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Catalog of Rose Gall, Herb Gall, and Inquiline Gall Wasps (Hymenoptera: Cynipidae) of the United States, Canada, and Mexico

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Catalog of Rose Gall, Herb Gall, and Inquiline Gall Wasps (Hymenoptera: Cynipidae) of the United States, Canada, and Mexico

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Abstract

Background

Cynipidae (Hymenoptera: Cynipoidea) is a diverse group of wasps, many of which are capable of inducing plants to make novel structures, galls, that protect and nourish the wasps' larvae. Other cynipids, especially those species in Ceroptresini and Synergini, are understood to be usurpers of galls made by other cynipids. The North American cynipid fauna has not been fully cataloged since 1979, but there is renewed interest in revising the taxonomy and in doing research that sheds light on the mechanisms of gall induction, the evolution of this life history, and their ecological interactions more broadly. Significant taxonomic changes have impacted the group since 1979, thereby warranting a new catalog.

New information

The current state of knowledge of species classified in Aulacideini, Ceroptresini, Diastrophini, Diplolepidini, Phanacidini, and Synergini in the United States, Canada, and Mexico is summarized in catalog format. We report 323 names, including 170 valid species of rose gall wasps, herb gall wasps, and inquiline gall wasps, classified in 12 genera, from the United States, Canada, and Mexico. Current taxonomic status, distribution, host associations, and vernacular names are listed for each species. The catalog also includes the original description of galls for many species of gall-inducer, as well as atomized characterizations of different gall traits as key-value pairs. For most galling species without existing vernacular names, new vernacular names are proposed.

Keywords

biodiversity,
checklist, Aulacideini, Ceroptresini, Diastrophini, Diplolepidini, Phanacidini, Synergini

Introduction

The hymenopteran family Cynipidae constitutes a diverse assemblage of gall-forming and inquiline wasps, which occur worldwide. While the galls induced by these insects are often conspicuous and charismatic (see Fig. 1), the North American fauna lacks robust classification and accessible diagnostic tools. The group has received moderate phylogenetic attention in recent years, but revisionary taxonomy remains uneven. While the higher taxonomy of the family is uncertain, species that induce galls or act as inquilines are well-distinguished from other Cynipoidea both in terms of their current taxonomy and natural history.

The present work catalogs the species of tribes Aulacideini, Ceroptresini, Diastrophini, Diplolepidini, Phanacidini, and Synergini that are known from Canada, the United States, and Mexico. The higher taxonomy at the tribe level employed herein follows that of [Buffington et al. \(2020\)](#) and [Ronquist et al. \(2015\)](#). Cynipini, which is by far the most species-rich of the family's tribes, is excluded from the present work, primarily due to the existence of many taxonomic works in press or in preparation. While Cynipini is the most diverse of the family's tribes, the herb galls (Aulacideini, Diastrophini, and Phanacidini), rose galls (Diplolepidini), and inquilines (Ceroptresini and Synergini) comprise a significant portion of the family's diversity and are actively being researched.

The last catalogs of the family are works by [Weld \(1957\)](#), [Weld \(1959\)](#), [Weld \(1960\)](#), [Burks \(1979\)](#), and a database contributed to the Hymenoptera Online database by [Johan Liljeblad \(Johnson et al. 2019\)](#), but many changes to the higher taxonomy of Cynipidae warrant the development of a new catalog to reflect recent improved knowledge.

Materials and methods

Data were compiled using the Darwin Core data standard ([Wieczorek et al. 2012](#)) and the [Darwin Core Extensions](#) for [taxon description](#), [species distribution](#), and [vernacular names](#). An initial list of cynipid species was obtained by examining the Cynipidae dataset in the [Hymenoptera Online database](#) ([Johnson et al. 2019](#)). Existing literature relating to the Cynipidae of North America was reviewed in order to generate records relating to the taxonomy, distribution, and biology of cynipid wasps. Data from the community science platform iNaturalist (2021) were also used in order to substantiate locality records and provide the most complete possible distribution for the covered species. iNaturalist observations used in this manner were personally examined by the authors and have been verified to a reasonable degree of certainty to properly represent the organisms contained

in the records. Vernacular names were assigned for gall-inducing species that have not yet been assigned one.

Gall descriptions from the literature are provided verbatim for many species. These descriptions were also atomized into individual traits and presented as key-value pairs, using a controlled vocabulary for gall terminology (Deans et al. 2021; included also in the Darwin Core Archive version of this data set). Host associations for numerous Synergini are provided verbatim from the given references (see Suppl. material 1).

Data resources

The catalog of Aulacideini, Ceroptresini, Diastrophini, Diplolepidini, Phanacidini, and Synergini of the United States, Canada, and Mexico is provided as Suppl. material 1 (Darwin Core Archive) and provides 322 species-level and subspecific names including synonyms. We recognize 170 valid species. The taxonomy of many of these species needs revision, and the intention is to issue subsequent versions of this catalog to reflect substantial changes as they are made in the future. A checklist, which summarizes the data set in the Darwin Core Archive, including nomenclature, notes on biology, and geographic distribution, is provided below.

Initial data were drawn from the [Hymenoptera Online Database \(Norm Johnson; Johan Liljeblad\)](#). We also used occurrence data from [iNaturalist](#), when we could confidently verify the species' identity, to further establish or even expand the distributions for many species. Botanical taxonomic names were matched to names in the [Taxonomic Name Resolution Service](#).

The Aulacideini, Ceroptresini, Diastrophini, Diplolepidini, Phanacidini, and Synergini of the United States, Canada, and Mexico

Family Cynipidae

Tribe Aulacideini

Genus *Antistrophus* Walsh, 1869

Antistrophus bicolor Gillette, 1891

Feeds on: May induce galls on *Silphium integrifolium* Michx. but claim is unsubstantiated

Distribution: United States: Illinois

Antistrophus chrysothamni* (Beutenmüller, 1908)*Nomenclature:**

Aulax chrysothamni Beutenmüller, 1908

Feeds on: Induces galls on *Chrysothamnus* Nutt.

Distribution: United States: Arizona

***Antistrophus jeanae* Tooker & Hanks, 2004**

Feeds on: Induces galls on *Silphium perfoliatum* L.

Distribution: United States: Illinois

***Antistrophus laciniatus* Gillette, 1891**

Feeds on: Induces galls on *Silphium laciniatum* L.

Distribution: United States: Illinois, Kansas, Wisconsin

Antistrophus lygodesmiaepisum* Walsh, 1869*Nomenclature:**

Antistrophus pisum Ashmead, 1885 | *Ascepiadiphila stephanotidis* Ashmead, 1897

Feeds on: Induces galls on *Lygodesmia juncea* D. Don ex Hook

Distribution: United States: Colorado, Iowa, Kansas, Nebraska, Texas; Canada: Alberta, Saskatchewan

***Antistrophus meganae* Tooker & Hanks, 2004**

Feeds on: Induces galls on *Silphium terebinthinaceum* Jacq.

Distribution: United States: Illinois

Antistrophus microseris* (McCracken & Egbert, 1922)*Nomenclature:**

Aylax microseris McCracken & Egbert, 1922

Feeds on: Induces galls on *Microseris* D. Don

Distribution: United States: California

Antistrophus minor* Gillette, 1891*Nomenclature:**

Aulax Gillettei Kieffer, 1902

Feeds on: Induces galls on *Silphium laciniatum* L. and possibly other *Silphium*

Distribution: United States: Illinois

***Antistrophus rufus* Gillette, 1891**

Feeds on: Induces galls on *Silphium laciniatum* L.

Distribution: United States: Illinois

Antistrophus silphii* Gillette, 1891*Nomenclature:**

Antistrophus leavenworthi Bassett, 1900

Feeds on: Induces galls on *Silphium integrifolium* Michx. and *S. perfoliatum* L.

Distribution: United States: Illinois, Wisconsin

Genus *Aulacidea* Ashmead, 1897***Aulacidea abdita* Kinsey, 1920**

Feeds on: Induces galls on *Lactuca canadensis* L. and possibly additional *Lactuca* L. species

Distribution: Canada: Québec

***Aulacidea acroptilonica* Tyurebaev, 1972**

Feeds on: Induces galls on *Acroptilon repens* (L.) DC.

Distribution: United States: Colorado, Montana, Wyoming

Aulacidea ambrosiaecola* (Ashmead, 1896)*Nomenclature:**

Aulax ambrosiaecola Ashmead, 1896

Feeds on: May induce galls on *Ambrosia* L. sp. but claim is unverified

Distribution: United States: Missouri

***Aulacidea annulata* Kinsey, 1920**

Feeds on: Induces galls on *Lactuca* L. sp. or possibly *Prenanthes*

Distribution: United States: Massachusetts, Nebraska

***Aulacidea harringtoni* (Ashmead, 1887)**

Nomenclature:

Aulax harringtoni Ashmead, 1887 | *Aulax bicolor* Gillette, 1891 | *Aulax mulgediicola* Ashmead, 1896 | *Aulax cavicola* Ashmead, 1896

Feeds on: Induces galls on *Lactuca floridana* L.

Distribution: United States: Connecticut, District of Columbia, Illinois, Massachusetts, Missouri, North Carolina, New Jersey, New York, Oklahoma; Canada: Ontario

***Aulacidea nabali* (Brodie, 1892)**

Nomenclature:

Aulax nabali Brodie, 1892

Feeds on: Induces galls on *Nabulus altissimus* (L.) Hook

Distribution: United States: Massachusetts, New Jersey, New York; Canada: Ontario

***Aulacidea pilosellae* (Kieffer, 1901)**

Nomenclature:

Aulax bejerinckii Kieffer, 1899 | *Aulax pilosellae* Kieffer, 1901

Feeds on: Induces galls on *Pilosella* Hill spp.

Distribution: United States (Possibly introduced)

***Aulacidea podagrae* (Bassett, 1890)**

Nomenclature:

Aulax podagrae Bassett, 1890

Feeds on: Induces galls on *Lactuca canadensis* L.

Distribution: United States: District of Columbia, Illinois, Kansas, New York, Ohio, Pennsylvania, Virginia

***Aulacidea subterminalis* Niblett, 1946**

Feeds on: Induces galls on *Hieracium* L. spp.

Distribution: United States (Possibly introduced); Canada: British Columbia (Introduced)

***Aulacidea tumida* (Bassett, 1890)**

Nomenclature:

Aulax tumidus Bassett, 1890 | *Aulax sonchicola* Ashmead, 1896 | *Aulacidea solidaginis* Girault, 1903

Feeds on: Induces galls on *Lactuca canadensis* L.

Distribution: United States: Massachusetts, New Hampshire, Virginia

Genus *Liposthenes* Förster, 1869***Liposthenes glechomae* (Linnaeus, 1758)**

Nomenclature:

Cynips Glechomae Linnaeus, 1758 | *Diastrophus similis* Bassett, 1881 | *Aulax Latreillei* Kieffer, 1898

Feeds on: Induces galls on *Glechoma hederacea* L.

Distribution: United States: Connecticut, Delaware, Iowa, Illinois, Indiana, Kansas, Massachusetts, Maryland, Michigan, Minnesota, Nebraska, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont

Tribe Ceroptresini**Genus *Buffingtonella* Lobato-Vila & Pujade-Villar, 2019*****Buffingtonella politus* (Ashmead, 1896)**

Nomenclature:

Ceroptres politus Ashmead, 1896

Feeds on: Host unknown but presumed to be inquiline

Distribution: United States: Virginia

Genus *Ceroptres* Hartig, 1840

Ceroptres catesbaei Ashmead, 1885

Feeds on: Inquiline of: galls of *Callirhytis quercuscatesbaei* Ashmead, 1881 on *Quercus laevis* Walter

Distribution: United States: Florida

Ceroptres confertus (McCracken & Egbert, 1922)

Nomenclature:

Periclistus confertus McCracken & Egbert, 1922

Feeds on: Inquiline of: galls of *Andricus confertus* McCracken & Egbert, 1922 on *Quercus lobata* Née

Distribution: United States: California

Ceroptres cornigera Melika & Buss, 2002

Feeds on: Inquiline of: galls of *Callirhytis quercuscornigera* (Osten Sacken 1865) on *Quercus palustris* Münchh.

Distribution: United States: Kentucky

Ceroptres ensiger (Walsh, 1864)

Nomenclature:

Amblynotus ensiger Walsh, 1864

Feeds on: Inquiline of: galls of *Andricus quercuspetiolicola* (Bassett, 1863) on *Quercus bicolor* Willd.

Distribution: United States: Illinois

Ceroptres frondosae Ashmead, 1896

Feeds on: Inquiline of *Andricus quercusfrondosus* (Bassett, 1865) [as *Cynips? quercusfrondosa*] on *Quercus prinoides* Willd.

Distribution: United States: Missouri

***Ceroptres junquerasi* Lobato-Vila & Pujade-Villar, 2019**

Feeds on: Inquiline of: galls of *Dros perilentum* Kinsey, 1937 on *Quercus obtusata* Humb. and Bonpl. and *Quercus laeta* Liebm.; galls of *Andricus sphaericus* Pujade-Villar, 2016 on *Quercus rugosa* Née and *Quercus laeta* Liebm.; galls of *Andricus georgei* Pujade-Villar, 2011 on *Quercus candicans* Née; galls of *Neuroterus eugeros* Pujade-Villar, 2018 on *Quercus laeta* Liebm.; galls of *Atrusca pictor* (Kinsey, 1936) on *Quercus* sp.; galls of *Atrusca* sp. on *Quercus obtusata* Humb. and Bonpl.; unknown galls on *Quercus acutifolia* Née; unknown galls on *Quercus laeta* Liebm.; galls of *Melikaiella amphibolensis* Pujade-Villar, 2014 on *Quercus castanea* Née; unknown leaf galls of *Neuroterus* on *Quercus laeta* Liebm.

Distribution: Mexico: Ciudad de México, Jalisco, México, Michoacán de Ocampo, Morelos, Puebla

***Ceroptres lanigerae* Ashmead, 1885**

Feeds on: Inquiline of: galls of *Andricus quercuslanigera* (Ashmead, 1881) on *Quercus minima* (Sarg.) Small, *Quercus oleoides* Schltld. & Cham., and *Quercus virginiana* Mill. (= *Q. geminata* Small)

Distribution: United States: Florida

***Ceroptres lenis* Lobato-Vila & Pujade-Villar, 2019**

Feeds on: Inquiline of: unknown galls on *Quercus laeta* Liebm.

Distribution: Mexico: Ciudad de México

***Ceroptres mexicanus* Lobato-Vila & Pujade-Villar, 2019**

Feeds on: Inquiline of: unknown spherical leaf galls on *Quercus* sp.

Distribution: Mexico: México

***Ceroptres minutissimi* Ashmead, 1885**

Feeds on: Inquiline of: galls of *Neuroterus quercusminutissimus* (Ashmead, 1885) on *Quercus virginiana* Mill.; undetermined, non-deciduous galls on leaves of *Quercus rugosa* Née

Distribution: United States: Florida; Mexico: Ciudad de México

***Ceroptres montensis* Weld, 1957**

Feeds on: Inquiline of: galls of *Andricus reniformis* McCracken & Egbert, 1922 on *Quercus vaccinifolia* Kell.; galls of *Disholcaspis truckeensis* (Ashmead, 1896) on *Quercus chrysolepis* Liebm.

Distribution: United States: California, Oregon

***Ceroptres nigricus* Lobato-Vila & Pujade-Villar, 2019**

Feeds on: Inquiline of: undetermined galls on *Quercus acutifolia* Née; undetermined twig galls on *Quercus* sp.

Distribution: Mexico: México, Michoacán de Ocampo

***Ceroptres petiolicola* (Osten Sacken, 1861)**

Nomenclature:

Amblynotus? *petiolicola* Osten Sacken, 1861

Feeds on: Inquiline of: galls of *Andricus quercuspetiolicola* (Bassett, 1863) on *Quercus michauxii* Nuttall (= *Q. prinus auctores* not L., = *Q. prinus* var. *michauxii* (Nutt.) Chapman 1860); galls of *Neuroterus quercusbatatus* (Fitch, 1859) [unverified]

Distribution: United States: District of Columbia; Canada: Québec

***Ceroptres pisum* (Osten Sacken, 1861)**

Nomenclature:

Sarothrus? *pisum* Osten Sacken, 1861

Feeds on: Inquiline of: galls of *Acraspis pezomachoides* (Osten Sacken, 1862) on *Quercus alba* L. [unverified]

Distribution: United States: District of Columbia

***Ceroptres quadratifacies* Lobato-Vila & Pujade-Villar, 2019**

Feeds on: Inquiline of: galls of *Atrusca* sp. on *Quercus microphylla* Née; galls of *Sphaeroteris* nr. *pulchripennis* on *Quercus microphylla* Née

Distribution: Mexico: Aguascalientes

***Ceroptres quercusobtusilobae* (Karsch, 1880)**

Nomenclature:

Diplolepis q. obtusilobae Karsch, 1880 | *Cynips obtusilobae* (Karsch, 1880) | *Neuroterus quercusobtusilobae* (Karsch, 1880) | *Ceroptres obtusilobensis* (Karsch, 1880)

Feeds on: Inquiline of: undetermined woody, tuberous galls on *Quercus stellata* Wengenh. (= *Q. obtusiloba* Michx.)

Distribution: United States: Texas

***Ceroptres rufiventris* Ashmead, 1896**

Feeds on: Inquiline of: galls of *Amphibolips quercusostensackenii* (Bassett, 1863) on *Quercus coccinea* Muenchh. and *Quercus palustris* Muenchh.

Distribution: United States: Missouri

***Ceroptres snellingi* Lyon, 1996**

Nomenclature:

Ceropteres [sic] *snellingi* Lyon, 1996

Feeds on: Inquiline of: galls of *Andricus flocculentus* Lyon, 1996 on *Quercus pungens* Liebm.; galls of *Andricus sphaericus* Pujade-Villar, 2016 on *Quercus mexicana* Bonpl.; galls of *Andricus sphaericus* Pujade-Villar, 2016 on *Quercus rugosa* Née; galls of *Andricus* sp. on leaves of *Quercus* cf. *chihuahuensis* Trel.; galls of *Andricus* sp. on leaves of *Quercus* cf. *eduardi* Trel.; undetermined leaf petiole galls on *Q. potosina* Trel.; galls of *Andricus* sp. (*georgei* group) on *Quercus* sp.

Distribution: United States: Texas; Mexico: Aguascalientes, Ciudad de México, México, Nuevo León, Zacatecas

Tribe Diastrophini

Genus *Diastrophus* Hartig, 1840

***Diastrophus austrior* Kinsey, 1922**

Nomenclature:

Diastrophus kincaidii var. *austrior* Kinsey, 1922

Feeds on: Induces galls on *Rubus parviflorus* Nutt. and *R. nutkanus* Moc. ex Ser.

Distribution: United States: California

***Diastrophus bassettii* Beutenmüller, 1892**

Feeds on: Induces galls on *Rubus procumbens* Muhl. and *R. hispidus* L.

Distribution: United States: Connecticut, Massachusetts, North Carolina, New Jersey, New York, Rhode Island

***Diastrophus cuscutaeformis* Osten Sacken, 1863**

Feeds on: Induces galls on *Rubus* L. spp.

Distribution: United States: Illinois, Indiana, Massachusetts, Maryland, Maine, Michigan, Minnesota, Missouri, North Carolina, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, Vermont; Canada: Newfoundland and Labrador, Ontario

***Diastrophus fragariae* Beutenmüller, 1915**

Feeds on: Induces galls on *Fragaria virginiana* Duch.

Distribution: United States: Michigan, Minnesota; Canada: Ontario

***Diastrophus fusiformans* Ashmead, 1890**

Feeds on: Induces galls on *Potentilla* L. sp.

Distribution: United States: Colorado, Washington

***Diastrophus kincaidii* Gillette, 1893**

Nomenclature:

Diastrophus minimus Bassett, 1900

Feeds on: Induces galls on *Rubus nutkanus* Moc. ex Ser. and *R. parviflorus* Nutt.

Distribution: United States: California, Idaho, Michigan, Minnesota, Montana, Oregon, Washington, Wisconsin; Canada: British Columbia, Ontario

***Diastrophus nebulosus* (Osten Sacken, 1861)**

Nomenclature:

Cynips (*Diastrophus*?) *nebulosus* Osten Sacken, 1861

Feeds on: Induces galls on *Rubus corchorifolius* L. f. (=villosus)

Distribution: United States: Arkansas, Connecticut, District of Columbia, Delaware, Georgia, Illinois, Indiana, Kentucky, Louisiana, Massachusetts, Maryland, Michigan, Missouri, Mississippi, North Carolina, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, Vermont, West Virginia; Canada: Ontario

***Diastrophus niger* Bassett, 1900**

Feeds on: Induces galls on *Potentilla canadensis* L.

Distribution: United States: Connecticut, Massachusetts, Minnesota, New Jersey, New York, Rhode Island

***Diastrophus piceus* Provancher, 1886**

Feeds on: Gall unknown

Distribution: Canada: Ontario

***Diastrophus potentillae* Bassett, 1864**

Nomenclature:

Gonaspis potentillae (Bassett, 1864)

Feeds on: Induces galls on *Potentilla canadensis* L. and *P. simplex* Michx.

Distribution: United States: Illinois, Indiana, Massachusetts, Maine, Minnesota, North Carolina, Ohio; Canada: New Brunswick, Nova Scotia

***Diastrophus radicum* Bassett, 1870**

Feeds on: Induces galls on *Rubus corchorifolius* L. f. (= *villosus*) and *R. occidentalis* L.

Distribution: United States: Colorado, Michigan, North Carolina

***Diastrophus smilacis* Ashmead, 1896**

Feeds on: Reportedly induces galls on *Smilax rotundifolia* L. and *S. herbacea* L. but records remain unverified and suspect (M. L. Buffington, in litt.)

Distribution: United States: Florida, Illinois

***Diastrophus tumefactus* Kinsey, 1920**

Feeds on: Induces galls on *Tridophyllum norvegicum* (L.) Greene (= *Potentilla monspeliensis* var. *norvegica*)

Distribution: Canada: Ontario, Québec

***Diastrophus turgidus* Bassett, 1870**

Nomenclature:

Diastrophus turgidus [sic] Bassett, 1870

Feeds on: Induces galls on *Rubus strigosus* Michx.

Distribution: Canada: Manitoba, Newfoundland and Labrador, Ontario, Québec;
United States: Colorado, Maine, Minnesota, New York, Ohio, Vermont

Genus *Periclistus* Förster, 1869

***Periclistus arefactus* McCracken & Egbert, 1922**

Feeds on: Inquiline of: galls of *Diplolepis arefacta* (Gillette, 1894) on *Rosa californicus*

Distribution: United States: California

***Periclistus californicus* Ashmead, 1896**

Feeds on: Inquiline of: galls of *Rhodites polita* [= *Diplolepis polita* (Ashmead, 1890)]

Distribution: United States: California, Colorado, Wyoming

***Periclistus obliquus* Provancher, 1888**

Feeds on: Host unknown but presumed to be inquilineous

Distribution: United States: California

***Periclistus piceus* Fullaway, 1911**

Feeds on: Inquiline of: galls of *Diplolepis polita* (Ashmead, 1890) on *Rosa californica*

Distribution: United States: California

***Periclistus pirata* (Osten Sacken, 1863)**

Nomenclature:

Aulax pirata Osten Sacken, 1863 | *Rhodites globulus* Beutenmüller, 1892

Feeds on: Inquiline of: galls of *Diplolepis ignota* (Osten Sacken, 1863)

Distribution: United States: District of Columbia

Periclistus semipiceus* (Harris, 1841)*Nomenclature:**

Cynips semipiceus Harris, 1841

Feeds on: Inquiline of: undetermined subspherical galls on roots of *Rosa* sp.

Distribution: United States: Massachusetts

***Periclistus smilacis* Ashmead, 1896**

Feeds on: Inquiline of: galls of *Diastrophus smilacis* Ashmead, 1896 [unverified]

Distribution: United States: Florida

Genus *Synophromorpha* Ashmead, 1903***Synophromorpha kaulbarsi* Ritchie & Shorthouse, 1987**

Feeds on: Host unknown but presumed to be inquilineous

Distribution: Mexico: Puebla

***Synophromorpha rubi* Weld, 1952**

Feeds on: Inquiline of: galls of *Diastrophus cuscutaeformis* Osten Sacken, 1863 on *Rubus* spp.

Distribution: United States: Illinois, Massachusetts, Ohio, Rhode Island; Canada: Ontario

Synophromorpha sylvestris* (Osten Sacken, 1861)*Nomenclature:**

Synophrus sylvestris Osten Sacken, 1861

Feeds on: Inquiline of: galls of *Diastrophus nebulosus* (Osten Sacken, 1861); galls of *Diastrophus turgidus* Bassett, 1870; galls of *Diastrophus bassettii* Beutenmüller, 1892 on *Rubus* spp.

Distribution: United States: Arkansas, Connecticut, District of Columbia, Florida, Illinois, Indiana, Massachusetts, Maryland, Maine, Missouri, North Carolina, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Virginia, West Virginia

***Synophromorpha terricola* Weld, 1952**

Feeds on: Inquiline of: galls of *Diastrophus bassettii* Beutenmüller, 1892; galls of *Diastrophus cuscutaeformis* Osten Sacken, 1863; galls of *Diastrophus radicum* Bassett, 1870 on *Rubus* spp.

Distribution: United States: Alabama, Connecticut, Maryland, North Carolina, New York, Ohio, Virginia, West Virginia

Tribe Diplolepidini

Genus *Diplolepis* Geoffroy, 1762

***Diplolepis arefacta* (Gillette, 1894)**

Nomenclature:

Rhodites arefactus Gillette, 1894

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: Colorado, Utah

***Diplolepis ashmeadi* (Beutenmüller, 1918)**

Nomenclature:

Rhodites ashmeadi Beutenmüller, 1918

Feeds on: Induces galls on *Rosa nutkana* C. Presl

Distribution: United States: Oregon

***Diplolepis bassetti* subsp. *bassetti* (Beutenmüller, 1918)**

Nomenclature:

Rhodites bassetti Beutenmüller, 1918

Feeds on: Induces galls on *Rosa nutkana* C. Presl and *R. woodsii* Lindl.

Distribution: United States: Oregon; Canada: Alberta, British Columbia, Saskatchewan

***Diplolepis bassetti* subsp. *lucida* Kinsey, 1922**

Nomenclature:

Diplolepis bassetti var. *lucida* Kinsey, 1922

Feeds on: Induces galls on *Rosa nutkana* C. Presl

Distribution: United States: Idaho, Oregon

***Diplolepis bicolor* (Harris, 1841)**

Nomenclature:

Cynips bicolor Harris, 1841

Feeds on: Induces galls on *Rosa woodsii* Lindl. and *R. arkansana* Porter

Distribution: United States: Arkansas, California, Connecticut, Idaho, Illinois, Indiana, Kentucky, Maryland, Maine, Michigan, Minnesota, Missouri, Montana, North Carolina, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Washington, Wisconsin; Canada: Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Québec, Saskatchewan

***Diplolepis californica* (Beutenmüller, 1914)**

Nomenclature:

Rhodites californicus Beutenmüller, 1914

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: California

***Diplolepis dichlocera* (Harris, 1841)**

Nomenclature:

Cynips dichlocera Harris, 1841

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: Massachusetts; Canada: Ontario

***Diplolepis fulgens* (Gillette, 1894)**

Nomenclature:

Rhodites fulgens Gillette, 1894

Feeds on: Induces galls on *Rosa rugosa* Thunb.

Distribution: United States: Illinois, New York, South Dakota

***Diplolepis fusiformans* subsp. *fusiformans* (Ashmead, 1890)**

Nomenclature:

Rhodites fusiformans Ashmead, 1890

Feeds on: Induces galls on *Rosa arkansana* Porter, *R. woodsii* Lindl., and *R. blanda* Aiton

Distribution: United States: Arizona, Colorado, Illinois, Minnesota, Nebraska; Canada: British Columbia, Ontario

***Diplolepis fusiformans* subsp. *mendocinensis* Kinsey, 1922**

Nomenclature:

Diplolepis fusiformans var. *mendocinensis* Kinsey, 1922

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: California

***Diplolepis fusiformans* subsp. *minuta* Kinsey, 1922**

Nomenclature:

Diplolepis fusiformans var. *minuta* Kinsey, 1922

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: California

***Diplolepis gracilis* (Ashmead, 1897)**

Nomenclature:

Rhodites gracilis Ashmead, 1897

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: Minnesota, Wisconsin; Canada: Alberta, British Columbia

***Diplolepis ignota* (Osten Sacken, 1863)**

Nomenclature:

Rhodites ignota Osten Sacken, 1863 | *Rhodites carolina* Ashmead, 1887

Feeds on: Induces galls on *Rosa arkansana* Porter, *R. blanda* Aiton, *R. carolina* L., and *R. nitida* Willd.

Distribution: United States: Colorado, Connecticut, District of Columbia, Iowa, Illinois, Indiana, Massachusetts, Montana, North Carolina, New Jersey, New York, Pennsylvania, Washington; Canada: Manitoba, Saskatchewan

***Diplolepis inconspicuis* Dailey & Campbell, 1973**

Feeds on: Induces galls on *Rosa californica* Cham. and Schltld.

Distribution: United States: California

***Diplolepis lens* Weld, 1952**

Feeds on: Induces galls on *Rosa nutkana* C. Presl

Distribution: United States: California, Oregon, Washington

***Diplolepis mayri* (Schlechtendal, 1877)**

Nomenclature:

Rhodites mayri Schlechtendal, 1877

Feeds on: Induces galls on *Rosa rubiginosa* L.

Distribution: United States: New Jersey

***Diplolepis nebulosa* (Bassett, 1890)**

Nomenclature:

Rhodites nebulosa Bassett, 1890

Feeds on: Induces galls on *Rosa blanda* Aiton and *R. rubiginosa* L.

Distribution: United States: Connecticut, New York; Canada: Ontario

***Diplolepis neglecta* (Gillette, 1894)**

Nomenclature:

Rhodites neglecta Gillette, 1894

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: Colorado

***Diplolepis nervosa* (Curtis, 1838)**

Nomenclature:

Diplolepis centifoliae (Hartig, 1840) | *Rhodites centifoliae* Hartig, 1840 | *Rhodites andrei* Kieffer, 1904 | *Rhodites dispar* Niblett, 1943 | *Rhodites kiefferi* Loisele, 1912 | *Diplolepis rosarum* (Giraud, 1859) | *Rhodites rosarum* Giraud, 1859 | *Cynips nervosa* Curtis, 1838 |

Feeds on: Induces galls on *Rosa canina* L. and *R. rubiginosa* L.

Distribution: United States: Oregon; Canada: Ontario, Québec

***Diplolepis nodulosa* (Beutenmüller, 1909)**

Nomenclature:

Rhodites nodulosus Beutenmüller, 1918

Feeds on: Induces galls on *Rosa woodsii* Lindl., *Rosa virginiana* Mill., and *R. blanda* Aiton; possibly induces galls on *Rosa carolina* var. *lucida* (Ehrh.) Farw. [unsubstantiated]

Distribution: United States: Illinois, Massachusetts; Canada: Alberta, British Columbia, Ontario, Prince Edward Island, Saskatchewan

***Diplolepis oregonensis* (Beutenmüller, 1918)**

Nomenclature:

Rhodites oregonensis Beutenmüller, 1918

Feeds on: Induces galls on *Rosa nutkana* C. Presl

Distribution: United States: Oregon

***Diplolepis ostensackeni* (Beutenmüller, 1918)**

Nomenclature:

Rhodites ostensackeni Beutenmüller, 1918

Feeds on: Induces galls on *Rosa nutkana* C. Presl

Distribution: United States: Oregon

***Diplolepis polita* (Ashmead, 1890)**

Nomenclature:

Rhodites polita Ashmead, 1890 | *Rhodites occidentalis* Beutenmüller, 1922

Feeds on: Induces galls on *Rosa californica* Cham. & Schldl., *R. woodsii* Lindl., *R. acicularis* Lindl., and *R. arkansana* Porter

Distribution: United States: Alaska, California, Colorado; Canada: Alberta, British Columbia, Manitoba, Ontario, Québec, Saskatchewan, Yukon

***Diplolepis pustulatoides* (Beutenmüller, 1914)**

Nomenclature:

Rhodites pustulatoides Beutenmüller, 1914

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: Indiana

***Diplolepis radicum* (Osten Sacken, 1863)**

Nomenclature:

Rhodites radicum Osten Sacken, 1863 | *Tribalia batatorum* Walsh, 1864 | *Rhodites atahensis* Bassett, 1890 | *Diplolepis radicum* var. *johnsoni* Kinsey, 1922 | *Diplolepis radicum* var. *plana* Kinsey, 1922 | *Diplolepis radicum* var. *divergens* Kinsey, 1922 | *Diplolepis radicum* var. *angustior* Hunter, 1923

Feeds on: Produces galls on *Rosa carolina* L., *R. nutkana* C. Presl, and *R. woodsii* Lindl.

Distribution: United States: Colorado, Connecticut, District of Columbia, Illinois, Indiana, Massachusetts, Minnesota, North Carolina, New Jersey, New York, Ohio, Oregon, Pennsylvania, Washington; Canada: British Columbia, Manitoba, Ontario

***Diplolepis rosae* (Linnaeus, 1758)**

Nomenclature:

Cynips rosae Linnaeus, 1758

Feeds on: Induces galls on *Rosa rugosa* Thunb., *R. cinnamomea* L., *R. rubiginosa* L., and *R. blanda* Aiton

Distribution: United States: California, Colorado, District of Columbia, Idaho, Illinois, Kansas, Massachusetts, Maine, Michigan, Montana, North Carolina, New Hampshire, New York, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Utah, Virginia, Vermont, Washington, West Virginia; Canada: Alberta, British Columbia, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Québec

***Diplolepis rosaefolii* (Cockerell, 1889)**

Nomenclature:

Rhodites rosaefolii Cockerell, 1889 | *Rhodites lenticularis* Bassett,

Feeds on: Induces galls on *Rosa acicularis* Lindl., *R. woodsii* Lindl., and *R. arkansana* Porter

Distribution: United States: California, Colorado, Illinois, Pennsylvania; Canada: British Columbia, Manitoba, Newfoundland and Labrador, Nova Scotia, Saskatchewan, Yukon

***Diplolepis similis* (Ashmead, 1896)**

Nomenclature:

Rhodites similis Ashmead, 1897

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: Wyoming

***Diplolepis spinosa* (Ashmead, 1887)**

Nomenclature:

Rhodites spinosa Ashmead, 1887 | *Rhodites spinosissima* Gillette, 1889 | *Rhodites multispinosa* Gillette, 1890

Feeds on: Induces galls on *Rosa rubiginosa* L., *R. woodsii* Lindl., and *R. blanda* Aiton

Distribution: United States: California, Colorado, Florida, Idaho, Illinois, Massachusetts, Maine, Minnesota, Washington; Canada: Alberta, British Columbia, Manitoba, Ontario, Saskatchewan

***Diplolepis terrigena* Weld, 1952**

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: California

***Diplolepis triforma* Shorthouse & Ritchie, 1984**

Feeds on: Induces galls on *Rosa acicularis* Lindl.

Distribution: United States: Minnesota; Canada: Alberta, Manitoba, Ontario, Saskatchewan

***Diplolepis tuberculator* (Cockerell, 1888)**

Nomenclature:

Diplolepis tuberculatrix (Cockerell, 1888) | *Rhodites tuberculator* Cockerell, 1888 | *Diplolepis tuberculatrix* var. *coloradensis* form *coloradensis* Kinsey & Ayres, 1922 | *Diplolepis tuberculatrix* var. *coloradensis* form *subcoloradensis* Kinsey & Ayres, 1922 | *Diplolepis tuberculatrix* var. *wasatchensis* Kinsey & Ayres, 1922 | *Diplolepis tuberculatrix* var. *versicolor* Kinsey & Ayres, 1922 | *Diplolepis tuberculatrix* var.

melanderi Kinsey & Ayres, 1922 | *Diplolepis tuberculatrix* var. *rubriderma* Kinsey & Ayres, 1922 | *Diplolepis tuberculatrix* var. *sierranensis* Kinsey & Ayres, 1922 | *Diplolepis tuberculatrix* var. *descansonis* Kinsey & Ayres, 1922

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: California, Colorado, North Dakota, New Mexico, Oregon, Utah, Washington

***Diplolepis tuberculosa* (Osten Sacken, 1861)**

Nomenclature:

Cynips (*Rhodites*?) *tuberculosa* Osten Sacken, 1861

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States

***Diplolepis tumida* (Bassett, 1890)**

Nomenclature:

Rhodites tumidus Bassett, 1890 | *Diplolepis tuberculatrix* var. *tumida* form *xerophila* Kinsey and Ayres, 1922

Feeds on: Produces galls on *Rosa* L. sp.

Distribution: United States: Utah

***Diplolepis variabilis* (Bassett, 1890)**

Nomenclature:

Rhodites variabilis Bassett, 1890 | *Rhodites globuloides* Beutenmüller, 1907

Feeds on: Induces galls on *Rosa woodsii* Lindl.

Distribution: United States: Colorado, Idaho, Texas, Utah, Washington, Wyoming; Canada: British Columbia

***Diplolepis verna* (Osten Sacken, 1863)**

Nomenclature:

Rhodites verna Osten Sacken, 1863

Feeds on: Induces galls on *Rosa blanda* Aiton

Distribution: United States: District of Columbia, New York

***Diplolepis weldi* (Beutenmüller, 1913)**

Nomenclature:

Rhodites weldi Beutenmüller, 1913

Feeds on: Induces galls on *Rosa* L. sp.

Distribution: United States: California

Tribe Phanacidini**Genus *Phanacis* Förster, 1860*****Phanacis hypochoeridis* (Kieffer, 1887)**

Nomenclature:

Aulax hypochoeridis Kieffer, 1887

Feeds on: Induces galls on *Hypochoeris radicata* L.

Distribution: United States: California, Oregon; Canada: British Columbia

***Phanacis taraxaci* (Ashmead, 1897)**

Nomenclature:

Gillettea taraxaci Ashmead, 1897

Feeds on: Induces galls on *Taraxacum officinale* F. H. Wigg.

Distribution: United States: Minnesota, Pennsylvania

Tribe Synergini**Genus *Saphonecrus* Dalla Torre & Kieffer, 1910*****Saphonecrus favanus* Weld, 1944**

Distribution: United States: District of Columbia, Missouri

***Saphonecrus gemmariae* (Ashmead, 1885)**

Distribution: United States: Florida

Genus *Synergus* Hartig, 1840

***Synergus agrifoliae* Ashmead, 1896**

Nomenclature:

Synergus maculatus Fullaway, 1911 | *Synergus obscurus* McCracken & Egbert, 1922

Feeds on: Inquiline of: galls of *Neuroterus saltatorius* (Edwards, 1874); undetermined round, brown galls, 2.0 mm in diameter located on adaxial leaf surface on *Quercus agrifolia* (Lobato-Vila and Pujade-Villar 2021); undetermined galls on *Quercus garryana* Douglas ex Hook

Distribution: United States: California

***Synergus ashmeadi* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of: galls of *Andricus* sp. on *Quercus potosina*

Distribution: Mexico: Aguascalientes

***Synergus aurofacies* Lobato-Vila & Pujade-Villar, 2020**

Feeds on: Inquiline of: galls of *Femuros lusum* Kinsey, 1937

Distribution: Mexico: Ciudad de México

***Synergus atra* Gillette, 1896**

Feeds on: Inquiline of: galls of *Disholcaspis rubens* (Gillette, 1893) (asexual generation)

Distribution: United States: Colorado, Michigan

***Synergus atripennis* Ashmead, 1896**

Feeds on: Inquiline of: galls of *Disholcaspis spongiosa* (Karsch, 1880) (asexual generation)

Distribution: United States: Florida

***Synergus atripes* Gillette, 1896**

Feeds on: Inquiline of: galls of *Atrusca brevipennata* (Gillette, 1893) (asexual generation)

Distribution: United States: Colorado

***Synergus batatoides* Ashmead, 1885**

Feeds on: Inquiline of: galls of *Callirhytis quercusbatoides* (Ashmead, 1881) (asexual generation)

Distribution: United States: Florida

***Synergus bellus* McCracken & Egbert, 1922**

Feeds on: Inquiline of: undetermined galls on *Quercus chrysolepis* Liebm.

Distribution: United States: California

***Synergus beutenmulleri* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of: galls of *Andricus* sp. *Q. potosina*

Distribution: Mexico: Aguascalientes

***Synergus brevicornis* Ashmead, 1896**

Nomenclature:

Saphonecrus brevicornis (Ashmead, 1896)

Feeds on: Inquiline of: galls of *Andricus* sp. on *Quercus wislizeni* A. DC.

Distribution: United States: California

***Synergus bicolor* Ashmead, 1885**

Feeds on: Inquiline of: galls of *Andricus quercusfoliatus* (Ashmead, 1881)

Distribution: United States: Florida

***Synergus campanula* Osten Sacken, 1865**

Feeds on: Inquiline of: galls of *Andricus dimorphus* (Beutenmüller, 1913); galls of *Acraspis erinacei* (Beutenmüller, 1909); galls of *Acraspis pezomachoides* (Osten Sacken, 1862); galls of *Disholcaspis quercusglobulus* (Fitch, 1859); galls of *Disholcaspis quercusmamma* (Walsh, 1869); galls of *Trigonaspis? quercusforticorne* (Walsh, 1864)

Distribution: United States: District of Columbia, Illinois, New Jersey, New York, Wisconsin

***Synergus castanopsidis* (Beutenmüller, 1918)**

Nomenclature:

Periclistus castanopsidis (Beutenmüller, 1918)

Feeds on: Inquiline of: galls of *Dryocosmus castanopsidis* (Beutenmüller, 1917) (asexual generation)

Distribution: United States: California

***Synergus cibriani* Pujade-Villar & Lobato-Vila, 2017**

Feeds on: Inquiline of: undetermined spherical galls, possibly induced by *Disholcaspis*, on twigs of undetermined species of *Quercus*; undetermined spherical galls on abaxial leaf surface on *Quercus glabrescens* (Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Michoacán de Ocampo

***Synergus citriformis* (Ashmead, 1885)**

Nomenclature:

Ceroptres citriformis Ashmead, 1885 | *Synergus niger* Fullaway, 1911 | *Synergus elegans* Nieves-Aldrey & Medianero, 2011

Feeds on: Inquiline of: "... a gall related to *Amphibolips citriformis* Ashmead" (Lobato-Vila and Pujade-Villar 2021); galls of *Amphibolips*, *Disholcaspis*, *Cynips*, *Andricus*, *Dros*, and *Antron* spp. on *Quercus* spp. in sections *Quercus* and *Lobatae* (Lobato-Vila and Pujade-Villar 2021).

Distribution: United States: California, Florida; Mexico: Aguascalientes, Ciudad de México, Guanajuato, Hidalgo, México, Michoacán de Ocampo, Morelos, Oaxaca, Puebla, Tlaxcala, Veracruz de Ignacio de la Llave, Zacatecas

***Synergus compressus* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of: tuberous galls probably induced by *Andricus* on *Quercus crassifolia*

Distribution: Mexico: Puebla

***Synergus confertus* McCracken & Egbert, 1922**

Feeds on: Inquiline of: galls of *Andricus confertus* McCracken & Egbert, 1922

Distribution: United States: California

***Synergus coniferae* Ashmead, 1885**

Feeds on: Inquiline of: galls of *Callirhytis quercusventricosa* (Bassett, 1864)

Distribution: United States: Florida, Iowa, Missouri

***Synergus digressus* McCracken & Egbert, 1922**

Feeds on: Inquiline of: undetermined twig galls on *Quercus agrifolia* Née

Distribution: United States: California

***Synergus dimorphus* Osten Sacken, 1865**

Feeds on: Inquiline of: "woody twig galls on red oaks" (Gillette 1896); galls of *Besbicus conspicuus* (Kinsey, 1930) on *Quercus lobata* (Lobato-Vila and Pujade-Villar 2021)

Distribution: United States: California, District of Columbia, Michigan

***Synergus distinctus* McCracken & Egbert, 1922**

Feeds on: Inquiline of: galls of *Disholcaspis canescens* (Bassett, 1890)

Distribution: United States: California

***Synergus diversicolor* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of: galls of *Melikaiella bicolor* Pujade-Villar, 2014; galls of *Sphaeroteris* sp. on the leaves of *Quercus obtusata*; galls of *Neuroterus* sp. on the leaves of *Quercus peduncularis*; undetermined round galls on the twigs of *Quercus acutifolia*

Distribution: Mexico: Hidalgo, Jalisco, Morelos, Puebla

Synergus dorsalis* (Provancher, 1888)*Nomenclature:**

Synergus splendidus Fullaway, 1911 | *Synergus dubiosus* Fullaway, 1911 | *Ceroptres dorsalis* Provancher, 1888

Feeds on: Inquiline of: undetermined galls on *Quercus lobata*; galls of *Amphibolips quercuspomiformis* (Bassett 1881) on *Quercus agrifolia*; *Synergus dubiosus* was reared from galls of *A. quercuspomiformis* on *Q. agrifolia*; undetermined galls on *Quercus wislizeni*. See Lobato-Vila and Pujade-Villar (2021) for more details.

Distribution: United States: California

***Synergus duricorius* Gillette, 1896**

Feeds on: Inquiline of: galls of *Disholcaspis quercusmamma* (Walsh, 1869)

Distribution: United States: Delaware, Minnesota

***Synergus ebenus* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of: galls of *Femuros repandae* Kinsey, 1937; undetermined galls of *Neuroterus* on the leaves of *Quercus obtusata*; undetermined galls of *Andricus* on the twigs of *Quercus obtusata*

Distribution: Mexico: Ciudad de México, México, Veracruz de Ignacio de la Llave

***Synergus equihuai* Pujade-Villar & Lobato-Vila, 2016**

Feeds on: Inquiline of: undetermined concealed galls in the acorns of *Quercus rugosa*

Distribution: Mexico: Morelos

***Synergus erinacei* Gillette, 1896**

Feeds on: Inquiline of: galls of *Acraspis erinacei* (Beutenmüller, 1909); galls of *Acraspis macrocarpae* Bassett, 1890; galls of *Acraspis pezomachoides* Osten Sacken, 1862

Distribution: United States: Iowa, Illinois, New York; Canada: Ontario

***Synergus estradae* Pujade-Villar & Lobato-Vila, 2016**

Feeds on: Inquiline of: woody, tuberous galls induced by *Andricus* spp. (Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Hidalgo, Morelos, Puebla

***Synergus ficigerae* Ashmead, 1885**

Feeds on: Inquiline of: galls of *Disholcaspis* sp. on *Quercus magnoliifolia*

Distribution: United States: Florida, Virginia

***Synergus filicornis* Cameron, 1883**

Nomenclature:

Synergus similis Gillette, 1896 | *Synergus furnessana* Weld, 1913

Feeds on: Inquiline of: woolly galls of *Andricus furnessae* (Weld, 1913); woolly galls of *Andricus mexicanus* Kinsey (= *Andricus nievesaldreyi* Pujade-Villar, 2011); woolly galls of *Andricus crystallinus*; woolly galls of *Andricus georgei*; woolly galls of *Andricus maesi*; woolly galls of *Cynips* spp. (*Antron* group); woolly galls of *Andricus nievesaldreyi*; woolly galls of *Andricus quercuslanigera* (Ashmead) (= *A. linaria* (Kinsey)); non-woolly galls of *Andricus rochai* Pujade-Villar, 2018; non-woolly galls of *Atrusca* spp.; non-woolly galls of *Disholcaspis* nr. *insulana*; non-woolly galls of *Disholcaspis* nr. *mexicana*; non-woolly galls of *Kokkocynips* nr. *doctorrosae*; non-woolly galls of *Loxaulus*; undetermined galls on *Quercus* sect. *Quercus*. According to Lobato-Vila and Pujade-Villar (2021), *Synergus filicornis* was described from specimens "obtained from woolly leaf galls of '*Andricus guatemalensis* (Cameron, 1883)", a name they consider incertae sedis.

Distribution: Mexico: Aguascalientes, Ciudad de México, Guanajuato, Jalisco, México, Michoacán de Ocampo, Morelos, Puebla, Querétaro, Zacatecas

***Synergus flavens* McCracken & Egbert, 1922**

Nomenclature:

Synergus variegatus McCracken & Egbert, 1922

Feeds on: Inquiline of: galls of *Heteroecus flavens* (McCracken & Egbert, 1922); galls of *Heteroecus pacificus* (Ashmead, 1896); galls of *Trichoteras coquilletti* Ashmead, 1897

Distribution: United States: California

***Synergus forcadellae* Lobato-Vila & Pujade-Villar, 2020**

Feeds on: Inquiline of: woolly galls of *Andricus* sp(p).; woolly galls of *Striatoandricus* sp(p).; non-woolly galls of *Andricus* spp.; non-woolly galls of *Atrusca* spp.; non-woolly galls of *Amphibolips* spp.; non-woolly galls of *Cynips* spp. mainly on *Quercus* sect. *Quercus* (Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Ciudad de México, Guanajuato, México, Michoacán de Ocampo, Morelos, Querétaro

***Synergus gilletti* Pujade-Villar & Lobato-Vila, 2017**

Feeds on: Inquiline of: galls of *Atrusca* sp. on *Quercus laeta* and *Quercus rugosa*; galls of *Andricus* on the leaves of *Quercus laeta*

Distribution: Mexico: Zacatecas

***Synergus grahami* Lobato-Vila & Pujade-Villar, 2019**

Feeds on: Inquiline of: galls of *Andricus santafe* Pujade-Villar, 2013; undetermined galls, possibly *Andricus* or *Loxaulus*, on *Quercus crassipes* and *Quercus laeta*; galls of *Loxaulus laeta* Pujade-Villar, 2014

Distribution: Mexico: Ciudad de México

***Synergus incisus* Gillette, 1896**

Feeds on: Inquiline of: galls of *Callirhytis frequens* (Gillette, 1892)

Distribution: United States: Colorado, New Mexico

***Synergus laevis* (Osten Sacken, 1861)**

Feeds on: Inquiline of: galls of *Amphibolips cookii* Gillette, 1888; galls of *Amphibolips confluenta* (Harris, 1841); galls of *Amphibolips quercusinanis* Osten Sacken, 1862; galls of *Amphibolips quercusjuglans* (Osten Sacken, 1862); galls of *Amphibolips quercusostensackenii* (Bassett, 1863); galls of *Amphibolips quercusspongifica* (Osten-Sacken, 1862); galls of *Andricus pisiformis* Beutenmüller, 1911; galls of *Andricus quercusfrondosus* (Bassett, 1865); galls of *Atrusca quercuscentricola* (Osten-Sacken, 1861); galls of *Disholcaspis quercusglobulus* (Fitch, 1839); galls of *Disholcaspis rubens* (Gillette, 1893); undetermined gall on *Quercus falcata* Michx.; undetermined bud gall on undetermined *Quercus* sect. *Lobatae*

Distribution: United States: Colorado, District of Columbia, Michigan

***Synergus lignicola* (Osten Sacken, 1862)**

Nomenclature:

Cynips (*Synerges* [sic]) *lignicola* Osten Sacken, 1862 | *Synergus davisii* (Beutenmüller, 1907) | *Andricus davisii* Beutenmüller, 1907 | *Synerges* [sic] *rhoditiformis* Walsh, 1864

Feeds on: Inquiline of: galls of *Andricus quercuslaurinus* Melika & Pujade-Villar, 2009; galls of *Callirhytis cornigera* (Osten-Sacken, 1865); galls of *Callirhytis quercusgemmaria* (Ashmead, 1885); galls of *Callirhytis quercuspunctata* (Bassett, 1863); undetermined galls on *Quercus incana* and other *Quercus* sect. *Lobatae* spp.

Distribution: United States: District of Columbia, Indiana, Michigan, Missouri, New Jersey, New York, Virginia

***Synergus linnei* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of: small, round galls of *Disholcaspis* sp. on twigs of *Quercus* sp.; small, striped, round, undetermined galls on twigs of *Quercus* sp. (see Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Querétaro, Zacatecas

***Synergus longimalaris* Pujade-Villar & Lobato-Vila, 2017**

Feeds on: Inquiline of: galls of *Amphibolips dampfi* Kinsey, 1937; galls of *Amphibolips* sp. on *Quercus affinis* Scheidw., *Q. konzattii* Trel., and *Q. glabrescens* Benth.; galls of *Amphibolips* sp. on *Quercus* sp.; galls of *Andricus tecturnarum* species group on *Quercus* sp. (see Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Hidalgo, Jalisco, México, Michoacán de Ocampo, Morelos

***Synergus longiscapus* Pujade-Villar & Lobato-Vila, 2017**

Feeds on: Inquiline of: galls of *Disholcaspis* sp. on *Quercus candicans* Née, *Q. eduardi* c.f., *Q. emoryi* Torr., *Q. glabrescens* Benth., *Q. laeta*, and *Q. rugosa*; galls of *Andricus* sp. on *Quercus candicans* Née, *Q. eduardi* c.f., *Q. emoryi* Torr., *Q. glabrescens* Benth., *Q. laeta*, and *Q. rugosa*; unidentified subellipsoidal galls on the leaves of on *Quercus candicans* Née, *Q. eduardi* c.f., *Q. emoryi* Torr., *Q. glabrescens* Benth., *Q. laeta*, and *Q. rugosa*; galls of *Neuroterus eugeros* Pujade-Villar; galls of the *Andricus georgei* and *Andricus maesi* groups; galls of *Andricus sphaericus* Pujade-Villar; galls of undetermined species of *Andricus*, *Cynips*, and *Disholcaspis* on *Quercus* sect. *Quercus* spp. (see Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Ciudad de México, México, Morelos, Nuevo León, Oaxaca, Tlaxcala, Veracruz de Ignacio de la Llave, Zacatecas

***Synergus macrackenae* Lobato-Vila & Pujade-Villar, 2021**

Nomenclature:

Synergus nigro-ornatus McCracken & Egbert, 1922

Feeds on: Inquiline of: galls of *Loxaulus hyalinus* Pujade-Villar & Melika, 2014; galls of *Andricus fusiformis* Pujade-Villar, 2014; galls of *Neuroterus* sp. on leaves of *Quercus obtusata*

Distribution: Mexico: México, Michoacán de Ocampo

***Synergus medullae* Ashmead, 1885**

Feeds on: Inquiline of: galls of *Zapatella quercusmedullae* (Ashmead, 1885) on *Quercus incana* Bartram (= *Q. cinerea* Raf.), *Q. marilandica* (L.) Münchn. and *Q. myrtifolia* Willd.

Distribution: United States: Florida

***Synergus mendax* Walsh, 1864**

Nomenclature:

Synerges [sic] *mendax* Walsh, 1864

Feeds on: Inquiline of: galls of *Callirhytis quercuspunctata* (Bassett, 1863)

Distribution: United States: Illinois

***Synergus mexicanus* Gillette, 1896**

Nomenclature:

Synophrus mexicanus (Gillette, 1896) | *Synergus mexicana* Gillette, 1896 | *Synergus dugesi* Ashmead, 1899 | *Synergus multiplicatus* Fullaway, 1911 | *Saphonerus brevis* Weld, 1926 | *Synergus brevis* (Weld, 1926)

Feeds on: Inquiline of: "woody tuberous galls and fusiform twig swellings ... of oaks from both *Quercus* and *Lobatae* sections" (Lobato-Vila and Pujade-Villar 2021); galls of *Andricus chrysolepidicola* (Ashmead, 1896) (= *Andricus kelloggi* (Fullaway, 1911)) on *Quercus douglasii* Hook. and Arn. (*Quercus* section) (see Lobato-Vila and Pujade-Villar 2021).

Distribution: United States: Arizona, California, New Mexico; Mexico: Ciudad de México, Guanajuato, Hidalgo, México, Zacatecas

***Synergus nigroornatus* McCracken & Egbert, 1922**

Feeds on: Inquiline of: galls of *Heteroecus pacificus* (Ashmead, 1896)

Distribution: United States: California

***Synergus oaxaquensis* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of: galls of an undetermined genus, possibly *Andricus* or *Loxaulus*, on twigs of *Quercus obtusata* (see Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Oaxaca

***Synergus obtusilobae* (Ashmead, 1885)**

Nomenclature:

Ceroptres obtusilobae Ashmead, 1885

Feeds on: Inquiline of: undetermined gall on *Quercus stellata*; undetermined gall on *Quercus alba* L. (see Lobato-Vila and Pujade-Villar 2021)

Distribution: United States: District of Columbia, Florida, Missouri, Virginia

***Synergus ochreus* Fullaway, 1911**

Feeds on: Inquiline of: galls of *Besbicus conspicuus* (Kinsey, 1930) (= *Cynips* (*Besbicus*) *multipunctata* var. *conspicua*) on *Quercus lobata*; galls of *Amphibolips quercuspomiformis* (Bassett, 1881); galls of *Disholcaspis eldoradensis* (Beutenmüller, 1909); galls of *Disholcaspis* sp. on *Quercus oblongifolia*; undetermined galls on *Quercus lobata* and *Q. dumosa* (see Lobato-Vila and Pujade-Villar 2021)

Distribution: United States: Arizona, California

***Synergus oneratus* (Harris, 1841)**

Nomenclature:

Cynips oneratus Harris, 1841 | *Synergus garryanus* Gillette, 1893 | *Synergus oneratus coloradensis* (Gillette, 1896) | *Synergus oneratus* var. *coloradensis* Gillette, 1896

Feeds on: Inquiline of: galls of *Andricus* (= *Adleria*) *quercusstrobilana* (Osten-Sacken, 1862); galls of *Atrusca brevipennata* (Gillette, 1893); galls of *Disholcaspis quercusglobulus* (Fitch, 1859); galls of *Disholcaspis rubens* (Gillette, 1893); galls similar to those of *Disholcaspis perniciosus* (Bassett, 1890) (= *Holcaspis monticola* Gillette, 1893) on *Quercus garryana*; galls of *Disholcaspis eldoradensis* on *Quercus lobata* and *Q. dumosa*; galls of *Disholcaspis perniciosus* on *Quercus gambelii*; galls of *Disholcaspis rubens* on *Quercus x undulata*; galls of *Acraspis erinacei* (Beutenmüller, 1909); galls of *Acraspis pezomachoides* Osten Sacken, 1862; galls of *Philonix nigra* Gillette, 1889; galls of *Atrusca quercuscentricola* (Osten Sacken, 1861); galls of *Andricus robustus* Weld, 1926; galls of *Andricus biconicus* Weld, 1926; galls of *Disholcaspis quercusmamma* (Walsh, 1869) (see Lobato-Vila and Pujade-Villar (2021) and references therein)

Distribution: United States: California, Colorado, District of Columbia, Iowa, Illinois, Kentucky, Massachusetts, Michigan, New Jersey, New York, Oregon, Washington; Canada: Ontario

***Synergus pacificus* McCracken & Egbert, 1922**

Nomenclature:

Synergus profusus McCracken & Egbert, 1922

Feeds on: Inquiline of: galls of *Heteroecus pacificus* (Ashmead, 1896) (= *Andricus pacificus*) on *Quercus chrysolepis*; galls of *Disholcaspis canescens* (Bassett, 1890) on *Quercus douglasii* (see Lobato-Vila and Pujade-Villar 2021 and references therein)

Distribution: United States: California

***Synergus personatus* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of undetermined species of *Atrusca* on *Q. microphylla* and *Q. glabrescens*

Distribution: Mexico: México, Tlaxcala

***Synergus pomiformis* Ashmead, 1885**

Nomenclature:

Ceroptres pomiformis Ashmead, 1885 | *Synergus flavus* Kieffer, 1904 | *Synergus varicolor* Fullaway, 1911 | *Synergus variegatus* McCracken & Egbert, 1922

Feeds on: Inquiline of: galls of *Callirhytis quercuspomiformis* (Bassett, 1881) (= *C. maculipennis* Kieffer, 1904) on *Quercus wislizeni* A. DC. and *Q. agrifolia* (*Lobatae* section); *Amphibolips* sp. on *Quercus agrifolia* (Lobato-Vila and Pujade-Villar 2021)

Distribution: United States: California; Mexico: Baja California

***Synergus pseudofilicornis* Lobato-Vila & Pujade-Villar, 2018**

Feeds on: Inquiline of: galls of *Andricus quercuslaurinus* Melika & Pujade-Villar, 2009 (asexual generation) on *Quercus affinis* and *Quercus laurina*; galls of *Andricus quercuslaurinus* (sexual generation); other tuberous galls initiated by *Andricus* spp.; woolly galls induced by *Andricus* spp. and *Striatoandricus* spp.; non-woolly galls induced by *Andricus*, *Atrusca*, *Cynips*, *Dros*, *Neuroterus* on *Quercus* spp. (sections *Quercus* and *Lobatae*) (Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Ciudad de México, Hidalgo, México, Morelos, Nuevo León, Puebla, Tlaxcala, Veracruz de Ignacio de la Llave

***Synergus punctatus* Gillette, 1896**

Nomenclature:

Synergus punctata Gillette, 1896

Feeds on: Inquiline of: galls of *Disholcaspis rubens* (Gillette, 1893) and *Disholcaspis eldoradensis* (Beutenmüller, 1909) and *Biorhiza eburnea* (Bassett, 1890) (= *Dryophanta glabra* Gillette, 1894) on *Quercus arizonica* Sarg., *Q. dumosa* Nutt. (= *Q. durata*), *Q. gambelii* Nutt., *Q. garryana* Dougl. ex Hook., *Q. lobata* Née, *Q. oblongifolia* Torr., *Q. rugosa*, *Q. toumeyii* Sarg., *Q. turbinella* Greene and *Q. undulata* Torr.; galls of *Andricus nigriceps* (Gillette, 1888); galls of *Philonix nigra* (Gillette, 1889); galls of *Acraspis erinacei* (Beutenmüller, 1909); galls of *Acraspis macrocarpae* Bassett, 1890; galls of *Andricus robustus* Weld, 1926 (Lobato-Vila and Pujade-Villar 2021)

Distribution: United States: California, Colorado

***Synergus quercuslana* (Fitch, 1859)**

Nomenclature:

Cynips quercus-lana Fitch, 1859 | *Andricus lana* Ashmead, 1885 | *Synergus lana* Cresson, 1887

Feeds on: Inquiline of *Andricus quercusflocci* (Walsh, 1864)

Distribution: United States: Iowa, New York

***Synergus reniformis* McCracken & Egbert, 1922**

Nomenclature:

Synergus magnificus Weld, 1957

Feeds on: Inquiline of: galls of *Disholcaspis? reniformis* (McCracken & Egbert, 1922) on *Quercus vaccinifolia*; galls of *Andricus? truckeensis* (Ashmead, 1896) on *Quercus chrysolepis*; unknown galls on *Quercus chrysolepis* and *Quercus vaccinifolia* (Lobato-Vila and Pujade-Villar 2021)

Distribution: United States: California, Oregon; Mexico: Baja California

***Synergus ruficephalus* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of: galls induced by *Andricus*, possibly *A. quercuslaurinus* Melika & Pujade-Villar, 2009, on *Quercus crassipes* (Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: México

***Synergus rutulus* McCracken & Egbert, 1922**

Feeds on: Inquiline of *Disholcaspis plumbella* Kinsey, 1920

Distribution: United States: California

***Synergus shorthousei* Lobato-Vila & Pujade-Villar, 2019**

Feeds on: Inquiline of: "woody tuberous galls of different *Andricus* species on twigs of oaks of both *Quercus* and *Lobatae* sections" (Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Guanajuato, Hidalgo, México, Michoacán de Ocampo, Oaxaca, Zacatecas

***Synergus stelluli* Burnett, 1976**

Feeds on: Inquiline of: galls of *Andricus stellulus* Burnett, 1974

Distribution: United States: California

***Synergus striatifrons* Pujade-Villar & Lobato-Vila, 2017**

Feeds on: Inquiline of: galls of *Amphibolips hidalgoensis* Pujade-Villar & Melika, 2011 (asexual generation) on *Quercus eduardi* and *Q. crassipes*; galls of *Amphibolips zacatequensis* Melika & Pujade-Villar, 2011 on *Quercus eduardi* and *Q. crassipes*; galls of *Amphibolips cibriani* Pujade-Villar, 2018 (asexual generation) on *Quercus crassipes* (see Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Ciudad de México, Hidalgo, México, Tlaxcala, Zacatecas

***Synergus succinipedis* (Ashmead, 1885)**

Nomenclature:

Ceroptres succinipedis Ashmead, 1885

Feeds on: Inquiline of: galls of *Disholcaspis quercusvirens* (Ashmead, 1881)

Distribution: United States: Florida

***Synergus tenebrosus* Lobato-Vila & Pujade-Villar, 2019**

Feeds on: Inquiline of: woody tuberous twig galls of *Andricus* sp. on *Quercus mexicana* Bonpl. (*Lobatae* Section) and *Q. rugosa* (*Quercus* section)

Distribution: Mexico: Guerrero, México

***Synergus villosus* Gillette, 1891**

Feeds on: Inquiline of: galls of *Acraspis villosa* Gillette, 1888, *Callirhytis lanata* (Gillette, 1891), and *Dryocosmus imbricariae* (Ashmead, 1896)

Distribution: United States: Illinois, Iowa

***Synergus virentis* (Ashmead, 1885)**

Nomenclature:

Ceroptres virentis Ashmead, 1885

Feeds on: Inquiline of: galls of *Disholcaspis quercusvirens* (Ashmead, 1881)

Distribution: United States: Florida

***Synergus walshii* Gillette, 1896**

Nomenclature:

Synophrus albipes Walsh, 1864 | *Synergus albipes* (Walsh, 1864)

Feeds on: Inquiline of: galls of *Andricus ignotus* (Bassett, 1900), *Andricus pattoni* (Bassett, 1881), *Andricus quercusflocci* (Walsh, 1864), *Phylloteras volutellae* Ashmead, 1897, and *Phylloteras poculum* (Osten Sacken, 1862)

Distribution: United States: Illinois, Michigan

***Synergus weldi* Lobato-Vila & Pujade-Villar, 2021**

Feeds on: Inquiline of: galls of *Andricus* sp. on twigs of *Quercus mexicana* (Lobato-Vila and Pujade-Villar 2021)

Distribution: Mexico: Guanajuato

Discussion

Examination of cynipids from the covered geographic range yields 170 valid species amongst 323 published taxonomic names (see Table 1).

Kinsey and Ayres (1922) apparently amended the original spelling of Ashmead's *Diplolepis tuberculator* as *Diplolepis tuberculatrix* without explanation. The amended name was subsequently carried forward in publications by other authors, particularly in Burks (1979). We treat Kinsey and Ayres's spelling as an unjustified amendment, as described in Article 33.2.3 of the International Code of Zoological Nomenclature (Fourth Edition) and revert the spelling to Ashmead's original *Diplolepis tuberculator*.

Our experience in developing this catalog reveals the need for a better mechanism to record and share data on extended phenotypes and for fine-grained trait data more generally. A model has been developed for the semantic representation of phenotype data (Balhoff et al. 2013, Mikó et al. 2014), for example, and further development of the [Taxon Description](#) extension or even a new phenotype-focused Darwin Core extension might be a convenient vehicle for sharing these data.

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Figure 1.

Examples of galls induced by some of the species treated in this catalog. Photos are not at the same scale. **A** *Antistrophus jeanae* Tooker & Hanks, 2004 inside *Silphium perfoliatum* L. stems; **B** *Diatrophus nebulosus* (Osten Sacken, 1861) on *Rubus* sp. stem; **C** *Antistrophus laciniatus* Gillette, 1891 galls on disk flowers of *Silphium laciniatum* L.; **D** *Diplolepis polita* (Ashmead, 1890) galls on leaves of *Rosa* sp.; **E** *Diplolepis rosaefolii* (Cockerell, 1889) galls in leaves of *Rosa* sp. Photos by Andrew R. Deans

Table 1.

Table 1: Species diversity by country

Tribe	Genus	Total Species	United States	Canadian	Mexican
Aulacideini		21	20	6	0
	<i>Antistrophus</i>	10	10	1	0
	<i>Aulacidea</i>	10	9	4	0
	<i>Liposthenes</i>	1	1	1	0
Ceroptresini		19	13	1	7
	<i>Buffingtonella</i>	1	1	0	0
	<i>Ceroptres</i>	18	12	1	7
Diastrophini		25	20	11	1
	<i>Diastrophus</i>	14	12	8	0
	<i>Periclistus</i>	7	5	2	0
	<i>Synophromorpha</i>	4	3	1	1
Diplolepidini	<i>Diplolepis</i>	34	34	16	0
Phanacidini	<i>Phanacis</i>	2	2	0	0
Synergini		69	44	2	29
	<i>Saphonecrus</i>	2	2	0	0
	<i>Synergus</i>	67	42	2	29
Total species		170 (Total)	133 (USA)	37 (CAN)	37 (MEX)

Supplementary material

Suppl. material 1: Catalog of the Cynipidae of North America

Authors: Nastasi, L. F. and Deans, A. R.

Data type: taxon names, distributions, biotic associations, vernacular names

Brief description: A catalog of the Aulacideini, Ceroptresini, Diastrophini, Diplolepidini, Phanacidini, Synergini (Hymenoptera: Cynipidae) of North America, including information about the taxon name history, vernacular names, biotic associations, and geographic regions in which these species occur. The checklist was created using Darwin Core data standard, including Darwin Core Extensions for Taxon Description, Literature References, Vernacular Names, and Species Distribution. A glossary of gall morphology is also included. The data are compressed into a Darwin Core Archive.

[Download file](#) (62.52 kb)