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Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California

Doctorado en Ciencias
en Ciencias de la Vida
con orientación en Biología Ambiental

Biogeography and macroevolution of the genus *Phidippus* (Araneae, Salticidae) from North America

Tesis
para cubrir parcialmente los requisitos necesarios para obtener el grado de Doctor en Ciencias

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Biogeografía y macroevolución del género *Phidippus* (Araneae, Salticidae) de Norteamérica

Resumen aprobado por:

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El género de arañas saltarinas *Phidippus* cuenta con 61 especies descritas, distribuidas en Norteamérica y clasificadas en nueve grupos de especies con base en una filogenia obtenida con datos morfológicos. La diversidad de *Phidippus* está bien documentada en países como Estados Unidos y Canadá, sin embargo, en México su diversidad permanece poco conocida debido a las grandes áreas inaccesibles o que siguen sin explorar. Por lo tanto, en este trabajo se aplicó un método taxonómico integrativo para descubrir la diversidad del genero *Phidippus* en un área poco explorada de México, la península de Baja California. Dado que en muchos estudios previos se han visto discrepancias entre topologías filogenéticas reconstruidas con datos morfológicos versus datos moleculares, en el presente trabajo se obtuvieron datos genómicos provenientes de elementos ultraconservados (UCE) de 48 especies de *Phidippus* para inferir una filogenia molecular con máxima verosimilitud y así corroborar la hipótesis filogenética existente. Además, se llevó a cabo una datación filogenética utilizando métodos Bayesianos y datación secundaria utilizando 11 géneros del clado Marpissoida como grupos externos, con el fin de elucidar la historia biogeográfica y macroevolutiva de *Phidippus*. En la península de Baja California se encontraron un total de 10 especies de *Phidippus*, de los cuales uno es un nuevo registro para México, tres son nuevos registros para la península de Baja California, y se encontró al menos una especie no descrita. En la filogenia molecular obtenida en este estudio se recuperaron cuatro clados principales, siendo el grupo morfológico “octopunctatus” el único congruente con la evidencia molecular. En general se recuperaron especies del mismo grupo morfológico dentro del mismo clado. La incongruencia entre la filogenia morfológica y molecular pudo deberse a un escenario de radiación rápida en donde los cambios morfológicos no alcanzaron a diferenciarse, lo que también puede ser evidencia a favor de un sorteo incompleto de linajes a nivel molecular. Con base en la filogenia datada, el ancestro común de *Phidippus* y *Paraphidippus* divergió hace alrededor de 5.8 millones de años (Ma) en el Mioceno tardío y posteriormente *Phidippus* divergió hace alrededor de 2.8 Ma en el Plioceno tardío en donde la mayoría de su diversificación ocurrió durante mediados del Pleistoceno temprano (2.58 Ma – 11.7 miles de años). Además se encontró una disminución en la tasa de diversificación de *Phidippus* a lo largo del tiempo, soportando el modelo de especiación dependiente de la densidad (DDL), lo que indica que las tasas de especiación disminuyeron debido a que los nichos ecológicos fueron llenados mientras los linajes incrementaron. En este estudio también se vio que el área ancestral de *Phidippus* fue la región Suroeste de Norteamérica, en donde también ocurrieron la mayoría de los eventos históricos como la dispersión y especiación. Finalmente, estos resultados proporcionan una compresión más profunda de la diversidad y evolución del género *Phidippus* en la región de estudio, sin embargo, se destaca la necesidad de futuras investigaciones enfocadas en áreas más específicas o clados particulares dentro de *Phidippus*.

Palabras clave: biogeografía histórica, elementos ultraconservados, filogenia, Pleistoceno, Salticidae

Abstract of the thesis presented **by Luis Carlos Hernández Salgado** as a partial requirement to obtain the Doctor of Science degree in Life Sciences with orientation in Environmental Biology.

Biogeography and macroevolution of the genus *Phidippus* (Araneae, Salticidae) from North America

Abstract approved by:

PhD. Fadia Sara Ceccarelli
Thesis Director

The jumping spider genus *Phidippus* comprises 61 described species, distributed across North America and classified into nine species groups, based on a morphology-based phylogeny. The diversity of *Phidippus* is well documented in countries such as the United States and Canada; however, in Mexico, the diversity of this genus remains poorly understood due to large, inaccessible areas, or regions that remain unexplored. Therefore, in this work an integrative taxonomic approach was applied to discover the diversity of *Phidippus* in a largely unexplored area of Mexico, the Baja California Peninsula. Given that in many previous studies, morphology- and molecular-based phylogenetic topologies were found to be incongruent, in this study genomic data derived from ultraconserved elements (UCE) of 48 *Phidippus* species were used to infer a phylogeny by Maximum Likelihood and thus corroborate the existing phylogenetic hypothesis. Additionally, phylogenetic node-age estimates were carried out using Bayesian methods, with secondary calibrations using 11 genera from the clade Marpissoida as outgroup taxa, with the aim of elucidating the biogeographic and macroevolutionary history of *Phidippus*. In the Baja California peninsula, a total of 10 *Phidippus* species were found, including one new record for Mexico, three new records for the peninsula, and at least one undescribed species. In the molecular phylogeny, four main clades were recovered, with the octopunctatus group being the only group recovered in both the molecular and morphological phylogenies. Generally, species within the same morphological group were recovered within the same, larger clade. The few incongruences between the morphological and molecular phylogenies could be attributed to a scenario of rapid radiation, where morphological characters did not fully differentiate, which could also imply incomplete lineage sorting at a molecular level. Based on the dated phylogeny, the most recent common ancestor of *Phidippus* and *Paraphidippus* diverged approximately 5.8 Ma in the late Miocene, with the subsequent divergence of *Phidippus* approximately 2.8 Ma in the late Pliocene, and its main diversification occurring during the early to mid-Pleistocene (2.58 Ma – 11.7 Ka). Furthermore, a decrease in the rate of diversification over time was observed, supporting the density-dependent speciation model (DDL), indicating that speciation rates decreased as ecological niches were filled with newly emerging lineages. Furthermore, in this study the ancestral area of *Phidippus* was estimated as the Southwestern region of North America, where most historical events such as dispersal and speciation occurred. In conclusion, the results of this study provide a deeper understanding of the diversity and evolution of the genus *Phidippus* in the region. However, we also emphasize the need for future research focused on more specific geographic areas or particular clades within *Phidippus*.

Keywords: historical biogeography, phylogeny, Pleistocene, Salticidae, ultraconserved elements

Dedication

To my beloved wife, Paola,

Your constant support, love and patience have been the guiding light in my journey. This accomplishment is as much yours as it is mine. Thank you for standing by my side through every challenge and triumph.

With all my love

There's nothing more romantic as biogeography

Edward Wilson

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Chapter 1. Introduction

Since Darwin and Wallace, biologists have searched for the reasons for the great biological diversity and its distribution; questions have arisen such as “Why are the species found where they are?” and “What events or processes led them to inhabit these places?” Biogeography is the field where methods are developed to answer such questions, being the discipline of biology whereby the distributional patterns of biological diversity and the processes that have formed those distributions over time are analyzed and identified (Cox et al., 2016).

Biogeographic patterns can reveal historical connections between different regions and help us understand how species have dispersed and diversified over time. For example, the distribution of closely related species across different continents can indicate past continental connections or long-distance dispersal events (Lomolino et al., 2010). By studying the distribution of extant species and their ancestors, researchers can reconstruct the evolutionary history of lineages and identify the processes that have shaped their diversification. Biogeography also plays a crucial role in understanding the factors that drive macroevolutionary processes. Considering longer timescales (millions of years), geological and large-scale geographical factors such as orogenesis and continental drift are used to explain biogeographical and macroevolutionary patterns and processes. On the other hand, environmental factors, such as climate and habitat availability, influence the distribution and evolution of species during shorter timespans (thousands of years). For instance, changes in climate can lead to range shifts, speciation, and extinction events (Cox et al., 2016; Hua & Wiens, 2013; Wilson et al., 2009).

Spiders have been used as model organisms in several biogeographic studies due to their importance in ecosystems and their diversity. Research on spider biogeography has explored different aspects such as island diversification (Méndez-Castro et al., 2020; Planas & Ribera, 2014), ecological gradients (Pavlek & Mammola, 2021; Piel, 2018), and historical evolutionary processes (Ceccarelli et al., 2016; Griotti et al., 2023). These investigations have shed light on the spatial distribution of spiders in relation to environmental and geographical factors, and the evolutionary history of spider lineages. Furthermore, the use of phylogenetic analyses, genetic markers, and ecological predictors has enhanced our understanding of spider abundance, richness, and community dynamics in various habitats (Dimitrov & Hormiga, 2020). Overall, biogeographic studies on spiders contribute significantly to our knowledge of biodiversity patterns, species interactions, and evolutionary processes.

1.1 Order Araneae

Spiders (Order Araneae) are among the most common terrestrial invertebrates; they are abundant in almost every continent of the world, from anthropogenic environments and agricultural areas, to sites with natural vegetation; spiders have colonized all possible ecological niches (Turnbull, 1973). Most spiders live in well-defined environments; the species distributional limits are established by each species physiological conditions and environmental factors (Foelix, 2011). Spiders comprise about 51,400 described species, but some authors estimate that there are more than 120,000 species. The currently known species are distributed in 4,179 genera and 128 families (World Spider Catalog, 2023). Spiders are generalist predators that play a dominant role in the functioning and stability of ecosystems, especially in the food web by preying on other arthropods, thus helping to maintain the balance of the ecosystem (Samu et al., 2021). Additionally, spiders are an important component of the total biodiversity in many areas (Jiménez et al., 2015; Smith DiCarlo & DeBano, 2019).

1.2 Origin and evolution of spiders

The order Araneae is an ancient group, which continually diversified and adapted since the Devonian period > 380 million years ago (Ma). The oldest spider species recorded so far is *Attercopus fimbriunguis*, described in 1991 (Selden et al., 1991), and is the only known species of spider from the Devonian period. The order Araneae is estimated to have appeared on earth around 397-334 Ma in the Devonian, but this data varies according to some authors. The suborders Mygalomorphae and Araneomorphae are estimated to have diverged around 308 Ma in the Carboniferous and began to diversify into different families in the Jurassic or Cretaceous.

The Araneoidea and RTA clades are significant groups within the spider phylogeny, characterized by specific morphological features and evolutionary relationships. The Araneoidea clade includes various families of spiders, such as Tetragnathidae, Araneidae, and Nephilidae and is closely related to the RTA clade. The latter is known for the presence of the retrolateral tibial apophysis on the male palpal tibia and includes approximately half of the known spider species, which lost the ability to build webs (Blackledge et al., 2009), including families such as Salticidae and Lycosidae (Álvarez-Padilla et al., 2009; Wheeler et al., 2017). The RTA clade originated ca. 187-138 Ma and Araneoidea ca. 202-153 Ma (Fernández, Kallal, et al., 2018; Garrison et al., 2016). The diverse life strategies of spiders are the results of varied evolutionary paths; from highly specialized web-weaving to the wide array of hunting strategies, including specialized

pheromone traps, mimicry of ants, and intricate silken structures for capturing prey (Cordellier et al., 2020; Cushing, 2012; Eberhard, 1980; Garrison et al., 2016).

Spiders use different hunting techniques; some ambush their prey, and others use the web as a method of capture. The evolution of spiders has been attributed mainly to innovations in their webs and the transition to a cursorial lifestyle had a significant impact on spiders' diversification (Blackledge et al., 2009; Dimitrov et al., 2012). Based on the results obtained by Fernandez et al., (2018) the diversification rates in Araneoidea are accelerated, particularly in two families, Araneidae and Linyphiidae. Additionally, Fernandez et al., (2018) found that there is a pattern in the evolution of the cobweb presenting multiple transformations and losses in its architecture. Contrary to the findings of Fernandez et al (2018) of the highest rates of diversification being in Araneidae and Linyphiidae, other authors indicate that the highest rates of diversification occur in the RTA clade (Garrison et al., 2016). It seems then that the spider web is an important factor in the diversification of spiders; however, more studies are required to support these hypotheses. According to recent studies, the origin of the orbicular web had its origin approximately 247-191 Ma, in the middle Triassic to the early Jurassic (Bond et al., 2014; Dimitrov et al., 2012; Fernández, Kallal, et al., 2018). These dates are consistent with fossil discoveries of weaver spiders of the *Mongolarachne jurassica* species found in Jurassic deposits in China (Selden et al., 2013).

Biogeography has also played a crucial role in understanding the evolutionary history of spiders, with studies reconstructing the origin and subsequent dispersal of spider clades, shedding light on the biogeographical history of spiders in different regions (Magalhaes & Ramírez, 2022; Turk et al., 2020, 2021). For instance, the global diversification of *Anelosimus* spiders has been driven by long-distance overwater dispersal and Neogene climate oscillations, highlighting the role of historical climate dynamics in shaping the distribution and diversification of spiders (Luo et al., 2020). Moreover, the biogeographical patterns of spider communities have been studied, revealing the drivers of diversity in spider communities and the role of species extinctions in shaping insular spider biogeography (Cardoso et al., 2010). Additionally, the biogeographical history of the ancient spider family Filistatidae has been studied, revealing insights consistent with long-distance dispersal and vicariance following continental drift, contributing to the understanding of the morphological evolution and biogeography of this family (Magalhaes & Ramírez, 2022). Salticidae, commonly known as jumping spiders, represent another example within the context of biogeography and spider evolution. Studies on the biogeography of Salticidae have provided valuable insights into their evolutionary history and distribution patterns (Bodner & Maddison, 2012; Hedin et al., 2020). For example, some studies have highlighted the role of land bridges and climatic fluctuations in facilitating the dispersal and diversification of jumping spiders across different continents

(Hill, 2009; Hill & Edwards, 2013). These studies offer some insights into the historical dynamics of spider evolution and diversification but also underscore the interplay between environmental changes, dispersal mechanisms, and continental shifts in shaping the evolution and present-day distribution of spiders.

1.3 Salticidae: Taxonomy, ecology, and evolution

The family Salticidae, also known as a "jumping spiders", is the most diverse family of all spiders with 646 genera and more than 6,000 species, which constitute around 13% of all spiders species (Peng et al., 2002; World Spider Catalog, 2023). One of the first classifications of the family Salticidae was presented by Simon (1892) in his four volume book "Histoire naturelle des araignées" published in the years 1892 to 1903, classifying the family into Pluridentati, Fissidentati and Unidentati, according to chelicera dentition. Prószyński (1976) used characteristics of the genitalia to perform the classification, which was a great advance, however it did not include many genera of the Salticidae. Recent advancements in molecular tools and techniques have made it easier to unravel the phylogeny of the Salticidae family (Bodner & Maddison, 2012; Hedin & Maddison, 2001; Maddison et al., 2008, 2014; Maddison & Hedin, 2003; Ruiz & Maddison, 2015; J. X. Zhang & Maddison, 2013), ending in Maddison (2015) classification for the family Salticidae which is one of the most comprehensive classifications for any spider family.

The monophyly of the family Salticidae is well supported by phylogenetic and morphological analyses (Maddison, 2015; Maddison and Hedin, 2003; Maddison et al., 2014) and according to a recent study the family Philodromidae has been hypothesized as the sister family of salticids (Azevedo et al., 2022a). It was previously suggested that the family Salticidae was composed of three main lineages the Lyssomanines, Spartaeines and a group consisting of the remaining salticidae (Maddison, 1988, 1996; Wanless, 1984), this last group is referred to by Maddisson (1996) as Salticine and later formally recognized as the Salticoida clade (Maddison and Hedin, 2003), which includes more than 90% of the described species of Salticidae.

Maddison et al. (2017) presented the first phylogeny using the whole genome of Salticidae with a technique called Anchored Hybrid Enrichment (AHE), where the phylogeny was resolved with a high degree of confidence compared to other studies that used only some genes (Maddison, 2015; Maddison et al., 2014). On the other hand, in this same work, the clade Salticoida recognized by Maddison (2003) was reassigned to a subfamily called Salticine while Salticoida was assigned to a subgroup together with its sister group Amycoida. The phylogeny of the Salticidae family has been extensively studied, however

much information is still lacking at the generic level; while the overall phylogenetic "backbone" for the family is relatively well resolved, the phylogenies of certain families and genera continue to be unresolved due to the fact that there are still many species to be discovered. Nevertheless, these works guide us on the path we must follow in future research focused on this highly diversified family of spiders (Maddison, 2015; Maddison et al., 2017).

Spiders of the family Salticidae are easily recognized by their enlarged anterior median eyes and bright colors. According to Hill (2009), the origin of this family within the RTA clade may be related to the evolution of its ocular system. The Salticids ocular system is more developed than other spider families, mainly regarding the resolution and size of their middle anterior eyes (Foelix, 2011; Hill, 2007; Morehouse, 2020), also have very particular predation strategies (Richman and Jackson, 1992). For example, the species of *Phidippus* evaluate the distance and direction of its prey and that makes its jump more exact when hunting (Hill, 2006).

The amber fossils of Chiapas in southern Mexico contain representatives of the family Salticidae and are dated to about 23-15 Ma. Fossils of *Lyssomanes* (García-Villafuerte and Penney, 2003) and Marpissinae have been recorded (Riquelme and Hill, 2013), and the latter suggests that a great diversity of Salticides was already present in North America in the Early Miocene 23-13 Ma ago (Hill and Edwards, 2013). Most species of Salticidae belong to the subfamily Salticinae and within this subfamily are the largest clades of Salticidae which are Amycoida, Astioida, Marpissoida, and Euophryines. Within the phylogeny of Salticidae, an interesting biogeographical pattern can be observed; many of these salticid clades predominate in a specific continental region (Maddison et al., 2008; Maddison and Hedin, 2003), and in the case of Marpissoida their diversification occurred in Australasia at the end of the Eocene around 33.9 Ma (Hill and Richman, 2009; Maddison and Hedin, 2003). Within Marpissoida is the subfamily Salticinae to which the spiders of the genus *Phidippus* belong, which are among the most diverse salticids of North America.

1.4 Genus *Phidippus* C. L Koch, 1846

The genus *Phidippus* (Figure 1) has 61 described species distributed from Alaska to Costa Rica and includes some of the largest jumping spiders in the world, some reaching up to 20 mm in length (Edwards, 2004, 2020). According to Edwards (2004), in the United States there are 46 species of *Phidippus*, while 8 are found in Canada, and 42 in Mexico. Although the diversity of *Phidippus* is well-documented in the United

States and Canada, in Mexico, the true diversity of *Phidippus* remains poorly known due to vast unexplored and inaccessible regions. While the genus *Phidippus* has been used as a model organism for studies of movement and feeding, vision, neurophysiology, and courtship behavior (Baker, 2007; Bednarski et al., 2012; Ceccarelli et al., 2023; Edwards & Jackson, 1993; Jackson, 1977), to date, there are no published studies of its evolutionary history based on molecular data.

Figure 1. *Phidippus pacosauritus* most recently described by G.B Edwards. *Phidippus pacosauritus* female (A) Anterior view. (B-D). Variation in dorsal abdominal pattern in color and visibility of lateral abdominal bands. (C) Dark integument and scales variant. *Phidippus pacosauritus* male. (E-F) Color pattern similar to female with red dorsal abdominal scales (Edwards, 2020). Photo credits: Figures A-B,D, Colin Hutton; Figures C,E-F, David Hill.

As mentioned previously, *Phidippu*s belongs to the tribe Dendryphantini subfamily Salticinae, and according to Hill (2009) some genera of this tribe are divided into two groups: those that are distributed in North America, with their origin in the Miocene and those that have limited distribution in North America which may have arrived relatively recently through the Panama bridge. In this division, *Phidippus* belongs to the former group. In North America *Phidippus* can be separated into different groups according to their distribution: west coast, western interior, south central, east, southeast, boreal, and tropical (Hill & Edwards, 2013; Richman et al., 2012). Hill & Edwards (2013) present a hypothesis of how *Phidippus* species dispersed during the Last Glacial Maximum, namely from southern North America northwards in the last 20,000 years; however, they recommend implementing molecular studies to test this hypothesis.

1.5 Justification

Spiders are among the most abundant and common terrestrial invertebrates. They play a significant ecological role as predators and preys for many larger taxa; their distributions are limited by specific environmental factors combined with the physiological conditions of each species. Despite extensive research on spider ecology and biology, conflicting findings exist regarding their diversification patterns, underscoring the need for additional research into the factors influencing their evolution. Further studies integrating comparative analyses and detailed molecular phylogenies are essential to spiders' diversity and diversification. Additionally, the spatial patterns of spider diversity remain poorly understood; more detailed data on species distribution on a global scale is still needed.

The Salticidae family has 646 genera and more than 6,000 species, making it the most diverse family of the order Araneae. The genus *Phidippus* has 61 described species and is widely distributed from Alaska to Costa Rica, with the majority of its species found in North America. However, there are still unexplored regions requiring further research and attention, particularly in Mexico. One such under-studied area is the Baja California Peninsula. Given that new *Phidippus* species are still being discovered and described, it is possible that this genus has greater diversity than currently known. Using an integrative approach with morphological examinations and DNA "barcoding" part of this research will allow us to know the *Phidippus* diversity in Baja California.

Additionally, to date there is no molecular phylogeny for the genus *Phidippus*, or studies that elucidate its evolutionary origin, since the studies carried out until now are mainly morphological, behavioral, and physiological. In this sense, the species of spiders of the genus *Phidippu*s are an ideal study model to

explore micro-and macroevolutionary questions in North America on the diversification patterns of this genus within the family Salticidae. This research will allow us to know how the diversification of the genera was and what were the evolutionary and historical-biogeographic processes that shaped its current distribution.

1.6 Hypotheses

- Species of the genus *Phidippus* are monophyletic, and their most recent common ancestor diverged after the Eocene in North America.
- *Phidippus* species diversified gradually since the Miocene.

1.7 Objective

1.7.1 General objective

To identify the center of origin of the genus *Phidippus,* elucidate the timing and patterns of its diversification and radiation, and estimate the historical-biogeographical processes that shaped its current distribution.

1.7.2 Specific objectives

- To uncover the diversity of *Phidippus* in Baja California
- To obtain a complete dated phylogeny of the genus *Phidippus* using ultraconserved elements.
- To estimate the ancestral range of the genus *Phidippus* using parametric biogeography methods.
- To estimate historical biogeographic processes such as dispersal, extinction, and cladogenesis of the genus *Phidippus*.
- To identify areas of high phylogenetic diversity for the genus *Phidippus*.

Chapter 2. New distributional records of *Phidippus* (Araneae: Salticidae) for Baja California and México: An integrative approach

2.1 Introduction

Biogeographical and biodiversity studies rely primarily on knowing the complete distribution of focal taxa as well as the total number of species present in an area. To date, numerous taxonomic groups and vast areas are poorly known owing to a paucity of studies. One such area is the Mexican Baja California Peninsula (BCP), which is the world's second longest peninsula, situated between the latitudes 23° N and 32° N, which means that its climates range from temperate to subtropical. The peninsula's location and orography allow for a variety of ecoregions to exist within the region, such as Mediterranean coastal scrub, mountain coniferous forest, and deserts (González-Abraham et al., 2010).

While the BCP's relative isolation confers a high number of endemics, especially in plant species (Rebman et al., 2016), the peninsula lies parallel to the mainland, and therefore dispersals and species interchanges are possible from the east as well as from the north. So, considering the geographic and phytogeographic similarities with southern California and Arizona in the United States, as well as Sonora and Sinaloa in Mexico, shared distributional patterns between taxa are expected (Riddle et al., 2000). Nevertheless, most studies of the region's fauna have focused on vertebrate taxa, while ecologically important groups, such as spiders, have received proportionally much less attention. For the BCP, and particularly its southernmost region, there are approximately 411 described spider species (Jiménez et al., 2018).

The spider family Salticidae has the largest number of genera (646) and species (>6000) within the Araneae, comprising about 13% of the order's species (Peng et al., 2002; World Spider Catalog, 2023). A well-known and charismatic salticid genus, *Phidippus* has 76 described species and includes some of the largest jumping spiders in the world, some reaching up to 20 mm in length (Edwards, 2004; Hill & Edwards, 2013). This genus is distributed from North to Central America, including the Caribbean.

In 2004, Edwards carried out a complete revision of the genus, including a phylogenetic hypothesis based on morphological data. Based on this revision, Mexico contains 36 species of *Phidippus*, while the BCP has the following 6 recorded species (Edwards, 2004, 2020; Richman et al., 2012): *Phidippus boei* Edwards, 2004, *Phidippus californicus* Peckham & Peckham, 1901, *Phidippus carneus* Peckham & Peckham, 1896,

Phidippus johnsoni (Peckham & Peckham, 1883), *Phidippus nikites* Chamberlin & Ivie, 1935 and *Phidippus phoenix* Edwards, 2004. However, considering geographic distances and similarities in habitats between California, Arizona, Sonora, and Sinaloa, of the 26 *Phidippus* species found in the region, several could be present in the BCP. Despite their size and charismatic color patterns, new species of *Phidippus* are still being found and described, the latest as recently as 2020 (Edwards, 2020). Thus, there also exists a possibility that in the BCP there may be new *Phidippus* species that are not formally described.

In addition to traditional morphological taxonomic methods, in the past decade and a half, a commonly used data source for species identification in animals, including spiders, has been the DNA "barcoding" region (Astrin et al., 2016; Barrett & Hebert, 2005; Blagoev et al., 2016; Hebert et al., 2004; Naseem & Tahir, 2016). Despite its advantages, such as its universality and a discernable threshold between inter- and intraspecific nucleotide diversity for most taxonomic groups (Čandek & Kuntner, 2015; Coddington et al., 2016), the "barcode" region has also been the source of controversy, owing to limitations in correctly delimiting species arising from mitochondrial mechanisms such as incomplete lineage sorting and introgression (Ceccarelli et al., 2012; Funk & Omland, 2003; Vences et al., 2005) and dependence on the analytic method (Meier et al., 2022). Therefore, integrative approaches are preferred over standalone methods (Schlick-Steiner et al., 2010). In this chapter, a combination of morphological examinations, especially adult male and female genitalia (Huber, 2004) and DNA "barcoding" for species identification, is used to explore the diversity of *Phidippus* in the Baja California peninsula.

2.2 Materials and methods

2.2.1 Fieldwork

Sampling was carried out in Baja California Peninsula, Mexico from 2017 to 2021. We covered a wide range of habitats from shrubland, palm oasis and pine forests to highly modified rural and urban sites throughout the Baja California peninsula (Figure 2). The sampling was carried out manually, and *Phidippus* specimens collected were preserved in 96% ethanol under a temperature of -18°C (-0.4°F). The specimens remain in the Museum of Arthropods of Baja California (MABC), located at the Ensenada Center for Scientific Research and Higher Education (CICESE) in Baja California, Mexico.

Figure 2. Maps of different areas within the Baja California Peninsula, with orange circles indicating the sampling points during this study

2.2.2 Morphological analysis

To identify the collected individuals to species level, the taxonomic work of Edwards (2004) was used as a reference to identify adult male and female specimens. Body terminology is standard for spiders; genitalia terminology follows Maddison (1996). The following abbreviations are used in the text: ALE—anterior lateral eyes, AER—anterior eyes row, PLE—posterior lateral eyes, PME—posterior median eyes.

The male and female adult genitalia were dissected and examined under a stereoscope and immersed in 96% alcohol to determine the species. The epigynes were previously cleared following the protocol proposed by Guerrero-Fuentes and Francke (Guerrero-Fuentes & Francke, 2019) but omitting the steps involving hydrochloric and glacial acetic acid. Digital photos of selected jumping spiders were taken using a LUMIX DFC490 camera mounted on a Nikon Z16 APO-A stereo microscope.

2.2.3 DNA barcode analysis

For the species collected in the BCP, the prosoma and legs were used for DNA extraction, using the DNeasy Blood & Tissue Kit by Qiagen. Polymerase Chain Reaction (PCR) was carried out following the protocol proposed by the Canadian Centre for DNA Barcoding (CCDB) (Schlick-Steiner et al., 2010). The primers used for COI amplification were LCO-1490: 5'- GGTCAACAAATCATAAAGATATTGG-3'; HCO-2198: 5'-TAAACTTCAGGGTGACCAAA AAATCA-3', C1-N-2191 (Nancy): 5'-CCCGGTAAAATTAAAATATAAACTTC-3' and C-1-J-1751 (Ron): 5'-GGAGCTCCTGACATAGCATTCCC-3'. PCR products for 121 newly collected specimens from the BCP were sent to Macrogen, Inc., Korea, for sequencing.

The sequences were edited and assembled with Geneious Prime 2021.2.2 and Sequencher v 4.1.4. The 121 newly generated "barcode" sequences, all the same length, were uploaded to the Bold Systems v4 database (Ratnasingham and Hebert, 2007) and a Barcode Gap Analysis (BGA) was carried out using the Kimura 2 Parameter substitution model with MUSCLE alignment and pairwise gap deletion to corroborate species identities, particularly in groups where there were no adult specimens.

Additionally, 23 reference sequences from previously identified individuals from other localities (Guerrero-Fuentes, in prep), were used in this study to corroborate morphological identifications. The reference sequences were selected for species known to occur in the BCP or nearby states from the U.S.A. (California

and Arizona) and Mexico (Sonora and Sinaloa). A list of the species used for reference can be found in supplementary information, Table 8.

In addition to the species listed in, reference sequences belonging to *P. bidentatus* and *P. cruentus* were included because these two species are widespread in Mexico, and their complete distribution is likely to be unknown. Since most of the reference sequences were obtained with a different primer set, they are missing the first ca. 240 nucleotides of the DNA "barcoding" region. So, rather than using BOLD tools, where missing data are detrimental to calculating genetic distances, a Bayesian phylogenetic tree was reconstructed, since Bayesian phylogenetic relationships can be accurately inferred despite missing data in the matrix (Wiens, 2006; Wiens & Moen, 2008).The newly obtained sequences, the reference sequences, plus a sequence belonging to the jumping spider species *Habronattus borealis* as an outgroup taxon were aligned using the MAFFT v 7 server (Katoh & Standley, 2013).

Nucleotide substitution models and codon partitioning schemes were selected using Partition Finder v. 1.1.1 (Lanfear et al., 2012) under an AICc model selection, which resulted in the following suggested models and partitions: TrN + G for COI codon position 1, HKY + I for codon position 2, and TVM + G for codon position 3. Bayesian phylogenetic inference was then applied in MrBayes v. 3.2.6 (Ronquist et al., 2012), running 4 parallel Markov chains for 50 million generations, with a tree sampled every 5000th generation.

A consensus tree was then built after discarding the first 25% as burn-in, and the tree was evaluated by looking for supported nodes (with posterior probabilities greater than 0.95), particularly with regards to species-level clades which included reference sequences. In cases where there were inconsistencies between the Bayesian tree clades, BGA, and morphological identifications, decisions were made based on the reliability of morphological characters and the DNA "barcoding" sequence fragment. The newly obtained sequences were deposited in the NCBI's GenBank database.

2.3 Results

Specimens belonging to the genus *Phidippus* were found in 16 different localities of the Baja California Peninsula (see supplementary information, Table 9). For this study, a total of 121 newly collected individuals belonging to the genus *Phidippus* were used for DNA "barcoding", of which 75 were adults and were thus examined morphologically and assigned to 9 described and 1 undescribed species. Among the

nine described species found, four were new records, three for Baja California and one for Mexico. The expanded distributions of the new records, *P. adumbratus*, *P. comatus*, *P. octopunctatus* and *P. tux*, can be found in Figure 3.

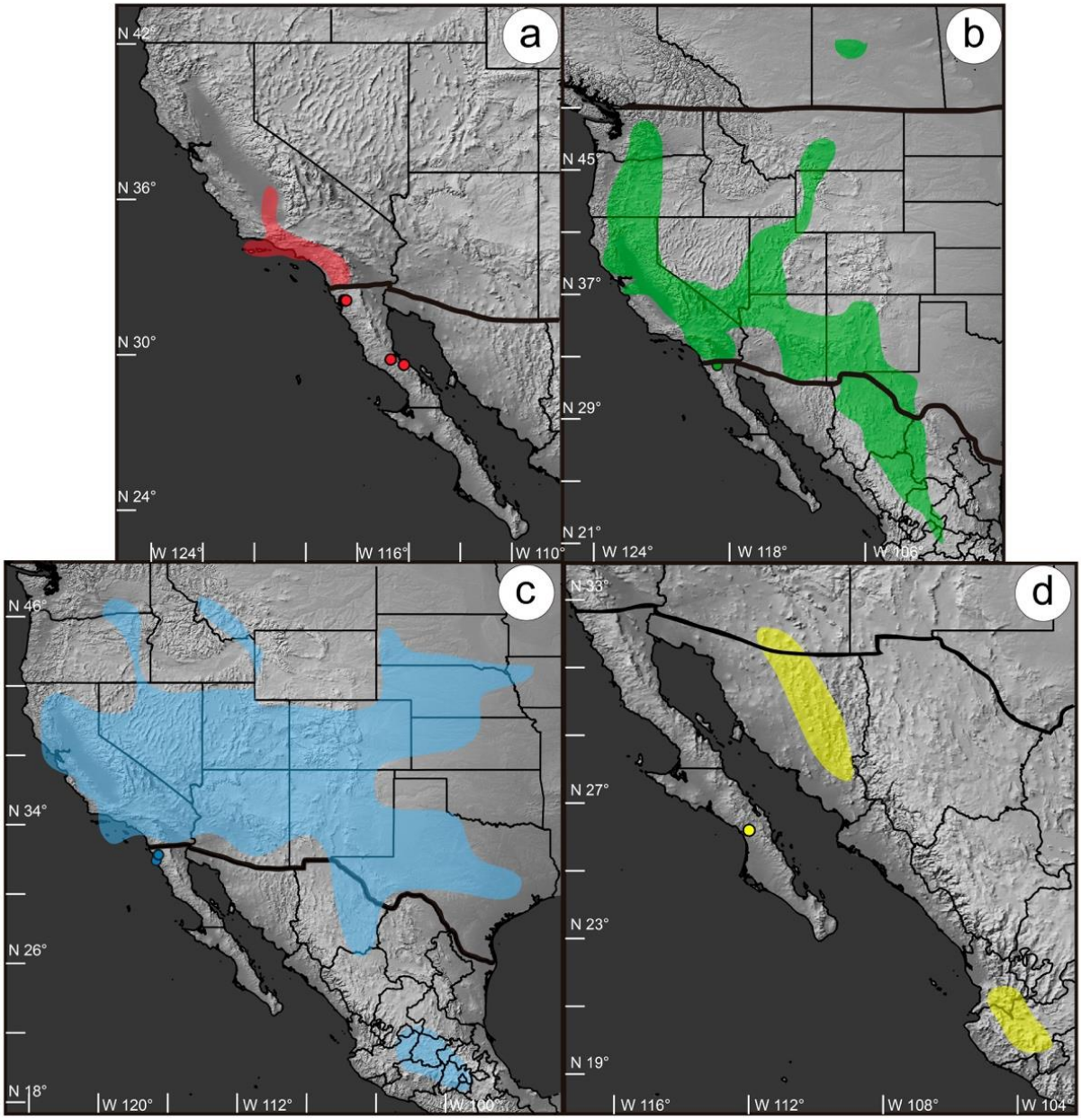

Figure 3. Distributional maps of the four *Phidippus* species with new distributional records in this study, namely, *P. adumbratus* (a), *P. comatus* (b), *P. octopunctatus* (c) and *P. tux* (d). Colored polygons represent the previously known distributions, based on Edwards (2004) and colored circles with black outlines represent the localities of the samples from this study. Country borders are shown with thick black lines, and thin black lines represent state borders for Mexico and the U.S.A. and Canadian provinces.

2.3.1 Taxonomy

Phidippus adumbratus Gertsch, 1934. New record for Mexico (see supplementary information, Figure 15)

Examined material. MEXICO, Baja California: 3 females (Ph083, Ph088, Ph0147), Sierra Blanca (32.0749◦ N, −116.4528◦ W, 600 m), Municipio de Ensenada, 27.I.2020, B. Meza leg.; 1 male (Ph076), Mesa Escondido (29.8027◦ N, −114.7355◦ W, 872 m), San Antonio de Las Minas, Municipio de Ensenada, 29.IX.2020, D. Ward Jr leg.

Distribution. California, USA. Baja California, Mexico.

Diagnosis.

Male. Carapace dorsal view, ocular quadrangle covered with gray iridescent scales, median and posterior bands with orange to reddish scales; in frontal view, cheek band strongly marked with white scales and extended to PLE, eyes area with white scales too. Chelicerae are iridescent and striped with a vertical fringe of white and brown setae. Leg fringes are strongly dense and alternating black and white. Abdomen dorsally covered with red scales, basal white band present. Palp with white dorsal stripe from femur to cymbium; embolus is a long, very thin, and recurved spike; palea wider than long, ectal and retrolateral margins smooth.

Female. Carapace covered with sparse white scales, in dorsal view with median ocular band with reddish scales; ocular quadrangular with sparse and tan scales, in frontal view, cheek band and eyes area with white scales. Abdomen covered red with spots, basal, and lateral bands white. Epigynum with long length flaps and straight posteriorly, septum rudimentary to absent, without sagittal ridge, middle slightly depressed, copulatory ducts with one pair of supernumerary bends.

Phidippus boei Edwards, 2004 (see supplementary information, Figure 16)

Examined material. MEXICO, Baja California: 1 female (Ph013), Santa Catarina (29.5981◦ N, −114.2245◦ W), Municipio de San Quintín, 05.VI.2019.

Distribution. Southern California, USA; Baja California and Baja California Sur, Mexico. Diagnosis.

Female. Carapace black; in frontal view, cheek band weakly marked with gray scales.

Abdomen is dorsally totally black covered with red scales except on median black stripe, without spots. Epigynum with large length flaps and straight posteriorly, septum absent to distinct and without sagittal ridge, middle slightly depressed, copulatory ducts without supernumerary bends.

Phidippus californicus Peckham & Peckham, 1901 (see supplementary information, Figure 17)

Examined material. MEXICO, Baja California: 2 male, 1 female (Ph073, Ph099, Ph103), Rancho Mil (32.1205◦ N, −115.2611◦ W), Ejido El Mayor, Municipio de Mexicali, 23.III.2020, E. López and H. P. Murillo leg.; 1 female (Ph106), 23.IV.2020, same locality, E. López leg.

Distribution. Arizona, California, New Mexico, Oregon, Texas, and Utah, USA; Baja California, Baja California Sur, Chihuahua, Sinaloa, and Sonora, Mexico.

Diagnosis.

Male. Carapace black with white broad submarginal band from PME to thoracic slope or absent; in frontal view, cheek band weakly marked with gray scales. Chelicerae are iridescent and glabrous. Leg fringes are dense and alternating black and white. Abdomen is dorsally covered with red scales except the medial black stripe, basal white band present, white spots or absent. Palp with white dorsal stripe from femur to tibia, cymbium with black setae; embolus is a long, thin, and slightly recurved spike; palea as long as wide, ectal and retrolateral margins smooth.

Female. Carapace in dorsal view with median ocular band present or absent; ocular quadrangular with sparse white scales, in frontal view, cheek band broad and white. Abdomen covered red; spots, basal, and lateral bands white. Epigynum with medium length flaps and straight posteriorly, without septum and sagittal ridge, middle slightly depressed, copulatory ducts with one pair of supernumerary bends.

Phidippus comatus Peckham & Peckham, 1901. New record for Baja California (see supplementary information, Figure 18)

Examined Material. MEXICO, Baja California: 1 male (MABC-B001), Road to Pino Suárez (32.4099◦ N, −116.2761◦ W), Japá, Municipio de Tecate, 02.V.2018, E. López leg. Distribution. Saskatchewan, Canada;

Arizona, California, New Mexico, Nevada, Oregon, Texas, Utah, Washington, and Wyoming, USA; Chihuahua, Coahuila, Durango, Guanajuato, and Hidalgo, Mexico.

Diagnosis.

Male. Carapace, the median ocular tufts replaced by a dense, horizontal setal crests; ocular quadrangle covered with tan scales, median ocular band white, submarginal band broad from ALE to thoracic slope, cheek band white. Chelicera iridescent and vertically striped with white setae. Leg fringes are dense and alternating black and white. Femur I, ventrally with dark metallic blue distal bulge with gray tuft. Abdomen is dorsally covered with tan scales, basal band white, and white spots are present. Palp with white dorsal stripe from femur to the basal edge of the cymbium; embolus is a long, and recurved spike; palea wider than long, ectal and retrolateral margins smooth.

Phidippus johnsoni (Peckham & Peckham, 1888) (see supplementary information, Figure 19)

Examined material. MEXICO, Baja California: 1 female (Ph023), El Mogor (32.0339◦ N,−116.6038◦ W, 376 m), Valle de Guadalupe, Municipio de Ensenada, 07.V.2018, R. Santos, K. Munguía and E. López leg.; 1 female (Ph015), same locality, 11.I.2019, F. S. Ceccarelli, E. López, K. Munguía and H. P. Murillo leg.; 1 male (Ph022), same locality, 23.IV.2019, E. López leg.; 1 female (Ph014), same locality, 17.VII.2019, J. Quintana leg.; 1 male, 1 female (Ph011, Ph058), same locality, 13.XI.2019, K. Munguía, F.S. Ceccarelli and E. López leg.; 1 male, 3 females (Ph025, Ph091, Ph109, Ph115), same locality, 17.XII.2019, E. López and A. López leg.; 2 males (Ph100, Ph116), same locality, 15.I.2020, K. Munguía and E. López leg.; 1 male, 1 female, juvenile (Ph059, Ph093, Ph037), same locality, 23–24.I.2020, V. Aguilera and E. López leg.; 1 male (Ph098), same locality, 29.I.2020, E. López leg.; 1 female (Ph085), same locality, 14.II.2020; 1 female (Ph016), Xanic (32.0952◦ N, −116.5862◦ W), Valle de Guadalupe, 01.XI.2019, E. López leg.; 1 male (Ph067), Sexto Ayuntamiento (31.8812◦ N, −116.6447◦ W), Municipio de Ensenada, 22.02.2020, A. Alfaro leg.; 1 male (Ph064), El Sauzal (31.8679◦ N, −116.6690◦ W 32 m), Municipio de Ensenada, 20.02.2020, 1 male (Ph028), 27.02.2020, 1 male (Ph062), 01.03.2020, 1 male (Ph153), 10.III.2020, same locality, L. A. Garduño leg.; 1 male (Ph066), UABC (31.8635◦ N, −116.6664◦ W), Ciudad de Ensenada, Municipio de Ensenada, 11.III.2020, C. Baiza leg.; 2 females (Ph057, Ph092), Colonia Popular 89, (31.8958◦ N, −116.5622◦ W), Ciudad de Ensenada, Municipio de Ensenada, 10.IV.2019, H. P. Murillo leg.; 2 males (Ph035, Ph043), Fraccionamiento Carlos Pacheco I, Ciudad de Ensenada (31.8837◦ N, −116.6141◦ W), Municipio de Ensenada, 06.III.2020,E. López leg.; 1 male (Ph075), Ciudad de Ensenada (31.8637◦ N, −116.6476◦ W), Municipio de Ensenada, 16.III.2020, A. Aquino leg.; 1 male (Ph074), Playa San Miguel (31.9014◦ N, −116.731◦ W), Municipio de

Ensenada, 22-III−2020, 1 male (Ph078), same locality, 05.IV.2020, F. S. Cecca- relli leg.; 1 female (Ph068) Ojos Negros (31.8180◦ N, −116.3865◦ W), Municipio de Ensenada, 15.II.2020; 1 male (Ph095) Maneadero (31.7189◦ N, −116.60◦ W), Municipio de Ensenada, 17-III-2019, D. Parra.

Distribution. Abundant throughout southwest Canada, western USA, and north- west Mexico.

Diagnosis

Male. Carapace is totally black in dorsal and lateral views, cheek band poorly marked with gray and iridescent scales in frontal view. Chelicerae are iridescent and glabrous. Leg fringes are poorly dense with black and white setae. Abdomen are covered with red scales on lateral edges or totally red; in some specimens, spots are barely visible. Palp without dorsal stripe; embolus is a short and thin spike; palea is distinctly longer than wide, ectal margin is squared and retrolateral margin is notched.

Female. Habitus like the male. Abdomen may present white spots; red scales are only on lateral edges. Epigynum with short length flaps and posteriorly divergent, septum and sagittal ridge present, middle slightly depressed, copulatory ducts with supernumerary bends.

Phidippus nikites Chamberlin & Ivie, 1935 (see supplementary information, Figure 20).

Examined material. MEXICO, Baja California: 1 male (Ph021), El Mogor (32.0339◦ N,−116.6038◦ W, 376 m), Valle de Guadalupe, Municipio de Ensenada, 16.X.2019, E. López; 1 female (Ph080), 15.06.2020, same locality. Baja California Sur: 1 male (Ph135), Vizcaíno (27.2734◦ N, −113.5338), Municipio de Mulegé, 20.IX.2020, H. P. Murillo leg.

Distribution. California, Idaho, Nevada, and Oregon, USA; Baja California, Mexico.

Diagnosis.

Male. Carapace dorsum is totally covered with red scales; in the frontal view, cheek band is weakly marked with gray scales. Chelicerae are iridescent and glabrous. Leg fringes are poorly dense, alternating black and white, with a few reddish to orange scales. Abdomen dorsally covered with red scales. Palp without dorsal stripe, cymbium with black setae; embolus is a short and recurved blade; palea longer than wide, ectal margin extended distally and retrolateral margin notched.

Female. General color pattern is like the male. Carapace, cheek band broad and red. Abdomen is covered red; spots are not visible. Epigynum with short length flaps and convergent posteriorly, without septum and sagittal ridge, middle depressed, copulatory ducts with one to two pairs of supernumerary bends.

Phidippus octopunctatus (Peckham & Peckham, 1883). New record for Baja California (see supplementary information, Figure 21).

Examined material. MEXICO, Baja California: 1 female, (Ph150), El Mogor (32.0339◦ N,−116.6038◦ W, 376 m), 20.VIII.2020, E. López leg.; 1 male (Ph087), El Sauzal (31.8679◦ N, −116.6690◦ W, 32 m), Municipio de Ensenada, 10.IX.2020, L. A. Garduño leg.

Distribution. Widespread from western to central USA; northern to central Mexico. Diagnosis.

Male. Carapace dorsum is totally covered with gray scales; in the frontal view, cheekband is weakly marked with gray scales. Chelicerae are black, dull, and glabrous. Leg fringes are poorly dense, alternating black and white. Abdomen dorsally covered with gray scales. Palp with white or gray dorsal stripe, cymbium almost black, with some white setae; embolus is a long and slightly recurved spike; palea wider than long, ectal and retrolateral margins smooth.

Female. General color pattern is like the male. Carapace, cheek band broad, with gray and white scales. Abdomen covered with gray scales, without spots or bands. Epigynum without flaps, anterior depressed, copulatory ducts with one pair of supernumerary bends.

Phidippus phoenix Edwards, 2004 (see supplementary information, Figure 22).

Examined material. MEXICO, Baja California: 1 male (Ph070), Ampliación La Moderna (31.8693◦ N, −116.6431◦ W), Ciudad de Ensenada, Municipio de Ensenada, 16.III.2020; 1 male (Ph077), 01.III.2020; 1 male, 1 female (Ph071, Ph072), 23.III.2020; 1 male (Ph079), 24.IV.2020, same locality, F. S. Ceccarelli leg.; 1 female (Ph096), Punta Colonet (31.0764◦ N, −116.2761◦ W), Municipio de Ensenada, 05.VIII.2019, B. Meza leg.; 6 males, 8 females (Ph031, Ph032, Ph034,Ph045, Ph046, Ph047, Ph048, Ph050, Ph052, Ph053, Ph054, Ph055, Ph056, Ph060), same locality, 25.I.2020, L. A. Garduño, E. López, and H. P. Murillo leg.; 1 female (Ph102), Santa Catarina (29.598151◦ N, −114.224484◦ W), Municipio de San Quintín, 06.V.2019, K. Munguía leg.; 1 female (Ph010), 05.VI.2019, same locality, K. Munguía, E. López, and H. P. Murillo, leg.; 1 male (Ph090), CICESE (31.8657◦ N, −116.6625◦ W), El Sauzal, Ciudad de Ensenada, Municipio de Ensenada,

15.II. 2020, L. Sankey leg.; 1 male (Ph081), 01.III.2020, same locality, E. López leg.; 3 males (Ph030, Ph039, Ph069), 10–17.IV.2020, same locality, L. A. Garduño leg.

Distribution. Southern Arizona and southern California, USA; Baja California and Baja California Sur, Mexico.

Diagnosis.

Male. Carapace in dorsal view with white median ocular band; in frontal view, cheek band very broad with white scales. Chelicerae are iridescent and fringed, with white scales and setae. Leg fringes are dense and white. Abdomen dorsally covered with red scales. Palp with white dorsal stripe from femur to cymbium; embolus is a long and recurved spike; palea is wider than long, ectal and retrolateral margins smooth.

Female. Carapace in dorsal view with white median ocular band; in frontal view, cheek and submarginal bands fused, and colored white. Abdomen with lateral edges red or white; spots and lateral bands white. Epigynum with medium length flaps and posteriorly divergent, septum rudimentary and without sagittal ridge, middle slightly depressed, copulatory ducts with one pair of supernumerary bends.

Phidippus tux Pinter, 1970. New record for Baja California. (see supplementary information, Figure 23).

Examined material. MEXICO, Baja California Sur: 1 female (Ph158) Oasis Carambuche (26.1293◦ N, −112.0167◦ W, 300 m), La Purísima, Municipio de Comondú, IX.2020, H. P. Murillo leg.

Distribution. Arizona, USA; Nayarit, Jalisco and Sonora, Mexico.

Diagnosis.

Female. Carapace dorsum is totally covered with yellow scales; in the frontal view, cheek band is strongly marked with yellow to white scales, the area of eyes covered with brown to tan scales. Abdomen totally covered with yellow scales, or partially covered with a posterior abdominal area dark and U-shaped, spots and bands are white. Epigynum with medium length and wide flaps, divergent posteriorly; with septum and sagittal ridge, middle depressed, copulatory ducts without supernumerary bends.

2.3.2 DNA barcoding

Based on the BGA in the Bold Systems v4 database, the 121 individuals belong to 10 species. Individuals tentatively assigned to undescribed species (*Phidippu*s spp. 1 and 3) were found to have a distance below 2% to their nearest neighbor, which grouped them with *P. boei*. The remaining species (9 identified and 1 unidentified) were consistently delimited as separate from each other, based on the BGA (Table 1). The nucleotide alignment upon which the COI phylogenetic tree was based consisted of 145 taxa and 1204 sites, which included the "barcode" region as well as ca. 500 additional nucleotides because the reference sequences were amplified using different primer sets (Guerrero-Fuentes et al., in prep.). The Bayesian consensus tree recovered 12 lineages for the *Phidippus* species from the BCP (Figure 4).

The sequences from the individuals that formed clades with the identified reference species, and which were also identified morphologically, belonged to the following six species: *P. adumbratus*, *P. boei*, *P. californicus*, *P. nikites*, *P. octopunctatus* and *P. phoenix*. A further two species, which were identified morphologically as *P. comatus* and *P. johnsoni*, did not form a clade in the tree with their respective reference species. Rather, *P. comatus* from the BCP fell into an unresolved group (albeit with the *P. comatus* reference species) and the *P. johnsoni* were in a clade with the *P. concinnus* reference species, sister to the *P. johnsoni* reference species.

Table 1. Barcode Gap Analysis result for 121 COI sequences assigned to 12 putative species, with the mean and maximum intra-specific values compared to the nearest neighbor distance. Bold rows indicate a distance to nearest neighbor below 2% or lower than the maximum intra-specific distance.

Species	Mean Intra-Sp	Max Intra-Sp	Nearest Species	Nearest Neighbor	Distance to NN
P. adumbratus	0.58	0.95	*Phidippus* sp. 3LH	SALBC028-21 (Ph024)	3.45
P. boei	**0**	**0**	***Phidippus* sp. 3LH**	**SALBC028-21 (Ph024)**	**1.7**
P. californicus	0.62	1.07	*Phidippus johnsoni*	SALBC026-21 (Ph022)	5.8
P. tux	N/A	0	*Phidippus* sp. 1LH	SALBC093-21 (Ph089)	6.86
P. comatus	N/A	0	*Phidippus* sp. 1LH	SALBC093-21 (Ph089)	2.9
P. johnsoni	0.97	2.52	*Phidippus* sp. 1LH	SALBC093-21 (Ph089)	5.61
P. nikites	0.83	1.82	*P. adumbratus*	SALBC151-21 (Ph147)	5.88
P. octopunctatus	0	0	*P. californicus*	SALBC110-21 (Ph106)	7.53
P. phoenix	0.47	1.65	*Phidippus* sp. 2LH	SALBC090-21 (Ph086)	2.89
***Phidippus* sp. 1LH**	**0**	**0**	***Phidippus* sp. 3LH**	**SALBC127-21 (Ph123)**	**0.15**
Phidippus sp. 2LH	0.4	0.61	*Phidippus* sp. 3LH	SALBC028-21 (Ph024)	2.33
***Phidippus* sp. 3LH**	**3.12**	**3.12**	***Phidippus* sp. 1LH**	**SALBC093-21 (ph089)**	**0.15**

Figure 4. Bayesian phylogenetic tree of COI sequences of *Phidippus* individuals from this study, marked with DNA codes (**Table** 9) and reference sequences with codes in brackets following the species names. Green boxes with solid lines outline the species identified by morphology, while dotted lines represent species with uncertainties based on DNA sequences and/or unidentified specimens. Solid black circles at nodes represent posterior probability values >0.95 and white circles posterior probabilities between 0.9 and 0.95.

Reference sequences were not available for *P. tux*, so its identification was based on female genital morphology and other morphological traits. A further three well supported clades within the tree did not have any associated reference sequences. For two of these clades, morphological identification was not possible owing to a lack of adult specimens. For a third clade (*Phidippus sp. 2*), preliminary morphological examinations pointed to the species belonging to the insignarius group following Edwards (2004) revision for the genus.

2.4 Discussion

In this chapter, no comments will be made with regards to the phylogenetic relationships between the species since many nodes are not supported, as COI is generally not ideal for resolving deeper relationships, added to the fact that the results here show a gene tree and not a species tree. It has been reported that the complex evolutionary dynamics of COI could contribute to misleading node resolution in jumping spiders (Bodner and Maddison, 2012; Hedin and Maddison, 2001; Maddison et al., 2014, 2020). In any case, in this study the tree was built for species grouping, which worked for most species, including the grouping of juveniles (which cannot be reliably identified using morphological features) with adults. The Barcode Gap Analyses helped to further discriminate between species. DNA barcoding has been shown to be a generally reliable method for discriminating species (Adeniran et al., 2021; Blagoev et al., 2016; Hebert et al., 2004; Naseem and Tahir, 2016) and as part of a combined (integrative taxonomic) approach; the molecular and morphological data complemented each other for assigning individuals to *Phidippus* species.

Inconsistencies between morphological and COI tree-based identifications were found for two species and may be attributed to certain limitations commonly found in COI, such as introgressive hybridization and incomplete lineage sorting (Funk and Omland, 2003). In the case of *P. comatus*, increased sampling throughout the species' distributional range, as well as more specimens belonging to sister taxa, may help resolve the nodes. The morphological examination of the male specimen from the BCP left no doubt about its identity, and the fact that it was collected near its known distributional range and in a similar environment and altitude to those reported by Edwards (2004) ruled out the possibility of an accidental record, even though only a single individual was collected.

The incongruence between the COI of the BCP's *P. johnsoni* grouping (with *P. concinnus*) and morphological identification pointed to a slightly more complex situation. Genital examination clearly

confirmed the distinct identities of *P. johnsoni* and *P. concinnus*. *P. johnsoni* is a widespread species, found from western Canada, throughout western USA, to as far south as northwestern Mexico. Close morphological examinations of *P. johnsoni* pointed to sympatric morphotypes with regard to abdomen color patterns, but a lack of population genetic studies on this species made it difficult to reach conclusions about the structuring of these populations and whether *P. johnsoni* may in fact be a species complex with conserved genital morphology. Thus, *P. concinnus* may have diverged from a most recent common ancestor of a *P. johnsoni* population. This would explain why the BCP *P. johnsoni* sequences cluster with *P. concinnus* instead of with its reference *P. johnsoni* sequence, which came from an individual collected in Grant County, Washington state, USA.

Since no reference sequences were available for *P. tux*, its identity was based solely on morphological examination of one single specimen collected during this study. A single individual might lead to doubts about whether it is an accidental record, perhaps a case of accidental faunal translocation. Further sampling in and around the locality where this *P. tux* individual was found, as well as from its complete distributional range, will be necessary for an in-depth study of how it got to the BCP. If indeed there is an established population of *P. tux* in the BCP, and since the locality lies in the southern part of the peninsula, it is likely that the population is genetically closer to the *P. tux* populations from Mexico's west coast states and may either be a relictual population as a result of the peninsula's separation from the mainland during the last 10 million years (Mulcahy and Macey, 2009; Riddle et al., 2000), or it may be an established population following westward dispersal from the mainland to the peninsula.

The other confirmed species for which new records from Mexico and the BCP are presented are *P. octopunctatus*, which has a widespread distribution, and the new records are near the limits of its known distribution, and *P. adumbratus*, which until now was recorded from the California floristic province, an area of high endemism (Burge et al., 2016; Vanderplank et al., 2018) located along the coast of the North American Pacific. In this study, *P. adumbratus* is newly recorded for Mexico, as well as from a new ecoregion, namely, Baja California's Central Desert ecoregion, as defined by Gonzalez-Abraham et al. (2010). Perhaps this distribution could be explained by Hill and Edwards' (2013) hypothesis on the dispersal routes of *Phidippus* species since the Last Glacial Maximum (LGM; ~20 Ka), whereby *P. adumbratus* may have migrated from the southern part of the BCP northwards, reaching California as the climate changed and warmed.

Three clades in this study's COI Bayesian phylogeny did not include any of the reference species, perhaps because they are species for which reference sequences were not available, or perhaps they are, to date,

undescribed species. For two of the unidentified morphospecies, adult specimens were not available; however, the BGA placed them with *P. boei*. A third species probably belongs to the insignarius group following Edwards' (2004) classification. However, to accurately determine whether these individuals belong to undescribed species, further sampling and a full taxonomic work will be necessary.

In the Baja California Peninsula, many unexplored places are difficult to access for sampling, and many *Phidippus* species, despite their relatively large size, are difficult to find in the field owing to habits such as hiding at the base of dense cactus spines, which complicates collecting. Although this study contributed to knowledge of the diversity of spiders in the BCP and the distributional range and richness of *Phidippus*, which increased from six to nine species, increased sampling efforts are required to uncover the BCP's true richness and diversity of *Phidippus* spiders. After the present contribution, the number of known spider species for the BCP increased from 396 to 400, and the diversity of Salticidae in the BCP increased from 37 to 41 species, based on the most recent data published on the diversity of the peninsula's spiders (Jiménez et al., 2018; Richman et al., 2012). Furthermore, several *Phidippus* species are more widely distributed than previously thought. This new information has direct implications for both ecological and historical biogeographic studies. For ecological biogeography, such as Species Distribution Modeling, a higher number of known distributional datapoints allow for models with greater accuracy and precision (Stockwell and Peterson, 2002).

As for historical biogeographical implications, the fact that the northern part of the BCP was found to harbor a great diversity of *Phidippus* suggests that it could be an ancestral area for at least some taxa. Additionally, several taxa may have dispersed to the BCP, as proposed by Hill and Edwards (2013); however, this hypothesis only considers a fraction of the diversity present in the BCP. Given the fact that the species found in the BCP belong to different species groups as defined by Edwards (2004), species richness as well as phylogenetic diversity (Faith, 1992) for *Phidippus* is likely to be high for this area. A more in-depth molecular phylogenetic study of Phidippus and related genera will shed more light on the historical biogeographic and macroevolutionary processes of these spiders.

Chapter 3. Phylogeny of *Phidippus* (Araneae:Salticidae) using ultraconserved elements: re-assessing morphological species groups

3.1 Introduction

Building species-level phylogenies is a first step to understanding macroevolutionary patterns and processes that have shaped the Earth's biodiversity. It is therefore important, when working with species-rich genera, to consider as much data as possible for accurate phylogenetic inferences. The most commonly used data sources for phylogenetic inferences have been morphological characters at first, followed by an ever-increasing number of genetic and genomic data (Felsenstein, 2004). In addition to high-quality data, it is crucial to have as complete a taxon sampling as possible, especially in speciose genera, such as the numerous arthropod genera. For example, many spider families contain genera with more than 50 described species to date (World Spider Catalog, 2023).

Phidippus is a genus of jumping spiders (family Salticidae) with some of the largest-bodied individuals, reaching a maximum size of 22 mm. These spiders are found in a wide range of environments, from grassy fields to forests, and even urban areas (Edwards, 2004). There are 61 described species of *Phidippus* distributed across North America (World Spider Catalog, 2023), some of which, such as *Phidippus dianthus* and *P. amans*, have very restricted geographic ranges, while others, such as *P. johnsoni* or *P. audax*, are more widely distributed (Edwards, 2004).

There is a long history of research on the genus *Phidippus*, dating back to its first description by C. L. Koch in 1846, where by 1896, 17 species were already described (Banks, 1895; Hentz, 1845; Keyserling, 1885; Koch & Hahn, 1831; Peckham & Peckham, 1883, 1896). In the early 1900s, Peckham and Peckham contributed with additional species descriptions, and by 1978, 20 new *Phidippus* species had been described (Banks, 1906; Chamberlin, 1933, 1935; Chamberlin & Gertsch, 1929; Edwards, 1978; Gertsch, 1934; Peckham & Peckham, 1901, 1909; Pickard-Cambridge, 1901; Pinter, 1970; Scheffer, 1905). Edwards (2004) carried out the second revision of the genus, describing 23 new species of *Phidippus* and more recently, Edwards (2020) added to the diversity of the genus by describing a new species, *Phidippus pacosauritus*, found in Mazatlan, Mexico. In his review, Edwards (2004) presented 70 morphological characters for the genus, such as body color patterns, and forms of the male and female genitalia (the pedipalp and epigynum, respectively). Based on these characters, he reconstructed the first morphological

phylogeny of *Phidippus*, where 60 species were divided into nine species groups. Seven synapomorphies defining the genus were identified in Edwards' work: (1) iridescent chelicerae, (2) loss of vertical ridges in male palea, (3) sharply bent partial vertical ridges, (4) medial diagonal ridges in palea, (5) post-posterior median eyes tuft in females, (6) female clypeus with a white band, and (7) narrow spermathecal duct heads.

There have been numerous studies focused on *Phidippus*, exploring the biology and ecology of specific species such as *P. johnsoni* and *P. audax* (Edwards & Jackson, 1993; Jackson, 1977; Taylor & Peck, 1975). Additionally, there have been studies on the behavior of other species, such as those carried out by Baker (2007) and Bednarski et al. (2012). Recent research has expanded beyond morphology and behavior, with studies using genetic data to explore diversity within the genus. These studies have led to uncovering new distributional records and several undescribed species for Mexico (see Chapter 2), as well as elucidating the population genetic history of two widely distributed species in the Baja California peninsula (Ceccarelli et al., 2023; Hernández Salgado et al., 2022). As part of a genus-level molecular phylogenetic study of the salticid subtribe Dendryphantina, 37 species of *Phidippus* were analyzed (Guerrero-Fuentes et al., in review). However, this study was still not able to fully resolve the interspecific relationships of the genus, since many species were not included, and the phylogeny relied on three loci. To date, there is not enough genomic information for the genus *Phidippus*, and since gene flow and hybridization events have been found within the family Salticidae (Bougie et al., 2021; Hedin et al., 2020; Hedin & Lowder, 2009), it is important to have sufficient information that can be used to infer evolutionary processes of the genus.

Ultraconserved elements (UCEs) are highly conserved regions within the genome that are shared between different taxa. UCEs were originally intended for use in vertebrates and were characterized as noncoding sequences and with possible regulatory functions (Baira et al., 2008; Polychronopoulos et al., 2017). More recently, probe sets have been developed for use in groups of arthropods, including arachnids and insects (Kulkarni et al., 2020; Liu et al., 2022; Starrett et al., 2017; J. Zhang et al., 2023) and some studies using those probe sets reveal that most flanking regions captured are exons (Hedin et al., 2019; Y. M. Zhang et al., 2019). In recent years, the use of UCEs to infer phylogenies has become increasingly popular due to several advantages they offer over traditional data sources such as single-locus sequences obtained through Sanger sequencing, which has been used since the 1990s. One of the main advantages of using UCEs is the amount of data generated, which is much greater than that obtained through traditional methods. Additionally, UCEs can be generated in a shorter period of time and can be obtained from a wider range of sample types, including museum specimens. This provides a significant advantage in sampling species that are difficult to find in the field and allows researchers to generate genomic data for

a wider range of species (Blaimer et al., 2016; Y. M. Zhang et al., 2019). In the study of spider phylogenomics, UCEs have been used in different families, such as Mygalomorphae, Leptonetidae, Liphistiidae, and Salticidae (Bougie et al., 2021; Hedin et al., 2019; Ledford et al., 2021; Xu et al., 2021) These studies have addressed a range of questions within the fields of phylogenetic systematics and historical biogeography.

Given the uncertainties to date regarding the phylogenetic relationships within *Phidippus*, is not only necessary to elucidate the phylogenetic relationships of this genus, but also to provide more data for future research on the evolution of these species and for the family Salticidae. Here, the first genomic phylogeny of the genus *Phidippus* is presented and discussed with regards to the morphological phylogeny and classification proposed by Edwards (2004).

3.2 Materials and methods

3.2.1 Sampling, DNA extraction and UCE library preparation

The individuals used in this study were obtained from various institutions and research centers (see Supplementary Information, Table 10). One or two individuals belonging to 48 of the 61 currently described *Phidippus* species were included, plus two species of *Paraphidippus* as outgroups, since it has been shown to be the sister genus of *Phidippus* (Edwards, 2004; Hedin & Maddison, 2001). Leg tissues were removed from the individuals and stored in 100% EtOH, until DNA extraction. The QIAGEN DNeasy Blood & Tissue Kit was used for the DNA extraction. The tissue samples were lysed, and the lysates were then loaded onto the DNeasy spin columns. After several wash steps to remove contaminants, the pure DNA was eluted from the columns, and quantified using a Qubit Fluorometer (Life Technologies, Inc.) to ensure between 250-500 ng of DNA. The quality was also assessed via gel electrophoresis on agarose gel, and the total DNA obtained was used for UCE library preparation. A Covaris M220 Ultrasonicator was used for sonication procedures with a target range of 500-600 base-pairs. The samples were sonicated for 60 seconds using a peak incidence power of 50, duty factor of 10%, and 200 cycles per burst. Finally, 4 µL of sonicated DNA was compared with a standard DNA ladder.

Library preparation protocols previously used for arachnids (Hedin et al., 2019, 2020; Starrett et al., 2017) were followed and are explained in detail below. Prior to library preparation, an initial bead clean-up was

conducted for each sample. For end repair and A-tailing, a 30 µL reaction was carried out for each sample. This included 25 µL of DNA, 3.5 µL of buffer, and 1.5 µL of end repair and A-tailing enzyme. The incubation conditions were 20 °C for 30 min and 65 °C for 30 min. For adapter ligation, 2.5 µL of Universal iTru Stubs, 2.5 µL of PCR-grade water, 15 µL of ligation buffer, and 5 µL of DNA ligase were added to each sample. The mixture was then incubated at 20 °C for 30 min on a thermocycler. After adapter ligation, a cleanup was carried out. Libraries were amplified in a 50 µL reaction, which included 25 µL of 2X KAPA HiFi HotStart ReadyMix, 5 µL of i5/i7 primer combos, 5 µL of PCR-grade water, and 15 µL of adapter-ligated library. The amplification conditions were 98 °C for 45 sec, then 18 cycles of 98 °C for 15 sec, 60 °C for 30 sec, 72 °C for 1 min and 72 °C for 5 min. Post-amplification cleanup was performed and samples were quantified using a Qubit fluorometer to ensure amplification success.

For the pooling step, libraries were combined into 1000 ng pools consisting of eight samples each (125 ng per sample). For some pools, 500 ng were used because some samples did not have enough DNA. Target enrichment was performed on pooled libraries using the MYbaits Arachnida 1.1K version 1 kit (Arbor Biosciences). Hybridization was conducted at 65 °C for 24 hours, then libraries were bound to streptavidin beads (Dynabeads MyOne C1, Invitrogen) and underwent several rounds of washing with warm buffer to remove non-target DNA. After hybridization, pools were amplified in a 50 µL reaction consisting of 25 µL of 2X Kapa HiFi HotStart ReadyMix, 5 µL of primer mix, 15 µL of hybridized pool, and 5 µL of PCR-grade water. The amplification conditions consisted of 98 °C for 45 sec, then 16 cycles of 98 °C for 15 sec, 60 °C for 30 sec, and 72 °C for 60 sec, followed by a final extension of 72 °C for 5 minutes. After the final cleanup, libraries were quantified using a Qubit fluorometer. Molarity was determined with an Agilent 2100 Bioanalyzer, and equimolar mixes were prepared for sequencing on an Illumina NextSeq.

3.2.2 UCEs and matrix assembly

To process the UCE reads, the Phyluce v1.7.1 (Faircloth, 2016) pipeline was used, which employs various tools to handle the data. Unless stated otherwise, these tools were used consistently. First, adapters and low-quality bases were removed with illumiprocessor, after this step, the Phyluce script “phyluce_assembly_get_fastq_lengths” was used to get summary statistics. The resulting data was assembled using SPAdes v3.14.1 (Bankevich et al., 2012) with default settings and the Phyluce script “phyluce_assembly_assemblo_spades”. Contigs were matched using a minimum coverage and identity of 80, whit the Phyluce script “phyluce_assembly_match_contigs_to_probes”, and created a taxon set that included all our samples to query the UCE contig identification database whit the script

"phyluce_assembly_get_match_counts". From this, a list of UCE loci by sample was generated and a monolithic FASTA file for sequence extraction created. To align the UCEs, MAFFT v7.475 (Katoh & Standley, 2013) was used, and the resulting alignment trimmed with GBLOCKS v0.91b (Castresana, 2000), employing settings of —b1 0.5, —b2 0.5, —b3 10, and —b4 4. The alignments were filtered by minimum length of 100 base pairs and minimum taxa of 4. The resulting alignment was filtered to create five completeness matrices of 50%, 60%, 70%, 80%, and 90%, in order to compare topology and node support under different missing data scenarios. The percentage completeness refers to the loci which contains at least N percent of the taxa in the alignment. All analyses were conducted on the CICESE High Performance Cluster "OMICA".

3.2.3 Phylogenomic analysis

The phylogenomic analysis of the UCE data was performed using two different methods on the five completeness matrices, to examine their effects on resolution or phylogenetic topology. The phylogenies were inferred using the concatenated method and the summary-coalescent method. The software IQ-TREE v 2.2.2.6 (Minh, Schmidt, et al., 2020) was used to analyze the concatenated UCE alignments. The partitions and models for the analysis were determined using ModelFinder (Kalyaanamoorthy et al., 2017). Support for the phylogenetic trees was estimated through 100 ultrafast bootstrap replicates (Minh et al., 2013). For the summary-coalescent method, individual gene trees were inferred using IQ-TREE and then ASTRAL-III (C. Zhang et al., 2018) was used to infer the complete species tree based on these individual trees. ASTRAL-III utilized the Local Posterior Probabilities (LPP) as a measure of support for the trees.

To evaluate the agreement between the gene trees or nucleotide sites and the concatenation-based species tree, IQ-TREE was set to estimate gene concordance factors and site concordance factors (Minh, Hahn, et al., 2020). Additionally, the normalized Robinson-Foulds pairwise distances were calculated using the R package phangorn (Robinson & Foulds, 1981; Schliep, 2011) to compare the trees inferred by different methods and data-filtering approaches. A Perl script (Puigbò et al., 2007) was then used to identify and describe the taxa that differed in position between the alternative tree topologies.

To select a preferred phylogenetic tree, an analysis of variance (ANOVA) was carried out on the bootstrap values and LPP values of the five different trees for each approach. The goal was to select the trees with the best support based on the bootstrap values for the concatenation method and the LPP for the ASTRAL method. This approach is commonly used in phylogenetic studies to evaluate the statistical support of the

different clades in the tree (Mort et al., 2000). The selected tree was used for comparison to Edwards' (2004) morphology-based phylogeny of *Phidippus* (referred to as the morphological phylogeny of *Phidippus* from this point onwards).

3.3 Results

3.3.1 Phylogenomic analysis

The genomic data obtained by the Illumina sequencing of 51 samples had the following characteristics. On average, 6,756,131 raw reads and 93,239 contigs were obtained per sample (see supplementary information, Table 11). In total, 1,471 UCE loci were captured from the Spider probe set and the UCEs average between the 51 samples was 814 loci with a range between 204-1,032. The information regarding the different matrices can be found in Table 2.

Table 2. Number of UCE loci, alignment length (in base-pairs), percentage of missing data and percentage of parsimony-informative sites in five UCE data matrices with different percent completeness.

Matrix completeness	Number of UCEs	Alignment lenght	Missing data	Informative Sites
50%	921	511,425	38.25%	9.70%
60%	745	437,181	35.30%	9.90%
70%	552	338,752	31.86%	10.20%
80%	347	232,673	28.35%	10.60%
90%	113	97,320	23.96%	11.20%

In the Robinson-Foulds test for both the trees based on the ASTRAL- and concatenated analyses, the similarity between the trees' topologies ranged between 0.70 and 0.90 (Figure 5) The gene concordance factors, and site concordance factors were similar for each tree based on the five completeness matrices.

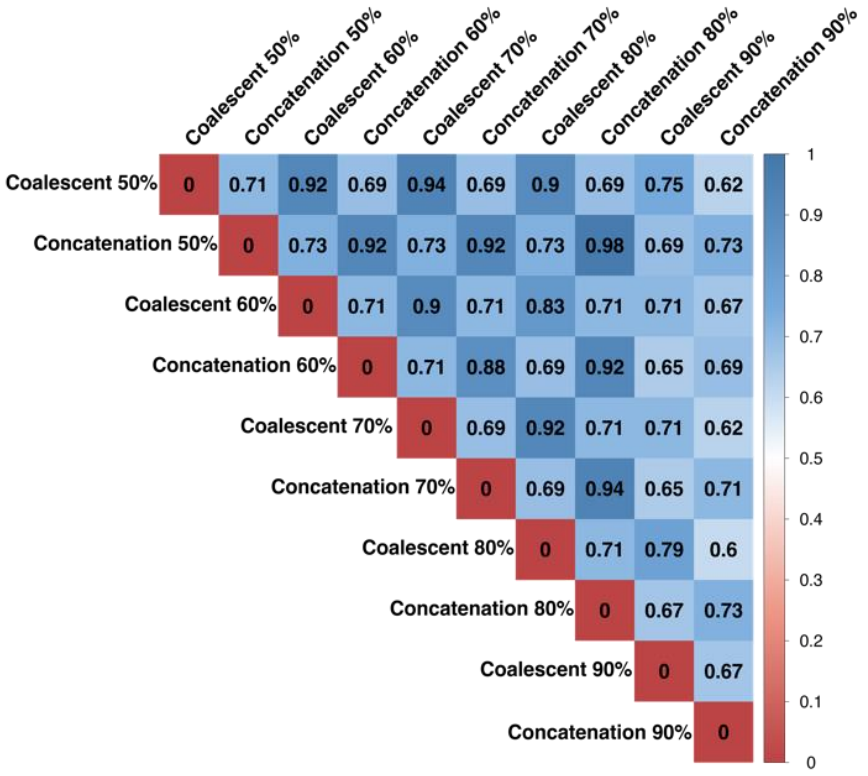

Figure 5. Heatmap showing Robinson-Foulds pairwise distances between trees inferred from data sets with different levels of completeness, using concatenation and summary-coalescent methods.

3.3.2 Differences between phylogenies based on different methods

In the concatenated analysis, in all trees with different matrix completeness, the sister-species relationship of *P. octopunctatus* and *P. georgii* is recovered, and the two species are recovered as a sister group to remaining *Phidippus* species. Four clades were recovered (clades I, II, III and IV, see Figure 7) in the phylogenies based on most of the completeness matrices, with the exception of the 90% matrix, where *P. mimicus*, *P. maddisoni*, and *P. albulatus* were recovered as a separate clade (see supplementary information, Figure 30).

Across the trees obtained by the different analyses (see supplementary information, Figure 24-Figure 30), the phylogenetic positions of a few species were uncertain, such as *P. tux* and *P. clarus*, which were recovered in different positions within Clade II, depending on the completeness matrix used. In addition to the uncertain position of these species, *P. regius* and *P. pacosauritus* were recovered in the same position in most matrices, except in the 90% matrix (see supplementary information Table 11); in any case, the concordance factors are low for the position of *P. regius* and *P. pacosauritus* in all trees. Also, *P.*

arizonensis and *P. carneus* are only recovered as sister species in the phylogeny based on the 60% completeness matrix.

In the trees obtained by ASTRAL, there are more differences in the topologies between the analyses based on the five completeness matrices. The positions of *P. clarus* and *P. tux* change depending on the tree, and the relationships between the species from Clade II remain unclear. *P. adonis* and *P. phoenix* are another two species whose positions are uncertain, only the trees based on the 50% and 60% completeness matrix support the sister relationship between these two species. In addition, the relationship between *P. pacosauritus*, *P. cerberus* and *P. cruentus* remains unclear in the ASTRAL trees, where based on the 60% and 70% completeness matrices, *P. pacosauritus* and *P. cruentus* were recovered as sister species, while in the rest of the trees, they were recovered as separate lineages. Furthermore, the sister relationships between *P. boei* and *P. adumbratus* is only supported in the topology based on the 60% matrix, while in the other trees, *P. boei* was recovered as sister of *P. kastoni* and *P. adumbratus* as a separate lineage. Also, *P. bidentatus*, *P. pius* and *P. regius* were recovered in separate lineages across the trees based on the different matrices.

Based on the results of the ANOVA, the differences in bootstrap and LPP support among the five inferred trees from the 50%-90% completeness matrices for the concatenated and ASTRAL methods are not statistically significant ($F = 0.558$, $p = 0.693$ and $F= 1.898$, $p = 0.112$, respectively), indicating that any of these trees could be used as a reliable representation of *Phidippus* phylogeny. The concatenated tree based on the 70% completeness matrix was therefore chosen, since it had the overall highest node support (Figure 7) (see Discussion). This tree has four main clades, which will hereafter be referred to as clade I, II, III and IV.

3.3.3 Differences between the selected species tree and concatenated tree

In this section, some of the main topological differences between two trees will be outlined, namely the trees based on the 70% completeness matrix obtained using the ASTRAL and concatenated algorithms (Figure 6). In clade II of the ASTRAL-based tree, *P. tux* is recovered as sister to the remaining species of its clade, while in the concatenated tree, *P. tux* is recovered as the sister species of *P. cardinalis* however, both cases lack branch support. The position of *P. tyrelli* within clade III also differs between the two trees. In the clade of *P. texanus*, *P. purpuratus* and *P. ardens* (clade IV), the latter two species were recovered in different positions in the two topologies.

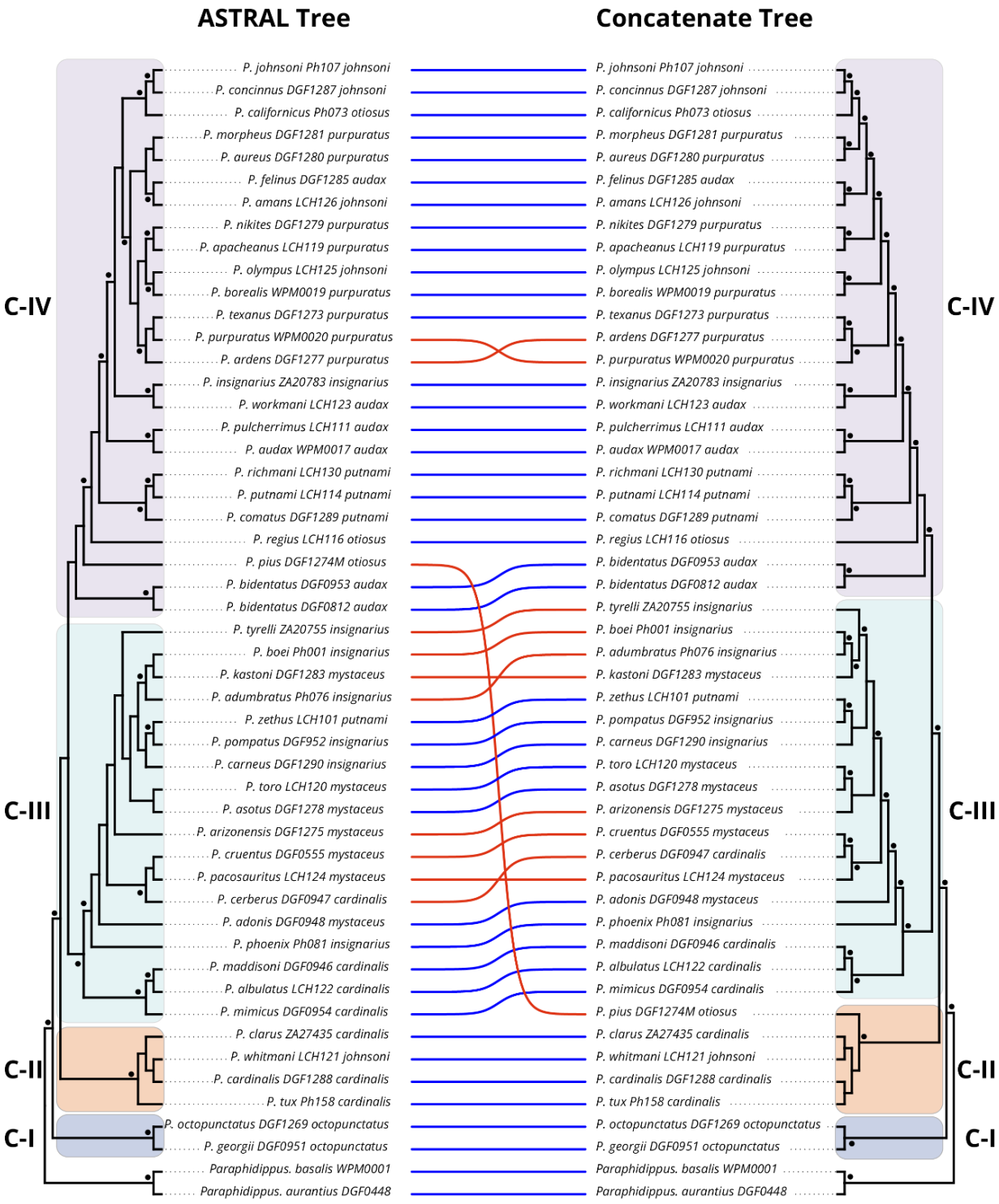

Figure 6. Topological comparison of ASTRAL and Concatenated trees of the 70% completeness UCE matrix. Blue lines indicate concordance in topological position and red lines indicate discordance in topological position of *Phidippus* species. Solid black circles indicate branch support > 75% for bootstrap in the concatenate tree, and > 0.95 for Local Posterior Probabilities (LPP) in the ASTRAL tree. Terminal taxa contain the species names, followed by the DNA extraction code and finally the name of the morphological species groups they belong to.

3.3.4 Comparison between morphology- and UCE-based phylogeny

In the morphology-based phylogeny, the genus *Phidippus* is divided into nine species groups based on the characters proposed by Edwards (2004) and will henceforth be referred to as the "morphological species groups". In the preferred molecular phylogeny from this study (tree built from the concatenated, 70% completeness matrix), four main clades were recovered, as previously mentioned (Figure 7).

The only group in concordance - both in composition and relative position - with the morphological phylogeny is the *octopunctatus* species group/clade I, recovered as sister to the remaining *Phidippus* species (Figure 7). The molecular phylogeny generally recovered species from the same morphological group within the same clade, with a few exceptions. The species belonging to the morphological *cardinalis* species group, were almost evenly split between the molecular clades II and III. Apart from that, species from the morphological *cardinalis*, *insignarius*, and *mystaceus* species groups were recovered in clade III of the molecular-based phylogeny, while species from the morphological *audax*, *otiosus*, *putnami*, *purpuratus*, and *johnsoni* species groups were recovered in clade IV of the molecular tree.

Although most members of the same morphological species groups were recovered together in the same clade of the molecular-based phylogeny, there were exceptions with some species such as *P. pius*, which was recovered in the molecular clade II, *P. zethus*, which was recovered in the molecular clade III, and *P. insignarius*, which was recovered in the molecular clade IV.

Finally, in the molecular-based tree, two minor clades that coincide with the morphological tree were recovered, both with a bootstrap support of 100. One clade includes *P. comatus*, *P. putnami*, and *P. richmani*, and the other clade includes *P. purpuratus*, *P. ardens*, and *P. texanus*. The only difference is that in the molecular tree, *P. ardens* is recovered as a sister species to *P. texanus*, whereas in the morphological tree, *P. texanus* is recovered as a sister species to *P. purpuratus*.

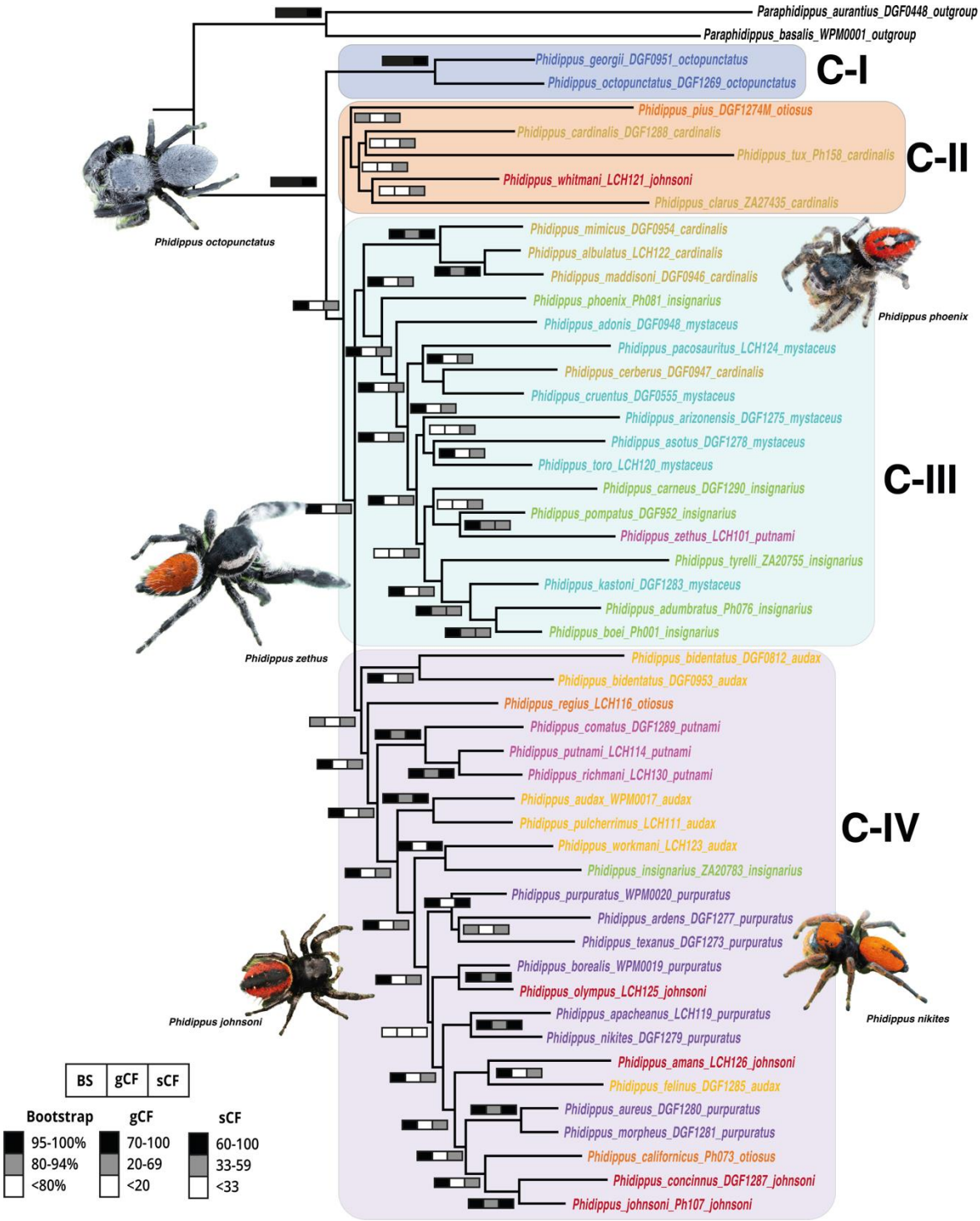

Figure 7. UCE-based phylogenetic tree of the *Phidippus* species, inferred using a Maximum Likelihood concatenation method on a 70% completeness matrix. The bar plots in each node indicate the Bootstrap support values (BS), Gene concordance factor (gCF) and Site concordance factor (sCF). Taxon names are followed by individual codes and the morphological species group they belong to (and color-coded by morphological species group), while the molecular-based clades are identified as C-I, C-II, C-III and C-IV, next to the colored rectangles. Terminal taxa contain the species names, followed by the DNA extraction code and finally the name of the morphological species groups they belong to. Photographs by Colin Hutton and David Hill.

3.4 Discussion

The application of Ultraconserved elements (UCEs) in arachnid phylogenomic studies has been widely used (Hedin et al., 2019; Derkarabetian et al., 2018; Xu et al., 2021; Ortiz, 2023), and their applicability within the genus *Phidippus* is demonstrated in this study. The primary advantage of using genomic data lies in the significantly larger amount of data generated in comparison to studies that only employ a limited number of markers, as highlighted in studies conducted by Hedin and Maddison (2001) and Guerrero-Fuentes (*in press*). In this study, the number of UCEs captured was comparable to previous studies where the same probe set was used (Ledford et al., 2021; Hedin et al., 2019; Ramírez et al., 2021). Additionally, a significant number of loci from museum samples were successfully captured, demonstrating the utility of UCEs in studies that include older specimens.

This is the first study where a large proportion of nominal species of *Phidippus*, an important North American jumping spider genus, are included in a phylogenomic analysis. This phylogeny contains 48 of the 61 described species (80%). Given the similar topologies that were obtained with different datasets and methods of data analysis, the preferred topology is considered reliable in correctly representing most species relationships within the genus. Despite the similar topologies, there were few differences for each method, possibly attributed to the missing data as other studies have reported (Wiens, 2006; Xi et al., 2016). Incongruences between methods and data-completeness matrices, as well as low support in some branches, may be resolved by adding more individuals from the same species to future analysis, as some authors suggest (Muell et al., 2022; Maddison & Knowles, 2006).

Regarding the comparison of the topologies resulting from the concatenated and the ASTRAL methods, the few differences in the placement of *P. tyrelli, P. pacosauritus*, and *P. purpuratus* and the relationship of *P. tux* with *P. cardinalis* (see supplementary information Table 11) may be due to the conflict between gene trees resulting from incomplete lineage sorting, as seen in previous studies with Salticidae (Hedin & Maddison, 2001; Maddison, 2015; Maddison et al., 2014) and with other non-arthropod taxa (H.Tomasco et al., 2022; McLay et al., 2023). Moreover, these taxa also showed low support in the concordance analyses. This incongruence between species trees and gene trees is frequent in rapidly diversifying taxa (Burbrink et al., 2020; Pardo-De La Hoz et al., 2023), and these evolutionary histories can complicate the inference of gene trees due to the limited number of nucleotide substitutions over time (Tea et al., 2021; W. P. Maddison, 1997; Feng et al., 2022; Maddison & Knowles, 2006). Given that the divergence of *Phidippus* and *Eris militaris* from its most recent common ancestor has been estimated at less than 5 Million years ago according to Bodner & Maddison (2012), it appears that *Phidippus* may be a relatively

young, and therefore rapidly diversifying genus, compared to other spider genera such as *Habronattus* and *Kukulcania*, which diversified approximately 5 and 79 million years ago, respectively (Bodner & Maddison, 2012; Hedin et al., 2020; Magalhaes & Ramírez, 2022).

According to Edwards (2004) the iridescent chelicerae are a synapomorphy of all species of *Phidippus* except for species of the *octopunctatus* group (see supplementary information, Figure 31). The molecular phylogeny presented here supports the sister-group relation between the *octopunctatus* group and the remaining species of the genus. Further sister-group relationships proposed by Edwards (2004) were recovered in this study and will be discussed in detail. For example, *P. albulatus* and *P. maddisoni* were recovered as sister species, and according to the morphological hypothesis, they share a strongly forked embolous in its apical portion. Additionally, they have secondarily lost the palea diagonal ridges, and the palea exhibits median and basal horizontal ridges. The molecular data herein also lends support to the synapomorphies that unite *P. putnami*, *P. richmani*, and *P. comatus*, which include three male characters on femur I: a white prolateral subdistal band, a distal ventral bulge, and a distal retroventral tuft on the bulge. The molecular data also supports three synapomorphies among *P. ardens*, *P. texanus*, and *P. purpuratus*. These include a male endite cusp set slightly medially from the anterolateral edge, the presence of median diagonal ridges on the palea, and the presence of horizontal ridges on the palea only in the basal region. *P. nikites* and *P. apacheanus* exhibit a unique feature in their spermathecal ducts, characterized by five major bends and the molecular data supports these relationships and is congruent with morphological hypothesis.

Morphological data have traditionally been used to infer phylogenies (Giribet, 2010; MacLeod, 2002), with more recent data based on molecular biology being implemented to elucidate complex or uncertain evolutionary histories, although results based on molecular data have occasionally given rise to further questions (Bond et al., 2014; Fernández, Edgecombe, et al., 2018; Lüddecke et al., 2018; Wheeler et al., 2017). Ideally, there should be congruence between morphology and genetic characters, as a result of their shared evolutionary history (Hillis, 1987). However, this is not always the case. Several studies have been conducted in different model organism such as Diptera, (Marinho et al., 2017; Vujić et al., 2020; Meier, 2002), mammals (Feng_et al., 2022; Voet et al., 2022), reptiles (Reeder et al., 2015; Burbrink et al., 2020) and spiders (Bougie et al., 2021; Urfer et al., 2021) which demonstrate that phylogenies based on morphological characters are not always congruent with those based on molecular datasets.

The causes of this discordance between phylogenetic inferences based on molecular and morphological data have been discussed extensively (Som, 2015; Voet et al., 2022). Homoplastic characters, when used

in phylogenetic reconstructions, will lead to incorrect topological inferences, since they do not stem from a common ancestor. Similarly, when there is incongruence between the species tree and gene trees based on traits that follow a different evolutionary path from the species, the overall phylogenetic inference may be imprecise, a phenomenon termed morphological hemiplasy (Avise & Robinson, 2008). It has been shown that hemiplasy is more likely to occur in species that have undergone rapid radiations (Azevedo et al., 2022b; Roberts et al., 2023; Wu et al., 2018), and may possibly explain to some degree the incongruence between the morphological and molecular phylogenetic inferences in *Phidippus*.

When genetic and morphological data are congruent, they offer support for the confidence in the accuracy of phylogenetic reconstructions and evolutionary hypothesis (Kundrata et al., 2019; Marín et al., 2017). Nevertheless, incongruence suggests that the phylogenetic history is not being fully recovered and that evidence needs to be re-evaluated (Larson, 1998), or that multiple lines of evidence need to be considered, as in other studies (Farias et al., 2000; Fernández et al., 2018; Reeder et al., 2015). In the case of *Phidippus*, the aforementioned morphological synapomorphies were supported by the molecular-based phylogeny. However, the general incongruences were found at species-group level, where the members of the morphological species groups tended to be “lumped” and mixed in larger clades, highlighting the need to re-visit morphological characters that could be synapomorphies at said levels.

Chapter 4. Macroevolution and Biogeography of the Genus *Phidippus*

4.1 Introduction

Biogeography is a scientific field in which researchers study the distribution of organisms and their dispersal patterns over time (Cox et al., 2016; Crisci et al., 2003). The fundamental aim in biogeography is to gain insight into the distributional patterns of species across different temporal and spatial scales. There are a number of methods and tools, including phylogenetic analyses and fossil record data, that can be employed to understand how abiotic and biotic factors, such as climate, geology, and species interactions, influence the establishment and endurance of species distribution patterns on Earth (Ronquist, 1997, 2011; Sanmartín, 2012). Biogeography has been separated into two distinct approaches. Ecological biogeography, which focuses on the examination of environmental factors that contribute to the distribution of species at a local spatial scale, and historical biogeography, where the aim is to elucidate the historical patterns and processes of species evolutionary histories across space and time to explain their current geographic distribution (Morrone & Crisci, 1995; Sanmartín, 2012).

Event-based biogeography is an approach where evolutionary processes and distributional patterns are considered, by incorporating phylogenetic and species distribution information offering a framework for understanding the dynamics underlying the distribution of organisms (Morrone & Crisci, 1995; Ronquist, 1997; Sanmartín, 2012). This approach employs parametric models that assign a distinct cost to each biogeographical event or process such as dispersal, extinction and vicariance, based on the probability of its occurrence. The main aim is to identify the least costly set of events that can plausibly elucidate the observed distribution patterns (Ree & Sanmartín, 2009; Ronquist, 2011; Sanmartín, 2007). These methods have become increasingly popular for attempting to estimate the biogeographic history of organisms (Magalhaes et al., 2021).

There are different models for inferring biogeographical histories of species, such as Dispersal-Extinction-Cladogenesis (DEC) (Ree et al., 2005), which considers the probability of dispersal, local extinction, and cladogenesis events to explain distribution patterns by Maximum Likelihood. Another model is DIVA (Ronquist, 1997), which centers on vicariance, where the splitting of ancestral populations due to geographic barriers is a fundamental driver of speciation. The BAYAREALIKE (Landis et al., 2013) model

focusses on dispersal limitations and estimates the probability of lineage colonization across different regions. Additional parameters were subsequently introduced to the models mentioned above, such as the parameter "j" which refers to the founder event speciation that occurs when a new population is established by a small number of individuals from a larger ancestral population (Matzke, 2013, 2014).

In addition to the study of event-based biogeography, examining macroevolutionary dynamics and diversification rates contributes further to understanding the evolutionary processes influencing species distributions and biodiversity over time (Futuyma & Kirkpatrick, 2017; Saupe & Myers, 2021). Analyzing patterns of speciation, extinction, and dispersal at extensive temporal and spatial scales allows researchers to acquire insights into the drivers of diversity dynamics (Rabosky & Lovette, 2008b). Diversification rates provide valuable information about the tempo and mode of evolutionary change within lineages, where high diversification rates may indicate periods of rapid adaptive radiation or ecological opportunity, while low rates could suggest environmental constraints, evolutionary stasis, or increased extinction rates (Aguilée et al., 2018; Mahler et al., 2010). Within the study of biodiversity and its distribution, the traditional metrics such as species richness have been complemented by indices such as phylogenetic diversity (PD), which takes into account the evolutionary relationships among species as well as the species richness of an area (Faith, 1992; Tucker et al., 2017). Understanding the distribution of phylogenetic diversity across landscapes can guide conservation efforts by identifying areas of high evolutionary significance and targeting conservation actions accordingly (Pio et al., 2011).

As a crucial component of the Earth's biodiversity with over 51,500 species, spiders play essential ecological roles in various ecosystems (Foelix, 2011; World Spider Catalog, 2023). The family Salticidae, in particular, is the most species-rich family of spiders, with over 6,000 described species to date (World Spider Catalog, 2023). These spiders are known for their unique hunting behavior, excellent vision, and a wide array of body forms and colorations (Baker, 2007; Hill, 2018; Hill et al., 2007; Morehouse, 2020). Several studies based on molecular data have contributed to our understanding of the phylogenetic structure of the family Salticidae and its diversity (Maddison, 2015; Maddison et al., 2014, 2017; Maddison & Hedin, 2003). Despite the fact that the fossil evidence of salticids is rare and primarily found in Eocene Baltic amber, Dominican amber, and Mexican amber (Dunlop et al., 2020; García-Villafuerte & Penney, 2003; Riquelme & Menéndez-Acuña, 2017), time-calibrated phylogenies are available and estimate the origins of the most recent common ancestor of the family Salticidae 56-44 Ma in the Eocene (Bodner & Maddison, 2012). Even though a lot of work is still needed to elucidate the full biogeographical and evolutionary history of salticids, with the advances in this phylogenetic framework, a general biogeographical pattern is evident; many of the larger clades of salticids are distributed in specific

continental regions, or at least most of the species diversity, for example Marpissoida (except Ballinae) and Amycoida in America or Astioida in Australasia (Bodner & Maddison, 2012; Hill & Edwards, 2013).

The genus *Phidippus* is one of the most diverse North American genera of salticids, with 61 species and a widespread distribution (Edwards, 2004, 2020) and belongs to the clade Marpissoida of the subfamily Salticinae (Bodner & Maddison, 2012; Maddison, 2015). Salticinae appears to be a relatively recently-diverged subfamily, and it has been present in North America since the Miocene (Bodner & Maddison, 2012; Hill & Edwards, 2013). The genus *Phidippus* is therefore an interesting model for studying species evolutionary and geographical histories. Here, the aim is to obtain a dated phylogeny of *Phidippus* species, to identify the center of origin of the genus *Phidippus* and estimate the historical-biogeographical processes that shaped its current distribution in North America using parametric biogeographical methods. Furthermore, the time-calibrated phylogeny will be used to uncover diversification patterns and identify the modern-day geographical areas with high phylogenetic diversity for *Phidippus*.

4.2 Materials and methods

4.2.1 Taxon sampling

48 of the 61 currently described *Phidippus* species were included as ingroup taxa. The outgroup taxa included two species of *Paraphidippus*, a sister genus of *Phidippus* based on previous studies (Edwards, 2004; Hedin & Maddison, 2001) and representatives of 11 genera belonging to the Marpissoida clade (Maddison & Hedin, 2003). The selection of outgroup taxa was based on previous taxonomic and systematic studies (Bodner & Maddison 2012; Maddison 2015; Benjamin 2004) and the aim was to include representatives of the tribe Dendryphantini, to which *Phidippus* belongs, as well as four sister groups inside the tribe Dendryphantini and two genera of the tribe Ballini, which is sister to Dendryphantini.

4.2.2 Divergence time estimation

The UCE data for the 48 ingroup and 13 outgroup taxa was taken from a previous study (Chapter 3) and newly generated (by W.P. Maddison, University of British Columbia, Canada). A new data matrix was generated with the aim of reducing missing data to a 90% completeness matrix, the raw data were filtered

by the Phyluce pipeline script “phyluce_align_randomly_sample_and_concatenate” (Faircloth, 2016). This script resulted in selecting 50 UCE loci randomly.

Table 3. List of species used as outgroups in the Bayesian analysis, including their voucher numbers, their systematic classification based on Maddison (2015) and the country they were collected from.

Voucher	Clade	Tribe	Subtribe	Species	Country
GBN07-1341	Marpissoida	Ballini		*Afromarengo* sp.	Gabon
IDWM.21036	Marpissoida	Ballini		*Ballus chalybelus*	Poland
DGF0448	Marpissoida	Dendryphantini	Dendryphantina	*Paraphidippus aurantius*	Mexico
WPM001	Marpissoida	Dendryphantini	Dendryphantina	*Paraphidippus basalis*	USA
RU18-8886	Marpissoida	Dendryphantini	Dendryphantina	*Dendryphantes* sp.	Russia
IDWM.21020	Marpissoida	Dendryphantini	Dendryphantina	*Pelegrina aeneola*	Canada
ECU11-7088	Marpissoida	Dendryphantini	Dendryphantina	*Rudra* cf *wagae*	Ecuador
IDWM.21034	Marpissoida	Dendryphantini	Dendryphantina	*Zygoballus rufipes*	USA
ECU10-2664	Marpissoida	Dendryphantini	Itatina	*Itata* sp.	Ecuador
MRB059	Marpissoida	Dendryphantini	Synagelina	*Attidops youngi*	Canada
NA19-2960	Marpissoida	Dendryphantini	Synagelina	*Synageles venator*	Canada
IDWM.22039	Marpissoida	Dendryphantini		*Platycryptus undatus*	Canada
ECU10-2292	Marpissoida	Dendryphantini		*Psecas* cf. *viridipurpureus*	Ecuador

The program BEAST v. 1.10.4 (Suchard et al., 2018) was used to obtain a phylogenetic tree with node-age estimates through a Bayesian analysis with a Markov chain Monte Carlo for 100 million generations, sampling trees every 10000 generations. The data was partitioned by locus and to avoid over-parametrization, a HKY substitution model was applied to each partition (Hasegawa et al., 1985). The clock models were unlinked, applying an uncorrelated lognormal relaxed clock prior to each partition. The tree models were linked, and a birth-death tree prior was used. For the node-age estimates, two secondary calibrations were applied, based on previous estimates for the entire family Salticidae (Bodner & Maddison, 2012). For one calibration, a normal distribution with a mean age of 29.2 million years ago (Ma; s.d = 4.0 Ma) was selected for the most recent common ancestor (MRCA) of the entire subclade Marpissoida to generate a curve that closely mirrored the 95% Highest posterior density (HPD) confidence intervals of (Bodner & Maddison, 2012) for the root of our tree. The other calibration was set at the Dendryphantini tribe node, with a lognormal distribution with a mean age of 20.75 Ma (s.d = 1.5 Ma) to obtain a curve that closely matched the 95% HPD confidence intervals of Bodner & Maddison (2012) for that particular node. Five separate runs were executed and reviewed in Tracer v1.7 (Rambaut et al., 2018)

to check that the independent runs had converged, and the parameters had reached Effective Sample Size values greater than 200. The last 10,000 trees from each of the five runs were combined and TreeAnnotator v1.10.4 (Suchard et al., 2018) was used to select the Maximum clade credibility (MCC) tree with “mean node heights”.

4.2.3 Historical biogeography: ancestral areas and event estimation

The occurrence points, used in subsequent analyses, were obtained from Edwards (2004) and from data obtained in chapter 2. The data points of *Phidippus* individuals which had been reviewed from different museums and institutions, and displayed on maps (Edwards, 2004), were digitized and georeferenced with QGIS v.3.28.4-Firenze (QGIS Development Team, 2023) (see supplementary information, Table 12). To estimate the ancestral areas of *Phidippus*, each species was coded as belonging to one or more of the following five areas in North America: N = North, W = Northwest, E = East, T = Southwest and S = South (see Figure 8). The five areas were defined according to the natural regions proposed by the Commission for Environmental Cooperation (CEC), as shown in their digital shape layers for their level II files (Commission for Environmental Cooperation, 2023). In order to obtain the minimum number of areas to improve computational analysis, the CEC layers were modified by combining the areas by proximity and vegetation similarity with QGIS v.3.28.4-Firenze (QGIS Development Team, 2023).

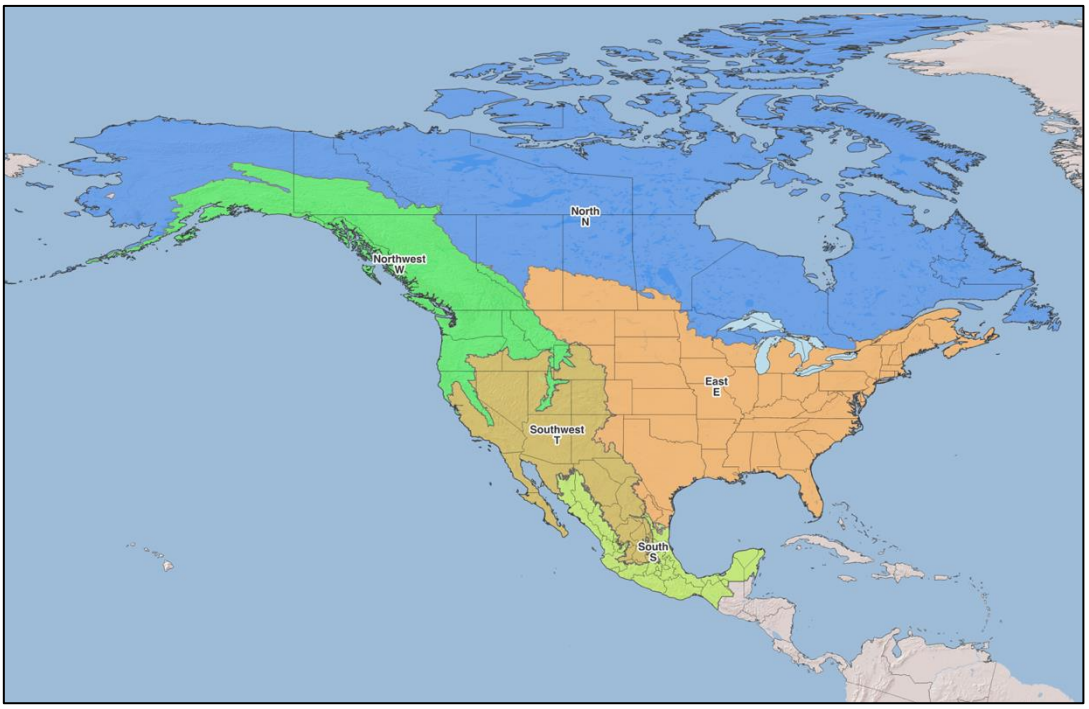

Figure 8. Map of North America showing the biogeographical areas used for the event-based analysis as different colored polygons, labelled with their respective names and one-letter codes.

The estimation of ancestral ranges and events for *Phidippus* was carried out in R v4.3.1 (R Core Team, 2023) using the BioGeoBEARS v1.1.3 package (Matzke, 2018). Prior to the analysis with BioGeoBEARS the tree was pruned with the R package Phyloch (Heibl, 2008) to remove most of the outgroup taxa from the MCC tree, leaving only *Paraphidippus*. Six different biogeographic models were compared, these being a combination of three algorithms - Dispersal-Extinction-Cladogenesis (DEC) (Ree et al., 2005), DIVA (Ronquist, 1997), and BAYAREALIKE (Landis et al., 2013) – with, and without the “j” parameter, which models "jump dispersal" or founder event speciation (Matzke, 2013, 2014). The Akaike information criterion (AIC) (Akaike, 1992) was used to select the best-fitting model.

BioGeoBEARS uses five input data matrices: geographical data (supplementary information, Table 13), areas adjacency (supplementary information, Table 14), areas allowed distance matrix (supplementary information, Table 15) and manual dispersal multipliers. The geographic matrix comprises presence and absence data for each species in the five previously established areas. The adjacency matrix determines the adjacent areas for each area of the analysis and identifies which areas share a boundary or are geographically connected to each other. The areas allowed matrix serves to establish which areas a species can inhabit. By using this matrix, the analysis can focus on evaluating the dispersal and colonization of the species within the areas considered suitable, and for this study, the areas allowed were only the connected areas. The distance matrix serves to define the geographical distances between the different areas applied to the analysis. In order to calculate distances between the areas, points were positioned at the farthest vertices of the areas and measurements were made by QGIS. The manual dispersal multipliers matrix is applied to the matrix of distances and adjacency areas and serves to indicate the probable dispersal rates of the species; this matrix was set by default with values of 1. All the matrices can be found in the supplementary material.

If a single phylogenetic tree is used for biogeographic analyses, the results may be biased due to uncertainty in the topology and node ages (Magalhaes et al., 2021). Therefore, in addition to the analysis on the pruned MCC tree, a second analysis was carried out with BioGeoBEARS, using an R script proposed by Magalhaes et al. (2021) on a total of 100 posterior, post-burnin trees randomly sampled from the MCMC runs obtained in the BEAST analyses. For each of the randomly sampled trees, the best model previously estimate in BioGeoBEARS was used to estimate ancestral ranges and events.

Additionally, biogeographic stochastic mapping (BSM) was carried out to quantify the number and types of biogeographic events and estimate the number of lineages through time by area (Dupin et al., 2017; Matzke, 2016). A total of 100 replicates for the 100 sampled posterior trees were calculated with this

method. The script from Magalhaes (2021) was also used to estimate the number of lineages present in each area through time dividing the tree in 1 million year slices and counting the number of species in each area in each time slice.

4.2.4 Diversification rates

To determine which macroevolutionary model (of diversification through time) best describes the evolutionary history of *Phidippus*, the package LASER (Rabosky, 2006) was used in R (R Core Team, 2023) on the BEAST MCC tree with the outgroup taxa pruned from the tree using the R package APE (Paradis & Schliep, 2019). First, the overall diversification rates were determined under no extinction ($\varepsilon = 0$) and high ($\varepsilon = 0.9$) extinction rates. Five models of diversification (two constant-rate models, 'pure birth' and 'birth–death', as well as three rate-variable models: exponential and linear density dependent models 'DDX' and 'DDL' and two-rate Yule model) where then compared, calculating the ΔAIC (difference in Akaike Information Criterion values between two models) of those models.

Ten thousand trees were simulated under a Yule speciation model, to obtain a P-value for the diversification rates of the phylogeny. We also fitted the 'SPVAR', 'EXVAR' and 'BOTHVAR' models (Rabosky & Lovette, 2008b), alternatively employing time-varying speciation and constant extinction, time-varying extinction and constant speciation, and time varying speciation and extinction, to investigate which model best explains the data. The gamma statistic (Pybus & Harvey, 2000) was also applied, to check whether diversification rates have changed over time.

The program BAMM v.2.5.0 (Bayesian Analysis of Macroevolutionary Mixtures) (Rabosky, 2014) was used to identify any significant diversification rate changes within *Phidippus*. The priors for speciation (λ) and extinction (μ) were obtained using "setBAMMpriors" function in the R package BAMM tools v.2.1.7 (Rabosky et al., 2014), with both speciation and extinction priors set at 0.1789, based on the dated phylogenetic tree. Incomplete taxon sampling was accounted for in the control file by specifying the number of species. The expected number of rate shifts was set to 1 and set to run for 10 million generations on four MCMC chains, sampled every 1,000 generations. We used the R package "coda" (Plummer et al., 2006) to check MCMC convergence. The chain convergence was guaranteed by confirming that effective sample size (ESS) values were above 200.

Table 4. Total number of distributional records of *Phidippu*s species used for the analysis in this study. The areas are included and coded as follows. (N) North, (W) Northwest, (T) Southwest, (E) East and (S) South.

Species	Distributional records	Distribution
Phidippus_adonis_DGF0948	1	S
Phidippus_adumbratus_Ph076	14	T
Phidippus_albulatus_LCH122	3	S
Phidippus_amans_LCH126	2	S, T
Phidippus_apacheanus_LCH119	120	W, E, T
Phidippus_ardens_DGF1277	43	S, E, T
Phidippus_arizonensis_DGF1275	35	S, E, T
Phidippus_asotus_DGF1278	43	W, E, T
Phidippus_audax_WPM0017	337	S, E, T
Phidippus_aureus_DGF1280	5	T
Phidippus_bidentatus_DGF0812	5	S
Phidippus_bidentatus_DGF0953	5	S
Phidippus_boei_Ph001	11	T
Phidippus_borealis_WPM0019	57	N, W, E
Phidippus_californicus_Ph073	49	S, E, T
Phidippus_cardinalis_DGF1288	94	S, E, T
Phidippus_carneus_DGF1290	58	S, E, T
Phidippus_cerberus_DGF0947	6	S, T
Phidippus_clarus_ZA27435	299	W, E, T
Phidippus_comatus_DGF1289	45	N, E, T
Phidippus_concinnus_DGF1287	6	W, T
Phidippus_cruentus_DGF0555	5	S
Phidippus_felinus_DGF1285	5	E, T
Phidippus_georgii_DGF0951	11	S, T
Phidippus_insignarius_ZA20783	45	E, T
Phidippus_johnsoni_Ph107	177	W, E, T
Phidippus_kastoni_DGF1283	5	W, T
Phidippus_maddisoni_DGF0946	2	S, T
Phidippus_mimicus_DGF0954	2	S
Phidippus_morpheus_DGF1281	4	T
Phidippus_nikites_DGF1279	21	W, T
Phidippus_octopunctatus_DGF1269	56	W, E, T
Phidippus_olympus_LCH125	4	T
Phidippus_pacosauritus_LCH124	1	S
Phidippus_phoenix_Ph081	39	T
Phidippus_pius_DGF1274M	40	E, T
Phidippus_pompatus_DGF952	7	S, T
Phidippus_pulcherrimus_LCH111	18	E
Phidippus_purpuratus_WPM0020	95	N, W, E

Species	Distributional records	Distribution
Phidippus_putnami_LCH114	51	E
Phidippus_regius_LCH116	60	E
Phidippus_richmani_LCH130	8	E
Phidippus_texanus_DGF1273	69	S, E, T
Phidippus_toro_LCH120	6	S, E, T
Phidippus_tux_Ph158	5	S, E
Phidippus_tyrelli_ZA20755	51	W, E, T
Phidippus_whitmani_LCH121	121	N, E, T
Phidippus_workmani_LCH123	10	E
Phidippus_zethus_LCH101	2	S
Total	**2158**	

4.2.5 Species richness and phylogenetic diversity

A total of 2,158 occurrence points from 48 *Phidippus* species were used (see Table 4) to estimate the phylogenetic diversity and species richness. These occurrence points were a combination of data from Edwards (2004) and collector data information from a previous study (Chapter 2). Phylogenetic diversity and species richness were calculated to identify important areas for *Phidippus* species. For this, the program Biodiverse 4.3v was used (Laffan et al., 2010), where *Phidippus* occurrence data, a genetic distance matrix that was calculated with MEGA-X v. 10.1.8 (Kumar et al., 2018) and the MCC tree were imported for the analysis. The results were visualize and edited in QGIS v.3.28.4-Firenze (QGIS Development Team, 2023).

4.3 Results

4.3.1 Divergence time of *Phidippus*

Based on the MCC tree obtained from the time-calibrated analysis in BEAST (Figure 9), the most recent common ancestor of *Phidippus* and *Paraphidippus* diverged around 5.8 Ma (5.28-6.37 Ma, 95% HPD) in the late Miocene. Posteriorly, the most recent common ancestor of the genus *Phidippus* diverged around 2.8 Ma (2.61-3.14 Ma, 95% HPD) in the late Pliocene, and most of its diversification occurred during the

early to mid-Pleistocene (2.58 Ma – 11.7 Ka). The full tree with outgroups can be found in supplementary information (see supplementary information, Figure 32).

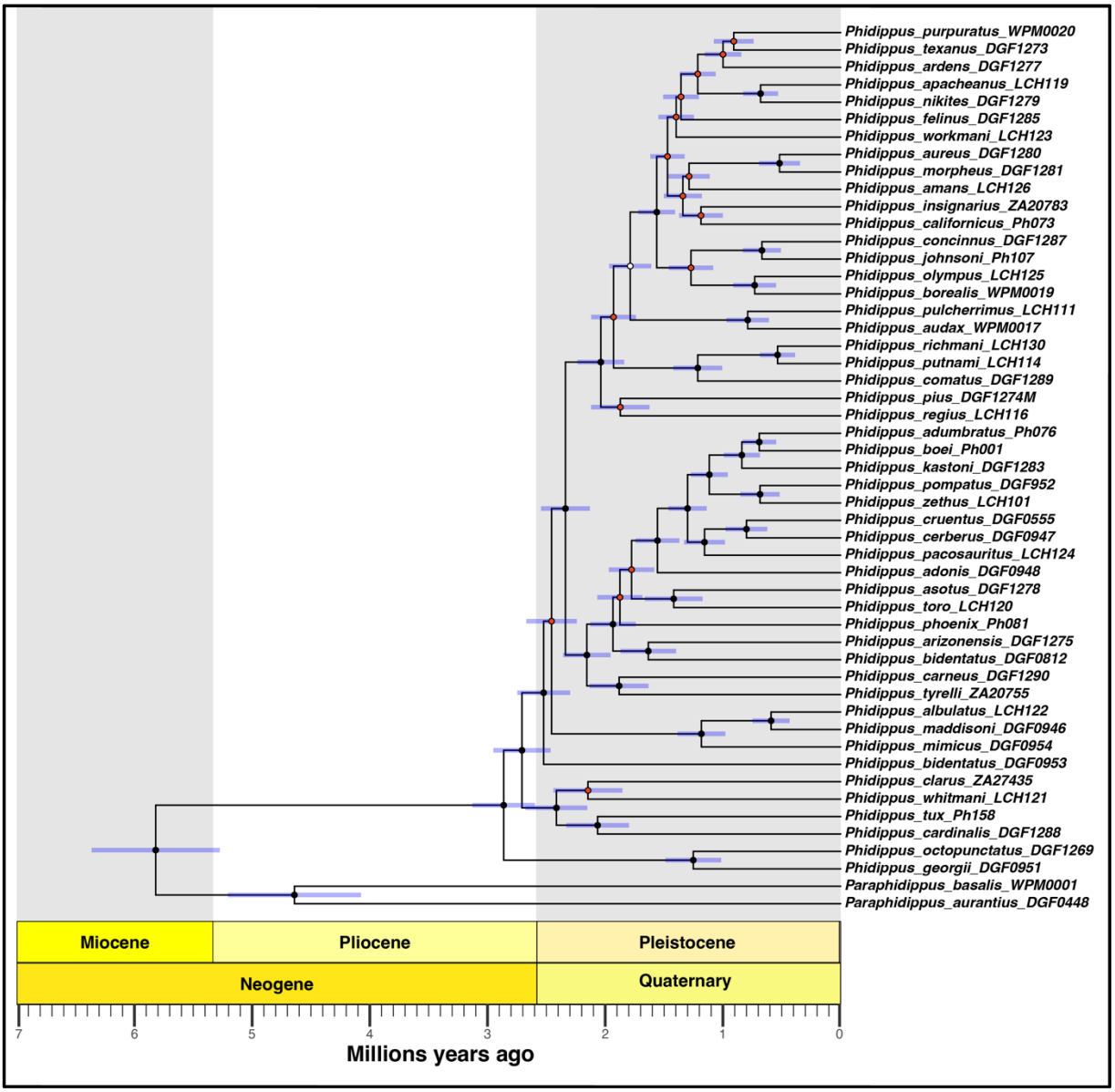

Figure 9. Bayesian-dated relaxed clock maximum credibility clade (MCC) tree of the genus *Phidippus* based on secondary calibration. Bayesian posterior probabilities (PP) represented by circles at nodes (black circles: $1 \geq PP > 0.95$; white circles: $0.95 > PP \geq 0.90$; red circles: $PP < 0.90$), 95% highest posterior density values as horizontal blue bars.

4.3.2 Biogeographical analysis

Based on the statistical comparisons of the six models that were implemented in BioGeoBears, the DEC+J model exhibited the most optimal fit to the data when utilizing the MCC tree (Table 5). A summary of the

BSMs revealed that most biogeographic events that influenced the diversification of *Phidippus* were primarily in situ speciation (51.36%) and dispersal (33.25%) according to the analysis that considered topological and node-age uncertainty (Table 6).

Table 5. Statistical comparison of six biogeographical models implemented by BioGeoBEARS. The best fit model according to the AICc value is displayed in bold.

Model	LnL	n parameters	d	e	j	AICc	AICcw
DEC	-121.8	2	1.48	1.65	0	247.8	8.10E-05
DEC+J	**-111.4**	3	0.41	0.17	1.00E-05	**229.2**	**0.87**
DIVALIKE	-114.8	2	0.34	0.0011	0	233.9	0.086
DIVALIKE+J	-114.2	3	0.33	1.00E-12	0.013	235	0.048
BAYAREALIKE	-134.7	2	0.13	0.26	0	273.7	1.90E-10
BAYAREALIKE+J	-134.7	3	0.13	0.26	1.00E-05	276	6.20E-11

Table 6. Summary of the biogeographic stochastic mapping (BSM) averaged on 100 replicates under the DEC + J model using the 100 posterior sampled trees.

	Speciation in situ	founder event speciation	allopatry	dispersal	extinction
mean	58.49	8.12	9.41	37.87	0
sd	5.89	2.1	3.37	2.04	0
Percent	51.36	7.13	8.26	33.25	0

The most probable ancestral area of *Phidippus* and *Paraphidippus* was found to be the Southern region (relative probability = 0.23) and the most probable ancestral area for *Phidippus* species was found to be the South-East-Southwest (SET) region (relative probability = 0.50) (Figure 10), and most of the historical events (dispersal and in situ speciation) were between these areas according to the ancestral area estimation analysis. For node probabilities of DEC+J model see supplementary information (Figure 33). Additional event trees for different models can be found in supplementary information (Figure 34-Figure 43)

According to these results, within the ancestral area of *Phidippus*, a vicariant event occurred around 2.85 Ma, separating the ancestral population into a lineage to the south and another lineage to the southwest. In the uncertainty analysis an average of 113.89 biogeographic events were estimated in the total areas. Of these events, 37.87 were anagenetic (dispersal and/or extinction) and 76.02 cladogenetic (in situ

speciation, founder event speciation and allopatry). The geographic areas with higher rates of in situ speciation were East, Southwest, and South, and the highest number of dispersal events occurred in the ancestral area South-East-Southwest, i.e., the regions with higher dispersal rates among each other were East and Southwest. The direction of dispersal across North America is indicated in Figure 11. According to the lineage-through-time estimates (LTT) over time and across geographical regions, there is a marked increase in the number of lineages found in the Southwest and Eastern areas over the past 2 million years (Ma; Figure 12).

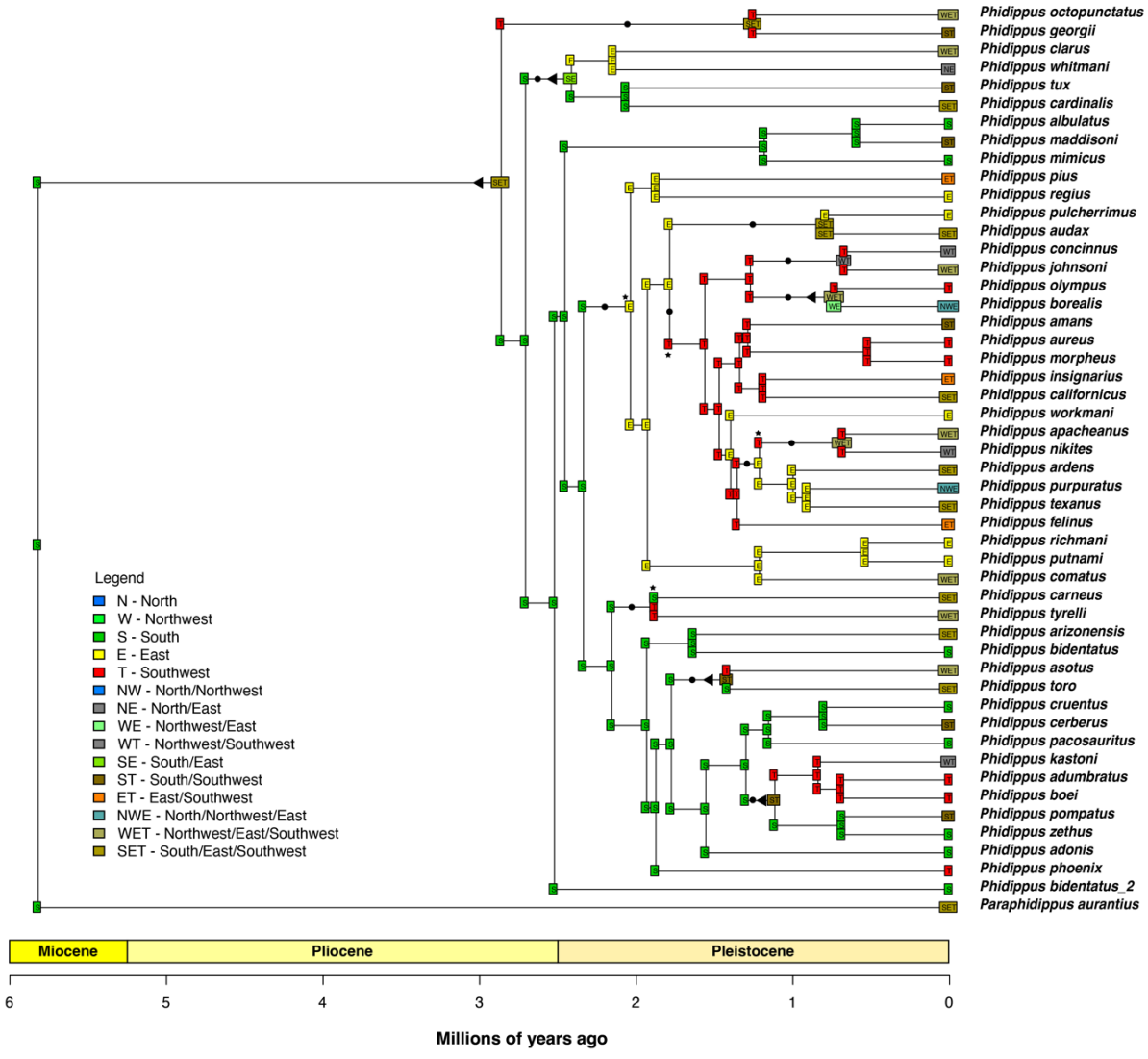

Figure 10. MCC tree with the estimated ancestral ranges of the genus *Phidippus* mapped on the nodes, based on BioGeoBEARS analysis with DEC+J model. Symbols at nodes and on branches represent events (black circle = dispersal/anagenetic range expansion; black star = 'jump' dispersal/cladogenetic founder effect speciation; black triangle = vicariant speciation event).

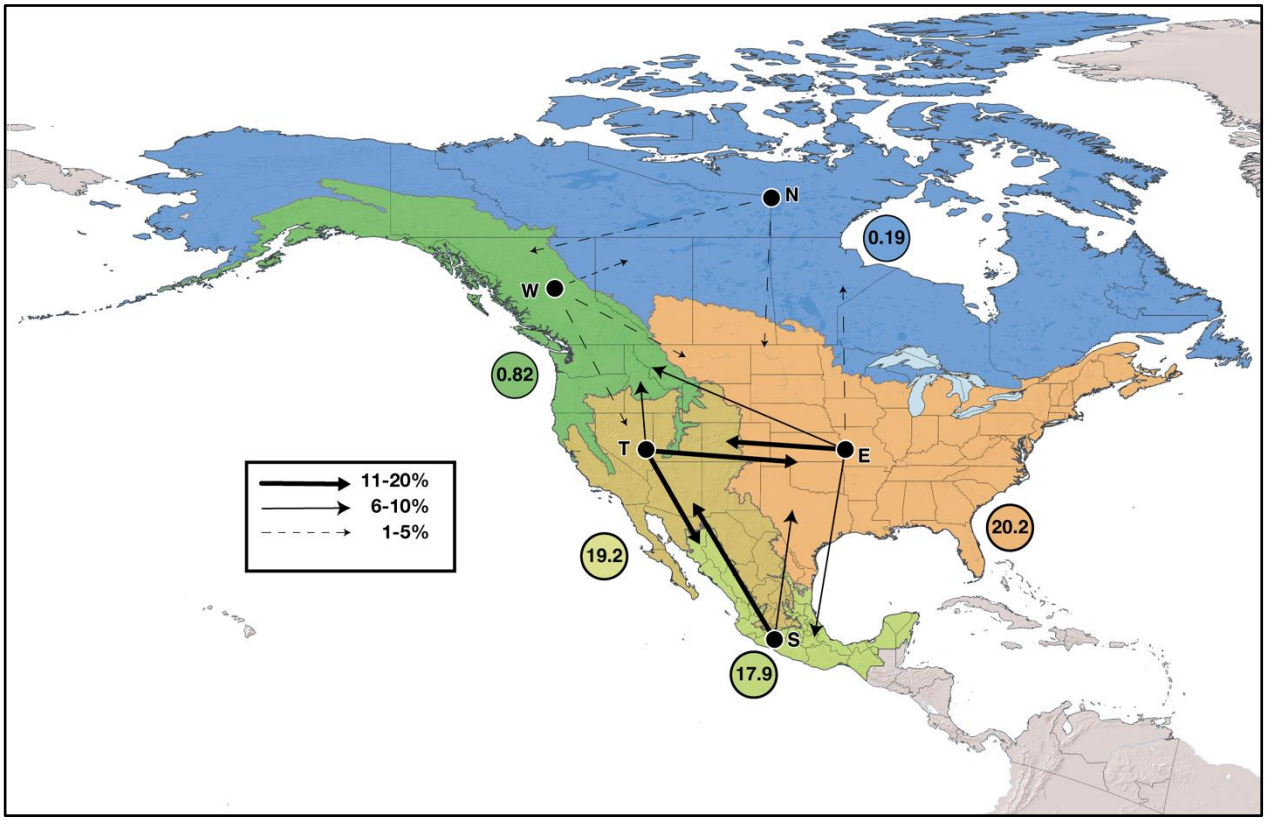

Figure 11. Map of North America with estimated relative dispersal rates of *Phidippus* species between the biogeographical areas (N = North; W = Northwest; T = Southwest; E = East; S = South), based on BSM analyses of 100 posterior trees from BEAST. Arrow widths are proportional to the frequency at which dispersals were inferred. Numbered circles indicate the inferred number of within-area speciation events in each of the areas for the genus.

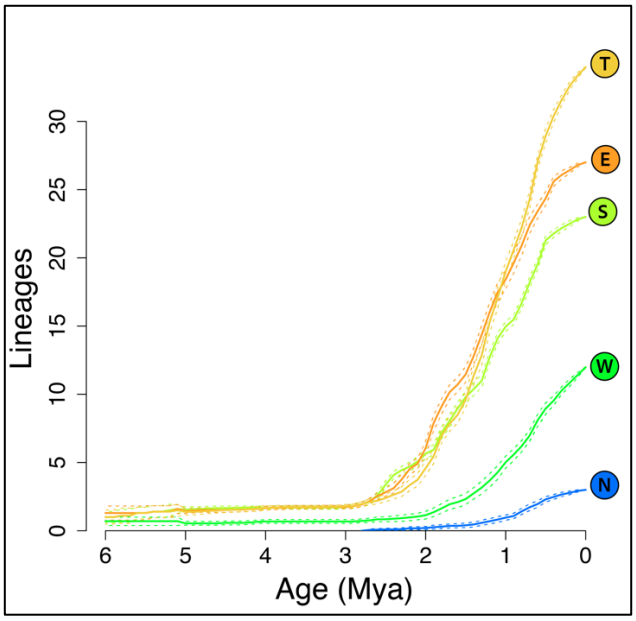

Figure 12. Log-lineage-Through-Time (LTT) plot showing the number of *Phidippus* lineages occupying each North American area (N = North; W = Northwest; T = Southwest; E = East; S = South) through time (Million years ago), based on 100 biogeographic stochastic maps. Solid lines represent average values and dashed lines represent the 95 % confidence intervals.

4.3.3 Diversification rates of *Phidippus*

The net accumulation of lineages over time is shown in the Lineage through time plots (Figure 13). The net diversification rate for *Phidippus* was found to be 1.18 lineages per Ma assuming no extinction and 0.65 lineages per Ma assuming high extinction rates (ε =0.9). Based on the likelihood-ratio tests, our data fit a Density dependent speciation model (DDL), and the data are better explained by models with variable speciation and extinction (BOTHVAR) than with variable speciation (SPVAR) or variable extinction (EXVAR) rates (Table 7). When our data were compared to 10,000 Yule-process simulated trees, the difference was not significant (*P* = 0.99). According to the gamma statistic (calculated gamma = -5.835301; *P* = 2.684683e-09) diversification rates in *Phidippus* decreased over time. No rate shifts were identified by the Bayesian analyses of macroevolutionary mixtures (BAMM), although decreased speciation rates were detected (Figure 13). The extinction rate and speciation rate were found to be 0.1944 and 0.7530 lineages per Ma, respectively.

Table 7. Output from laser diversification analyses for maximum-likelihood ΔAIC test statistic for *Phidippus* data.

Model	*r1*	*r2*	Model parameters	LH	AIC	ΔAIC
Rate-constant (rc) and variable-rate models						
Pure birth	0.64406493		-143.9920084(*a*)	72.99600	-143.99201	38.66
Birth-death	0.64406493		0(*a*)	72.99600	-141.99201	40.66
DDX	11.0681824		-165.8501472(*a*)	84.92507	-165.85015	16.80
DDL	**2.54437624**		**-182.6573149(*a*)**	**93.32865**	**-182.65731**	**0.00**
Yule 2-rate	1.01921597	0.06939042	0.5907997(*st*)	90.09093	-174.18187	8.47
Variable speciation/extinction models						
SPVAR			0.8085 (λ), 0.0645 (k)	74.07506	-142.1501	-26.9549
EXVAR			0.6440 (λ), 0.001 (z)	72.99598	-139.992	-29.1095
BOTHVAR			4.6643 (λ), 0.4730 (z)	**88.55074**	**-169.1015**	

***r1, rates (in lineages per Ma) of the first model; r2, rates (in lineages per Ma) of the second model (for Yule 2-rate only); LH, log-likelihood; AIC, Akaike information criterion. Rate parameters a, extinction fraction; st, shift time; x, magnitude of rate-change; K, population "carrying capacity"; λ, speciation rate; k, speciation rate change; z, extinction rate change.**

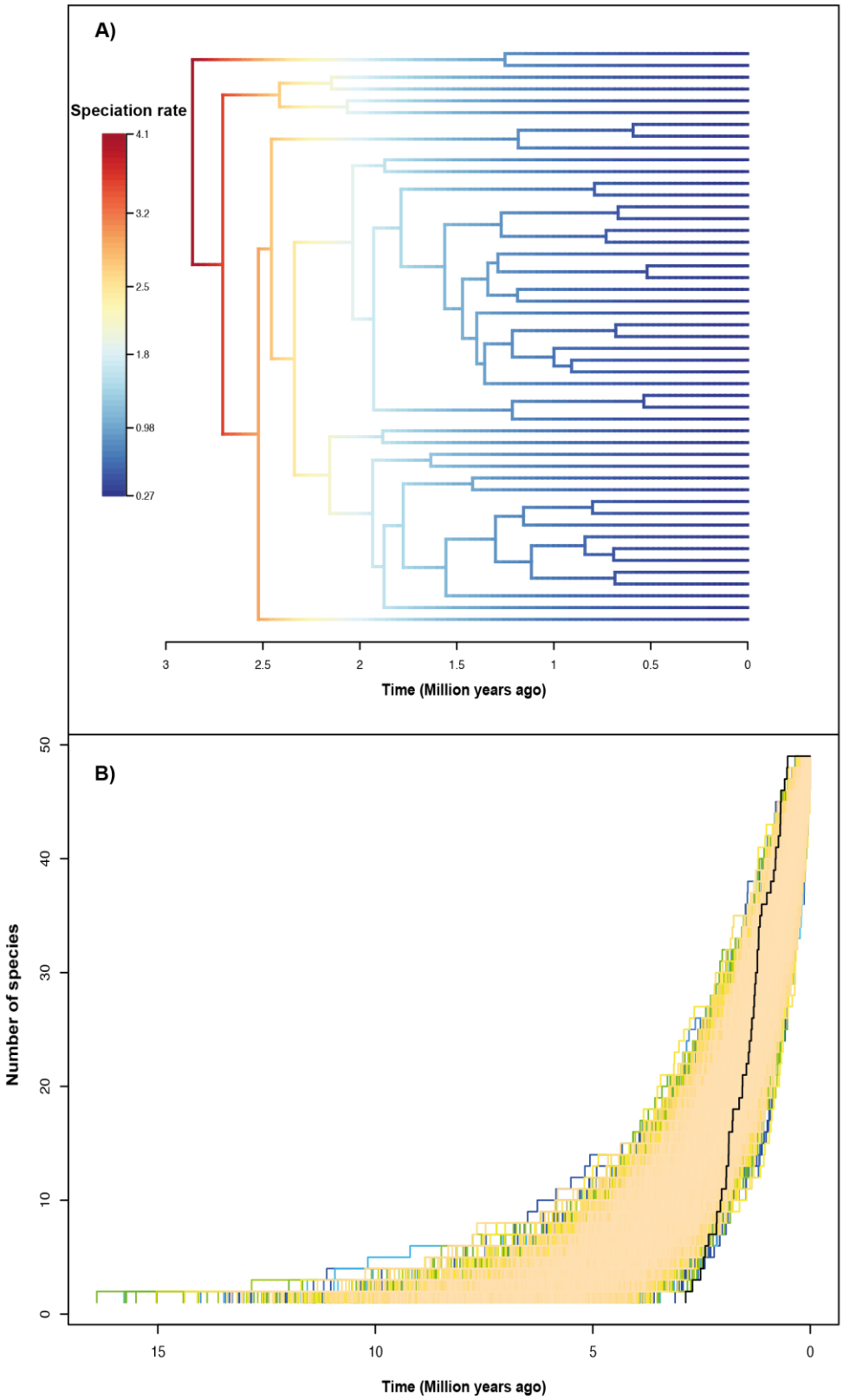

Figure 13. (A) MCC tree of *Phidippus* species with speciation rates, as estimated in BAMM, color-coded along branches and values of color gradient indicated in legend. (B) Lineage through-time (LTT) plot for species tree (black line) not significantly different (P = 0.99) from 10,000 Yule-process simulated trees (coloured lines).

4.3.4 Species richness and phylogenetic diversity of *Phidippus*

Based on the maps obtained from biodiverse of species richness and phylogenetic diversity (PD) of *Phidippus* (Figure 14) the highest values for both indices are found in the eastern and southwestern regions of North America, specifically in Florida (USA), along the California (USA)-Baja California (Mexico) border and along the Arizona (USA)-Sonora (Mexico) border. Within this last region lies the one-degree cell (-109.75°W,31.75°N) with both the highest species richness (9 species of *Phidippus*) and the highest phylogenetic diversity value at 18.90 total branch length. Whereas the three aforementioned areas all have similar species richness values, when it comes to phylogenetic diversity, the area in Florida has a comparably lower PD value than southern California and Arizona.

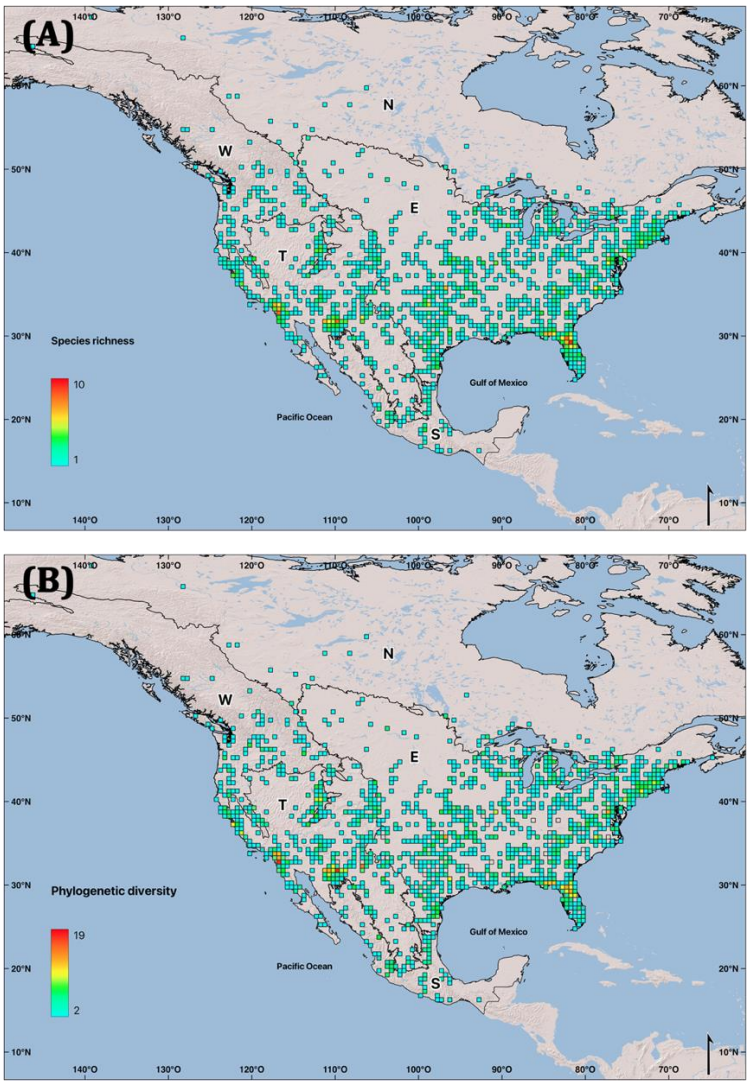

Figure 14. Maps of North America with one-degree cells color coded with regards to (A) Species richness of *Phidippus* and (B) Phylogenetic diversity (PD) of *Phidippus* as calculated in biodiverse.

4.4 Discussion

This study is the first to provide a time-calibrated phylogeny for the genus *Phidippus*, indicating a Pliocene origin with divergence and diversification occurring from the late Pliocene to the mid-Pleistocene. The oldest known fossils of Salticids are from the Baltic amber, and the estimated age is 44-49 Ma (Dunlop et al., 2020; Magalhaes et al., 2020; Penney, 2010); however, there is no fossil evidence of species that are phylogenetically close to the genus *Phidippus*, which is why a secondary calibration was carried out in this study. Although erroneous estimates using secondary calibrations have been reported (Schenk, 2016), the calibration data used in this analysis is strongly supported by the current fossil evidence available and also by the solid geographical association that Bodner & Maddison (2012) point out of the four largest groups of Salticoida indicating that these groups could have failed to reach the Baltic by the Eocene and by the time their diversification occurred the continents were more or less isolated.

The time-calibrated phylogeny using genome-scale data and outgroup taxa from other marpissoid tribes recovers *Phidipus* as monophyletic and its sister relationship with *Paraphidippus*, and is consistent with previously proposed hypotheses (Edwards, 2004; Hedin & Maddison, 2001), however, future analyzes with more external groups are needed to confirm this assumption. Based on the divergence and diversification times obtained for *Phidippus,* most species originated during the Pleistocene before the last glacial maxima (Cox et al., 2016; G. Hewitt, 2000). In comparison with other studies on the origins and diversification times of spider genera, the divergence and diversification of *Phidippus* is relatively recent (Griotti et al., 2023; Hedin et al., 2019, 2020; Magalhaes & Ramírez, 2022), suggesting that this genus can be considered young in an evolutionary context. Also, the original hypothesis of the diversification of *Phidippus* having taken place gradually since the Miocene does not stand, given that the diversification times of *Phidippus* were estimated during the Pleistocene. Contrary to the expectation of a gradual diversification process originating from the Miocene epoch, the results indicate rapid and recent diversification, having occurred specifically during the Pleistocene.

The fact that most of the diversification of *Phidippus* took place during the Pleistocene is interesting in a biogeographical context. Approximately 2.5 million years ago, the Pleistocene epoch was marked by significant climatic fluctuations. The intensified glaciation across the Northern Hemisphere during the Plio/Pleistocene transition at around 2.7 Ma represents a critical interval of late Neogene climate evolution (Allstädt et al., 2021). This period was characterized by worldwide climatic perturbations that resulted in the development of large ice sheets and changes in the landscape and ecology of continental areas of the northern hemisphere (Qu et al., 2010). The Pleistocene was also characterized by global cooling,

aridification, and major glaciation events, particularly in North America (G. M. Hewitt, 1999; Leavitt et al., 2013). These climatic fluctuations in the Pleistocene have been identified as a significant promoter of rapid diversification patterns and also have a profound impact on species distributions with the isolation of ancestral populations (Graham et al., 2020; G. M. Hewitt, 1999; Tsai & Yeh, 2016; Wood et al., 2011). These environmental changes in the Pleistocene likely created opportunities for speciation and range expansions (dispersal events), leading to the observed diversification patterns within the genus *Phidippus*, similar to the results reported from studies on different organisms, including plants (Hughes & Eastwood, 2006), birds (Sun et al., 2017), and frogs (Carvalho et al., 2021).

By the time the genus *Phidippus* diversified, there were no major orographic changes in North America, so one of the explanations for promoting its diversification is the climatic influence of the Pleistocene. However, to determine the impact of the Pleistocene climatic fluctuations on the evolutionary history of *Phidippus* species, future studies that focus on smaller spatial scales and shorter timespans are necessary. For example, it would be interesting to test where certain areas served as "refugia" in the Pleistocene during the glacial periods. Other studies have shown that such refugia allowed species to persist in relatively stable environments, promoting genetic diversity and potentially leading to speciation events (Church et al., 2003; González-Trujillo et al., 2016; Smith et al., 2022).

Also, this study indicates that diversification rates of *Phidippus* decreased over time, supporting the Density-dependent speciation model (DDL) (Nee et al., 1992; Rabosky & Lovette, 2008a). Under this model, speciation rates decrease because ecological niches are filled as the number of lineages increases, leading to ecological spaces being unavailable and opportunities for speciation decreasing (Crowl et al., 2015; Phillimore & Price, 2008). Several studies across various taxa have documented a pattern of initial rapid diversification, followed by subsequent temporal declines in speciation rates (Cai et al., 2021; Harmon et al., 2003; Rüber & Zardoya, 2005; Weir, 2006). The slowdown in diversification observed in these results is similar to other studies where a likely main factor was the decline in habitat availability caused by climate changes during the Pleistocene (Burbrink & Pyron, 2010; Linder et al., 2014, 2014).

Based on the results from this study, the southern area of North America was estimated as the origin of the common ancestor of *Phidippus* and *Paraphidippus,* and this is consistent with the previous hypothesis of the origin of the dendryphantine species in South America and the later introductions to North America (Hill & Edwards, 2013), although the timescales proposed by Hill and Edwards (2013) of the dispersal routes of *Phidippus* species are more recent than the ages of the species obtained here. Also, the ancestral area estimation analyses indicated that the South-East-Southwest (SET) region of North America was the

ancestral area of *Phidippus* species. Furthermore, both the eastern and southwestern areas exhibited higher species richness and phylogenetic diversity, and are currently recognized as biodiversity hotspots for other organisms (Myers et al., 2000). For instance, the Californian floristic province in the Southwest area and the Coastal plains of North America in the East area are acknowledged as biodiversity hotspots due to their high number of endemic species (Calsbeek et al., 2003; Noss et al., 2015).

Moreover, the high number of speciation and dispersal events in the three ancestral areas is a testament to the complex biogeographical history of *Phidippus* within those areas. For example, the high number of dispersal events detected by the BSM could be due to the movements to- and from habitat refugia in the Pleistocene, as found in other taxa (González-Trujillo et al., 2016; Soto-Trejo et al., 2017). Most speciation events were found in the Eastern and Southwestern areas, where notably higher species richness and PD were observed for *Phidippus*, with the main difference being that the southwestern area harbors higher phylogenetic diversity compared to the eastern region. This would be consistent with higher in-situ speciation for the eastern area, versus an area with more immigrants from distantly related lineages for the southwest (Fritz & Rahbek, 2012; Saladin et al., 2019) It must be kept in mind, however, that the large size of areas used in this study may in part explain the high number of in situ speciation events detected. Such vast geographical areas can support larger population sizes and tend to provide opportunities for allopatric speciation, as pointed out by other authors (Dupin et al., 2017; Griotti et al., 2023; Rojas et al., 2016). Future biogeographic analyses of smaller areas or specific *Phidippus* clades are needed to test events that cannot be detected in the large geographic areas selected in this study.

Finally, the overall results need to be interpreted cautiously because the ancestral states were obtained with low relative probabilities, especially for the deeper nodes, which means that the full resolution of the ancestral areas of *Phidippus* is complicated. This fact is not unexpected because some *Phidippus* species are relatively widespread, and certain areas, especially in Mexico, are largely unexplored and could harbor undescribed species of *Phidippus* or increase the distributional area of known species. This underscores the challenges posed by widespread distributions and lack of sampling in accurately reconstructing ancestral ranges, as pointed out by some authors (Buerki et al., 2011; Lee et al., 2018; Soto-Trejo et al., 2017).

Chapter 5. General discussion

During this study, new records of spiders belonging to the genus *Phidippus* were found in a relatively small area of Mexico—the Baja California peninsula—within a short timeframe. While recent studies have uncovered new spider species in various regions of Mexico (Monjaraz-Ruedas et al., 2023; Valdez-Mondragón et al., 2019; Valdez-Mondragón & Cabrera-Espinosa, 2023), there are still many unexplored sites in areas like Baja California due to their challenging accessibility. Thus, it is essential to increase sampling efforts at these locations to enhance our understanding of the true biodiversity present.

This is the first study addressing questions about the biogeographical and evolutionary history of *Phidippus* using molecular data, specifically Ultraconserved elements. Ultraconserved elements have been extensively used in phylogenomic systematic and biogeographical studies due to their ability to provide valuable insights into genetic diversity, phylogenetic relationships, and population genetics (Baca et al., 2017; Bejerano et al., 2004). The applicability of UCEs to reconstruct phylogenetic relationships within the genus *Phidippus* is demonstrated in this study, which is consistent with other studies that have also used UCEs for phylogenetic reconstructions in other spider taxa (Hedin et al., 2019; Xu et al., 2021).

The use of Ultraconserved elements offered a significant advantage to this study, especially when working with samples mainly obtained from museum collections. Castañeda-Rico et al., (2020) pointed out that DNA degradation is a commonly encountered challenge in ancient museum specimens, often hindering successful amplification through traditional methods. However, the use of modern sequencing techniques as demonstrated in this study and others (Blaimer et al., 2016; Derkarabetian et al., 2019; McCormack et al., 2016), significantly facilitated the process of acquiring data. Furthermore, the extensive dataset obtained using this approach proved highly valuable for subsequent analyses. Importantly, here, a substantial portion of *Phidippus* species was effectively captured and a strong framework for understanding their evolutionary relationships was established.

The morphological phylogeny from Edwards (2004) was a significant contribution to understanding the interspecific relationships of *Phidippus*. However, in this study, incongruences between the morphological phylogeny and the newly generated molecular phylogeny were found. According to other studies, this incongruence between morphological and genomic data may be attributed to the rapid radiation of species, where species diversify in short periods of time, preventing sufficient morphological changes to differentiate between species (Pardo-De La Hoz et al., 2023). This incongruence suggests that the

phylogenetic relationships of *Phidippus* are not being fully recovered and that evidence needs to be re-evaluated (Larson, 1998), or that multiple lines of evidence need to be considered, as in other studies (Farias et al., 2000; Fernández, Edgecombe, et al., 2018; Reeder et al., 2015)

Compared with other spiders, the genus *Phidippus* is identified as a relatively young genus in an evolutionary context (Griotti et al., 2023; Hedin et al., 2019, 2020; Magalhaes & Ramírez, 2022). However, the late diversification of *Phidippus* in the Pleistocene compared to early diversifying genera from the Miocene, nullifies the hypothesis of gradual diversification since the Miocene, as the results indicate a rapid and recent diversification. Also, the diversification rates of *Phidippus* decreased over time, similar to other studies (Cai et al., 2021; Harmon et al., 2003; Rüber & Zardoya, 2005) and the likely main factor is the decline in habitat availability caused by climate changes during the Pleistocene. The Pleistocene, which lasted from 2.5 million years to 11,700 years ago, was characterized by significant climatic variations (Allstädt et al., 2021; Cox et al., 2016). These climatic variations created opportunities for speciation, range expansion, and species dispersal, which is likely what occurred with the genus *Phidippus* in North America (Graham et al., 2020; G. M. Hewitt, 1999; Tsai & Yeh, 2016; Wood et al., 2011). Further in-depth studies, such as niche modeling (Guillory & Brown, 2021) or population genomics approach (González-Trujillo et al., 2016; Smith et al., 2022), are required to better understand the climatic impact of the Pleistocene on the biogeographic and evolutionary history of *Phidippus*.

The lack of sampling in southern North America, specifically in Mexico, and the large geographic areas selected for these biogeographic analyses have led to uncertainty regarding the ancestral area of *Phidippus*. This highlights the importance of conducting more extensive sampling in this area. Furthermore, it has been observed that estimating ancestral ranges can be challenging for species with broad distributions, such as many species of *Phidippus* (Buerki et al., 2011; Lee et al., 2018; Soto-Trejo et al., 2017).

The biogeographic events that best describe the history of *Phidippus* are in-situ speciation and dispersal. These events mainly occurred in the ancestral area, which was found to be a composite geographic area (South-East-Southwest); in fact, both the east and southwest areas exhibited higher species richness and phylogenetic diversity and are currently recognized as biodiversity hotspots for other organisms (Myers et al., 2000). Nevertheless, the large number of in situ speciation is sometimes overestimated when using large geographic areas, as may be the case in this study (Dupin et al., 2017; Griotti et al., 2023; Rojas et al., 2016). For this reason, future biogeographic analyses are recommended to focus on smaller areas or specific clades of *Phidippus.*

Chapter 6. General conclusions

The results of Chapter 2 expand the known distribution of some species, such as *Phidippus octopunctatus* and *P. adumbratus.* This not only contributes to our understanding of the overall diversity and distribution of the genus *Phidippus* but also emphasizes the need to continue exploring and increasing the sampling efforts to uncover the true richness of *Phidippus* in Baja California and Mexico.

Based on a dataset of ultraconserved elements from *Phidippus* species, we present the first molecular phylogeny of this enigmatic North American jumping spider genus in this study. The molecular phylogeny is only partially consistent with the morphological hypothesis proposed by Edwards (2004) for *Phidippus* species; some species relationships are supported, and four new clades are proposed with this molecular evidence. On the other hand, to better understand the incongruence, it is necessary to obtain more taxa and re-evaluate the morphological characters of *Phidippus* species to fully resolve the *Phidippus* phylogeny and to reconcile morphological and molecular data.

The time-calibrated phylogeny for *Phidippus* species represents a major milestone for future studies. The results suggest that the genera *Phidippus* and *Paraphidippus* diverged from their most recent common ancestor ca. 5.8 Ma, and *Phidippus* started to diversify 2.8 Ma. The analysis conducted here suggests rapid diversification during the Pleistocene, contrary to the previous gradual diversification hypotheses.

The Pleistocene's climatic influence, marked by significant fluctuations, emerges as a possible key factor promoting *Phidippus* diversification. However, future research is needed to explore the impact of Pleistocene further.

Ancestral area estimation places the common ancestor in the southern area of North America, with caution due to low probabilities in certain states. Bidirectional dispersal events, particularly in the East and Southwest, highlight these regions as hotspots for evolutionary divergence. Despite the results presented here is important the future biogeographic analyses focusing on smaller areas or specific *Phidippus* clades for fully understand *Phidippus* history.

The East and Southwest regions of North America are acknowledged as important areas for biodiversity due to their high species richness and phylogenetic diversity of *Phidippus*, as indicated by the findings of this study.

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Supplementary information

Supplementary 1

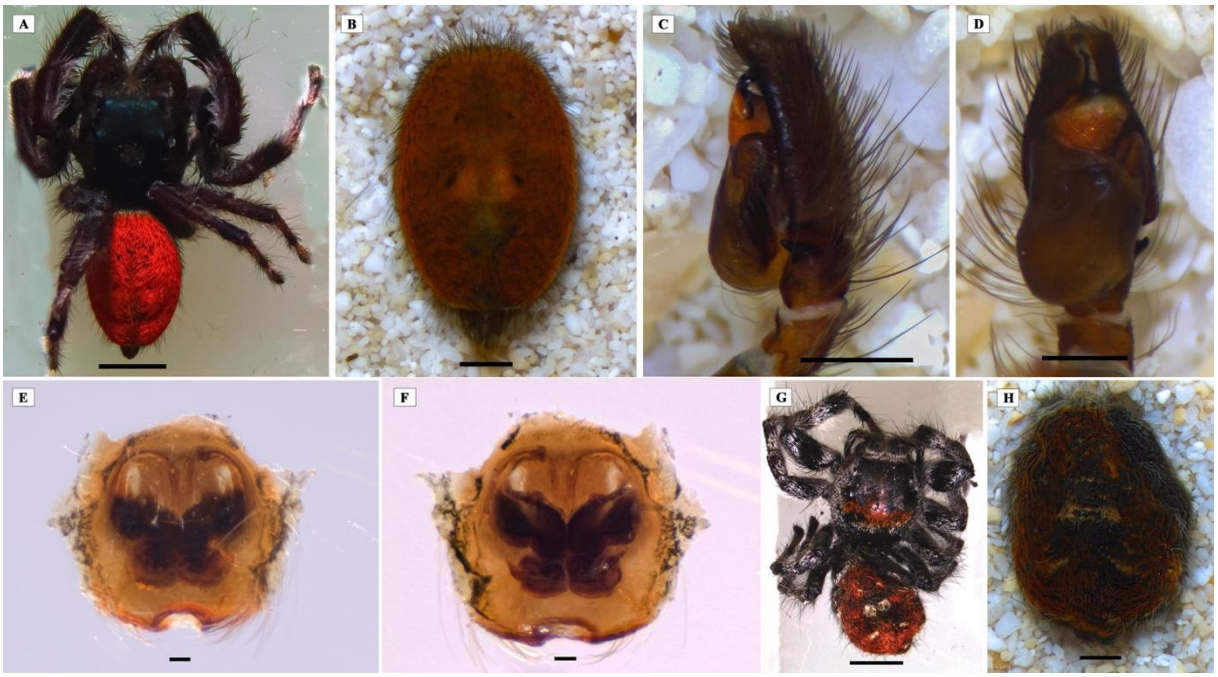

Figure 15. Photographs of *Phidippus adumbratus* Gertsch 1934. Male: A-D. (A) habitus, (B) opisthosoma, (C) palp retrolateral view, (D) palp ventral view. Female: E-H. (E) epigynum ventral view, (F) epigynum dorsal view, (G) habitus, (H) opisthosoma. Scale bars: opisthosoma: 1mm, habitus: 2mm, epigynum: 0.1mm, palp: 2mm.

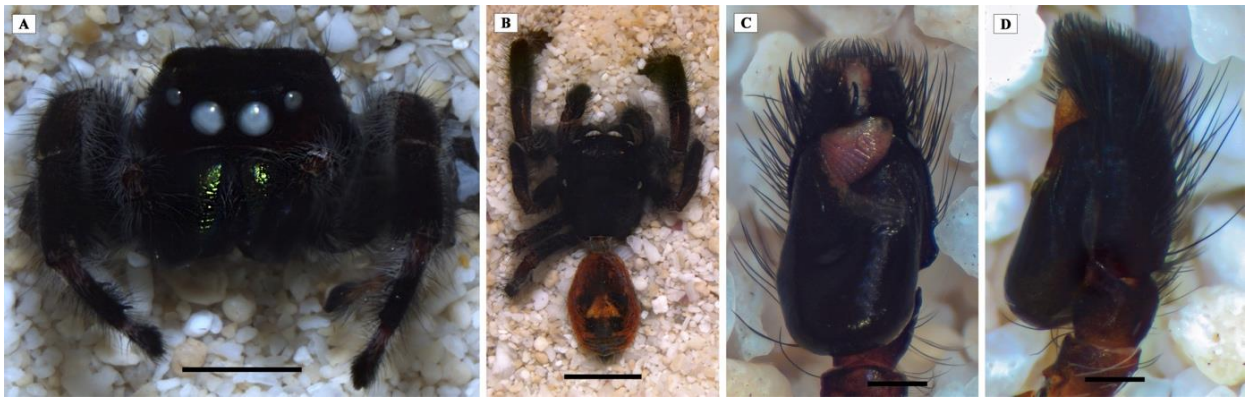

Figure 16. Photographs of *Phidippus boei* Edwards 2004. Male: A-D. (A) face, (B) habitus, (C) palp ventral view, (D) palp retrolateral view. Scale bars: opisthosoma: 1mm, habitus: 2mm, epigynum: 0.1mm, palp: 2mm.

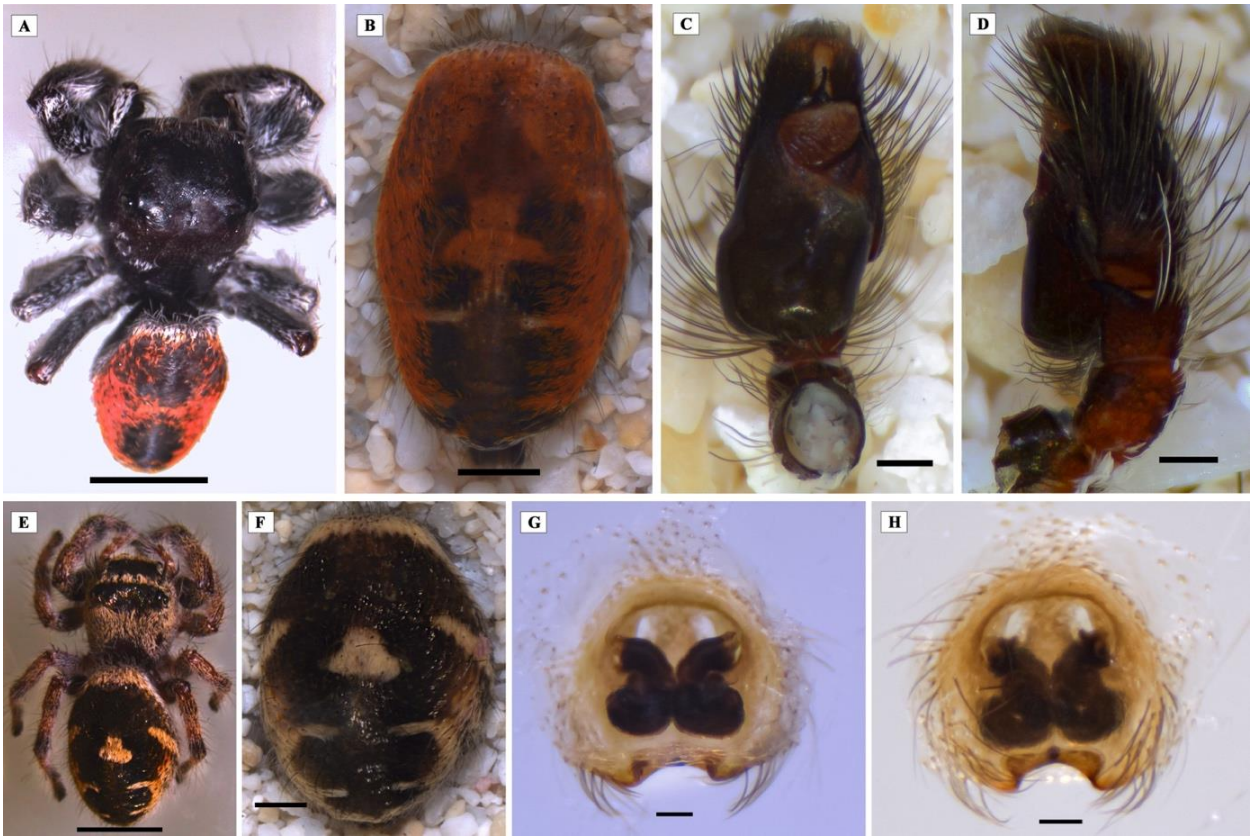

Figure 17. Photographs of *Phidippus californicus* Peckham and Peckham, 1901. Male: A-D. (A) habitus, (B) opisthosoma, (C) palp ventral view, (D) palp retrolateral view. Female: E-H. (E) habitus, (F) opisthosoma, (G) epiggynum ventral view, (H) epigynum dorsal view. Scale bars: opisthosoma: 1mm, habitus: 2mm, palp: 2mm.

Figure 18. Photographs of *Phidippus comatus* Peckham and Peckham, 1901. Male: A-D. (A) face, (B) habitus, (C) palp retrolateral view, (D) palp ventral view. Scale bars: opisthosoma: 1mm, habitus/face: 2mm, palp: 2mm.

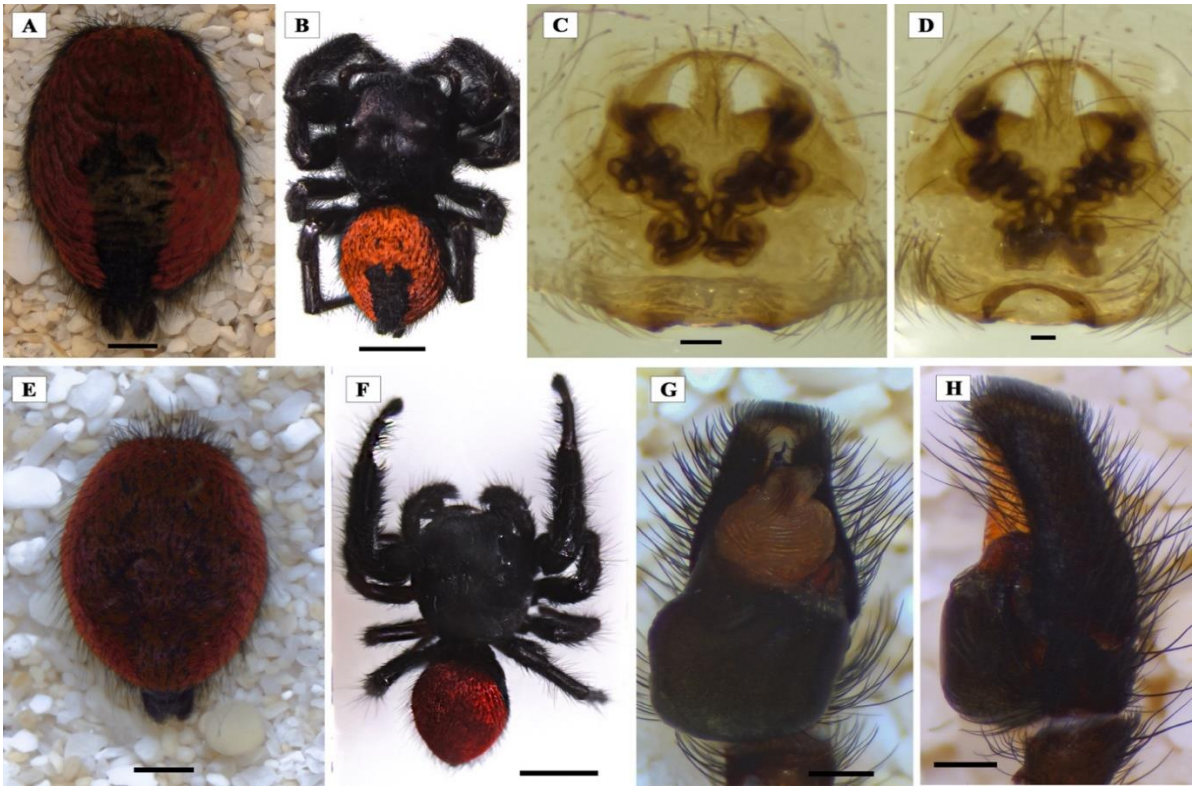

Figure 19. Photographs of *Phidippus johnsoni* (Peckham and Peckham, 1888). Female: A-D. (A) opisthosoma, (B) habitus, (C) epigynum dorsal view, (D) epigynum ventral view. Male: E-H. (E) opisthosoma, (F) habitus, (G) palp ventral view, (H) palp retrolateral view. Scale bars: opisthosoma: 1mm, habitus: 2mm, epigynum: 0.1mm, palp: 2mm.

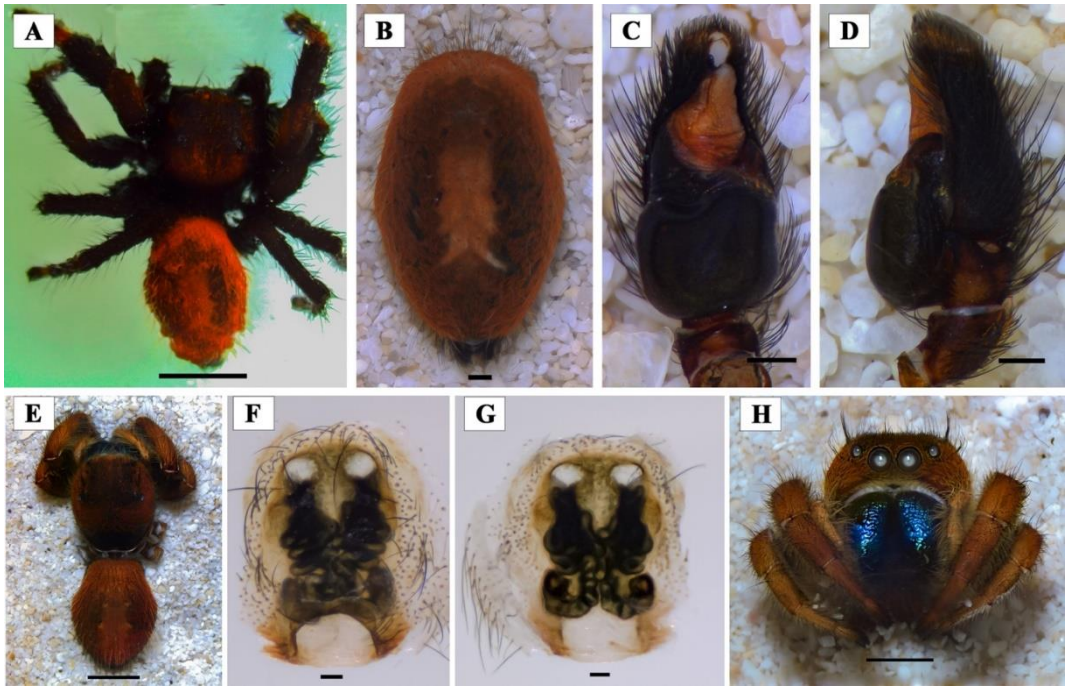

Figure 20. Photographs of *Phidippus nikites* Chamberlin and Ivie, 1935. Male: A-D. (A) habitus, (B) opisthosoma, (C) palp ventral view, (D) palp retrolateral view. Female: E-F. (E) habitus, (F) epigynum ventral view,
(G) epigynum dorsal view, (H) face. Scale bars: opisthosoma: 1mm, habitus: 2mm, epigynum: 0.1mm, palp: 2mm.

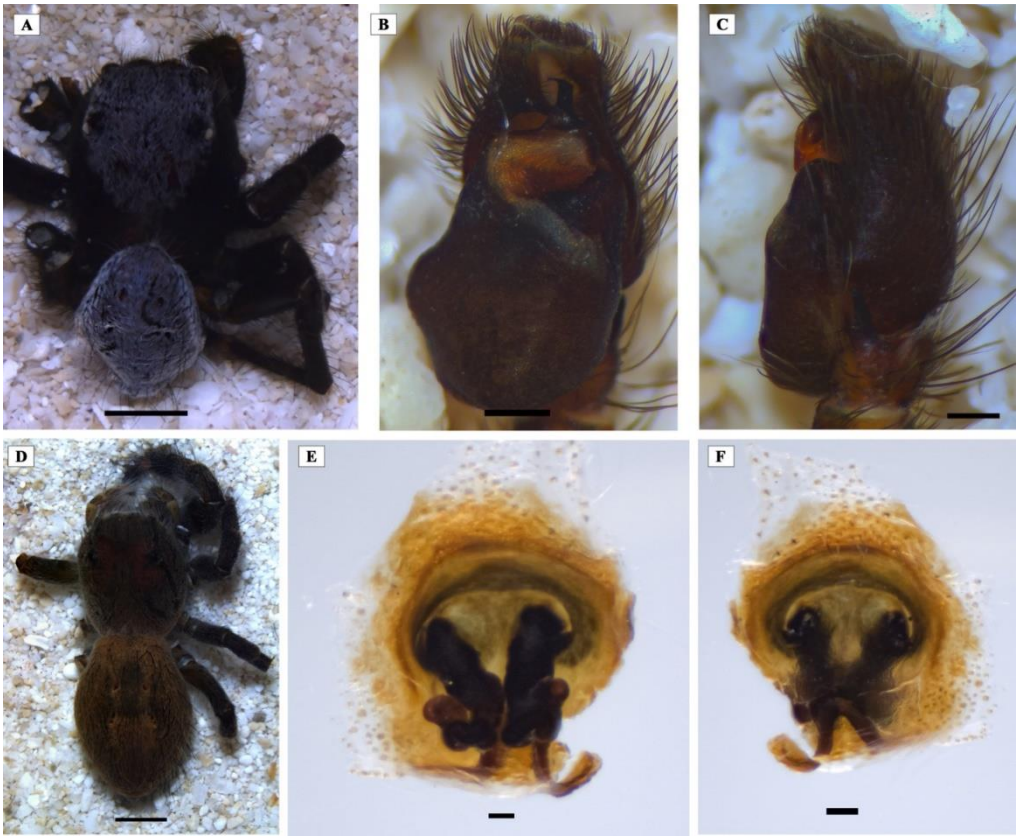

Figure 21. Photographs of *Phidippus octopunctatus* (Peckham & Peckham, 1883). Male: A-D. (A) habitus, (B) palp ventral view, (C) palp retrolateral view. Female: D-F. (D) habitus, (E) epigynum ventral view, (F) epigynum dorsal view. Scale bars: opisthosoma: 1mm, habitus: 2mm, epigynum: 0.1mm, palp: 2mm.

Figure 22. Photographs of *Phidippus phoenix* Edwards 2004. Female: A-D. (A) habitus, (B) opisthosoma, (C) epigynum ventral view, (D) epigynum dorsal view. Male: E-H. (E)habitus, (F) opisthosoma, (G) palp ventral view, (D) palp retrolateral view. Scale bars: opisthosoma: 1mm, habitus: 2mm, epigynum: 0.1mm, palp: 2mm.

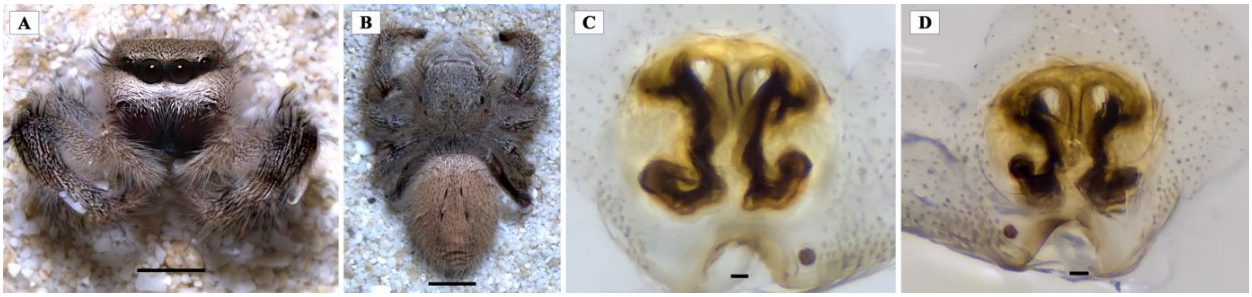

Figure 23. Photographs of *Phidippus tux* Pinter, 1970. Female: A-D. (A) face, (B) habitus, (C) epigynum ventral view, (D) epigynum dorsal view. Scale bars: habitus/face: 2mm, epigynum: 0.1mm.

Supplementary 2

Table 8. List of *Phidippus* species currently recorded for the U.S. states of Arizona and California and the Mexican states of Sonora and Sinaloa, with a note for the species for which a reference sequence of COI was used.

Extended list of species*	Species included as reference sequence?
Phidippus adumbratus Gertsch, 1934	YES
Phidippus apacheanus Chamberlin & Gertsch, 1929	YES
Phidippus ardens Peckham & Peckham, 1901	NO
Phidippus asotus Chamberlin & Ivie, 1933	YES
Phidippus audax (Hentz, 1845)	YES
Phidippus aureus Edwards, 2004	YES
Phidippus boei Edwards, 2004	YES
Phidippus californicus Peckham & Peckham, 1901	YES
Phidippus carneus Peckham & Peckham, 1896	YES
Phidipuus clarus Keyserling, 1885	YES
Phidippus comatus Peckham & Peckham, 1901	YES
Phidippus concinnus Gertsch, 1934	YES
Phidippus felinus Edwards, 2004	NO
Phidippus johnsoni (Peckham & Peckham, 1883)	YES
Phidippus kastoni Edwards, 2004	YES
Phidippus nikites Chamberlin & Ivie, 1935	YES
Phidippus octopunctatus (Peckham & Peckham, 1883)	YES
Phidippus olympus Edwards, 2004	NO
Phidippus phoenix Edwards, 2004	YES
Phidippus pius Scheffer 1906	YES
Phidippus tigris Edwards, 2004	NO
Phidippus toro Edwards, 1978	NO
Phidippus tux Pinter, 1970	NO
Phidippus tyrannus Edwards, 2004	NO
Phidippus tyrelli Peckham & Peckham, 1901	NO
Phidippus pacosauritus Edwards, 2020	NO

Table 9. Individual codes, species identification, collection information and GenBank accession numbers for the COI sequences of the *Phidippus* species collected in the Baja California Peninsula for this study.

DNA Code/collection voucher	Species	Date collected	Locality	Latitude	Longitude	GenBank COI accession number
MABC-B001/MABC-Ar-000040	Phidippus nikites	05/31/2017	Valle de Guadalupe	32.033884	-116.603821	OL505741
MABC-B002/MABC-Ar-000047	Phidippus comatus	05/02/2017	Japá	32.40992	-116.117	OL505742
MABC-B004/MABC-Ar-00001	*Phidippus johnsoni*	31/05/2017	Valle de Guadalupe	32.033884	-116.603821	OL505743
MABC-B005/MABC-Ar-00001	*Phidippus johnsoni*	31/05/2017	Valle de Guadalupe	32.033884	-116.603821	OL505744
Ph001/MABC-Ar-000035	*Phidippus boei*	08/05/2019	Punta Colonet	31.076357	-116.276112	OL505745
Ph002/MABC-Ar-000024	*Phidippus johnsoni*	08/05/2019	Punta Colonet	31.076357	-116.276112	OL505746
Ph003/MABC-Ar-000035	*Phidippus boei*	08/05/2019	Punta Colonet	31.076357	-116.276112	OL505747
Ph004/MABC-Ar-000051	*Phidippus sp. 3*	08/05/2019	Punta Colonet	31.076357	-116.276112	OL505748
Ph005/MABC-Ar-000031	*Phidippus phoenix*	06/05/2019	Santa Catarina	29.598151	-114.224484	OL505749
Ph006/MABC-Ar-000052	*Phidippus johnsoni*	04/10/2019	Ensenada	31.910775	-116.598739	OL505750
Ph007/MABC-Ar-000003	*Phidippus johnsoni*	11/01/2019	Valle de Guadalupe	32.033884	-116.603821	OL505751
Ph008/MABC-Ar-000003	*Phidippus johnsoni*	12/01/2019	Valle de Guadalupe	32.033884	-116.603821	OL505752
Ph010/MABC-Ar-000031	*Phidippus phoenix*	06/05/2019	Santa Catarina	29.598151	-114.224484	OL505753
Ph011/MABC-Ar-000008	*Phidippus johnsoni*	13/11/2019	Valle de Guadalupe	32.033884	-116.603821	OL505754
Ph012/MABC-Ar-000053	*Phidippus sp. 2*	01/10/2019	San Agustín	29.921638	-114.976428	OL505755
Ph013/MABC-Ar-000033	*Phidippus boei*	06/05/2019	Santa Catarina	29.598151	-114.224484	OL505756
Ph014/MABC-Ar-000005	*Phidippus johnsoni*	11/07/2019	Valle de Guadalupe	32.033884	-116.603821	OL505757
Ph015/MABC-Ar-000003	*Phidippus johnsoni*	11/01/2019	Valle de Guadalupe	32.033884	-116.603821	OL505758
Ph016/MABC-Ar-000014	*Phidippus johnsoni*	01/11/2019	Valle de Guadalupe	32.0952	-116.58623	OL505759
Ph017/MABC-Ar-000006	*Phidippus johnsoni*	01/11/2019	Valle de Guadalupe	32.033884	-116.603821	OL505760
Ph018/MABC-Ar-000041	*Phidippus nikites*	03/11/2019	Valle de Guadalupe	32.033884	-116.603821	OL505761
Ph019/MABC-Ar-000007	*Phidippus johnsoni*	03/11/2019	Valle de Guadalupe	32.033884	-116.603821	OL505762
Ph020/MABC-Ar-000010	Phidippus johnsoni	17/12/2019	Valle de Guadalupe	32.033884	-116.603821	OL505763
Ph021/MABC-Ar-000038	Phidippus nikites	16/10/2019	Valle de Guadalupe	32.033884	-116.603821	OL505764

DNA Code/collection voucher	Species	Date collected	Locality	Latitude	Longitude	GenBank COI accession number
Ph022/MABC-Ar-000004	Phidippus johnsoni	23/04/2019	Valle de Guadalupe	32.033884	-116.603821	OL505765
Ph023/MABC-Ar-000002	*Phidippus johnsoni*	07/05/2018	Valle de Guadalupe	32.033884	-116.603821	OL505766
Ph024/MABC-Ar-000054	*Phidippus sp. 1*	07/05/2018	Punta Colonet	31.076357	-116.276112	OL505767
Ph025/MABC-Ar-000010	*Phidippus johnsoni*	12/17/2019	Valle de Guadalupe	32.033884	-116.603821	OL505768
Ph026/MABC-Ar-000020	*Phidippus johnsoni*	01/10/2019	Ensenada	31.895833	-116.562222	OL505769
Ph027/MABC-Ar-000055	*Phidippus sp. 2*	05/01/2020	Ensenada	31.910775	-116.598739	OL505770
Ph028/MABC-Ar-000016	*Phidippus johnsoni*	02/27/2020	Ensenada	31.867998	-116.669048	OL505771
Ph030/MABC-Ar-000033	*Phidippus phoenix*	10/04/2020	Ensenada	31.867998	-116.669048	OL505772
Ph031/MABC-Ar-000029	*Phidippus phoenix*	08/05/2019	Punta Colonet	31.076357	-116.276112	OL505773
Ph032/MABC-Ar-000029	*Phidippus phoenix*	08/05/2019	Punta Colonet	31.076357	-116.276112	OL505774
Ph033/MABC-Ar-000029	*Phidippus phoenix*	08/05/2019	Punta Colonet	31.076357	-116.276112	OL505775
Ph034/MABC-Ar-000029	*Phidippus phoenix*	08/05/2019	Punta Colonet	31.076357	-116.276112	OL505776
Ph035/MABC-Ar-000021	*Phidippus johnsoni*	06/03/2020	Ensenada	31.883690	-116.614114	OL505777
Ph037/MABC-Ar-000011	*Phidippus johnsoni*	01/24/2020	Valle de Guadalupe	32.033884	-116.603821	OL505778
Ph038/MABC-Ar-000064	*Phidippus sp. 2*	02/17/2020	Carr L. Cárdenas Punta Prieta	29.172565	-114.143353	OL505779
Ph039/MABC-Ar-000033	*Phidippus phoenix*	04/17/2020	Ensenada	31.867998	-116.669048	OL505780
Ph042/MABC-Ar-000033	*Phidippus phoenix*	03/15/2020	Ensenada	31.867998	-116.669048	OL505781
Ph043/MABC-Ar-000021	*Phidippus johnsoni*	06/03/2020	Ensenada	31.883690	-116.614114	OL505782
Ph045/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505783
Ph046/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505784
Ph047/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505785
Ph048/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505786
Ph049/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505787
Ph050/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505788
Ph051/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505789
Ph052/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505790
Ph053/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505791
Ph054/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505792

DNA Code/collection voucher	Species	Date collected	Locality	Latitude	Longitude	GenBank COI accession number
Ph055/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505793
Ph056/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505794
Ph057/MABC-Ar-000018	*Phidippus johnsoni*	10/04/2019	Ensenada	31.895833	-116.562222	OL505795
Ph058/MABC-Ar-000008	*Phidippus johnsoni*	11/13/2019	Valle de Guadalupe	32.033884	-116.603821	OL505796
Ph059/MABC-Ar-000011	*Phidippus johnsoni*	01/23/2020	Valle de Guadalupe	32.033884	-116.603821	OL505797
Ph060/MABC-Ar-000029	*Phidippus phoenix*	01/25/2020	Punta Colonet	31.076357	-116.276112	OL505798
Ph062/MABC-Ar-000016	*Phidippus johnsoni*	01/03/2020	Ensenada	31.867998	-116.669048	OL505799
Ph064/MABC-Ar-000016	*Phidippus johnsoni*	02/20/2020	Ensenada	31.867998	-116.669048	OL505800
Ph066/MABC-Ar-000017	*Phidippus johnsoni*	11/03/2020	Ensenada	31.863500	-116.666400	OL505801
Ph067/MABC-Ar-000015	*Phidippus johnsoni*	02/22/2020	Ensenada	31.881263	-116.644755	OL505802
Ph068/MABC-Ar-000025	*Phidippus johnsoni*	02/15/2020	Carretera a Ojos Negros	31.818000	-166.386500	OL505803
Ph069/MABC-Ar-000033	*Phidippus phoenix*	11/04/2020	Ensenada	31.867998	-116.669048	OL505804
Ph070/MABC-Ar-000028	*Phidippus phoenix*	03/16/2020	Ensenada	31.869261	-116.643128	OL505805
Ph071/MABC-Ar-000028	*Phidippus phoenix*	03/24/2020	Ensenada	31.869261	-116.643128	OL505806
Ph072/MABC-Ar-000028	*Phidippus phoenix*	03/23/2020	Ensenada	31.869261	-116.643128	OL505807
Ph073/MABC-Ar-000036	*Phidippus californicus*	03/24/2020	Ejido el Mayor	32.118802	-115.258034	OL505808
Ph074/MABC-Ar-000023	*Phidippus johnsoni*	03/22/2020	Ensenada	31.901428	-116.731054	OL505809
Ph075/MABC-Ar-000022	*Phidippus johnsoni*	03/16/2020	Ensenada	31.863719	-116.647592	OL505810
Ph076/MABC-Ar-000045	*Phidippus adumbratus*	09/29/2020	S. Antonio dl Minas	29.802694	-114.735500	OL505811
Ph077/MABC-Ar-000028	*Phidippus cf phoenix*	01/03/2020	Ensenada	31.869261	-116.643128	OL505812
Ph078/MABC-Ar-000023	*Phidippus johnsoni*	05/04/2020	Ensenada	31.901428	-116.731054	OL505813
Ph079/MABC-Ar-000028	*Phidippus phoenix*	04/29/2020	Ensenada	31.869261	-116.643128	OL505814
Ph080/MABC-Ar-000038	*Phidippus nikites*	06/15/2020	Valle de Guadalupe	32.033884	-116.603821	OL505815
Ph081/MABC-Ar-000033	*Phidippus phoenix*	01/03/2020	Ensenada	31.865700	-116.662500	OL505816
Ph083/MABC-Ar-000044	*Phidippus adumbratus*	01/27/2020	Sierra Blanca	32.074990	-116.452847	OL505817
Ph085/MABC-Ar-000013	*Phidippus johnsoni*	02/14/2020	Valle de Guadalupe	32.033884	-116.603821	OL505818
Ph086/MABC-Ar-000056	*Phidippus sp. 2*	02/17/2020	Carr Guerrero Negro-L. Cardenas	29.186600	-114.146100	OL505819
Ph087/MABC-Ar-000043	*Phidippus octopunctatus*	10/09/2020	Ensenada	31.867998	-116.669048	OL505820
Ph088/MABC-Ar-000044	*Phidippus adumbratus*	01/27/2020	Sierra Blanca	32.074990	-116.452847	OL505821

DNA Code/collection voucher	Species	Date collected	Locality	Latitude	Longitude	GenBank COI accession number
Ph089/MABC-Ar-000057	*Phidippus sp. 3*	08/05/2020	Punta Colonet	31.076357	-116.276112	OL505822
Ph090/MABC-Ar-000033	*Phidippus phoenix*	02/15/2020	Ensenada	31.865700	-116.662500	OL505823
Ph091/MABC-Ar-000010	*Phidippus johnsoni*	12/17/2019	Valle de Guadalupe	32.033884	-116.603821	OL505824
Ph092/MABC-Ar-000018	*Phidippus johnsoni*	10/04/2020	Ensenada	31.895833	-116.562222	OL505825
Ph093/MABC-Ar-000011	*Phidippus johnsoni*	01/23/2020	Valle de Guadalupe	32.033884	-116.603821	OL505826
Ph094/MABC-Ar-000058	*Phidippus sp. 3*	05/08/2019	Punta Colonet	31.076357	-116.276112	OL505827
Ph095/MABC-Ar-000026	*Phidippus johnsoni*	03/17/2019	Ensenada	31.720280	-116.570140	OL505828
Ph096/MABC-Ar-000029	*Phidippus phoenix*	05/08/2019	Punta Colonet	31.076357	-116.276112	OL505829
Ph097/MABC-Ar-000035	*Phidippus boei*	05/08/2019	Punta Colonet	31.076357	-116.276112	OL505830
Ph098/MABC-Ar-000012	*Phidippus johnsoni*	01/29/2020	Valle de Guadalupe	32.033884	-116.603821	OL505831
Ph099/MABC-Ar-000036	*Phidippus californicus*	03/23/2020	Ejido el Mayor	32.120519	-115.261114	OL505832
Ph100/MABC-Ar-000011	*Phidippus johnsoni*	01/15/2020	Valle de Guadalupe	32.033884	-116.603821	OL505833
Ph102/MABC-Ar-000031	*Phidippus phoenix*	06/05/2019	Santa Catarina	29.598151	-114.224484	OL505834
Ph103/MABC-Ar-000036	*Phidippus californicus*	03/23/2020	Ejido el Mayor	32.120519	-115.261114	OL505835
Ph104/MABC-Ar-000037	*Phidippus californicus*	03/23/2020	Paso San Matìas	31.312724	-115.479317	OL505836
Ph106/MABC-Ar-000036	*Phidippus californicus*	04/23/2020	Ejido el Mayor	32.120519	-115.261114	OL505837
Ph107/MABC-Ar-000010	*Phidippus johnsoni*	12/17/2019	Valle de Guadalupe	32.033884	-116.603821	OL505838
Ph108/MABC-Ar-000004	*Phidippus johnsoni*	06/18/2019	Valle de Guadalupe	32.033884	-116.603821	OL505839
Ph109/MABC-Ar-000010	*Phidippus johnsoni*	12/17/2019	Valle de Guadalupe	32.033884	-116.603821	OL505840
Ph110/MABC-Ar-000019	*Phidippus johnsoni*	10/07/2019	Ensenada	31.865700	-116.662500	OL505841
Ph111/MABC-Ar-000032	*Phidippus phoenix*	08/22/2019	Ensenada	31.865700	-116.662500	OL505842
Ph112/MABC-Ar-000046	*Phidippus adumbratus*	06/03/2019	Santa Catarina	29.598151	-114.224484	OL505843
Ph113/MABC-Ar-000006	*Phidippus johnsoni*	09/23/2019	Valle de Guadalupe	32.033884	-116.603821	OL505844
Ph114/MABC-Ar-000059	*Phidippus sp. 2*	02/20/2020	Isla Magdalena	24.796630	-112.115840	OL505845
Ph115/MABC-Ar-000010	*Phidippus johnsoni*	12/17/2019	Valle de Guadalupe	32.033884	-116.603821	OL505846
Ph116/MABC-Ar-000011	*Phidippus johnsoni*	01/15/2020	Valle de Guadalupe	32.033884	-116.603821	OL505847
Ph118/MABC-Ar-000034	*Phidippus boei*	06/03/2019	Santa Catarina	29.598151	-114.224484	OL505848
Ph119/MABC-Ar-000035	*Phidippus boei*	05/08/2019	Punta Colonet	31.076357	-116.276112	OL505849
Ph120/MABC-Ar-000035	*Phidippus boei*	05/08/2019	Punta Colonet	31.076357	-116.276112	OL505850

DNA Code/collection voucher	Species	Date collected	Locality	Latitude	Longitude	GenBank COI accession number
Ph121/MABC-Ar-000060	*Phidippus sp. 3*	05/08/2019	Punta Colonet	31.076357	-116.276112	OL505851
Ph123/MABC-Ar-000061	*Phidippus sp. 1*	11/16/2017	Ensenada	31.885417	-116.619444	OL505852
Ph126/MABC-Ar-000062	*Phidippus sp. 3*	05/03/2019	Santa Catarina	29.598151	-114.224484	OL505853
Ph129/MABC-Ar-000009	*Phidippus johnsoni*	01/12/2019	Valle de Guadalupe	32.033884	-116.603821	OL505854
Ph135/MABC-Ar-000039	*Phidippus nikites*	09/20/2020	Vizcaíno	27.273380	-113.533770	OL505855
Ph139/MABC-Ar-000063	*Phidippus sp. 3*	06/03/2019	Santa Catarina	29.598151	-114.224484	OL505856
Ph144/MABC-Ar-000030	*Phidippus phoenix*	03/11/2019	Punta Colonet	31.076357	-116.276112	OL505857
Ph147/MABC-Ar-000044	*Phidippus adumbratus*	01/27/2020	Sierra Blanca	32.074990	-116.452847	OL505858
Ph150/MABC-Ar-000042	*Phidippus octopunctatus*	08/26/2020	Ensenada	32.033884	-116.603821	OL505859
Ph153/MABC-Ar-000048	*Phidippus johnsoni*	10/03/2020	Ensenada	31.867998	-116.669048	OL505860
Ph158/MABC-Ar-000049	*Phidippus cf. tux*	02/21/2020	Carr Carambuche-La Purisima	26.129320	-112.016740	OL505861

Supplementary 3

Table 10. Species list used for phylogenomic analyses using UCE. Sample origins abbreviation, CNAN: Colección Nacional de Aracnidos, MABC: Museo de Artropodos de Baja California, DMNS: Denver Museum of Nature and Science.

Sample	Voucher Museum	Species	Country	State	City	Locality	Colect Date	Latitude	Longitude	Sample Origin
DGF0448	CNAN	*Paraphidippis aurantius*	México	Morelos	Huitzilac	Zempoala, Parque Estatal Lagunas de Zempoala	21/06/2018	19.0502	99.3172	CNAN
WPM0001	WPM#13-091	*Paraphidippus basalis*	USA	Arizona	Santa Cruz Co.	Madera Canyon, Santa Rita Lodge	20-21/08/ 2013	31.725	110.881	CNAN
DGF0948	CNAN-Ar011333	*Phidippus adonis*	México	Morelos	Temixco	Alrededores de Temixco	21/06/2018	18.8808	99.2643	CNAN
Ph_076	MABC-Ar-000045	*Phidippus adumbratus*	México	Baja California	Ensenada	San Antonio de las Minas	29/09/2020	29.802694	114.7355	MABC
LCH01_0122	-	*Phidippus albulatus*	México	Morelos	-	-	2018	18.467976	-97.453566	G.B Edwards
LCH01_0126	-	*Phidippus amans*	-	-	-	-	-	-	-	G.B Edwards
LCH01_0119	-	*Phidippus apacheanus*	USA	Georgia	Taylor Co.	Fall Line Sandhills WMA	21/09/2017	32.57433	-84.29013	G.B Edwards
DGF1277	CNAN-Ar011312	*Phidippus ardens*	USA	Nuevo Mexico	Eddy Co.	Carlsbad	28/10/2017	32.0979	104.0799	CNAN
DGF1275	CNAN-Ar011310	*Phidippus arizonensis*	USA	Nuevo Mexico	Otero Co.	James Canyon Campground	11/06/2017	32.9047	105.5053	CNAN
DGF1278	CNAN-Ar011313	*Phidippus asotus*	USA	Arizona	Cohise. Co	Chiricahua mountains	13/06/2017	31.8768	109.2257	CNAN
WPM0017	CNAN	*Phidippus audax*	USA	Oregon	Benton Co.	Corvallis	13/05/2010	-	-	CNAN
DGF1280	CNAN-Ar011315	*Phidippus aureus*	USA	California	San Bernardino	Apple Valley	15/05/2017	34.5009	117.1119	CNAN
DGF0812	CNAN	*Phidippus bidentatus*	Mexico	Chiapas	La Trinidad	Tenam Puente	05/10/2018	16.138	92.11167	CNAN
DGF0953	CNAN-Ar011338	*Phidippus bidentatus*	México	Veracruz	Jamapa	2.19 Km aéreos de la cabecera municipal de Jamapa	16/06/2018	19.0618	96.2417	CNAN
Ph001	MABC-Ar-000035	*Phidippus boei*	México	Baja California	Ensenada	Punta Colonet	5/08/2019	31.076357	116.276112	MABC
WPM0019	WPM#13-050	*Phidippus borealis*	Canada	Alberta	-	near Owl River, Old Conklin Trail	25/06/2013	54.983	112.002	CNAN
Ph073	MABC-Ar-000036	*Phidippus californicus*	México	Baja California	Mexicali	Ejido El Mayor	24/03/2020	32.118802	115.258034	MABC
DGF1288	CNAN-Ar011323	*Phidippus cardinalis*	USA	Georgia	Union Co.	Copperhead Rd field	11/07/2017	34.8765	84.0949	CNAN
DGF1290	CNAN-Ar011325	*Phidippus carneus*	USA	Nuevo Mexico	Chaves Co.	SW of Roswell	11/06/2017	33.0499	104.6882	CNAN
DGF0947	CNAN-Ar011332	*Phidippus cerberus*	México	Estado de México	Aculco	San Lucas Totolmaloya	18/07/2018	20.1514	99.9097	CNAN
ZA27435	ZA.27435	*Phidippus clarus*	USA	Ohio	Summit	Bath Nature Preserve	30/06/2005	41.1776	-81.6424	DMNS
DGF1289	CNAN-Ar011324	*Phidippus comatus*	USA	California	Santa Barbara Co.	NW of Santa Barbara	12/05/2017	34.5442	119.8138	CNAN
DGF1287	CNAN-Ar011322	*Phidippus concinnus*	USA	California	San Bernardino Co.	NE of Mt. Baldy	12/06/2017	34.2631	117.6302	CNAN
DGF0555	CNAN	*Phidippus cruentus*	México	Estado de México	Aculco	Cascada La Concepción	19/06/2018	20.1508	99.9121	CNAN

Sample	Voucher Museum	Species	Country	State	City	Locality	Colect Date	Latitude	Longitude	Sample Origin
DGF1285	CNAN-Ar011320	*Phidippus felinus*	USA	Nuevo Mexico	Cibola Co.	El Malpais	15/06/2017	34.7414	107.9654	CNAN
DGF0951	CNAN-Ar011336	*Phidippus georgii*	México	Oaxaca	Ejutla de Crespo	1.59 Km al O de Carr. Fed. Piedras Negras-San Mateo Río Hondo	13/07/2018	16.5523	96.6994	CNAN
ZA20783	ZA.20783	*Phidippus insignarius*	USA	Colorado	Jefferson	Chatfield State Park	18/06/2007	39.498278	-105.08608	DMNS
Ph107	MABC-Ar-000010	*Phidippus johnsoni*	México	Baja California	Ensenada	Valle de Guadalupe	17/12/.2019	32.033884	116.603821	MABC
DGF1283.1	CNAN-Ar011318	*Phidippus kastoni*	USA	California	Monterey Co.	Los Padres National Forest	19/02/2018	36.1189	121.4657	CNAN
DGF0946	CNAN-Ar011331	*Phidippus maddisoni*	México	Jalisco	La Huerta	Estación de Biología Chamela, sendero principal, tejón y ardilla	13/02/2018	19.525	105.0779	CNAN
DGF0954	CNAN-Ar011339	*Phidippus mimicus*	México	Oaxaca	San José Estancia Grande	4.53 Km aéreos de Cabecera de San José Estancia Grande, desviación de la carretera federalNo. 200, Marquelia-Santiago Pinotepa Nacional	14/07/2018	16.3943	98.2801	CNAN
DGF1281	CNAN-Ar011316	*Phidippus morpheus*	USA	Nuevo Mexico	Chaves Co.	SW of Roswell	12/06/2017	33.0499	104.688	CNAN
DGF1279	CNAN-Ar011314	*Phidippus nikites*	USA	California	Imperial Co.	Brawley	10/05/2017	32.9705	115.2548	CNAN
DGF1269	CNAN-Ar011304	*Phidippus octopunctatus*	USA	Nuevo Mexico	Chaves Co.	SW of Roswell	11/06/2017	33.0499	104.6882	CNAN
LCH01_0125	-	*Phidippus olympus*	-	-	-	-	-	-	-	G.B Edwards
LCH01_0124	-	*Phidippus pacosauritus*	-	-	-	-	-	-	-	G.B Edwards
Ph081	MABC-Ar-000033	*Phidippus phoenix*	México	Baja California	Ensenada	El Sauzal	01/03/2020	31.8657	116.6625	MABC
DGF1274_M	CNAN-Ar011309	*Phidippus pius*	USA	Texas	Culberson Co.	Guadalupe Mountains	27/09/2017	31.8974	104.8306	CNAN
DGF952	CNAN-Ar011337	*Phidippus pompatus*	México	-	-	-	06/2018	-	-	CNAN
LCH01_0111	-	*Phidippus princeps pulcherrimus*	USA	Florida	Okaloosa Co.	Blackwater, River State Forest, Mattie Kennedy Rd.	26/04/2022	30.9299	-86.7156	G.B Edwards
WPM0020	WPM#12-178	*Phidippus purpuratus*	Canada	Ontario	Haileybury	West road near HWY 11	15/08/2012	47.45	79.708	CNAN
LCH01_0114	-	*Phidippus putnami*	USA	South Carolina	-	-	-	-	-	G.B Edwards
LCH01_0116	-	*Phidippus regius*	USA	Florida	Santa Rosa Co.	Row W of Garner Landing Rd.	29/09/2021	30.67604	-86.79777	G.B Edwards
LCH01_0130	-	*Phidippus richmani*	USA	Florida	-	-	2022	-	-	G.B Edwards
DGF1273	CNAN-Ar011308	*Phidippus texanus*	USA	Texas	Zapata Co.	Falcon Lake	01/04/2017	26.5918	99.1539	CNAN
LCH01_0120	-	*Phidippus toro*	USA	Arizona	Cochise Co.	Chiricahua Mts, East Turkey Creek	05/.2021	31.901	-109.253	G.B Edwards
Ph158	MABC-Ar-000049	*Phidippus tux*	México	Baja California Sur	SD	Carambuche-La Purisima	-	26.12932	-112.01674	MABC
ZA20755	ZA.20755	*Phidippus tyrelli*	USA	Colorado	Hinsdale	Mill Creek Campground	2006	37.9072	-107.3914	DMNS
LCH01_0121	-	*Phidippus whitmani*	USA	Georgia	Wayne Co.	Jesup, Altamaha River boat landing	29/07/2021	31.78472	-81.98506	G.B Edwards
LCH01_0123	-	*Phidippus workmani*	USA	Georgia	Mcintosh Co.	Townsend, Altamaha, Wildlife Managament Area	7/08/2021	32.45705	-81.58061	G.B Edwards

Sample	Voucher Museum	Species	Country	State	City	Locality	Colect Date	Latitude	Longitude	Sample Origin
LCH01_0101	-	*Phidippus zethus*	Mexico	Jalisco	-	-	2018	-	-	G.B Edwards

Table 11. The samples for UCE collect. UCE loci column denotes the number of loci obtained from Phyluce pipeline. Reads column indicates the number of reads that were retained after undergoing quality control and adapter removal using Illumiprocessor in Phyluce pipeline.

Species	Specimen	Reads	Contigs	UCE loci
Paraphidippus aurantius	DGF0448	11,224,507	217,148	733
Paraphidippus basalis	WPM0001	8,002,157	98,294	689
Phidippus adonis	DGF0948	14,882,374	125,575	1032
Phidippus adumbratus	Ph076	2,180,876	13,688	679
Phidippus albulatus	LCH122	3,104,645	17,104	928
Phidippus amans	LCH126	5,552,691	295,224	823
Phidippus apacheanus	LCH119	4,977,728	28,276	901
Phidippus ardens	DGF1277	6,055,549	35,562	770
Phidippus arizonensis	DGF1275	4,608,168	81,598	629
Phidippus asotus	DGF1278	12,556,056	47,886	766
Phidippus audax	WPM0017	9,950,545	202,481	927
Phidippus aureus	DGF1280	11,270,331	224,930	820
Phidippus bidentatus	DGF0812	9,970,302	26,746	569
Phidippus bidentatus	DGF0953	6,095,659	27,429	703
Phidippus boei	Ph001	6,698,390	42,295	825
Phidippus borealis	WPM0019	8,965,420	195,850	933
Phidippus californicus	Ph073	4,361,303	30,472	850
Phidippus cardinalis	DGF1288	6,660,218	67,111	918
Phidippus carneus	DGF1290	4,109,890	46,548	843
Phidippus cerberus	DGF0947	6,541,622	198,354	951
Phidippus clarus	ZA27435	3,528,673	96,181	543
Phidippus comatus	DGF1289	4,199,529	30,598	841
Phidippus concinnus	DGF1287	9,168,331	48,211	939
Phidippus cruentus	DGF0555	7,999,778	139,948	911
Phidippus felinus	DGF1285	4,549,367	129,143	854
Phidippus georgii	DGF0951	9,871,165	217,410	984
Phidippus insignarius	ZA20783	5,734,648	140,246	679
Phidippus johnsoni	Ph107	4,083,713	26,157	814
Phidippus kastoni	DGF1283	14,577,812	285,730	956
Phidippus maddisoni	DGF0946	6,600,032	70,166	853
Phidippus mimicus	DGF0954	9,502,919	163,390	850
Phidippus morpheus	DGF1281	8,513,891	47,565	789
Phidippus nikites	DGF1279	12,300,312	108,509	967
Phidippus octopunctatus	DGF1269	9,437,991	205,452	993
Phidippus olympus	LCH125	6,264,359	53,447	873
Phidippus pacosauritus	LCH124	4,464,505	250,636	760
Phidippus phoenix	Ph081	8,189,756	53,428	974
Phidippus pius	DGF1274M	4,136,562	117,285	686

Species	Specimen	Reads	Contigs	UCE loci
Phidippus pompatus	DGF952	4,809,793	47,526	796
Phidippus pulcherrimus	LCH111	6,678,500	45,874	923
Phidippus purpuratus	WPM0020	11,681,811	116,360	999
Phidippus regius	LCH116	6,111,754	40,627	973
Phidippus richmani	LCH130	5,685,585	33,562	793
Phidippus texanus	DGF1273	3,111,788	18,957	740
Phidippus toro	LCH120	3,700,254	59,016	798
Phidippus tux	Ph158	5,264,942	23,286	785
Phidippus tyrelli	ZA20755	3,096,832	89,912	637
Phidippus whitmani	LCH121	4,156,251	83,606	742
Phidippus workmani	LCH123	1,707,778	10,679	688
Phidippus zethus	LCH101	3,394,092	35,900	612

Supplementary 4

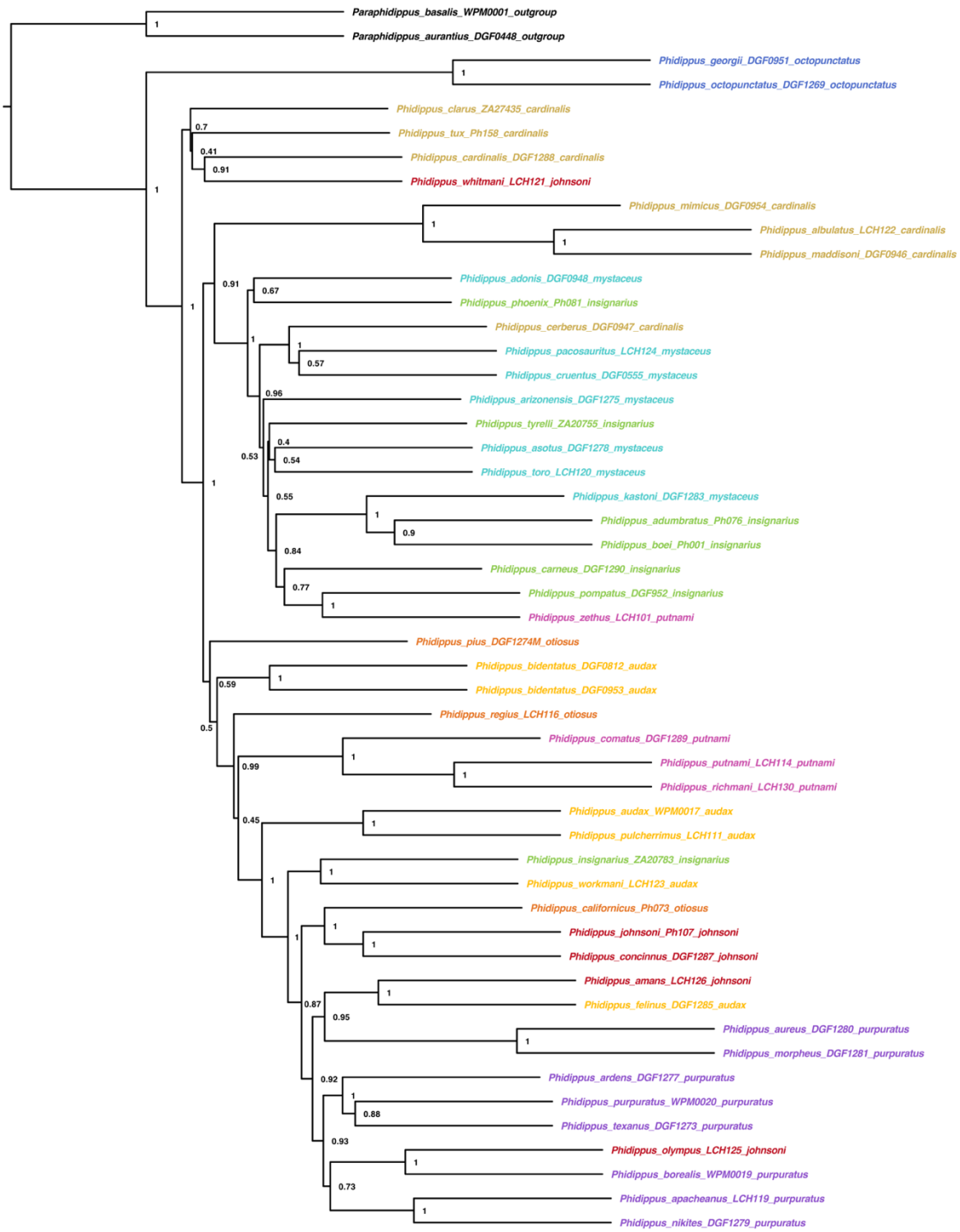

Figure 24. Species tree generated using ASTRAL-III based in 745 UCE-based trees of *Phidippus* species. The numbers on branches are local posterior probabilities. Taxon names are followed by individual codes and the morphological species group they belong to (and color-coded by morphological species group).

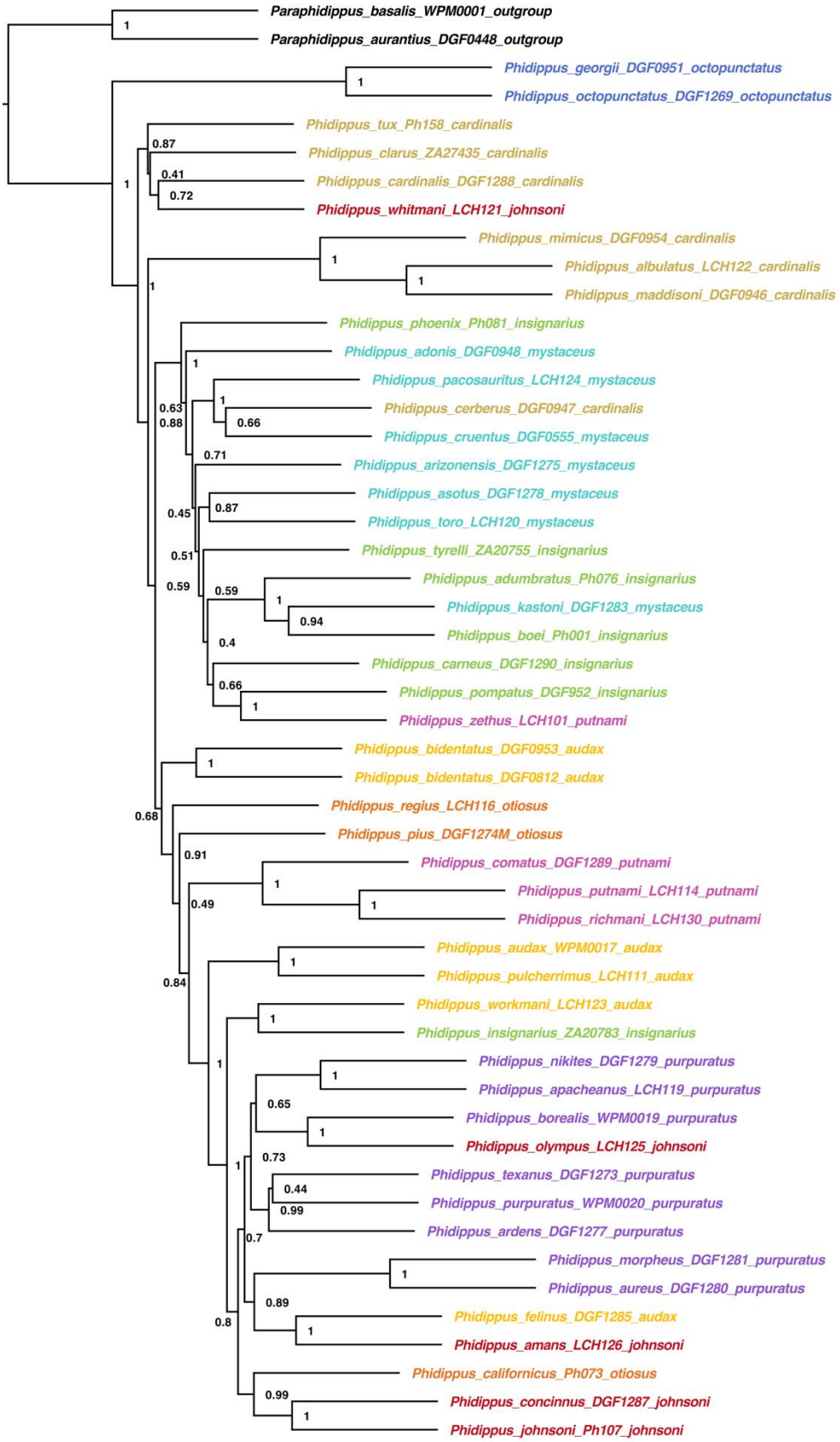

Figure 25. Species tree generated using ASTRAL-III based in 347 UCE-based trees of *Phidippus* species. The numbers on branches are local posterior probabilities. Taxon names are followed by individual codes and the morphological species group they belong to (and color-coded by morphological species group).

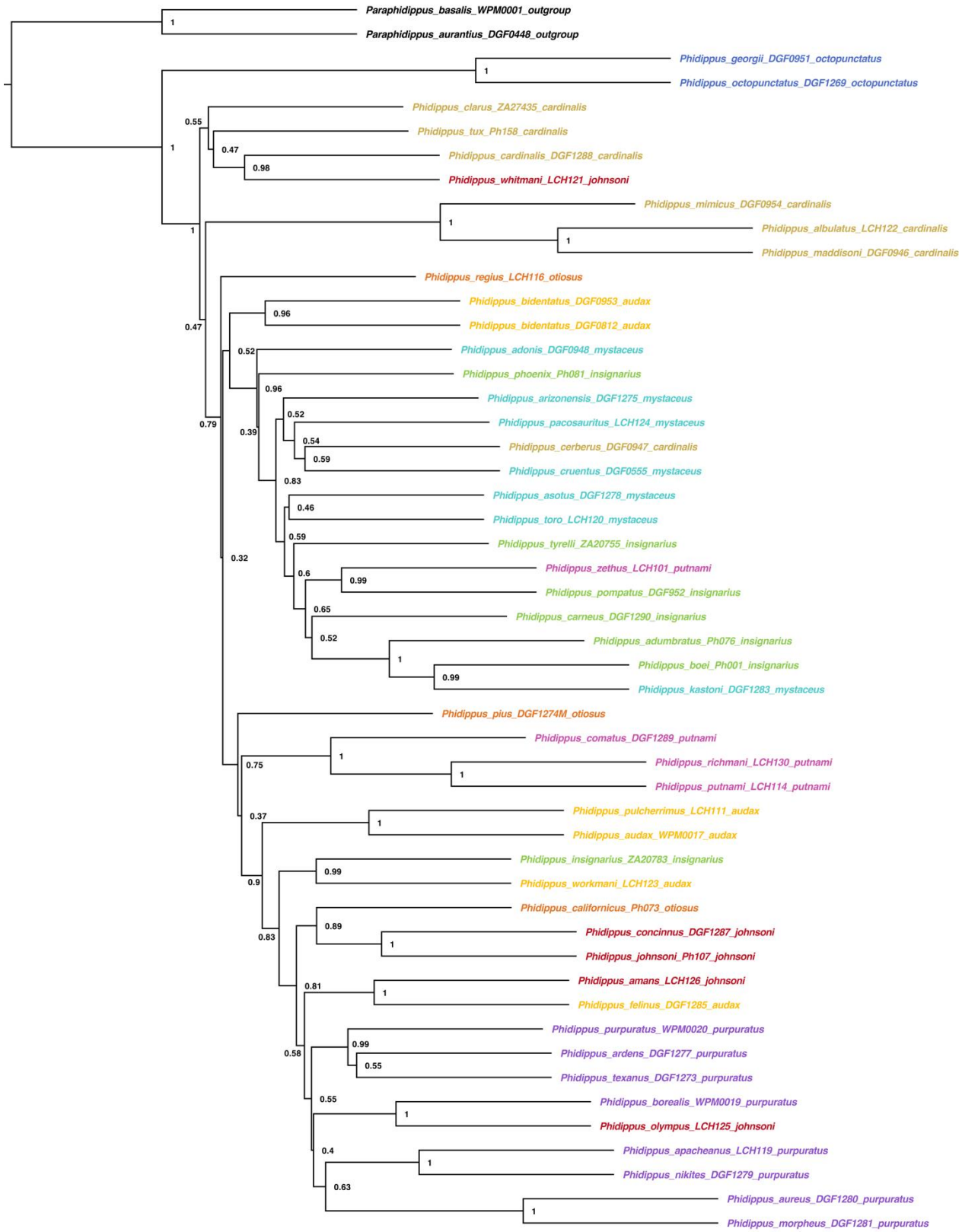

Figure 26. Species tree generated using ASTRAL-III based in 113 UCE-based trees of *Phidippus* species. The numbers on branches are local posterior probabilities. Taxon names are followed by individual codes and the morphological species group they belong to (and color-coded by morphological species group).

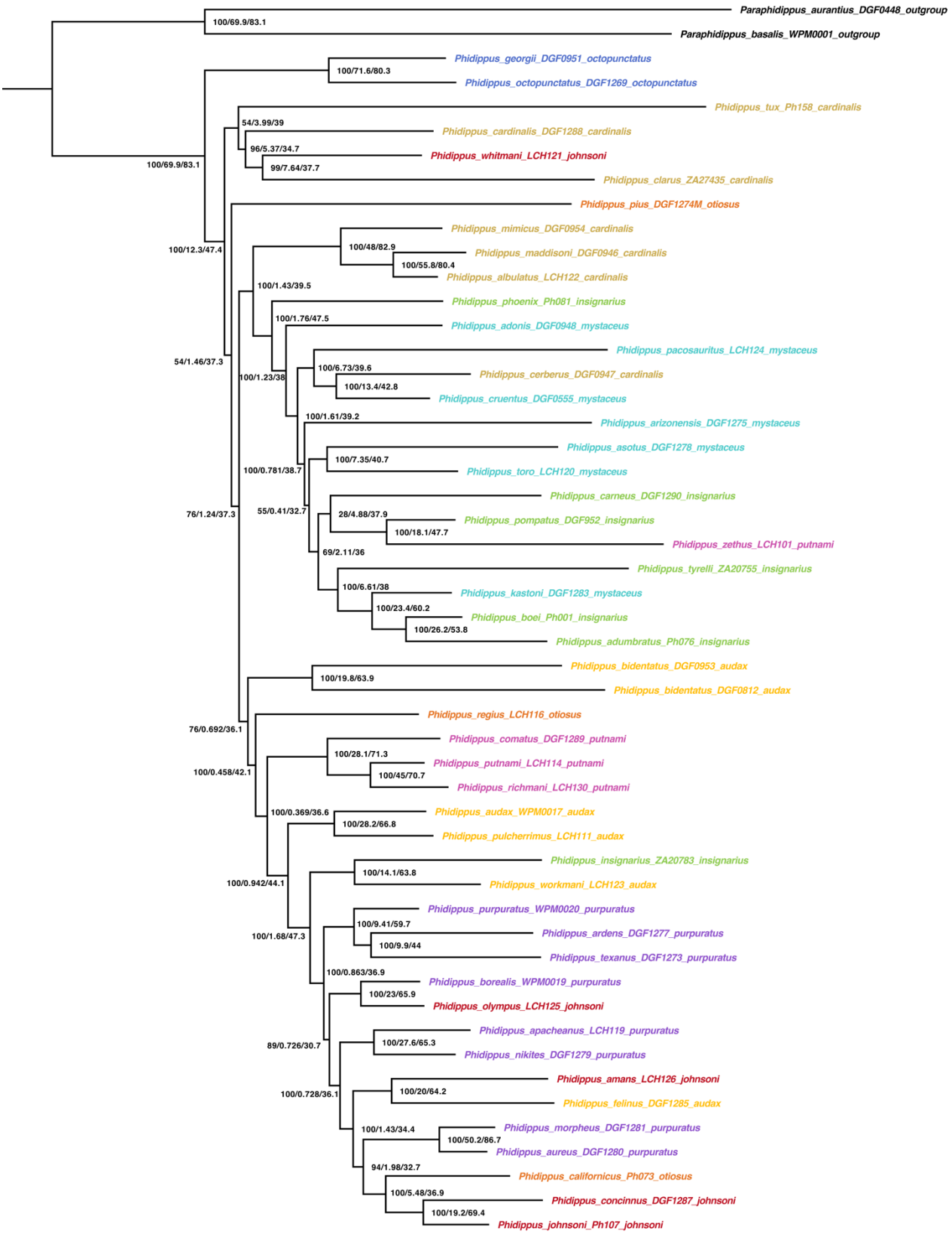

Figure 27. UCE-based phylogenetic tree of the *Phidippus* species, inferred using a Maximum Likelihood concatenation method with 50% completeness. The numbers in each node indicate the Bootstrap support values, Gene concordance factor (gCF) and Site concordance factor (sCF). Taxon names are followed by individual codes and the morphological species group they belong to (and color-coded by morphological species group).

Figure 28. UCE-based phylogenetic tree of the *Phidippus* species, inferred using a Maximum Likelihood concatenation method with 60% completeness. The numbers in each node indicate the Bootstrap support values, Gene concordance factor (gCF) and Site concordance factor (sCF). Taxon names are followed by individual codes and the morphological species group they belong to (and color-coded by morphological species group).

Figure 29. UCE-based phylogenetic tree of the *Phidippus* species, inferred using a Maximum Likelihood concatenation method with 80% completeness. The numbers in each node indicate the Bootstrap support values, Gene concordance factor (gCF) and Site concordance factor (sCF). Taxon names are followed by individual codes and the morphological species group they belong to (and color-coded by morphological species group).

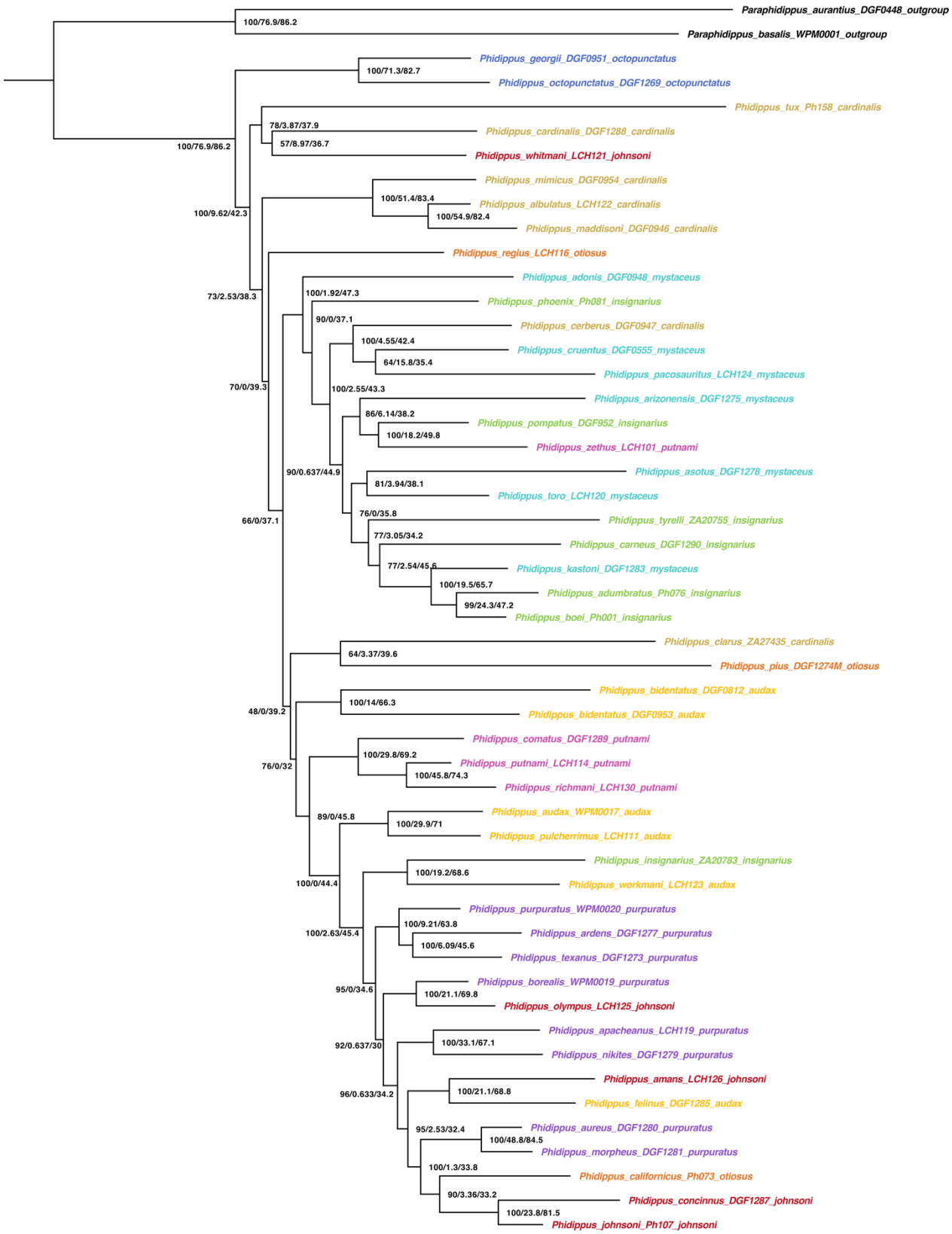

Figure 30. UCE-based phylogenetic tree of the *Phidippus* species, inferred using a Maximum Likelihood concatenation method with 90% completeness. The numbers in each node indicate the Bootstrap support values, Gene concordance factor (gCF) and Site concordance factor (sCF). Taxon names are followed by individual codes and the morphological species group they belong to (and color-coded by morphological species group

Supplementary 5

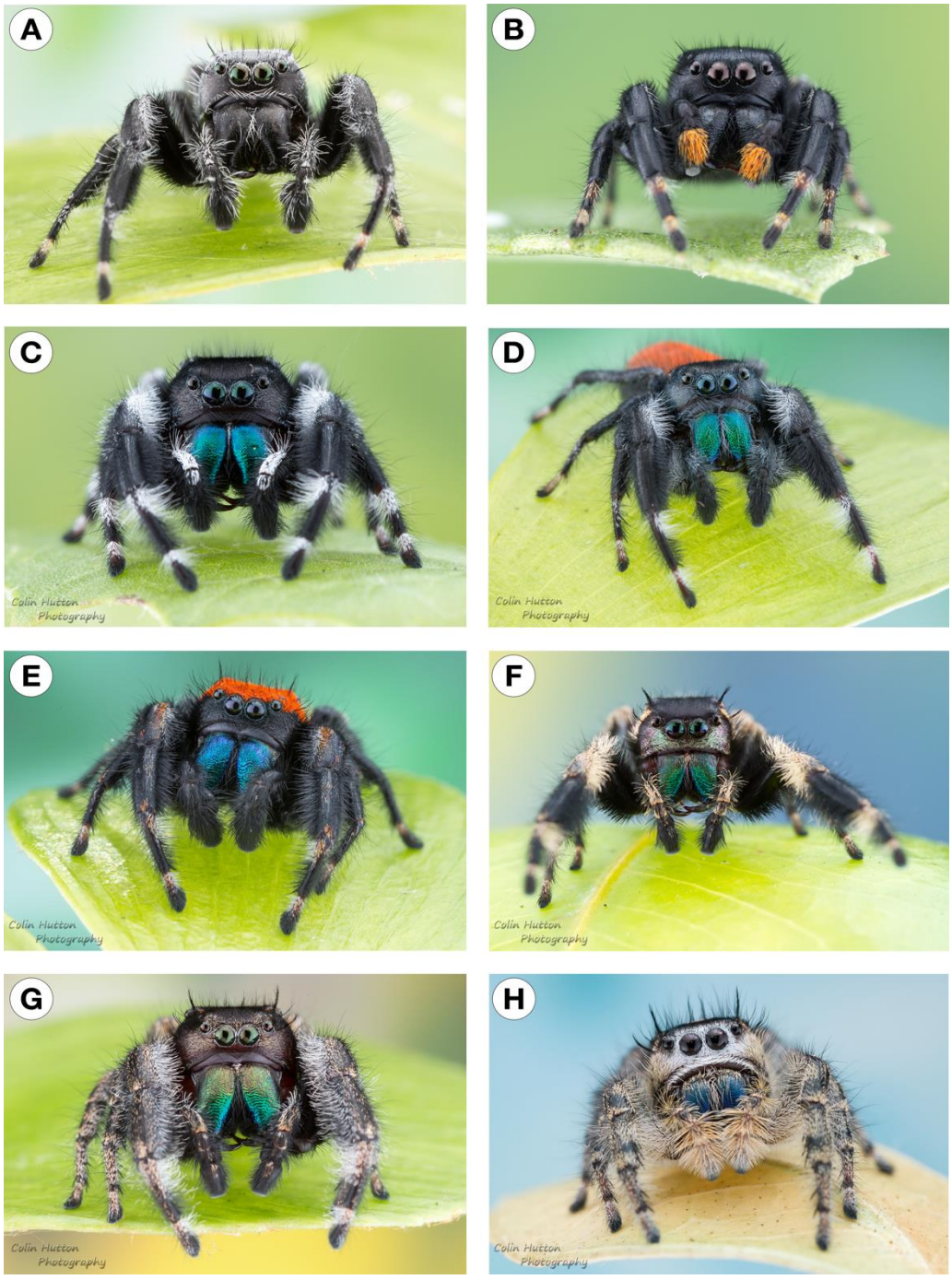

Figure 31. Photographs displaying the iridescent chelicerae in various species of the genus Phidippus. The images are labeled as follows: (A) *Phidippus octopunctatus* male, (B) *Phidippus georgii* male, (C) *Phidippus audax* male, (D) *Phidippus boei* male, (E) *Phidippus nikites* male, (F) *Phidippus otiosus* male, (G) *Phidippus texanus* male, and (H) *Phidippus phoenix* male. Note that *Phidippus octopunctatus* (A) and *Phidippus georgii* (B) do not exhibit iridescent chelicerae, whereas the other species show varying degrees of cheliceral iridescence.

Supplementary 6

Table 12. Occurrence of *Phidippus* species along with the geographic coordinates. The points were georeferenced using QGIS software. Latitudes and longitudes are expressed in decimal degrees.

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus adonis	Edwards, 2004	México	Morelos	Temixco	18.8796	-99.2631
Phidippus adumbratus	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	29.59815	-114.22448
Phidippus adumbratus	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	29.80269	-114.7355
Phidippus adumbratus	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.07621	-116.52346
Phidippus adumbratus	Edwards, 2004	United States	California	Imperial	32.88795	-115.92194
Phidippus adumbratus	Edwards, 2004	United States	California	San Diego	32.77025	-116.55459
Phidippus adumbratus	Edwards, 2004	United States	California	San Diego	33.12335	-116.6723
Phidippus adumbratus	Edwards, 2004	United States	California	Riverside	33.43233	-116.18677
Phidippus adumbratus	Edwards, 2004	United States	California	Riverside	33.83996	-117.36554
Phidippus adumbratus	Edwards, 2004	United States	California	San Diego	33.32614	-117.22953
Phidippus adumbratus	Edwards, 2004	United States	California	Orange	33.6435	-117.72823
Phidippus adumbratus	Edwards, 2004	United States	California	Los Angeles	34.32356	-118.52919
Phidippus adumbratus	Edwards, 2004	United States	California	Tulare	36.00103	-119.13369
Phidippus adumbratus	Edwards, 2004	United States	California	Los Angeles	33.37934	-118.42566
Phidippus adumbratus	Edwards, 2004	United States	California	Santa Barbara	33.96913	-120.11831
Phidippus albulatus	Edwards, 2004	México	Veracruz de Ignacio de la Llave	Cosamaloapan de Carpio	18.35639	-96.04423
Phidippus albulatus	Edwards, 2004	México	Guerrero	Iguala de la Independencia	18.08942	-99.64829
Phidippus albulatus	Edwards, 2004	México	Guerrero	Chilpancingo de los Bravo	17.32665	-99.49574

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus amans	Edwards 2004	México	Hidalgo	Zimapán	20.74951	-99.36048
Phidippus amans	Edwards 2004	México	Veracruz de Ignacio de la Llave	Perote	19.60994	-97.37862
Phidippus apacheanus	Edwards 2004	United States	Nevada	Nye	38.27246	-115.05021
Phidippus apacheanus	Edwards 2004	United States	Arizona	Yuma	32.69022	-114.45565
Phidippus apacheanus	Edwards 2004	United States	Arizona	Pima	31.99657	-112.53985
Phidippus apacheanus	Edwards 2004	United States	Arizona	Yavapai	34.44087	-112.44076
Phidippus apacheanus	Edwards 2004	México	Durango	Tlahualilo	25.9519	-103.55542
Phidippus apacheanus	Edwards 2004	México	Sonora	Tubutama	30.93132	-111.39202
Phidippus apacheanus	Edwards 2004	México	Sonora	Imuris	30.87352	-110.52496
Phidippus apacheanus	Edwards 2004	México	Sonora	Nogales	31.23686	-110.89656
Phidippus apacheanus	Edwards 2004	United States	Arizona	Santa Cruz	31.50937	-111.14429
Phidippus apacheanus	Edwards 2004	United States	Arizona	Pima	31.76536	-110.98739
Phidippus apacheanus	Edwards 2004	United States	Arizona	Pima	31.74884	-110.57451
Phidippus apacheanus	Edwards 2004	United States	Arizona	Cochise	31.56717	-109.43494
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Hidalgo	31.47633	-109.03031
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Hidalgo	31.64149	-108.53484
Phidippus apacheanus	Edwards 2004	United States	Arizona	Cochise	32.2443	-109.52577
Phidippus apacheanus	Edwards 2004	United States	Arizona	Cochise	32.21953	-110.28549
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Luna	32.06264	-108.0146
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Doña Ana	32.17824	-106.92458
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Doña Ana	32.35991	-106.70162

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus apacheanus	Edwards 2004	United States	Texas	El Paso	31.93051	-106.52821
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Otero	32.57462	-105.94191
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Otero	32.85538	-106.14835
Phidippus apacheanus	Edwards 2004	United States	Texas	La Salle	28.31362	-99.37699
Phidippus apacheanus	Edwards 2004	United States	Texas	Zavala	28.64393	-99.8064
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Lea	32.70674	-103.30768
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Lea	32.97099	-103.60496
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Lea	33.26827	-103.30768
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Roosevelt	33.89586	-103.5389
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Valencia	34.65557	-106.74291
Phidippus apacheanus	Edwards 2004	United States	New Mexico	Santa Fe	35.87772	-105.85107
Phidippus apacheanus	Edwards 2004	United States	Texas	Montgomery	30.09729	-95.2316
Phidippus apacheanus	Edwards 2004	United States	Texas	Grimes	30.54321	-96.05738
Phidippus apacheanus	Edwards 2004	United States	Texas	Robertson	30.92307	-96.4042
Phidippus apacheanus	Edwards 2004	United States	Texas	Coryell	31.25338	-97.80802
Phidippus apacheanus	Edwards 2004	United States	Texas	Stephens	32.67371	-98.89805
Phidippus apacheanus	Edwards 2004	United States	Texas	Hockley	33.44994	-102.08554
Phidippus apacheanus	Edwards 2004	United States	Texas	Hale	33.92889	-101.83781
Phidippus apacheanus	Edwards 2004	United States	Texas	Smith	32.47552	-95.08296

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus apacheanus	Edwards 2004	United States	Texas	Henderson	32.19476	-95.49585
Phidippus apacheanus	Edwards 2004	United States	Texas	Dallas	32.73977	-96.83361
Phidippus apacheanus	Edwards 2004	United States	Texas	Montague	33.59858	-97.56029
Phidippus apacheanus	Edwards 2004	United States	Texas	Clay	33.79676	-98.40258
Phidippus apacheanus	Edwards 2004	United States	Texas	Archer	33.81328	-98.91456
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Tillman	34.37481	-99.16229
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Caddo	34.87027	-98.45213
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Cotton	34.39132	-98.17136
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Atoka	34.4739	-95.82616
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Pottawatomie	35.03543	-96.80058
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Lincoln	35.53089	-96.76755
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Canadian	35.51438	-97.87408
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Cimarron	36.58788	-102.3663
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Major	36.2906	-98.38606
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Garfield	36.37318	-97.97318
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Rogers	36.25757	-95.79313
Phidippus apacheanus	Edwards 2004	United States	Oklahoma	Muskogee	35.51438	-95.19857
Phidippus apacheanus	Edwards 2004	United States	Arkansas	Benton	36.3897	-94.20764
Phidippus apacheanus	Edwards 2004	United States	Utah	Box Elder	41.6664	-112.44076

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus apacheanus	Edwards 2004	United States	Utah	Cache	41.55905	-111.87923
Phidippus apacheanus	Edwards 2004	United States	Utah	Salt Lake	40.60115	-111.85446
Phidippus apacheanus	Edwards 2004	United States	Utah	Utah	40.24607	-112.12696
Phidippus apacheanus	Edwards 2004	United States	Utah	Utah	40.18001	-111.51589
Phidippus apacheanus	Edwards 2004	United States	Utah	Juab	39.71757	-112.11871
Phidippus apacheanus	Edwards 2004	United States	Utah	Sanpete	39.38726	-111.52415
Phidippus apacheanus	Edwards 2004	United States	Utah	Millard	39.35423	-112.8041
Phidippus apacheanus	Edwards 2004	United States	Utah	Millard	38.66058	-112.91971
Phidippus apacheanus	Edwards 2004	United States	Utah	Tooele	40.58464	-113.26653
Phidippus apacheanus	Edwards 2004	United States	Utah	Sevier	38.64406	-111.87097
Phidippus apacheanus	Edwards 2004	United States	Utah	Emery	38.62755	-111.14429
Phidippus apacheanus	Edwards 2004	United States	Colorado	Mesa	38.78445	-108.55962
Phidippus apacheanus	Edwards 2004	United States	Colorado	Montezuma	37.1907	-108.35317
Phidippus apacheanus	Edwards 2004	United States	Montana	Meagher	46.86053	-111.25164
Phidippus apacheanus	Edwards 2004	United States	Montana	Rosebud	46.19991	-106.39608
Phidippus apacheanus	Edwards 2004	United States	Wyoming	Converse	42.33528	-105.47122
Phidippus apacheanus	Edwards 2004	United States	Colorado	Larimer	40.74979	-105.86759
Phidippus apacheanus	Edwards 2004	United States	Colorado	Weld	40.63418	-104.9262
Phidippus apacheanus	Edwards 2004	United States	Colorado	Gilpin	39.82492	-105.57031

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus apacheanus	Edwards 2004	United States	Colorado	Douglas	39.41203	-105.05833
Phidippus apacheanus	Edwards 2004	United States	Colorado	El Paso	38.5202	-104.82711
Phidippus apacheanus	Edwards 2004	United States	Colorado	Otero	38.07428	-103.90224
Phidippus apacheanus	Edwards 2004	United States	Kansas	Scott	38.61929	-100.92945
Phidippus apacheanus	Edwards 2004	United States	Nebraska	Cheyenne	41.31132	-103.04344
Phidippus apacheanus	Edwards 2004	United States	Nebraska	Valley	41.49299	-98.79895
Phidippus apacheanus	Edwards 2004	United States	Nebraska	Gage	40.1222	-96.73451
Phidippus apacheanus	Edwards 2004	United States	Kansas	Shawnee	39.01566	-95.84268
Phidippus apacheanus	Edwards 2004	United States	Kansas	Wabaunsee	38.81748	-96.07389
Phidippus apacheanus	Edwards 2004	United States	Kansas	Dickinson	38.76793	-97.08134
Phidippus apacheanus	Edwards 2004	United States	Kansas	Harper	37.26502	-98.05575
Phidippus apacheanus	Edwards 2004	United States	Kansas	Elk	37.38063	-96.32163
Phidippus apacheanus	Edwards 2004	United States	Wisconsin	Buffalo	44.11895	-91.66425
Phidippus apacheanus	Edwards 2004	United States	Wisconsin	Sauk	43.49136	-89.84755
Phidippus apacheanus	Edwards 2004	United States	Wisconsin	Iowa	43.12802	-90.07877
Phidippus apacheanus	Edwards 2004	United States	Missouri	Bollinger	37.28153	-90.21089
Phidippus apacheanus	Edwards 2004	United States	Arkansas	Lawrence	35.99333	-90.93757
Phidippus apacheanus	Edwards 2004	United States	Mississippi	Forrest	31.0717	-89.31905
Phidippus apacheanus	Edwards 2004	United States	Alabama	Marengo	32.19476	-87.56841

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus apacheanus	Edwards 2004	United States	Alabama	Barbour	31.83142	-85.48746
Phidippus apacheanus	Edwards 2004	United States	Alabama	Mobile	30.60101	-88.21251
Phidippus apacheanus	Edwards 2004	United States	Florida	Washington	30.41934	-85.9086
Phidippus apacheanus	Edwards 2004	United States	Florida	Wakulla	30.11381	-84.60388
Phidippus apacheanus	Edwards 2004	United States	Florida	Gadsden	30.65882	-84.49653
Phidippus apacheanus	Edwards 2004	United States	Georgia	Mitchell	31.08822	-84.32311
Phidippus apacheanus	Edwards 2004	United States	Georgia	Thomas	30.89829	-84.04235
Phidippus apacheanus	Edwards 2004	United States	Georgia	Dooly	32.15347	-83.95977
Phidippus apacheanus	Edwards 2004	United States	Georgia	Dooly	32.27734	-83.6212
Phidippus apacheanus	Edwards 2004	United States	Georgia	Rockdale	33.53251	-84.05061
Phidippus apacheanus	Edwards 2004	United States	Georgia	Bulloch	32.50855	-81.73018
Phidippus apacheanus	Edwards 2004	United States	Georgia	Burke	33.04531	-81.56502
Phidippus apacheanus	Edwards 2004	United States	Georgia	McIntosh	31.62497	-81.34206
Phidippus apacheanus	Edwards 2004	United States	Florida	Taylor	30.13445	-83.86068
Phidippus apacheanus	Edwards 2004	United States	Florida	Gilchrist	29.60595	-82.85323
Phidippus apacheanus	Edwards 2004	United States	Florida	Levy	29.47383	-82.57247
Phidippus apacheanus	Edwards 2004	United States	Florida	Clay	30.01884	-81.90359
Phidippus apacheanus	Edwards 2004	United States	Florida	Putnam	29.7133	-81.8623
Phidippus apacheanus	Edwards 2004	United States	Florida	Marion	29.39951	-81.76321

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus apacheanus	Edwards 2004	United States	Florida	Marion	29.19307	-82.01094
Phidippus apacheanus	Edwards 2004	United States	Florida	Lake	28.78844	-81.61457
Phidippus apacheanus	Edwards 2004	United States	Florida	Citrus	28.82973	-82.21738
Phidippus apacheanus	Edwards 2004	United States	Florida	Citrus	29.02791	-82.56421
Phidippus apacheanus	Edwards 2004	United States	Maryland	Charles	38.62342	-76.95307
Phidippus apacheanus	Edwards 2004	United States	New York	Suffolk	40.77869	-73.30727
Phidippus ardens	Edwards, 2004	México	Durango	Durango	23.70503	-104.83085
Phidippus ardens	Edwards, 2004	México	Chihuahua	Huejotitán	27.14186	-106.08604
Phidippus ardens	Edwards, 2004	México	Sonora	Nacozari de García	30.57869	-109.52287
Phidippus ardens	Edwards, 2004	United States	California	San Diego	33.0293	-116.42642
Phidippus ardens	Edwards, 2004	United States	California	Riverside	33.74655	-116.78505
Phidippus ardens	Edwards, 2004	United States	California	Riverside	33.8661	-117.17356
Phidippus ardens	Edwards, 2004	United States	Nevada	Nye	36.34659	-115.91837
Phidippus ardens	Edwards, 2004	United States	Nevada	Clark	35.68911	-115.05169
Phidippus ardens	Edwards, 2004	United States	Utah	Washington	37.30293	-113.34822
Phidippus ardens	Edwards, 2004	United States	Arizona	Yavapai	34.40404	-112.33211
Phidippus ardens	Edwards, 2004	United States	Arizona	Gila	34.40404	-111.61486
Phidippus ardens	Edwards, 2004	United States	Arizona	Graham	33.41781	-110.27001
Phidippus ardens	Edwards, 2004	United States	Arizona	Maricopa	33.56724	-112.36199
Phidippus ardens	Edwards, 2004	United States	Arizona	Pinal	32.58102	-111.70451

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus ardens	Edwards, 2004	United States	Arizona	Santa Cruz	31.50514	-110.91255
Phidippus ardens	Edwards, 2004	United States	Arizona	Pima	31.65457	-111.39072
Phidippus ardens	Edwards, 2004	United States	Arizona	Pima	31.83388	-110.97232
Phidippus ardens	Edwards, 2004	United States	Arizona	Cochise	31.92354	-110.28495
Phidippus ardens	Edwards, 2004	United States	Arizona	Cochise	31.53503	-110.06081
Phidippus ardens	Edwards, 2004	United States	Arizona	Cochise	31.6994	-109.74701
Phidippus ardens	Edwards, 2004	United States	New Mexico	Hidalgo	31.54997	-108.76079
Phidippus ardens	Edwards, 2004	United States	New Mexico	Doña Ana	31.98331	-106.83318
Phidippus ardens	Edwards, 2004	United States	New Mexico	Lea	32.68562	-103.74003
Phidippus ardens	Edwards, 2004	United States	New Mexico	Chaves	33.79138	-104.33774
Phidippus ardens	Edwards, 2004	United States	New Mexico	Chaves	33.38793	-104.59177
Phidippus ardens	Edwards, 2004	United States	New Mexico	Lincoln	33.74655	-105.74236
Phidippus ardens	Edwards, 2004	United States	New Mexico	Sandoval	35.22589	-106.32512
Phidippus ardens	Edwards, 2004	United States	New Mexico	McKinley	35.37531	-108.37228
Phidippus ardens	Edwards, 2004	United States	New Mexico	Union	36.31671	-103.6952
Phidippus ardens	Edwards, 2004	United States	New Mexico	Colfax	36.54085	-104.09865
Phidippus ardens	Edwards, 2004	United States	New Mexico	Mora	36.16728	-104.99522
Phidippus ardens	Edwards, 2004	United States	Colorado	Fremont	38.40869	-105.1297
Phidippus ardens	Edwards, 2004	United States	New Mexico	Taos	36.33165	-105.87684

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus ardens	Edwards, 2004	United States	Colorado	Baca	37.31787	-102.78369
Phidippus ardens	Edwards, 2004	United States	Kansas	Grant	37.48224	-101.48367
Phidippus ardens	Edwards, 2004	United States	Kansas	Rush	38.55812	-99.49629
Phidippus ardens	Edwards, 2004	United States	Idaho	Bingham	43.22026	-112.55625
Phidippus ardens	Edwards, 2004	United States	Utah	Salt Lake	40.50068	-111.89877
Phidippus ardens	Edwards, 2004	United States	Colorado	Garfield	39.54434	-108.40217
Phidippus ardens	Edwards, 2004	United States	Colorado	Park	39.39491	-105.74236
Phidippus ardens	Edwards, 2004	United States	Kansas	Sherman	39.54434	-101.70782
Phidippus ardens	Edwards, 2004	United States	Kansas	Logan	39.03629	-101.11011
Phidippus ardens	Edwards, 2004	United States	Washington	Klickitat	46.01455	-120.9989
Phidippus arizonensis	Edwards, 2004	United States	New Mexico	Union	36.70314	-103.60248
Phidippus arizonensis	Edwards, 2004	United States	New Mexico	Guadalupe	35.20009	-105.01963
Phidippus arizonensis	Edwards, 2004	United States	New Mexico	Eddy	32.53756	-104.33253
Phidippus arizonensis	Edwards, 2004	United States	Texas	Archer	33.82589	-98.7498
Phidippus arizonensis	Edwards, 2004	United States	Texas	Ellis	32.23696	-96.86026
Phidippus arizonensis	Edwards, 2004	United States	Texas	Coryell	31.42102	-98.10564
Phidippus arizonensis	Edwards, 2004	United States	Texas	Williamson	30.58361	-97.61178
Phidippus arizonensis	Edwards, 2004	United States	Texas	Hays	30.17564	-98.04122
Phidippus arizonensis	Edwards, 2004	United States	Texas	Guadalupe	29.5959	-98.14858

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus arizonensis	Edwards, 2004	United States	Texas	Frio	29.01615	-98.92158
Phidippus arizonensis	Edwards, 2004	United States	Texas	Live Oak	28.60818	-98.27742
Phidippus arizonensis	Edwards, 2004	United States	Texas	La Salle	28.43641	-98.9001
Phidippus arizonensis	Edwards, 2004	United States	Texas	La Salle	28.41493	-99.2866
Phidippus arizonensis	Edwards, 2004	United States	Texas	Zavala	28.86585	-99.78046
Phidippus arizonensis	Edwards, 2004	United States	Texas	Nueces	27.599	-97.80503
Phidippus arizonensis	Edwards, 2004	United States	Texas	Kleberg	27.45669	-97.48749
Phidippus arizonensis	Edwards, 2004	United States	Texas	Duval	27.29839	-98.38478
Phidippus arizonensis	Edwards, 2004	United States	Texas	Brooks	26.86895	-98.0627
Phidippus arizonensis	Edwards, 2004	United States	Texas	Cameron	26.20332	-97.56884
Phidippus arizonensis	Edwards, 2004	United States	Texas	Hidalgo	26.26773	-98.08417
Phidippus arizonensis	Edwards, 2004	United States	Texas	Starr	26.46098	-98.72833
Phidippus arizonensis	Edwards, 2004	México	Nuevo León	China	25.64504	-99.15777
Phidippus arizonensis	Edwards, 2004	México	Nuevo León	Cadereyta Jiménez	25.68799	-99.93076
Phidippus arizonensis	Edwards, 2004	México	Tamaulipas	Xicoténcatl	22.93957	-98.79274
Phidippus arizonensis	Edwards, 2004	México	Tamaulipas	Llera	23.43342	-98.96452
Phidippus arizonensis	Edwards, 2004	México	Coahuila de Zaragoza	Saltillo	25.25855	-101.00436
Phidippus arizonensis	Edwards, 2004	México	Chihuahua	Valle de Zaragoza	27.34133	-105.83557
Phidippus arizonensis	Edwards, 2004	México	Durango	Ocampo	26.50392	-105.9644
Phidippus arizonensis	Edwards, 2004	México	Jalisco	Ixtlahuacán del Río	20.8031	-103.13009
Phidippus arizonensis	Edwards, 2004	México	Guerrero	Tixtla de Guerrero	17.56082	-99.39396
Phidippus arizonensis	Edwards, 2004	México	Veracruz de Ignacio de la Llave	Ixtaczoquitlán	18.78473	-97.01057
Phidippus arizonensis	Edwards, 2004	México	San Luis Potosí	Tamasopo	22.16657	-99.41007
Phidippus arizonensis	Edwards, 2004	México	San Luis Potosí	Ciudad Valles	22.00553	-98.91084

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus arizonensis	Edwards, 2004	México	San Luis Potosí	Coxcatlán	21.55462	-98.90547
Phidippus arizonensis	Edwards, 2004	México	Hidalgo	Nicolás Flores	20.74405	-99.15777
Phidippus arizonensis	Edwards, 2004	United States	Texas	Brewster	29.45096	-103.62932
Phidippus asotus	Edwards, 2004	United States	California	San Diego	32.8201	-116.64309
Phidippus asotus	Edwards, 2004	United States	California	Riverside	33.53736	-116.70286
Phidippus asotus	Edwards, 2004	United States	California	San Bernardino	34.79255	-115.5971
Phidippus asotus	Edwards, 2004	United States	California	Fresno	37.00407	-118.43622
Phidippus asotus	Edwards, 2004	United States	California	Madera	37.66155	-119.0937
Phidippus asotus	Edwards, 2004	United States	California	Tuolumne	38.05006	-119.63164
Phidippus asotus	Edwards, 2004	United States	Nevada	Douglas	39.06617	-119.60176
Phidippus asotus	Edwards, 2004	United States	California	Placer	39.24549	-120.64775
Phidippus asotus	Edwards, 2004	United States	California	Monterey	36.19717	-121.33511
Phidippus asotus	Edwards, 2004	United States	Nevada	White Pine	39.4248	-114.58099
Phidippus asotus	Edwards, 2004	United States	Utah	Millard	38.67766	-113.05683
Phidippus asotus	Edwards, 2004	United States	Utah	Beaver	38.37881	-113.68443
Phidippus asotus	Edwards, 2004	United States	Utah	Washington	37.3627	-113.41546
Phidippus asotus	Edwards, 2004	United States	Arizona	Yavapai	34.01552	-113.1166
Phidippus asotus	Edwards, 2004	United States	Utah	Tooele	40.7547	-113.31086
Phidippus asotus	Edwards, 2004	United States	Utah	Tooele	40.41102	-112.47406
Phidippus asotus	Edwards, 2004	United States	Utah	Salt Lake	40.81447	-111.90624

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus asotus	Edwards, 2004	United States	Utah	Wasatch	40.41102	-111.4729
Phidippus asotus	Edwards, 2004	United States	Utah	Utah	40.21676	-112.05567
Phidippus asotus	Edwards, 2004	United States	Utah	San Juan	37.37764	-109.85908
Phidippus asotus	Edwards, 2004	United States	Colorado	Jackson	40.84436	-106.61651
Phidippus asotus	Edwards, 2004	United States	Colorado	Fremont	38.30409	-105.64523
Phidippus asotus	Edwards, 2004	United States	New Mexico	Union	36.48108	-103.88199
Phidippus asotus	Edwards, 2004	United States	New Mexico	Santa Fe	35.13623	-105.76477
Phidippus asotus	Edwards, 2004	United States	New Mexico	McKinley	35.73394	-107.49813
Phidippus asotus	Edwards, 2004	United States	New Mexico	San Juan	36.09257	-107.82687
Phidippus asotus	Edwards, 2004	United States	New Mexico	Catron	34.07529	-107.85676
Phidippus asotus	Edwards, 2004	United States	New Mexico	Sierra	33.08907	-106.67628
Phidippus asotus	Edwards, 2004	United States	New Mexico	Otero	32.45401	-106.24294
Phidippus asotus	Edwards, 2004	United States	New Mexico	Doña Ana	32.05055	-106.88548
Phidippus asotus	Edwards, 2004	United States	Arizona	Cochise	32.25975	-109.70966
Phidippus asotus	Edwards, 2004	United States	Arizona	Cochise	31.88618	-109.9338
Phidippus asotus	Edwards, 2004	United States	Arizona	Pima	32.08044	-110.71082
Phidippus asotus	Edwards, 2004	United States	Arizona	Pima	31.99078	-111.24876
Phidippus asotus	Edwards, 2004	United States	Arizona	Santa Cruz	31.63216	-110.84531
Phidippus asotus	Edwards, 2004	United States	Arizona	Santa Cruz	31.51261	-111.06945

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus asotus	Edwards, 2004	United States	Arizona	Cochise	31.49767	-110.41197
Phidippus asotus	Edwards, 2004	United States	Arizona	Cochise	31.5425	-109.60506
Phidippus asotus	Edwards, 2004	México	Sonora	Agua Prieta	30.78042	-109.3062
Phidippus asotus	Edwards, 2004	United States	New Mexico	Hidalgo	31.52756	-108.78321
Phidippus asotus	Edwards, 2004	México	Chihuahua	Ignacio Zaragoza	29.95857	-107.91653
Phidippus asotus	Edwards, 2004	United States	Texas	Jeff Davis	30.72065	-104.09118
Phidippus asotus	Edwards, 2004	United States	Oklahoma	Cimarron	36.80235	-102.79864
Phidippus audax	Edwards, 2004	United States	Washington	Franklin	46.45526	-118.66444
Phidippus audax	Edwards, 2004	United States	Idaho	Washington	44.31578	-116.61798
Phidippus audax	Edwards, 2004	United States	Idaho	Ada	43.57161	-116.05985
Phidippus audax	Edwards, 2004	United States	California	San Bernardino	33.9207	-117.73423
Phidippus audax	Edwards, 2004	United States	California	Riverside	33.85093	-117.24587
Phidippus audax	Edwards, 2004	United States	California	San Diego	33.43234	-117.24587
Phidippus audax	Edwards, 2004	United States	California	Riverside	33.43234	-116.9203
Phidippus audax	Edwards, 2004	United States	California	San Diego	32.75794	-116.64123
Phidippus audax	Edwards, 2004	United States	Arizona	Yavapai	34.19976	-111.78089
Phidippus audax	Edwards, 2004	United States	Arizona	Cochise	31.66494	-109.61816
Phidippus audax	Edwards, 2004	United States	New Mexico	Doña Ana	32.08354	-106.8973
Phidippus audax	Edwards, 2004	United States	New Mexico	Socorro	34.17651	-106.92055
Phidippus audax	Edwards, 2004	United States	New Mexico	Bernalillo	34.89742	-107.01357

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Phidippus audax	Edwards, 2004	United States	New Mexico	Santa Fe	35.59507	-106.10662
Phidippus audax	Edwards, 2004	United States	New Mexico	Lea	32.85096	-103.64157
Phidippus audax	Edwards, 2004	United States	New Mexico	Roosevelt	33.9207	-103.68808
Phidippus audax	Edwards, 2004	United States	Texas	Jeff Davis	30.66497	-104.36248
Phidippus audax	Edwards, 2004	United States	Utah	Piute	38.1764	-112.40878
Phidippus audax	Edwards, 2004	United States	Utah	Utah	39.96706	-111.80415
Phidippus audax	Edwards, 2004	United States	Utah	Utah	40.26937	-112.17623
Phidippus audax	Edwards, 2004	United States	Utah	Utah	40.47867	-111.64136
Phidippus audax	Edwards, 2004	United States	Utah	Davis	40.96703	-112.05996
Phidippus audax	Edwards, 2004	United States	Colorado	Mesa	38.73453	-108.59493
Phidippus audax	Edwards, 2004	United States	Wyoming	Laramie	41.38562	-105.26943
Phidippus audax	Edwards, 2004	United States	Wyoming	Platte	41.99026	-105.08339
Phidippus audax	Edwards, 2004	United States	Nebraska	Dawes	42.54838	-103.47878
Phidippus audax	Edwards, 2004	United States	Colorado	Weld	40.26937	-104.15318
Phidippus audax	Edwards, 2004	United States	Colorado	Larimer	40.26937	-105.595
Phidippus audax	Edwards, 2004	United States	Colorado	Clear Creek	39.82752	-105.66477
Phidippus audax	Edwards, 2004	United States	Colorado	Jefferson	39.45544	-105.15315
Phidippus audax	Edwards, 2004	United States	Colorado	Douglas	39.12987	-104.94386
Phidippus audax	Edwards, 2004	United States	Colorado	Park	39.03685	-105.38571

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Colorado	Pueblo	37.94385	-104.89735
Phidippus audax	Edwards, 2004	United States	Colorado	Las Animas	37.17643	-104.78107
Phidippus audax	Edwards, 2004	United States	Colorado	Baca	37.2927	-102.96716
Phidippus audax	Edwards, 2004	United States	Texas	Terry	33.01374	-102.08347
Phidippus audax	Edwards, 2004	United States	Texas	Randall	35.10671	-101.71138
Phidippus audax	Edwards, 2004	United States	Kansas	Meade	37.45549	-100.43234
Phidippus audax	Edwards, 2004	United States	Kansas	Sheridan	39.54846	-100.36258
Phidippus audax	Edwards, 2004	United States	Nebraska	Frontier	40.50193	-100.2463
Phidippus audax	Edwards, 2004	United States	Nebraska	Custer	41.17633	-99.61841
Phidippus audax	Edwards, 2004	México	San Luis Potosí	Tampacán	21.46171	-98.73471
Phidippus audax	Edwards, 2004	México	San Luis Potosí	Ciudad Valles	21.92682	-98.96727
Phidippus audax	Edwards, 2004	México	San Luis Potosí	Ciudad Valles	22.18263	-98.99052
Phidippus audax	Edwards, 2004	México	San Luis Potosí	Tamasopo	22.06635	-99.47888
Phidippus audax	Edwards, 2004	México	Tamaulipas	El Mante	22.42745	-98.64375
Phidippus audax	Edwards, 2004	México	Tamaulipas	González	22.7175	-98.78122
Phidippus audax	Edwards, 2004	México	Tamaulipas	Xicoténcatl	23.01981	-98.78122
Phidippus audax	Edwards, 2004	México	Tamaulipas	Soto la Marina	23.50817	-98.38589
Phidippus audax	Edwards, 2004	México	Tamaulipas	Casas	23.6477	-98.8975
Phidippus audax	Edwards, 2004	México	Tamaulipas	Jiménez	24.18257	-98.47891
Phidippus audax	Edwards, 2004	México	Tamaulipas	San Fernando	24.39187	-98.0138
Phidippus audax	Edwards, 2004	México	Nuevo León	General Bravo	25.74067	-98.75797
Phidippus audax	Edwards, 2004	México	Tamaulipas	Reynosa	26.15409	-98.37854
Phidippus audax	Edwards, 2004	United States	Texas	Kinney	29.33361	-100.50792
Phidippus audax	Edwards, 2004	United States	Texas	Dimmit	28.51967	-99.97305

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Texas	Willacy	26.51972	-97.88008
Phidippus audax	Edwards, 2004	United States	Texas	Willacy	26.33368	-97.57777
Phidippus audax	Edwards, 2004	United States	Texas	Brooks	27.17087	-98.29868
Phidippus audax	Edwards, 2004	United States	Texas	Kleberg	27.49644	-97.92659
Phidippus audax	Edwards, 2004	United States	Texas	Nueces	27.63597	-97.67079
Phidippus audax	Edwards, 2004	United States	Texas	San Patricio	28.12433	-97.43824
Phidippus audax	Edwards, 2004	United States	Texas	Jim Wells	28.05457	-98.04287
Phidippus audax	Edwards, 2004	United States	Texas	Atascosa	28.8685	-98.601
Phidippus audax	Edwards, 2004	United States	Texas	Uvalde	29.24058	-100.01956
Phidippus audax	Edwards, 2004	United States	Texas	Medina	29.40337	-99.22889
Phidippus audax	Edwards, 2004	United States	Texas	Bandera	29.82197	-99.55446
Phidippus audax	Edwards, 2004	United States	Texas	Bexar	29.65918	-98.53123
Phidippus audax	Edwards, 2004	United States	Texas	Karnes	28.93827	-97.81032
Phidippus audax	Edwards, 2004	United States	Texas	Goliad	28.63595	-97.55451
Phidippus audax	Edwards, 2004	United States	Texas	Lavaca	29.47314	-97.20568
Phidippus audax	Edwards, 2004	United States	Texas	Bastrop	29.91499	-97.20568
Phidippus audax	Edwards, 2004	United States	Texas	Hays	30.10103	-97.83357
Phidippus audax	Edwards, 2004	United States	Texas	Austin	30.03126	-96.41501
Phidippus audax	Edwards, 2004	United States	Texas	Wharton	29.42663	-96.04292

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Texas	Brazoria	29.56616	-95.2755
Phidippus audax	Edwards, 2004	United States	Texas	Harris	29.98475	-95.41503
Phidippus audax	Edwards, 2004	United States	Texas	Liberty	30.03126	-94.85691
Phidippus audax	Edwards, 2004	United States	Texas	Chambers	29.79871	-94.50808
Phidippus audax	Edwards, 2004	United States	Texas	Polk	30.72892	-94.94993
Phidippus audax	Edwards, 2004	United States	Texas	Jasper	31.05449	-93.99646
Phidippus audax	Edwards, 2004	United States	Texas	Rusk	31.9847	-94.67086
Phidippus audax	Edwards, 2004	United States	Texas	Cherokee	32.00796	-95.29875
Phidippus audax	Edwards, 2004	United States	Texas	Rains	32.79863	-95.69409
Phidippus audax	Edwards, 2004	United States	Texas	Hunt	33.3335	-96.18245
Phidippus audax	Edwards, 2004	United States	Texas	Dallas	32.89165	-96.78709
Phidippus audax	Edwards, 2004	United States	Texas	Kaufman	32.54283	-96.39175
Phidippus audax	Edwards, 2004	United States	Texas	Ellis	32.54283	-96.99639
Phidippus audax	Edwards, 2004	United States	Texas	Robertson	31.14751	-96.50803
Phidippus audax	Edwards, 2004	United States	Texas	Falls	31.40332	-96.90337
Phidippus audax	Edwards, 2004	United States	Texas	McLennan	31.28704	-97.34521
Phidippus audax	Edwards, 2004	United States	Texas	San Saba	31.03124	-98.55449
Phidippus audax	Edwards, 2004	United States	Texas	Comanche	31.89168	-98.74053
Phidippus audax	Edwards, 2004	United States	Texas	Jones	32.58934	-99.78701

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Phidippus audax	Edwards, 2004	United States	Texas	Shackelford	32.75212	-99.2754
Phidippus audax	Edwards, 2004	United States	Texas	Archer	33.72884	-98.88006
Phidippus audax	Edwards, 2004	United States	Louisiana	Franklin	32.23469	-91.60117
Phidippus audax	Edwards, 2004	United States	Louisiana	Franklin	31.97889	-91.62443
Phidippus audax	Edwards, 2004	United States	Louisiana	Catahoula	31.58355	-91.85698
Phidippus audax	Edwards, 2004	United States	Louisiana	Avoyelles	30.86264	-92.06628
Phidippus audax	Edwards, 2004	United States	Louisiana	Evangeline	30.83938	-92.53138
Phidippus audax	Edwards, 2004	United States	Louisiana	Vernon	31.02542	-93.2523
Phidippus audax	Edwards, 2004	United States	Louisiana	Calcasieu	30.0487	-93.08951
Phidippus audax	Edwards, 2004	United States	Louisiana	Vermilion	30.0487	-92.48487
Phidippus audax	Edwards, 2004	United States	Louisiana	Vermilion	30.0487	-92.11279
Phidippus audax	Edwards, 2004	United States	Louisiana	Iberville	30.37428	-91.50815
Phidippus audax	Edwards, 2004	United States	Louisiana	East Baton Rouge	30.60683	-91.25235
Phidippus audax	Edwards, 2004	United States	Louisiana	Livingston	30.32777	-90.71748
Phidippus audax	Edwards, 2004	United States	Louisiana	Assumption	29.93243	-91.18258
Phidippus audax	Edwards, 2004	United States	Mississippi	Pike	31.11844	-90.50818
Phidippus audax	Edwards, 2004	United States	Mississippi	Hinds	32.35097	-90.15935
Phidippus audax	Edwards, 2004	United States	Mississippi	Oktibbeha	33.35094	-89.06636
Phidippus audax	Edwards, 2004	United States	Mississippi	Sunflower	33.56024	-90.46167

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Phidippus audax	Edwards, 2004	United States	Mississippi	Lowndes	33.63001	-88.48498
Phidippus audax	Edwards, 2004	United States	Mississippi	Lee	34.23464	-88.55474
Phidippus audax	Edwards, 2004	United States	Tennessee	Rutherford	35.93227	-86.55479
Phidippus audax	Edwards, 2004	United States	Alabama	DeKalb	34.44394	-85.74086
Phidippus audax	Edwards, 2004	United States	Alabama	Shelby	33.51373	-86.53154
Phidippus audax	Edwards, 2004	United States	Alabama	Tuscaloosa	33.32769	-87.41523
Phidippus audax	Edwards, 2004	United States	Alabama	Hale	32.56027	-87.64779
Phidippus audax	Edwards, 2004	United States	Mississippi	Stone	30.74636	-88.95008
Phidippus audax	Edwards, 2004	United States	Mississippi	Harrison	30.38076	-89.32177
Phidippus audax	Edwards, 2004	United States	Florida	Calhoun	30.37428	-85.08971
Phidippus audax	Edwards, 2004	United States	Alabama	Macon	32.51376	-85.55482
Phidippus audax	Edwards, 2004	United States	Alabama	Lee	32.6998	-85.27575
Phidippus audax	Edwards, 2004	United States	Georgia	Monroe	32.88584	-84.06648
Phidippus audax	Edwards, 2004	United States	Georgia	Newton	33.63001	-83.9037
Phidippus audax	Edwards, 2004	United States	Georgia	Jackson	34.11837	-83.64789
Phidippus audax	Edwards, 2004	United States	Georgia	Oconee	33.90907	-83.57812
Phidippus audax	Edwards, 2004	United States	Georgia	Greene	33.53699	-83.04325
Phidippus audax	Edwards, 2004	United States	Georgia	Screven	32.63003	-81.7177
Phidippus audax	Edwards, 2004	United States	Georgia	Thomas	30.88589	-83.81068

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Georgia	Terrell	31.65331	-84.29904
Phidippus audax	Edwards, 2004	United States	Florida	Putnam	29.83941	-81.60143
Phidippus audax	Edwards, 2004	United States	Florida	Volusia	29.30454	-81.55492
Phidippus audax	Edwards, 2004	United States	Florida	Marion	29.23477	-82.11304
Phidippus audax	Edwards, 2004	United States	Florida	Alachua	29.63011	-82.41536
Phidippus audax	Edwards, 2004	United States	Florida	Levy	29.32779	-82.76419
Phidippus audax	Edwards, 2004	United States	Florida	Citrus	28.9092	-82.39211
Phidippus audax	Edwards, 2004	United States	Florida	Taylor	30.11847	-83.71765
Phidippus audax	Edwards, 2004	United States	Florida	Wakulla	30.23475	-84.39206
Phidippus audax	Edwards, 2004	United States	Florida	Lake	28.51386	-81.6712
Phidippus audax	Edwards, 2004	United States	Florida	Miami-Dade	25.53719	-80.50843
Phidippus audax	Edwards, 2004	United States	Florida	Palm Beach	26.35112	-80.69448
Phidippus audax	Edwards, 2004	United States	Florida	Palm Beach	26.39763	-80.3689
Phidippus audax	Edwards, 2004	United States	Florida	Hendry	26.49065	-81.13633
Phidippus audax	Edwards, 2004	United States	Florida	Highlands	27.30459	-81.36888
Phidippus audax	Edwards, 2004	United States	Florida	Manatee	27.28133	-82.11304
Phidippus audax	Edwards, 2004	United States	Florida	Hardee	27.51388	-81.99677
Phidippus audax	Edwards, 2004	United States	Florida	Polk	27.72318	-81.76422
Phidippus audax	Edwards, 2004	United States	Florida	Martin	27.11855	-80.46192

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Phidippus audax	Edwards, 2004	United States	Florida	St. Lucie	27.51388	-80.50843
Phidippus audax	Edwards, 2004	United States	Florida	Monroe	24.68401	-81.36742
Phidippus audax	Edwards, 2004	United States	South Carolina	Laurens	34.6358	-82.06363
Phidippus audax	Edwards, 2004	United States	South Carolina	Anderson	34.61254	-82.55199
Phidippus audax	Edwards, 2004	United States	North Carolina	Pender	34.61254	-77.78467
Phidippus audax	Edwards, 2004	United States	North Carolina	Jones	34.96137	-77.13352
Phidippus audax	Edwards, 2004	United States	North Carolina	Johnston	35.51949	-78.15675
Phidippus audax	Edwards, 2004	United States	North Carolina	Harnett	35.44973	-78.69162
Phidippus audax	Edwards, 2004	United States	North Carolina	Wake	35.65903	-78.85441
Phidippus audax	Edwards, 2004	United States	North Carolina	Moore	35.17067	-79.45904
Phidippus audax	Edwards, 2004	United States	North Carolina	Union	35.00788	-80.34274
Phidippus audax	Edwards, 2004	United States	North Carolina	Davidson	35.7753	-80.38925
Phidippus audax	Edwards, 2004	United States	North Carolina	Rutherford	35.33345	-81.85433
Phidippus audax	Edwards, 2004	United States	North Carolina	Rutherford	35.47298	-82.08688
Phidippus audax	Edwards, 2004	United States	North Carolina	Transylvania	35.28694	-82.64501
Phidippus audax	Edwards, 2004	United States	North Carolina	Jackson	35.17067	-83.17988
Phidippus audax	Edwards, 2004	United States	Tennessee	Cocke	35.86832	-83.22639
Phidippus audax	Edwards, 2004	United States	North Carolina	Pamlico	35.15904	-76.77306
Phidippus audax	Edwards, 2004	United States	North Carolina	Perquimans	36.20596	-76.463

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Virginia	Chesapeake	36.67063	-76.2847
Phidippus audax	Edwards, 2004	United States	Virginia	Brunswick	36.76365	-77.91257
Phidippus audax	Edwards, 2004	United States	Virginia	Cumberland	37.34503	-78.28465
Phidippus audax	Edwards, 2004	United States	Virginia	Campbell	37.13573	-79.00557
Phidippus audax	Edwards, 2004	United States	Virginia	Augusta	38.20547	-78.98231
Phidippus audax	Edwards, 2004	United States	West Virginia	Hampshire	39.25196	-78.74976
Phidippus audax	Edwards, 2004	United States	West Virginia	Pocahontas	38.39151	-80.16833
Phidippus audax	Edwards, 2004	United States	West Virginia	Webster	38.64732	-80.47064
Phidippus audax	Edwards, 2004	United States	West Virginia	Wetzel	39.57753	-80.58692
Phidippus audax	Edwards, 2004	United States	Pennsylvania	Washington	40.04263	-80.09856
Phidippus audax	Edwards, 2004	United States	Pennsylvania	Fayette	40.1124	-79.51718
Phidippus audax	Edwards, 2004	United States	Pennsylvania	Indiana	40.46123	-79.02882
Phidippus audax	Edwards, 2004	United States	Virginia	Rockbridge	37.81013	-79.49393
Phidippus audax	Edwards, 2004	United States	Virginia	Bedford	37.46131	-79.67997
Phidippus audax	Edwards, 2004	United States	Virginia	Franklin	37.18224	-79.8195
Phidippus audax	Edwards, 2004	United States	Virginia	Franklin	36.83341	-80.05205
Phidippus audax	Edwards, 2004	United States	Virginia	Floyd	36.85667	-80.56367
Phidippus audax	Edwards, 2004	United States	Virginia	Pulaski	37.11248	-80.67994
Phidippus audax	Edwards, 2004	United States	Virginia	Wythe	36.83341	-81.28458

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Virginia	Russell	36.90318	-81.93572
Phidippus audax	Edwards, 2004	United States	West Virginia	Mingo	37.53264	-81.9458
Phidippus audax	Edwards, 2004	United States	West Virginia	Wyoming	37.55433	-81.56364
Phidippus audax	Edwards, 2004	United States	West Virginia	Ritchie	39.08917	-81.02877
Phidippus audax	Edwards, 2004	United States	Virginia	Suffolk	36.86323	-76.5244
Phidippus audax	Edwards, 2004	United States	Indiana	Warrick	38.06594	-87.1914
Phidippus audax	Edwards, 2004	United States	Indiana	Tippecanoe	40.43797	-86.74955
Phidippus audax	Edwards, 2004	United States	Indiana	Montgomery	39.9031	-87.00536
Phidippus audax	Edwards, 2004	United States	Indiana	Monroe	39.18219	-86.40073
Phidippus audax	Edwards, 2004	United States	Indiana	Marion	39.87985	-86.00539
Phidippus audax	Edwards, 2004	United States	Indiana	Wayne	39.87985	-85.00541
Phidippus audax	Edwards, 2004	United States	Ohio	Clermont	39.20545	-84.00544
Phidippus audax	Edwards, 2004	United States	Ohio	Clinton	39.53102	-83.88916
Phidippus audax	Edwards, 2004	United States	Ohio	Madison	40.06589	-83.4008
Phidippus audax	Edwards, 2004	United States	Ohio	Hocking	39.46125	-82.49385
Phidippus audax	Edwards, 2004	United States	Ohio	Fairfield	39.85659	-82.54036
Phidippus audax	Edwards, 2004	United States	Ohio	Licking	40.15891	-82.5171
Phidippus audax	Edwards, 2004	United States	Ohio	Wayne	40.92633	-81.72643
Phidippus audax	Edwards, 2004	United States	Ohio	Mahoning	41.01935	-80.67994

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Ohio	Ashtabula	41.55422	-80.959
Phidippus audax	Edwards, 2004	United States	New York	Delaware	42.50769	-74.84288
Phidippus audax	Edwards, 2004	United States	New York	Cattaraugus	42.46118	-78.9358
Phidippus audax	Edwards, 2004	United States	New York	Monroe	42.99605	-77.72653
Phidippus audax	Edwards, 2004	United States	New York	Ontario	42.92628	-77.00562
Phidippus audax	Edwards, 2004	United States	New York	Yates	42.50769	-77.02887
Phidippus audax	Edwards, 2004	United States	New York	Cayuga	42.74024	-76.35447
Phidippus audax	Edwards, 2004	United States	Pennsylvania	Bradford	41.81003	-76.37773
Phidippus audax	Edwards, 2004	United States	New Jersey	Burlington	39.85659	-74.68009
Phidippus audax	Edwards, 2004	United States	New Jersey	Somerset	40.48448	-74.68009
Phidippus audax	Edwards, 2004	United States	New Jersey	Sussex	41.01935	-74.61033
Phidippus audax	Edwards, 2004	United States	Pennsylvania	Bucks	40.43797	-75.3545
Phidippus audax	Edwards, 2004	United States	Pennsylvania	Lackawanna	41.27516	-75.47077
Phidippus audax	Edwards, 2004	United States	Pennsylvania	Lebanon	40.39146	-76.51726
Phidippus audax	Edwards, 2004	United States	Pennsylvania	Northumberland	40.87982	-76.61028
Phidippus audax	Edwards, 2004	United States	Pennsylvania	Perry	40.36821	-77.21491
Phidippus audax	Edwards, 2004	United States	Maryland	Frederick	39.438	-77.33119
Phidippus audax	Edwards, 2004	United States	Maryland	Howard	39.27521	-77.00562
Phidippus audax	Edwards, 2004	United States	Maryland	Howard	39.13568	-76.93585

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Maryland	Harford	39.55427	-76.47075
Phidippus audax	Edwards, 2004	United States	New York	Genesee	42.99605	-78.07536
Phidippus audax	Edwards, 2004	United States	Illinois	Woodford	40.62402	-89.1681
Phidippus audax	Edwards, 2004	United States	Illinois	Kankakee	41.13563	-87.88906
Phidippus audax	Edwards, 2004	United States	Illinois	Cook	41.69376	-87.70302
Phidippus audax	Edwards, 2004	United States	Illinois	Lake	42.22863	-88.0751
Phidippus audax	Edwards, 2004	United States	Illinois	Winnebago	42.27514	-89.00531
Phidippus audax	Edwards, 2004	United States	Illinois	Lee	41.83329	-89.09833
Phidippus audax	Edwards, 2004	United States	Illinois	Tazewell	40.60076	-89.47042
Phidippus audax	Edwards, 2004	United States	Kansas	Bourbon	37.69386	-94.93539
Phidippus audax	Edwards, 2004	United States	Missouri	Vernon	37.99618	-94.12146
Phidippus audax	Edwards, 2004	United States	Missouri	Dade	37.55433	-93.93542
Phidippus audax	Edwards, 2004	United States	Missouri	St. Clair	37.94966	-93.51682
Phidippus audax	Edwards, 2004	United States	Missouri	Moniteau	38.74034	-92.47034
Phidippus audax	Edwards, 2004	United States	Missouri	Callaway	38.64732	-92.00523
Phidippus audax	Edwards, 2004	United States	Missouri	Lincoln	38.94964	-90.88898
Phidippus audax	Edwards, 2004	United States	Missouri	St. Louis	38.57755	-90.65643
Phidippus audax	Edwards, 2004	United States	Missouri	Ripley	36.81016	-90.70294
Phidippus audax	Edwards, 2004	United States	Missouri	Douglas	36.90318	-92.2843

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Missouri	Webster	37.08922	-93.02846
Phidippus audax	Edwards, 2004	United States	Arkansas	Crawford	35.67065	-94.19122
Phidippus audax	Edwards, 2004	United States	Arkansas	Independence	35.78693	-91.4006
Phidippus audax	Edwards, 2004	United States	Arkansas	Cleburne	35.55438	-91.98198
Phidippus audax	Edwards, 2004	United States	Arkansas	Lonoke	34.85672	-92.05174
Phidippus audax	Edwards, 2004	United States	Arkansas	Grant	34.32185	-92.26104
Phidippus audax	Edwards, 2004	United States	Arkansas	Little River	33.71721	-94.05169
Phidippus audax	Edwards, 2004	United States	Kansas	Harper	37.11248	-98.23763
Phidippus audax	Edwards, 2004	United States	Kansas	Pratt	37.69386	-98.74925
Phidippus audax	Edwards, 2004	United States	Kansas	McPherson	38.57755	-97.37719
Phidippus audax	Edwards, 2004	United States	Kansas	Geary	39.15894	-96.86558
Phidippus audax	Edwards, 2004	United States	Kansas	Marshall	39.62404	-96.58651
Phidippus audax	Edwards, 2004	United States	Missouri	Jackson	39.20545	-94.19122
Phidippus audax	Edwards, 2004	United States	Kansas	Leavenworth	39.04266	-95.00516
Phidippus audax	Edwards, 2004	United States	Kansas	Jefferson	39.06591	-95.37724
Phidippus audax	Edwards, 2004	United States	Kansas	Shawnee	39.18219	-95.8656
Phidippus audax	Edwards, 2004	United States	Kansas	Nemaha	39.71706	-96.02839
Phidippus audax	Edwards, 2004	United States	Nebraska	Sarpy	41.15889	-96.30745
Phidippus audax	Edwards, 2004	United States	Nebraska	Saunders	41.06586	-96.70279

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Iowa	Sioux	42.92628	-96.21443
Phidippus audax	Edwards, 2004	United States	Iowa	Palo Alto	43.15883	-94.77261
Phidippus audax	Edwards, 2004	United States	Iowa	Polk	41.64724	-93.74938
Phidippus audax	Edwards, 2004	United States	Iowa	Hardin	42.29839	-93.44706
Phidippus audax	Edwards, 2004	United States	Iowa	Franklin	42.71699	-93.02846
Phidippus audax	Edwards, 2004	United States	Illinois	Cass	39.87985	-90.12156
Phidippus audax	Edwards, 2004	United States	Illinois	Macoupin	39.32172	-89.98203
Phidippus audax	Edwards, 2004	United States	Illinois	Bond	38.87987	-89.58669
Phidippus audax	Edwards, 2004	United States	Illinois	Clinton	38.64732	-89.4239
Phidippus audax	Edwards, 2004	United States	Illinois	Perry	38.18222	-89.28437
Phidippus audax	Edwards, 2004	United States	Illinois	Clay	38.62407	-88.30765
Phidippus audax	Edwards, 2004	United States	New York	Suffolk	40.83913	-72.81968
Phidippus audax	Edwards, 2004	United States	New York	Suffolk	40.77517	-73.31966
Phidippus audax	Edwards, 2004	United States	Connecticut	New Haven	41.47864	-73.16851
Phidippus audax	Edwards, 2004	United States	Connecticut	New Haven	41.57167	-72.98246
Phidippus audax	Edwards, 2004	United States	Connecticut	Middlesex	41.36628	-72.39184
Phidippus audax	Edwards, 2004	United States	Connecticut	Windham	41.7112	-72.14528
Phidippus audax	Edwards, 2004	United States	Massachusetts	Suffolk	42.35944	-71.04869
Phidippus audax	Edwards, 2004	United States	Massachusetts	Middlesex	42.40885	-71.54064

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Massachusetts	Worcester	42.36234	-71.86621
Phidippus audax	Edwards, 2004	United States	Massachusetts	Hampshire	42.31583	-72.51736
Phidippus audax	Edwards, 2004	United States	New Hampshire	Merrimack	43.19953	-71.58715
Phidippus audax	Edwards, 2004	United States	New York	Greene	42.40885	-73.81965
Phidippus audax	Edwards, 2004	United States	New York	Essex	43.80417	-74.00569
Phidippus audax	Edwards, 2004	United States	New York	Hamilton	43.47859	-74.28476
Phidippus audax	Edwards, 2004	Canadá	Ontario	Ottawa	45.10646	-75.72658
Phidippus audax	Edwards, 2004	Canadá	Ontario	Lennox and Addington	44.19829	-76.98598
Phidippus audax	Edwards, 2004	Canadá	Ontario	Haliburton	44.96693	-78.14512
Phidippus audax	Edwards, 2004	Canadá	Ontario	Peel	43.75766	-79.91252
Phidippus audax	Edwards, 2004	Canadá	Ontario	Wellington	43.75766	-80.7032
Phidippus audax	Edwards, 2004	Canadá	Ontario	Perth	43.33906	-80.88924
Phidippus audax	Edwards, 2004	United States	Michigan	Wayne	42.22281	-83.49382
Phidippus audax	Edwards, 2004	United States	Michigan	Tuscola	43.29255	-83.58684
Phidippus audax	Edwards, 2004	United States	Michigan	Ingham	42.73443	-84.19148
Phidippus audax	Edwards, 2004	United States	Michigan	Ingham	42.50187	-84.33101
Phidippus audax	Edwards, 2004	United States	Michigan	Calhoun	42.22281	-85.21471
Phidippus audax	Edwards, 2004	United States	Michigan	Allegan	42.64141	-85.72632
Phidippus audax	Edwards, 2004	United States	Michigan	Isabella	43.66464	-84.79612
Phidippus audax	Edwards, 2004	United States	Michigan	Gladwin	43.85068	-84.47054
Phidippus audax	Edwards, 2004	United States	Michigan	Roscommon	44.17625	-84.84263

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Michigan	Oscoda	44.64135	-84.23799
Phidippus audax	Edwards, 2004	United States	Michigan	Otsego	44.96693	-84.51705
Phidippus audax	Edwards, 2004	United States	Oklahoma	Cherokee	35.82181	-95.0226
Phidippus audax	Edwards, 2004	United States	Oklahoma	Muskogee	35.7753	-95.72026
Phidippus audax	Edwards, 2004	United States	Oklahoma	Logan	35.93809	-97.58067
Phidippus audax	Edwards, 2004	United States	Oklahoma	Lincoln	35.82181	-97.13882
Phidippus audax	Edwards, 2004	United States	Oklahoma	Creek	35.79856	-96.53419
Phidippus audax	Edwards, 2004	United States	Oklahoma	Pittsburg	34.75207	-95.99932
Phidippus audax	Edwards, 2004	United States	Oklahoma	Garvin	34.68231	-97.20859
Phidippus audax	Edwards, 2004	United States	Oklahoma	McClain	35.05439	-97.51091
Phidippus audax	Edwards, 2004	United States	Oklahoma	Comanche	34.84509	-98.20856
Phidippus audax	Edwards, 2004	United States	Oklahoma	Comanche	34.6358	-98.69692
Phidippus audax	Edwards, 2004	United States	Oklahoma	Tillman	34.49626	-99.13877
Phidippus audax	Edwards, 2004	United States	Michigan	Oakland	42.82163	-83.53452
Phidippus audax	Edwards, 2004	United States	Wisconsin	Milwaukee	43.12395	-88.02278
Phidippus audax	Edwards, 2004	United States	Wisconsin	Sheboygan	43.61231	-87.92976
Phidippus audax	Edwards, 2004	United States	Wisconsin	Dodge	43.3565	-88.46463
Phidippus audax	Edwards, 2004	United States	Wisconsin	Dane	43.26348	-89.4646
Phidippus audax	Edwards, 2004	United States	Wisconsin	Sauk	43.26348	-89.90645

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus audax	Edwards, 2004	United States	Wisconsin	Richland	43.24023	-90.32504
Phidippus audax	Edwards, 2004	United States	Iowa	Allamakee	43.14721	-91.37153
Phidippus audax	Edwards, 2004	United States	Wisconsin	Crawford	43.3565	-90.92968
Phidippus audax	Edwards, 2004	United States	Wisconsin	La Crosse	43.82161	-90.97619
Phidippus audax	Edwards, 2004	United States	Wisconsin	Jackson	44.14718	-91.11572
Phidippus audax	Edwards, 2004	United States	Minnesota	Winona	44.10067	-92.04593
Phidippus audax	Edwards, 2004	United States	Minnesota	Freeborn	43.84486	-93.4645
Phidippus audax	Edwards, 2004	United States	South Dakota	Meade	44.60682	-102.41013
Phidippus audax	Edwards, 2004	United States	Minnesota	Ramsey	44.99684	-93.04963
Phidippus audax	Edwards, 2004	United States	Minnesota	Anoka	45.28936	-93.24464
Phidippus audax	Edwards, 2004	United States	Wisconsin	Menominee	44.99684	-88.56439
Phidippus audax	Edwards, 2004	United States	Wisconsin	Taylor	45.09435	-90.22198
Phidippus audax	Edwards, 2004	United States	Wisconsin	Washburn	45.72813	-91.58705
Phidippus audax	Edwards, 2004	México	Veracruz de Ignacio de la Llave	Jamapa	18.95356	-96.29254
Phidippus aureus	Edwards, 2004	United States	California	Inyo	35.93504	-117.13574
Phidippus aureus	Edwards, 2004	United States	California	San Bernardino	35.24655	-117.25548
Phidippus aureus	Edwards, 2004	United States	California	San Bernardino	34.19885	-117.25548
Phidippus aureus	Edwards, 2004	United States	California	Los Angeles	34.37846	-117.91403
Phidippus aureus	Edwards, 2004	United States	California	Riverside	33.86958	-116.35745
Phidippus bidentatus	Edwards, 2004	México	Morelos	Ayala	18.69677	-99.04808

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus bidentatus	Edwards, 2004	México	Chiapas	Venustiano Carranza	16.30087	-92.74072
Phidippus bidentatus	Edwards, 2004	México	Oaxaca	San Pedro Mártir Quiechapa	16.4036	-96.26789
Phidippus bidentatus	Edwards, 2004	México	Veracruz de Ignacio de la Llave	Huatusco	19.10445	-96.94693
Phidippus bidentatus	Edwards, 2004	México	Veracruz de Ignacio de la Llave	Texhuacán	18.5936	-97.01504
Phidippus boei	Edwards, 2004	United States	California	San Diego	33.41814	-116.58173
Phidippus boei	Edwards, 2004	United States	California	Riverside	33.78056	-116.08751
Phidippus boei	Edwards, 2004	United States	California	Imperial	32.92392	-115.79098
Phidippus boei	Edwards, 2004	México	Baja California	Tecate	32.474	-116.1542
Phidippus boei	Edwards, 2004	México	Baja California	Mexicali	32.1535	-115.71562
Phidippus boei	Edwards, 2004	México	Baja California	Ensenada	31.51251	-116.13733
Phidippus boei	Edwards, 2004	México	Baja California	Ensenada	29.78022	-115.54234
Phidippus boei	Edwards, 2004	México	Baja California	Ensenada	29.73509	-115.15875
Phidippus boei	Edwards, 2004	México	Baja California	Ensenada	29.40791	-114.8767
Phidippus boei	Edwards, 2004	México	Baja California Sur	Comondú	25.31078	-111.2738
Phidippus boei	Edwards, 2004	México	Baja California Sur	Loreto	26.10671	-111.51662
Phidippus borealis	Edwards, 2004	United States	Alaska	Fairbanks North Star	64.67818	-146.26999
Phidippus borealis	Edwards, 2004	Canadá	Yukon	Yukon	68.43574	-139.31155
Phidippus borealis	Edwards, 2004	Canadá	Northwest Territories / Territoires du Nord-Ouest	Region 2	65.5132	-128.24762
Phidippus borealis	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Kitimat-Stikine	54.93636	-128.10845
Phidippus borealis	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Northern Rockies	58.62433	-122.61128
Phidippus borealis	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Northern Rockies	58.7635	-121.70668
Phidippus borealis	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Fraser-Fort George	53.23154	-120.07145
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 19	55.84096	-117.70558
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 16	57.71974	-111.23423
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 17	55.1799	-114.60907
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 13	54.69281	-112.90425
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 1	50.58733	-110.4688

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 1	49.47398	-110.50359
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 3	49.3696	-114.26115
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 15	50.83088	-114.60907
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 9	51.87464	-115.23533
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 14	53.02279	-116.87057
Phidippus borealis	Edwards, 2004	Canadá	Alberta	Division No. 11	53.54467	-113.49572
Phidippus borealis	Edwards, 2004	Canadá	Saskatchewan	Division No. 18	59.6681	-106.01539
Phidippus borealis	Edwards, 2004	Canadá	Saskatchewan	Division No. 18	57.92849	-108.27689
Phidippus borealis	Edwards, 2004	Canadá	Saskatchewan	Division No. 11	52.15298	-106.85041
Phidippus borealis	Edwards, 2004	United States	Montana	Flathead	48.15188	-114.78303
Phidippus borealis	Edwards, 2004	United States	Montana	Lake	47.80395	-114.4699
Phidippus borealis	Edwards, 2004	United States	Montana	Ravalli	45.92517	-113.70447
Phidippus borealis	Edwards, 2004	United States	Montana	Beaverhead	45.22933	-112.55633
Phidippus borealis	Edwards, 2004	United States	Wyoming	Teton	44.32473	-110.60797
Phidippus borealis	Edwards, 2004	United States	Wyoming	Teton	43.94202	-110.50359
Phidippus borealis	Edwards, 2004	United States	Wyoming	Teton	43.94202	-110.85151
Phidippus borealis	Edwards, 2004	United States	Wyoming	Carbon	41.26302	-106.91999
Phidippus borealis	Edwards, 2004	United States	Colorado	Hinsdale	37.99255	-107.37229
Phidippus borealis	Edwards, 2004	United States	Colorado	Larimer	40.39321	-105.00642
Phidippus borealis	Edwards, 2004	United States	South Dakota	Custer	43.62889	-103.47556
Phidippus borealis	Edwards, 2004	United States	Minnesota	Hennepin	45.02058	-93.28144
Phidippus borealis	Edwards, 2004	United States	Minnesota	St. Louis	47.49082	-92.65518
Phidippus borealis	Edwards, 2004	Canadá	Manitoba	Division No. 1	49.57836	-95.54293
Phidippus borealis	Edwards, 2004	Canadá	Ontario	Thunder Bay	48.28235	-90.44587

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus borealis	Edwards, 2004	United States	Minnesota	Lake	47.42124	-91.28958
Phidippus borealis	Edwards, 2004	United States	Wisconsin	Ashland	45.98606	-90.92427
Phidippus borealis	Edwards, 2004	United States	Wisconsin	Langlade	45.32501	-88.84543
Phidippus borealis	Edwards, 2004	United States	Wisconsin	Winnebago	44.13337	-88.42792
Phidippus borealis	Edwards, 2004	United States	Michigan	Newaygo	43.44623	-85.69673
Phidippus borealis	Edwards, 2004	United States	Michigan	Cheboygan	45.29022	-84.53119
Phidippus borealis	Edwards, 2004	United States	Michigan	Montmorency	44.97709	-83.93973
Phidippus borealis	Edwards, 2004	United States	Michigan	Delta	45.82949	-87.24499
Phidippus borealis	Edwards, 2004	Canadá	Ontario	Thunder Bay	49.20434	-88.5149
Phidippus borealis	Edwards, 2004	Canadá	Ontario	Thunder Bay	49.16955	-86.54914
Phidippus borealis	Edwards, 2004	Canadá	Ontario	Timiskaming	47.72567	-80.84322
Phidippus borealis	Edwards, 2004	Canadá	Ontario	Lennox and Addington	44.95969	-77.25962
Phidippus borealis	Edwards, 2004	Canadá	Quebec / Québec	Pontiac	46.16002	-76.63336
Phidippus borealis	Edwards, 2004	United States	New York	Lewis	43.84634	-75.38084
Phidippus borealis	Edwards, 2004	United States	New York	Franklin	44.42041	-74.18051
Phidippus borealis	Edwards, 2004	United States	New Hampshire	Coos	44.75963	-71.47541
Phidippus borealis	Edwards, 2004	United States	New Hampshire	Coos	44.65526	-71.12749
Phidippus borealis	Edwards, 2004	United States	New Hampshire	Grafton	43.89853	-71.58849
Phidippus borealis	Edwards, 2004	United States	New Hampshire	Hillsborough	42.78518	-71.69286
Phidippus borealis	Edwards, 2004	United States	New York	Essex	44.26384	-73.62383
Phidippus borealis	Edwards, 2004	Canadá	Quebec / Québec	Lotbinière	46.47315	-71.42322

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus californicus	Edwards 2004	United States	California	Alpine	38.56262	-120.03767
Phidippus californicus	Edwards 2004	United States	Oregon	Harney	42.36801	-118.48596
Phidippus californicus	Edwards 2004	United States	California	Alameda	37.60203	-121.66328
Phidippus californicus	Edwards 2004	United States	California	Monterey	36.51214	-121.34924
Phidippus californicus	Edwards 2004	United States	California	Monterey	36.05031	-121.23841
Phidippus californicus	Edwards 2004	United States	California	Monterey	35.88406	-120.73964
Phidippus californicus	Edwards 2004	United States	California	Santa Barbara	34.64638	-120.20393
Phidippus californicus	Edwards 2004	United States	Nevada	Clark	35.77322	-114.95765
Phidippus californicus	Edwards 2004	United States	Arizona	Yavapai	34.75722	-111.74339
Phidippus californicus	Edwards 2004	United States	Utah	Washington	37.25105	-113.51678
Phidippus californicus	Edwards 2004	United States	Arizona	Maricopa	33.51954	-113.16579
Phidippus californicus	Edwards 2004	United States	California	San Bernardino	34.2954	-114.23721
Phidippus californicus	Edwards 2004	México	Baja California	Ensenada	31.69997	-116.19533
Phidippus californicus	Edwards 2004	United States	California	Imperial	32.82681	-115.81664
Phidippus californicus	Edwards 2004	United States	California	San Diego	32.78063	-116.64792
Phidippus californicus	Edwards 2004	United States	California	San Diego	33.15932	-116.20457
Phidippus californicus	Edwards 2004	United States	California	San Diego	33.28863	-116.50937
Phidippus californicus	Edwards 2004	United States	California	Riverside	33.60267	-116.76799
Phidippus californicus	Edwards 2004	United States	California	Riverside	33.83358	-117.1005

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus californicus	Edwards 2004	United States	California	San Diego	33.33481	-117.13744
Phidippus californicus	Edwards 2004	United States	California	Imperial	33.27016	-114.93918
Phidippus californicus	Edwards 2004	United States	California	Imperial	32.87299	-115.04078
Phidippus californicus	Edwards 2004	United States	Arizona	Yuma	32.63285	-114.56049
Phidippus californicus	Edwards 2004	México	Chihuahua	Chihuahua	29.21538	-106.49711
Phidippus californicus	Edwards 2004	México	Chihuahua	Namiquipa	29.51094	-107.30991
Phidippus californicus	Edwards 2004	México	Sonora	Magdalena	30.63778	-110.93058
Phidippus californicus	Edwards 2004	México	Sonora	Nogales	31.21968	-110.90287
Phidippus californicus	Edwards 2004	México	Sonora	Sáric	31.29357	-111.32775
Phidippus californicus	Edwards 2004	United States	Arizona	Pima	31.83852	-111.1892
Phidippus californicus	Edwards 2004	United States	Arizona	Cochise	31.9863	-110.21014
Phidippus californicus	Edwards 2004	United States	Arizona	Graham	32.57743	-110.04389
Phidippus californicus	Edwards 2004	United States	Arizona	Cochise	32.04172	-109.51741
Phidippus californicus	Edwards 2004	United States	New Mexico	Hidalgo	31.61684	-108.79697
Phidippus californicus	Edwards 2004	México	Sonora	Naco	31.19197	-110.04389
Phidippus californicus	Edwards 2004	United States	New Mexico	Luna	32.10637	-107.74402
Phidippus californicus	Edwards 2004	United States	New Mexico	Doña Ana	31.94012	-106.82038
Phidippus californicus	Edwards 2004	United States	Texas	Reeves	31.35822	-103.57841
Phidippus californicus	Edwards 2004	United States	Texas	Brewster	29.30774	-103.59688
Phidippus californicus	Edwards 2004	México	Sonora	Alamos	26.46293	-108.89857
Phidippus californicus	Edwards 2004	United States	Texas	Jim Hogg	27.10948	-98.51686
Phidippus californicus	Edwards 2004	México	Coahuila de Zaragoza	Saltillo	25.04053	-101.19542
Phidippus californicus	Edwards 2004	México	Sinaloa	Escuinapa	22.87921	-105.81362

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus californicus	Edwards 2004	México	Sinaloa	Culiacán	24.32009	-106.95893
Phidippus californicus	Edwards 2004	México	Baja California Sur	Comondú	25.31762	-111.96506
Phidippus californicus	Edwards 2004	México	Baja California	Ensenada	31.07636	-116.27611
Phidippus californicus	Edwards 2004	México	Baja California	Ensenada	32.0952	-116.58623
Phidippus californicus	Edwards 2004	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus californicus	Edwards 2004	México	Baja California	Ensenada	31.89583	-116.56222
Phidippus californicus	Edwards 2004	México	Baja California	Ensenada	31.88369	-116.61411
Phidippus cardinalis	Edwards, 2004	United States	Texas	Grayson	33.50827	-96.51874
Phidippus cardinalis	Edwards, 2004	United States	Texas	Rusk	32.03829	-94.62877
Phidippus cardinalis	Edwards, 2004	United States	Texas	Chambers	29.88583	-94.41877
Phidippus cardinalis	Edwards, 2004	United States	Texas	Brazos	30.51582	-96.30874
Phidippus cardinalis	Edwards, 2004	United States	Texas	Bell	31.19831	-97.62122
Phidippus cardinalis	Edwards, 2004	United States	Texas	Travis	30.25333	-97.72621
Phidippus cardinalis	Edwards, 2004	United States	Texas	Kleberg	27.36588	-97.83121
Phidippus cardinalis	Edwards, 2004	United States	Texas	Cameron	26.2634	-97.67371
Phidippus cardinalis	Edwards, 2004	United States	Texas	Atascosa	29.15085	-98.72369
Phidippus cardinalis	Edwards, 2004	United States	Texas	Zavala	28.99335	-100.08867
Phidippus cardinalis	Edwards, 2004	United States	Texas	Edwards	30.20083	-100.03617
Phidippus cardinalis	Edwards, 2004	United States	Texas	Wilbarger	33.98076	-99.14369
Phidippus cardinalis	Edwards, 2004	United States	Texas	Knox	33.77076	-99.77368
Phidippus cardinalis	Edwards, 2004	United States	Oklahoma	Kiowa	34.66325	-99.09119
Phidippus cardinalis	Edwards, 2004	United States	Oklahoma	Roger Mills	35.45073	-99.66868

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus cardinalis	Edwards, 2004	United States	Oklahoma	Kingfisher	35.87072	-97.98871
Phidippus cardinalis	Edwards, 2004	United States	Oklahoma	Pottawatomie	35.34573	-96.93873
Phidippus cardinalis	Edwards, 2004	United States	Oklahoma	Lincoln	35.71323	-96.99123
Phidippus cardinalis	Edwards, 2004	United States	Oklahoma	Osage	36.34321	-96.36124
Phidippus cardinalis	Edwards, 2004	United States	Oklahoma	Cherokee	35.97572	-95.04876
Phidippus cardinalis	Edwards, 2004	United States	Missouri	Newton	36.76321	-94.10378
Phidippus cardinalis	Edwards, 2004	United States	Missouri	Webster	37.39319	-93.0538
Phidippus cardinalis	Edwards, 2004	United States	Missouri	Howard	39.07316	-92.58131
Phidippus cardinalis	Edwards, 2004	United States	Kansas	Jackson	39.23066	-95.73125
Phidippus cardinalis	Edwards, 2004	United States	Kansas	Wallace	38.91567	-101.82114
Phidippus cardinalis	Edwards, 2004	United States	Colorado	Custer	38.12818	-105.39107
Phidippus cardinalis	Edwards, 2004	United States	New Mexico	Doña Ana	32.30079	-106.65105
Phidippus cardinalis	Edwards, 2004	México	Oaxaca	San Gabriel Mixtepec	16.03921	-97.09623
Phidippus cardinalis	Edwards, 2004	United States	Texas	Palo Pinto	32.52391	-98.2512
Phidippus cardinalis	Edwards, 2004	United States	Texas	Eastland	32.44516	-99.06494
Phidippus cardinalis	Edwards, 2004	United States	Texas	Runnels	31.97267	-99.72118
Phidippus cardinalis	Edwards, 2004	United States	Texas	Ellis	32.31391	-96.91248
Phidippus cardinalis	Edwards, 2004	United States	Texas	Dallas	32.68141	-96.70248
Phidippus cardinalis	Edwards, 2004	United States	Louisiana	Natchitoches	31.47393	-92.92255

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus cardinalis	Edwards, 2004	United States	Louisiana	Catahoula	31.55268	-91.84632
Phidippus cardinalis	Edwards, 2004	United States	Louisiana	Ascension	30.1877	-91.00634
Phidippus cardinalis	Edwards, 2004	United States	Mississippi	Perry	30.97519	-88.90638
Phidippus cardinalis	Edwards, 2004	United States	Mississippi	Wayne	31.50018	-88.74888
Phidippus cardinalis	Edwards, 2004	United States	Mississippi	Noxubee	33.28515	-88.77513
Phidippus cardinalis	Edwards, 2004	United States	Arkansas	Ashley	33.33764	-91.71508
Phidippus cardinalis	Edwards, 2004	United States	Arkansas	Lawrence	35.98885	-91.13759
Phidippus cardinalis	Edwards, 2004	United States	Arkansas	Crawford	35.72635	-94.02503
Phidippus cardinalis	Edwards, 2004	United States	Arkansas	Logan	35.22761	-93.47379
Phidippus cardinalis	Edwards, 2004	United States	Arkansas	Clark	34.02013	-93.23755
Phidippus cardinalis	Edwards, 2004	United States	Arkansas	Calhoun	33.41639	-92.34506
Phidippus cardinalis	Edwards, 2004	United States	Tennessee	Meigs	35.67385	-84.71302
Phidippus cardinalis	Edwards, 2004	United States	Georgia	Newton	33.46889	-83.84678
Phidippus cardinalis	Edwards, 2004	United States	Georgia	Clarke	33.96763	-83.42679
Phidippus cardinalis	Edwards, 2004	United States	Georgia	Hancock	33.33764	-83.03305
Phidippus cardinalis	Edwards, 2004	United States	Georgia	Wilkinson	32.91765	-83.1118
Phidippus cardinalis	Edwards, 2004	United States	Georgia	Thomas	31.02769	-83.84678
Phidippus cardinalis	Edwards, 2004	United States	Florida	Madison	30.31895	-83.61054
Phidippus cardinalis	Edwards, 2004	United States	Florida	Calhoun	30.4502	-85.00176

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus cardinalis	Edwards, 2004	United States	Florida	Bay	30.3977	-85.84175
Phidippus cardinalis	Edwards, 2004	United States	Florida	Okaloosa	30.58145	-86.44549
Phidippus cardinalis	Edwards, 2004	United States	Alabama	Baldwin	30.68644	-87.60046
Phidippus cardinalis	Edwards, 2004	United States	Alabama	Lee	32.68141	-85.36926
Phidippus cardinalis	Edwards, 2004	United States	Alabama	Shelby	33.41639	-86.39299
Phidippus cardinalis	Edwards, 2004	United States	Florida	Miami-Dade	25.67279	-80.36216
Phidippus cardinalis	Edwards, 2004	United States	Florida	St. Lucie	27.44463	-80.46716
Phidippus cardinalis	Edwards, 2004	United States	Florida	Okeechobee	27.20838	-80.93965
Phidippus cardinalis	Edwards, 2004	United States	Florida	Highlands	27.35276	-81.41214
Phidippus cardinalis	Edwards, 2004	United States	Florida	Lake	28.57336	-81.67464
Phidippus cardinalis	Edwards, 2004	United States	Florida	Seminole	28.79648	-81.34652
Phidippus cardinalis	Edwards, 2004	United States	Florida	Marion	29.19022	-82.09463
Phidippus cardinalis	Edwards, 2004	United States	Florida	Marion	29.37397	-81.85838
Phidippus cardinalis	Edwards, 2004	United States	Florida	St. Johns	29.83333	-81.56964
Phidippus cardinalis	Edwards, 2004	United States	Florida	Duval	30.22708	-81.51714
Phidippus cardinalis	Edwards, 2004	United States	Florida	Flagler	29.42647	-81.28089
Phidippus cardinalis	Edwards, 2004	United States	Florida	Volusia	29.13772	-81.32027
Phidippus cardinalis	Edwards, 2004	United States	Florida	Lake	28.94085	-81.67464
Phidippus cardinalis	Edwards, 2004	United States	Illinois	Franklin	37.86569	-88.98513

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus cardinalis	Edwards, 2004	United States	Illinois	Pope	37.41944	-88.69638
Phidippus cardinalis	Edwards, 2004	United States	Ohio	Guernsey	39.9919	-81.71401
Phidippus cardinalis	Edwards, 2004	United States	Ohio	Coshocton	40.22814	-81.84526
Phidippus cardinalis	Edwards, 2004	United States	Pennsylvania	Indiana	40.62188	-79.11531
Phidippus cardinalis	Edwards, 2004	United States	Pennsylvania	Lancaster	39.86065	-76.01787
Phidippus cardinalis	Edwards, 2004	United States	Virginia	Fairfax	38.70567	-77.22534
Phidippus cardinalis	Edwards, 2004	United States	Virginia	Stafford	38.44317	-77.46159
Phidippus cardinalis	Edwards, 2004	United States	Virginia	Spotsylvania	38.04943	-77.61909
Phidippus cardinalis	Edwards, 2004	United States	Virginia	Tazewell	37.05195	-81.76651
Phidippus cardinalis	Edwards, 2004	United States	Virginia	Carroll	36.8682	-80.71653
Phidippus cardinalis	Edwards, 2004	United States	North Carolina	Rockingham	36.44821	-79.90279
Phidippus cardinalis	Edwards, 2004	United States	North Carolina	Harnett	35.50323	-78.69532
Phidippus cardinalis	Edwards, 2004	United States	North Carolina	Cumberland	34.87324	-78.80031
Phidippus cardinalis	Edwards, 2004	United States	North Carolina	Mecklenburg	35.31948	-80.74278
Phidippus cardinalis	Edwards, 2004	United States	Connecticut	Litchfield	41.84249	-73.16979
Phidippus cardinalis	Edwards, 2004	United States	Connecticut	Windham	41.86874	-72.06731
Phidippus cardinalis	Edwards, 2004	United States	Connecticut	New London	41.47499	-72.17231
Phidippus cardinalis	Edwards, 2004	United States	Connecticut	New Haven	41.42249	-72.88105
Phidippus cardinalis	Edwards, 2004	United States	Connecticut	Fairfield	41.3175	-73.24854

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus cardinalis	Edwards, 2004	United States	New York	Westchester	41.1075	-73.77353
Phidippus cardinalis	Edwards, 2004	United States	New York	Nassau	40.68751	-73.72103
Phidippus cardinalis	Edwards, 2004	United States	New York	Suffolk	40.81876	-73.0648
Phidippus carneus	Edwards, 2004`	México	Baja California	Ensenada	28.37031	-113.95663
Phidippus carneus	Edwards, 2004`	México	Sonora	Caborca	30.58418	-112.91125
Phidippus carneus	Edwards, 2004`	México	Sonora	Navojoa	26.92088	-109.38487
Phidippus carneus	Edwards, 2004`	México	Sonora	Alamos	27.28745	-108.90673
Phidippus carneus	Edwards, 2004`	México	Sonora	Banámichi	30.14033	-110.48458
Phidippus carneus	Edwards, 2004`	México	Sonora	Cumpas	30.15627	-109.95863
Phidippus carneus	Edwards, 2004`	México	Sonora	Bacoachi	30.60253	-109.863
Phidippus carneus	Edwards, 2004`	México	Sonora	Arizpe	30.7141	-110.30926
Phidippus carneus	Edwards, 2004`	México	Sonora	Imuris	30.74597	-110.62802
Phidippus carneus	Edwards, 2004`	México	Sonora	Santa Cruz	31.16036	-110.75552
Phidippus carneus	Edwards, 2004`	México	Sonora	Cananea	31.11254	-110.24551
Phidippus carneus	Edwards, 2004`	México	Sonora	Naco	31.11254	-109.84707
Phidippus carneus	Edwards, 2004`	México	Sonora	Fronteras	31.00098	-109.41674
Phidippus carneus	Edwards, 2004`	United States	Arizona	Cochise	31.52693	-109.30518
Phidippus carneus	Edwards, 2004`	United States	Arizona	Cochise	31.97319	-109.608
Phidippus carneus	Edwards, 2004`	United States	Arizona	Cochise	31.49505	-109.84707
Phidippus carneus	Edwards, 2004`	United States	Arizona	Cochise	31.70224	-110.26145
Phidippus carneus	Edwards, 2004`	United States	Arizona	Cochise	32.13257	-110.27739
Phidippus carneus	Edwards, 2004`	United States	Arizona	Pima	32.13257	-110.86709
Phidippus carneus	Edwards, 2004`	United States	Arizona	Santa Cruz	31.62255	-110.83521
Phidippus carneus	Edwards, 2004`	United States	Arizona	Maricopa	33.45541	-112.07837

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus carneus	Edwards, 2004`	United States	Arizona	Pinal	33.05696	-112.03055
Phidippus carneus	Edwards, 2004`	United States	Arizona	Maricopa	33.26416	-111.66398
Phidippus carneus	Edwards, 2004`	United States	Arizona	Maricopa	33.70643	-112.82745
Phidippus carneus	Edwards, 2004`	United States	Arizona	Yavapai	34.00925	-112.44494
Phidippus carneus	Edwards, 2004`	United States	Arizona	Coconino	34.83802	-111.7118
Phidippus carneus	Edwards, 2004`	United States	Arizona	Coconino	35.1249	-111.47273
Phidippus carneus	Edwards, 2004`	United States	Arizona	Coconino	35.02927	-110.99459
Phidippus carneus	Edwards, 2004`	United States	Arizona	Navajo	33.83393	-109.95863
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Hidalgo	32.01702	-108.87486
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Grant	32.19233	-108.4286
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Hidalgo	31.49107	-108.90673
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Hidalgo	31.47513	-108.50829
Phidippus carneus	Edwards, 2004`	México	Chihuahua	Ignacio Zaragoza	29.6104	-107.6317
Phidippus carneus	Edwards, 2004`	México	Chihuahua	Buenaventura	30.00885	-106.99419
Phidippus carneus	Edwards, 2004`	México	Chihuahua	Chihuahua	29.22789	-106.46824
Phidippus carneus	Edwards, 2004`	México	Chihuahua	Chihuahua	28.8135	-106.38855
Phidippus carneus	Edwards, 2004`	México	Chihuahua	Hidalgo del Parral	26.88502	-105.59165
Phidippus carneus	Edwards, 2004`	México	Durango	Ocampo	26.50251	-105.71916
Phidippus carneus	Edwards, 2004`	United States	Texas	Brewster	29.24383	-103.37629
Phidippus carneus	Edwards, 2004`	United States	Texas	Presidio	30.2001	-104.46007
Phidippus carneus	Edwards, 2004`	United States	Texas	Hudspeth	31.26794	-105.22508

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Socorro	33.88175	-107.56795
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Sandoval	35.82617	-106.80293
Phidippus carneus	Edwards, 2004`	United States	New Mexico	San Miguel	35.81023	-105.51197
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Lincoln	33.53111	-105.78291
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Lincoln	33.33986	-105.55978
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Otero	33.33986	-106.06979
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Otero	32.70235	-106.18136
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Doña Ana	32.33577	-106.51605
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Doña Ana	31.87358	-106.77106
Phidippus carneus	Edwards, 2004`	United States	New Mexico	Eddy	32.25608	-104.44413
Phidippus carneus	Edwards, 2004`	México	Durango	Topia	25.35499	-106.54793
Phidippus carneus	Edwards, 2004`	México	Zacatecas	Fresnillo	23.31494	-102.75471
Phidippus carneus	Edwards, 2004`	México	Aguascalientes	Jesús María	21.92834	-102.38814
Phidippus carneus	Edwards, 2004`	México	San Luis Potosí	Zaragoza	22.03991	-100.74654
Phidippus carneus	Edwards, 2004`	México	Guanajuato	Apaseo el Alto	20.36643	-100.61904
Phidippus carneus	Edwards, 2004`	United States	Texas	Wilbarger	33.87378	-99.04119
Phidippus carolinensis	Edwards, 2004	United States	Texas	Cameron	26.24833	-97.46602
Phidippus carolinensis	Edwards, 2004	United States	Texas	Kenedy	27.02974	-97.67067
Phidippus carolinensis	Edwards, 2004	United States	Texas	Uvalde	29.22511	-99.94046
Phidippus carolinensis	Edwards, 2004	United States	Texas	Edwards	30.19257	-99.94046
Phidippus carolinensis	Edwards, 2004	United States	Texas	Kimble	30.58327	-99.71721

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus carolinensis	Edwards, 2004	United States	Texas	Sutton	30.63908	-100.88931
Phidippus carolinensis	Edwards, 2004	United States	Texas	Bastrop	30.09954	-97.50323
Phidippus carolinensis	Edwards, 2004	United States	Texas	Milam	30.80653	-97.20555
Phidippus carolinensis	Edwards, 2004	United States	Texas	Falls	31.23444	-96.90787
Phidippus carolinensis	Edwards, 2004	United States	Texas	Van Zandt	32.40654	-95.64274
Phidippus carolinensis	Edwards, 2004	United States	Texas	Dallas	32.92748	-96.72182
Phidippus carolinensis	Edwards, 2004	United States	Texas	Denton	33.02051	-97.3916
Phidippus carolinensis	Edwards, 2004	United States	Texas	Parker	32.94609	-97.89393
Phidippus carolinensis	Edwards, 2004	United States	Texas	Stephens	32.70422	-98.82417
Phidippus carolinensis	Edwards, 2004	United States	Texas	Eastland	32.25771	-98.60091
Phidippus carolinensis	Edwards, 2004	United States	Texas	Mills	31.42049	-98.65673
Phidippus carolinensis	Edwards, 2004	United States	Texas	Taylor	32.48096	-99.94046
Phidippus carolinensis	Edwards, 2004	United States	Texas	Crosby	33.52284	-101.29862
Phidippus carolinensis	Edwards, 2004	United States	Texas	Haskell	33.24376	-99.84744
Phidippus carolinensis	Edwards, 2004	United States	Texas	Wilbarger	33.89493	-99.21487
Phidippus carolinensis	Edwards, 2004	United States	Texas	Archer	33.69028	-98.60091
Phidippus carolinensis	Edwards, 2004	United States	Texas	Clay	33.57865	-98.00556
Phidippus carolinensis	Edwards, 2004	United States	Oklahoma	Tillman	34.30424	-99.13115
Phidippus carolinensis	Edwards, 2004	United States	Oklahoma	Caddo	35.05774	-98.60091

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus carolinensis	Edwards, 2004	United States	Oklahoma	Pawnee	36.22984	-96.68461
Phidippus carolinensis	Edwards, 2004	United States	Texas	Roberts	35.92286	-100.71257
Phidippus carolinensis	Edwards, 2004	United States	Kansas	Haskell	37.45777	-101.01024
Phidippus carolinensis	Edwards, 2004	United States	Kansas	Butler	37.5694	-96.54508
Phidippus carolinensis	Edwards, 2004	United States	Kansas	Graham	39.46709	-99.61488
Phidippus cerberus	Edwards, 2004	México	Jalisco	Concepción de Buenos Aires	19.97786	-103.16777
Phidippus cerberus	Edwards, 2004	México	Jalisco	Tamazula de Gordiano	19.51552	-103.1164
Phidippus cerberus	Edwards, 2004	México	Michoacán de Ocampo	Villamar	20.04978	-102.62324
Phidippus cerberus	Edwards, 2004	México	Michoacán de Ocampo	Uruapan	19.60799	-102.26365
Phidippus cerberus	Edwards, 2004	México	Hidalgo	Cardonal	20.58403	-98.99647
Phidippus cerberus	Edwards, 2004	México	Ciudad de México	Tlalpan	19.27922	-99.15058
Phidippus clarus	Edwards 2004	United States	Washington	Lewis	46.7209	-122.6968
Phidippus clarus	Edwards 2004	United States	Washington	Kittitas	46.7715	-120.2187
Phidippus clarus	Edwards 2004	United States	Washington	Walla Walla	46.4681	-118.5498
Phidippus clarus	Edwards 2004	United States	Washington	Columbia	46.1646	-117.7406
Phidippus clarus	Edwards 2004	United States	Montana	Lake	47.2267	-113.9475
Phidippus clarus	Edwards 2004	United States	Idaho	Jerome	42.675	-114.605
Phidippus clarus	Edwards 2004	United States	Idaho	Canyon	43.4842	-116.628
Phidippus clarus	Edwards 2004	United States	Idaho	Payette	43.8888	-116.7291
Phidippus clarus	Edwards 2004	United States	Oregon	Clackamas	45.3807	-122.4187
Phidippus clarus	Edwards 2004	United States	Oregon	Marion	45.1279	-123.0003

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Oregon	Linn	44.3945	-122.8991
Phidippus clarus	Edwards 2004	United States	Oregon	Lane	43.9647	-122.267
Phidippus clarus	Edwards 2004	United States	Oregon	Lane	43.6612	-122.8991
Phidippus clarus	Edwards 2004	United States	Oregon	Douglas	43.1555	-122.444
Phidippus clarus	Edwards 2004	United States	Oregon	Jackson	42.3969	-122.5198
Phidippus clarus	Edwards 2004	United States	California	Trinity	40.5762	-122.9244
Phidippus clarus	Edwards 2004	United States	California	Mendocino	39.3877	-123.2784
Phidippus clarus	Edwards 2004	United States	California	El Dorado	38.7303	-121.129
Phidippus clarus	Edwards 2004	United States	California	Yolo	38.8567	-122.2922
Phidippus clarus	Edwards 2004	United States	California	Sonoma	38.5027	-122.8233
Phidippus clarus	Edwards 2004	United States	California	Mono	37.5165	-118.8026
Phidippus clarus	Edwards 2004	United States	California	Monterey	36.2648	-121.4072
Phidippus clarus	Edwards 2004	United States	California	Santa Clara	37.0613	-121.4831
Phidippus clarus	Edwards 2004	United States	California	San Joaquin	37.5418	-121.4957
Phidippus clarus	Edwards 2004	United States	California	Santa Cruz	37.2004	-122.052
Phidippus clarus	Edwards 2004	United States	California	Marin	38.136	-122.6147
Phidippus clarus	Edwards 2004	United States	Utah	Piute	38.1613	-112.0826
Phidippus clarus	Edwards 2004	United States	Utah	Utah	40.0325	-111.9309
Phidippus clarus	Edwards 2004	United States	Utah	Salt Lake	40.4624	-112.0068

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Colorado	Douglas	39.4509	-104.8253
Phidippus clarus	Edwards 2004	United States	Colorado	El Paso	38.5406	-104.6988
Phidippus clarus	Edwards 2004	United States	Arizona	Graham	33.2303	-110.2367
Phidippus clarus	Edwards 2004	United States	Arizona	Gila	33.5844	-110.0091
Phidippus clarus	Edwards 2004	México	Jalisco	Zapopan	20.6374	-103.523
Phidippus clarus	Edwards 2004	México	Jalisco	Tonalá	20.5995	-103.169
Phidippus clarus	Edwards 2004	United States	Texas	Crockett	30.512	-101.3862
Phidippus clarus	Edwards 2004	United States	North Dakota	Sheridan	47.5365	-100.2989
Phidippus clarus	Edwards 2004	United States	Texas	Polk	30.8218	-94.7105
Phidippus clarus	Edwards 2004	United States	Texas	Anderson	31.6815	-95.4438
Phidippus clarus	Edwards 2004	United States	Texas	Dallas	32.7689	-96.784
Phidippus clarus	Edwards 2004	United States	Texas	Madison	30.8976	-96.1518
Phidippus clarus	Edwards 2004	United States	Texas	Johnson	32.2884	-97.492
Phidippus clarus	Edwards 2004	United States	Texas	Wilbarger	34.0079	-99.0345
Phidippus clarus	Edwards 2004	United States	Kansas	Barber	37.2699	-98.984
Phidippus clarus	Edwards 2004	United States	Oklahoma	Caddo	35.3481	-98.3771
Phidippus clarus	Edwards 2004	United States	Oklahoma	Caddo	34.8677	-98.4024
Phidippus clarus	Edwards 2004	United States	Oklahoma	Lincoln	35.7527	-97.0369
Phidippus clarus	Edwards 2004	United States	Oklahoma	McIntosh	35.3987	-95.4438
Phidippus clarus	Edwards 2004	United States	Oklahoma	Le Flore	34.7159	-94.5587

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Texas	Grayson	33.578	-96.7334
Phidippus clarus	Edwards 2004	United States	Texas	Denton	33.1987	-97.138
Phidippus clarus	Edwards 2004	United States	Kansas	Dickinson	38.7366	-97.2645
Phidippus clarus	Edwards 2004	United States	Kansas	Pottawatomie	39.394	-96.1518
Phidippus clarus	Edwards 2004	United States	Kansas	Douglas	38.7619	-95.4944
Phidippus clarus	Edwards 2004	United States	Kansas	Jefferson	39.1665	-95.3679
Phidippus clarus	Edwards 2004	United States	Kansas	Bourbon	37.8515	-94.9128
Phidippus clarus	Edwards 2004	United States	Missouri	Vernon	38.0285	-94.2806
Phidippus clarus	Edwards 2004	United States	Missouri	Vernon	37.6745	-94.1036
Phidippus clarus	Edwards 2004	United States	Arkansas	Franklin	35.601	-93.876
Phidippus clarus	Edwards 2004	United States	Arkansas	Pike	34.3114	-93.9013
Phidippus clarus	Edwards 2004	United States	Arkansas	Nevada	33.6539	-93.4461
Phidippus clarus	Edwards 2004	United States	Arkansas	Poinsett	35.5251	-90.6645
Phidippus clarus	Edwards 2004	United States	Missouri	Johnson	38.5849	-93.5978
Phidippus clarus	Edwards 2004	United States	Missouri	Lafayette	39.0906	-94.0783
Phidippus clarus	Edwards 2004	United States	Nebraska	Lancaster	41.0377	-96.4806
Phidippus clarus	Edwards 2004	United States	Nebraska	Washington	41.417	-96.0254
Phidippus clarus	Edwards 2004	United States	Iowa	Plymouth	42.7572	-95.9495
Phidippus clarus	Edwards 2004	United States	Iowa	Carroll	41.9227	-94.9128

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Iowa	Webster	42.2768	-94.1542
Phidippus clarus	Edwards 2004	United States	Iowa	Hamilton	42.2262	-93.5473
Phidippus clarus	Edwards 2004	United States	Iowa	Iowa	41.7204	-92.1818
Phidippus clarus	Edwards 2004	United States	Missouri	Randolph	39.3435	-92.6116
Phidippus clarus	Edwards 2004	United States	Missouri	Boone	38.9642	-92.2829
Phidippus clarus	Edwards 2004	United States	Louisiana	Livingston	30.5689	-90.8985
Phidippus clarus	Edwards 2004	United States	Mississippi	Pike	31.1568	-90.5128
Phidippus clarus	Edwards 2004	United States	Mississippi	Madison	32.5349	-90.0134
Phidippus clarus	Edwards 2004	United States	Mississippi	Lauderdale	32.3137	-88.6922
Phidippus clarus	Edwards 2004	United States	Mississippi	Forrest	31.1821	-89.1473
Phidippus clarus	Edwards 2004	United States	Mississippi	Harrison	30.4172	-89.2674
Phidippus clarus	Edwards 2004	United States	Mississippi	George	30.7585	-88.7427
Phidippus clarus	Edwards 2004	United States	Mississippi	Jackson	30.4172	-88.6795
Phidippus clarus	Edwards 2004	United States	Alabama	Washington	31.2137	-87.9652
Phidippus clarus	Edwards 2004	United States	Alabama	Baldwin	30.5183	-87.4752
Phidippus clarus	Edwards 2004	United States	Alabama	Hale	32.7752	-87.5701
Phidippus clarus	Edwards 2004	United States	Alabama	Tuscaloosa	33.2556	-87.5321
Phidippus clarus	Edwards 2004	United States	Mississippi	Oktibbeha	33.42	-88.6827
Phidippus clarus	Edwards 2004	United States	Mississippi	Monroe	33.8372	-88.6195

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Alabama	Marion	34.0901	-87.9999
Phidippus clarus	Edwards 2004	United States	Mississippi	Pontotoc	34.0775	-89.1126
Phidippus clarus	Edwards 2004	United States	Mississippi	Benton	34.6843	-89.1758
Phidippus clarus	Edwards 2004	United States	Alabama	Lawrence	34.4568	-87.431
Phidippus clarus	Edwards 2004	United States	Alabama	Limestone	34.7349	-87.077
Phidippus clarus	Edwards 2004	United States	Alabama	Cleburne	33.8752	-85.623
Phidippus clarus	Edwards 2004	United States	Alabama	Talladega	33.2556	-86.2172
Phidippus clarus	Edwards 2004	United States	Alabama	Tallapoosa	33.0028	-85.762
Phidippus clarus	Edwards 2004	United States	Alabama	Chambers	32.8763	-85.2057
Phidippus clarus	Edwards 2004	United States	Florida	Walton	30.512	-85.8821
Phidippus clarus	Edwards 2004	United States	Florida	Jackson	30.6764	-85.1741
Phidippus clarus	Edwards 2004	United States	Georgia	Thomas	30.9798	-84.0868
Phidippus clarus	Edwards 2004	United States	Florida	Leon	30.3476	-84.1247
Phidippus clarus	Edwards 2004	United States	Florida	Madison	30.3476	-83.7833
Phidippus clarus	Edwards 2004	United States	Florida	Liberty	30.12	-84.9086
Phidippus clarus	Edwards 2004	United States	Florida	Franklin	29.8545	-84.9971
Phidippus clarus	Edwards 2004	United States	Florida	Lafayette	30.0189	-83.2649
Phidippus clarus	Edwards 2004	United States	Georgia	Peach	32.6361	-83.8086
Phidippus clarus	Edwards 2004	United States	Georgia	Jenkins	32.6487	-82.0385

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Georgia	Cherokee	34.1912	-84.3649
Phidippus clarus	Edwards 2004	United States	Georgia	Hall	34.3177	-83.7454
Phidippus clarus	Edwards 2004	United States	Georgia	Madison	34.0901	-83.2397
Phidippus clarus	Edwards 2004	United States	Tennessee	Weakley	36.17	-88.7901
Phidippus clarus	Edwards 2004	United States	Missouri	New Madrid	36.6504	-89.5993
Phidippus clarus	Edwards 2004	United States	Kentucky	Logan	36.7768	-86.9695
Phidippus clarus	Edwards 2004	United States	Tennessee	Sumner	36.347	-86.312
Phidippus clarus	Edwards 2004	United States	Tennessee	DeKalb	35.8918	-85.7557
Phidippus clarus	Edwards 2004	United States	Illinois	Hamilton	37.9906	-88.689
Phidippus clarus	Edwards 2004	United States	Indiana	Spencer	38.117	-87.0201
Phidippus clarus	Edwards 2004	United States	Kentucky	Estill	37.586	-84.0868
Phidippus clarus	Edwards 2004	United States	Kentucky	Bracken	38.6987	-84.0109
Phidippus clarus	Edwards 2004	United States	Indiana	Brown	39.1285	-86.135
Phidippus clarus	Edwards 2004	United States	Indiana	Martin	38.7239	-86.8683
Phidippus clarus	Edwards 2004	United States	Indiana	Sullivan	38.9515	-87.4499
Phidippus clarus	Edwards 2004	United States	Illinois	Richland	38.7998	-87.9557
Phidippus clarus	Edwards 2004	United States	Illinois	Douglas	39.7607	-88.0568
Phidippus clarus	Edwards 2004	United States	Illinois	LaSalle	41.2273	-88.7143
Phidippus clarus	Edwards 2004	United States	Illinois	Marshall	41.0503	-89.22

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Illinois	Pike	39.6848	-91.2936
Phidippus clarus	Edwards 2004	United States	Missouri	Pike	39.3055	-91.243
Phidippus clarus	Edwards 2004	United States	Illinois	Sangamon	39.8619	-89.22
Phidippus clarus	Edwards 2004	United States	Illinois	Sangamon	39.5331	-89.5488
Phidippus clarus	Edwards 2004	United States	Illinois	Macoupin	39.0274	-89.8269
Phidippus clarus	Edwards 2004	United States	Missouri	St. Charles	38.8251	-90.5855
Phidippus clarus	Edwards 2004	United States	Florida	Indian River	27.7115	-80.6983
Phidippus clarus	Edwards 2004	United States	Florida	Seminole	28.7103	-81.1535
Phidippus clarus	Edwards 2004	United States	Florida	Lake	28.8494	-81.8362
Phidippus clarus	Edwards 2004	United States	Florida	Pasco	28.3689	-82.5316
Phidippus clarus	Edwards 2004	United States	Florida	Sumter	28.3942	-82.0512
Phidippus clarus	Edwards 2004	United States	Florida	Polk	28.1666	-81.7983
Phidippus clarus	Edwards 2004	United States	Florida	Polk	27.6482	-81.5328
Phidippus clarus	Edwards 2004	United States	Florida	Polk	27.6862	-82.0385
Phidippus clarus	Edwards 2004	United States	Florida	Marion	29.2666	-82.0259
Phidippus clarus	Edwards 2004	United States	Florida	Levy	29.2792	-82.5948
Phidippus clarus	Edwards 2004	United States	Florida	Levy	29.5574	-82.8477
Phidippus clarus	Edwards 2004	United States	Florida	Alachua	29.9114	-82.5063
Phidippus clarus	Edwards 2004	United States	Florida	Baker	30.2402	-82.3546

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Florida	Duval	30.4298	-81.6466
Phidippus clarus	Edwards 2004	United States	Georgia	Glynn	31.2769	-81.6466
Phidippus clarus	Edwards 2004	United States	Georgia	Charlton	31.0114	-82.0006
Phidippus clarus	Edwards 2004	United States	Georgia	Ware	31.3022	-82.4178
Phidippus clarus	Edwards 2004	United States	Florida	St. Johns	29.6838	-81.5201
Phidippus clarus	Edwards 2004	United States	Florida	Hillsborough	27.6862	-82.3293
Phidippus clarus	Edwards 2004	United States	South Carolina	Hampton	32.9459	-81.1155
Phidippus clarus	Edwards 2004	United States	South Carolina	Orangeburg	33.5654	-80.9512
Phidippus clarus	Edwards 2004	United States	South Carolina	Williamsburg	33.6918	-79.6236
Phidippus clarus	Edwards 2004	United States	Georgia	Barrow	33.9826	-83.6442
Phidippus clarus	Edwards 2004	United States	South Carolina	Oconee	34.8297	-83.2017
Phidippus clarus	Edwards 2004	United States	Tennessee	Blount	35.6389	-83.6948
Phidippus clarus	Edwards 2004	United States	Tennessee	Loudon	35.7148	-84.2385
Phidippus clarus	Edwards 2004	United States	Tennessee	Knox	36.1067	-83.8592
Phidippus clarus	Edwards 2004	United States	North Carolina	Jackson	35.4113	-83.1891
Phidippus clarus	Edwards 2004	United States	North Carolina	Transylvania	35.3102	-82.6581
Phidippus clarus	Edwards 2004	United States	North Carolina	Buncombe	35.5504	-82.2408
Phidippus clarus	Edwards 2004	United States	North Carolina	Burke	35.8918	-81.7983
Phidippus clarus	Edwards 2004	United States	North Carolina	Ashe	36.4102	-81.4696

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Virginia	Smyth	36.8274	-81.596
Phidippus clarus	Edwards 2004	United States	Virginia	Bland	37.055	-81.0903
Phidippus clarus	Edwards 2004	United States	Virginia	Montgomery	37.2067	-80.5719
Phidippus clarus	Edwards 2004	United States	Virginia	Carroll	36.7895	-80.5845
Phidippus clarus	Edwards 2004	United States	North Carolina	Iredell	35.9297	-80.8753
Phidippus clarus	Edwards 2004	United States	North Carolina	Stanly	35.4366	-80.2305
Phidippus clarus	Edwards 2004	United States	North Carolina	Cumberland	35.1205	-78.688
Phidippus clarus	Edwards 2004	United States	North Carolina	Chatham	35.8286	-78.9282
Phidippus clarus	Edwards 2004	United States	North Carolina	Wake	36.0688	-78.6754
Phidippus clarus	Edwards 2004	United States	North Carolina	Nash	35.8412	-78.1443
Phidippus clarus	Edwards 2004	United States	Virginia	Lunenburg	36.9033	-78.334
Phidippus clarus	Edwards 2004	United States	Virginia	Charlotte	37.1056	-78.688
Phidippus clarus	Edwards 2004	United States	Virginia	Amherst	37.6492	-78.9914
Phidippus clarus	Edwards 2004	United States	Virginia	Rockbridge	37.8768	-79.5225
Phidippus clarus	Edwards 2004	United States	West Virginia	Pocahontas	38.4584	-79.9271
Phidippus clarus	Edwards 2004	United States	Virginia	Augusta	38.0918	-79.042
Phidippus clarus	Edwards 2004	United States	Virginia	Rockingham	38.3446	-78.5869
Phidippus clarus	Edwards 2004	United States	Virginia	Amelia	37.4596	-78.0558
Phidippus clarus	Edwards 2004	United States	Virginia	Chesterfield	37.409	-77.4237

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	North Carolina	Pamlico Sound	35.3355	-75.6978
Phidippus clarus	Edwards 2004	United States	Virginia	Virginia Beach	36.7642	-76.1277
Phidippus clarus	Edwards 2004	United States	Virginia	Westmoreland	38.0665	-76.684
Phidippus clarus	Edwards 2004	United States	Virginia	Stafford	38.5849	-77.4932
Phidippus clarus	Edwards 2004	United States	Virginia	Fairfax	38.7998	-77.3162
Phidippus clarus	Edwards 2004	United States	Pennsylvania	Franklin	39.786	-77.5691
Phidippus clarus	Edwards 2004	United States	Pennsylvania	Cumberland	40.2412	-76.9874
Phidippus clarus	Edwards 2004	United States	Maryland	Harford	39.5584	-76.4564
Phidippus clarus	Edwards 2004	United States	Delaware	Sussex	38.7492	-75.6757
Phidippus clarus	Edwards 2004	United States	Maryland	Montgomery	39.0969	-77.0791
Phidippus clarus	Edwards 2004	United States	Pennsylvania	Chester	40.1337	-75.6947
Phidippus clarus	Edwards 2004	United States	Pennsylvania	Bucks	40.3423	-75.0372
Phidippus clarus	Edwards 2004	United States	New Jersey	Monmouth	40.2538	-74.3165
Phidippus clarus	Edwards 2004	United States	New Jersey	Burlington	39.8745	-74.8539
Phidippus clarus	Edwards 2004	United States	New Jersey	Morris	40.7722	-74.4872
Phidippus clarus	Edwards 2004	United States	Pennsylvania	Juniata	40.6331	-77.4078
Phidippus clarus	Edwards 2004	United States	Pennsylvania	Huntingdon	40.6078	-77.8883
Phidippus clarus	Edwards 2004	United States	Pennsylvania	Tioga	41.5814	-77.5216
Phidippus clarus	Edwards 2004	United States	Pennsylvania	Clarion	41.0503	-79.4182

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Pennsylvania	Washington	40.2285	-80.2906
Phidippus clarus	Edwards 2004	United States	Ohio	Harrison	40.2664	-80.9101
Phidippus clarus	Edwards 2004	United States	Ohio	Geauga	41.3917	-81.3653
Phidippus clarus	Edwards 2004	United States	New York	Steuben	42.5012	-77.4205
Phidippus clarus	Edwards 2004	United States	New York	Seneca	42.9184	-76.9021
Phidippus clarus	Edwards 2004	United States	New York	Cayuga	43.1334	-76.5987
Phidippus clarus	Edwards 2004	United States	New York	Cortland	42.6023	-76.1561
Phidippus clarus	Edwards 2004	United States	New York	Warren	43.6138	-73.7539
Phidippus clarus	Edwards 2004	United States	New York	Montgomery	42.9311	-74.4746
Phidippus clarus	Edwards 2004	United States	New York	Schoharie	42.7035	-74.4998
Phidippus clarus	Edwards 2004	United States	New York	Greene	42.261	-74.4493
Phidippus clarus	Edwards 2004	United States	New York	Columbia	42.1345	-73.855
Phidippus clarus	Edwards 2004	United States	New York	Ulster	41.7552	-73.9562
Phidippus clarus	Edwards 2004	United States	Connecticut	Fairfield	41.4265	-73.3366
Phidippus clarus	Edwards 2004	United States	Maine	Kennebec	44.3345	-70.0936
Phidippus clarus	Edwards 2004	United States	New York	Orange	41.3506	-74.1079
Phidippus clarus	Edwards 2004	United States	New Hampshire	Carroll	43.8161	-71.3074
Phidippus clarus	Edwards 2004	United States	New Hampshire	Grafton	43.8414	-71.9016
Phidippus clarus	Edwards 2004	United States	Maine	Cumberland	43.9425	-70.6752

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	New Hampshire	Hillsborough	42.9311	-71.7625
Phidippus clarus	Edwards 2004	United States	Massachusetts	Worcester	42.3621	-72.1039
Phidippus clarus	Edwards 2004	United States	Massachusetts	Worcester	42.2104	-71.6487
Phidippus clarus	Edwards 2004	United States	Massachusetts	Plymouth	42.0587	-70.9281
Phidippus clarus	Edwards 2004	United States	Rhode Island	Kent	41.6541	-71.6108
Phidippus clarus	Edwards 2004	United States	Connecticut	Windham	41.6794	-72.0154
Phidippus clarus	Edwards 2004	United States	Connecticut	New London	41.5908	-72.3568
Phidippus clarus	Edwards 2004	United States	Connecticut	Litchfield	41.8311	-73.2292
Phidippus clarus	Edwards 2004	United States	Massachusetts	Berkshire	42.0587	-73.0901
Phidippus clarus	Edwards 2004	United States	Massachusetts	Franklin	42.4759	-72.5464
Phidippus clarus	Edwards 2004	United States	Maine	Waldo	44.5621	-69.3097
Phidippus clarus	Edwards 2004	United States	Vermont	Orleans	44.7865	-72.5211
Phidippus clarus	Edwards 2004	Canadá	Ontario	Leeds and Grenville	44.521	-76.1119
Phidippus clarus	Edwards 2004	Canadá	Ontario	Lanark	45.1405	-76.1372
Phidippus clarus	Edwards 2004	Canadá	Ontario	Hastings	44.6348	-77.3509
Phidippus clarus	Edwards 2004	Canadá	Ontario	Lennox and Addington	44.4451	-77.0222
Phidippus clarus	Edwards 2004	Canadá	Ontario	Lennox and Addington	44.1796	-76.9084
Phidippus clarus	Edwards 2004	Canadá	Ontario	Durham	44.1922	-79.2032
Phidippus clarus	Edwards 2004	Canadá	Ontario	Niagara	43.0733	-79.6837
Phidippus clarus	Edwards 2004	Canadá	Ontario	Haldimand-Norfolk	42.9469	-80.2653
Phidippus clarus	Edwards 2004	Canadá	Ontario	Wellington	43.7055	-80.3791
Phidippus clarus	Edwards 2004	Canadá	Ontario	Wellington	43.8888	-80.8722
Phidippus clarus	Edwards 2004	Canadá	Ontario	Bruce	44.4704	-81.2451
Phidippus clarus	Edwards 2004	Canadá	Ontario	Bruce	45.0141	-81.3716

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	Canadá	Ontario	Muskoka	45.3365	-79.3423
Phidippus clarus	Edwards 2004	Canadá	Ontario	Middlesex	43.1428	-81.713
Phidippus clarus	Edwards 2004	Canadá	Ontario	Chatham-Kent	42.4095	-82.3198
Phidippus clarus	Edwards 2004	United States	Michigan	Oakland	42.7635	-83.1164
Phidippus clarus	Edwards 2004	United States	Michigan	St. Clair	43.0417	-82.6865
Phidippus clarus	Edwards 2004	United States	Michigan	Sanilac	43.3198	-82.7371
Phidippus clarus	Edwards 2004	United States	Michigan	Huron	43.7118	-82.775
Phidippus clarus	Edwards 2004	United States	Michigan	Genesee	43.0164	-83.856
Phidippus clarus	Edwards 2004	United States	Ohio	Holmes	40.6521	-82.2124
Phidippus clarus	Edwards 2004	United States	Ohio	Fairfield	39.8808	-82.7687
Phidippus clarus	Edwards 2004	United States	Ohio	Ross	39.2866	-83.0468
Phidippus clarus	Edwards 2004	United States	Ohio	Champaign	40.0705	-83.6032
Phidippus clarus	Edwards 2004	United States	Ohio	Marion	40.5383	-83.2997
Phidippus clarus	Edwards 2004	United States	Indiana	Adams	40.6268	-84.8675
Phidippus clarus	Edwards 2004	United States	Indiana	DeKalb	41.5245	-84.956
Phidippus clarus	Edwards 2004	United States	Indiana	Noble	41.3475	-85.5503
Phidippus clarus	Edwards 2004	United States	Indiana	Huntington	40.6774	-85.6261
Phidippus clarus	Edwards 2004	United States	Indiana	Cass	40.7153	-86.4479
Phidippus clarus	Edwards 2004	United States	Michigan	Kalamazoo	42.0934	-85.5629
Phidippus clarus	Edwards 2004	United States	Michigan	Berrien	41.7647	-86.4859

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Indiana	Starke	41.2337	-86.7514
Phidippus clarus	Edwards 2004	United States	Michigan	Crawford	44.5968	-84.3871
Phidippus clarus	Edwards 2004	United States	Michigan	Cheboygan	45.5325	-84.425
Phidippus clarus	Edwards 2004	United States	Michigan	Alcona	44.698	-83.7802
Phidippus clarus	Edwards 2004	United States	Michigan	Arenac	44.0279	-84.1215
Phidippus clarus	Edwards 2004	United States	Michigan	Saginaw	43.4589	-84.3238
Phidippus clarus	Edwards 2004	United States	Michigan	Ingham	42.6877	-84.425
Phidippus clarus	Edwards 2004	United States	Michigan	Livingston	42.498	-83.7928
Phidippus clarus	Edwards 2004	United States	Michigan	Washtenaw	42.144	-83.9319
Phidippus clarus	Edwards 2004	United States	Michigan	Jackson	42.1693	-84.5893
Phidippus clarus	Edwards 2004	United States	Michigan	Monroe	42.0429	-83.325
Phidippus clarus	Edwards 2004	Canadá	Ontario	Nipissing	47.0623	-79.6331
Phidippus clarus	Edwards 2004	Canadá	Ontario	Algoma	46.6072	-82.1871
Phidippus clarus	Edwards 2004	United States	Michigan	Schoolcraft	46.4428	-86.2583
Phidippus clarus	Edwards 2004	United States	Michigan	Iron	46.1899	-88.9766
Phidippus clarus	Edwards 2004	United States	Wisconsin	Shawano	44.698	-88.2939
Phidippus clarus	Edwards 2004	United States	Wisconsin	Sheboygan	43.5727	-87.8893
Phidippus clarus	Edwards 2004	United States	Wisconsin	Milwaukee	43.1176	-87.9652
Phidippus clarus	Edwards 2004	United States	Illinois	Cook	42.1061	-87.8767
Phidippus clarus	Edwards 2004	United States	Wisconsin	Jefferson	43.067	-88.8123

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus clarus	Edwards 2004	United States	Wisconsin	Columbia	43.3451	-89.4697
Phidippus clarus	Edwards 2004	United States	Wisconsin	Sauk	43.5727	-90.064
Phidippus clarus	Edwards 2004	United States	Wisconsin	Iowa	43.0923	-90.241
Phidippus clarus	Edwards 2004	United States	Wisconsin	Marathon	44.7486	-90.2031
Phidippus clarus	Edwards 2004	United States	Wisconsin	Rusk	45.4945	-91.1134
Phidippus clarus	Edwards 2004	United States	Wisconsin	Douglas	46.2278	-91.7076
Phidippus clarus	Edwards 2004	United States	Wisconsin	Burnett	45.7348	-92.2134
Phidippus clarus	Edwards 2004	United States	Minnesota	Washington	45.2037	-92.8708
Phidippus clarus	Edwards 2004	United States	Minnesota	Carlton	46.7083	-92.8708
Phidippus clarus	Edwards 2004	United States	Minnesota	Sibley	44.5463	-94.4133
Phidippus clarus	Edwards 2004	United States	Iowa	Emmet	43.4084	-94.5018
Phidippus clarus	Edwards 2004	United States	Minnesota	Lyon	44.4451	-95.8041
Phidippus clarus	Edwards 2004	United States	Minnesota	Murray	43.99	-95.9558
Phidippus clarus	Edwards 2004	United States	Virginia	Pittsylvania	36.7579	-79.5572
Phidippus clarus	Edwards 2004	United States	Florida	Alachua	29.6902	-82.3135
Phidippus clarus	Edwards 2004	United States	Florida	Putnam	29.7028	-81.9532
Phidippus comatus	Edwards, 2004	México	Guanajuato	Irapuato	20.77591	-101.32039
Phidippus comatus	Edwards, 2004	México	Durango	Durango	23.53695	-104.67493
Phidippus comatus	Edwards, 2004	México	Durango	Santa Clara	24.62072	-103.38472
Phidippus comatus	Edwards, 2004	México	Coahuila de Zaragoza	San Pedro	26.16897	-102.67511
Phidippus comatus	Edwards, 2004	México	Durango	Ocampo	26.60441	-106.05545

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus comatus	Edwards, 2004	México	Chihuahua	Hidalgo del Parral	27.01728	-105.70709
Phidippus comatus	Edwards, 2004	México	Chihuahua	Ahumada	29.6984	-106.59547
Phidippus comatus	Edwards, 2004	México	Chihuahua	Ignacio Zaragoza	29.84088	-107.70368
Phidippus comatus	Edwards, 2004	United States	Texas	Jeff Davis	30.8066	-104.10992
Phidippus comatus	Edwards, 2004	United States	New Mexico	Doña Ana	31.99001	-106.82503
Phidippus comatus	Edwards, 2004	United States	New Mexico	Doña Ana	32.27498	-106.87252
Phidippus comatus	Edwards, 2004	United States	New Mexico	Socorro	33.93729	-106.88835
Phidippus comatus	Edwards, 2004	United States	New Mexico	Valencia	34.61805	-106.93585
Phidippus comatus	Edwards, 2004	United States	Arizona	Gila	34.34891	-111.33702
Phidippus comatus	Edwards, 2004	United States	Arizona	Cochise	31.8317	-109.26308
Phidippus comatus	Edwards, 2004	United States	Arizona	Cochise	31.4834	-109.59555
Phidippus comatus	Edwards, 2004	United States	Arizona	Cochise	31.59422	-110.16548
Phidippus comatus	Edwards, 2004	United States	Arizona	Santa Cruz	31.49923	-110.5771
Phidippus comatus	Edwards, 2004	United States	Arizona	Santa Cruz	31.68921	-111.03622
Phidippus comatus	Edwards, 2004	United States	Arizona	Cochise	32.1325	-110.33963
Phidippus comatus	Edwards, 2004	United States	California	San Diego	32.70243	-116.97304
Phidippus comatus	Edwards, 2004	United States	California	San Diego	32.79742	-116.64058
Phidippus comatus	Edwards, 2004	United States	California	San Diego	33.17738	-116.37144
Phidippus comatus	Edwards, 2004	United States	California	San Diego	33.35152	-117.02054
Phidippus comatus	Edwards, 2004	United States	California	Riverside	33.60483	-117.33717

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus comatus	Edwards, 2004	United States	California	Los Angeles	33.90563	-118.08125
Phidippus comatus	Edwards, 2004	United States	Nevada	Lincoln	37.74307	-114.30904
Phidippus comatus	Edwards, 2004	United States	Utah	Kane	37.54104	-112.7112
Phidippus comatus	Edwards, 2004	United States	Utah	Utah	40.44286	-111.77454
Phidippus comatus	Edwards, 2004	United States	California	Mono	38.07365	-119.23112
Phidippus comatus	Edwards, 2004	United States	California	San Mateo	37.45547	-122.34059
Phidippus comatus	Edwards, 2004	United States	California	Sutter	38.87772	-121.5559
Phidippus comatus	Edwards, 2004	United States	California	Napa	38.57365	-122.576
Phidippus comatus	Edwards, 2004	United States	California	Mendocino	39.32892	-123.46859
Phidippus comatus	Edwards, 2004	United States	California	Siskiyou	41.47465	-122.60378
Phidippus comatus	Edwards, 2004	United States	California	Shasta	41.04421	-122.36097
Phidippus comatus	Edwards, 2004	United States	Oregon	Jackson	42.50108	-122.76933
Phidippus comatus	Edwards, 2004	United States	Wyoming	Teton	43.99966	-110.38309
Phidippus comatus	Edwards, 2004	United States	Oregon	Grant	44.23806	-119.34047
Phidippus comatus	Edwards, 2004	United States	Oregon	Crook	44.47647	-120.63469
Phidippus comatus	Edwards, 2004	United States	New Mexico	Sandoval	35.36635	-106.63013
Phidippus comatus	Edwards, 2004	United States	New Mexico	Sandoval	35.61588	-106.96773
Phidippus comatus	Edwards, 2004	United States	Washington	Klickitat	45.88577	-120.58256
Phidippus comatus	Edwards, 2004	United States	Washington	Yakima	46.66718	-120.21047

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus comatus	Edwards, 2004	Canadá	Saskatchewan	Division No. 12	51.83003	-107.02892
Phidippus concinnus	Edwards, 2004	United States	Idaho	Bannock	42.34096	-111.99216
Phidippus concinnus	Edwards, 2004	United States	California	San Bernardino	34.386	-116.74856
Phidippus concinnus	Edwards, 2004	United States	California	San Bernardino	34.386	-117.44395
Phidippus concinnus	Edwards, 2004	United States	California	Fresno	37.00952	-118.89795
Phidippus concinnus	Edwards, 2004	United States	California	Inyo	37.26239	-118.26578
Phidippus concinnus	Edwards, 2004	United States	California	El Dorado	38.7796	-120.38355
Phidippus cruentus	Edwards, 2004	México	Jalisco	Tecolotlán	20.25521	-103.93106
Phidippus cruentus	Edwards, 2004	México	Nayarit	Santiago Ixcuintla	21.73018	-105.00377
Phidippus cruentus	Edwards, 2004	México	Michoacán de Ocampo	Pátzcuaro	19.55733	-101.5916
Phidippus cruentus	Edwards, 2004	México	Durango	Durango	23.624	-104.87569
Phidippus cruentus	Edwards, 2004	México	Chihuahua	Madera	29.60126	-108.30485
Phidippus cryptus	Edwards 2004	United States	Idaho	Lemhi	45.48974	-114.1914
Phidippus cryptus	Edwards 2004	Canadá	Alberta	Division No. 15	51.13804	-115.18233
Phidippus cryptus	Edwards 2004	Canadá	Saskatchewan	Division No. 12	51.43532	-108.0146
Phidippus cryptus	Edwards 2004	Canadá	Saskatchewan	Division No. 12	51.99685	-107.45308
Phidippus cryptus	Edwards 2004	Canadá	Saskatchewan	Division No. 6	50.47742	-104.34816
Phidippus cryptus	Edwards 2004	United States	North Dakota	Mountrail	48.09919	-101.9369
Phidippus cryptus	Edwards 2004	Canadá	Saskatchewan	Division No. 9	52.06291	-102.39933
Phidippus cryptus	Edwards 2004	United States	Minnesota	Douglas	45.82005	-95.52888
Phidippus cryptus	Edwards 2004	United States	Minnesota	Itasca	47.17432	-93.54702
Phidippus cryptus	Edwards 2004	United States	Minnesota	Koochiching	47.93404	-93.81127
Phidippus cryptus	Edwards 2004	Canadá	Ontario	Kenora	49.71771	-93.44793
Phidippus cryptus	Edwards 2004	United States	Michigan	Iron	46.41461	-88.67495

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus cryptus	Edwards 2004	Canadá	Ontario	Algoma	46.74492	-83.47256
Phidippus dianthus	Edwards 2004	México	Morelos	Tepalcingo	18.60275	-98.91403
Phidippus felinus	Edwards, 2004	United States	Arizona	Coconino	35.38143	-112.5277
Phidippus felinus	Edwards, 2004	United States	Arizona	Coconino	35.11718	-111.75899
Phidippus felinus	Edwards, 2004	United States	Arizona	Navajo	35.16523	-110.22156
Phidippus felinus	Edwards, 2004	United States	New Mexico	McKinley	35.30936	-108.68412
Phidippus felinus	Edwards, 2004	United States	New Mexico	Quay	35.02109	-103.78356
Phidippus georgii	Edwards, 2004	México	Chihuahua	López	26.98252	-105.08004
Phidippus georgii	Edwards, 2004	México	Nayarit	Del Nayar	21.78922	-104.87875
Phidippus georgii	Edwards, 2004	México	Nayarit	San Pedro Lagunillas	21.18535	-104.75797
Phidippus georgii	Edwards, 2004	México	Jalisco	Tala	20.58148	-103.73139
Phidippus georgii	Edwards, 2004	México	Jalisco	Tuxpan	19.55489	-103.42945
Phidippus georgii	Edwards, 2004	México	Guanajuato	Santa Cruz de Juventino Rosas	20.58148	-100.99383
Phidippus georgii	Edwards, 2004	México	Hidalgo	Metztitlán	20.58148	-98.94067
Phidippus georgii	Edwards, 2004	México	Guerrero	Pedro Ascencio Alquisiras	18.57863	-99.81628
Phidippus georgii	Edwards, 2004	México	Guerrero	Quechultenango	17.3105	-99.25267
Phidippus georgii	Edwards, 2004	México	Oaxaca	Chalcatongo de Hidalgo	16.94818	-97.5115
Phidippus georgii	Edwards, 2004	México	Colima	Colima	19.20263	-103.77165
Phidippus johnsoni	Edwards, 2004	México	Baja California	Ensenada	31.51161	-116.26119
Phidippus johnsoni	Edwards, 2004	United States	California	Imperial	32.82909	-115.94639
Phidippus johnsoni	Edwards, 2004	United States	California	Imperial	33.38872	-116.03967
Phidippus johnsoni	Edwards, 2004	United States	California	San Diego	33.29545	-116.36612
Phidippus johnsoni	Edwards, 2004	México	Baja California	Tijuana	32.22281	-116.62262
Phidippus johnsoni	Edwards, 2004	United States	California	San Diego	32.81743	-116.98405
Phidippus johnsoni	Edwards, 2004	United States	California	Riverside	33.76181	-116.75087

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus johnsoni	Edwards, 2004	United States	California	San Diego	33.17886	-117.12396
Phidippus johnsoni	Edwards, 2004	United States	California	San Diego	33.27213	-116.86746
Phidippus johnsoni	Edwards, 2004	United States	California	Riverside	33.85509	-117.21724
Phidippus johnsoni	Edwards, 2004	United States	California	Los Angeles	34.2515	-117.97508
Phidippus johnsoni	Edwards, 2004	United States	California	Los Angeles	34.14656	-118.58135
Phidippus johnsoni	Edwards, 2004	United States	Nevada	Clark	35.38243	-114.89708
Phidippus johnsoni	Edwards, 2004	United States	Arizona	Mohave	35.31247	-113.84776
Phidippus johnsoni	Edwards, 2004	United States	Arizona	Maricopa	33.90172	-112.2388
Phidippus johnsoni	Edwards, 2004	United States	Arizona	Coconino	35.80216	-111.9823
Phidippus johnsoni	Edwards, 2004	United States	Arizona	Coconino	35.17256	-111.73746
Phidippus johnsoni	Edwards, 2004	United States	Arizona	Coconino	34.7645	-111.45764
Phidippus johnsoni	Edwards, 2004	United States	Arizona	Cochise	31.65152	-109.82537
Phidippus johnsoni	Edwards, 2004	United States	California	San Luis Obispo	35.66225	-120.98313
Phidippus johnsoni	Edwards, 2004	United States	California	Monterey	36.00036	-121.35622
Phidippus johnsoni	Edwards, 2004	United States	California	Madera	37.31784	-119.78224
Phidippus johnsoni	Edwards, 2004	United States	California	Tuolumne	37.88914	-119.87551
Phidippus johnsoni	Edwards, 2004	United States	California	Mariposa	37.80752	-119.38583
Phidippus johnsoni	Edwards, 2004	United States	California	Fresno	37.39945	-118.9661
Phidippus johnsoni	Edwards, 2004	United States	California	Mono	37.8425	-118.90781

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus johnsoni	Edwards, 2004	United States	Nevada	Washoe	39.39316	-119.7356
Phidippus johnsoni	Edwards, 2004	United States	Nevada	Douglas	39.0667	-119.75892
Phidippus johnsoni	Edwards, 2004	United States	California	El Dorado	39.00841	-120.3069
Phidippus johnsoni	Edwards, 2004	United States	California	Nevada	39.34652	-120.42349
Phidippus johnsoni	Edwards, 2004	United States	California	Nevada	39.1833	-120.93649
Phidippus johnsoni	Edwards, 2004	United States	California	Monterey	36.69991	-121.50779
Phidippus johnsoni	Edwards, 2004	United States	California	Santa Clara	37.11963	-121.55442
Phidippus johnsoni	Edwards, 2004	United States	California	Contra Costa	38.00573	-121.62438
Phidippus johnsoni	Edwards, 2004	United States	California	Yolo	38.54204	-121.64769
Phidippus johnsoni	Edwards, 2004	United States	California	Alameda	37.49273	-121.89254
Phidippus johnsoni	Edwards, 2004	United States	California	Solano	38.18061	-122.17235
Phidippus johnsoni	Edwards, 2004	United States	California	Sutter	39.24159	-121.92751
Phidippus johnsoni	Edwards, 2004	United States	California	Marin	38.14564	-122.69701
Phidippus johnsoni	Edwards, 2004	United States	California	Sonoma	38.48375	-123.03513
Phidippus johnsoni	Edwards, 2004	United States	California	Sonoma	38.69361	-123.25665
Phidippus johnsoni	Edwards, 2004	United States	California	Mendocino	38.9268	-123.53647
Phidippus johnsoni	Edwards, 2004	United States	California	Mendocino	39.20661	-123.59476
Phidippus johnsoni	Edwards, 2004	United States	California	Tehama	40.2093	-122.25397
Phidippus johnsoni	Edwards, 2004	United States	California	Tehama	40.30257	-121.49613

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus johnsoni	Edwards, 2004	United States	California	Shasta	41.17409	-121.5894
Phidippus johnsoni	Edwards, 2004	United States	California	Trinity	40.94091	-122.6737
Phidippus johnsoni	Edwards, 2004	United States	California	Siskiyou	41.32565	-122.68535
Phidippus johnsoni	Edwards, 2004	United States	California	Shasta	40.66109	-122.54545
Phidippus johnsoni	Edwards, 2004	United States	California	Trinity	40.55615	-123.34992
Phidippus johnsoni	Edwards, 2004	United States	California	Humboldt	40.36961	-124.20395
Phidippus johnsoni	Edwards, 2004	United States	California	Humboldt	41.01086	-123.97077
Phidippus johnsoni	Edwards, 2004	United States	California	Del Norte	41.55884	-123.88916
Phidippus johnsoni	Edwards, 2004	United States	California	Siskiyou	41.92027	-123.53938
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Lake	42.66645	-120.05331
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Crook	43.99559	-120.63627
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Grant	44.60186	-118.8874
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Umatilla	45.1615	-118.56095
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Hood River	45.39468	-121.569
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Washington	45.48795	-123.03804
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Clatsop	45.97764	-123.45777
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Linn	44.392	-123.13132
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Lane	44.11218	-123.3645
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Douglas	43.6225	-123.55104

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Coos	43.50591	-123.97077
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Lane	43.64582	-122.71159
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Jackson	42.43327	-122.29186
Phidippus johnsoni	Edwards, 2004	United States	Oregon	Josephine	42.38663	-123.66763
Phidippus johnsoni	Edwards, 2004	United States	Idaho	Owyhee	42.54986	-115.15649
Phidippus johnsoni	Edwards, 2004	United States	Idaho	Ada	43.31936	-116.0659
Phidippus johnsoni	Edwards, 2004	United States	Idaho	Washington	44.392	-116.64886
Phidippus johnsoni	Edwards, 2004	United States	Idaho	Idaho	45.90768	-116.34572
Phidippus johnsoni	Edwards, 2004	United States	Idaho	Bannock	42.31668	-111.93858
Phidippus johnsoni	Edwards, 2004	United States	Montana	Gallatin	45.58123	-111.1924
Phidippus johnsoni	Edwards, 2004	United States	Montana	Granite	46.58391	-113.10449
Phidippus johnsoni	Edwards, 2004	United States	Montana	Ravalli	46.28077	-113.80403
Phidippus johnsoni	Edwards, 2004	United States	Montana	Mineral	47.02696	-114.50358
Phidippus johnsoni	Edwards, 2004	United States	Montana	Lake	47.983	-113.85067
Phidippus johnsoni	Edwards, 2004	Canadá	Alberta	Division No. 3	49.33546	-113.99058
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	East Kootenay	49.45205	-115.87935
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Central Kootenay	49.80182	-117.58158
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	North Okanagan	50.01169	-118.65422
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Kootenay Boundary	49.66191	-118.70086

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Kootenay Boundary	49.19555	-118.79413
Phidippus johnsoni	Edwards, 2004	United States	Washington	Spokane	47.53996	-117.27845
Phidippus johnsoni	Edwards, 2004	United States	Washington	Lincoln	47.40005	-118.04795
Phidippus johnsoni	Edwards, 2004	United States	Washington	Garfield	46.42068	-117.48831
Phidippus johnsoni	Edwards, 2004	United States	Washington	Walla Walla	46.23414	-118.23449
Phidippus johnsoni	Edwards, 2004	United States	Washington	Grant	46.98032	-119.16722
Phidippus johnsoni	Edwards, 2004	United States	Washington	Grant	47.23682	-119.4004
Phidippus johnsoni	Edwards, 2004	United States	Washington	Grant	47.60991	-119.09727
Phidippus johnsoni	Edwards, 2004	United States	Washington	Lincoln	47.65655	-118.77081
Phidippus johnsoni	Edwards, 2004	United States	Washington	Douglas	47.70318	-119.93672
Phidippus johnsoni	Edwards, 2004	United States	Washington	Chelan	47.35341	-120.1699
Phidippus johnsoni	Edwards, 2004	United States	Washington	Yakima	46.60723	-120.28649
Phidippus johnsoni	Edwards, 2004	United States	Washington	Thurston	47.0685	-123.01013
Phidippus johnsoni	Edwards, 2004	United States	Washington	Mason	47.20767	-123.38782
Phidippus johnsoni	Edwards, 2004	United States	Washington	Jefferson	47.66238	-123.4636
Phidippus johnsoni	Edwards, 2004	United States	Washington	Snohomish	47.93637	-122.05285
Phidippus johnsoni	Edwards, 2004	United States	Washington	King	47.71484	-122.25105
Phidippus johnsoni	Edwards, 2004	United States	Washington	King	47.26597	-122.3385
Phidippus johnsoni	Edwards, 2004	United States	Washington	Whatcom	48.70587	-122.25688

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Alberni-Clayoquot	49.42873	-125.36986
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Strathcona	50.18657	-126.92052
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Cowichan Valley	48.99734	-124.54207
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Sunshine Coast	49.69689	-123.73176
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Thompson-Nicola	50.39061	-121.29501
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	North Okanagan	50.41392	-119.54614
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	North Okanagan	50.6036	-119.1065
Phidippus johnsoni	Edwards, 2004	Canadá	Alberta	Division No. 15	51.53785	-115.33968
Phidippus johnsoni	Edwards, 2004	Canadá	Alberta	Division No. 6	50.64711	-113.99641
Phidippus johnsoni	Edwards, 2004	Canadá	Alberta	Division No. 11	53.92623	-113.03768
Phidippus johnsoni	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Bulkley-Nechako	54.88269	-127.51623
Phidippus johnsoni	Edwards, 2004	United States	Utah	Box Elder	41.68126	-112.15427
Phidippus johnsoni	Edwards, 2004	United States	Utah	Weber	41.24987	-112.10764
Phidippus johnsoni	Edwards, 2004	United States	Utah	Morgan	40.9001	-111.61795
Phidippus johnsoni	Edwards, 2004	United States	Utah	Utah	40.36378	-112.09598
Phidippus johnsoni	Edwards, 2004	United States	Utah	Utah	40.02566	-112.03768
Phidippus johnsoni	Edwards, 2004	United States	Utah	Juab	39.5593	-112.22423
Phidippus johnsoni	Edwards, 2004	United States	Utah	Millard	38.81312	-112.97041
Phidippus johnsoni	Edwards, 2004	United States	Utah	Piute	38.18353	-112.34082
Phidippus johnsoni	Edwards, 2004	United States	Utah	Garfield	38.13689	-111.99104

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus johnsoni	Edwards, 2004	United States	Utah	Wayne	38.30012	-111.37311
Phidippus johnsoni	Edwards, 2004	United States	Utah	Emery	38.7898	-110.86011
Phidippus johnsoni	Edwards, 2004	United States	Utah	Duchesne	40.08396	-110.42872
Phidippus johnsoni	Edwards, 2004	United States	Wyoming	Lincoln	42.1243	-110.73186
Phidippus johnsoni	Edwards, 2004	United States	Wyoming	Fremont	42.68394	-108.26013
Phidippus johnsoni	Edwards, 2004	United States	Wyoming	Albany	41.85614	-105.57854
Phidippus johnsoni	Edwards, 2004	United States	Wyoming	Platte	42.17094	-105.0772
Phidippus johnsoni	Edwards, 2004	United States	Colorado	Park	39.41939	-105.61352
Phidippus johnsoni	Edwards, 2004	United States	Colorado	Park	39.03464	-105.45029
Phidippus johnsoni	Edwards, 2004	United States	Colorado	Gunnison	38.70819	-106.70947
Phidippus johnsoni	Edwards, 2004	United States	Colorado	Saguache	38.39339	-106.96597
Phidippus johnsoni	Edwards, 2004	United States	Colorado	Montrose	38.60325	-107.73547
Phidippus johnsoni	Edwards, 2004	United States	Colorado	Gunnison	38.28846	-107.46731
Phidippus johnsoni	Edwards, 2004	United States	Colorado	San Miguel	37.90371	-107.79377
Phidippus johnsoni	Edwards, 2004	United States	Colorado	La Plata	37.39071	-108.05027
Phidippus johnsoni	Edwards, 2004	United States	Colorado	Hinsdale	37.43735	-107.39736
Phidippus johnsoni	Edwards, 2004	United States	Colorado	Hinsdale	37.67053	-107.24579
Phidippus johnsoni	Edwards, 2004	United States	Colorado	La Plata	37.58891	-107.65386
Phidippus johnsoni	Edwards, 2004	United States	South Dakota	Custer	43.58169	-103.20008

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus johnsoni	Edwards, 2004	United States	Wyoming	Washakie	44.04806	-107.77045
Phidippus johnsoni	Edwards, 2004	United States	Wyoming	Teton	44.11801	-110.522
Phidippus johnsoni	Edwards, 2004	United States	Wyoming	Teton	43.65165	-110.40541
Phidippus johnsoni	Edwards, 2004	Canadá	Saskatchewan	Division No. 3	49.43456	-105.71845
Phidippus johnsoni	Edwards, 2004	United States	California	Santa Cruz	37.18084	-122.21608
Phidippus johnsoni	Edwards, 2004	United States	California	Santa Clara	37.21582	-121.91294
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.0952	-116.58623
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.868	-116.66905
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.88369	-116.61411
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.88369	-116.61411
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.89583	-116.56222
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.868	-116.66905
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.868	-116.66905
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.8635	-116.6664
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.88126	-116.64476
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.90143	-116.73105
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.86372	-116.64759
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.90143	-116.73105
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.89583	-116.56222
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.7189	-116.6
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus johnsoni	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.868	-116.66905

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Phidippus kastoni	Edwards, 2004	United States	California	Santa Barbara	34.80127	-119.81524
Phidippus kastoni	Edwards, 2004	United States	California	San Luis Obispo	35.04925	-120.44646
Phidippus kastoni	Edwards, 2004	United States	California	Monterey	36.4244	-121.64126
Phidippus kastoni	Edwards, 2004	United States	California	Santa Cruz	37.14579	-122.06959
Phidippus kastoni	Edwards, 2004	United States	California	Alameda	37.61921	-121.82161
Phidippus lynceus	Edwards 2004	United States	Nevada	Nye	38.54535	-116.67887
Phidippus lynceus	Edwards 2004	United States	Oregon	Baker	44.79609	-117.75875
Phidippus maddisoni	Edwards, 2004	México	Jalisco	Villa Purificación	19.66361	-104.69536
Phidippus maddisoni	Edwards, 2004	México	Michoacán de Ocampo	Panindícuaro	20.04168	-101.81083
Phiddippus mimicus	Edwards, 2004	México	Guerrero	Acapulco de Juárez	16.94266	-99.79703
Phiddippus mimicus	Edwards, 2004	México	Oaxaca	Santiago Jamiltepec	16.2076	-97.72549
Phidippus morpheus	Edwards 2004	United States	New Mexico	Eddy	32.48	-104.536
Phidippus morpheus	Edwards 2004	United States	New Mexico	Doña Ana	32.274	-106.442
Phidippus morpheus	Edwards 2004	United States	Arizona	Cochise	31.604	-109.405
Phidippus morpheus	Edwards 2004	México	Coahuila de Zaragoza	Saltillo	24.881	-101.523
Phidippus mystaceus	Edwards, 2004	United States	Texas	Frio	28.74821	-98.92099
Phidippus mystaceus	Edwards, 2004	United States	Texas	Bexar	29.28614	-98.59225
Phidippus mystaceus	Edwards, 2004	United States	Texas	Medina	29.61489	-99.18996
Phidippus mystaceus	Edwards, 2004	United States	Texas	Real	29.88385	-99.66813
Phidippus mystaceus	Edwards, 2004	United States	Texas	Nolan	32.18504	-100.47504
Phidippus mystaceus	Edwards, 2004	United States	Texas	Jones	32.81263	-100.02676

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus mystaceus	Edwards, 2004	United States	Texas	Stephens	32.63332	-98.98076
Phidippus mystaceus	Edwards, 2004	United States	Texas	Callahan	32.18504	-99.42905
Phidippus mystaceus	Edwards, 2004	United States	Texas	McCulloch	31.25859	-99.13019
Phidippus mystaceus	Edwards, 2004	United States	Texas	Llano	30.69076	-98.68191
Phidippus mystaceus	Edwards, 2004	United States	Texas	Travis	30.09305	-97.69569
Phidippus mystaceus	Edwards, 2004	United States	Texas	Austin	29.64477	-96.17153
Phidippus mystaceus	Edwards, 2004	United States	Texas	Grimes	30.48156	-96.11176
Phidippus mystaceus	Edwards, 2004	United States	Texas	McLennan	31.58733	-96.94855
Phidippus mystaceus	Edwards, 2004	United States	Texas	Coryell	31.52756	-97.57615
Phidippus mystaceus	Edwards, 2004	United States	Texas	Lampasas	31.13905	-97.96466
Phidippus mystaceus	Edwards, 2004	United States	Texas	Lampasas	31.4379	-98.20374
Phidippus mystaceus	Edwards, 2004	United States	Texas	Wilbarger	34.00805	-99.10031
Phidippus mystaceus	Edwards, 2004	United States	Texas	Baylor	33.7092	-99.07042
Phidippus mystaceus	Edwards, 2004	United States	Texas	Wichita	33.85863	-98.62214
Phidippus mystaceus	Edwards, 2004	United States	Texas	Denton	33.11149	-96.85889
Phidippus mystaceus	Edwards, 2004	United States	Texas	Grayson	33.67931	-96.79912
Phidippus mystaceus	Edwards, 2004	United States	Oklahoma	Johnston	34.36668	-96.79912
Phidippus mystaceus	Edwards, 2004	United States	Oklahoma	Comanche	34.84485	-98.77157
Phidippus mystaceus	Edwards, 2004	United States	Oklahoma	Noble	36.30924	-97.12786

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus mystaceus	Edwards, 2004	United States	Oklahoma	Lincoln	35.89084	-96.70947
Phidippus mystaceus	Edwards, 2004	United States	Oklahoma	Oklahoma	35.47244	-97.24741
Phidippus mystaceus	Edwards, 2004	United States	Oklahoma	Le Flore	34.99427	-94.76691
Phidippus mystaceus	Edwards, 2004	United States	Arkansas	Crawford	35.74141	-94.04966
Phidippus mystaceus	Edwards, 2004	United States	Arkansas	Boone	36.15981	-93.15309
Phidippus mystaceus	Edwards, 2004	United States	Arkansas	Pope	35.47244	-93.12321
Phidippus mystaceus	Edwards, 2004	United States	Arkansas	Conway	35.11382	-92.58527
Phidippus mystaceus	Edwards, 2004	United States	Arkansas	Clark	34.12759	-93.15309
Phidippus mystaceus	Edwards, 2004	United States	Missouri	Cole	38.49088	-92.28641
Phidippus mystaceus	Edwards, 2004	United States	Illinois	Menard	40.07481	-89.86569
Phidippus mystaceus	Edwards, 2004	United States	Illinois	Washington	38.37134	-89.20821
Phidippus mystaceus	Edwards, 2004	United States	Illinois	Franklin	37.89317	-88.84958
Phidippus mystaceus	Edwards, 2004	United States	Kentucky	Hardin	37.77363	-86.01046
Phidippus mystaceus	Edwards, 2004	United States	Kentucky	Breathitt	37.53454	-83.23111
Phidippus mystaceus	Edwards, 2004	United States	Ohio	Licking	39.98515	-82.75294
Phidippus mystaceus	Edwards, 2004	United States	Tennessee	Anderson	36.10004	-84.12767
Phidippus mystaceus	Edwards, 2004	United States	Tennessee	Knox	35.86095	-83.88859
Phidippus mystaceus	Edwards, 2004	United States	Florida	Charlotte	26.95508	-81.64718
Phidippus mystaceus	Edwards, 2004	United States	Florida	Marion	29.22637	-81.85638

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus mystaceus	Edwards, 2004	United States	Florida	Alachua	29.49534	-82.18512
Phidippus mystaceus	Edwards, 2004	United States	Georgia	Emanuel	32.63332	-82.33454
Phidippus mystaceus	Edwards, 2004	United States	Alabama	Chambers	32.81263	-85.47252
Phidippus mystaceus	Edwards, 2004	United States	Georgia	Spalding	33.32069	-84.21733
Phidippus mystaceus	Edwards, 2004	United States	Georgia	Cobb	33.88851	-84.51618
Phidippus mystaceus	Edwards, 2004	United States	Georgia	Barrow	34.03794	-83.76905
Phidippus mystaceus	Edwards, 2004	United States	Georgia	Habersham	34.78508	-83.55985
Phidippus mystaceus	Edwards, 2004	United States	South Carolina	Pickens	34.87473	-82.51386
Phidippus mystaceus	Edwards, 2004	United States	North Carolina	Buncombe	35.7713	-82.51386
Phidippus mystaceus	Edwards, 2004	United States	North Carolina	Yadkin	36.07015	-80.7805
Phidippus mystaceus	Edwards, 2004	United States	North Carolina	Wake	35.71153	-78.95748
Phidippus mystaceus	Edwards, 2004	United States	Virginia	Pittsylvania	37.02649	-79.34599
Phidippus mystaceus	Edwards, 2004	United States	Virginia	Amherst	37.59431	-79.10691
Phidippus mystaceus	Edwards, 2004	United States	Maryland	Dorchester	38.52823	-75.82698
Phidippus mystaceus	Edwards, 2004	United States	Maryland	Queen Anne's	39.02882	-75.99135
Phidippus mystaceus	Edwards, 2004	United States	Maryland	Carroll	39.45468	-77.11952
Phidippus mystaceus	Edwards, 2004	United States	Maryland	Howard	39.15583	-76.88791
Phidippus mystaceus	Edwards, 2004	United States	New Jersey	Atlantic	39.57423	-74.79593
Phidippus mystaceus	Edwards, 2004	United States	New Jersey	Ocean	40.11216	-74.48213

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus mystaceus	Edwards, 2004	United States	New Jersey	Morris	40.79953	-74.60167
Phidippus mystaceus	Edwards, 2004	United States	New York	Ulster	41.65127	-74.27293
Phidippus mystaceus	Edwards, 2004	United States	Massachusetts	Berkshire	42.23404	-73.09245
Phidippus mystaceus	Edwards, 2004	United States	Connecticut	New Haven	41.41218	-72.98786
Phidippus mystaceus	Edwards, 2004	United States	New York	Westchester	41.29264	-73.80971
Phidippus nikites	Edwards, 2004	United States	Oregon	Wallowa	45.31492	-117.46925
Phidippus nikites	Edwards, 2004	United States	Oregon	Harney	42.53372	-118.88514
Phidippus nikites	Edwards, 2004	United States	Idaho	Washington	44.25301	-116.45791
Phidippus nikites	Edwards, 2004	United States	Idaho	Elmore	42.78656	-115.04202
Phidippus nikites	Edwards, 2004	United States	Idaho	Power	42.58429	-112.81706
Phidippus nikites	Edwards, 2004	United States	Nevada	Carson City	39.16116	-119.7676
Phidippus nikites	Edwards, 2004	United States	California	San Bernardino	34.70147	-114.86869
Phidippus nikites	Edwards, 2004	United States	California	Riverside	33.95819	-115.71333
Phidippus nikites	Edwards, 2004	United States	California	San Bernardino	34.83661	-116.99718
Phidippus nikites	Edwards, 2004	United States	California	San Bernardino	34.3974	-117.13232
Phidippus nikites	Edwards, 2004	United States	California	San Bernardino	34.02576	-117.33504
Phidippus nikites	Edwards, 2004	United States	California	Riverside	33.65411	-117.36882
Phidippus nikites	Edwards, 2004	United States	California	Riverside	33.62033	-116.82825
Phidippus nikites	Edwards, 2004	United States	California	San Diego	33.14733	-116.55797

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus nikites	Edwards, 2004	United States	California	San Diego	32.9784	-116.82825
Phidippus nikites	Edwards, 2004	México	Baja California	Tecate	32.56405	-116.63799
Phidippus nikites	Edwards, 2004	México	Baja California	Ensenada	30.1742	-115.13898
Phidippus nikites	Edwards, 2004	United States	California	Monterey	36.08668	-121.08524
Phidippus nikites	Edwards, 2004	United States	California	Santa Clara	37.47189	-121.76095
Phidippus nikites	Edwards, 2004	United States	California	Santa Cruz	37.10024	-121.94677
Phidippus nikites	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	32.03388	-116.60382
Phidippus octopunctatus	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.86765	-116.66756
Phidippus octopunctatus	Edwards, 2004	México	Sonora	Arizpe	30.5007	-110.04886
Phidippus octopunctatus	Edwards, 2004	United States	California	Ventura	34.70004	-119.05691
Phidippus octopunctatus	Edwards, 2004	United States	California	Ventura	34.26908	-118.82486
Phidippus octopunctatus	Edwards, 2004	United States	California	Orange	33.70552	-117.59828
Phidippus octopunctatus	Edwards, 2004	United States	California	Riverside	33.87127	-116.985
Phidippus octopunctatus	Edwards, 2004	United States	California	Riverside	33.77182	-116.42143
Phidippus octopunctatus	Edwards, 2004	United States	California	San Diego	33.29113	-116.85239
Phidippus octopunctatus	Edwards, 2004	United States	California	San Diego	32.7773	-116.70321
Phidippus octopunctatus	Edwards, 2004	United States	California	Imperial	32.8436	-116.00705
Phidippus octopunctatus	Edwards, 2004	United States	Arizona	Maricopa	32.74415	-112.80801
Phidippus octopunctatus	Edwards, 2004	United States	Arizona	Maricopa	33.40716	-111.84664
Phidippus octopunctatus	Edwards, 2004	United States	Arizona	Yavapai	34.41826	-111.81349

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus octopunctatus	Edwards, 2004	United States	Arizona	Cochise	32.13086	-110.43774
Phidippus octopunctatus	Edwards, 2004	United States	Arizona	Cochise	31.96511	-110.22226
Phidippus octopunctatus	Edwards, 2004	United States	Arizona	Cochise	31.65018	-110.30514
Phidippus octopunctatus	Edwards, 2004	United States	Arizona	Santa Cruz	31.6999	-110.78582
Phidippus octopunctatus	Edwards, 2004	United States	Arizona	Cochise	31.53415	-109.5261
Phidippus octopunctatus	Edwards, 2004	United States	New Mexico	Hidalgo	31.5673	-108.78021
Phidippus octopunctatus	Edwards, 2004	United States	New Mexico	Doña Ana	32.18059	-106.92377
Phidippus octopunctatus	Edwards, 2004	United States	New Mexico	Otero	32.74415	-105.97898
Phidippus octopunctatus	Edwards, 2004	United States	New Mexico	Eddy	32.28004	-104.38775
Phidippus octopunctatus	Edwards, 2004	United States	Texas	Brewster	30.4236	-103.67501
Phidippus octopunctatus	Edwards, 2004	United States	Texas	Brewster	29.95949	-103.2109
Phidippus octopunctatus	Edwards, 2004	United States	Texas	Brewster	29.24675	-103.4098
Phidippus octopunctatus	Edwards, 2004	United States	New Mexico	Quay	35.18072	-103.54241
Phidippus octopunctatus	Edwards, 2004	United States	New Mexico	San Miguel	35.06469	-105.38227
Phidippus octopunctatus	Edwards, 2004	United States	New Mexico	Valencia	34.73319	-106.82432
Phidippus octopunctatus	Edwards, 2004	México	Durango	Ocampo	26.33778	-105.36569
Phidippus octopunctatus	Edwards, 2004	México	Jalisco	Ixtlahuacán de los Membrillos	20.46183	-103.2109
Phidippus octopunctatus	Edwards, 2004	México	Guanajuato	Dolores Hidalgo Cuna de la Independencia Nacional	21.12485	-101.05611
Phidippus octopunctatus	Edwards, 2004	México	Morelos	Puente de Ixtla	18.70692	-99.22039

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus octopunctatus	Edwards, 2004	United States	Texas	Grimes	30.5417	-96.00478
Phidippus octopunctatus	Edwards, 2004	United States	Colorado	Las Animas	37.66909	-104.45819
Phidippus octopunctatus	Edwards, 2004	United States	Colorado	Douglas	39.29347	-104.88915
Phidippus octopunctatus	Edwards, 2004	United States	Colorado	Jefferson	39.59183	-105.25381
Phidippus octopunctatus	Edwards, 2004	United States	Colorado	Weld	40.5532	-104.82285
Phidippus octopunctatus	Edwards, 2004	United States	Utah	Box Elder	41.61402	-112.04969
Phidippus octopunctatus	Edwards, 2004	United States	Utah	Morgan	41.11676	-111.81764
Phidippus octopunctatus	Edwards, 2004	United States	Utah	Utah	40.35429	-111.91709
Phidippus octopunctatus	Edwards, 2004	United States	Utah	Juab	39.69128	-111.75134
Phidippus octopunctatus	Edwards, 2004	United States	Nevada	Mineral	38.59731	-118.34832
Phidippus octopunctatus	Edwards, 2004	United States	Nevada	Carson City	39.16087	-119.60804
Phidippus octopunctatus	Edwards, 2004	United States	California	Placer	39.29347	-120.53626
Phidippus octopunctatus	Edwards, 2004	United States	Nebraska	Holt	42.44279	-99.15409
Phidippus octopunctatus	Edwards, 2004	United States	Kansas	Rawlins	39.72443	-101.01053
Phidippus octopunctatus	Edwards, 2004	United States	Nebraska	Sheridan	42.64169	-102.66806
Phidippus octopunctatus	Edwards, 2004	United States	Nebraska	Box Butte	42.11128	-103.19847
Phidippus octopunctatus	Edwards, 2004	United States	Iowa	Franklin	42.84059	-93.18697
Phidippus octopunctatus	Edwards, 2004	United States	South Dakota	Meade	44.19977	-102.99956
Phidippus octopunctatus	Edwards, 2004	United States	Montana	Gallatin	45.82415	-111.65188

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus octopunctatus	Edwards, 2004	United States	Washington	Columbia	46.25511	-117.81791
Phidippus octopunctatus	Edwards, 2004	United States	California	Mendocino	38.99512	-123.38721
Phidippus octopunctatus	Edwards, 2004	United States	California	Santa Clara	37.33758	-121.91201
Phidippus octopunctatus	Edwards, 2004	United States	California	Alameda	37.61937	-121.87886
Phidippus octopunctatus	Edwards, 2004	United States	California	San Mateo	37.32101	-122.26009
Phidippus olympus	Edwards, 2004	United States	New Mexico	Sierra	33.22317	-107.78037
Phidippus olympus	Edwards, 2004	United States	New Mexico	Catron	33.53051	-108.64651
Phidippus olympus	Edwards, 2004	United States	Arizona	Apache	33.86579	-109.54059
Phidippus olympus	Edwards, 2004	United States	Arizona	Coconino	34.98339	-110.90965
Phidippus otiousus	Edwards 2004	United States	Texas	Washington	30.18982	-96.30936
Phidippus otiousus	Edwards 2004	United States	Texas	Harrison	32.4435	-94.38819
Phidippus otiousus	Edwards 2004	United States	Texas	Sabine	31.51986	-93.79706
Phidippus otiousus	Edwards 2004	United States	Louisiana	Rapides	31.40902	-92.39313
Phidippus otiousus	Edwards 2004	United States	Louisiana	Madison	32.51739	-91.3217
Phidippus otiousus	Edwards 2004	United States	Arkansas	Sevier	33.99522	-94.16652
Phidippus otiousus	Edwards 2004	United States	Arkansas	Hot Spring	34.29078	-93.20593
Phidippus otiousus	Edwards 2004	United States	Arkansas	Johnson	35.58388	-93.68622
Phidippus otiousus	Edwards 2004	United States	Missouri	Shannon	37.02476	-91.58032
Phidippus otiousus	Edwards 2004	United States	Mississippi	Oktibbeha	33.36714	-88.88329

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus otiousus	Edwards 2004	United States	Mississippi	Jones	31.48292	-88.95719
Phidippus otiousus	Edwards 2004	United States	Virginia	Smyth	36.87697	-81.45723
Phidippus otiousus	Edwards 2004	United States	Tennessee	Blount	35.73166	-83.82175
Phidippus otiousus	Edwards 2004	United States	Tennessee	McMinn	35.39915	-84.44982
Phidippus otiousus	Edwards 2004	United States	Georgia	Jenkins	32.62823	-82.01141
Phidippus otiousus	Edwards 2004	United States	South Carolina	Lee	34.03216	-80.0533
Phidippus otiousus	Edwards 2004	United States	Delaware	Sussex	38.57647	-75.50899
Phidippus otiousus	Edwards 2004	United States	Maryland	Baltimore	39.46316	-76.83903
Phidippus otiousus	Edwards 2004	United States	Maryland	Montgomery	39.11218	-76.94986
Phidippus otiousus	Edwards 2004	United States	Virginia	Prince William	38.83509	-77.55947
Phidippus otiousus	Edwards 2004	United States	Maryland	Charles	38.558	-76.93139
Phidippus otiousus	Edwards 2004	United States	North Carolina	Pamlico	35.21442	-76.8575
Phidippus otiousus	Edwards 2004	United States	North Carolina	Edgecombe	35.91639	-77.37474
Phidippus otiousus	Edwards 2004	United States	North Carolina	Greene	35.49151	-77.52252
Phidippus otiousus	Edwards 2004	United States	North Carolina	Duplin	35.08511	-77.8735
Phidippus otiousus	Edwards 2004	United States	North Carolina	Wake	35.82402	-78.50158
Phidippus otiousus	Edwards 2004	United States	North Carolina	Durham	35.95333	-78.9634
Phidippus otiousus	Edwards 2004	United States	North Carolina	Harnett	35.30678	-78.66784
Phidippus otiousus	Edwards 2004	United States	North Carolina	Bladen	34.71566	-78.79714

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus otiousus	Edwards 2004	United States	Florida	Indian River	27.70061	-80.62595
Phidippus otiousus	Edwards 2004	United States	Florida	Polk	27.66366	-81.2725
Phidippus otiousus	Edwards 2004	United States	Florida	DeSoto	27.18337	-81.62348
Phidippus otiousus	Edwards 2004	United States	Florida	Hardee	27.62672	-82.02988
Phidippus otiousus	Edwards 2004	United States	Florida	Hillsborough	27.94076	-82.12225
Phidippus otiousus	Edwards 2004	United States	Florida	Pasco	28.23632	-82.27003
Phidippus otiousus	Edwards 2004	United States	Florida	Hernando	28.47647	-82.47323
Phidippus otiousus	Edwards 2004	United States	Florida	Lake	28.55036	-81.82668
Phidippus otiousus	Edwards 2004	United States	Florida	Lake	28.8644	-81.54959
Phidippus otiousus	Edwards 2004	United States	Florida	Orange	28.5873	-81.2725
Phidippus otiousus	Edwards 2004	United States	Florida	Osceola	28.1809	-81.36486
Phidippus otiousus	Edwards 2004	United States	Florida	Volusia	29.25232	-81.19861
Phidippus otiousus	Edwards 2004	United States	Florida	St. Johns	29.80651	-81.53112
Phidippus otiousus	Edwards 2004	United States	Florida	Duval	30.34222	-81.71585
Phidippus otiousus	Edwards 2004	United States	Georgia	Brantley	31.11808	-82.12225
Phidippus otiousus	Edwards 2004	United States	Florida	Columbia	30.45306	-82.47323
Phidippus otiousus	Edwards 2004	United States	Florida	Columbia	30.02818	-82.78727
Phidippus otiousus	Edwards 2004	United States	Florida	Levy	29.56636	-82.7688
Phidippus otiousus	Edwards 2004	United States	Florida	Marion	29.10454	-82.43629

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus otiousus	Edwards 2004	United States	Florida	Marion	29.2708	-81.97447
Phidippus otiousus	Edwards 2004	United States	Florida	Bradford	29.80651	-82.12225
Phidippus otiousus	Edwards 2004	United States	Florida	Union	30.04665	-82.3624
Phidippus otiousus	Edwards 2004	United States	Florida	Hamilton	30.47153	-83.21214
Phidippus otiousus	Edwards 2004	United States	Florida	Madison	30.54542	-83.56313
Phidippus otiousus	Edwards 2004	United States	Georgia	Brooks	30.97029	-83.69244
Phidippus otiousus	Edwards 2004	United States	Florida	Jefferson	30.37917	-83.85869
Phidippus otiousus	Edwards 2004	United States	Florida	Leon	30.39764	-84.28357
Phidippus otiousus	Edwards 2004	United States	Alabama	Henry	31.35822	-85.31804
Phidippus otiousus	Edwards 2004	United States	Florida	Jackson	30.93335	-85.2811
Phidippus otiousus	Edwards 2004	United States	Florida	Gadsden	30.56389	-84.8747
Phidippus otiousus	Edwards 2004	United States	Florida	Calhoun	30.36069	-85.2811
Phidippus otiousus	Edwards 2004	United States	Florida	Liberty	30.04665	-84.91164
Phidippus pacosauritus	Edwards, 2020	México	Sinaloa	Mazatlán	23.2994	-106.4435
Phidippus phoenix	Edwards, 2004	México	Baja California	Ensenada	28.561	-113.559
Phidippus phoenix	Edwards, 2004	México	Baja California	Ensenada	29.318	-114.668
Phidippus phoenix	Edwards, 2004	United States	Arizona	Santa Cruz	31.468	-110.57
Phidippus phoenix	Edwards, 2004	United States	Arizona	Pima	31.549	-111.165
Phidippus phoenix	Edwards, 2004	United States	Arizona	Pima	31.955	-110.8
Phidippus phoenix	Edwards, 2004	México	Baja California	Ensenada	30.156	-115.56
Phidippus phoenix	Edwards, 2004	México	Baja California	Ensenada	31.36	-115.979

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus phoenix	Edwards, 2004	México	Baja California	Ensenada	32.239	-116.277
Phidippus phoenix	Edwards, 2004	United States	California	San Diego	32.719	-116.561
Phidippus phoenix	Edwards, 2004	United States	California	San Diego	33.043	-116.716
Phidippus phoenix	Edwards, 2004	United States	California	Riverside	33.659	-117.345
Phidippus phoenix	Edwards, 2004	United States	Arizona	Maricopa	33.449	-112.606
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	29.598	-114.224
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.868	-116.669
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.868	-116.669
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.868	-116.669
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.869	-116.643
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.869	-116.643
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.869	-116.643
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.869	-116.643
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.869	-116.643
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.866	-116.662
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.866	-116.662
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	31.076	-116.276
Phidippus phoenix	Hernandez Salgado, L.C. et al, 2022	México	Baja California	Ensenada	29.598	-114.224
Phidippus pompatus	Edwards 2004	México	Colima	Coquimatlán	19.17103	-103.85432
Phidippus pompatus	Edwards 2004	México	Jalisco	Concepción de Buenos Aires	20.02392	-103.22041
Phidippus pompatus	Edwards 2004	México	Jalisco	Ocotlán	20.38122	-102.72481
Phidippus pompatus	Edwards 2004	México	Michoacán de Ocampo	Uruapan	19.39002	-102.10243
Phidippus pompatus	Edwards 2004	México	Guanajuato	Salamanca	20.66936	-101.11123
Phidippus pompatus	Edwards 2004	México	México	Huixquilucan	19.37849	-99.35934
Phidippus pompatus	Edwards 2004	México	Morelos	Emiliano Zapata	18.84831	-99.20951
Phidippus princeps	Edwards, 2004	United States	Utah	Utah	40.46	-111.814
Phidippus princeps	Edwards, 2004	United States	Texas	Wilbarger	33.937	-98.992

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus princeps	Edwards, 2004	United States	Oklahoma	Cleveland	35.303	-97.263
Phidippus princeps	Edwards, 2004	United States	Oklahoma	Hughes	35.08	-96.232
Phidippus princeps	Edwards, 2004	United States	Oklahoma	Tulsa	35.972	-96.009
Phidippus princeps	Edwards, 2004	United States	Arkansas	Washington	35.805	-94.155
Phidippus princeps	Edwards, 2004	United States	Louisiana	Caddo	32.655	-93.807
Phidippus princeps	Edwards, 2004	United States	Arkansas	Hempstead	33.491	-93.556
Phidippus princeps	Edwards, 2004	United States	Arkansas	Calhoun	33.63	-92.594
Phidippus princeps	Edwards, 2004	United States	Arkansas	White	35.15	-91.981
Phidippus princeps	Edwards, 2004	United States	Mississippi	Washington	33.505	-90.852
Phidippus princeps	Edwards, 2004	United States	Alabama	Baldwin	31.108	-87.862
Phidippus princeps	Edwards, 2004	United States	Mississippi	Chickasaw	33.826	-88.838
Phidippus princeps	Edwards, 2004	United States	Mississippi	Lee	34.076	-88.768
Phidippus princeps	Edwards, 2004	United States	Mississippi	Union	34.578	-89.228
Phidippus princeps	Edwards, 2004	United States	Georgia	Fulton	33.867	-84.42
Phidippus princeps	Edwards, 2004	United States	Georgia	Madison	34.118	-83.221
Phidippus princeps	Edwards, 2004	United States	South Carolina	Anderson	34.592	-82.566
Phidippus princeps	Edwards, 2004	United States	South Carolina	Newberry	34.244	-81.618
Phidippus princeps	Edwards, 2004	United States	South Carolina	Sumter	33.979	-79.953
Phidippus princeps	Edwards, 2004	United States	North Carolina	Pender	34.453	-78.071

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus princeps	Edwards, 2004	United States	North Carolina	Craven	35.247	-77.123
Phidippus princeps	Edwards, 2004	United States	North Carolina	Johnston	35.442	-78.587
Phidippus princeps	Edwards, 2004	United States	North Carolina	Chatham	35.679	-79.033
Phidippus princeps	Edwards, 2004	United States	North Carolina	Hoke	34.913	-79.13
Phidippus princeps	Edwards, 2004	United States	North Carolina	Mecklenburg	35.428	-80.831
Phidippus princeps	Edwards, 2004	United States	North Carolina	Jackson	35.345	-83.116
Phidippus princeps	Edwards, 2004	United States	North Carolina	Macon	35.219	-83.632
Phidippus princeps	Edwards, 2004	United States	Tennessee	Cocke	36.083	-83.102
Phidippus princeps	Edwards, 2004	United States	Tennessee	Sevier	35.763	-83.646
Phidippus princeps	Edwards, 2004	United States	Tennessee	Monroe	35.442	-84.162
Phidippus princeps	Edwards, 2004	United States	Kansas	Geary	38.955	-96.594
Phidippus princeps	Edwards, 2004	United States	Kansas	Pottawatomie	39.233	-96.065
Phidippus princeps	Edwards, 2004	United States	Missouri	Barton	37.617	-94.364
Phidippus princeps	Edwards, 2004	United States	Missouri	Johnson	38.843	-93.89
Phidippus princeps	Edwards, 2004	United States	Missouri	Howard	39.094	-92.72
Phidippus princeps	Edwards, 2004	United States	Missouri	Boone	38.676	-92.274
Phidippus princeps	Edwards, 2004	United States	Missouri	Texas	37.115	-92.162
Phidippus princeps	Edwards, 2004	United States	Illinois	Macoupin	39.401	-90.099
Phidippus princeps	Edwards, 2004	United States	Illinois	Perry	38.063	-89.263

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus princeps	Edwards, 2004	United States	Illinois	Williamson	37.617	-88.789
Phidippus princeps	Edwards, 2004	United States	Indiana	Warrick	38.174	-87.423
Phidippus princeps	Edwards, 2004	United States	Indiana	Carroll	40.516	-86.531
Phidippus princeps	Edwards, 2004	United States	Ohio	Licking	40.098	-82.489
Phidippus princeps	Edwards, 2004	United States	Ohio	Fairfield	39.624	-82.629
Phidippus princeps	Edwards, 2004	United States	Ohio	Wayne	40.683	-81.82
Phidippus princeps	Edwards, 2004	United States	Virginia	Montgomery	37.087	-80.566
Phidippus princeps	Edwards, 2004	United States	Virginia	Patrick	36.655	-80.482
Phidippus princeps	Edwards, 2004	United States	Virginia	Pittsylvania	36.766	-79.604
Phidippus princeps	Edwards, 2004	United States	Virginia	Pittsylvania	37.031	-79.2
Phidippus princeps	Edwards, 2004	United States	Virginia	Lynchburg	37.38	-79.172
Phidippus princeps	Edwards, 2004	United States	Virginia	Nelson	37.881	-79.102
Phidippus princeps	Edwards, 2004	United States	Virginia	Dinwiddie	36.934	-77.541
Phidippus princeps	Edwards, 2004	United States	Virginia	Isle of Wight	36.697	-76.831
Phidippus princeps	Edwards, 2004	United States	West Virginia	Greenbrier	37.812	-80.677
Phidippus princeps	Edwards, 2004	United States	West Virginia	Raleigh	37.686	-81.068
Phidippus princeps	Edwards, 2004	United States	West Virginia	Wyoming	37.742	-81.667
Phidippus princeps	Edwards, 2004	United States	Iowa	Greene	42.119	-94.239
Phidippus princeps	Edwards, 2004	United States	Minnesota	Jackson	43.721	-94.866

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus princeps	Edwards, 2004	United States	Minnesota	Yellow Medicine	44.697	-95.953
Phidippus princeps	Edwards, 2004	United States	Minnesota	Meeker	45.087	-94.42
Phidippus princeps	Edwards, 2004	United States	Minnesota	Hennepin	45.213	-93.486
Phidippus princeps	Edwards, 2004	United States	Minnesota	Isanti	45.617	-93.221
Phidippus princeps	Edwards, 2004	United States	Minnesota	Stearns	45.673	-94.462
Phidippus princeps	Edwards, 2004	United States	Minnesota	Cass	46.969	-94.267
Phidippus princeps	Edwards, 2004	United States	Minnesota	Lake of the Woods	48.558	-94.434
Phidippus princeps	Edwards, 2004	United States	Minnesota	St. Louis	46.816	-93.012
Phidippus princeps	Edwards, 2004	United States	Wisconsin	Buffalo	44.362	-91.716
Phidippus princeps	Edwards, 2004	United States	Wisconsin	Trempealeau	44.195	-91.521
Phidippus princeps	Edwards, 2004	United States	Wisconsin	Crawford	43.234	-90.671
Phidippus princeps	Edwards, 2004	United States	Wisconsin	Juneau	43.819	-90.044
Phidippus princeps	Edwards, 2004	United States	Wisconsin	Columbia	43.415	-89.528
Phidippus princeps	Edwards, 2004	United States	Wisconsin	Menominee	44.976	-88.719
Phidippus princeps	Edwards, 2004	United States	Michigan	Marquette	46.425	-87.465
Phidippus princeps	Edwards, 2004	United States	Illinois	Cook	41.84	-87.855
Phidippus princeps	Edwards, 2004	United States	Michigan	Wexford	44.237	-85.388
Phidippus princeps	Edwards, 2004	United States	Michigan	Ogemaw	44.349	-84.12
Phidippus princeps	Edwards, 2004	United States	Michigan	Clare	43.833	-84.608

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus princeps	Edwards, 2004	United States	Michigan	Shiawassee	43.094	-84.259
Phidippus princeps	Edwards, 2004	United States	Michigan	Eaton	42.467	-84.636
Phidippus princeps	Edwards, 2004	United States	Michigan	Jackson	42.188	-84.454
Phidippus princeps	Edwards, 2004	United States	Michigan	Livingston	42.425	-84.008
Phidippus princeps	Edwards, 2004	United States	Michigan	Lapeer	42.899	-83.179
Phidippus princeps	Edwards, 2004	United States	Michigan	Oakland	42.509	-83.388
Phidippus princeps	Edwards, 2004	United States	Ohio	Ashtabula	41.7	-80.726
Phidippus princeps	Edwards, 2004	Canadá	Saskatchewan	Division No. 14	53.241	-102.065
Phidippus princeps	Edwards, 2004	Canadá	Manitoba	Division No. 22	53.966	-98.831
Phidippus princeps	Edwards, 2004	United States	West Virginia	Wetzel	39.61	-80.601
Phidippus princeps	Edwards, 2004	United States	West Virginia	Monongalia	39.54	-79.987
Phidippus princeps	Edwards, 2004	United States	Pennsylvania	Westmoreland	40.279	-79.681
Phidippus princeps	Edwards, 2004	United States	West Virginia	Grant	39.178	-79.137
Phidippus princeps	Edwards, 2004	United States	West Virginia	Hampshire	39.387	-78.524
Phidippus princeps	Edwards, 2004	United States	Virginia	Fauquier	38.773	-77.757
Phidippus princeps	Edwards, 2004	United States	Maryland	Harford	39.54	-76.489
Phidippus princeps	Edwards, 2004	United States	Maryland	Wicomico	38.3	-75.506
Phidippus princeps	Edwards, 2004	United States	New Jersey	Ocean	40.091	-74.433
Phidippus princeps	Edwards, 2004	United States	Pennsylvania	Montgomery	40.125	-75.297
Phidippus princeps	Edwards, 2004	United States	New Jersey	Essex	40.76	-74.315

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus princeps	Edwards, 2004	United States	New Jersey	Hunterdon	40.704	-74.907
Phidippus princeps	Edwards, 2004	United States	New York	Orange	41.484	-74.454
Phidippus princeps	Edwards, 2004	United States	New York	Dutchess	41.547	-73.931
Phidippus princeps	Edwards, 2004	United States	New York	Westchester	41.331	-73.771
Phidippus princeps	Edwards, 2004	United States	New York	Suffolk	40.78	-73.367
Phidippus princeps	Edwards, 2004	United States	New York	Suffolk	40.857	-72.583
Phidippus princeps	Edwards, 2004	United States	Connecticut	New Haven	41.505	-72.904
Phidippus princeps	Edwards, 2004	United States	Connecticut	Middlesex	41.505	-72.471
Phidippus princeps	Edwards, 2004	United States	New York	Tompkins	42.425	-76.52
Phidippus princeps	Edwards, 2004	United States	New York	Schenectady	42.753	-74.165
Phidippus princeps	Edwards, 2004	United States	New York	Rensselaer	42.495	-73.691
Phidippus princeps	Edwards, 2004	United States	Vermont	Windham	42.885	-72.667
Phidippus princeps	Edwards, 2004	United States	New Hampshire	Rockingham	42.878	-71.308
Phidippus princeps	Edwards, 2004	United States	Massachusetts	Hampshire	42.244	-72.806
Phidippus princeps	Edwards, 2004	United States	Massachusetts	Hampshire	42.265	-72.297
Phidippus princeps	Edwards, 2004	United States	Massachusetts	Worcester	42.342	-71.621
Phidippus princeps	Edwards, 2004	Canadá	Ontario	Stormont, Dundas and Glengarry	45.038	-75.371
Phidippus princeps	Edwards, 2004	Canadá	Ontario	Leeds and Grenville	44.565	-76.081
Phidippus princeps	Edwards, 2004	United States	Connecticut	Windham	41.7	-72.074

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus princeps	Edwards, 2004	United States	Maryland	Prince George's	38.955	-76.768
Phidippus princeps	Edwards, 2004	United States	Maryland	Frederick	39.582	-77.465
Phidippus princeps	Edwards, 2004	United States	Virginia	Prince William	38.662	-77.353
Phidippus princeps	Edwards, 2004	United States	Virginia	Fauquier	38.801	-77.855
Phidippus princeps	Edwards, 2004	United States	Michigan	Missaukee	44.321	-85.333
Phidippus princeps	Edwards, 2004	United States	Wisconsin	Waukesha	43.066	-88.176
Phidippus princeps	Edwards, 2004	United States	New Hampshire	Hillsborough	43.108	-71.851
Phidippus princeps	Edwards, 2004	United States	Massachusetts	Bristol	41.749	-70.938
Phidippus princeps	Edwards, 2004	United States	Massachusetts	Suffolk	42.293	-71.175
Phidippus princeps	Edwards, 2004	United States	Vermont	Orange	43.972	-72.499
Phidippus princeps	Edwards, 2004	United States	New York	Essex	44.411	-73.573
Phidippus princeps	Edwards, 2004	Canadá	Ontario	Renfrew	45.61	-77.113
Phidippus pruinosus	Edwards, 2004	United States	Texas	Taylor	32.36538	-99.93196
Phidippus pruinosus	Edwards, 2004	United States	Texas	Johnson	32.23974	-97.60754
Phidippus pruinosus	Edwards, 2004	United States	Texas	Llano	30.79482	-98.69646
Phidippus pruinosus	Edwards, 2004	United States	Texas	Travis	30.35507	-97.71224
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Escambia	30.613	-87.273
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Franklin	30	-84.695
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Wakulla	30.264	-84.11

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Dixie	29.721	-82.981
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Columbia	29.902	-82.632
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Baker	30.167	-82.27
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Clay	30.125	-81.74
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Alachua	29.637	-82.228
Phidippus pulcherrim	Edwards, 2004	United States	Georgia	Thomas	30.822	-83.942
Phidippus pulcherrim	Edwards, 2004	United States	Georgia	Lee	31.714	-84.11
Phidippus pulcherrim	Edwards, 2004	United States	Georgia	Emanuel	32.759	-82.256
Phidippus pulcherrim	Edwards, 2004	United States	Alabama	Coffee	31.505	-85.866
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Marion	29.247	-82.047
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Putnam	29.484	-81.684
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Lake	28.815	-81.74
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Seminole	28.689	-81.35
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Citrus	28.815	-82.339
Phidippus pulcherrim	Edwards, 2004	United States	Florida	Pasco	28.327	-82.367
Phidippus purpuratus	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Bulkley-Nechako	54.69629	-124.74953
Phidippus purpuratus	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Columbia-Shuswap	50.7514	-119.31037
Phidippus purpuratus	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	Okanagan-Similkameen	49.27207	-119.42991
Phidippus purpuratus	Edwards, 2004	Canadá	Alberta	Division No. 6	50.94566	-113.99075

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus purpuratus	Edwards, 2004	United States	Montana	Sanders	47.41917	-114.37926
Phidippus purpuratus	Edwards, 2004	United States	Montana	Ravalli	45.85018	-113.94593
Phidippus purpuratus	Edwards, 2004	Canadá	Alberta	Division No. 1	49.6307	-111.01715
Phidippus purpuratus	Edwards, 2004	Canadá	Saskatchewan	Division No. 4	49.66058	-109.20907
Phidippus purpuratus	Edwards, 2004	United States	Wyoming	Converse	42.43576	-105.6527
Phidippus purpuratus	Edwards, 2004	United States	Wyoming	Albany	41.37483	-105.705
Phidippus purpuratus	Edwards, 2004	United States	Kansas	Wabaunsee	38.84203	-96.23877
Phidippus purpuratus	Edwards, 2004	United States	Nebraska	York	40.7547	-97.6135
Phidippus purpuratus	Edwards, 2004	United States	North Dakota	Ward	48.34562	-101.61816
Phidippus purpuratus	Edwards, 2004	United States	North Dakota	Williams	48.5847	-103.65037
Phidippus purpuratus	Edwards, 2004	Canadá	Manitoba	Division No. 12	50.01921	-96.65717
Phidippus purpuratus	Edwards, 2004	United States	Arkansas	Hempstead	33.82127	-93.66862
Phidippus purpuratus	Edwards, 2004	United States	Missouri	Moniteau	38.72249	-92.41343
Phidippus purpuratus	Edwards, 2004	United States	Minnesota	Yellow Medicine	44.63982	-95.99969
Phidippus purpuratus	Edwards, 2004	United States	Minnesota	Norman	47.32951	-96.11923
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Kenora	52.64913	-94.02724
Phidippus purpuratus	Edwards, 2004	United States	Minnesota	St. Louis	47.62837	-92.38354
Phidippus purpuratus	Edwards, 2004	United States	Minnesota	Lake	47.65825	-91.51686
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Thunder Bay	48.5847	-89.48465
Phidippus purpuratus	Edwards, 2004	United States	Wisconsin	Polk	45.5065	-92.264
Phidippus purpuratus	Edwards, 2004	United States	Minnesota	Ramsey	45.0881	-93.01114

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus purpuratus	Edwards, 2004	United States	Wisconsin	Chippewa	44.90879	-91.51686
Phidippus purpuratus	Edwards, 2004	United States	Minnesota	Houston	43.80302	-91.72606
Phidippus purpuratus	Edwards, 2004	United States	Wisconsin	Dane	43.14554	-89.33522
Phidippus purpuratus	Edwards, 2004	United States	Wisconsin	Marathon	44.90879	-89.51453
Phidippus purpuratus	Edwards, 2004	United States	Michigan	Marquette	46.25363	-87.30301
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Algoma	47.00077	-83.86618
Phidippus purpuratus	Edwards, 2004	United States	Michigan	Cheboygan	45.32718	-84.28457
Phidippus purpuratus	Edwards, 2004	United States	Michigan	Antrim	45.05821	-84.97194
Phidippus purpuratus	Edwards, 2004	United States	Michigan	Wexford	44.43062	-85.62942
Phidippus purpuratus	Edwards, 2004	United States	Michigan	Missaukee	44.25131	-84.88228
Phidippus purpuratus	Edwards, 2004	United States	Michigan	Alcona	44.55016	-83.74663
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Waterloo	43.66854	-80.5713
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Muskoka	45.1927	-79.46554
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Nipissing	45.98466	-77.82183
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Haliburton	45.14787	-78.67357
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Renfrew	45.35707	-77.47815
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Hastings	44.52028	-77.53792
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Lennox and Addington	44.32602	-76.7609
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Lanark	44.89384	-76.32756
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Stormont, Dundas and Glengarry	44.96856	-75.46835
Phidippus purpuratus	Edwards, 2004	Canadá	Ontario	Leeds and Grenville	44.62487	-75.84192
Phidippus purpuratus	Edwards, 2004	United States	New York	Oswego	43.51911	-75.99135
Phidippus purpuratus	Edwards, 2004	United States	New York	Cayuga	42.7122	-76.3948

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus purpuratus	Edwards, 2004	United States	New York	Erie	43.026	-78.75575
Phidippus purpuratus	Edwards, 2004	United States	Pennsylvania	Warren	41.66621	-78.9799
Phidippus purpuratus	Edwards, 2004	United States	New York	Clinton	44.55016	-73.67522
Phidippus purpuratus	Edwards, 2004	Canadá	Quebec / Québec	Beauharnois-Salaberry	45.17776	-73.74993
Phidippus purpuratus	Edwards, 2004	United States	New York	Essex	44.14671	-73.49591
Phidippus purpuratus	Edwards, 2004	United States	New York	Warren	43.32486	-73.60051
Phidippus purpuratus	Edwards, 2004	United States	New York	Saratoga	42.96623	-73.94419
Phidippus purpuratus	Edwards, 2004	United States	New York	Greene	42.39841	-73.82465
Phidippus purpuratus	Edwards, 2004	United States	Pennsylvania	Luzerne	41.05356	-76.09595
Phidippus purpuratus	Edwards, 2004	United States	Pennsylvania	Westmoreland	40.25039	-79.39829
Phidippus purpuratus	Edwards, 2004	United States	West Virginia	Gilmer	38.93542	-80.71326
Phidippus purpuratus	Edwards, 2004	United States	Maryland	Washington	39.67883	-77.90775
Phidippus purpuratus	Edwards, 2004	United States	Maryland	Baltimore	39.5406	-76.82441
Phidippus purpuratus	Edwards, 2004	United States	Virginia	Fairfax	38.66494	-77.21589
Phidippus purpuratus	Edwards, 2004	United States	New Hampshire	Grafton	44.09814	-71.71772
Phidippus purpuratus	Edwards, 2004	United States	New Hampshire	Carroll	43.88894	-71.13495
Phidippus purpuratus	Edwards, 2004	United States	New Hampshire	Belknap	43.60503	-71.55335
Phidippus purpuratus	Edwards, 2004	United States	New Hampshire	Merrimack	43.39583	-71.95681
Phidippus purpuratus	Edwards, 2004	United States	Vermont	Windham	43.15675	-72.64417

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus purpuratus	Edwards, 2004	United States	New Hampshire	Cheshire	42.91767	-72.166
Phidippus purpuratus	Edwards, 2004	United States	New Hampshire	Merrimack	43.12686	-71.56829
Phidippus purpuratus	Edwards, 2004	United States	New Hampshire	Rockingham	42.96249	-71.13495
Phidippus purpuratus	Edwards, 2004	United States	Massachusetts	Plymouth	42.00616	-71.03036
Phidippus purpuratus	Edwards, 2004	United States	Massachusetts	Worcester	42.34984	-71.65795
Phidippus purpuratus	Edwards, 2004	United States	Connecticut	Hartford	41.61765	-72.44992
Phidippus purpuratus	Edwards, 2004	United States	Connecticut	New Haven	41.40845	-73.0028
Phidippus purpuratus	Edwards, 2004	United States	New York	Dutchess	41.57282	-73.69016
Phidippus purpuratus	Edwards, 2004	United States	Maine	Somerset	44.93494	-69.58091
Phidippus purpuratus	Edwards, 2004	United States	Maine	Penobscot	45.53265	-68.68434
Phidippus purpuratus	Edwards, 2004	United States	Maine	Washington	44.97976	-67.77284
Phidippus purpuratus	Edwards, 2004	United States	Maine	Hancock	44.7108	-68.31078
Phidippus purpuratus	Edwards, 2004	United States	Maine	Waldo	44.48665	-69.11768
Phidippus purpuratus	Edwards, 2004	United States	Maine	Lincoln	44.12803	-69.49125
Phidippus purpuratus	Edwards, 2004	United States	Maine	Androscoggin	44.09814	-70.28322
Phidippus purpuratus	Edwards, 2004	United States	Maine	York	43.48549	-70.61196
Phidippus purpuratus	Edwards, 2004	United States	Massachusetts	Cape Cod	41.46822	-70.25333
Phidippus purpuratus	Edwards, 2004	Canadá	Nova Scotia / Nouvelle-Écosse	Kings	45.11425	-64.59003
Phidippus purpuratus	Edwards, 2004	United States	Florida	Okaloosa	30.54507	-86.63058

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus purpuratus	Edwards, 2004	United States	Florida	Liberty	30.15656	-84.98688
Phidippus purpuratus	Edwards, 2004	United States	Florida	Liberty	30.08185	-84.71791
Phidippus purpuratus	Edwards, 2004	United States	Florida	Wakulla	30.20139	-84.34434
Phidippus purpuratus	Edwards, 2004	United States	Florida	Clay	30.02207	-81.78913
Phidippus purpuratus	Edwards, 2004	United States	Florida	Alachua	29.76805	-82.17764
Phidippus purpuratus	Edwards, 2004	United States	Florida	Putnam	29.55885	-81.80408
Phidippus purpuratus	Edwards, 2004	United States	Florida	Marion	29.17034	-81.92362
Phidippus purpuratus	Edwards, 2004	United States	Florida	Marion	29.20022	-82.43167
Phidippus purpuratus	Edwards, 2004	United States	South Carolina	Barnwell	33.36925	-81.40062
Phidippus purpuratus	Edwards, 2004	United States	Virginia	Smyth	36.89574	-81.71442
Phidippus putnami	Edwards, 2004	United States	Texas	Brazos	30.85051	-96.29589
Phidippus putnami	Edwards, 2004	United States	Texas	Denton	33.40962	-97.30828
Phidippus putnami	Edwards, 2004	United States	Oklahoma	Johnston	34.16892	-96.63335
Phidippus putnami	Edwards, 2004	United States	Oklahoma	Lincoln	35.85624	-96.74584
Phidippus putnami	Edwards, 2004	United States	Kansas	Wabaunsee	38.78094	-96.32401
Phidippus putnami	Edwards, 2004	United States	Kansas	Pottawatomie	39.28713	-96.04279
Phidippus putnami	Edwards, 2004	United States	Nebraska	Lancaster	40.80572	-96.63335
Phidippus putnami	Edwards, 2004	United States	Kansas	Johnson	38.94967	-94.88978
Phidippus putnami	Edwards, 2004	United States	Missouri	Jackson	38.94967	-94.43983

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus putnami	Edwards, 2004	United States	Missouri	Johnson	38.69657	-93.90551
Phidippus putnami	Edwards, 2004	United States	Kansas	Neosho	37.68418	-95.22725
Phidippus putnami	Edwards, 2004	United States	Missouri	Vernon	37.76854	-94.2711
Phidippus putnami	Edwards, 2004	United States	Arkansas	Washington	35.85624	-94.24298
Phidippus putnami	Edwards, 2004	United States	Arkansas	Madison	36.19371	-93.79302
Phidippus putnami	Edwards, 2004	United States	Arkansas	Pope	35.20943	-92.92124
Phidippus putnami	Edwards, 2004	United States	Missouri	Howard	39.03403	-92.69626
Phidippus putnami	Edwards, 2004	United States	Missouri	Franklin	38.49972	-91.26204
Phidippus putnami	Edwards, 2004	United States	Missouri	Lincoln	38.89342	-90.8402
Phidippus putnami	Edwards, 2004	United States	Illinois	Macoupin	39.51211	-90.02466
Phidippus putnami	Edwards, 2004	United States	Illinois	Franklin	37.99352	-89.04039
Phidippus putnami	Edwards, 2004	United States	Illinois	Johnson	37.57169	-88.78729
Phidippus putnami	Edwards, 2004	United States	Mississippi	Webster	33.60648	-89.15288
Phidippus putnami	Edwards, 2004	United States	Mississippi	Itawamba	34.45014	-88.47795
Phidippus putnami	Edwards, 2004	United States	Mississippi	Wilkinson	31.18798	-91.23391
Phidippus putnami	Edwards, 2004	United States	Louisiana	Plaquemines	29.81	-89.99654
Phidippus putnami	Edwards, 2004	United States	Alabama	Pike	31.89103	-86.00321
Phidippus putnami	Edwards, 2004	United States	Alabama	Chambers	32.8753	-85.55326
Phidippus putnami	Edwards, 2004	United States	Alabama	Lawrence	34.70324	-87.32495

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus putnami	Edwards, 2004	United States	Tennessee	DeKalb	35.91248	-85.69387
Phidippus putnami	Edwards, 2004	United States	Tennessee	Davidson	36.16558	-86.65002
Phidippus putnami	Edwards, 2004	United States	Kentucky	Trigg	36.953	-87.74678
Phidippus putnami	Edwards, 2004	United States	Ohio	Logan	40.27141	-83.58471
Phidippus putnami	Edwards, 2004	United States	Tennessee	Jefferson	35.94061	-83.50035
Phidippus putnami	Edwards, 2004	United States	North Carolina	Swain	35.32192	-83.47222
Phidippus putnami	Edwards, 2004	United States	North Carolina	Haywood	35.43441	-82.82542
Phidippus putnami	Edwards, 2004	United States	Georgia	Madison	34.22516	-83.27537
Phidippus putnami	Edwards, 2004	United States	South Carolina	Edgefield	33.77521	-81.89739
Phidippus putnami	Edwards, 2004	United States	Georgia	Effingham	32.39723	-81.5318
Phidippus putnami	Edwards, 2004	United States	South Carolina	Darlington	34.30953	-79.81635
Phidippus putnami	Edwards, 2004	United States	North Carolina	Wake	35.82812	-78.41025
Phidippus putnami	Edwards, 2004	United States	Virginia	Augusta	38.19037	-78.8602
Phidippus putnami	Edwards, 2004	United States	Virginia	Rockbridge	37.57169	-79.50701
Phidippus putnami	Edwards, 2004	United States	Virginia	Franklin	37.12173	-79.76011
Phidippus putnami	Edwards, 2004	United States	Maryland	Prince George's	39.09731	-76.84948
Phidippus putnami	Edwards, 2004	United States	Virginia	Fairfax	38.75984	-77.25022
Phidippus putnami	Edwards, 2004	United States	Maryland	Caroline	39.05512	-75.84411
Phidippus putnami	Edwards, 2004	United States	New Jersey	Atlantic	39.4629	-74.68408

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus putnami	Edwards, 2004	United States	Virginia	York	37.14986	-76.48389
Phidippus putnami	Edwards, 2004	United States	New Jersey	Ocean	39.94097	-74.33255
Phidippus putnami	Edwards, 2004	United States	New Jersey	Burlington	39.89176	-74.85281
Phidippus putnami	Edwards, 2004	United States	Pennsylvania	Montgomery	40.22219	-75.28167
Phidippus regius	Edwards 2004	United States	Virginia	Fredericksburg	38.28485	-77.48569
Phidippus regius	Edwards 2004	United States	North Carolina	Johnston	35.41115	-78.47662
Phidippus regius	Edwards 2004	United States	North Carolina	Duplin	35.01478	-77.9151
Phidippus regius	Edwards 2004	United States	North Carolina	Transylvania	35.41115	-82.73762
Phidippus regius	Edwards 2004	United States	Mississippi	Jefferson Davis	31.48046	-89.60807
Phidippus regius	Edwards 2004	United States	Alabama	Bullock	32.07502	-85.87557
Phidippus regius	Edwards 2004	United States	Georgia	Monroe	32.96686	-83.9928
Phidippus regius	Edwards 2004	United States	Georgia	Bulloch	32.57049	-81.94488
Phidippus regius	Edwards 2004	United States	Georgia	Tattnall	32.07502	-82.1761
Phidippus regius	Edwards 2004	United States	Georgia	Chatham	32.10805	-81.31729
Phidippus regius	Edwards 2004	United States	Alabama	Baldwin	30.8281	-87.94001
Phidippus regius	Edwards 2004	United States	Alabama	Baldwin	30.53082	-87.6097
Phidippus regius	Edwards 2004	United States	Florida	Okaloosa	30.5556	-86.78392
Phidippus regius	Edwards 2004	United States	Florida	Liberty	30.39044	-84.76077
Phidippus regius	Edwards 2004	United States	Florida	Wakulla	30.184	-84.45524

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus regius	Edwards 2004	United States	Florida	Leon	30.42347	-84.31485
Phidippus regius	Edwards 2004	United States	Georgia	Mitchell	31.22447	-84.18273
Phidippus regius	Edwards 2004	United States	Georgia	Thomas	30.76204	-84.03409
Phidippus regius	Edwards 2004	United States	Florida	Jefferson	30.53082	-83.72855
Phidippus regius	Edwards 2004	United States	Florida	Jefferson	30.28309	-83.95977
Phidippus regius	Edwards 2004	United States	Florida	Taylor	29.94452	-83.5056
Phidippus regius	Edwards 2004	United States	Florida	Lafayette	29.86194	-83.0349
Phidippus regius	Edwards 2004	United States	Georgia	Ware	30.85287	-82.44034
Phidippus regius	Edwards 2004	United States	Georgia	Glynn	31.23273	-81.70541
Phidippus regius	Edwards 2004	United States	Florida	Duval	30.51431	-81.75495
Phidippus regius	Edwards 2004	United States	Florida	Baker	30.28309	-82.34125
Phidippus regius	Edwards 2004	United States	Florida	Columbia	30.0271	-82.70459
Phidippus regius	Edwards 2004	United States	Florida	Levy	29.37474	-82.86149
Phidippus regius	Edwards 2004	United States	Florida	Alachua	29.54815	-82.39906
Phidippus regius	Edwards 2004	United States	Florida	Marion	29.37474	-81.96965
Phidippus regius	Edwards 2004	United States	Florida	Clay	29.91149	-81.93662
Phidippus regius	Edwards 2004	United States	Florida	Duval	30.184	-81.47419
Phidippus regius	Edwards 2004	United States	Florida	Flagler	29.36648	-81.33381
Phidippus regius	Edwards 2004	United States	Florida	Citrus	28.94533	-82.4486

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus regius	Edwards 2004	United States	Florida	Pasco	28.34252	-82.56421
Phidippus regius	Edwards 2004	United States	Florida	Manatee	27.39288	-82.19261
Phidippus regius	Edwards 2004	United States	Florida	Hillsborough	27.84705	-82.28345
Phidippus regius	Edwards 2004	United States	Florida	Osceola	28.34252	-80.91266
Phidippus regius	Edwards 2004	United States	Florida	Volusia	28.83798	-81.0035
Phidippus regius	Edwards 2004	United States	Florida	Polk	27.78925	-81.67237
Phidippus regius	Edwards 2004	United States	Florida	Highlands	27.47545	-81.20994
Phidippus regius	Edwards 2004	United States	Florida	Hardee	27.3681	-81.66412
Phidippus regius	Edwards 2004	United States	Florida	DeSoto	27.03779	-81.82927
Phidippus regius	Edwards 2004	United States	Florida	Sumter	28.63154	-82.11003
Phidippus regius	Edwards 2004	United States	Florida	Marion	29.14352	-81.77972
Phidippus regius	Edwards 2004	United States	Florida	Seminole	28.6976	-81.4329
Phidippus regius	Edwards 2004	United States	Florida	Lake	29.00314	-81.44116
Phidippus regius	Edwards 2004	United States	Florida	Polk	28.20214	-81.82927
Phidippus regius	Edwards 2004	United States	Florida	Okeechobee	27.50023	-80.73099
Phidippus regius	Edwards 2004	United States	Florida	Martin	27.11211	-80.475
Phidippus regius	Edwards 2004	United States	Florida	Hendry	26.69303	-81.14388
Phidippus regius	Edwards 2004	United States	Florida	Glades	26.96554	-81.26774
Phidippus regius	Edwards 2004	United States	Florida	Lee	26.4453	-81.65586

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus regius	Edwards 2004	United States	Florida	Collier	26.13976	-81.50722
Phidippus regius	Edwards 2004	United States	Florida	Collier	25.96635	-80.9044
Phidippus regius	Edwards 2004	United States	Florida	Miami-Dade	25.82597	-80.55758
Phidippus regius	Edwards 2004	United States	Florida	Broward	26.25537	-80.37591
Phidippus regius	Edwards 2004	United States	Florida	Palm Beach	26.68477	-80.4172
Phidippus regius	Edwards 2004	United States	Florida	Monroe	25.48121	-80.9044
Phidippus regius	Edwards 2004	United States	Florida	Miami-Dade	25.38211	-80.71447
Phidippus richmani	Edwards, 2004	United States	Florida	Calhoun	30.58335	-84.94863
Phidippus richmani	Edwards, 2004	United States	Florida	Leon	30.48493	-84.13309
Phidippus richmani	Edwards, 2004	United States	Florida	Lafayette	29.89436	-83.07851
Phidippus richmani	Edwards, 2004	United States	Florida	Alachua	29.6272	-82.50201
Phidippus richmani	Edwards, 2004	United States	Florida	Bradford	29.96467	-82.22079
Phidippus richmani	Edwards, 2004	United States	Florida	Marion	29.38817	-81.8552
Phidippus richmani	Edwards, 2004	United States	Florida	Lake	28.58669	-81.89739
Phidippus richmani	Edwards, 2004	United States	Florida	St. Lucie	27.2087	-80.50534
Phidippus texanus	Edwards, 2004	México	Tamaulipas	Casas	23.564	-99.037
Phidippus texanus	Edwards, 2004	México	Tamaulipas	Méndez	25.238	-98.303
Phidippus texanus	Edwards, 2004	United States	Texas	Cameron	26.101	-97.543
Phidippus texanus	Edwards, 2004	United States	Texas	Hidalgo	26.256	-98.161
Phidippus texanus	Edwards, 2004	United States	Texas	Starr	26.372	-98.663

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus texanus	Edwards, 2004	United States	Texas	Zapata	27.235	-99.295
Phidippus texanus	Edwards, 2004	United States	Texas	Kenedy	26.797	-97.839
Phidippus texanus	Edwards, 2004	United States	Texas	Kenedy	27.093	-97.633
Phidippus texanus	Edwards, 2004	United States	Texas	Brooks	27.132	-98.38
Phidippus texanus	Edwards, 2004	United States	Texas	Duval	27.428	-98.316
Phidippus texanus	Edwards, 2004	United States	Texas	Duval	27.582	-98.663
Phidippus texanus	Edwards, 2004	United States	Texas	La Salle	28.317	-99.307
Phidippus texanus	Edwards, 2004	México	Coahuila de Zaragoza	Juárez	27.673	-100.827
Phidippus texanus	Edwards, 2004	United States	Texas	DeWitt	29.044	-97.453
Phidippus texanus	Edwards, 2004	United States	Texas	Atascosa	28.993	-98.599
Phidippus texanus	Edwards, 2004	United States	Texas	Medina	29.276	-98.934
Phidippus texanus	Edwards, 2004	United States	Texas	Bexar	29.559	-98.779
Phidippus texanus	Edwards, 2004	United States	Texas	Bandera	29.817	-99.552
Phidippus texanus	Edwards, 2004	United States	Texas	Val Verde	29.817	-100.943
Phidippus texanus	Edwards, 2004	United States	Texas	Pecos	31.028	-102.888
Phidippus texanus	Edwards, 2004	United States	Texas	Midland	31.736	-102.244
Phidippus texanus	Edwards, 2004	United States	Texas	Gillespie	30.409	-99.179
Phidippus texanus	Edwards, 2004	United States	Texas	Travis	30.384	-98.084
Phidippus texanus	Edwards, 2004	United States	Texas	Austin	29.946	-96.371

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus texanus	Edwards, 2004	United States	Texas	Milam	31.015	-96.783
Phidippus texanus	Edwards, 2004	United States	Texas	McLennan	31.813	-97.054
Phidippus texanus	Edwards, 2004	United States	Texas	Llano	30.822	-98.96
Phidippus texanus	Edwards, 2004	United States	Texas	San Saba	31.247	-98.895
Phidippus texanus	Edwards, 2004	United States	Texas	Martin	32.232	-101.961
Phidippus texanus	Edwards, 2004	United States	New Mexico	Lea	32.309	-103.609
Phidippus texanus	Edwards, 2004	United States	New Mexico	Lea	33.121	-103.377
Phidippus texanus	Edwards, 2004	United States	Texas	Crosby	33.7	-101.265
Phidippus texanus	Edwards, 2004	United States	Texas	Kent	33.211	-100.724
Phidippus texanus	Edwards, 2004	United States	Texas	Scurry	32.708	-100.84
Phidippus texanus	Edwards, 2004	United States	Texas	King	33.713	-100.145
Phidippus texanus	Edwards, 2004	United States	Texas	Foard	33.906	-99.617
Phidippus texanus	Edwards, 2004	United States	Texas	Baylor	33.816	-99.282
Phidippus texanus	Edwards, 2004	United States	Texas	Wichita	33.855	-98.715
Phidippus texanus	Edwards, 2004	United States	Texas	Cooke	33.649	-97.311
Phidippus texanus	Edwards, 2004	United States	Texas	Rockwall	32.966	-96.422
Phidippus texanus	Edwards, 2004	United States	Texas	Parker	32.953	-97.942
Phidippus texanus	Edwards, 2004	United States	Texas	Taylor	32.193	-99.797
Phidippus texanus	Edwards, 2004	United States	Texas	Stephens	32.541	-98.844

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus texanus	Edwards, 2004	United States	Texas	Erath	32.464	-98.187
Phidippus texanus	Edwards, 2004	United States	Oklahoma	Bryan	34.151	-96.41
Phidippus texanus	Edwards, 2004	United States	Oklahoma	McCurtain	33.996	-94.645
Phidippus texanus	Edwards, 2004	United States	Arkansas	Newton	35.774	-93.306
Phidippus texanus	Edwards, 2004	United States	Oklahoma	Creek	35.696	-96.577
Phidippus texanus	Edwards, 2004	United States	Texas	Hemphill	35.954	-100.17
Phidippus texanus	Edwards, 2004	United States	Texas	Wheeler	35.4	-100.531
Phidippus texanus	Edwards, 2004	United States	Texas	Collingsworth	35.014	-100.454
Phidippus texanus	Edwards, 2004	United States	Oklahoma	Washita	35.13	-99.256
Phidippus texanus	Edwards, 2004	United States	Oklahoma	Comanche	34.64	-98.715
Phidippus texanus	Edwards, 2004	United States	Oklahoma	Dewey	35.89	-98.805
Phidippus texanus	Edwards, 2004	United States	Oklahoma	Roger Mills	35.941	-99.385
Phidippus texanus	Edwards, 2004	United States	Oklahoma	Roger Mills	35.529	-99.462
Phidippus texanus	Edwards, 2004	United States	Oklahoma	Woods	36.762	-98.766
Phidippus texanus	Edwards, 2004	United States	Missouri	McDonald	36.685	-94.181
Phidippus texanus	Edwards, 2004	United States	Missouri	Barton	37.574	-94.31
Phidippus texanus	Edwards, 2004	United States	Kansas	Coffey	38.153	-95.56
Phidippus texanus	Edwards, 2004	United States	Kansas	Cowley	37.277	-97.066
Phidippus texanus	Edwards, 2004	United States	Kansas	Barber	37.393	-98.483

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus texanus	Edwards, 2004	United States	Kansas	Pawnee	38.127	-99.372
Phidippus texanus	Edwards, 2004	United States	Kansas	Trego	38.855	-99.861
Phidippus texanus	Edwards, 2004	United States	Nebraska	Seward	40.864	-97.208
Phidippus texanus	Edwards, 2004	United States	Kansas	Morris	38.855	-96.873
Phidippus texanus	Edwards, 2004	United States	Kansas	Shawnee	39.035	-95.637
Phidippus texanus	Edwards, 2004	United States	Missouri	St. Louis	38.675	-90.562
Phidippus texanus	Edwards, 2004	México	Nuevo León	Santa Catarina	25.577	-100.441
Phidippus tigris	Edwards, 2004	United States	Arizona	Yavapai	34.55329	-111.74465
Phidippus tigris	Edwards, 2004	United States	Arizona	Santa Cruz	31.57754	-110.48222
Phidippus tigris	Edwards, 2004	United States	Arizona	Santa Cruz	31.60009	-111.0458
Phidippus tigris	Edwards, 2004	United States	Arizona	Graham	32.54691	-109.68192
Phidippus toro	Edwards, 2004	México	Chihuahua	Casas Grandes	30.56308	-107.95734
Phidippus toro	Edwards, 2004	México	Tamaulipas	Jaumave	23.43933	-99.3908
Phidippus toro	Edwards, 2004	México	Nuevo León	Doctor González	25.82894	-99.79658
Phidippus toro	Edwards, 2004	United States	Arizona	Cochise	31.91569	-109.55793
Phidippus toro	Edwards, 2004	United States	Arizona	Cochise	31.53245	-109.25359
Phidippus toro	Edwards, 2004	United States	Arizona	Cochise	31.45355	-109.80591
Phidippus tux	Edwards 2004	México	Sonora	Bacanora	28.88558	-109.38265
Phidippus tux	Edwards 2004	United States	Arizona	Santa Cruz	31.50987	-110.73456
Phidippus tux	Edwards 2004	México	Nayarit	Santa María del Oro	21.48983	-104.65096
Phidippus tux	Edwards 2004	México	Jalisco	Zacoalco de Torres	20.21745	-103.61715
Phidippus tux	Hernandez Salgado, L.C. et al, 2022	México	Baja California Sur	Comondú	26.12435	-112.01177

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus tyrannus	Edwards, 2004	México	Chihuahua	Chihuahua	29.69081	-106.09351
Phidippus tyrannus	Edwards, 2004	México	Chihuahua	Ahumada	30.58839	-106.79911
Phidippus tyrannus	Edwards, 2004	United States	New Mexico	Roosevelt	33.89191	-103.61794
Phidippus tyrannus	Edwards, 2004	United States	New Mexico	De Baca	34.05504	-104.51519
Phidippus tyrannus	Edwards, 2004	United States	New Mexico	Torrance	34.70858	-106.31277
Phidippus tyrannus	Edwards, 2004	United States	New Mexico	Socorro	34.36314	-107.46794
Phidippus tyrannus	Edwards, 2004	United States	Arizona	Cochise	31.56721	-109.654
Phidippus tyrannus	Edwards, 2004	United States	New Mexico	Hidalgo	31.77921	-108.60036
Phidippus tyrannus	Edwards, 2004	United States	Texas	Culberson	31.11858	-104.63755
Phidippus tyrannus	Edwards, 2004	México	Aguascalientes	San José de Gracia	21.99009	-102.46187
Phidippus tyrelli	Edwards, 2004	Canadá	British Columbia / Colombie-Britannique	East Kootenay	49.8281	-115.62953
Phidippus tyrelli	Edwards, 2004	United States	Oregon	Baker	44.93358	-117.88854
Phidippus tyrelli	Edwards, 2004	United States	Idaho	Custer	43.99232	-114.64121
Phidippus tyrelli	Edwards, 2004	United States	Montana	Ravalli	45.87483	-113.93527
Phidippus tyrelli	Edwards, 2004	United States	Montana	Madison	45.12183	-112.42926
Phidippus tyrelli	Edwards, 2004	United States	Wyoming	Big Horn	44.22763	-107.29942
Phidippus tyrelli	Edwards, 2004	United States	California	Riverside	33.73265	-116.66491
Phidippus tyrelli	Edwards, 2004	United States	Utah	Beaver	38.53304	-112.52339
Phidippus tyrelli	Edwards, 2004	United States	Utah	Washington	37.30941	-113.27639
Phidippus tyrelli	Edwards, 2004	United States	Utah	Garfield	38.01535	-110.17025

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus tyrelli	Edwards, 2004	United States	Utah	Garfield	37.59179	-112.0057
Phidippus tyrelli	Edwards, 2004	United States	Wyoming	Platte	42.39219	-105.08748
Phidippus tyrelli	Edwards, 2004	United States	Wyoming	Teton	43.38051	-110.07612
Phidippus tyrelli	Edwards, 2004	United States	Wyoming	Teton	43.38051	-110.68794
Phidippus tyrelli	Edwards, 2004	United States	Utah	Cache	41.96862	-111.6292
Phidippus tyrelli	Edwards, 2004	United States	Utah	Salt Lake	40.55674	-111.72332
Phidippus tyrelli	Edwards, 2004	United States	Utah	Summit	40.65087	-111.25269
Phidippus tyrelli	Edwards, 2004	United States	Utah	Utah	40.18024	-111.29976
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Delta	38.67423	-108.21715
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Gunnison	38.55658	-107.37002
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Saguache	38.36832	-106.8288
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Saguache	38.2036	-106.28757
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Saguache	38.01535	-105.81695
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Saguache	37.8271	-105.60517
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Hinsdale	37.96829	-107.22883
Phidippus tyrelli	Edwards, 2004	United States	Colorado	La Plata	37.4506	-107.74652
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Grand	40.32143	-106.02873
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Boulder	40.06258	-105.58163
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Denver	39.75668	-104.99335

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Fremont	38.62717	-105.04041
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Lincoln	38.6507	-103.76972
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Apache	36.13284	-109.39372
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Gila	34.32093	-111.06444
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Yavapai	34.53271	-111.84098
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Coconino	35.92106	-112.17042
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Coconino	35.47397	-112.09982
Phidippus tyrelli	Edwards, 2004	United States	New Mexico	Sierra	33.33261	-107.67593
Phidippus tyrelli	Edwards, 2004	United States	New Mexico	Grant	32.88552	-108.38187
Phidippus tyrelli	Edwards, 2004	United States	New Mexico	Luna	32.50901	-107.77005
Phidippus tyrelli	Edwards, 2004	México	Sonora	San Pedro de la Cueva	29.28522	-109.74669
Phidippus tyrelli	Edwards, 2004	México	Sonora	Magdalena	30.74416	-111.1821
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Pima	31.8266	-111.29976
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Santa Cruz	31.33305	-111.04584
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Graham	32.46195	-110.14672
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Cochise	32.25017	-109.62903
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Cochise	31.77954	-109.77022
Phidippus tyrelli	Edwards, 2004	México	Sonora	Agua Prieta	31.33333	-109.51222
Phidippus tyrelli	Edwards, 2004	United States	Arizona	Cochise	31.49717	-110.19378
Phidippus tyrelli	Edwards, 2004	United States	New Mexico	Socorro	34.36799	-106.73467

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus tyrelli	Edwards, 2004	United States	New Mexico	Guadalupe	35.121	-105.1816
Phidippus tyrelli	Edwards, 2004	United States	Colorado	Park	39.28605	-106.12286
Phidippus ursulus	Edwards, 2004`	United States	New Mexico	Harding	35.80876	-104.02579
Phidippus ursulus	Edwards, 2004`	United States	New Mexico	Doña Ana	32.8723	-106.5544
Phidippus venus	Edwards, 2004	México	Veracruz de Ignacio de la Llave	Ozuluama de Mascareñas	21.8008	-97.95319
Phidippus vexans	Edwards, 2004	United States	New Mexico	Doña Ana	32.16367	-106.84144
Phidippus vexans	Edwards, 2004	United States	Texas	Foard	33.94461	-99.5486
Phidippus vexans	Edwards, 2004	United States	Texas	Presidio	30.13476	-104.41801
Phidippus whitmani	Edwards, 2004	United States	North Dakota	Williams	48.5353	-103.63455
Phidippus whitmani	Edwards, 2004	Canadá	Manitoba	Division No. 13	50.03979	-96.98007
Phidippus whitmani	Edwards, 2004	United States	Minnesota	Lake	47.66732	-91.59862
Phidippus whitmani	Edwards, 2004	United States	Minnesota	Dakota	44.7162	-93.2767
Phidippus whitmani	Edwards, 2004	United States	Iowa	Hancock	42.98025	-93.50816
Phidippus whitmani	Edwards, 2004	United States	Iowa	Plymouth	42.5752	-96.28569
Phidippus whitmani	Edwards, 2004	United States	Nebraska	Gage	40.14487	-96.69074
Phidippus whitmani	Edwards, 2004	United States	Kansas	Johnson	38.81397	-95.01266
Phidippus whitmani	Edwards, 2004	United States	Missouri	Henry	38.46678	-93.68176
Phidippus whitmani	Edwards, 2004	United States	Missouri	Moniteau	38.81397	-92.52446
Phidippus whitmani	Edwards, 2004	United States	Missouri	Crawford	37.94599	-91.42502
Phidippus whitmani	Edwards, 2004	United States	Missouri	St. Charles	38.7561	-90.73064

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus whitmani	Edwards, 2004	United States	Illinois	Mason	40.37633	-89.9784
Phidippus whitmani	Edwards, 2004	United States	Illinois	Champaign	40.37633	-88.06885
Phidippus whitmani	Edwards, 2004	United States	Texas	Williamson	30.4814	-97.32726
Phidippus whitmani	Edwards, 2004	United States	Oklahoma	Lincoln	35.71819	-96.8354
Phidippus whitmani	Edwards, 2004	United States	Oklahoma	Pushmataha	34.56089	-95.35985
Phidippus whitmani	Edwards, 2004	United States	Arkansas	Carroll	36.4415	-93.4503
Phidippus whitmani	Edwards, 2004	United States	Arkansas	Madison	36.06538	-93.65283
Phidippus whitmani	Edwards, 2004	United States	Arkansas	Johnson	35.60246	-93.18991
Phidippus whitmani	Edwards, 2004	United States	Mississippi	Wilkinson	31.03112	-91.07783
Phidippus whitmani	Edwards, 2004	United States	Louisiana	East Baton Rouge	30.655	-90.99103
Phidippus whitmani	Edwards, 2004	United States	Mississippi	Simpson	32.01483	-90.15199
Phidippus whitmani	Edwards, 2004	United States	Mississippi	Winston	33.08533	-89.05256
Phidippus whitmani	Edwards, 2004	United States	Mississippi	Itawamba	34.18477	-88.30031
Phidippus whitmani	Edwards, 2004	United States	Illinois	Williamson	37.62774	-88.90789
Phidippus whitmani	Edwards, 2004	United States	Indiana	Morgan	39.39262	-86.62222
Phidippus whitmani	Edwards, 2004	United States	Alabama	Morgan	34.35836	-86.96941
Phidippus whitmani	Edwards, 2004	United States	Alabama	Hale	32.91174	-87.46127
Phidippus whitmani	Edwards, 2004	United States	Alabama	Clay	33.34572	-85.69638
Phidippus whitmani	Edwards, 2004	United States	Georgia	Taylor	32.70921	-84.30762

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus whitmani	Edwards, 2004	United States	Alabama	Pike	31.8123	-85.81211
Phidippus whitmani	Edwards, 2004	United States	Alabama	Houston	31.08899	-85.29133
Phidippus whitmani	Edwards, 2004	United States	Florida	Santa Rosa	30.5817	-86.79758
Phidippus whitmani	Edwards, 2004	United States	Florida	Liberty	30.13421	-84.82841
Phidippus whitmani	Edwards, 2004	United States	Florida	Wakulla	30.07083	-84.32918
Phidippus whitmani	Edwards, 2004	United States	Florida	Jefferson	30.33674	-83.98936
Phidippus whitmani	Edwards, 2004	United States	Florida	Taylor	30.24994	-83.70004
Phidippus whitmani	Edwards, 2004	United States	Florida	Lafayette	29.84489	-83.09246
Phidippus whitmani	Edwards, 2004	United States	Florida	Gilchrist	29.72916	-82.83206
Phidippus whitmani	Edwards, 2004	United States	Florida	Alachua	29.61343	-82.31128
Phidippus whitmani	Edwards, 2004	United States	Florida	Bradford	29.96062	-82.16661
Phidippus whitmani	Edwards, 2004	United States	Florida	Marion	29.29517	-81.84836
Phidippus whitmani	Edwards, 2004	United States	Tennessee	McMinn	35.63139	-84.59695
Phidippus whitmani	Edwards, 2004	United States	Georgia	Fannin	34.90808	-84.53908
Phidippus whitmani	Edwards, 2004	United States	Georgia	Hall	34.50302	-83.67111
Phidippus whitmani	Edwards, 2004	United States	Tennessee	Sevier	35.68926	-83.46858
Phidippus whitmani	Edwards, 2004	United States	North Carolina	Jackson	35.22634	-83.06352
Phidippus whitmani	Edwards, 2004	United States	North Carolina	Buncombe	35.57353	-82.45594
Phidippus whitmani	Edwards, 2004	United States	South Carolina	Anderson	34.73448	-82.62954

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus whitmani	Edwards, 2004	United States	North Carolina	Haywood	35.63139	-82.94779
Phidippus whitmani	Edwards, 2004	United States	Minnesota	Winona	43.90609	-91.80115
Phidippus whitmani	Edwards, 2004	United States	Wisconsin	Marathon	44.83193	-90.15199
Phidippus whitmani	Edwards, 2004	United States	Michigan	Big Bay De Noc	45.88797	-86.54989
Phidippus whitmani	Edwards, 2004	United States	Michigan	Cheboygan	45.30932	-84.29316
Phidippus whitmani	Edwards, 2004	United States	Michigan	Lake	44.03629	-85.59512
Phidippus whitmani	Edwards, 2004	United States	Wisconsin	Oconto	44.67281	-88.22798
Phidippus whitmani	Edwards, 2004	United States	Wisconsin	Waushara	44.12309	-88.95129
Phidippus whitmani	Edwards, 2004	United States	Wisconsin	Columbia	43.42871	-89.44314
Phidippus whitmani	Edwards, 2004	United States	Wisconsin	Grant	42.79219	-90.51365
Phidippus whitmani	Edwards, 2004	United States	Michigan	Kent	42.79219	-85.47939
Phidippus whitmani	Edwards, 2004	United States	Michigan	Cass	41.98208	-85.82658
Phidippus whitmani	Edwards, 2004	United States	Michigan	Calhoun	42.21354	-85.19006
Phidippus whitmani	Edwards, 2004	United States	Michigan	Jackson	42.18461	-84.40889
Phidippus whitmani	Edwards, 2004	United States	Michigan	Livingston	42.50287	-83.8881
Phidippus whitmani	Edwards, 2004	United States	Michigan	Shiawassee	42.87899	-84.03276
Phidippus whitmani	Edwards, 2004	United States	Michigan	Oakland	42.76326	-83.25158
Phidippus whitmani	Edwards, 2004	United States	Ohio	Madison	39.92787	-83.48304
Phidippus whitmani	Edwards, 2004	United States	Ohio	Franklin	40.0436	-82.78866

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Phidippus whitmani	Edwards, 2004	United States	Ohio	Fairfield	39.66748	-82.58614
Phidippus whitmani	Edwards, 2004	United States	Ohio	Pickaway	39.69641	-83.07799
Phidippus whitmani	Edwards, 2004	United States	Ohio	Muskingum	39.89894	-82.15215
Phidippus whitmani	Edwards, 2004	United States	Ohio	Athens	39.32029	-81.94962
Phidippus whitmani	Edwards, 2004	United States	Ohio	Adams	38.94417	-83.54091
Phidippus whitmani	Edwards, 2004	United States	North Carolina	Wake	35.64586	-78.91171
Phidippus whitmani	Edwards, 2004	United States	North Carolina	Johnston	35.58799	-78.27519
Phidippus whitmani	Edwards, 2004	United States	North Carolina		34.99777	-76.96501
Phidippus whitmani	Edwards, 2004	United States	Virginia	Pulaski	37.00569	-80.61872
Phidippus whitmani	Edwards, 2004	United States	Virginia	Botetourt	37.49754	-79.77968
Phidippus whitmani	Edwards, 2004	United States	Virginia	Rockbridge	37.98939	-79.37463
Phidippus whitmani	Edwards, 2004	United States	Virginia	Prince Edward	37.20821	-78.65131
Phidippus whitmani	Edwards, 2004	United States	Virginia	Isle of Wight	36.86102	-76.62604
Phidippus whitmani	Edwards, 2004	United States	Virginia	Caroline	37.91706	-77.19022
Phidippus whitmani	Edwards, 2004	United States	Virginia	Stafford	38.51018	-77.45061
Phidippus whitmani	Edwards, 2004	United States	Maryland	Montgomery	39.00203	-77.20469
Phidippus whitmani	Edwards, 2004	United States	Maryland	Prince George's	38.74164	-76.78517
Phidippus whitmani	Edwards, 2004	United States	Pennsylvania	Schuylkill	40.62225	-76.26438
Phidippus whitmani	Edwards, 2004	United States	Pennsylvania	Bradford	41.73615	-76.32225

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus whitmani	Edwards, 2004	United States	Pennsylvania	Monroe	41.11411	-75.35301
Phidippus whitmani	Edwards, 2004	United States	New Jersey	Hunterdon	40.70905	-74.91902
Phidippus whitmani	Edwards, 2004	United States	Pennsylvania	Chester	40.087	-75.81593
Phidippus whitmani	Edwards, 2004	United States	Pennsylvania	Bucks	40.1738	-74.81775
Phidippus whitmani	Edwards, 2004	United States	Delaware	New Castle	39.43602	-75.7002
Phidippus whitmani	Edwards, 2004	Canadá	Ontario	Renfrew	45.56971	-77.03109
Phidippus whitmani	Edwards, 2004	Canadá	Ontario	Kawartha Lakes	44.23882	-78.70918
Phidippus whitmani	Edwards, 2004	Canadá	Ontario	Prince Edward	44.09416	-76.88643
Phidippus whitmani	Edwards, 2004	Canadá	Ontario	Ottawa	45.30932	-75.78699
Phidippus whitmani	Edwards, 2004	Canadá	Ontario	Ottawa	45.33825	-76.16312
Phidippus whitmani	Edwards, 2004	Canadá	Quebec / Québec	Les Jardins-de-Napierville	45.17912	-73.41453
Phidippus whitmani	Edwards, 2004	United States	New York	Hamilton	43.96396	-74.4561
Phidippus whitmani	Edwards, 2004	United States	New York	Essex	43.97843	-73.64599
Phidippus whitmani	Edwards, 2004	United States	New York	Otsego	42.63306	-75.23728
Phidippus whitmani	Edwards, 2004	United States	New York	Broome	42.34374	-76.07632
Phidippus whitmani	Edwards, 2004	United States	New York	Seneca	42.60413	-76.66944
Phidippus whitmani	Edwards, 2004	United States	New Hampshire	Grafton	43.83376	-71.59178
Phidippus whitmani	Edwards, 2004	United States	New Hampshire	Sullivan	43.48657	-72.06916
Phidippus whitmani	Edwards, 2004	United States	New Hampshire	Merrimack	43.28404	-71.43265
Phidippus whitmani	Edwards, 2004	United States	New Hampshire	Hillsborough	42.90792	-71.50498
Phidippus whitmani	Edwards, 2004	United States	New Hampshire	Cheshire	42.85006	-72.06916

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus whitmani	Edwards, 2004	United States	Massachusetts	Berkshire	42.31481	-73.18307
Phidippus whitmani	Edwards, 2004	United States	Connecticut	Litchfield	41.66382	-73.28433
Phidippus whitmani	Edwards, 2004	United States	Connecticut	Fairfield	41.30217	-73.1252
Phidippus whitmani	Edwards, 2004	United States	Connecticut	Middlesex	41.50469	-72.63335
Phidippus whitmani	Edwards, 2004	United States	Connecticut	Hartford	41.89528	-72.63335
Phidippus whitmani	Edwards, 2004	United States	Massachusetts	Worcester	42.4016	-71.86664
Phidippus whitmani	Edwards, 2004	United States	Massachusetts	Norfolk	42.09781	-71.34585
Phidippus whitmani	Edwards, 2004	United States	Rhode Island	Kent	41.64936	-71.59178
Phidippus whitmani	Edwards, 2004	United States	New York	Rockland	41.18644	-74.16677
Phidippus whitmani	Edwards, 2004	United States	New Jersey	Essex	40.79585	-74.26804
Phidippus whitmani	Edwards, 2004	United States	Maine	Hancock	44.7162	-68.41282
Phidippus whitmani	Edwards, 2004	United States	Maine	Knox	44.35455	-69.28079
Phidippus whitmani	Edwards, 2004	United States	New York	Nassau	40.73798	-73.62067
Phidippus whitmani	Edwards, 2004	United States	New York	Suffolk	40.81031	-73.08542
Phidippus whitmani	Edwards, 2004	United States	Michigan	Anchor Bay	42.63306	-82.77058
Phidippus workmani	Edwards 2004	United States	Georgia	Brantley	31.07249	-81.98659
Phidippus workmani	Edwards 2004	United States	Florida	Nassau	30.59535	-81.74801
Phidippus workmani	Edwards 2004	United States	Florida	St. Johns	29.95915	-81.48956
Phidippus workmani	Edwards 2004	United States	Florida	Bradford	29.91939	-82.10587

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus workmani	Edwards 2004	United States	Florida	Levy	29.54165	-82.68242
Phidippus workmani	Edwards 2004	United States	Florida	Hernando	28.50784	-82.48361
Phidippus workmani	Edwards 2004	United States	Florida	Volusia	28.84581	-81.29075
Phidippus workmani	Edwards 2004	United States	Florida	Polk	27.7126	-81.25099
Phidippus workmani	Edwards 2004	United States	Florida	Liberty	30.37665	-84.76993
Phidippus whitmani	Edwards 2004	United States	Florida	Santa Rosa	30.59535	-86.85744
Phidippus zethus	Edwards, 2004	México	Jalisco	Zapopan	20.89203	-103.60406
Phidippus zethus	Edwards, 2004	México	Nayarit	Tepic	21.39521	-104.76524
Phidippus pius	Edwards 2004	United States	Arizona	Cochise	31.57832	-109.74389
Phidippus pius	Edwards 2004	United States	New Mexico	Otero	32.98444	-105.75604
Phidippus pius	Edwards 2004	United States	New Mexico	Otero	33.26105	-106.05571
Phidippus pius	Edwards 2004	México	Nuevo León	Galeana	24.82433	-100.73089
Phidippus pius	Edwards 2004	United States	Texas	Zapata	27.01419	-99.04815
Phidippus pius	Edwards 2004	United States	Texas	Kenedy	26.66842	-97.73424
Phidippus pius	Edwards 2004	United States	Texas	Val Verde	30.2644	-101.14581
Phidippus pius	Edwards 2004	United States	Texas	Travis	30.14915	-97.71119
Phidippus pius	Edwards 2004	United States	Texas	Waller	30.19525	-96.0976
Phidippus pius	Edwards 2004	United States	Texas	Collin	33.30716	-96.46642
Phidippus pius	Edwards 2004	United States	Texas	Archer	33.72208	-98.77154
Phidippus pius	Edwards 2004	United States	Texas	Carson	35.19735	-101.35327

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus pius	Edwards 2004	United States	Oklahoma	Le Flore	34.78243	-94.62233
Phidippus pius	Edwards 2004	United States	Oklahoma	Tulsa	36.18855	-95.82099
Phidippus pius	Edwards 2004	United States	Oklahoma	Lincoln	35.88889	-96.71998
Phidippus pius	Edwards 2004	United States	Kansas	Wilson	37.61196	-95.82099
Phidippus pius	Edwards 2004	United States	Kansas	Douglas	38.74147	-95.35997
Phidippus pius	Edwards 2004	United States	Kansas	Wabaunsee	39.11029	-96.16676
Phidippus pius	Edwards 2004	United States	Kansas	Graham	39.3408	-100.0163
Phidippus pius	Edwards 2004	United States	Missouri	Ray	39.17944	-94.0691
Phidippus pius	Edwards 2004	United States	Louisiana	Rapides	31.12306	-92.40942
Phidippus pius	Edwards 2004	United States	Alabama	Chilton	32.78274	-86.78493
Phidippus pius	Edwards 2004	United States	Georgia	Tattnall	32.13731	-82.08249
Phidippus pius	Edwards 2004	United States	Louisiana	St. Bernard	29.82643	-89.70091
Phidippus pius	Edwards 2004	United States	Florida	Franklin	29.98203	-84.55473
Phidippus pius	Edwards 2004	United States	North Carolina	Wake	35.64109	-78.63634
Phidippus pius	Edwards 2004	United States	South Carolina	Berkeley	33.10546	-79.97331
Phidippus pius	Edwards 2004	United States	Tennessee	Sevier	35.68719	-83.6154
Phidippus pius	Edwards 2004	United States	North Carolina	Transylvania	35.31837	-82.78556
Phidippus pius	Edwards 2004	United States	Kentucky	Crittenden	37.34687	-88.04122
Phidippus pius	Edwards 2004	United States	Indiana	Brown	39.28317	-86.33543

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus pius	Edwards 2004	United States	Minnesota	Yellow Medicine	44.71172	-96.20133
Phidippus pius	Edwards 2004	United States	Minnesota	Redwood	44.38901	-95.00267
Phidippus pius	Edwards 2004	United States	Minnesota	Dakota	44.71172	-93.29689
Phidippus pius	Edwards 2004	United States	Michigan	Oakland	42.75237	-83.47709
Phidippus pius	Edwards 2004	United States	Michigan	Livingston	42.61407	-84.03032
Phidippus pius	Edwards 2004	United States	Michigan	Jackson	42.24525	-84.44524
Phidippus pius	Edwards 2004	United States	Pennsylvania	Dauphin	40.44726	-76.677
Phidippus pius	Edwards 2004	United States	Virginia	Prince William	38.71842	-77.39158
Phidippus pius	Edwards 2004	United States	Pennsylvania	Montgomery	40.21675	-75.3285
Phidippus insignarius	Edwards 2004	United States	Colorado	La Plata	37.46213	-107.48488
Phidippus insignarius	Edwards 2004	United States	Colorado	El Paso	39.07571	-104.90315
Phidippus insignarius	Edwards 2004	United States	Nebraska	Blaine	41.74965	-99.9241
Phidippus insignarius	Edwards 2004	United States	Nebraska	Howard	41.10422	-98.67933
Phidippus insignarius	Edwards 2004	United States	Iowa	Crawford	42.16457	-95.63658
Phidippus insignarius	Edwards 2004	United States	Wisconsin	Pepin	44.56189	-92.0867
Phidippus insignarius	Edwards 2004	United States	Arkansas	Pope	35.47973	-93.0779
Phidippus insignarius	Edwards 2004	United States	Arkansas	Madison	36.00991	-93.49282
Phidippus insignarius	Edwards 2004	United States	Oklahoma	Adair	35.8255	-94.76064
Phidippus insignarius	Edwards 2004	United States	Missouri	Barton	37.43908	-94.16131

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus insignarius	Edwards 2004	United States	Kansas	Wabaunsee	38.91435	-96.35117
Phidippus insignarius	Edwards 2004	United States	Kansas	Osage	38.86825	-95.52132
Phidippus insignarius	Edwards 2004	United States	Kansas	Jackson	39.28317	-95.70573
Phidippus insignarius	Edwards 2004	United States	Missouri	Boone	38.86825	-92.31721
Phidippus insignarius	Edwards 2004	United States	Missouri	Phelps	37.87705	-91.81009
Phidippus insignarius	Edwards 2004	United States	Illinois	Clinton	38.59164	-89.50497
Phidippus insignarius	Edwards 2004	United States	Indiana	Marshall	41.42693	-86.46222
Phidippus insignarius	Edwards 2004	United States	Indiana	Decatur	39.37538	-85.44796
Phidippus insignarius	Edwards 2004	United States	Kentucky	Montgomery	38.03841	-84.01879
Phidippus insignarius	Edwards 2004	United States	Kentucky	Rockcastle	37.18552	-84.27236
Phidippus insignarius	Edwards 2004	United States	Michigan	Midland	43.63984	-84.57202
Phidippus insignarius	Edwards 2004	United States	Tennessee	Sevier	35.8255	-83.51167
Phidippus insignarius	Edwards 2004	United States	North Carolina	Burke	35.75634	-81.78283
Phidippus insignarius	Edwards 2004	United States	North Carolina	Randolph	35.71024	-79.73127
Phidippus insignarius	Edwards 2004	United States	Virginia	Pittsylvania	36.8628	-79.56992
Phidippus insignarius	Edwards 2004	United States	Virginia	Pulaski	37.18552	-80.72248
Phidippus insignarius	Edwards 2004	United States	Pennsylvania	Westmoreland	40.34353	-79.52381
Phidippus insignarius	Edwards 2004	United States	Pennsylvania	Union	41.01201	-77.10344
Phidippus insignarius	Edwards 2004	United States	Maryland	Montgomery	39.05266	-77.11497

Species	Autor	Country	State	Locality	Latitude	Longitude
Phidippus insignarius	Edwards 2004	United States	Virginia	Prince William	38.66079	-77.49531
Phidippus insignarius	Edwards 2004	United States	Virginia	Spotsylvania	38.3035	-77.66819
Phidippus insignarius	Edwards 2004	United States	Maryland	Charles	38.53401	-77.10344
Phidippus insignarius	Edwards 2004	United States	New Jersey	Camden	39.72114	-74.91358
Phidippus insignarius	Edwards 2004	United States	Pennsylvania	Bucks	40.34353	-75.13257
Phidippus insignarius	Edwards 2004	United States	New Jersey	Morris	40.89675	-74.7407
Phidippus insignarius	Edwards 2004	United States	Massachusetts	Worcester	42.17609	-71.71523
Phidippus insignarius	Edwards 2004	United States	Massachusetts	Worcester	42.25677	-72.09558
Phidippus insignarius	Edwards 2004	United States	Massachusetts	Middlesex	42.64288	-71.80167
Phidippus insignarius	Edwards 2004	United States	Connecticut	Hartford	41.72083	-72.68914
Phidippus insignarius	Edwards 2004	United States	New York	Suffolk	40.8737	-72.91389
Phidippus insignarius	Edwards 2004	United States	New York	Nassau	40.72387	-73.68034
Phidippus insignarius	Edwards 2004	United States	New York	Putnam	41.42117	-73.62848
Phidippus insignarius	Edwards 2004	United States	New York	Dutchess	41.74965	-73.62848
Phidippus insignarius	Edwards 2004	United States	Connecticut	New Haven	41.49032	-73.21932
Phidippus insignarius	Edwards 2004	United States	Massachusetts	Bristol	41.62863	-71.01217

Table 13. Presence/absence data based on *Phidippus* species records from Edwards (2004). This matrix was used as data entry in BioGeoBEARS analysis.

Species	North (N)	Northwest (W)	South (S)	East (E)	Southwest (T)
Paraphidippus_aurantius_DGF0448	0	0	1	1	1
Phidippus_adonis_DGF0948	0	0	1	0	0
Phidippus_adumbratus_Ph076	0	0	0	0	1
Phidippus_albulatus_LCH122	0	0	1	0	0
Phidippus_amans_LCH126	0	0	1	0	1
Phidippus_apacheanus_LCH119	0	1	0	1	1
Phidippus_ardens_DGF1277	0	0	1	1	1
Phidippus_arizonensis_DGF1275	0	0	1	1	1
Phidippus_asotus_DGF1278	0	1	0	1	1
Phidippus_audax_WPM0017	0	0	1	1	1
Phidippus_aureus_DGF1280	0	0	0	0	1
Phidippus_bidentatus_DGF0812	0	0	1	0	0
Phidippus_bidentatus_DGF0953	0	0	1	0	0
Phidippus_boei_Ph001	0	0	0	0	1
Phidippus_borealis_WPM0019	1	1	0	1	0
Phidippus_californicus_Ph073	0	0	1	1	1
Phidippus_cardinalis_DGF1288	0	0	1	1	1
Phidippus_carneus_DGF1290	0	0	1	1	1
Phidippus_cerberus_DGF0947	0	0	1	0	1
Phidippus_clarus_ZA27435	0	1	0	1	1
Phidippus_comatus_DGF1289	0	1	0	1	1
Phidippus_concinnus_DGF1287	0	1	0	0	1
Phidippus_cruentus_DGF0555	0	0	1	0	0
Phidippus_felinus_DGF1285	0	0	0	1	1
Phidippus_georgii_DGF0951	0	0	1	0	1
Phidippus_insignarius_ZA20783	0	0	0	1	1
Phidippus_johnsoni_Ph107	0	1	0	1	1
Phidippus_kastoni_DGF1283	0	1	0	0	1
Phidippus_maddisoni_DGF0946	0	0	1	0	1
Phidippus_mimicus_DGF0954	0	0	1	0	0
Phidippus_morpheus_DGF1281	0	0	0	0	1
Phidippus_nikites_DGF1279	0	1	0	0	1
Phidippus_octopunctatus_DGF1269	0	1	0	1	1
Phidippus_olympus_LCH125	0	0	0	0	1
Phidippus_pacosauritus_LCH124	0	0	1	0	0
Phidippus_phoenix_Ph081	0	0	0	0	1
Phidippus_pius_DGF1274M	0	0	0	1	1
Phidippus_pompatus_DGF952	0	0	1	0	1

Species	North (N)	Northwest (W)	South (S)	East (E)	Southwest (T)
Phidippus_pulcherrimus_LCH111	0	0	0	1	0
Phidippus_purpuratus_WPM0020	1	1	0	1	0
Phidippus_putnami_LCH114	0	0	0	1	0
Phidippus_regius_LCH116	0	0	0	1	0
Phidippus_richmani_LCH130	0	0	0	1	0
Phidippus_texanus_DGF1273	0	0	1	1	1
Phidippus_toro_LCH120	0	0	1	1	1
Phidippus_tux_Ph158	0	0	1	0	1
Phidippus_tyrelli_ZA20755	0	1	0	1	1
Phidippus_whitmani_LCH121	1	0	0	1	0
Phidippus_workmani_LCH123	0	0	0	1	0
Phidippus_zethus_LCH101	0	0	1	0	0

Table 14. Areas adjacency matrix of the five geographical areas used in the BioGeoBEARS analysis. Each cell contains a binary value: '1' indicates adjacency between two areas, while '0' indicates no adjacency.

N	W	S	E	T
N	1	1	0	1	0
W	1	1	0	1	1
S	0	0	1	1	1
E	1	1	1	1	1
T	0	1	1	1	1

Table 15. Calculated distances between areas using QGIS for input into BioGeoBEARS analysis. Distances were measured from the farthest vertices of each area to ensure accurate representation of spatial relationships. All the distances were re-scaled dividing the distances by the shortest distances.

N	W	S	E	T
N	0	1	0.18	1	0.25
W	1	0	0.19	1	1
S	0.18	0.19	0	1	1
E	1	1	1	0	1
T	0.25	1	1	1	0

Supplementary 7

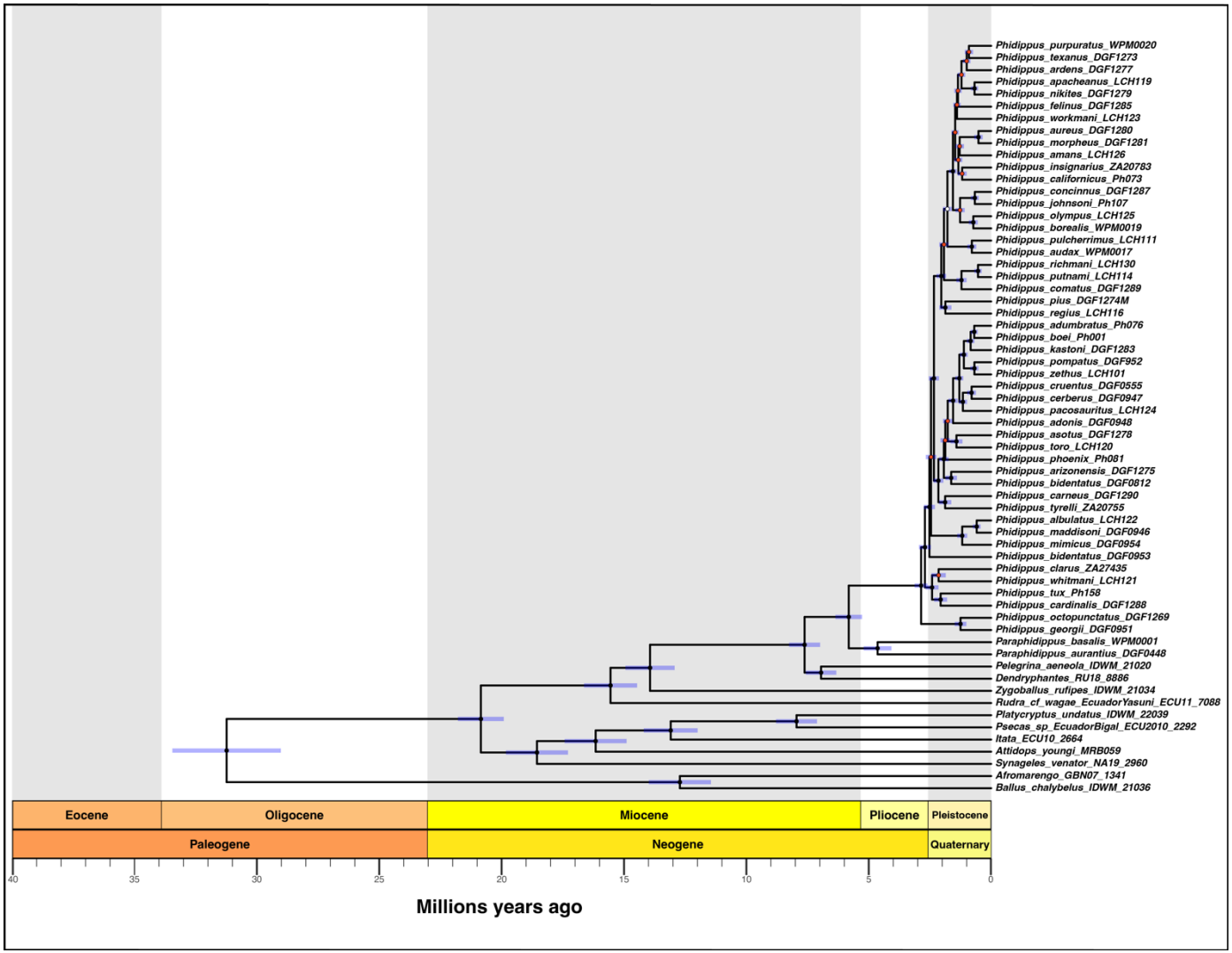

Figure 32. Bayesian-dated relaxed clock maximum credibility clade (MCC) tree of the genus *Phidippus* and outgroups based on secondary calibration. Bayesian posterior probabilities (PP) represented by circles at nodes (black circles: $1 \geq PP > 0.95$; white circles: $0.95 > PP \geq 0.90$; red circles: $PP < 0.90$), 95% highest posterior density values as horizontal blue bars.

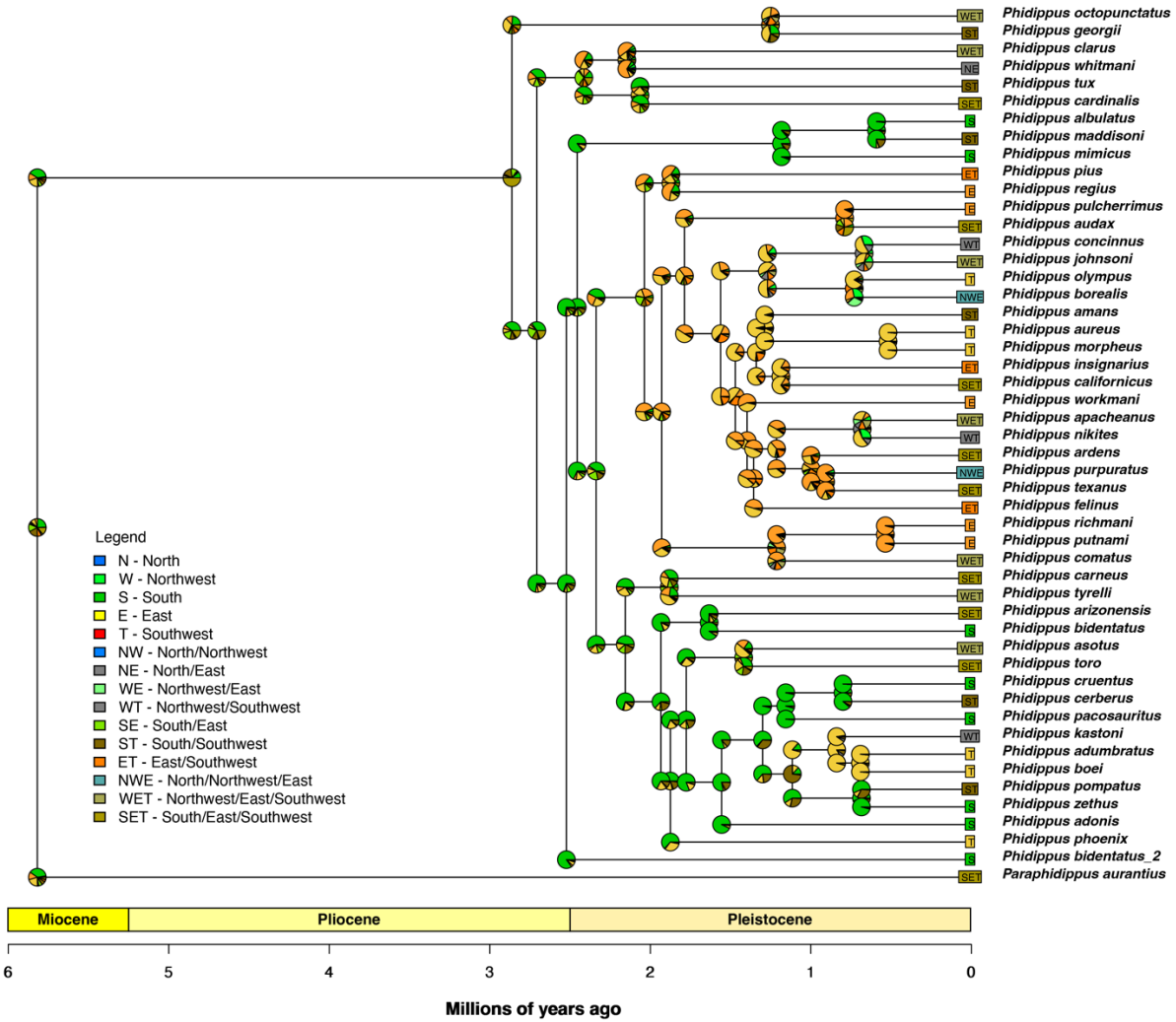

Figure 33. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with DEC+J model. n pie charts, the relative probability of the possible ancestral areas is shown.

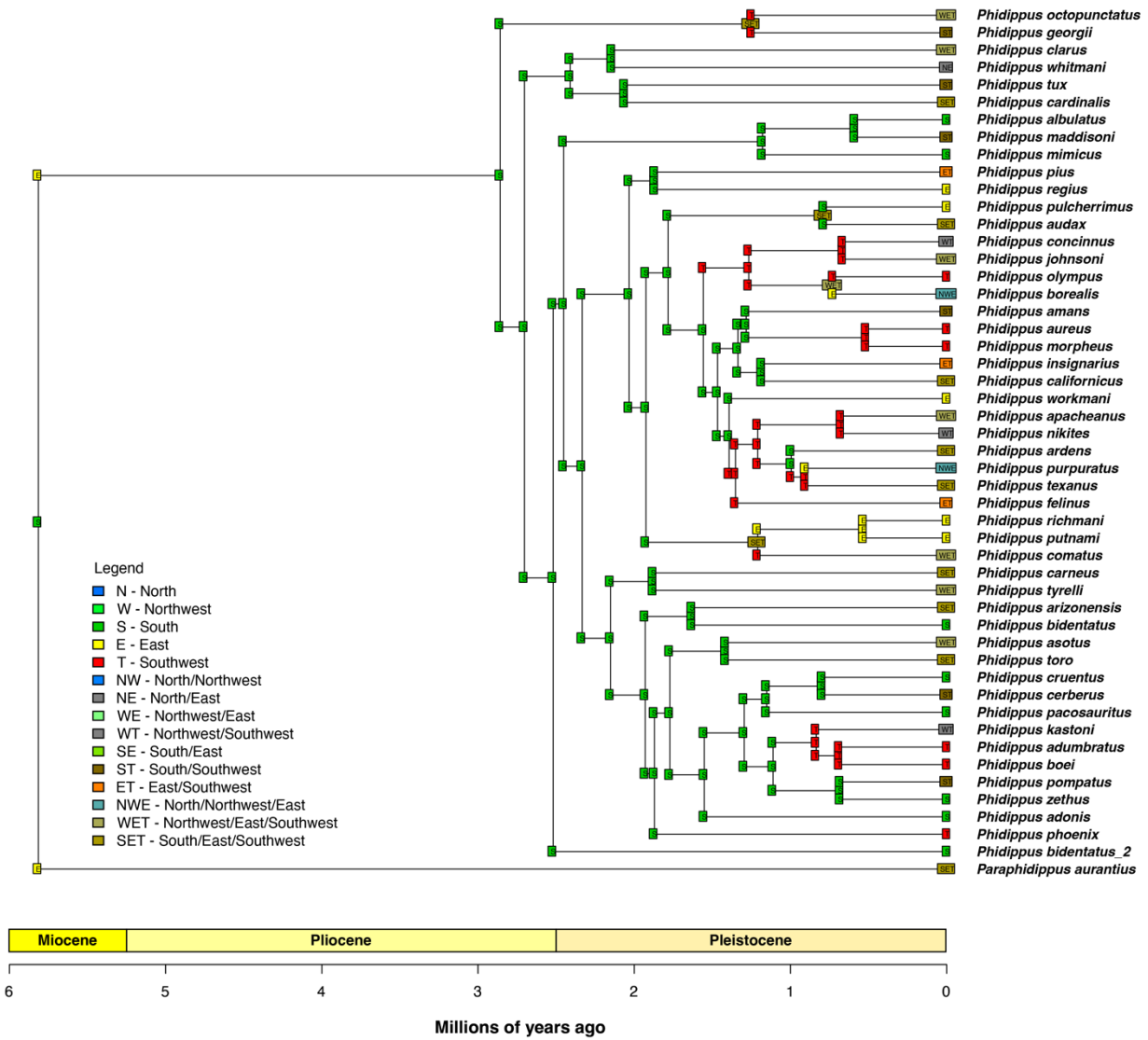

Figure 34. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with DEC model.

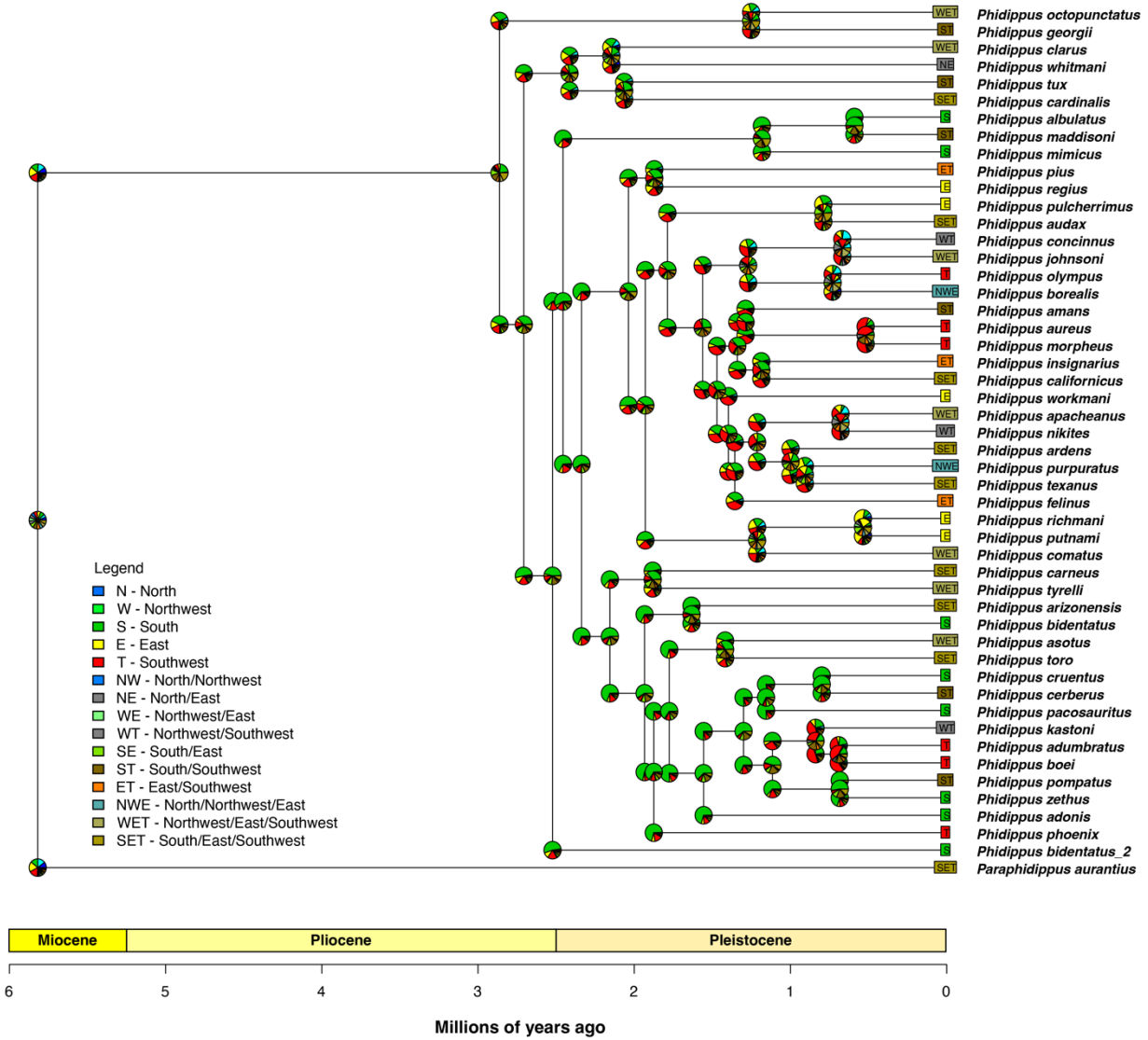

Figure 35. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with DEC model. In pie charts, the relative probability of the possible ancestral areas is shown.

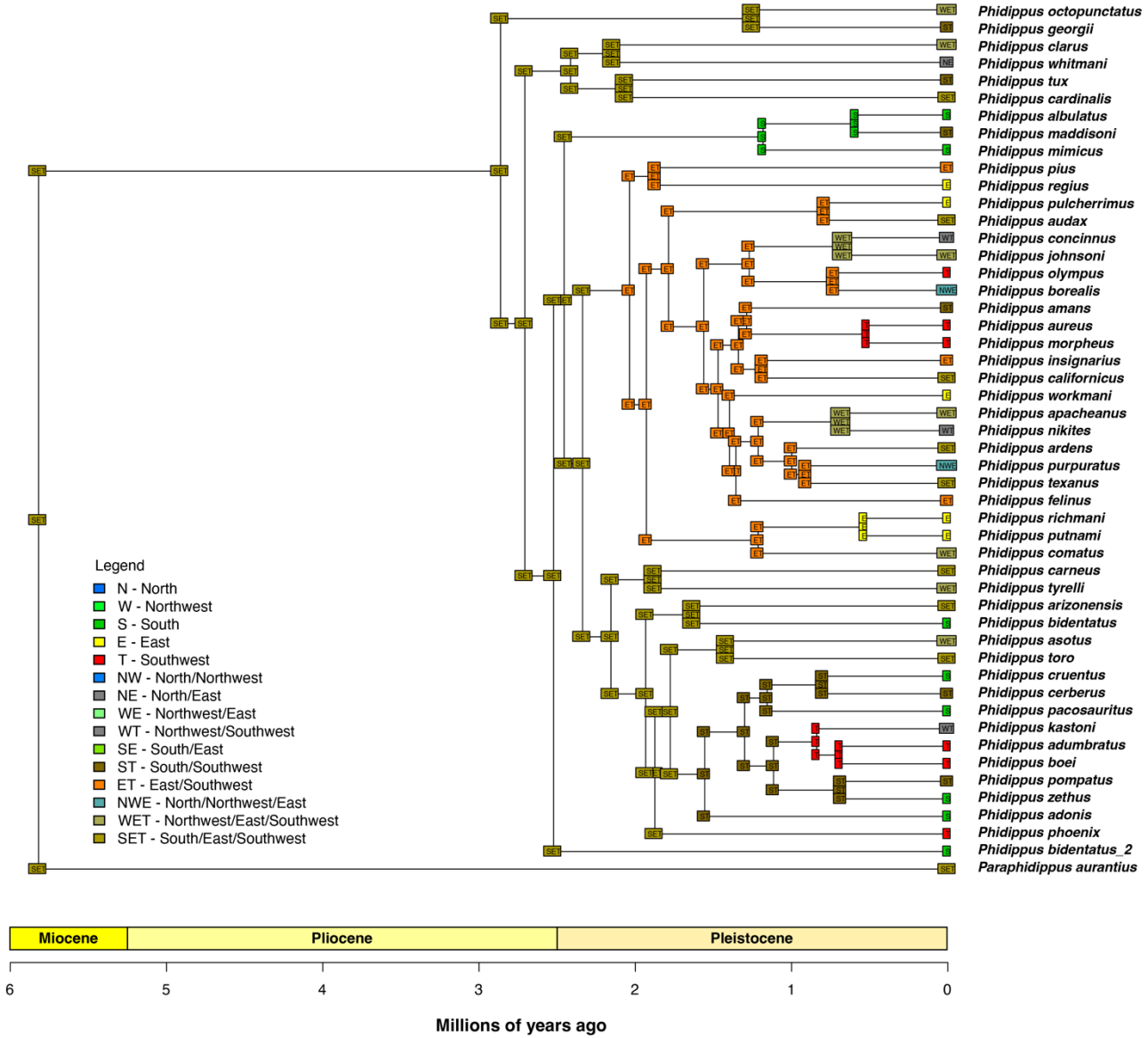

Figure 36. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with BAYAREALIKE model.

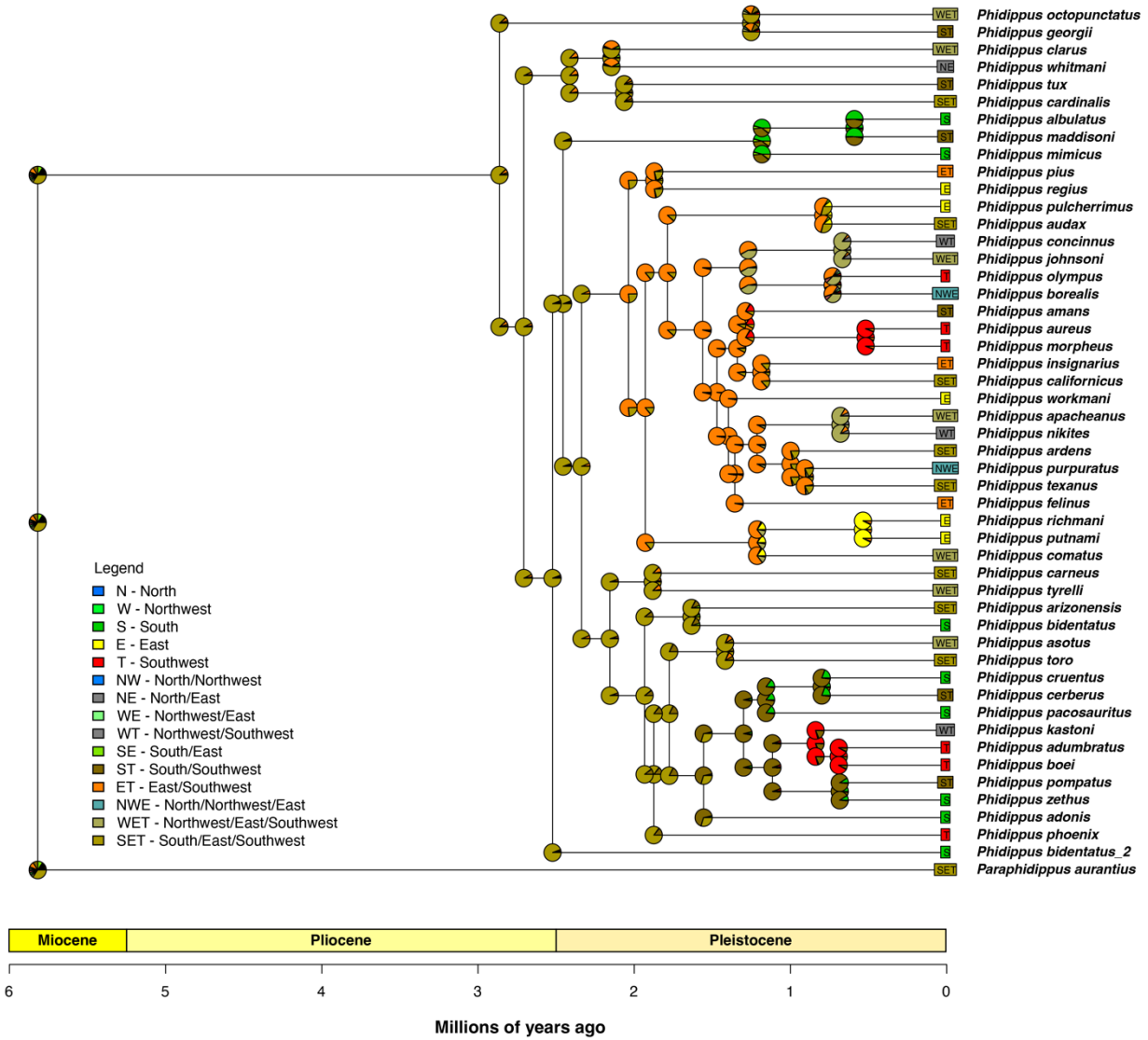

Figure 37. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with BAYAREALIKE model. In pie charts, the relative probability of the possible ancestral areas is shown.

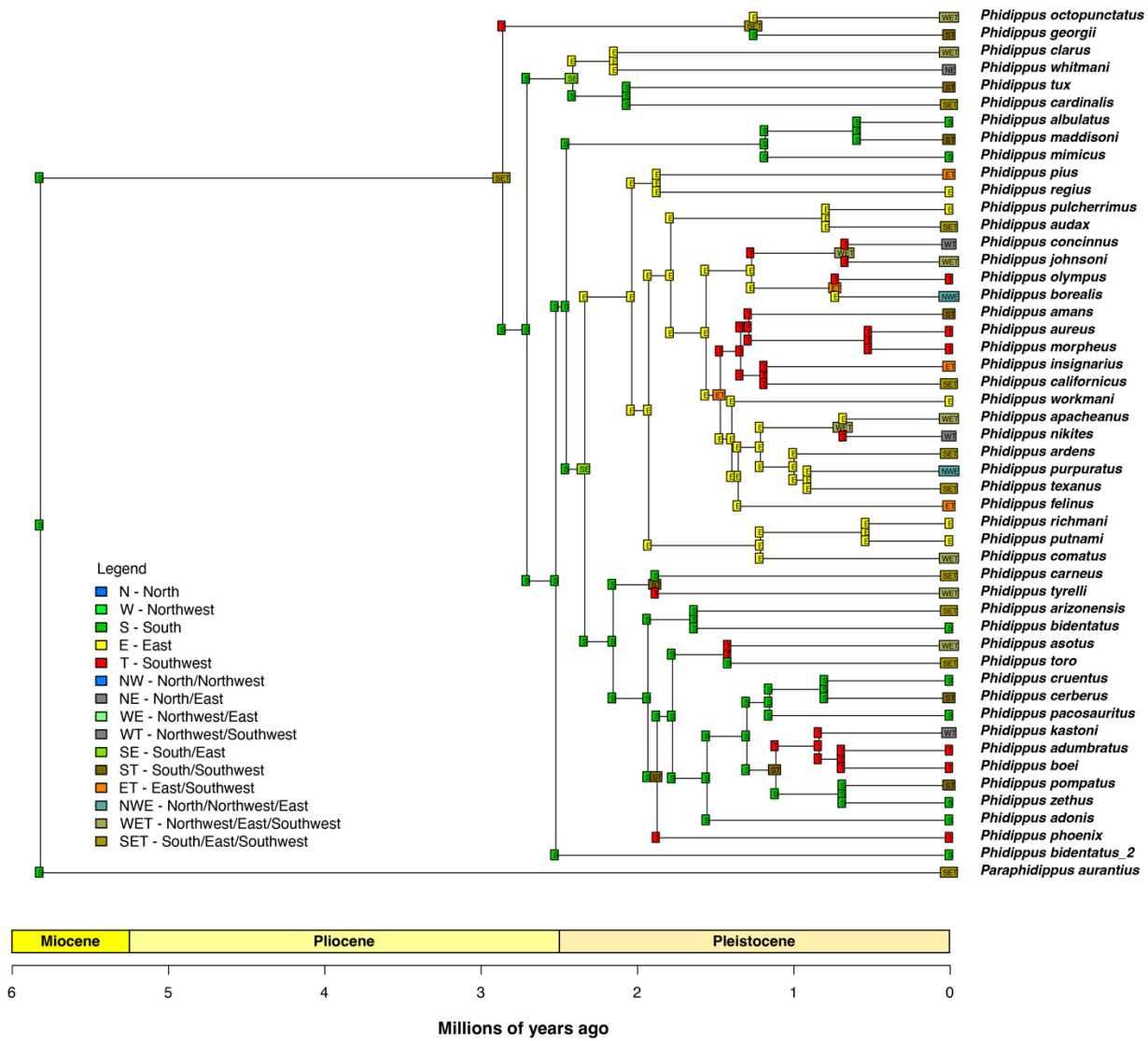

Figure 38. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with DIVALIKE model.

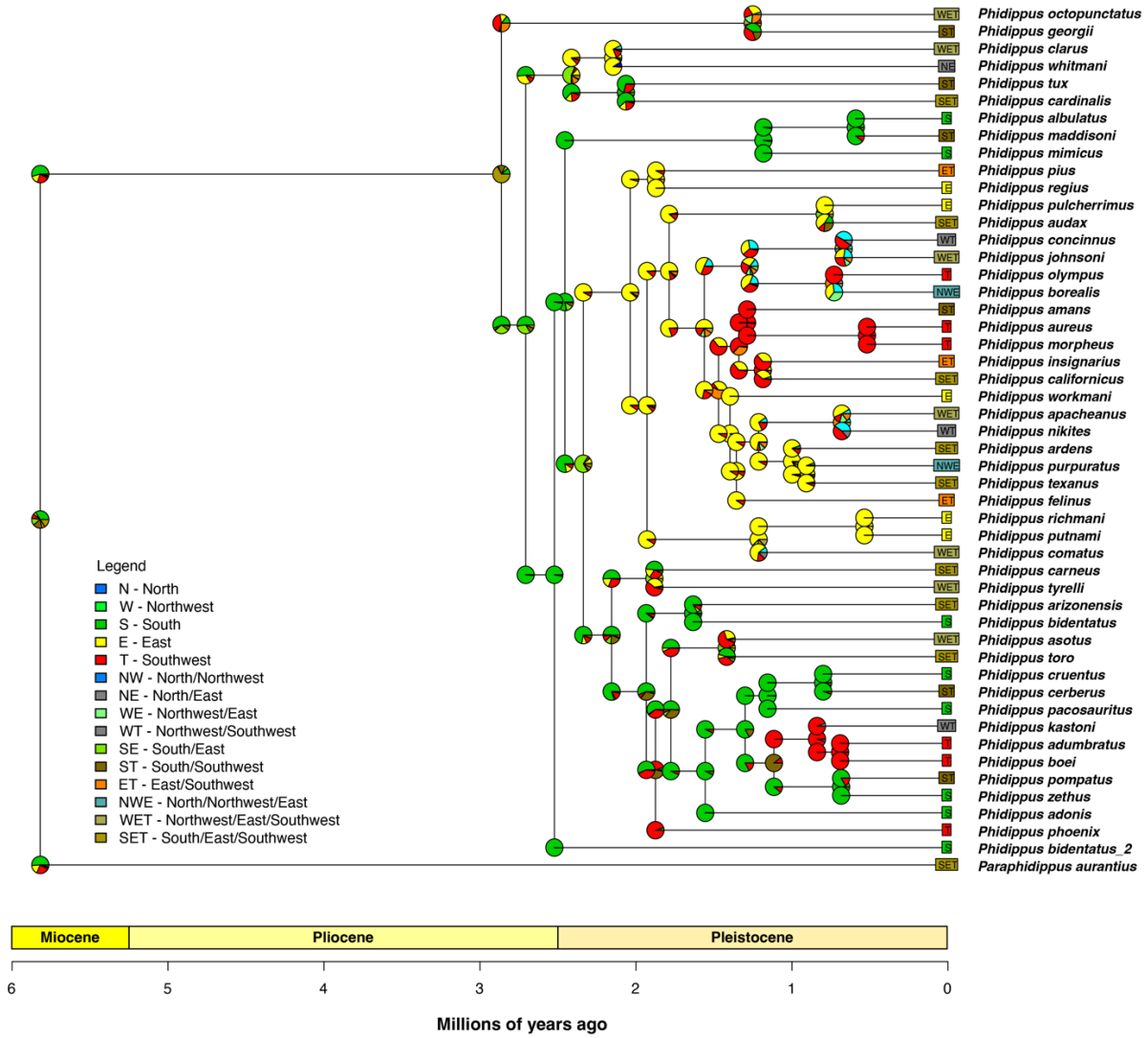

Figure 39. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with DIVALIKE model. In pie charts, the relative probability of the possible ancestral areas is shown.

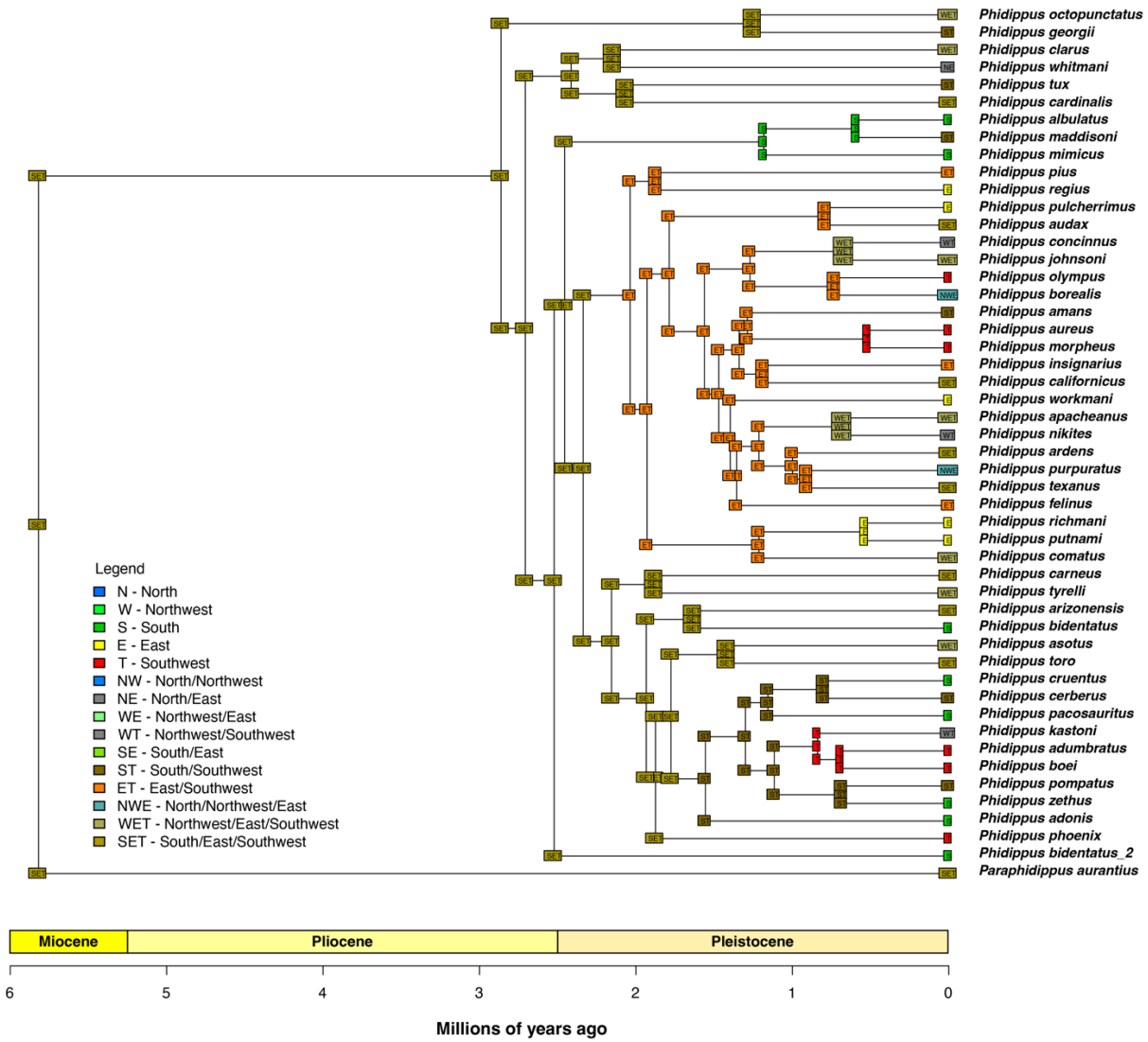

Figure 40. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with BAYAREALIKE+J model.

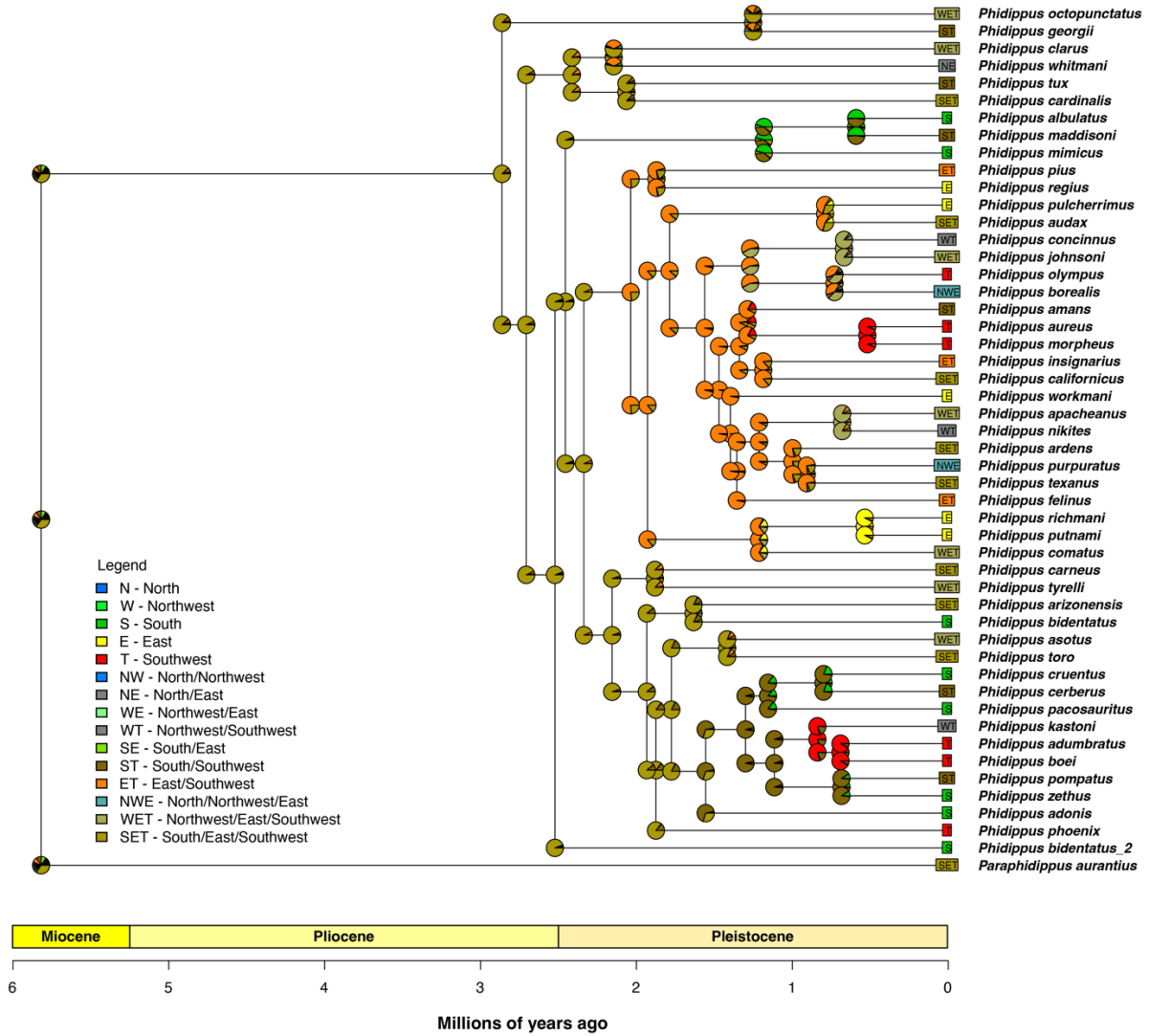

Figure 41. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with BAYAREALIKE+J model. In pie charts, the relative probability of the possible ancestral areas is shown.

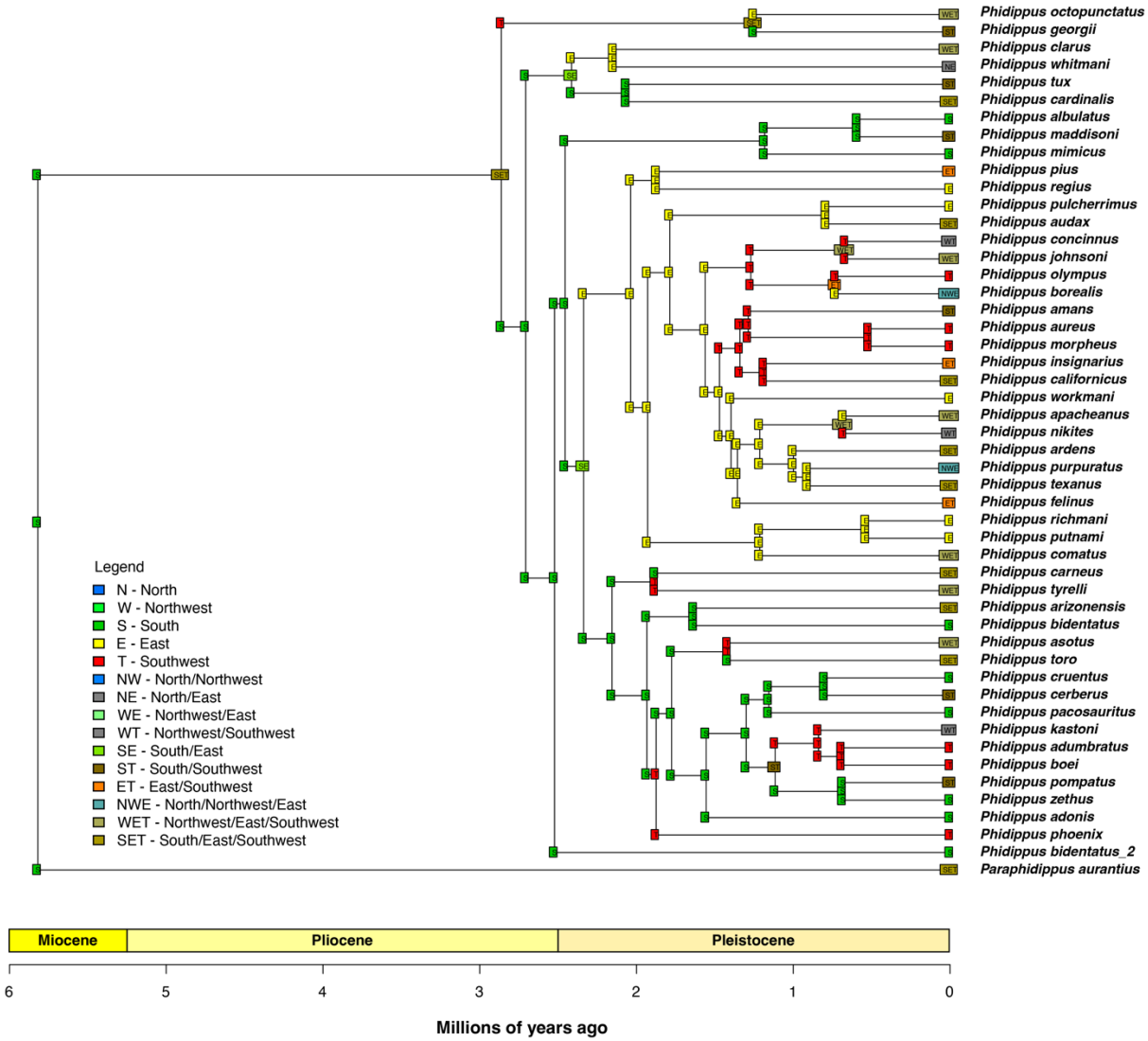

Figure 42. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with DIVALIKE+J model.

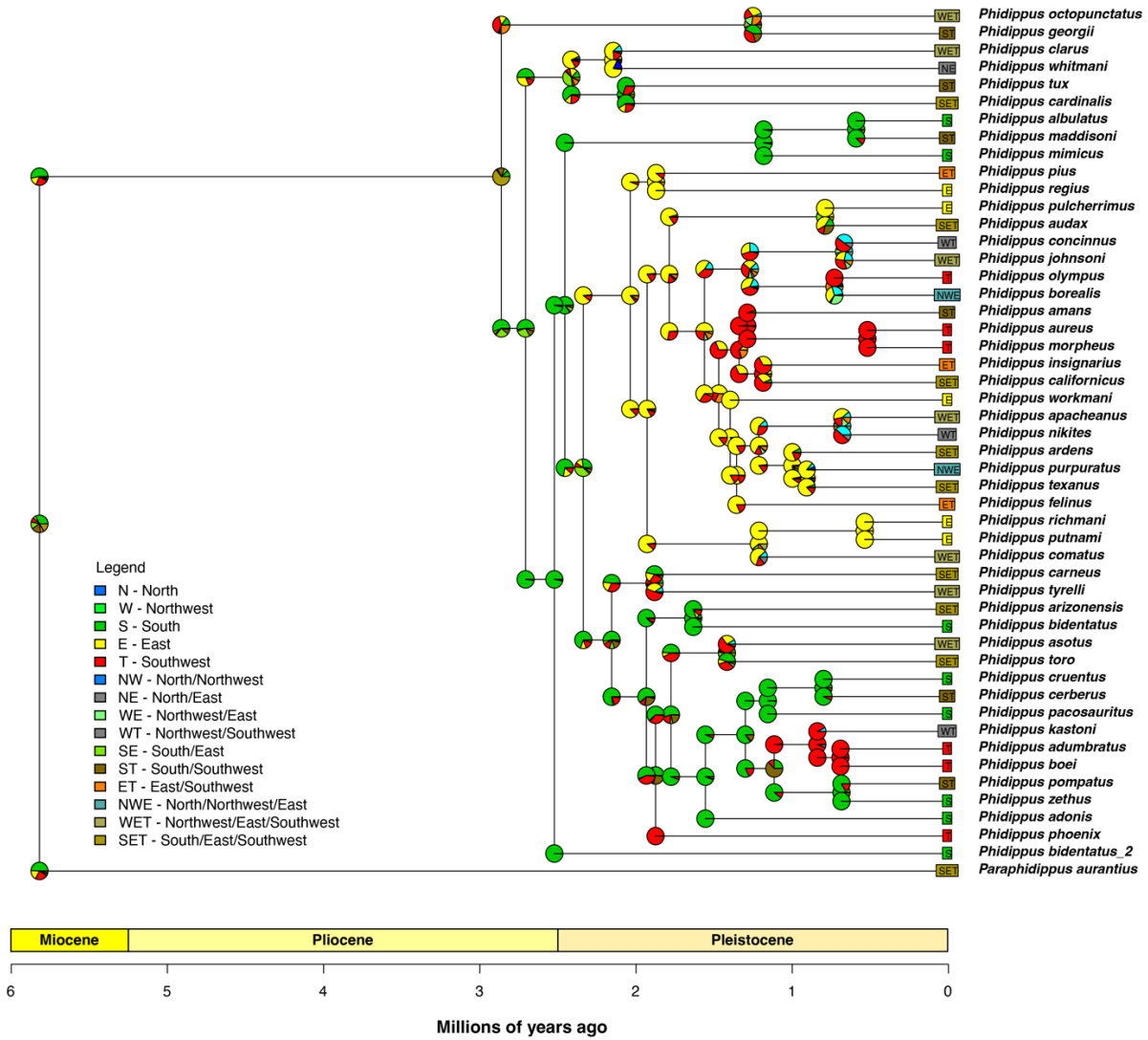

Figure 43. Estimated ancestral ranges of the genus *Phidippus* mapped on the nodes of the MCC tree based on BioGeoBEARS analysis with DIVALIKE+J model. In pie charts, the relative probability of the possible ancestral areas is shown.