of the photosynthetic characteristics of mature needles within the crown of a 25-year-old *Pinus pinaster*. *Tree Physiology*.
  9. Rodriguez-Calcerrada et al. 2008. Leaf physiological versus morphological acclimation to high-light exposure at different stages of foliar development in oak. *Tree Physiology*.
  10. Watanabe et al. 2011. Growth and photosynthetic traits of hybrid larch F1 (*Larix gmelinii* var. *japonica* × *L. kaempferi*) under elevated CO2 concentration with low nutrient availability. *Tree Physiology*.
  11. Wohlfahrt et al. 1999. Inter-specific variation of the biochemical limitation to photosynthesis and related leaf traits of 30 species from mountain grassland ecosystems under different land use. *Plant, Cell and Environment*.

*Conifers*, *Plantago*, *Quercus* – Contained data that were used in Walker et al. 2014. The data were a compilation of 11 published sources, and each data point could be linked to a source and was cited in TRY. All of the papers had the data in the main text. There were data uploaded for *Picea abies* that were cited as Merilo et al. 2006, but that study looked at *Salix*. All of the *Salix* data in Merilo et al. 2006 could be linked to *Picea abies* data that were uploaded to TRY. The conifer data from Bown et al. 2007 and Porté and Loustau 1998 were measured on a total leaf area basis. The data for the database reference could be downloaded outside of TRY from the ORNL DAAC ([link](http://dx.doi.org/10.3334/ORNLDAAC/1224)). The data uploaded to TRY were rounded to the nearest integer, causing TRY to mark many of these as duplicates that would not have been marked if they were not rounded. We did not consider them duplicates unless they were uploaded by another dataset.

**Abisko and Sheffield Database**

*Database Reference(s)*

1. Cornelissen et al. 1996. Seedling growth, allocation and leaf attributes in a wide range of woody plant species and types. *Journal of Ecology*.
2. Cornelissen et al. 2004. Leaf digestibility and litter decomposability are related in a wide range of subarctic plant species and types. *Functional Ecology*.
3. Quested et al. 2003. Decomposition of sub-arctic plants with differing nitrogen economies: a functional role for hemiparasites. *Ecology*.

*Quercus* – Contained data from three papers, all of which are cited as database references. All the data for Cornelissen et al. 1996 were presented in the paper. Needle-leaved species in Cornelissen et al. 1996 were measured on a true one-sided area basis. The data for Quested et al. 2003 and Cornelissen et al. 2004 were not presented in the paper, but all of the species with data are present in the supplemental material. There is no mention of SLA in Quested et al. 2003. The data for Quested et al. 2003 were all uploaded multiple times and are the same data as Cornelissen et al. 2004. The data were uploaded to TRY by the author of the papers.

**Altitudinal Vicariants Spain**

*Database Reference(s)*

1. Milla and Reich. 2011. Multi-trait interactions, not phylogeny, fine-tune leaf size reduction with increasing altitude. *Annals of Botany*.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Contained data from one paper (Milla and Reich 2011). The data were neither presented in the paper nor available outside of TRY, but were uploaded to TRY by the author of the paper.

**ArtDeco Database**

*Database Reference(s)*

1. Cornwell et al. 2008. Plant species traits are the predominant control on litter decomposition rates within biomes worldwide. *Ecology Letters*.

*Plantago*, *Poa*, *Quercus* – Contained data that were used in Cornwell et al. 2008. The data came from a larger dataset and the references could be seen in the appendix of the paper, however, none were cited in TRY. Cornwell was not an author of any of the published papers, so this data could be their unpublished data. However, many of the data points were the same as Cornelissen. 1996 and Garnier et al. 2007.. We assumed the data uploaded as the ArtDeco Database were not their own and were uncited. Some of the data points were uploaded multiple times.

**BAAD: A Biomass and Allometry Database for Woody Plants**

*Database Reference(s)*

1. Falster et al. 2015. BAAD: a biomass and allometry database for woody plants. *Ecology*.

*Data Reference(s)*

* + - 1. Aspinwall et al. 2013. Productivity differences among loblolly pine genotypes are independent of individual-tree biomass partitioning and growth efficiency. *Trees*.
      2. Baltzer and Thomas. 2007. Physiological and morphological correlates of whole-plant light compensation point in temperate deciduous tree seedlings. *Oecologia*.
      3. Claveau et al. 2005. Interacting influence of light and size on aboveground biomass distribution in sub-boreal conifer saplings with contrasting shade tolerance. *Tree Physiology*.
      4. Domec et al. 2012. Effects of age-related increases in sapwood area, leaf area, and xylem conductivity on height-related hydraulic costs in two contrasting coniferous species. *Annals of Forest Science*.
      5. Kohyama and Grubb. 1994. Below- and above-ground allometries of shade-tolerant seedlings in a Japanese warm-temperate rain forest. *Functional Ecology*.
      6. Martin et al. 1998. Aboveground biomass and nitrogen allocation of ten deciduous southern Appalachian tree species. *Canadian Journal of Forest Research*.
      7. Portsmuth et al. 2005. Biomass allocation and growth rates in *Pinus sylvestris* are interactively modified by nitrogen and phosphorus availabilities and by tree size and age. *Canadian Journal of Forest Research*.
      8. Roth et al. 2007. Genotype x environment interactions in selected loblolly (*Pinus taeda* L.) and slash pine (*P. elliottii* Engelm. var. *elliottii*) plantations in the southeastern United States. *Forest Ecology and Management*.
      9. Saldaña-Acosta et al. 2009. Seedling biomass allocation and vital rates of cloud forest tree species: responses to light in shade house conditions. *Forest Ecology and Management*.
      10. Tissue. Unpublished.

*Conifers*, *Quercus* – Contained raw data from nine papers, some of which had the data in the main text, and one unpublished source. None of the sources were cited in TRY, but were cited in the BAAD database, which could be found outside of TRY ([link](https://figshare.com/collections/BAAD_a_Biomass_And_Allometry_Database_for_woody_plants/3307692)). The minimum, maximum, and mean values presented in the main text of Martin et al. 1998 did not line up with the data that were uploaded to TRY (e.g., max of *Quercus alba* in the paper is 22.54 but in TRY is 21.08 mm2 mg-1). SLA for Claveau et al. 2005 was measured on a double projected leaf area basis. The raw SLA data for Claveau et al. 2005 could be seen in Figure 6 and are much different than the data uploaded to TRY, though there were a similar amount of observations. For example, the SLA for *Abies balsamea* ranged from 9.1-14.3 in the paper but from 10.1-39.5 in TRY, while *Pinus banksiana* ranged from 5.9-9.1 in the paper but from 1.2-52.8 in TRY. SLA was not mentioned in Roth et al. 2007. SLA in Domec et al. 2012 was measured on an all-sided basis for *Pinus*. The mean SLA data for Domec et al. 2012 could be seen in a table in the main text and lined up with the data uploaded to TRY, but the raw data were not available. SLA for Portsmuth et al. 2005 was measured on a total-leaf area basis. The raw data in TRY for Baltzer and Thomas 2007, Saldaña-Acosta et al. 2009, and Kohyama and Grubb 1994 lined up with what was presented in the main text.

**California Coastal Grassland Database**

*Database Reference(s)*

1. Sandel et al. 2011. Using plant functional traits to guide restoration: a case study in California coastal grassland. *Ecosphere*.

*Plantago* – Contained data from one paper (Sandel et al. 2011). The data were neither presented in the paper nor available outside of TRY, but were uploaded to TRY by the author of the paper.

**Catalonian Mediterranean Forest Trait Database**

*Database Reference(s)*

1. Ogaya and Penuelas. 2003. Comparative field study of *Quercus ilex* and *Phillyrea latifolia*: photosynthetic response to experimental drought conditions. *Environmental and Experimental Botany*.

*Quercus* – Contained data for many species of oaks. Only *Quercus ilex* was in the dataset reference, and SLA was not measured in that paper. Since none of the data in this database line up with any data in TRY, we assumed that the data are their own that was either unpublished or from different papers, but we were unable to determine their source.

**Causasus Plant Traits Database**

*Database Reference(s)*

1. Soudzilovskaia. Unpublished.

*Plantago*, *Poa* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data are associated with a now-published paper.

**Cedar Creek Plant Physiology Database**

*Database Reference(s)*

1. Bunker. Unpublished.

*Poa* – Contained a single unpublished data point from what we assumed to be a single source and was uploaded by who we assumed was the author. It was unclear whether this data point was associated with a now-published paper.

**Cedar Creek Savanna SLA, C, N Database**

*Database Reference(s)*

1. Willis et al. 2010. Phylogenetic community structure in Minnesota oak savanna is influenced by spatial extent and environmental variation. *Ecography*.

*Poa*, *Quercus* – Contained data from one paper (Willis et al. 2010). Data were not presented in paper, but were uploaded to TRY by the author of the paper. Data were available from the Cedar Creek website. There was no way to definitively connect data to paper (i.e., raw data or means not presented in publication), but we assumed that the data that were uploaded in this database were for this specific paper since both *Quercus ellipsoidalis* and *Quercus macrocarpa* were the only species with data and were a focus of the study.

**Chinese Savanna Trees – Aboveground Trait Data**

*Database Reference(s)*

1. Boonman. Unpublished.

*Quercus* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Chinese Traits**

*Database Reference(s)*

1. Prentice et al. 2011. Evidence of a universal scaling relationship for leaf CO2 drawdown along an aridity gradient. *New Phytologist*.

*Conifers*, *Plantago*, *Quercus* – Contained data from one paper (Prentice et al. 2011). The data were neither presented in the paper nor available outside of TRY, but were uploaded to TRY by the author of the paper.

**Costa Rican Tropical Dry Forest Trees**

*Database Reference(s)*

1. Powers and Tiffin 2012. Plant functional type classifications in tropical dry forests in Costa Rica: leaf habit versus taxonomic approaches. *Functional Ecology*.

*Quercus* – Contained data from one paper (Powers and Tiffin 2012). Mean trait values were provided in the supplement of the paper, which match the data uploaded to TRY. The data were uploaded by the author of the paper.

**Eastern US Old Field Plant Traits Database**

*Database Reference(s)*

1. Siefert et al. 2014. Community functional responses to soil and climate at multiple spatial scales: when does intraspecific variation matter? *PLOS One*.

*Plantago*, *Poa* – Contained data from Siefert et al. 2014. Data could be found online at the Knowledge Network for Biocomplexity ([link](https://knb.ecoinformatics.org/view/doi%3A10.5063%2FF1JM27JF)). The data were uploaded to TRY by the author and cited.

**ECOCRAFT**

*Database Reference(s)*

1. Medlyn et al. 1999. Effects of elevated CO2 on photosynthesis in European forest species: a meta-analysis of model parameters. *Plant, Cell and Environment*.

*Conifers*, *Quercus* – Contained data that were used in Medlyn et al. 1999. The data come from a larger dataset and references could be seen in the main text, but were not cited in TRY. Medlyn was an author of many of the published and unpublished sources, so this data could be their data, but we ultimately were unable to determine the source as none of the data were cited in TRY. The amount of significant digits varied substantially within the dataset. There were a lot of repeated data points for *Picea abies*, notably for data points that were either integers or went to one decimal point. We considered these duplicates.

**European Mountain Meadows Plant Traits Database**

*Database Reference(s)*

1. Bahn et al. 1999. Leaf photosynthesis, nitrogen contents and specific leaf area of 30 grassland species in differently managed mountain ecosystems in the Eastern Alps. *Land-use changes in European mountain ecosystems. ECOMONT-Concept and Results*.

*Plantago*, *Poa* – Contained data from a book chapter (Bahn et al. 1999). There was a paper from the same year that had most of the same authors and a similar title (Wohlfahrt et al. 1999). However, some of the species with data were not in the study. We assume these are data collected by the author and were either unpublished or in a different paper.

**European North Russia**

*Database Reference(s)*

1. Dalke et al. 2018. Morphological and functional traits of herbaceous plants with different functional types in the European Northeast. *Plant Ecology*.

*Plantago*, *Poa* – Contained data from one paper (Dalke et al. 2018). The data uploaded contained the minimum, mean, and maximum value. The mean can be validated in the paper. The data uploaded as a mean appeared to be the raw data since together they had the same mean as in the paper. The data were uploaded to TRY by one of the authors.

**Floridian Leaf Traits Database**

*Database Reference(s)*

1. Cavender-Bares et al. 2006. Phylogenetic structure of floridian plant communities depends on taxonomic and spatial scale. *Ecology*.

*Conifers*, *Quercus* – Contained data from one paper (Cavender-Bares et al. 2006). The data were neither presented in the paper nor available outside of TRY, but were uploaded to TRY by the author of the paper. Some of the conifer data were flagged as a duplicate by TRY but appear to be original.

**Fonseca/Wright New South Wales Database**

*Database Reference(s)*

1. Fonseca et al. 2000. Shifts in trait-combinations along rainfall and phosphorus gradients. *Journal of Ecology*.

*Conifers* – Contained data from one paper (Fonseca et al. 2000). The data were neither presented in the paper nor available outside of TRY and were uploaded to TRY by someone who was not an author of the paper.

**French Alps Trait Data**

*Database Reference(s)*

1. Gos et al. 2016. Relative contribution of soil, management and traits to co-variations of multiple ecosystem properties in grasslands. *Oecologia*.

*Plantago*, *Poa* – Contained data from one paper (Gos et al. 2016). The data were neither presented in the paper nor available outside of TRY, but were uploaded to TRY by one of the authors of the paper. There was no mention as to how SLA was measured in the paper.

**French Massif Central Grassland Trait Database**

*Database Reference(s)*

1. Louault et al. 2005. Plant traits and functional types in response to reduced disturbance in a semi-natural grassland. *Journal of Vegetation Science*.

*Poa* – Contained data from one paper (Louault et al. 2005). The data were neither presented in the paper nor available outside of TRY, but were uploaded to TRY by the author of the paper.

**Functional Resilience of Temperate Forests Dataset**

*Database Reference(s)*

1. Liebergesell et al. 2016. Functional resilience against climate-driven extinctions - comparing the functional diversity of European and North American tree floras. *PLOS One*.

*Conifers*, *Quercus* – Contained data that were used in Liebergesell et al. 2016. The data come from a larger dataset and could be seen in the supplement of the paper. There was a supplemental file that listed references where the data were obtained as well as provided the data that were used, but the individual data points did not have a reference associated with them. The data uploaded to TRY had a single value for each species and did not have a reference, suggesting that a mean of each species from a larger set of data was uploaded to TRY. Some data points matched up to other data in TRY, suggesting that they only had a single source for some species. We considered these data points to be duplicates.

**Functional Traits Explaining Variation in Plant Life History Strategies**

*Database Reference(s)*

1. Adler et al. 2014. Functional traits explain variation in plant life history strategies. *PNAS*.

*Conifers*, *Plantago*, *Poa* – Contains data that were used in Adler et al. 2014. The methods of this paper state that the data used in this paper were downloaded from TRY. The data uploaded has a single value for each species and does not have a reference, suggesting that a mean of each species was generated using TRY data and was then uploaded to TRY. Some data points match up to other data in TRY, suggesting that they only had a single source for some species.

**Functional Traits of Trees**

*Database Reference(s)*

1. Paine et al. 2015. Globally, functional traits are weak predictors of juvenile tree growth, and we do not know why. *Journal of Ecology*.

*Data Reference(s)*

* + - 1. Both and Bruelheide. Unpublished.
      2. Haase and Scherer-Lorenzen. Unpublished.
      3. Jactel. Unpublished.
      4. Paquette and Messier. 2011. The effect of biodiversity on tree productivity: from temperate to boreal forests. *Global Ecology and Biogeography*.
      5. Walters and Reich. 2000. Seed size, nitrogen supply, and growth rate affect tree seedling survival in deep shade. *Ecology*.

*Quercus* – Contained data that were used in Paine et al. 2015, most of which were unpublished and were not cited in TRY, but the citations can be seen in the database outside of TRY. The database was available outside of TRY from Dryad ([link](https://doi.org/10.5061/dryad.h9083)). The methods of Paquette and Messier 2011 stated that they got their data from Glopnet. Often data from Paquette and Messier 2011 only had a single data point for a species, even when there were multiple data points for that species in Glopnet. However, sometimes the data from Paquette and Messier 2011 were identical to Glopnet data. When the data in Paquette and Messier 2011 did not line up with Glopnet data, we assumed these were mean values from Glopnet.

**Global A, N, P, SLA Database**

*Database Reference(s)*

1. Reich et al. 2009. Leaf phosphorus influences the photosynthesis-nitrogen relation: a cross-biome analysis of 314 species. *Oecologia*.

*Data Reference(s)*

* + - 1. Oleksyn. Unpublished.

*Quercus* – Contained data that were used in Reich et al. 2009. The database was not available outside of TRY. The study used data from many published and unpublished sources, which were listed in the supplement. Many of the papers listed in the supplement of this study had previously had their data uploaded to TRY. None of the data in the Global A, N, P, SLA Database matched up with those data. This was possibly because unpublished data were used in this paper, but we were ultimately unable to tell.

**Global Leaf Gas Exchange Database (II)**

*Database Reference(s)*

1. Knauer et al. 2017. Towards physiologically meaningful water-use efficiency estimates from eddy covariance data. *Global Change Biology*.

*Data Reference(s)*

* + - 1. Martin-StPaul et al. 2012. Photosynthetic sensitivity to drought varies among populations of *Quercus ilex* along a rainfall gradient. *Functional Plant Biology*.

*Quercus* – Contained data that were used in Knauer et al. 2017. The database was not available outside of TRY. The study used data from many sources, which were listed in the main text and were cited in TRY. The data for Martin-St. Paul et al. 2012 were not publicly available outside of TRY so we could not verify them. The uploader was not an author of the data reference.

**Global Leaf Robustness and Physiology Database**

*Database Reference(s)*

1. Niinemets. 2001. Global-scale climatic controls of leaf dry mass per area, density, and thickness in trees and shrubs. *Ecology*.

*Data Reference(s)*

* + - 1. Abrams and Kubiske. 1990. Leaf structural characteristics of 31 hardwood and conifer tree species in central Wisconsin: influence of light regime and shade-tolerance rank. *Forest Ecology and Management*.
      2. Abrams et al. 1994. Relating wet and dry year ecophysiology to leaf structure in contrasting temperate tree species. *Ecology*.
      3. Aussenac and Ducrey. 1977. Etude bioclimatique d'une futaie feuillue (*Fagus silvatica* L. et *Quercus sessiliflora* Salisb.) de l'Est de la France. *I - analyse des profils microclimatiques et des caractéristiques anatomiques et morphologiques de l'appareil foliaire Annales des Sciences Forestieres.*
      4. Camacho and Bellefleur. 1996. Aclimatación morfológica a la luz en seis especies arbóreas de los bosques montanos de Costa Rica. *Revista de Biologia Tropical*.
      5. Castro-Díez et al. 1997. Leaf morphology and leaf chemical composition in three *Quercus* (Fagaceae) species along a rainfall gradient in NE Spain. *Trees*.
      6. Christodoulakis and Mitrakos. 1987. Structural analysis of sclerophylly in eleven evergreen phanerophytes in Greece. *Plant Response to Stress*.
      7. Faria et al. 1996. Growth at elevated CO2 leads to down-regulation of photosynthesis and altered response to high temperature in *Quercus suber* L. seedlings. *Journal of Experimental Botany*.
      8. Goryshina et al. 1979. Vestnik Leningradskogo Gosudarstvennogo Universiteta.
      9. Grossoni et al. 1998. Morpho-anatomical aterations in leaves of *Gagus vatica* L. and *Quercus ilex* L. in different environmental stress conditions. *Chemosphere*.
      10. Kloeppel et al. 1993. Seasonal ecophysiology and leaf morphology of four successional Pennsylvania barrens species in open versus understory environments. *Canadian Journal of Forest Research*.
      11. Koike. 1988. Leaf structure and photosynthetic performance as related to the forest succession of deciduous broad-leaved trees. *Plant Species Biology*.
      12. Kubiske and Abrams. 1992. Photosynthesis, water relations, and leaf morphology of xeric versus mesic *Quercus rubra* ecotypes in central Pennsylvania in relation to moisture stress. *Canadian Journal of Forest Research*.
      13. Leßner. 1994. Die Beziehung zwischen Gaswechsel, Blattdemographie und Stickstoffhaushalt an immer- und wechselgrünen mediterranen Holzgewachsen.
      14. Terradas and Savé. 1992. The influence of summer and winter stress and water relationships on the distribution of *Quercus ilex* L. *Vegetatio*.

*Quercus* – Contained data that were used in Niinemets 2001. The database was not available outside of TRY. The study used data from other published papers that could be found either in a figure or a table within them and were cited in TRY. There were two PhD theses that we were unable to find online (Goryshina et al. 1979, Leßner 1994).

**Global Respiration Database**

*Database Reference(s)*

1. Atkin et al. 2015. Global variability in leaf respiration among plant functional types in relation to climate and leaf traits. *New Phytologist*.

*Data Reference(s)*

* + - 1. Atkin, Griffin
      2. Griffin, Turnbull
      3. Guerrieri
      4. Kattge et al. 2011. TRY–a global database of plant traits. Global Change Biology.
      5. Niinemets
      6. Reich
      7. Weerasinghe
      8. Wright
      9. Zaragoza-Castells

*Conifers*, *Poa*, *Quercus* – Contained data that were used in Atkin et al. 2015. The database was not available outside of TRY. The data came from a larger dataset, and the references could be seen in the supplemental information. The data were a compilation of many published and unpublished sources. When uploaded to TRY, the references that were listed are the last name of an author. Issues arose because many of the authors provided both published and unpublished data. For example, Peter Reich was reported to have provided two unpublished and ten published datasets, but all were cited as ‘Reich’. For many data points, we were unable to distinguish as to what dataset a data point came from. Several of the data points could be linked to published papers, but most of these data points were not flagged as duplicates by TRY. Niinemets was also listed as a reference in TRY but was not a reference in supplemental information of the database manuscript. Kattge was listed as a reference for many of the data points in TRY and the only source associated with Kattge in the supplemental was Kattge et al. 2011 (the first TRY publication), which could imply that the data for which Kattge was cited was a species mean from TRY. Data points for which Kattge was the reference that did not line up with a data point within TRY were considered a mean of multiple data points from within TRY.. All of the data points with Wright as a reference could be linked to data from Wright et al. 2004.

**Global Respiration Database**

*Database Reference(s)*

1. Reich et al. 2008. Scaling of respiration to nitrogen in leaves, stems and roots of higher land plants. *Ecology Letters*.

*Poa*, *Quercus* – Contained data that were used in Reich et al. 2008. The database was not available outside of TRY. Reich et al. 2008 was also a source for Atkin’s ‘Global Respiration Database,’ so it was unclear as to whether this was a separate database (Reich uploaded the current one while Aktin uploaded the other). Data came from a larger dataset and references could be seen in the supplemental information. The data were a compilation of many published and one unpublished source. None of the data in TRY had a reference so we could not determine where the data came from. Since Reich was not the source of the unpublished data in this paper, we assumed that the data were from either the unpublished data source or from other published papers. Several of the data points could be linked to published papers, and all the data were flagged as duplicates by TRY.

**GLOPNET – Global Plant Trait Network Database**

*Database Reference(s)*

1. Wright et al. 2004. The worldwide leaf economics spectrum. *Nature*.

*Data Reference(s)*

* + - 1. Ackerly. Unpublished.
      2. Bassow and Bazzaz. 1997. Intra- and inter-specific variation in canopy photosynthesis in a mixed deciduous forest. *Oecologia*.
      3. Cavender-Bares. Unpublished.
      4. Chapin et al. 1996. Plant functional types as predictors of transient responses of arctic vegetation to global change. *Journal of Vegetation Science*.
      5. Chapin. Unpublished.
      6. Christodoulakis and Mitrakos. 1987. Structural analysis of sclerophylly in eleven evergreen phanerophytes in Greece. *Plant response to stress*.
      7. Cornelissen. Unpublished.
      8. DeLucia and Schlesinger. 1991. Resource-use efficiency and drought tolerance in adjacent Great Basin and Sierran plants. *Ecology*.
      9. Diemer. 1998. Life span and dynamics of leaves of herbaceous perennials in high-elevation environments: ‘news from the elephant's leg’. *Functional Ecology*.
      10. Garnier et al. 2001. Consistency of species ranking based on functional leaf traits. *New Phytologist*.
      11. Gulias et al. 2003. The relationship between maximum leaf photosynthesis, nitrogen content and specific leaf area in Balearic endemic and non-endemic Mediterranean species. *Annals of Botany*.
      12. Hikosaka and Hirose. 2000. Photosynthetic nitrogen-use efficiency in evergreen broad-leaved woody species coexisting in a warm-temperate forest. *Tree Physiology*.
      13. Jose and Gillespie. 1996. Aboveground production efficiency and canopy nutrient contents of mixed-hardwood forest communities along a moisture gradient in the central United States. *Canadian Journal of Forest Research*.
      14. Jose and Gillespie. 1997. Leaf area-productivity relationships among mixed-species hardwood forest communities of the central hardwood region. *Forest Science*.
      15. Jurik. 1986. Temporal and spatial patterns of specific leaf weight in successional northern hardwood tree species. *American Journal of Botany*.
      16. Koike. 1988. Leaf structure and photosynthetic performance as related to the forest succession of deciduous broad-leaved trees. *Plant Species Biology*.
      17. Kudo and Cornelissen. Unpublished.
      18. Kudo. 1996. Intraspecific variation of leaf traits in several deciduous species in relation to length of growing season. *Ecoscience*.
      19. Lee. Unpublished.
      20. Lusk et al. 2003. Photosynthetic differences contribute to competitive advantage of evergreen angiosperm trees over evergreen conifers in productive habitats. *New Phytologist*.
      21. Lusk. 2001. Leaf life spans of some conifers of the temperate forests of South America. *Revista Chilena de Historia Natural*.
      22. Mediavilla et al. 2001. Internal leaf anatomy and photosynthetic resource-use efficiency: interspecific and intraspecific comparisons. *Tree Physiology*.
      23. Midgley et al. 1995. Leaf attributes of South African forest species. *African Journal of Ecology*.
      24. Mitchell et al. 1999. Intraspecific and environmentally induced variation in foliar dark respiration among eighteen southeastern deciduous tree species. *Tree Physiology*.
      25. Miyazawa et al. 1998. Slow leaf development of evergreen broad-leaved tree species in Japanese warm temperate forests. *Annals of Botany*.
      26. Niinemets and Kull 1994. Leaf weight per area and leaf size of 85 Estonian woody species in relation to shade tolerance and light availability. *Forest Ecology and Management*.
      27. Oleksyn. Unpublished.
      28. Poorter and de Jong. 1999. A comparison of specific leaf area, chemical composition and leaf construction costs of field plants from 15 habitats differing in productivity. *New Phytologist*.
      29. Prior et al. 2003. Leaf attributes in the seasonally dry tropics: a comparison of four habitats in northern Australia. *Functional Ecology*.
      30. Pyankov et al. 1999. Leaf structure and specific leaf mass: the alpine desert plants of the Eastern Pamirs, Tadjikistan. *New Phytologist*.
      31. P'yankov et al. 2001. Plant construction cost in the boreal species differing in their ecological strategies. *Russian Journal of Plant Physiology*.
      32. Reich et al. 1998. Relationships of leaf dark respiration to leaf nitrogen, specific leaf area and leaf life-span - a test across biomes and functional groups. *Oecologia*.
      33. Reich et al. 1999. Generality of leaf trait relationships: a test across six biomes. *Ecology*.
      34. Ricklefs and Matthew. 1982. Chemical characteristics of the foliage of some deciduous trees in southeastern Ontario, Canada. *Canadian Journal of Botany*.
      35. Shipley. 1995. Structured interspecific determinants of specific leaf-area in 34 species of herbaceous angiosperms. *Functional Ecology*.
      36. Tjoelker. Unpublished.
      37. Villar and Merino. 2001. Comparison of leaf construction costs in woody species with differing leaf life-spans in contrasting ecosystems. *New Phytologist*.
      38. Williams-Linera. 2000. Leaf demography and leaf traits of temperate-deciduous and tropical evergreen-broadleaved trees in a Mexican montane cloud forest. *Plant Ecology*.
      39. Wright and Westoby. 2002. Leaves at low versus high rainfall: coordination of structure, lifespan and physiology. *New Phytologist*.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Contained data that were used in Wright et al. 2004. The dataset could be viewed in the supplement of the paper. The data were a compilation of many published and unpublished sources, and each data point could be linked to a source (either published or unpublished) and were cited in TRY, though the citations were often just last names. Some of the unpublished data sources in the dataset have since been published (e.g., Cavender-Bares et al. 2004, Cornelissen et al. 2003). The published data in the dataset could be found in tables and figures of the sources, except for Jose and Gillespie 1996 and Pyankov et al. 1999. SLA in Wright and Westoby 2002 was measured on a total-one-sided leaf area basis. The dataset was uploaded twice to TRY, once with the values as either LMA or SLA. Since TRY converts everything to SLA, each value within Glopnet was duplicated once.

**Grassland Plant Trait Database**

*Database Reference(s)*

1. Takkis. 2014. Changes in plant species richness and population performance in response to habitat loss and fragmentation. PhD Thesis.

*Conifers*, *Plantago*, *Poa* – Contained data from a PhD thesis. SLA was not a trait studied in the thesis. It was unclear whether these data were associated with a now-published paper. Mean, minimum, and maximum values were uploaded to TRY. The data were uploaded to TRY by the advisor to the PhD student.

**Growth and Herbivory of Juvenile Trees**

*Database Reference(s)*

1. Jactel. Unpublished.

*Conifers*, *Quercus* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Herbaceous Plants Traits From Southern Germany**

*Database Reference(s)*

1. Roemermann. Unpublished.

*Plantago* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Herbaceous Traits from the Öland Island Database**

*Database Reference(s)*

1. Hickler. 1999. Plant functional types and community characteristics along environmental gradients on Öland's Great Alvar (Sweden). Master’s Thesis.

*Plantago*, *Poa* – Contained data from a Master’s thesis which we could not find online. It was unclear whether these data were associated with a now-published paper. The data were uploaded to TRY by the author.

**Hokkaido Leaf Traits**

*Database Reference(s)*

1. Mori et al. 2015. Functional redundancy of multiple forest taxa along an elevational gradient: predicting the consequences of non-random species loss. *Journal of Biogeography*.

*Plantago*, *Quercus* – Contained data that were used in Mori et al. 2015. It was unclear if they collected the data themselves or obtained them from other sources. In the supplement, it said the authors collected trait data from a “variety of available data sources,” and in their methods there was no description of how they collected trait data. We assumed that these data came from other sources and were uncited.

**Iranian Plant Trait Dataset**

*Database Reference(s)*

1. Abedi. Unpublished.

*Poa* – Contained a single unpublished data point from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Jasper Ridge Californian Woody Plants Database**

*Database Reference(s)*

1. Preston et al. 2006. Wood density and vessel traits as distinct correlates of ecological strategy in 51 California coast range angiosperms. *New Phytologist*.

*Conifers*, *Quercus* – Contained data for species from Preston et al. 2006, but were not used in the study. SLA was not reported in the paper, and we did not know how it was measured, but all of the species (except the conifers) that they uploaded data for were listed as study species in the appendix. The conifers were mentioned in the methods as being present, so presumably SLA was measured on these species during the study. We assumed that these data were collected by the author and were uploaded by one of the authors to TRY.

**Jasper Ridge Leaf Chemistry Data**

*Database Reference(s)*

1. Dahlin et al. 2013. Environmental and community controls on plant canopy chemistry in a Mediterranean-type ecosystem. *PNAS*.

*Quercus* – Contained data for species from Dahlin et al. 2013, but appeared to have not been used in the study. SLA was not reported in the paper, and we did not know how it was measured, but all of the species that they uploaded data for were listed as study species in the appendix. We assumed that these data were collected by the author and were uploaded by one of the authors to TRY.

**KIT Herbaceous Functional Gradient (median)**

*Database Reference(s)*

1. Kattenborn et al. 2018. Differentiating plant functional types using reflectance: which traits make the difference? *Remote Sensing in Ecology and Conservation*.

*Plantago*, *Poa* – Contained data from one paper (Kattenborn et al. 2018). The data were not presented in the paper, but were uploaded to TRY by the author of the paper.

**LCE: Leaf Carbon Exchange Dataset for Tropical, Temperate, and Boreal Species of North and Central America**

*Database Reference(s)*

1. Smith and Dukes. 2017. LCE: leaf carbon exchange data set for tropical, temperate, and boreal species of North and Central America. *Ecology*.

*Conifers*, *Quercus* – A dataset for a data paper (Smith and Dukes 2017) associated with a research paper (Smith and Dukes 2018). The data were available in the supplement of Smith and Dukes 2017. Measurement details were available in Smith and Dukes 2018. All of the data were uploaded to TRY by the author and cited.

**Leaf Allometry Dataset**

*Database Reference(s)*

1. Price and Enquist. 2007. Scaling mass and morphology in leaves: an extension of the WBE model. *Ecology*.

*Conifers*, *Plantago*, *Quercus* – A dataset that was supposed to contain data from Price and Enquist 2007, but none of the data in the supplement of the paper matched with the data in TRY. The supplement of the paper provided 30 data points for oaks, but none were to species (listed as *Quercus* spp.). The units also appeared off in the supplement. There were 90 data points for oaks in TRY, and they were all listed to species. There were also a lot of conifer and *Plantago* data uploaded to TRY that were not in the paper, as they looked at no conifers nor *Plantago* in their study. We assumed the data uploaded to TRY were not associated with this paper, and we were unable to determine if they have been published elsewhere. We assumed the data belonged to the author that uploaded them. The amount of significant figures varied a fair amount within the dataset. The reference in TRY was also wrong.

**Leaf and Whole Plant Traits Database**

*Database Reference(s)*

1. Meziane and Shipley. 1999. Interacting determinants of specific leaf area in 22 herbaceous species: effects of irradiance and nutrient availability. *Plant, Cell and Environment*.
2. Pyankov et al. 1999. Leaf structure and specific leaf mass: the alpine desert plants of the Eastern Pamirs, Tadjikistan. *New Phytologist*.
3. Shipley. Unpublished.
4. Shipley. 2002. Trade-offs between net assimilation rate and specific leaf area in determining relative growth rate: relationship with daily irradiance. *Functional Ecology*.
5. Shipley and Vu. 2002. Dry matter content as a measure of dry matter concentration in plants and their parts. *New Phytologist*.

*Conifers*, *Poa*, *Quercus* – Contained data used in four papers, some unpublished data, as well as a wealth of data from other sources. Much of the data uploaded to TRY were cited. The data uploaded for Shipley 2002 could be seen in a table in the paper and could be linked to a data point in TRY, however, there were no *Poa* or *Quercus* in the study, but there were data points cited as such. The data cited as but not within Shipley 2002 appeared to be from other sources and were uncited. Many of the data points were identical to other data within TRY, though none had been flagged as duplicates. The data that could be validated in Shipley 2002 were measured using projected leaf area, except for *Pinus* species, which used two-thirds total surface area as their leaf area. The data for Meziane and Shipley 1999, Pyankov et al. 1999, and Shipley and Vu 2002 could be validated in tables in the papers. The *Poa* and *Quercus* data uploaded as unpublished Shipley data did not link up with data in TRY, and we assume are unpublished data uploaded by the author.

**Leaf and Whole-Plant Traits Database: Hydraulic and Gas Exchange Physiology, Anatomy, Venation Structure**

*Database Reference(s)*

1. Cavender-Bares et al. 2007. Atmospheric and soil drought reduce nocturnal conductance in live oaks. *Tree Physiology*.
2. Coomes et al. 2008. Scaling of xylem vessels and veins within the leaves of oak species. *Biology Letters*.
3. Dunbar-Co et al. 2009. Leaf trait diversification and design in seven rare taxa of the Hawaiian Plantago radiation. *International Journal of Plant Sciences*.
4. Quero et al. 2008. Relating leaf photosynthetic rate to whole-plant growth: drought and shade effects on seedlings of four *Quercus* species. *Functional Plant Biology*.
5. Sack et al. 2003. The 'hydrology' of leaves: co‐ordination of structure and function in temperate woody species. *Plant, Cell and Environment*.
6. Sack et al. 2006. How strong is intracanopy leaf plasticity in temperate deciduous trees? *American Journal of Botany*.

*Plantago*, *Quercus* – Contained data from six papers, all of which the uploader of the data (Sack) was an author on and had cited. The data uploaded could be found in tables or figures within each paper, and all had information about how the data were collected.

**Leaf Area, Dry Mass and SLA Dataset**

*Database Reference(s)*

1. Schamp. Unpublished.

*Plantago*, *Quercus* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Leaf Biomechanics Database**

*Database Reference(s)*

1. Onoda et al. 2011. Global patterns of leaf mechanical properties. *Ecology Letters*.

*Data Reference(s)*

* + - 1. Diaz et al. 2004. The plant traits that drive ecosystems: evidence from three continents. *Journal of Vegetation Science*.
      2. Dominy et al. 2008. In tropical lowland rain forests monocots have tougher leaves than dicots, and include a new kind of tough leaf. *Annals of Botany*.
      3. Enrico. Unpublished.
      4. Kitajima and Dominy. Unpublished.
      5. Kitajima. Unpublished.
      6. Matsuki and Koike. 2006. Comparison of leaf life span, photosynthesis and defensive traits across seven species of deciduous broad-leaf tree seedlings. *Annals of Botany*.
      7. Read and Sanson. 2003. Characterizing sclerophylly: the mechanical properties of a diverse range of leaf types. *New Phytologist.*
      8. Ricklefs and Matthew. 1982. Chemical characteristics of the foliage of some deciduous trees in southeastern Ontario. *Canadian Journal of Botany*.

*Plantago*, *Poa*, *Quercus* – Contained data that were used in Onoda et al. 2011. The references that went into the dataset could be viewed in the supplemental of the paper. The data were a compilation of many published and unpublished sources, and each data point (either published or unpublished) was cited in TRY. The data in the main text of Ricklefs and Matthew 1982 did not line up with the data uploaded to TRY. Dominy et al. 2008 did not have any *Plantago*, *Poa*,or *Quercus* in their study, and when sorting the dataset it appeared that their data were the same as Diaz et al. 2004. The data uploaded for Matsuki and Koike 2006 were not the same as the data presented in the paper.

**Leaf N-Retention Database**

*Database Reference(s)*

1. De Vries and Bardgett. 2016. Plant community controls on short-term ecosystem nitrogen retention. *New Phytologist*.

*Plantago*, *Poa* – Contained data from one paper (De Vries and Bardgett 2016). The data were not presented in the paper, but were uploaded to TRY by the author of the paper.

**Leaf Nutrients and SLA for Old Field Shrubs and Small Trees from Northeastern Connecticut, USA**

*Database Reference(s)*

1. Kinlock. Unpublished.

*Conifers* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper. Many of the data points had been uploaded multiple times.

**Leaf Photosynthesis and Nitrogen at Oak Ridge Dataset**

*Database Reference(s)*

1. Wilson et al. 2000. Spatial and seasonal variability of photosynthetic parameters and their relationship to leaf nitrogen in a deciduous forest. *Tree Physiology*.

*Quercus* – Contained data from one paper (Wilson et al. 2000). The data were presented in a figure in the paper, which matched up generally with the data that were uploaded to TRY. However, there were many more points in the figure than there were points uploaded to TRY. The author of the paper uploaded the data to TRY. There was no description in the paper as to how they measured leaf area.

**Leaf Physiology Database**

*Database Reference(s)*

1. Kattge et al. 2009. Quantifying photosynthetic capacity and its relationship to leaf nitrogen content for global-scale terrestrial biosphere models. *Global Change Biology*.

*Data Reference(s)*

* + - 1. Bassow and Bazzaz. 1997. Intra- and inter-specific variation in canopy photosynthesis in a mixed deciduous forest. *Oecologia*.
      2. Kattge. Unpublished.
      3. Lusk and Reich. 2000. Relationships of leaf dark respiration with light environment and tissue nitrogen content in juveniles of 11 cold-temperate tree species. *Oecologia*.
      4. Medlyn et al. 1999. Effects of elevated CO2 on photosynthesis in European forest species: a meta-analysis of model parameters. *Plant, Cell and Environment.*
      5. Reich et al. 1998. Relationships of leaf dark respiration to leaf nitrogen, specific leaf area and leaf life-span: a test across biomes and functional groups. *Oecologia*.
      6. Reich et al. 1999. Generality of leaf trait relationships: a test across six biomes. *Ecology*.
      7. Springer et al. 2005. Relationships between net photosynthesis and foliar nitrogen concentrations in a loblolly pine forest ecosystem grown in elevated atmospheric carbon dioxide. *Tree Physiology*.
      8. Walcroft et al. 1997. The response of photosynthetic model parameters to temperature and nitrogen concentration in *Pinus radiata* D. Don. *Plant, Cell and Environment*.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Contained data that were used in Kattge et al. 2009. The references that went into the dataset could be viewed in a table of the paper. The sources were a mix of original research and meta-analyses, as well as unpublished data from Kattge. The data uploaded to TRY included cited data from published papers, unpublished data by Kattge, and a lot of data without references. Most of the ECOCRAFT data that Kattge et al. 2009 uploaded were not the same as the ECOCRAFT data uploaded by Medlyn et al. 1999 in TRY, and there were more ECOCRAFT data points in this dataset than in the ECOCRAFT dataset uploaded by Medlyn et al. 1999 in TRY. For example, the ECOCRAFT dataset had no *Quercus robur* observations, but 10 were uploaded in this dataset. Furthermore, we found similar data points for *Quercus rubra*, *Quercus ilex*, and most of *Quercus petraea* in each of these datasets, but their values were 0 - 1.5%. None of the ECOCRAFT data in this dataset were marked as duplicates by TRY, but we considered all data that we could link as a duplicate. The data uploaded for Lusk and Reich 2000 was 50% lower than what was published in the figure of the paper. The data for Springer et al. 2005 were all exactly 180% (i.e., divided by 2.8) lower than the data presented in a table in the paper. Springer et al. 2005 measured SLA on a total leaf area basis, so this could have been a standard conversion to projected leaf area but this is not the conversion factor that other papers have used (i.e., divided by 3.14). Similarly, Walcroft et al. 1997 measured SLA on a total leaf area basis and the data in TRY looked to have been converted in a similar manner as Springer et al. 2005, though the data for Walcroft et al. 1997 could only be seen in a figure. Many of the data marked as unpublished could be linked to data in TRY (e.g., Reich et al. 1998). Some of the uncited data uploaded by Kattge et al. 2009 appeared similar to those data presented in tables in the main text of other meta-analyses (i.e., Schulze et al. 1994, White et al. 2000). However, some of these data appeared to have been altered by a couple percent. The data reference table in Kattge et al. 2009 also said they got data on temperate broadleaf species from Walcroft et al. 1997, but only *Pinus radiata* was studied according to that reference. A lot of the data that was uncited was flagged as a duplicate by TRY, but does not line up with any other data point in TRY. Many of the data points from Walcroft et al. 1997 were uploaded multiple times.

**Leaf Structure, Venation and Economic Spectrum**

*Database Reference(s)*

1. Blonder et al. 2011. Leaf venation networks and the origin of the leaf economics spectrum. *Ecology Letters*.
2. Blonder et al. 2012. The shrinkage effect biases estimates of paleoclimate. *American Journal of Botany*.

*Conifers*, *Quercus* – Contained data that were collected and used in Blonder et al. 2011 and Blonder et al. 2012. Data were available in the supplement of both papers and lined up with the data uploaded to TRY. Measurement details were available in Blonder et al. 2012 but not Blonder et al. 2011. All of the data were uploaded to TRY by the author and cited.

**Leaf Traits Data (SLA) for 56 Woody Species at the Smithsonian Conservation Biology Institute-Forest**

*Database Reference(s)*

1. Gonzalez-Akre et al. 2015. Leaf traits data (SLA) for 56 woody species at the Smithsonian Conservation Biology Institute-Forest GEO Forest Dynamic Plot.

*Quercus* – Contained what appears to be an unpublished dataset. Data could be found outside of TRY on Github ([link](https://github.com/SCBI-ForestGEO/SCBI-ForestGEO-Data/blob/master/species%20traits/Leaf%20traits%20sampled%20by%20Gonzalez-Akre_2012/TRY_Leaf_traits_SCBI_ForestGEO.csv)). We assumed the uploader of the data was an author.

**Leaf Traits for *Picea glauca* and *Pinus sylvestris* on University of Calgary (Canada) Campus**

*Database Reference(s)*

1. Michaletz and Johnson. 2006. A heat transfer model of crown scorch in forest fires. *Canadian Journal of Forest Research*.

*Conifers* – Contained data from one paper (Michaletz and Johnson 2006). SLA was not mentioned in the paper, but both the species were in the paper and leaf tissue was a focus. Presumably these data were collected in association with this paper, but we did not know how they were measured. They were uploaded to TRY by the author.

**Leaf Traits from Baltic Island Species**

*Database Reference(s)*

1. Hattermann et al. Unpublished.

*Plantago*, *Quercus* – Contained what appears to be an unpublished dataset associated within a project. We could not find a paper associated with the grant that measured SLA. We assumed the data were uploaded by one of the main authors.

**Leaf Traits from the Loess Plateau Region of Northern Shaanxi in China**

*Database Reference(s)*

1. Chai et al. 2015. Leaf traits in dominant species from different secondary successional stages of deciduous forest on the Loess Plateau of northern China. Applied Vegetation Science.

*Quercus* – Contained data that were unpublished at the time of upload but can be linked to a now published paper (Chai et al. 2015). The data were presented in the supplement of the paper and were uploaded to TRY by the author of the paper.

**Leaf Traits in Central Apennines Beech Forests**

*Database Reference(s)*

1. Campetella et al. 2011. Patterns of plant trait-environment relationships along a forest succession chronosequence. *Agriculture, Ecosystems and Environment*.

*Poa –* Contained data used in Campetella et al. 2011. In the main text they stated that SLA was measured in the field and collected from several literature sources. None of the data in TRY had a reference attached to it, so we were unable to tell if these were original data they collected or data from the literature. The data did not line up with any existing data in TRY (including Kleyer et al. 2008, which was one of their literature sources), so we assumed the data uploaded are their own data.

**Leaf Traits in Italian Central Apennines Beech Forests**

*Database Reference(s)*

1. Campetella et al. 2011. Patterns of plant trait-environment relationships along a forest succession chronosequence. *Agriculture, Ecosystems and Environment*.

*Poa –* Contained data used in Campetella et al. 2011. They were the same data that were uploaded in the Leaf Traits in Central Apennines Beech Forests dataset and were uploaded by the author of the paper.

**Leaf Traits Mount Hutt, New Zealand**

*Database Reference(s)*

1. Kichenin et al. 2013. Contrasting effects of plant inter- and intraspecific variation on community-level trait measures along an environmental gradient. *Functional Ecology*.

*Poa* – Contained data from one paper (Kichenin et al. 2013). The data were not presented in paper, but were uploaded to TRY by the author of the paper.

**LECA – Traits of the European Alpine Flora**

*Database Reference(s)*

1. Thuiller. Unpublished.

*Conifers*, *Plantago* – Contained unpublished data from what we assumed to be a single source and were uploaded by someone who did not appear to be an author (reference in TRY was Thuiller but the uploader was Boulangeat). It is unclear whether these data were associated with a now-published paper.

**Linking Hard and Soft Traits**

*Database Reference(s)*

1. Belluau and Shipley. 2018. Linking hard and soft traits: physiology, morphology and anatomy interact to determine habitat affinities to soil water availability in herbaceous dicots. *PLOS One*.

*Plantago* – Contained data from one paper (Belluau and Shipley 2018). The data were not presented in paper, but were uploaded to TRY by the author of the paper.

**MARGINS – Leaf Traits Database**

*Database Reference(s)*

1. Hornstein. Unpublished.

*Conifers*, *Quercus* – Contained data that we were unsure of its origin. Several documents on Hornstein’s ResearchGate profile ([1](https://www.researchgate.net/profile/Daniel-Hornstein/publication/265096403_Comparing_landscapes-_using_three_simple_traits/links/53fef2d20cf283c3583c0a7c/Comparing-landscapes-using-three-simple-traits.pdf), [2](https://www.researchgate.net/profile/Daniel-Hornstein/publication/265096470_Analysing_vegetation_patterns_of_the_Euoropean_land-_scapes_by_means_of_three_fundamental_plant_traits_seed_mass_plant_height_and_SLA/links/53fef1e00cf23bb019be7f33/Analysing-vegetation-patterns-of-the-Euoropean-land-scapes-by-means-of-three-fundamental-plant-traits-seed-mass-plant-height-and-SLA.pdf)) stated that they have created trait databases by obtaining data from several different studies. None of the data lined up with data in TRY, though one data point was uploaded 22 times, and several other data points were uploaded a couple of times. The amount of significant figures varied a lot across the data. The *Quercus* data was all for one species (*Quercus petraea*) and has an extreme range of SLA (2.7-261). We assumed that these were not the author’s data and come from other sources.

**Mediterranean Psammophytes**

*Database Reference(s)*

1. Ciccarelli. 2015. Mediterranean coastal dune vegetation: are disturbance and stress the key selective forces that drive the psammophilous succession? *Estuarine, Coastal and Shelf Science*.

*Plantago* – Contained data from one paper (Ciccarelli 2015). The data could be seen in the supplement of the paper and were uploaded to TRY by the author of the paper.

**Midwestern and Southern US Herbaceous Species Trait Database**

*Database Reference(s)*

1. Weiher. Unpublished.

*Plantago*, *Poa*, *Quercus* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper. The data were uploaded with ‘*Quercus* sap’ as the value for species. We assumed that these data were from unidentified oak saplings.

**New South Wales Plant Traits Database**

*Database Reference(s)*

1. Leishman. Unpublished.

*Conifers*, *Plantago* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data are associated with a now-published paper.

**New York Old Field Plant Traits Database**

*Database Reference(s)*

1. Siefert. 2012. Spatial patterns of functional divergence in old-field plant communities. *Oikos*.

*Plantago*, *Poa* – Contained data from one paper (Siefert 2012). The data were not presented in paper, but were uploaded to TRY by the author of the paper. Several data values appear twice, but we are not considering them duplicates.

**Niwot Alpine Plant Traits**

*Database Reference(s)*

1. Spasojevic and Suding. 2012. Inferring community assembly mechanisms from functional diversity patterns: the importance of multiple assembly processes. *Journal of Ecology*.

*Poa* – Contained data from one paper (Spasojevic and Suding 2012). The data could be seen in a table in the main text and were uploaded to TRY by the author of the paper. The data points represented the means of species.

**Northern Mixed-Grass Prairie Species Traits – Wyoming, USA**

*Database Reference(s)*

1. Blumenthal. Unpublished.

*Plantago* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Nutrient Resorption Efficiency Database**

*Database Reference(s)*

1. Vergutz et al. 2012. A global database of carbon and nutrient concentrations of green and senesced leaves.

*Data Reference(s)*

* + - 1. Campanella and Bertiller. 2008. Plant phenology, leaf traits and leaf litterfall of contrasting life forms in the arid Patagonian Monte, Argentina. *Journal of Vegetation Science*.
      2. Huang et al. 2007. Leaf nutrient concentration, nutrient resorption and litter decomposition in an evergreen broad-leaved forest in eastern China. *Forest Ecology and Management*.
      3. Keenan et al. 1995. Litter production and nutrient resorption in western red cedar and western hemlock forests on northern Vancouver Island, British Columbia. *Canadian Journal of Forest Research*.
      4. Killingbeck and Costigan. 1988. Element resorption in a guild of understory shrub species: niche differentiation and resorption thresholds. *Oikos*.
      5. Oyarzabal et al. 2008. Trait differences between grass species along a climatic gradient in South and North America. *Journal of Vegetation Science*.

*Conifers*, *Poa*, *Quercus* – A dataset (Vergutz et al. 2012) associated with a research paper (Vergutz et al. 2012, *Ecological Monographs*). The data were a compilation of many published sources, and each data point could be linked to a source in the dataset, but were not cited in TRY. The data for the papers could be found in tables and figures within the main text or in the supplement. The conifer data all came from Keenan et al. 1995 and were actually not SLA but rather “the relative mass per unit area of litter versus green foliage”. The dataset could be downloaded outside of TRY from the ORNL DAAC ([link](http://dx.doi.org/10.3334/ORNLDAAC/1108)). The dataset was uploaded by one of its authors.

**Old fields of Eastern US (Siefert Data)**

*Database Reference(s)*

* + - 1. Siefert et al. 2014. Community functional responses to soil and climate at multiple spatial scales: when does intraspecific variation matter? *PLOS One*.

*Plantago*, *Poa* – Contained data from Siefert et al. 2014. These data were already uploaded by the author as the Eastern US Old Field Plant Traits Database. Data could be found online at the Knowledge Network for Biocomplexity ([link](https://knb.ecoinformatics.org/view/doi%3A10.5063%2FF1JM27JF)).

**Onoda 2017 Leaf Dataset**

*Database Reference(s)*

1. Onoda et al. 2017. Physiological and structural tradeoffs underlying the leaf economics spectrum. *New Phytologist*.

*Data Reference(s)*

* + - 1. Bown et al. 2009. The influence of nitrogen and phosphorus supply and genotype on mesophyll conductance limitations to photosynthesis in *Pinus radiata*. *Tree Physiology*.
      2. De Lucia et al. 2003. The relative limitation of photosynthesis by mesophyll conductance in co-occurring species in a temperate rainforest dominated by the conifer *Dacrydium cupressinum*. *Functional Plant Biology*.
      3. Grassi and Magnani. 2005. Stomatal, mesophyll conductance and biochemical limitations to photosynthesis as affected by drought and leaf ontogeny in ash and oak trees. *Plant, Cell and Environment*.
      4. Guan and Wen. 2011. More nitrogen partition in structural proteins and decreased photosynthetic nitrogen-use efficiency of *Pinus massoniana* under in situ polluted stress. *Journal of Plant Research*.
      5. Han. 2011. Height-related decreases in mesophyll conductance, leaf photosynthesis and compensating adjustments associated with leaf nitrogen concentrations in *Pinus densiflora*. *Tree physiology*.
      6. Hanba et al. 1999. The influence of leaf thickness on the CO2 transfer conductance and leaf stable carbon isotope ratio for some evergreen tree species in Japanese warm-temperate forests. *Functional Ecology*.
      7. Hikosaka and Hirose. 2000. Photosynthetic nitrogen-use efficiency in evergreen broad-leaved woody species coexisting in a warm-temperate forest. *Tree Physiology*.
      8. Hikosaka and Shigeno. 2009. The role of Rubisco and cell walls in the interspecific variation in photosynthetic capacity. *Oecologia*.
      9. Nagano et al. 2009. Needle traits of an evergreen, coniferous shrub growing at wind-exposed and protected sites in a mountain region: does *Pinus pumila* produce needles with greater mass per area under wind-stress conditions? *Plant Biology*.
      10. Niinemets et al. 2005. Leaf internal diffusion conductance limits photosynthesis more strongly in older leaves of Mediterranean evergreen broad-leaved species. *Plant, Cell and Environment*.
      11. Onoda et al. Unpublished.
      12. Peguero-Pina et al. 2012. Leaf anatomical properties in relation to differences in mesophyll conductance to CO2 and photosynthesis in two related Mediterranean Abies species. *Plant, Cell and Environment*.
      13. Poorter and Evans. 1998. Photosynthetic nitrogen-use efficiency of species that differ inherently in specific leaf area. *Oecologia*.
      14. Read and Sanson. 2003. Characterizing sclerophylly: the mechanical properties of a diverse range of leaf types. *New Phytologist*.
      15. Ricklefs and Matthew. 1982. Chemical characteristics of the foliage of some deciduous trees in southeastern Ontario. *Canadian Journal of Botany*.
      16. Takashima et al. 2004. Photosynthesis or persistence: nitrogen allocation in leaves of evergreen and deciduous *Quercus* species. *Plant, Cell and Environment*.
      17. Tomas et al. 2013. Importance of leaf anatomy in determining mesophyll diffusion conductance to CO2 across species: quantitative limitations and scaling up by models. *Journal of Experimental Botany*.
      18. Tosens et al. 2012. Anatomical basis of variation in mesophyll resistance in eastern Australian sclerophylls: news of a long and winding path. *Journal of Experimental Botany*.
      19. Turner et al. 2000. Tree leaf form in Brunei: a heath forest and a mixed dipterocarp forest compared. *Biotropica*.
      20. Yasumura and Ishida. 2011. Temporal variation in leaf nitrogen partitioning of a broad-leaved evergreen tree, *Quercus myrsinaefolia*. *Journal of Plant Research*.

*Conifers*, *Plantago*, *Quercus* – Contained data that were used in Onoda et al. 2017. The dataset could be viewed in the supplemental of the paper. The data were a compilation of many published and a few unpublished sources, and each data point could be linked to a source (either published or unpublished), and were cited in TRY. Some of the data could be found in tables in the main text of the papers they were from, but much of the data could only be validated from figures or cannot be validated. The data in TRY lined up with the data from the figures, but there were typically many more data points in the figures (e.g., Takashima et al. 2004) than there were in TRY, so it was hard to determine if the values in TRY were means or individual data points. The data for Hikosaka and Shigeno 2009 were uploaded twice in the dataset, but had slightly different values. One upload was identical to what was in the supplemental of the paper. The data for Ricklefs and Matthew 1982 did not match either the individual points or the means from the paper. The data for Grassi and Magnani 2005 was not presented in the paper, however SLA data for *Quercus robur* can be seen in Grassi et al. 2005 (*Tree Physiology*) which we assumed to contain the data in TRY as it lined up with the value in TRY. There were no conifers in Tosens et al. 2012 but they uploaded data for four conifer species. Peguero-Pina et al. 2016 measured SLA on a total leaf area basis. De Lucia et al. 2003 and Bown et al. 2009 measured SLA on a hemi-surface leaf area basis. Several of the papers with SLA for conifers did not describe how they measured SLA. The unpublished data were cited as Onoda, and we assumed that they were their data and they uploaded them. In the main text of Onoda et al. 2017, they said they used lead discs so we assumed the unpublished data were measured using projected leaf area.

**Overton/Wright New Zealand Database**

*Database Reference(s)*

Overton and Wright. Unpublished.

*Conifers*, *Poa* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Ozark Glade Grassland Plants**

*Database Reference(s)*

1. Miller et al. 2018. Early- and late-flowering guilds respond differently to landscape spatial structure. *Journal of Ecology*.

*Plantago* – Contained data from one paper (Miller et al. 2018). The data were available outside of TRY from Dryad ([link](https://datadryad.org/stash/dataset/doi:10.5061/dryad.7fq07)) and were uploaded to TRY by the author of the paper. All the data in both TRY and Dryad were the same value duplicated 52 times.. TRY marked only one of these 52 as a duplicate.

**Ozark Tree Leaf Traits**

*Database Reference(s)*

1. Spasojevic et al. 2016. When does intraspecific trait variation contribute to functional beta diversity? *Journal of Ecology*.

*Quercus* – Contained data from one paper (Spasojevic et al. 2016). The data were available outside of TRY from Dryad ([link](https://datadryad.org/stash/dataset/doi:10.5061/dryad.rr4pm)) and were uploaded to TRY by the author of the paper. 63 of the data points (18% of the dataset) were marked as duplicates by TRY but appear to be original data.

**Photosynthesis and Leaf Characteristics Database**

*Database Reference(s)*

1. Blonder. Unpublished.

*Conifers* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Photosynthesis Traits Database**

*Database Reference(s)*

1. Xu and Baldocchi. 2003. Seasonal trends in photosynthetic parameters and stomatal conductance of blue oak (*Quercus douglasii*) under prolonged summer drought and high temperature. *Tree Physiology*.

*Quercus* – Contained data from one paper (Xu and Baldocchi 2003). The data can be seen in a figure in the main text and were uploaded to TRY by the author of the paper. The data uploaded to TRY were a few of the data points and have been duplicated numerous times and were marked as such.

**Photosynthesis Traits Worldwide**

*Database Reference(s)*

1. Maire et al. 2015. Global soil and climate effects on leaf photosynthetic traits and rates. *Global Ecology and Biogeography*.

*Data Reference(s)*

* + - 1. Barbour. Unpublished.
      2. Bassow and Bazzaz. 1997. Intra- and inter-specific variation in canopy photosynthesis in a mixed deciduous forest. *Oecologia*.
      3. Bhaskar et al. 2007. Evolution of hydraulic traits in closely related species pairs from mediterranean and non-mediterranean environments of North America. *New Phytologist*.
      4. Bond et al. 1999. Foliage physiology and biochemistry in response to light gradients in conifers with varying shade tolerance. *Oecologia*.
      5. Cavender-Bares et al. 2004. Multiple trait association in relation to habitat differentiation among 17 Floridian Oak species. *Ecological Monographs*.
      6. Cernusak and Marshall. 2001. Responses of foliar δ13C, gas exchange and leaf morphology to reduced hydraulic conductivity in *Pinus monticola* branches. *Tree Physiology*.
      7. DeLucia and Schlesinger. 1991. Resource-use efficiency and drought tolerance in adjacent Great Basin and Sierran plants. *Ecology*.
      8. Ellsworth et al. 2004. Photosynthesis, carboxylation and leaf nitrogen responses of 16 species to elevated pCO2 across four free-air CO2 enrichment experiments in forest, grassland and desert. *Global Change Biology*.
      9. Ellsworth et al. 2012. Elevated CO2 affects photosynthetic responses in canopy pine and subcanopy deciduous trees over 10 years: a synthesis from Duke FACE. *Global Change Biology*.
      10. Funk. 2008. Differences in plasticity between invasive and native plants from a low resource environment. *Journal of Ecology*.
      11. Garnier et al. 2001. Consistency of species ranking based on functional leaf traits. *New Phytologist*.
      12. Gower et al. 1993. Canopy dynamics and aboveground production of five tree species with different leaf longevities. *Tree Physiology*.
      13. Gratani and Bombelli. 2001. Differences in leaf traits among Mediterranean broad-leaved evergreen shrubs. *Annales Botanici Fennici*.
      14. Gulías et al. 2003. Relationship between maximum leaf photosynthesis, nitrogen content and specific leaf area in balearic endemic and non-endemic mediterranean species. *Annals of Botany*.
      15. Hikosaka and Hirose. 2000. Photosynthetic nitrogen-use efficiency in evergreen broad-leaved woody species coexisting in a warm-temperate forest. *Tree Physiology*.
      16. Jurik. 1986. Temporal and spatial patterns of specific leaf weight in successional northern hardwood tree species. *American Journal of Botany*.
      17. Kazda et al. 2000. Photosynthetic capacity in relation to nitrogen in the canopy of a *Quercus robur*, *Fraxinus angustifolia* and *Tilia cordata* flood plain forest. *Tree Physiology*.
      18. Kloeppel et al. 2000. Leaf-level resource use for evergreen and deciduous conifers along a resource availability gradient. *Functional Ecology*.
      19. Koike. 1988. Leaf structure and photosynthetic performance as related to the forest succession of deciduous broad-leaved trees. *Plant Species Biology*.
      20. Lusk et al. 2003. Photosynthetic differences contribute to competitive advantage of evergreen angiosperm trees over evergreen conifers in productive habitats. *New Phytologist*.
      21. Mediavilla et al. 2001. Internal leaf anatomy and photosynthetic resource-use efficiency: interspecific and intraspecific comparisons. *Tree Physiology*.
      22. Mediavilla and Escudero. 2003. Relative growth rate of leaf biomass and leaf nitrogen content in several mediterranean woody species. *Plant Ecology*.
      23. Mitchell. 1998. Acclimation of Pacific yew (*Taxus brevifolia*) foliage to sun and shade. *Tree Physiology*.
      24. Mitchell. 2001. Growth limitations for conifer regeneration under alternative silvicultural systems in a coastal montane forest in British Columbia, Canada. *Forest Ecology and Management*.
      25. Miyazawa et al. 1998. Slow leaf development of evergreen broad-leaved tree species in Japanese warm temperate forests. *Annals of Botany*.
      26. Nagel et al. 2002. Energy investment in leaves of red maple and co-occurring oaks within a forested watershed. *Tree Physiology*.
      27. Oleksyn. Unpublished.
      28. Porté and Loustau. 1998. Variability of the photosynthetic characteristics of mature needles within the crown of a 25-year-old *Pinus pinaster*. *Tree Physiology*.
      29. Prior et al. 2003. Leaf attributes in the seasonally dry tropics: a comparison of four habitats in northern Australia. *Functional Ecology*.
      30. Reich et al. 1998. Relationships of leaf dark respiration to leaf nitrogen, specific leaf area and leaf life-span: a test across biomes and functional groups. *Oecologia*.
      31. Reich et al. 1999. Generality of leaf trait relationships: a test across six biomes. *Ecology*.
      32. Ryan et al. 1996. Foliage, fine-root, woody-tissue and stand respiration in Pinus radiata in relation to nitrogen status. *Tree Physiology*.
      33. Santiago and Dawson. 2014. Light use efficiency of California redwood forest understory plants along a moisture gradient. *Oecologia*.
      34. Springer et al. 2005. Relationships between net photosynthesis and foliar nitrogen concentrations in a loblolly pine forest ecosystem grown in elevated atmospheric carbon dioxide. *Tree Physiology.*
      35. Sullivan et al. 1997. Variability in leaf-level CO2 and water fluxes in *Pinus banksiana* and *Picea mariana* in Saskatchewan. *Tree Physiology*.
      36. Tissue et al. 2005. Stomatal and non-stomatal limitations to photosynthesis in four tree species in a temperate rainforest dominated by *Dacrydium cupressinum* in New Zealand. *Tree Physiology*.
      37. Tjoelker et al. 2005. Linking leaf and root trait syndromes among 39 grassland and savannah species. *New Phytologist*.
      38. Turnbull et al. 2002. Photosynthetic characteristics in canopies of *Quercus rubra*, *Quercus prinus* and *Acer rubrum* differ in response to soil water availability. *Oecologia*.
      39. Valladares et al. 2008. Is shade beneficial for Mediterranean shrubs experiencing periods of extreme drought and late-winter frosts? *Annals of Botany*.
      40. Warren and Adams. 2001. Distribution of N, Rubisco and photosynthesis in *Pinus pinaster* and acclimation to light. *Plant, Cell and Environment*.
      41. Warren et al. 2003. Transfer conductance in second growth Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco) canopies. *Plant, Cell and Environment*.
      42. Wright and Westoby. 2002. Leaves at low versus high rainfall: coordination of structure, lifespan and physiology. *New Phytologist*.
      43. Zheng and Shangguan. 2007. Spatial patterns of photosynthetic characteristics and leaf physical traits of plants in the Loess Plateau of China. *Plant Ecology*.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Contained data that were used in Maire et al. 2015. The dataset can be viewed on Dryad ([link](https://datadryad.org/stash/dataset/doi:10.5061%2Fdryad.j42m7)). The data were a compilation of many published and a few unpublished sources. Many of the references in TRY (Bassow and Bazzaz 1997, Garnier et al. 2001, Gulías et al. 2003, Hikosaka and Hirose 2000, Jurik 1986, Koike 1988, Mediavilla et al. 2001, Miyazawa et al. 1998, Oleksyn unpublished, Reich et al. 1999) were not in the reference list in Dryad, but the data were cited as such in TRY. Most of the data could be found in the main text or supplemental of the papers. However, Ellsworth et al. 2012 did not have any oaks in the study, and the data uploaded for Garnier et al. 2001 and Koike 1988 did not match what were in the paper. Some of the TRY data cited as Warren and Adams 2001 lined up with the SLA in the table, but most of the data points were not the same. Bhaskar et al. 2007 did not describe measuring nor report SLA, but the species in TRY with data were in the study and they measured leaf area, so presumably they measured SLA. None of the oaks with data from Valladares et al. 2008 were in the study. There were no *Plantago* species in Funk 2008. The SLA for Portsmuth et al. 2005 and Springer et al. 2005 were measured on a total-leaf area basis. Sullivan et al. 1997 did not describe measuring SLA but they expressed photosynthesis on a half or hemi-surface leaf area basis. Tissue et al. 2005 also used either total or half-total area. SLA in Wright and Westoby 2002 was measured on a total-one-sided leaf area basis. The dataset was uploaded by Maire.

**Photosynthetic Capacity Dataset**

*Database Reference(s)*

1. Meir et al. 2002. Acclimation of photosynthetic capacity to irradiance in tree canopies in relation to leaf nitrogen concentration and leaf mass per unit area. *Plant, Cell and Environment*.

*Conifers*, *Quercus* – Contained data from one paper (Meir et al. 2002). The data could be seen in a figure in the main text and were uploaded to TRY by the author of the paper. There were more data points in the figure than were uploaded to TRY for *Quercus*.

**Plant Coastal Dune Traits (France, Aquitaine)**

*Database Reference(s)*

1. Forey. Unpublished.

*Plantago –* Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Plant Functional Traits of Arid Steppes in Eastern Morocco (ECWP-Morocco)**

*Database Reference(s)*

1. Frenette-Dussault et al. 2012. Functional structure of an arid steppe plant community reveals similarities with Grime’s C-S-R theory. *Journal of Vegetation Science*.

*Plantago* – Contained data from one paper (Frenette-Dussault et al. 2012). The data were not presented in the paper, but were uploaded to TRY by the author of the paper. Two of the data points were marked as duplicates by TRY but appear to be original.

**Plant Physiology Database**

*Database Reference(s)*

1. Atkin et al. 1997. Leaf respiration in light and darkness - a comparison of slow- and fast-growing Poa species. *Plant Physiology*.
2. Campbell et al. 2007. Acclimation of photosynthesis and respiration is asynchronous in response to changes in temperature regardless of plant functional group. *New Phytologist*.
3. Loveys et al. 2003. Thermal acclimation of leaf and root respiration: an investigation comparing inherently fast- and slow-growing plant species. *Global Change Biology*.

*Poa*, *Quercus* – Contained data from three papers. Loveys et al. 2003 did not mention measuring SLA, but the data could be seen in a table in Loveys et al. 2002 (*Plant, Cell and Environment*). One of the *Plantago* data points was different in TRY than in the paper. The data for Atkin et al. 1997 could be seen in a table in the paper. The data for Campbell et al. 2007 could be seen in a table in the main text. The uploader was an author on all the papers except Loveys et al. 2002. The data points represented the mean of different treatments.

**Plant Traits for Grassland Species (Konza Prairie, Kansas, USA)**

*Database Reference(s)*

1. Craine et al. 2011. Functional consequences of climate-change induced plant species loss in a tallgrass prairie. *Oecologia*.
2. Tucker et al. 2011. Physiological drought tolerance and the structuring of tallgrass assemblages. *Ecosphere*.

*Plantago*, *Poa* – Contained data from two papers. It was not clear whether the data from Craine et al. 2011 were original. In the methods they said that the data were collected from multiple sources and they did not describe how they measured SLA in the text. The data for Tucker et al. 2011 was not present in the paper. An author that was on both papers uploaded the data.

**Plant Traits for *Pinus* and *Juniperus* Forests in Arizona**

*Database Reference(s)*

1. Laughlin et al. 2010. A multi-trait test of the leaf-height-seed plant strategy scheme with 133 species from a pine forest flora. *Functional Ecology*.
2. Laughlin et al. 2011. Climatic constraints on trait-based forest assembly. *Journal of Ecology*.

*Conifers*, *Poa*, *Quercus* – Contained data for two papers (Laughlin et al. 2010, 2011). The mean trait values of each species could be seen in the main text or supplemental of the papers and the raw data were uploaded to TRY by the author of the papers. The mean of the data uploaded to TRY for Laughlin et al. 2010 were not the same as the mean in the supplement for the conifers, *Quercus*,or *Poa* species (e.g., 29 in paper vs. 20.9 in TRY for *Poa compressa*, 5 in paper vs 3.3 in TRY for *Pinus ponderosa*). The *Plantago* data lined up. The Laughlin et al. 2011 data mostly lined up, but there were small differences in two species (i.e., 4.4 in paper vs. 4.3 in TRY for *Pinus aristata*, 4.3 in paper vs. 4.5 in TRY for *Pinus edulis*). *Picea engelmannii* was in the study but there were no data in TRY for it. The *Pinus ponderosa* data for Laughlin et al. 2010 all lined up with data from Laughlin et al. 2011. Laughlin et al. 2011 has a few additional SLA measurements for *Pinus ponderosa* that were not in Laughlin et al. 2010.

**Plant Traits from Circeo National Park, Italy**

*Database Reference(s)*

1. Burrascano et al. 2015. Wild boar rooting intensity determines shifts in understorey composition and functional traits. *Community Ecology*.

*Poa*, *Quercus –* Contained data for one paper (Burrascano et al. 2015). There were a bunch of data for many oak species in TRY, but no oaks were presented in the supplemental of the paper. Several of the oaks that had data were mentioned as canopy species in their study. Since none of the data in this database lined up with any data in TRY, it was assumed that these data were their own that were either unpublished or from different papers, but we were unable to determine their source. We assumed that they were measured on a projected leaf area basis given the methods of Burrascano et al. 2015. The data in TRY lined up with the data in the supplemental.

**Plant Traits from Greby, Oeland, Sweden**

*Database Reference(s)*

1. Baastrup-Spohr et al. 2015. From soaking wet to bone dry: predicting plant community composition along a steep hydrological gradient. *Journal of Vegetation Science*.

*Plantago*, *Poa* – Contained data from one paper (Baastrup-Spohr et al. 2015). The data could be seen in a table in the supplement and were uploaded to TRY by the author of the paper.

**Plant Traits from LTER Matsch (Mazia), Italy**

*Database Reference(s)*

1. Fontana. Unpublished.

*Plantago –* Containsed unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Plant Traits From Spanish Mediterranean Shrublands**

*Database Reference(s)*

1. Gross et al. 2013. Uncovering multiscale effects of aridity and biotic interactions on the functional structure of Mediterranean shrublands. Journal of Ecology.

*Quercus* – Formerly unpublished data that appeared to now be published (Gross et al. 2013, *Journal of Ecology*). The mean trait values of each species could be seen in the supplement of the paper, and the raw data were uploaded to TRY by the author of the paper. The mean values of the raw data in TRY were mixed up. The mean for *Quercus ilex* was 3.81 in TRY and 4.42 in the supplement, while the mean for *Quercus coccifera* was 4.42 in TRY and 3.81 in the supplement. *Juniperus oxycedrus* has the same value in TRY and in the supplemental. One of the *Juniperus oxycedrus* appears to have been duplicated. There was no description as to how SLA was measured.

**Plant Traits from Wisconsin, USA**

*Database Reference(s)*

1. Weiher. Unpublished.

*Plantago*, *Poa*, *Quercus* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Plant Traits in Pollution Gradients Database**

*Database Reference(s)*

1. Anand et al. 2003. Characterising biocomplexity and soil microbial dynamics along a smelter-damaged landscape gradient. *Science of the Total Environment.*

*Quercus* – Contained data for *Quercus rubra*. *Quercus rubra* were in the study, but there was no mention of SLA in the study. Since none of the data in this database lined up with any data in TRY, it was assumed that these data were their own that were either unpublished or from different papers, but we were unable to determine their source.

**Plant Traits of Acidic Grasslands in Central Spain**

*Database Reference(s)*

1. Peco et al. 2005. The effect of grazing abandonment on species composition and functional traits: the case of dehesa grasslands. *Basic and Applied Ecology*.

*Plantago*, *Poa –* Contained data from one paper (Peco et al. 2005). The data were not presented in paper, but were uploaded to TRY by the author of the paper.

**Plant Traits of Canadian Forests**

*Database Reference(s)*

1. Bond-Lamberty et al. 2002. Leaf area dynamics of a boreal black spruce fire chronosequence. *Tree Physiology*.

*Conifers* - Contained data from one paper (Bond-Lamberty et al. 2002). The data were not presented in paper, but were uploaded to TRY by the author of the paper. In the paper it states that SLA was measured on a hemi-surface leaf area basis. In TRY, each observation was uploaded twice, once on a hemi-surface leaf area basis and once as, what we assumed to be, on a projected leaf area basis.

**Rocky Mountain Biological Laboratory WSR/Gradient Plant Traits**

*Database Reference(s)*

1. Read. Unpublished.

*Poa –* Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Sheffield and Spain Woody Database**

*Database Reference(s)*

1. Cornelissen et al. 2003. Functional traits of woody plants: correspondence of species rankings between field adults and laboratory-grown seedlings? *Journal of Vegetation Science*.

*Conifers*, *Quercus* – Contained data for many oak species. The species list in the main text did not have a couple of the species that had data in TRY, so we assumed that these data were from a different or multiple papers. When organizing the data, all of the data in this dataset could be linked to data in Cornelissen et al. 1996 (Abisko and Sheffield Database).

**Sheffield Database**

*Database Reference(s)*

1. Cornelissen. 1996. An experimental comparison of leaf decomposition rates in a wide range of temperate plant species and types. *Journal of Ecology*.
2. Cornelissen et al. 2003. Functional traits of woody plants: correspondence of species rankings between field adults and laboratory-grown seedlings? *Journal of Vegetation Science*.
3. Díaz et al. 2004. The plant traits that drive ecosystems: evidence from three continents. *Journal of Vegetation Science*.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Contained data for many species and had three different citations. The data cited as Cornelissen 1996 had data for three *Quercus* and one *Poa* and *Plantago* species which were all in the supplement of the paper. The data in TRY for Cornelissen 1996 were duplicated 2-5 times for each species and did not match up with the SLA data provided in the supplement, and we assumed these were fresh SLA and were uploaded by the author. There was a single data point for Díaz et al. 2004, and it appeared to be a duplicate of the data uploaded in both Cornelissen 1996 and Cornelissen et al. 2003. The data uploaded as Cornelissen et al. 2003 included species in the supplement of the paper. We assumed that these data were the raw data collected for this paper and were uploaded by the author. However, data uploaded under Cornelissen et al. 2003 that had a reference of N/A matched the data uploaded as Cornelissen 1996 and were considered duplicated.

**Sheffield-Iran-Spain Database**

*Database Reference(s)*

1. Díaz et al. 2004. The plant traits that drive ecosystems: evidence from three continents. *Journal of Vegetation Science*.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Contained data that were used in Díaz et al. 2004. Some of the data were the same as that in Cornelissen et al. 2003. The others we assumed were the author’s data, though they did link up with unpublished data in Onoda et al. 2017.

**Sherbrooke**

*Database Reference(s)*

1. Li and Shipley. 2018. Community divergence and convergence along experimental gradients of stress and disturbance. *Ecology*.

*Plantago*, *Poa* – Contained data from one paper (Li and Shipley 2018). The data were not presented in paper, but were uploaded to TRY by the author of the paper. The SLA measurement was not described thoroughly.

**Species and Trait Shifts in Apennine Grasslands**

*Database Reference(s)*

1. Giarrizzo et al. 2017. Re-visiting historical semi-natural grasslands in the Apennines to assess patterns of changes in plant species composition and functional traits. *Applied Vegetation Science*.

*Conifers* – Contained data that were used in Giarrizzo et al. 2017. In the methods they said they measured functional traits on species with “a value of 3 or more on the Braun-Blanquet scale in at least one new plot.” For the rest of the species, they got data from the LEDA database. Due to this, we were unable to determine whether these were original data or not, but none of the data links up to data in TRY, so we assumed that these were original data the author uploaded.

**Specific Leaf Area Responses to Environmental Gradients through Space and Time**

*Database Reference(s)*

1. Dwyer et al. 2014. Specific leaf area responses to environmental gradients through space and time. *Ecology*.

*Plantago –* Contained data from one paper (Dwyer et al. 2014). The data were not presented in paper, but were uploaded to TRY by the author of the paper.

**Structural and Biochemical Leaf Traits of Boreal Tree Species in Finland**

*Database Reference(s)*

1. Lukeš et al. 2013. Optical properties of leaves and needles for boreal tree species in Europe. *Remote Sensing Letters*.

*Conifers –* Contained data from one paper (Lukeš et al. 2013). The data were not presented in paper, but were uploaded to TRY by the author of the paper.

**The China Plant Trait Database**

*Database Reference(s)*

1. Wang et al. 2017. The China Plant Trait Database. *PANGAEA*.

*Data Reference(s)*

* + - 1. Liu et al. 2010. Coordinated variation in leaf and root traits across multiple spatial scales in Chinese semi-arid and arid ecosystems. *New Phytologist*.
      2. Meng et al. 2015. Responses of leaf traits to climatic gradients: adaptive variation versus compositional shifts. *Biogeosciences*.
      3. Prentice et al. 2011. Evidence of a universal scaling relationship for leaf CO2 drawdown along an aridity gradient. *New Phytologist*.
      4. Sun et al. 2006. Leaf emergence in relation to leaf traits in temperate woody species in East-Chinese *Quercus fabri* forests. *Acta Oecologica*.
      5. Zheng and Shangguan. 2007. Spatial patterns of photosynthetic characteristics and leaf physical traits of plants in the Loess Plateau of China. *Plant Ecology*.
      6. Wang. Unpublished.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Contained data for many papers and some unpublished data. The database was publicly available online ([link](https://doi.pangaea.de/10.1594/PANGAEA.871819)). The data cited as Meng et al. 2015 all linked up to data in Prentice et al. 2011 that was uploaded in the Chinese Traits dataset. We assumed the author of this dataset to be the author of the unpublished data.

**The Functional Ecology of Trees (FET) Database – Jena**

*Database Reference(s)*

1. Wirth and Lichstein. 2009. The imprint of species turnover on old-growth forest carbon balances - insights from a trait-based model of forest dynamics. *Old-Growth Forests: Function, Fate and Value*.

*Conifers*, *Quercus* – Contained what appears to be a former database. The reference was a book chapter which said they got their data from the FET database and provided a link to a website in the references that did not work ([link](http://www.bgc-jena.mpg.de/bgc-organisms/pmwiki.php/Research/FET)). The individual data in TRY did not have a citation associated with them, but much of the data could be linked to data from published papers that were in TRY. We assumed that the uploaded data that we could not link were not the author’s data and were uncited.

**The Global Leaf Traits**

*Database Reference(s)*

1. Sheremetev. Unpublished.

*Data Reference(s)*

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      93. Prior et al. 2004. Seasonal differences in leaf attributes in Australian tropical tree species: family and habitat comparisons. *Functional Ecology*.
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      103. Scherer-Lorenzen et al. 2007. Exploring the functional significance of forest diversity: a new long-term experiment with temperate tree species (BIOTREE). *Perspectives in Plant Ecology, Evolution and Systematics*.
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      116. Vendramini et al. 2002. Leaf traits as indicators of resource-use strategy in floras with succulent species. *New Phytologist*.
      117. Vergutz et al. 2012. A global database of carbon and nutrient concentrations of green and senesced leaves. http://dx.doi.org/10.3334/ORNLDAAC/1107
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      122. Willis et al. 2010. Phylogenetic community structure in Minnesota oak savanna is influenced by spatial extent and environmental variation. *Ecography*.
      123. Wilson et al. 2000. Spatial and seasonal variability of photosynthetic parameters and their relationship to leaf nitrogen in a deciduous forest. *Tree Physiology*.
      124. Wirth and Lichstein. 2009. The imprint of species turnover on old-growth forest carbon balances - insights from a trait-based model of forest dynamics. *Old-Growth Forests: Function, Fate and Value.*
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      130. Zhang et al. 2012. Photosynthetic thermotolerance of woody savanna species in China is correlated with leaf life span. *Annals of Botany*.
      131. Zheng and Shangguan. 2007. Spatial patterns of photosynthetic characteristics and leaf physical traits of plants in the Loess Plateau of China. *Plant Ecology*.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Appeared to be a database of datasets and a few additional published papers. Much of the data obtained from papers could be seen in tables or figures in the main text or supplemental information. Much of the data were within datasets that have been uploaded to TRY (e.g., Campetella et al. 2011, Cavender-Bares et al. 2006, Cornelissen 1996, Cornelissen et al. 2003, Kattge et al. 2009, Laughlin et al. 2010, Laughlin et al. 2011, Medlyn et al. 1999, Meir et al. 2002, Milla and Reich 2011, Ogaya and Penuelas 2003, Ordonez et al. 2010, Pladevall unpublished, Prentice et al. 2011, Preston et al. 2006, Price and Enquist 2007, Gross et al. 2013, Jactel unpublished, Spasojevic et al. 2016, Willis et al. 2010, Wilson et al. 2000, Wirth and Lichstein 2009, Wright et al. 2004, Xu and Baldocchi 2003). A lot of these datasets were not available outside of TRY (e.g., Cavender-Bares et al. 2006, Gross et al. 2013, Jactel unpublished), and it appeared that the data were downloaded from TRY and reuploaded. There were a bunch of data in the dataset that were listed as unpublished, but most of these could be linked to Gross et al. 2013, Jactel unpublished, Leishman unpublished, Pladevall unpublished, Roemermann unpublished, Siefert 2012, and Weiher unpublished and were simply uncited. There were some conifer data that were listed as unpublished and did not link up to data in TRY and may be the uploader’s data. A couple of the data points cited as Wright et al. 2004 or Royer et al. 2012 were not in these datasets. The data from Marx et al. 2016 came from multiple sources, and we were unable to determine if these were original data. Ogaya and Penuelas 2003 and Garnier et al. 2007 did not have any data in TRY for conifers but had data for other groups in TRY. However, there were a bunch of data uploaded in this dataset that were cited as such, and we could not determine where they came from. We could not determine if the data from Smart et al. 2017 were from an individual species or from all the species within a plot. We could not find Shmakova et al. 1996. Many of the data points from Garnier et al. 2007 were uploaded three times. Each data point in Shibata et al. 2016 was uploaded four times.

**The LEDA Traitbase**

*Database Reference(s)*

1. Kleyer et al. 2008. The LEDA Traitbase: a database of life-history traits of the Northwest European flora. *Journal of Ecology*.

*Data Reference(s)*

* + - 1. Aguinagalde et al. 2005. Effects of life-history traits and species distribution on genetic structure at maternally inherited markers in European trees and shrubs. *Journal of Biogeography*.
      2. Antúnez et al. 2001. Relative growth rate in phylogenetically related deciduous and evergreen woody species. *Oecologia*.
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      4. Bruun et al. 2005. Distinct patterns in alpine vegetation around dens of the Arctic fox. *Ecography*.
      5. Campbell and Rochefort. 2003. Germination and seedling growth of bog plants in relation to the recolonization of milled peatlands. *Plant Ecology*.
      6. Craine et al. 2001. The relationships among root and leaf traits of 76 grassland species and relative abundance along fertility and disturbance gradients. *Oikos*.
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      8. Garnier et al. 2001. Consistency of species ranking based on functional leaf traits. *New Phytologist*.
      9. graciela.rusch@nina.no
      10. Grotkopp et al. 2002. Toward a causal explanation of plant invasiveness: seedling growth and life-history strategies of 29 pine (*Pinus*) species. *The American Naturalist*.
      11. Gulias et al. 2003. Relationship between maximum leaf photosynthesis, nitrogen content and specific leaf area in Balearic endemic and non-endemic Mediterranean species. *Annals of Botany*.
      12. Hoch et al. 2003. Non-structural carbon compounds in temperate forest trees. *Plant, Cell and Environment*.
      13. Keller and Körner. 2003. The role of photoperiodism in alpine plant development. *Arctic, Antartic, and Alpine Research*.
      14. ken.thompson@sheffield.ac.uk
      15. Lavergne et al. 2003. Do rock endemic and widespread plant species differ under the Leaf–Height–Seed plant ecology strategy scheme? *Ecology Letters*.
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      22. Poorter amd Evans. 1998. Photosynthetic nitrogen-use efficiency of species that differ inherently in specific leaf area. *Oecologia*.
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      24. Roche et al. 2004. Congruency analysis of species ranking based on leaf traits: which traits are the more reliable? *Plant Ecology*.
      25. s.kahmen@gmx.de
      26. Shipley. 1995. Structured interspecific determinants of specific leaf-area in 34 species of herbaceous angiosperms. *Functional Ecology*.
      27. Shipley. 2002. Trade-offs between net assimilation rate and specific leaf area in determining relative growth rate: relationship with daily irradiance. *Functional Ecology*.
      28. Storkey. 2004. Modelling seedling growth rates of 18 temperate arable weed species as a function of the environment and plant traits. *Annals of Botany*.
      29. tonia.heider@uni-oldenburg.de
      30. Villar and Merino. 2001. Comparison of leaf construction costs in woody species with differing leaf life-spans in contrasting ecosystems. *New Phytologist*.
      31. Wright et al. 2004. The worldwide leaf economics spectrum. *Nature*.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Dataset for a data paper (Kleyer et al. 2008). The dataset contained data from several papers and what appeared to be unpublished data. The unpublished data all have an email associated with them. The published data could all be found in tables within the main text of the papers. Some of the data associated with emails could be linked to data uploaded to TRY. The data had been uploaded as either a minimum, maximum, best estimate, or a mean. Most of the means and best estimates were the same value, so the dataset was almost entirely duplicated.

**The Netherlands Plant Traits Database**

*Database Reference(s)*

1. Ordonez et al. 2010. Plant strategies in relation to resource supply in mesic to wet environments: does theory mirror nature? *American Naturalist*.

*Conifers*, *Plantago*, *Poa*, *Quercus* – Contained data from one paper (Ordonez et al. 2010). Data were not presented in paper, but were uploaded to TRY by the author of the paper.

**The Tansley Review LMA Database**

*Database Reference(s)*

1. Poorter et al. 2009. Causes and consequences of variation in leaf mass per area (LMA): a meta-analysis. *New Phytologist*.

*Plantago*, *Poa*, *Quercus* – Contained data that were used in Poorter et al. 2009. None of the data in TRY were cited, but a data reference list could be seen in the supplemental of the paper. Much of the data can be linked to data in TRY. We assumed that all of the data uploaded to TRY came from other papers and were uncited.

**The VISTA Plant Trait Database**

*Database Reference(s)*

1. Garnier et al. 2007. Assessing the effects of land-use change on plant traits, communities and ecosystem functioning in grasslands: a standardized methodology and lessons from an application to 11 European sites. *Annals of Botany*.

*Plantago*, *Poa*, *Quercus* – Contained data from one paper (Garnier et al. 2007). The data were not presented in paper, but were uploaded to TRY by the author of the paper. Some of the data had been uploaded multiple times.

**Trait and Biomass Data 2014 and 2015 of the BE\_LOW Project**

*Database Reference(s)*

1. Herz et al. 2017. Drivers of intraspecific trait variation of grass and forb species in German meadows and pastures. *Journal of Vegetation Science*.

*Plantago*, *Poa* – Contained data from one paper (Herz et al. 2017). The means presented in the supplement were not the same as the means obtained from the raw data in TRY (e.g., *Poa pratensis* was 16.6 in supplement and 20.8 in TRY, *Poa trivialis* was 27.1 in supplement and 33.0 in TRY, *Plantago lanceolata* was 13.1 in supplement and 18.4 in TRY). The data were uploaded to TRY by one of the authors.

**TraitDunes**

*Database Reference(s)*

1. Acosta. Unpublished.

*Plantago* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper. Seven of the data points had been marked as duplicates by TRY but appeared original.

**Traits and Ecological Strategies of 66 Subtropical Tree Species in the Brazilian Atlantic Forest**

*Database Reference(s)*

1. Forgiarini et al. 2015. In the lack of extreme pioneers: trait relationships and ecological strategies of 66 subtropical tree species. *Journal of Plant Ecology*.

*Conifers –* Contained data from one paper (Forgiarini et al. 2015). The data were presented in the paper and were uploaded to TRY by an author of the paper.

**Traits for Common Grasses and Herbs in Spain**

*Database Reference(s)*

1. Valladares. Unpublished.

*Plantago* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Traits for Herbaceous Species from Andorra**

*Database Reference(s)*

1. Pladevall. Unpublished.

*Poa* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper.

**Traits from Semi-Arid Mediterranean Ecosystems**

*Database Reference(s)*

1. de Frutos et al. 2015. Inferring resilience to fragmentation-induced changes in plant communities in a semi-arid Mediterranean ecosystem. *PLOS One*.

*Poa* – The data were said to be associated with one paper (de Frutos et al. 2015), but SLA was not one of the traits that they used in their study. There were also no *Poa* in the study. We were not sure where these data came from. The person who uploaded the data was not one of the authors of the paper.

**Traits from Subarctic Plant Species Database**

*Database Reference(s)*

1. Freschet et al. 2010. Evidence of the ‘plant economics spectrum’ in a subarctic flora. *Journal of Ecology*.

*Conifers –* Contained data from one paper (Freschet et al. 2010). The data were not presented in the paper, but were uploaded to TRY by an author of the paper.

**Traits of 59 Grassland Species**

*Database Reference(s)*

1. Schroeder-Georgi et al. 2016. From pots to plots: hierarchical trait-based prediction of plant performance in a mesic grassland. *Journal of Ecology*.

*Plantago*, *Poa –* Contained data from one paper (Schroeder-Georgi et al. 2016). The data were not presented in the paper, but were uploaded to TRY by an author of the paper.

**Traits of Halophytic Species in North-West-Germany**

*Database Reference(s)*

1. Minden and Kleyer. 2011. Testing the effect-response framework: key response and effect traits determining above-ground biomass of salt marshes. *Journal of Vegetation Science*.
2. Minden et al. 2012. Plant trait-environment relationships in salt marshes: deviations from predictions by ecological concepts. *Perspectives in Plant Ecology, Evolution and Systematics*.

*Plantago –* Contained data from two papers. The data were not presented in the papers, but were uploaded to TRY by an author of the paper. The data for the two papers were identical so the database had functionally been uploaded twice.

**Traits of the Hungarian Flora**

*Database Reference(s)*

1. Lhotsky et al. 2016. Changes in assembly rules along a stress gradient from open dry grasslands to wetlands. *Journal of Ecology*.

*Plantago*, *Poa –* Contained data from one paper (Lhotsky et al. 2016). 41.37% of the SLA data in this paper were collected in the field, while the rest came from the LEDA database. It was unclear as to whether these were the data they collected or not. The dataset could be found on Dryad ([link](https://datadryad.org/stash/dataset/doi:10.5061/dryad.5r62f)) but the formatting was hard to decipher. None of the data linked up to the LEDA data in TRY, so we assumed that these were original data that were uploaded by the author of the paper.

**Traits Related to Riparian Plant Invasion in South East Australia**

*Database Reference(s)*

1. Catford et al. 2014. Species and environmental characteristics point to flow regulation and drought as drivers of riparian plant invasion. *Diversity and Distributions*.

*Plantago*, *Poa –* Contained data from one paper (Catford et al. 2014). The data were not presented in paper, but were uploaded to TRY by an author of the paper. The data were uploaded twice. For *Poa* they were uploaded once as “SLA: petiole excluded” and once as “SLA: petiole included”.

**Tundra Plant Traits Database**

*Database Reference(s)*

1. Chapin. Unpublished.

*Conifers*, *Poa –* Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. The conifer data lined up with data in Chapin et al. 1996 (*Journal of Vegetation Science*), though there appears to be a conversion issue. It was unclear whether the *Poa* data were associated with a now-published paper.

**Tropical Traits from West Java Database**

*Database Reference(s)*

1. Shiodera et al. 2008. Variation in longevity and traits of leaves among co-occurring understorey plants in a tropical montane forest. *Journal of Tropical Ecology*.

*Quercus* – Contained data from one paper (Shiodera et al. 2008). The data were presented in the supplemental of the paper and were uploaded to TRY by the author of the paper.

**Ukraine Wetlands Plant Traits Database**

*Database Reference(s)*

1. van Bodegom. Unpublished.

*Quercus* – Contained unpublished data from what we assumed to be a single source and were uploaded by who we assumed was the author. It was unclear whether these data were associated with a now-published paper. The data were uploaded twice.

**VirtualForests Trait Database**

*Database Reference(s)*

1. Gutiérrez and Huth. 2012. Successional stages of primary temperate rainforests of Chiloé Island, Chile. *Perspectives in Plant Ecology, Systematics and Evolution*.

*Data Reference(s)*

* + - 1. Lusk et al. 2003. Photosynthetic differences contribute to competitive advantage of evergreen angiosperm trees over evergreen conifers in productive habitats. *New Phytologist*.
      2. Lusk. 2001. Leaf life spans of some conifers of the temperate forests of South America. *Revista Chilena de Historia Natural*.

*Conifers –* Contained data used in Gutiérrez and Huth 2012. In the supplement, they said they got their SLA data from Wright et al. 2004 and Lusk et al. 2008. In TRY, most of the data were cited to a source within Wright et al. 2004, however some of the data were uncited and can be linked to other data in TRY.

**Xylem Functional Traits (XFT) Database**

*Database Reference(s)*

1. Choat et al. 2012. Global convergence in the vulnerability of forests to drought. *Nature*.

*Data Reference(s)*

* + - 1. Beikircher and Mayr. 2008. The hydraulic architecture of *Juniperus communis* L. ssp. *communis*: shrubs and trees compared. *Plant, Cell and Environment*.
      2. Bhaskar et al. 2007. Evolution of hydraulic traits in closely related species pairs from Mediterranean and nonMediterranean environments of North America. *New Phytologist*.
      3. Ewers and Zimmermann. 1984. The hydraulic architecture of balsam fir (*Abies balsamea*). *Physiologia Plantarum*.
      4. Ewers and Zimmermann. 1984. The hydraulic architecture of eastern hemlock (*Tsuga canadensis*). *Canadian Journal of Botany*.
      5. Jacobsen et al. 2008. Comparative community physiology: nonconvergence in water relations among three semi-arid shrub communities. *New Phytologist*.
      6. Lo Gullo and Salleo. 1993. Different vulnerabilities of *Quercus ilex* L. to freeze- and summer drought-induced xylem embolism: an ecological interpretation. *Plant, Cell and Environment*.
      7. Maherali and DeLucia. 2000. Xylem conductivity and vulnerability to cavitation of ponderosa pine growing in contrasting climates. *Tree Physiology*.
      8. Maherali et al. 2006. Functional coordination between leaf gas exchange and vulnerability to xylem cavitation in temperate forest trees. *Plant, Cell and Environment*.
      9. Martínez-Vilalta et al. 2002. Xylem hydraulic properties of roots and stems of nine Mediterranean woody species. *Oecologia*.
      10. Martínez-Vilalta et al. 2009. Hydraulic adjustment of Scots pine across Europe. *New Phytologist*.
      11. Mencuccini et al. 1997. Biomechanical and hydraulic determinants of tree structure in Scots pine: anatomical characteristics. *Tree Physiology*.
      12. Mitchell et al. 2008. Using multiple trait associations to define hydraulic functional types in plant communities of south-western Australia. *Oecologia*.
      13. Poyatos et al. 2007. Plasticity in hydraulic architecture of Scots pine across Eurasia. *Oecologia*.
      14. Willson and Jackson. 2006. Xylem cavitation caused by drought and freezing stress in four co-occurring *Juniperus* species. *Physiologia Plantarum*.
      15. Willson et al. 2008. Hydraulic traits are influenced by phylogenetic history in the drought-resistant, invasive genus *Juniperus* (Cupressaceae). *American Journal of Botany*.

*Conifers*, *Quercus –* Contained data from a publicly available dataset ([link](https://xylemfunctionaltraits.org/)). The data uploaded to TRY contained mostly data that could not be obtained from tables or figures from the paper. Some of the papers also did not mention measuring SLA. All of the data were not from the author that uploaded the data to TRY.

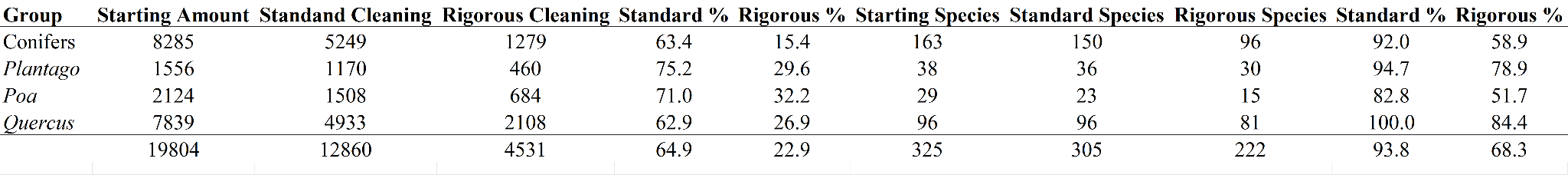
# **Appendix B. Comparison of the number of data points between cleaning protocols**

# **Figure S1.** The number of data points for each species when cleaned using the standard and rigorous protocols. Each point represents an individual species, and the lines pair the number of data points of each species between the cleaning protocols. The taxa mean and interquartile range are represented by boxplots. The numbers below the bars represent the number of species in each group and cleaning protocol.

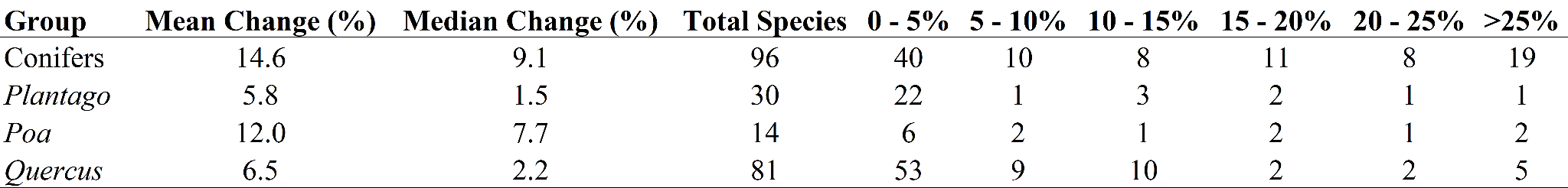
# 

# **Appendix C. Summary statistics by taxonomic group**

**Table S1.** The amount of data within each taxonomic group upon download and after cleaning using both TRY’s and the author’s more rigorous protocol.



**Table S2.** The magnitude of change in a species’ mean SLA between both TRY’s and the author’s more rigorous cleaning protocols.

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