UNIVERSIDADE FEDERAL DO PARANÁ

DANIELLE REMOR

REVISÃO DOS NOMES DE HELIANTHEAE *sensu lato* (ASTERACEAE) PUBLICADOS NA *FLORAE FLUMINENSIS* DO MUNICÍPIO DE CUNHA (SP) ENTORNO DA ESTRADA REAL

CURITIBA
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Dissertação apresentada ao curso de Pós- Graduação em Botânica, Setor de Ciências Biológicas, Universidade Federal do Paraná, como requisito parcial à obtenção do título de Mestre em Botânica.

Orientador: Prof. Dr. José Floriano Barêa Pastore
Coorientador: João Bernardo de Azevedo Bringel Jr.

CURITIBA
2023

DADOS INTERNACIONAIS DE CATALOGAÇÃO NA PUBLICAÇÃO (CIP)
UNIVERSIDADE FEDERAL DO PARANÁ
SISTEMA DE BIBLIOTECAS – BIBLIOTECA DE CIÊNCIAS BIOLÓGICAS

Remor, Danielle.
Revisão dos nomes **Heliantheae *sensu lato*** (Asteraceae) publicados na *Florae Fluminensis* do município de Cunha (SP) entorno da Estrada Real. / Danielle Remor. – Curitiba, 2023.
1 recurso on-line : PDF.

Orientador: José Floriano Barêa Pastore.
Coorientador: João Bernardo de Azevedo Bringel Jr.

Dissertação (Mestrado) – Universidade Federal do Paraná, Setor de Ciências Biológicas. Programa de Pós-Graduação em Botânica.

1. Botânica - Nomenclatura. 2. Plantas. 3. Asteraceae. 4. Flores. I. Título. II. Pastore, José Floriano Barêa. III. Bringel Jr., João Bernardo de Azevedo. IV. Universidade Federal do Paraná. Setor de Ciências Biológicas. Programa de Pós-Graduação em Botânica.

Bibliotecária: Rosilei Vilas Boas CRB-9/939

TERMO DE APROVAÇÃO

Os membros da Banca Examinadora designada pelo Colegiado do Programa de Pós-Graduação BOTÂNICA da Universidade Federal do Paraná foram convocados para realizar a arguição da dissertação de Mestrado de **DANIELLE REMOR** intitulada: **Revisão dos nomes Heliantheae *sensu lato* (Asteraceae) publicados na *Florae Fluminensis* do munícipio de Cunha (SP) entorno da Estrada Real**, sob orientação do Prof. Dr. JOSE FLORIANO BAREA PASTORE, que após terem inquirido a aluna e realizada a avaliação do trabalho, são de parecer pela sua APROVAÇÃO no rito de defesa.

A outorga do título de mestra está sujeita à homologação pelo colegiado, ao atendimento de todas as indicações e correções solicitadas pela banca e ao pleno atendimento das demandas regimentais do Programa de Pós-Graduação.

Curitiba, 27 de Fevereiro de 2023.

Assinatura Eletrônica
02/03/2023 10:20:17.0
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02/03/2023 11:12:47.0
MARCELO TROVÓ LOPES DE OLIVEIRA
Avaliador Externo (UNIVERSIDADE FEDERAL DO RIO DE JANEIRO)

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03/03/2023 09:12:17.0
JIMI NAKAJIMA
Avaliador Externo (UNIVERSIDADE FEDERAL DE UBERLÂNDIA)

Dedico esse trabalho ao meu orientador Floriano, meu primeiro exemplo de pesquisador. Obrigada por ter me acompanhado até aqui.

AGRADECIMENTOS

Eu não poderia deixar de começar agradecendo a Deus, pela oportunidade de estudar uma das minhas maiores paixões e pelo dom de amar e zelar por uma das suas mais lindas criações.

Ao meu amado companheiro de vida Leonardo, por toda a sua dedicação voltada à mim, pelo companheirismo e por me amar da maneira que sou. Agradeço por sempre acreditar e apoiar todos os meus sonhos.

Ao meu amado gatinho Benjamin, por todos os dias e noites que passou ao meu lado durante os estudos. E a Yumi, que esteve presente comigo durante todss as tardes de estudo.

A minha vó Udila, por ter me incentivado a estudar o reino vegetal.

Aos meus pais Lourdes e Ilzo, e as minhas irmãs, pelo incentivo nos estudos.

Aos meus sobrinhos Pedro e Enzo.

A minha querida sogra Sonia. Agradeço por ter me acolhido em sua casa nesses últimos seis meses e ter sido tão gentil comigo. E a minha cunhada Bruna, obrigada por compartilhar o seu cantinho comigo onde pude fazer diversas descobertas botânicas.

Ao meu querido orientador e amigo José Floriano. Agradeço por sempre acreditar em mim, pelas oportunidades que me proporcionou e por todo o conhecimento compartilhado durantes esses sete anos. Obrigada por ter feito parte da minha caminhada acadêmica e por sempre ter me incentivado a ser melhor. Sempre será o meu orientador favorito!

Ao meu querido coorientador João, que foi uma das peças chaves para que este trabalho pudesse ser realizado. Agradeço pela sua disponibilidade e gentileza em sempre me ajudar. Obrigada por compartilhar comigo o seu conhecimento sobre o maravilhoso mundo da família Asteraceae.

As amigas e companheiras de projeto Aline, Helen e Manuella. Agradeço por todas as experiências compartilhadas, em especial a Manu que foi minha fiel companheira nas expedições de coleta e um lindo presente de mestrado, e a Helen, que sempre foi muito gentil e prestativa em responder as minhas dúvidas sobre a *Florae Fluminensis*.

A Michelle Mota, por todas as dicas acadêmicas.

Ao amigo Vinícius Resende Bueno, por todo conhecimento compartilhado sobre a família Asteraceae.

Aos moradores de Cunha (SP), pela recepção solícita e a Pousada Viajantes do Tempo, em especial ao Horacio e todos os funcionários pela gentileza em nos receber muito bem.

Ao herbário CTBS, BHCB, CEN e MBM.

A Universidade Federal do Paraná, em especial ao Programa de Pós-graduação em Botânica.

A Universidade Federal de Santa Catarina, campus Curitibanos, por ter me permitido usar o laboratório para estudos durante o período de pandemia.

A CAPES pela concessão da bolsa para execução deste projeto.

A memória do Frei José Mariano da Conceição Vellozo e cortejo da *Florae Fluminensis*, espero poder contribuir com o regaste dos nomes dessa magnífica obra, que por muito tempo estão/estiveram negligenciados.

E a, todos aqueles que de alguma maneira contribuíram para minha formação e para execução deste projeto, muito obrigada.

Vendo a beleza das flores acredito que só um ser supremo poderia fazer tamanha obra. Em tudo vejo a mão de Deus.

Graziela Barroso.

RESUMO

A *Florae Fluminensis* foi uma importante obra produzida no final do século XVIII, comandada pelo Frei José Mariano da Conceição Vellozo. Apesar de o seu término ter sido em 1790, a obra foi parcialmente publicada em 1829, com as pranchas em 1831 e o texto final em 1881, este atraso acarretou em perda da autoria da maior parte dos nomes de gêneros e de espécies designados por Vellozo. Asteraceae é a segunda família mais representada na *Florae Fluminensis*, com 156 nomes, apenas atrás de Leguminosae, destes, 70 nomes têm origem no município de Cunha (São Paulo), dos quais 17 pertencem a Heliantheae *sensu lato*. O principal objetivo desta dissertação foi realizar a revisão dos nomes de Heliantheae *sensu lato* publicados na *Florae Fluminensis* do município de Cunha entorno da Estrada Real. Para tanto, esta dissertação é dividida em quatro capítulos: o primeiro é o tratamento taxonômico dos nomes de Heliantheae *sensu lato* (Asteraceae) da *Florae Fluminensis* com origem no munícipio de Cunha (São Paulo), o segundo e terceiro capítulo apresentam o resgate de prioridade dos nomes *Aster monanthus* Vell. (artigo publicado em 2022 na revista Phytotaxa) e *Eclipta trinervia* Vell. (artigo submetido em 2023 para a revista Kew Bulletin) em duas novas combinações no gênero *Wedelia* Jacquin. E finalmente, o quarto capítulo trata de uma nova combinação para o gênero *Ichthyothere* Mart. (artigo publicado em 2022 na revista Brittonia). Os resultados deste trabalho, contribuem para evidência da importância científica da obra e de seu autor, que por muito tempo estiveram negligenciados.

Palavras-chave: Aliança-Heliantheae, Compositae, nomenclatura, tipificação, Vellozo.

ABSTRACT

Florae Fluminensis was an important work produced at the end of the 18th century, commanded by Friar José Mariano da Conceição Vellozo. As a result, for eight years (1782-1790) Vellozo and collaborators cataloged and illustrated 1640 plant species from their expedition between the captaincies of Rio de Janeiro and São Paulo on the route of the Estrada Real between Paraty (RJ) and Cunha (SP). Although its completion was in 1790, the work was partially published in 1829, with the plates in 1831 and the final text in 1881, this delay resulted in the loss of authorship of most of the names of genera and species designated by Vellozo. Asteraceae is the second most represented family in *Florae Fluminensis*, with 156 names, just behind Leguminosae, of which 70 names originate in the municipality of Cunha (São Paulo), of which 17 belong to Heliantheae *sensu lato*. The main objective of this dissertation was to carry out a review of the names of Heliantheae *sensu lato* that belong to *Florae Fluminensis*, with emphasis on those originating in the municipality of Cunha and surroundings of Estrada Real. Therefore, this dissertation is divided into four chapters; the first is the taxonomic treatment of the names of Heliantheae sensu lato (Asteraceae) in *Florae Fluminensis* from the municipality of Cunha (São Paulo); the second and third chapters present the rescue of priority of the names *Aster monanthus* Vell. (article published in 2022 in the journal Phytotaxa) and *Eclipta trinervia* (article submitted in 2023 to the journal Kew Bulletin) in two new combinations in the genus *Wedelia* Jacquin. And finally, the fourth chapter deals with a new combination for the genus *Ichthyothere* Mart. (article published in 2022 in the jornal Brittonia). The results of this work contribute to evidence of the scientific importance of the work and its author, which for a long time were neglected.

Keywords: Alliance- Heliantheae, Compositae, nomenclature, typification, Vellozo.

SUMÁRIO

1 INTRODUÇÃO GERAL

A *Florae Fluminensis* (FF) é uma obra pioneira no tratamento taxonômico de plantas para o Brasil, liderada pelo insigne Frei José Mariano da Conceição Vellozo (1742-1811). A obra se destaca pelo seu caráter científico na qual as plantas foram retratadas com a utilização do sistema nomenclatural de Lineu e também pelas informações sobre as características morfológicas e os locais onde ocorrem (BEDIAGA; LIMA, 2015).

Nascido em 14 de outubro de 1741 na então Província de Minas Gerais, Freguesia de Santo Antônio da Vila de São José, Comarca de Rio das Mortes (atualmente município de Tiradentes), José Xavier Veloso, posteriormente chamado José Mariano da Conceição Vellozo, porém mais conhecido como Frei Vellozo, desde criança demonstrou interesse pelas plantas (VALLE, 1985). Aos 19 anos de idade, Vellozo decidiu seguir a vida eclesiástica e ingressou na ordem franciscana no ano de 1761 no Convento de São Boaventura de Macacu. Cursou Filosofia e Teologia no Convento de Santo Antônio (STELLFELD, 1952) e decidiu seguir a carreira de professor nas áreas de geometria, retórica e história natural, demonstrando especial afeição pela botânica (BLAKE, 1899; NUNES; BRIGOLA, 1999).

O talento e adoração de Vellozo pelas plantas foi reconhecido pelo vice-rei Luiz de Vasconcellos e Souza, que o designou como o responsável pela criação da monumental obra *Florae Fluminensis* (FF). Durante oito anos (1782-1790) Vellozo e colaboradores percorreram as capitanias do Rio de Janeiro e São Paulo pela Estrada Real entre o percurso Paraty-Cunha (PASTORE *et al*., 2021) coletando plantas de diversas famílias botânicas.

A expedição botânica instituída para a coleta, ilustração e descrição das plantas para a FF chegou a ser composta por mais de 40 pessoas, a maioria escravos, três sacerdotes (Frei Vellozo que dirigia a expedição, Frei Francisco Solano que desenhava as espécies e Frei Anastácio de Santa Inês, que escrevia as definições científicas) e 13 militares (DAMASCENO, 1977).

O resultado dessa longa expedição são 12 volumes (11 volumes de estampas originais e 1 volume de texto) com 396 gêneros e 1.640 descrições de plantas em diversas famílias botânicas (VELLOZO, 1881). Ao finalizar a FF em 1790, Frei Vellozo seguiu viagem a convite junto do vice-rei Luiz de Vasconcellos e Souza para Lisboa, onde foi nomeado pelo Príncipe regente Dom João, como diretor da Tipografia Arco do Cego (BLAKE 1899; VALE, 1985).

No exercício do cargo de diretor, Vellozo desenvolveu contatos e entendimentos com diversos impressores, com o objetivo de publicar livros que pudessem servir como aparato para a incipiente indústria, a agricultura e a história natural, publicando obras como *O fazendeiro do Brasil*, sua obra de maior destaque na área da tecnologia, constituída de 10 volumes impressa em Lisboa entre 1798 e 1806 (VALLE, 1985; WEGNER, 2004; LUNA, 2005). Para Lisboa, Vellozo levou consigo o seu herbário composto das coletas provenientes da sua expedição da FF, com intuito de publicar a obra, que constam terem sido depositados nos estabelecimentos museais da Ajuda e os originais dos textos e gravuras fitológicas da FF (NUNES; BRIGOLA, 1999).

No entanto, a tarefa de imprimir os manuscritos da FF demandava de equipamentos e mão de obra especializada que na época, não havia disponível em Portugal, o que tornava o trabalho oneroso. Foram efetuadas inúmeras tentativas para abertura das chapas em Veneza, porém ocorreram diversos entraves que impediram o sucesso da impressão da obra de Vellozo, como a morte de abade Santini, português encarregado para este posto, a burocracia e o desdém da sociedade lisboeta e de outros naturalistas para com a obra do franciscano e as dificuldades logísticas em meio às guerras napoleônicas (BLAKE, 1899; BEDIAGA; LIMA, 2015).

Diante dos percalços, a FF somente foi publicada postumamente. Em 1825 se deu início a impressão do manuscrito de forma incompleta até a página 352 (descrição de *Sabbata romana*), que somente ficou disponível em 1829. Em 1829, começa a impressão das pranchas que passaram a veicular em 1831, e somente em 1881 o texto completo da FF é finalmente publicado nos *Archivos do Museu Nacional* (CARAUTA, 1969).

Embora seja relatado que Vellozo tenha levado consigo o seu herbário para Lisboa, não se sabe ao certo o destino dos originais coletados nas expedições históricas feitas no contexto da FF. Borgmeier (1961) e Lima (1995) relatam que os espécimes originais de Vellozo foram inseridos no Museu Real de Lisboa em 1798, possivelmente pelo próprio Vellozo. Também é documentado que os espécies originais da FF foram encaminhados a Portugal logo no final da expedição em 1790, e que em 1808 foram expropriados e levados para a França como espólio de guerra. Entretanto, toda busca pela localização dos espécimes de Vellozo sempre foi mal sucedida (PASTORE, 2013).

Na ausência dos espécimes originais, o manuscrito e as ilustrações originais da FF que geralmente são utilizados para a tipificação dos nomes durante as revisões, estão disponíveis na Seção de Manuscritos da Biblioteca Nacional do Rio de Janeiro com cópia de parte das

ilustrações originais (1831) também no Arquivo Nacional da Torre do Tombo em Lisboa, Portugal (PASTORE *et al.,* 2022).

A versão incompleta publicada somente 39 anos depois de finalizada acarretou na perda de prioridade da maior parte dos nomes de gêneros e espécies designados por Vellozo. Diante dos desdobramentos da publicação da obra, a FF tem sido revisitada sob diversos aspectos históricos, contextuais e taxonômicos (BEDIAGA; LIMA, 2015).

Da perspectiva taxonômica, os nomes de diversas famílias botânicas da FF como Fabaceae (LIMA, 1995; MENEZES, 2021), Passifloraceae (CERVI; RODRIGUES, 2010; MILWARD, 2017), Orchidaceae (BUZZATO *et al.,* 2013), Polygalaceae (PASTORE, 2013), Commelinaceae (PELLEGRINI *et al.,* 2015), Pontederiaceae (PELEGRINI, 2015), Solanaceae (KNAPP *et al.,* 2015), e Melastomataceae (YAMAMOTO *et al.,* 2022) já foram revisados.

O itinerário de expedição e os topônimos citados em latim por Vellozo foram revisados por Pastore *et al*. (2021) que apresentou avanços substanciais na reinterpretação do trajeto original descrito na FF. Apesar do nome da FF expressar referência ao estado do Rio de Janeiro, muitas das suas espécies descritas citam topônimos com origem no estado de São Paulo, atribuídos especificamente ao município de Cunha que parece ter sido o ponto final da expedição de Vellozo (PASTORE *et al.,* 2021).

O município de Cunha localizado na região do Vale do Paraíba, leste do estado de São Paulo, conta com áreas verdes do bioma Mata Atlântica como o Parque Estadual da Serra do Mar e o Parque da Serra da Bocaina (DOMINGUES; MATTOS; FURIAN, 2001). Recentemente, entretanto, Pastore *et al*. (2021) através da reinterpretação do intinerário de Vellozo na FF identificaram áreas de cerrado por meio da designação de topônimos como "*mediterraneis*" e "*campis apricis*" que segundo a reinterpretação de Pastore *et al.* (2021) fazem referência ao município de Cunha e a sua vegetação de cerrado, respectivamente. Além da reinterpretação do itinerário original de Vellozo, Pastore *et al*. (2021) também foi pioneiro a explorar algumas das áreas históricas da FF coletando diversos espécimes presentes na FF, principalmente das famílias Asteraceae, Fabaceae e Melastomataceae.

A família Asteraceae Bercht. & J.Presl é a segunda maior de plantas, contando com cerca de 24.000 espécies descritas em mais de 1.600 gêneros, representando cerca de 10% do número total de angiospermas no mundo (FUNK *et al*., 2009) e presente em todos os continentes, com exceção da Antártida.

No Brasil, Asteraceae é a família botânica mais representativa com cerca de 2.205 espécies (FLORA E FUNGA, 2023), que ocorrem principalmente em ambientes campestres e

no domínio do Cerrado que é o que apresenta a maior diversidade de espécies da família no país, com 1.247 espécies (FLORA E FUNGA, 2023).

Seus representantes caracterizam-se por apresentar inflorescência do tipo capítulo, envolta por uma ou mais séries de brácteas involucrais, flores com androceu sinântero e deiscência introrsa, gineceu bicarpelar, ovário ínfero, unilocular, uniovulado com placentação basal, e fruto do tipo cipsela (FUNK *et al*., 2009). Além de ser uma das maiores famílias de angiospermas, Asteraceae também é uma das famílias mais representativas da FF. Dos 1640 nomes de plantas descritos por Vellozo, 156 correspondem a espécies de Asteraceae (VELLOZO, 1881).

As espécies de Asteraceae descritas na FF foram distribuídas nos grupos artificiais Petandria, Polygamia, Monoecia e Monogamia, compreendendo 35 gêneros, isso porque a classificação da FF segue o sistema sexual lineano, o qual já era considerado obsoleto no começo do séc. XIX, quando já estava consolidada a classificação em famílias botânicas (BEDIAGA; LIMA, 2015).

O maior gênero de Asteraceae retratado na FF é *Chrysocoma* L. composto por 50 nomes, seguindo por *Senecio* L. com 10 nomes, *Buphthalmum* L. e *Tussilago* L. com cinco nomes, respectivamente. Grande parte dos gêneros citados por Vellozo na FF, foram descritos por Lineu (1753;1758) muitos deles designando espécies até então inéditas. Entretanto, assim como para outros grupos, muitos novos nomes de espécies e gêneros de Asteraceae descritos na FF perderam a prioridade de autoria de Vellozo por conta da data efetiva de publicação da obra, que só ocorreu em 1831 e 1881.

Por conta disso, alguns nomes de gêneros que pertencem a Asteraceae já foram revisados como *Baccharis* DC. (CANDOLLE, 1836; BARROSO, 1976), *Piptocarpha* R.Br. (BAKER, 1873), *Hypochaeris* L. (BRITTON, 1893), *Vernonia* Schreb. (RUSBY, 1895), *Barnadesia* Mutis, *Trichocline* Cass. (BLAKE, 1925), *Chaptalia* Vent. (BURKART, 1944), *Holocheilus* Cass., *Trixis* P. Browne, *Pentacalia* Cass. (CUATREC, 1982), *Chrysolaena* H. Rob., *Lessingianthus* H. Rob., *Vernonanthura* H. Rob., (ROBINSON, 1988), *Dendrophorbium* (Cuatrec). C. Jeffrey (JEFFREY, 1992), *Stifftia* J.C. Mikan (HIND; SEMIR, 1998), *Calea* L. (PRUSKI, 2005), *Richterago* Kuntze (ROQUE; PIRANI, 2014), *Ichthyothere* Mart., *Wedelia* Jacq. (REMOR *et a*l., 2022 – parte desta dissertação), *Lucilia* Cass. (SITOWSKI *et al*., 2022) e diante, da extensão de nomes mencionados para a família na FF, uma das formas de realizar os estudos revisionais é separando-os em tribos. Um exemplo disso, são as revisões para os nomes da FF que pertencem a tribo Vernonieae (Asteraceae) elaborada por Sintowski (2023).

Heliantheae *sensu lato*, é um grupo não monofilético formado por tribos da Aliança Heliantheae caracterizadas por apresentarem um receptáculo paleáceo comum, flores em disco com lóbulos curtos, anteras com tecas de coloração enegrecida ou amarelas, e pápus geralmente de aristas ou escamas (ROBINSON, 1981).

Para Asteraceae, 70 nomes têm origem no município de Cunha (PASTORE *et al.,* 2021). Desta forma, o presente estudo tem como objetivo realizar a revisão dos nomes de Heliantheae *sensu lato* (Asteraceae) publicados na *Florae Fluminensis* do munícipio de Cunha (estado de São Paulo) entorno da Estrada Real, de forma a corroborar com a reinterpretação do itinerário por Pastore *et al.* (2021), como também, aumentar a possibilidade de registro de espécies pertencentes a família Asteraceae que possivelmente foram negligenciados ou interpretados de forma equivocada.

2 ESTRUTURA DA DISSERTAÇÃO

O principal objetivo desta dissertação é revisar os nomes de Heliantheae *sensu lato* (Asteraceae) publicados na *Florae Fluminensis* do munícipio de Cunha (estado de São Paulo) entorno da Estrada Real. Deste modo, a dissertação foi dividida em cinco capítulos e cada capítulo foi formatado de acordo com as normas da revista em que foi submetido ou publicado. O capítulo I aborda o tratamento taxonômico para os nomes de Heliantheae *sensu lato* (Asteraceae) da *Florae Fluminensis* com origem no município de Cunha (São Paulo). O capítulo II e III abordam uma novidade nomenclatural, duas novas combinações para o gênero *Wedelia* Jacquin. (publicado em 2022 na revista Phytotaxa e submetido a revista Kew Bulletin, respectivamente). Por fim, no capítulo IV é apresentada uma nova combinação para o gênero *Ichthyothere* Mart. (publicado em 2022 na revista Brittonia).

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CAPÍTULO I

Taxonomic treatment of the Heliantheae *sensu lato* (Asteraceae) names from the *Florae Fluminensis* with origin in the municipality of Cunha (São Paulo state)

Tratamento taxonômico dos nomes de Heliantheae *sensu lato* (Asteraceae) da *Florae Fluminensis* com origem no município de Cunha (estado de São Paulo)

*Manuscrito será submetido para publicação no periódico *Systematic Botany* ISSN (0363-6445) e está formatado de acordo com as normas da revista.

Danielle Remor[1,4], João Bernardo Azevedo Bringel Jr.[2,5] and José Floriano Barêa Pastore[3,6]

[4]Programa de Pós-Graduação em Botânica, Universidade Federal do Paraná, CEP 81531-970, Curitiba, PR, Brazil; https://orcid.org/0000-0002-4374-2448
[5]Universidade de Brasília, Instituto de Ciências Biológicas – ICB, Campus Universitário Darcy Ribeiro, Asa Norte, 70910900 -
Brasília, DF – Brasil; https://orcid.org/0000-0001-8423-2930
[6]Universidade Federal de Santa Catarina, Campus Curitibanos, Caixa Postal 101, Rod. Ulysses Gaboardi, km 3, 89.520-000,
Curitibanos, SC, Brasil; https://orcid.org/0000-0003-4134-7345
[4]Author for correspondence (danielle_remor@hotmail.com)

***Abstract*—** Asteraceae is among one of the largest botanical families cataloged in *Florae Fluminense* with 156 names, of which 17 belong to *Heliantheae sensu lato*, a non-monophyletic group composed of tribes of the Heliantheae Alliance that usually display paleaceus receptacle (excluding Eupatorieae). Here we review the names of Heliantheae *sensu lato* published in *Florae Fluminense*. One name had its priority rescued and transferred to the genus *Wedelia*. Taxonomic notes, occurrence maps, and photographic plates, lectotypes and eventually epitypes, were designated.

***Keywords*—** Brazilian flora, Compositae, nomenclature, typification.

***Resumo*—** Asteraceae está entre uma das maiores famílias botânicas catalogadas na *Florae Fluminense* com 156 nomes, dos quais 17 pertencem a Heliantheae *sensu lato*, grupo não monofilético composto pelas tribos da Aliança Heliantheae que geralmente apresentam receptáculo paleáceo (excluindo-se Eupatorieae). Aqui são revistos os nomes de Heliantheae *sensu lato* publicados na *Florae Fluminense*. Um nome teve sua prioridade resgatada e transferida para o gênero *Wedelia*. São apresentadas notas taxonômicas, mapas de ocorrência e pranchas fotográficas, lectótipos e, eventualmente, epítipos.

José Mariano da Conceição Vellozo (1742-1811) was a Brazilian naturalist, and author of *Florae Fluminensis* (hereafter FF), a taxonomic treatment that includes 1,640 descriptions of plant species distributed in 396 genera cataloged in 12 volumes (11 of original prints and 1 volume of text) (Vellozo 1825;1831;1881), housed in the Section of Manuscripts of the

National Library of Rio de Janeiro, with part of the plates in copy in the Torre do Tombo in Lisbon.

The FF is a work that stands out for its scientific character, where Vellozo classified plants according to Linnaeus's nomenclatural system and also provided information on the morphological characteristics and the places where they occurred (Bediaga and Lima 2015).

More than 40 people, most of them vassals, collaborated with Vellozo's expedition travelling for eight years (1782-1790) through the captaincies of Rio de Janeiro and São Paulo (Lima 1995) on the route of the Estrada Real between Paraty and Cunha (Pastore et al. 2021). Although completed in 1790, FF was only published posthumously, with parts of the text in 1829 (up to page 352), the plates in 1831, and the complete text only in 1881 (Carauta 1969; Carauta 1973).

Vellozo's biography, as well as the publication history of the FF, have been well documented times (Borgmeier 1961; Carauta 1973; Bediaga and Lima 2015; Pastore et al. 2021) however, from a taxonomic perspective, the names of several families botanical that make up the FF are, constantly revised (Lima 1995; Braga 2005; Cervi and Rodrigues 2010; Buzzato et al. 2013; Pastore 2013; Pellegrini, Forzza and Sakuragui 2015; Knapp et al. 2015; Milward-de-Azevedo 2017; Kessous, Salgueiro and Costa 2018; Menezes 2021; Remor et al. 2022; Yamamoto et al. 2023), since the delay in the publication of the work resulted in the loss of priority a number of most of the more than 100 names designated by Vellozo (Stellfeld 1952).

Difficulties in revising FF names are mainly based on the absence of the original specimens and the lack of information about the original localities. Historical sources state that Vellozo's original specimens were sent to the Royal Museum of Lisbon, where they were inserted into the herbarium, possibly by Vellozo himself (Borgemeier 1961; Lima 1995). Another hypothesis is that the original specimens from Vellozo were sent to Portugal after the end of the FF expeditions, and in 1808 they were taken to France as war spoils (Pellegrini 2015).

However, the whereabouts of the original specimens are still a gap for future studies, as their search is almost always unsuccessful (Carauta 1973; Lima 1995; Pastore 2013). For this reason FF illustrations serve as a reference for revisional studies (Pastore 2013). Published in 1831 in the Archivos do Museu Nacional, the illustrations of FF were recently the focus of study by Pastore et al. (2022) who presented a guideline for revisions and typifications of FF names.

The expedition path and toponyms mentioned in Latin by Vellozo were also revised by Pastore et al. (2021) who presented substantial advances in the reinterpretation of the original itinerary described in the FF. Despite the name of FF clearly referring to the state of Rio de Janeiro, many of its described species cite toponyms originating in the state of São Paulo, specifically attributed to the municipality of Cunha (Pastore et al. 2021).

The municipality of Cunha seems to have been the final point of Vellozo's expedition that assigned 339 names from the FF associated with the term "meditteraneis" which refers to the municipality of Cunha (SP), according to the reinterpretation of Pastore et al. (2021), when the terms "*campis apricis mediterraneis*" and "*transalpinis*" refer to the cerrado vegetation in Cunha, and the border region of the state of São Paulo with Rio de Janeiro, respectively. To reinterpreting Vellozo's original itinerary, Pastore et al. (2021) also made botanical collections, mainly the families Asteraceae, Fabaceae, Meslatomataceae, now stored in the CTBS in a special section called "Project Friar Vellozo". Nowadays, this collection comprises 1,254 specimens from the municipality of Cunha (SP), of which 287 belong to the Asteraceae family, being the reference in specimens of Asteraceae for the municipality of Cunha (speciesLink 2023).

Asteraceae Bercht. & J.Presl is one of the most significant families that make up FF, with about 156 names that occupy all of volume 8 and part of volume 10 (Vellozo 1881). Many of the names cited for Asteraceae in the FF belong to Heliantheae *sensu lat*o (*s.l.*), a non-monophyletic group formed by the tribes of the Heliantheae Alliance that often have paleaceous receptacle, disk flowers with short lobes, anthers with blackish thecae or yellow and papus usually of aristae or scales (Robinson 1981). Concretely it includes all the tribe of Heliantheae Alliance except Eupatorieae.

Despite being one of the most significant families in this important work, only part of the FF Asteraceae names has been revised: (Candolle 1836; Barroso 1976), (Baker 1873), (Britton 1893), (Rusby 1895), (Blake 1925), (Burkart 1944), (Cuatrecasas 1982), (Robinson 1988), (Jeffrey 1992), (Hind and Semir 1998), (Pruski 2005), (Roque and Pirani 2014), (Sitowski et al. 2022) and (Remor et al. 2022a; Remor et al. 2022b).

Of the 156 names of Asteraceae, 70 belong to species described by Vellozo in the FF that occur in the municipality of Cunha (Pastore et al. 2021). Based on this, we reviewed the names of Heliantheae *s.l.* (Asteraceae) published in FF with emphasis on names originating in the municipality of Cunha (SP) and the surroundings of Estrada Real. Typifications, distribution maps, taxonomic notes, and eventually, photographic plates are presented for the revised names.

MATERIALS AND METHODS

***Field expedition and collections*—** Field expeditions were made to locate and collect specimens during the dry and rainy seasons in October 2021 and January, March and May 2022, respectively, in the municipality of Cunha (SP) along the route of Estrada Real (Cunha - Paraty) (Fig. 2A) having as reference the probable localities and typical habitats of the names of FF verified and reinterpreted by Pastore et al. (2021) mainly the toponyms "*mediterraneis"* and *"Campis Apricis Mediterraneis"* (Fig. 2.B) that appeared in the names Heliantheae *s.l.*

Collection permit was obtained from the Biodiversity Authorization and Information System (SISBio) of the Chico Mendes Institute (ICMBio) for collections in areas of Conservation Units such as the Serra da Bocaina National Park.

The specimens were georeferenced, photographed, and herborized in the field following the precepts of Fidalgo and Bononi (1989), and deposited in a collection entitled “Projeto Frei Vellozo” in the CTBS herbarium (Thiers 2023) of the UFSC campus Curitibanos. The other duplicates were sent to the UPCB, RB, and US herbaria (Thiers 2023).

***Identification*—** A full analysis of names and their respective illustration was carried out in order to identify all names of FF which would fit in Asteraceae, Heliantheae *s.l.*. Once it was selected the set of names to be included in this study, all Heliantheae *s.l.* plates of FF with origin in the municipality of Cunha were printed, and considering the possibility of FF plates itself have been made in field based in fresh material, the printed plates were consulted during the field expedition to aid interpretation and eventually identify the species (Fig. 2C).

In addition, stereoscopic morphological analysis along with specialized bibliographic were consulted as support. The identification of the genera was also based on the works of: Alves and Roque (2016), Jansen (1981; 1985), Magenta (2006), Meyer (1818), Moraes and Semir (2009), Moreira and Cavalcanti (2020), Pereira (2001), Pruski (2005), Roque and Bautista (2008), Roque et al. (2017), Santos (1992) and Strother (1991).

The diagnoses of FF (Vellozo 1829; Vellozo 1881), available at the Biodiversity Heritage Library, were comprehensively studied and used as base of recognition of species represented in the FF. In addition to the collected specimens, searches on platform SpeciesLink and ‘Reflora Virtual Herbarium’, were conducted in order to find specimens from Heliantheae

s.l. from Cunha and nearby municipalities. The loan of specimens from the BHCB, CEN, MBM herbaria was made to aid in the identification (Thiers 2023).

***Taxonomic and nomenclatural treatment*—**In the review process, we analyzed which names described in FF (Vellozo 1831; Vellozo 1881) originating in the municipality of Cunha would possibly fit on the concept of Heliantheae *s.l.* (Robinson 1981). The need for nomenclatural adjustments such as new combinations and synonymies was verified and conducted according to the International Code of Botanical Nomenclature (ICN) (Turland et al. 2018). The full taxonomic list of synonyms is only cited when the Vellozo's name are considered as a nomenclatural novelty and the correct name. The species names here are presented in the same order as FF. The typification of all names involved was verified and, eventually, typified. Several virtual databases of herbaria were consulted, such as B, BM, BR, G-DC, K, P, US (Thiers 2023). A careful analysis of specimens from the *Muséum National d'Histoire Naturelle* was also carried out in the Sonnerat digital database in order to find putative specimens collected by Vellozo. The names of FF were typified following the recommendations provided in Pastore et al. (2022).

***Geographic Distributions*—**Distribution maps were prepared using QGIS 3.10 (Quantum GIS Development Team) from collection data available on SpeciesLink and Jabot, which had their identification confirmed. When the coordinates were not available on the specimens labels, we georeferenced the locations.

***Photographic plates*—**We used the Corel® PHOTO–PAINT™ X7 program to prepare the photographic plates with the details of the species and comparison with the FF illustrations for the new combinations, based on field photos and photos of specimens in a camera coupled to a stereomicroscope (Tecnival), and morphological parts were photographed using the software ToupView®.

Fig. 2. A. Estrada Real in the municipality of Cunha. B. Cerrado s.str. vegetation near the Church of São José da Boa Vista (*campis apricis mediterraneis*) in FF. C. Illustration from *Buphthalmum arvense* Vell. beside a fresh specimen of *Aspilia foliacea* (Spreng.) Baker. *Remor, 299* (CTBS). Photos by A-B. J.F.B. Pastore; C. Manuella Yamamoto.

RESULTS AND DISCUSSION

For Asteraceae of the total of 156 names treated in FF (Vellozo 1831, Vellozo 1881) 70 have probable origin in the municipality of Cunha (SP) (Pastore et al. 2021). Through our research, we recognized that 17 names belong to Heliantheae *s.l.* and had their plates published in 1831 and their descriptions in the final publication of 1881 FF (Vellozo 1881).

Of the names mentioned in Pastore et al. (2021) for Asteraceae in Cunha, 13 names fit Heliantheae *s.l.*, however, after analyzing the illustrations in this study, the number of taxon

names that fit Heliantheae s.l. with probable occurrence in the municipality of Cunha was expanded, including the names *Buphthalmum equinum* Vell., *B. scandens* Vell., *Cotula piper* Vell. and *Verbesina triradiata* Vell. The description of these names mentions the "*mediterraneis*" habitat, but also the "*maritimis*" and "*transalpinis*" habitats. According to the reinterpretation of Pastore et al. (2021) the boundary region of the municipality of Cunha (SP) is referred to by Vellozo as "*transalpinis*", so the mention of the habitats "*mediterraneis*" and "*transalpinis*" in the description of these names means that the species can be found in the municipality of Cunha and also on the state border near Paraty (RJ).

During our expeditions we found in the field seven species of Heliantheae *s.l.* (table 1). One "name" was considered a citation of a name already described by Linnaeus (1753), while eight names are new synonyms. Three new combinations for the genera *Ichthyothere* Mart. and *Wedelia* Jacq. have already been published by Remor et al. (2022a, 2022b, 2023c) and a new combination is proposed here for the genus *Wedelia*.

Lectotypes were assigned to 15 names based on the original illustrations kept in the Biblioteca Nacional (eventually published in volume eight of the FF available on the National Library). Based on the analysis of the original plates, five epitypes were designated to assist in the application of the names following the principle of Art. 9.9 of the ICN. (Turland et al. 2018).

Table 1. Species of Heliantheae *s.l.* described in FF collected in the municipaly of Cunha (state São Paulo) around Estrada Real.

Species name	**Voucher**
Wedelia foliacea (Spreng.) B. L. Turner	*Remor, D. 299* (CTBS)
Calea pinnatifida Banks ex Steud.	*Remor, D. 319* (CTBS)
Calea triantha (Vell.) Pruski	*Remor, D. 335* (CTBS)
Dimerostemma brasilianum Cass.	*Remor, D. 312* (CTBS)
Tilesia baccata (L.) Pruski	*Remor, D. 381* (CTBS)
Wedelia herbacea (Vell.) Remor, Bringel & J.F.B. Pastore	*Remor, D. 415* (CTBS)
Wedelia monantha (Vell.) Remor, Bringel & J.F.B. Pastore	*Remor, D. 301* (CTBS)

Taxonomic Treatment

1. *Acmella bellidioides* (Sm.) R. K. Jansen, Syst. Bot. Monogr. 8: 86 1985. *Rudbeckia bellidioides* Sm., Cycl. [A. Rees], (London ed.) 30: n. 12 1815. TYPE: Uruguay: Montevideo [Du Morne de Montevideo et Des Rochers de tout autour de la Ville], Nov. 1767, *Commerson s.n.* (holotype: LINN [HS1372-9]; isotypes: C [barcode] C10006877, P [barcode] P00704920, P [barcode] P00704919, P-JU [barcode] P00671393).

Bellis campestris Vell. Fl. Flum. 338. Icon. 8: tab.124.1831 [1827]. Brasil, São Paulo [Habitat campis apricis transalpinis mediterraneis]. Lectotype (designated here): [icon ined.] "Syng. Polyg. Superf. BELLIS *campestris* Tab. 124''. (Seção de Manuscritos, Bibliot. Nac. Rio de Janeiro No. (I-17,4,2 -mss1198657_127) (Fig. 3A). **New Synonym**.

Bellis pedunculata Vell. Fl. Flum. 338. Icon. 8: tab.125.1831 [1827]. Brasil, São Paulo [Habitat campis apricis transalpinis mediterraneis]. Lectotype (designated here) [icon ined.] "Syng. Polyg. fuperf. BELLIS *pedunculata* Tab.125''. (Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17,4,2 -mss1198657_128) (Fig. 3C). **New Synonym**.

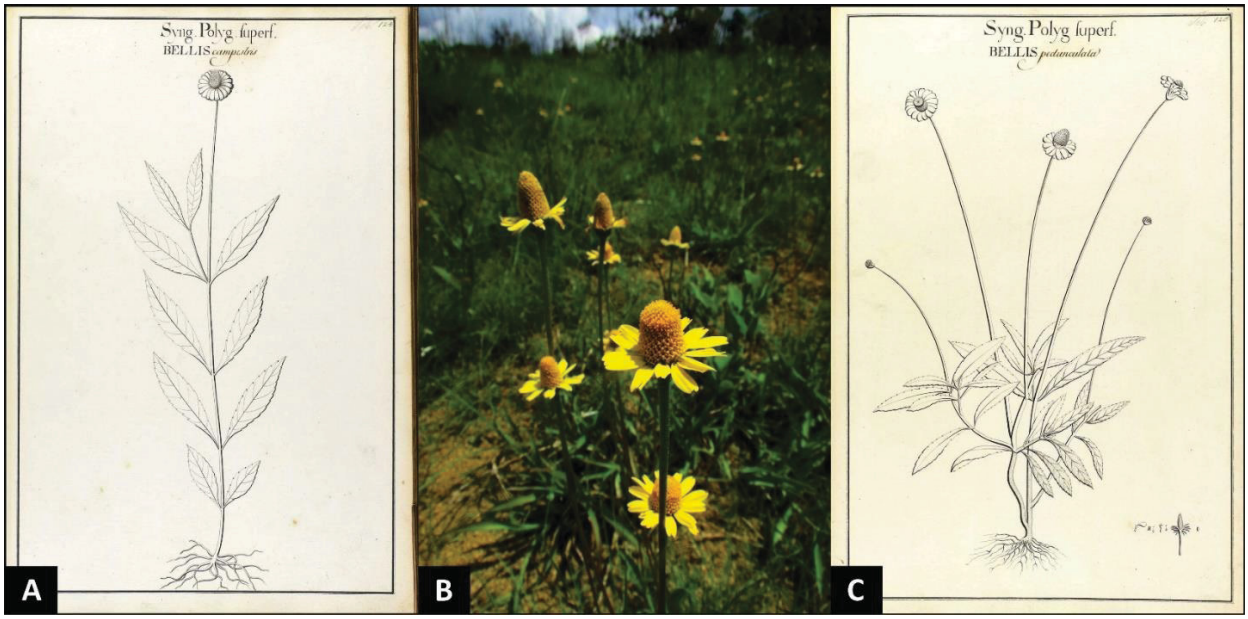

Fig. 3. A. Lectotype of *Bellis campestris* Vell. B. *Acmella bellidioides* (Sm.) R. K. Jansen *in vivo*. C. Lectotype of *Bellis pedunculata*. Plates by National Library and photo by Luciano Pedrosa.

Taxonomic Notes— The genus *Acmella* Rich. ex Pers., tribe Heliantheae, subtribe Spilanthinae (Panero 2007), consists of 30 species of tropical annual and perennial erect-growing herbs, and five pantropical that grow abundantly in roadside ditches and stream (Jansen 1985). The elongated and conic receptacle is remarkable character of *Acmella* (Jansen 1985; Panero 2007;

Magenta et al. 2010) that are also reported by Vellozo (1831; Vellozo 1881) to the taxa referred by him under the names *Bellis*.

Acmella bellidioides (Fig. 3B) can be recognized by its erect stem and the vegetative propagation by stolon, basal leaves with short petioles, oblanceolate to obovate blade, glabrous to moderately strigose or pilose indument, conspicuous pistillate ray florets with yellow corolla (Jansen 1985).

The morphological description of *Bellis campestris* (Vellozo 1881) supports its placement as a synonym of *A. bellidioides* due petiolate leaves, lanceolate blade, glabrous surface, ray florets yellow, and many disc florets. In addition, through careful analysis of the plate, we came to the conclusion that the illustration of *B. campestris* and *B. pedunculata*, represent the same species, however in different morphotypes, since their description are very similar except in indument and stem orientation (Vellozo 1831; Vellozo 1881).

Vellozo (1881) described *B. pedunculata* displaying strigose leaves. We understand it as a morphological variation of a single species, since it was already reported by Jansen (1985) occurring in *A. bellidoides*. The habitat "*campis apricis mediterraneis transalpinis*" is mentioned by Vellozo for both names, as well as a the flowering time "*Floret Sept*." (Vellozo 1881).

***Geographic Distribution*—**In Brazil, the species occurs in the states of Bahia, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Rio Grande do Sul, Santa Catarina, and São Paulo (Nakajima 2022). In São Paulo, *Acmella bellidioides* occurs in cerrado areas similar to the Cunha region, such as São José dos Campos and Mogi Guaçu (SpeciesLink 2022), which reinforces that it has possibly already occurred in the Cunha cerrado (Fig.13A).

***Additional Specimens Examined* —Brazil.—**Bahia: Cruz das Almas, Brasil, 12°40'12.0"S 39°06'06.8"W [-12.6700000762939 -39.1018981933594], April 1950, *Pinto, G. s.n.* (ICN); Goiás: Balsams. Municipio Jataí, 17°52' 33"S 51°43'17"W [-17.8757 -51.7216], 01 November 1950, *A. Macedo 2695* (US); Minas Gerais: Serra do Ouro Branco, Ocorre a 1421 m de altitude em área com solo ferruginoso, Ouro Branco, 20°29'10.0"S 43°41'06.0"W [-20.486111 -43.685], 10 August 2022*, Paula, C.C. de; Aniceto, D. & Silva, R.R. 259* (HUFU); Minas Gerais: Rod. Alpinópolis-Carmo do Rio Claro, 5 Km após Alpinópolis, 20°51'49.0"S 46°23'17.2"W [-20.8635997772217 -46.3880996704102], 17 October 1997, *Costa, FB, Veneziani, RCS, Schorr, K. 30* (ALCB); Mato Grosso: Estrada São Félix do Araguaia. - Alto Boa Vista, ca. 41

Km de São Félix do Araguaia. 180 m.s.m. Savana arborizada (campo cerrado), com árvores e arbustos concentrados sobre murunduns, 11°37'01.9"S 50°40'09.8"W [-11.6171998977661 -50.6693992614746], 14 March 1997, *Souza, V.C.; Souza, J.P.., Duarte, A.R., Mazine, F.F. 14019* (ESA); Mato Grosso do Sul: Inst. Agronomico do Estado, Aquidauana, 20°28'16.0"S 55°47'13.9"W [-20.4710998535156 -55.7872009277344], 20 October 1938, *Rombouts, JE s.n.* (SP); Paraná: Parque Barigui, Curitiba Mun., 25°22'12.0"S 49°13'12.0"W [-25.37 -49.22], 06 November 1996, *C. Kozera 338* (NY); Rio Grande do Sul: Cascata da Usina, Nova Prata Mun., 28°47'03.1"S 51°36'36.0"W [-28.7842 -51.61], 02 March 1989, *R. A. Wasum 5354* (NY); Cidreira, Fazenda da Azaléia., 30°10'52.0"S 50°12'20.2"W [-30.1811008453369-50.2056007385254], 13 October 2012, *R. Wasum., E. Valduga. 5098* (VIC); Santa do Livramento, Cerro Pelotas, 30°53'26.9"S 55°31'58.1"W [-30.8908004760742 -55.5327987670898], 12 October 2002, *Mondin, CA; Iob, A. 2745* (ICN); Santa Catarina: Rod. SC-450, Serra do Faxinal, Praia Grande, 29°11'48.1"S 49°57'01.1"W [-29.1966991424561 -49.9502983093262], 23 November 1994, *Hatschbach, G; Ribas, O.S. 61279* (MBM); São Paulo: Franca, 20°31'48.0"S 47°24'00.0"W [-20.5300006866455 -47.4000015258789], 02 January 1893, *Loefgren, A., Edwall, G.1992* (SP); Itapetininga, 23°35'24.0"S 48°03'00.0"W [-23.5900001525879 -48.0499992370605], 15 September 1997, *Loefgren, A. 116* (SP); Itararé, 24°06'36.0"S 49°20'24.0"W [-24.1100006103516 -49.3400001525879], 10 February 1993, *Sakuragui, C.M. et al. 450* (ESA); São José dos Campos, uma área disjuntiva de cerrado, de várias centenas de km2, rodeada antigamente por mata. Ca. 8,5 km SSE em linha reta da praça principal, 23°10' 60"S 45°52' 59"W [-23.183314 -45.8833], November 1961, *I. Mimura 100* (US).

2. *Calea pinnatifida* R.Br. Observ. Compositae. 109. 1817. *Caleacte pinnatifida* R. Br. Observ. Compositae. 109. 1817. TYPE: Brazil, 1815, *Sellow 433* holotype BM [barcode] BM000799750.

Bellis scandens Vell. Fl. Flum. 339. Icon. 8: tab.126. 1831 [1827]. Brasil, São Paulo [Habitat fruticetis transalpinis]. Lectotype (designated here): [icon ined.] “Syng. Polyg. Superf. BELLIS *scandens* Tab.126’’. (Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17,4,2- mss1198657_129) (Fig. 4A). Epitype: (designated here): BRAZIL, São Paulo: Estrada do bairro do Jericó. Beira de estrada, 21 Out Mar 2021, *Remor 319* (CTBS 6441). **New synonim**.

Taxonomic Notes— The genus *Calea* L. belongs to the tribe Neurolaeneae Rydb. (Fig. 4.B). *Calea pinnatifida* is native to Brazil and differs from other Brazilian species mainly by the pinnatifid leaves, with long acuminate apex (Reis-Silva et al. 2022). Furthermore, the radiate heads, in dichasial axillary capitulescence, the campanulate to cylindrical involucre (Fig. 5A), conic receptacle are also features present in *C. pinnatifida* (Mondin 2004), and can be observed in the illustration (Vellozo 1831) and diagnosis (Vellozo 1881) of *Bellis scandens.*

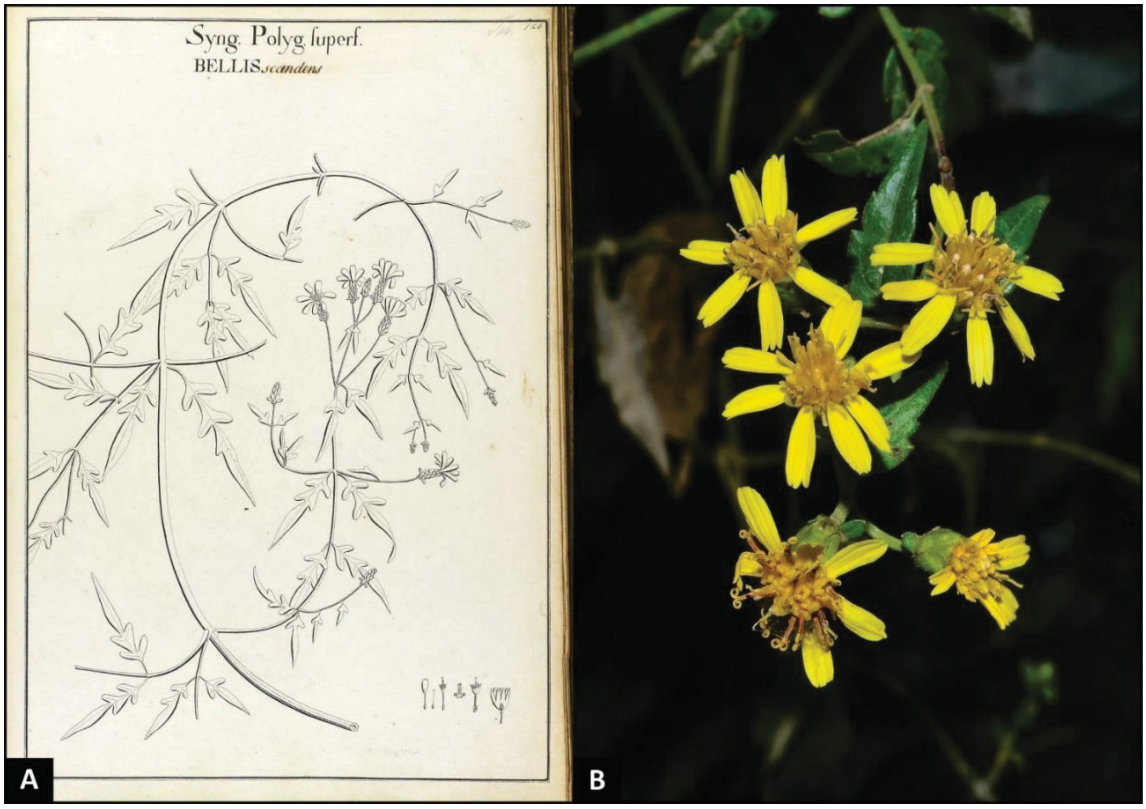

Fig. 4. A. Lectotype of *Bellis scandens* Vell. B. *Calea pinnatifida* R.Br. *in vivo*. Plate by National Library and photo by Paulo Schwirkowski.

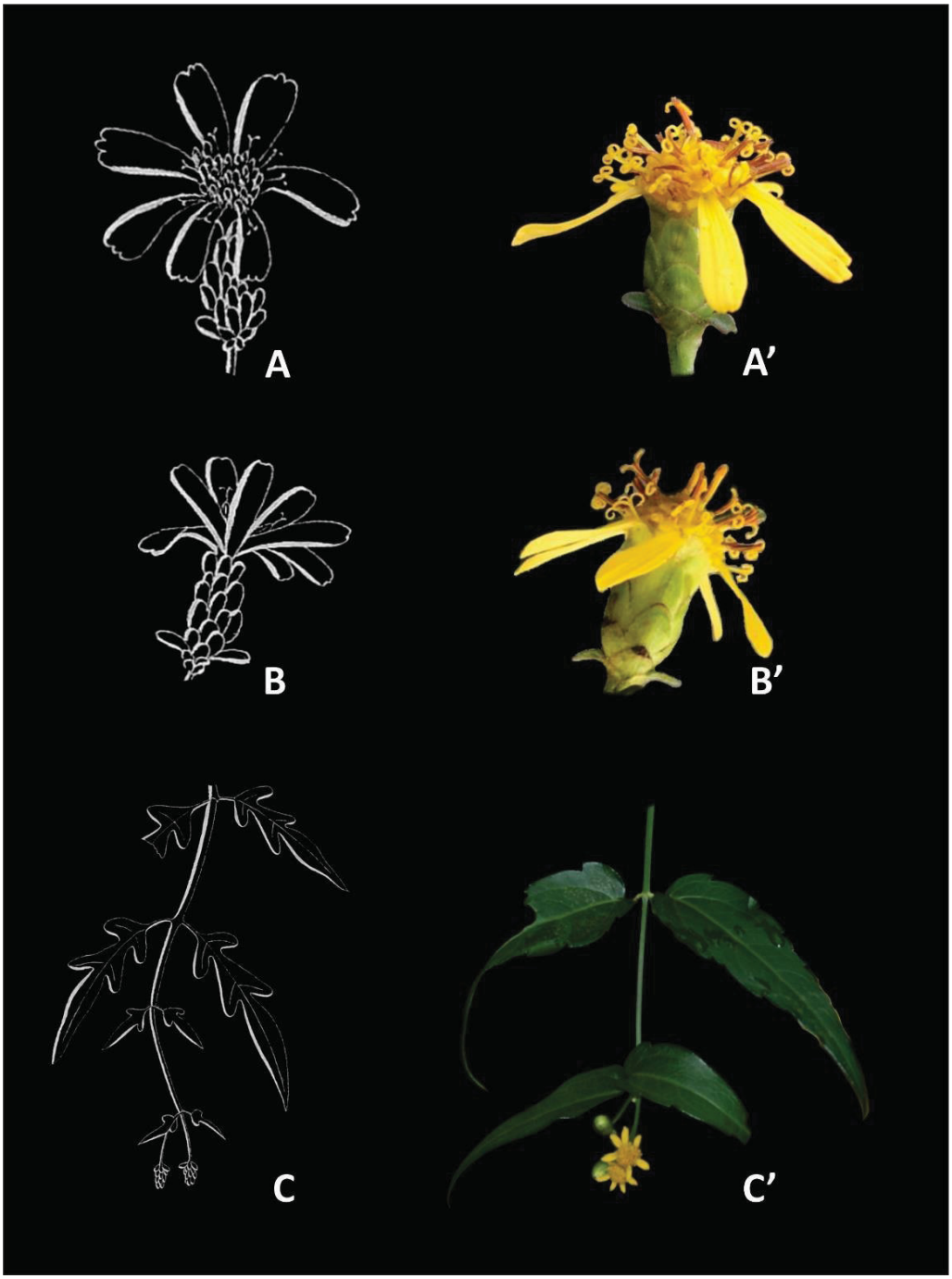

Fig. 5. Comparison of a fresh specimen of *Calea pinnatifida* with fragments of the lectotype illustration of *Bellis scandens*. A-A'. Radiate head. B-B'. Involucre cylindrical. C-C'. Leaves. Photos by A-B-C. plates from *National Library*; A'-B'. *Remor 319* (CTBS); D'. *Vinicius Domingues*.

In his description, Vellozo describes the specie occurring in the typical locality "*transalpinis*". Pastore et al. (2021) who comment that the term referring to the municipality of Cunha, being the border area of the states from São Paulo and Rio de Janeiro. However, *Calea*

pinnatifida was collected during field expedition in vegetation fragmente of Atlantic Forest on the Estrada Real in Cunha. The specimen collected in the field was selected as an epitype following the precepts of Art. 9.9 of the ICN, since the cypsela is not illustrated in the lectotype, which is an important taxonomic character for the species.

***Geographic Distribution*—** In Brazil, the species is cited for the states of Espírito Santo, Mato Grosso do Sul, Minas Gerais, Paraná, Rio Grande do Sul, Rio de Janeiro, Santa Catarina, and São Paulo (Reis-Silva et al. 2022) (Fig. 13B).

***Additional Specimens Examined*—Brazil.—**Espírito Santo: Penha, Sítio do R. Pizziolo, 19°56'06.0"S 40°33'21.0"W [-19.935 -40.555833], 30 November 2005, *L. Kollmann 8486* (MBML); Mato Grosso do Sul: Cachoeira do Sapatu, Eldorado, 23°47'12.8"S 54°17'01.0"W [-23.7868995666504 -54.2835998535156],05 September 1995 *Souza, VC., et al. 9162* (UEC); Minas Gerais: Olaria, 21°51'38.9"S 43°56'13.9"W [-21.8607997894287-43.937198638916], 10 November 1988, *Krieger, L. et al. 24516* (MBM); Paraná: Piraquara, Fazenda Experimental da Escola de Agronomia, 25°26'30.1"S 49°03'47.9"W [-25.4416999816895-49.0633010864258], 22 November 1972, *Imaguire, N. 3163* (MBM); Rio Grande do Sul: Viamão, 30°04'52.0"S 51°01'23.9"W [-30.0811004638672 -51.0233001708984], 29 September 2002, *Rossato, M. 136* (MBM); Santa Catarina: Rio Feijão., Leoberto Leal, 27°27'01.0"S 49°13'50.0"W [-27.4502778 -49.2305556] 05 November 2009, *Korte, A.; Kniess, A*. *735* (FLOR); São Paulo: Campinas, 22°54'00.0"S 47°03'36.0"W [-22.8999996185303 -47.060001373291], 11 June 1938, *Mourão, C. Viegas, A.P. 2858* (ESA); Itararé, 24°06'36.0"S 49°20'24.0"W [-24.1100006103516-49.3400001525879], 10 February 1993, *Sakuragui, C.M. et al. 489*.

3. *Tilesia baccata* (L.) Pruski, Novon 6: 414. 1996. *Coreopsis baccata* L., Pl. Surinam. 14. 1775. L. f. Suppl. 380. 1782; L. Amoen. Acad. 262. 1785. TYPE: “Habitat [in Surinamo]” s.d., *Dalberg 15* (lectotype, designated by D’arcy in Woodson & Schery (ed.) (1975, p. 1170), LINN 1026.7).

Buphthalmum equinum Vell. Fl. Flum. 340. Icon. 8: tab. 126. 1831 [1827]. Brasil, São Paulo [Habitat frequentissime silvis mediterraneis recenter excultis; raro maritimis]. Lectotype (designated here): [icon ined.] “Syng. Polyg. Superf. BUPHTHALMUM *equinum*

Tab.131’’(Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17,4,2-mss1198657_135) (Fig. 6.A). Epitype (designated here): BRAZIL, São Paulo: Cunha, Estrada Real Cunha- Paraty, bairro do Monjolo, 23 Mar 2022, *Remor 381* (CTBS 7085; isoepitype UPCB!). **New synonim**.

Buphthalmum scandens Vell. Fl. Flum. 341. Icon. 8: tab. 132. 1831 [1827]. Brasil, São Paulo, “*Caeteris immediate praecedenti omnino coharet. Sicuti etiam tempore eflorescentiae, et loco habitationis*”. Lectotype (designated here): [icon ined.] “Syng. Polyg. Superf. BUPHTHALMUM *scandens* Tab.132’’(Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17,4,2- mss1198657_135) (Fig. 6.C). **New synonim**.

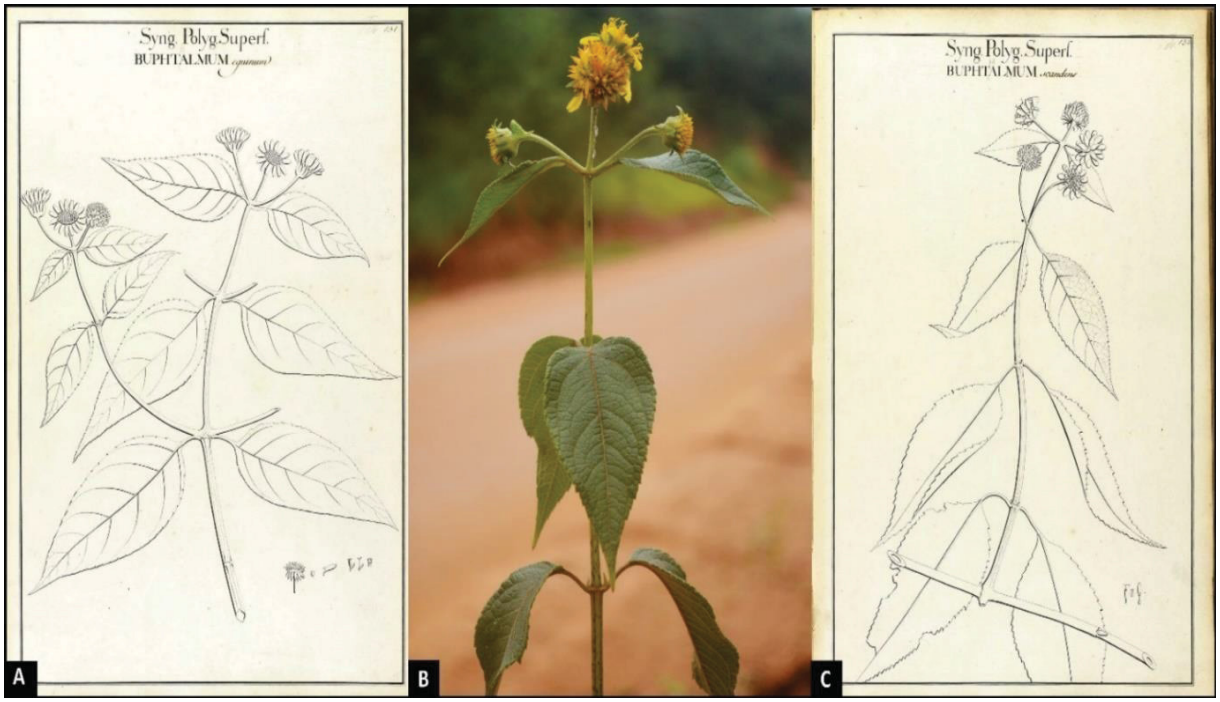

Fig. 6. A. Lectotype of *Buphthalmum equinum* Vell. B. *Tilesia baccata* (L.) Pruski in field in Cunha. C. Lectotype of *Buphthalmum scandens*. Plates by National Libray and photo by Danielle Remor.

Taxonomic Notes— The genus *Tilesia* G. Mey placed in Heliantheae, subtribe Ecliptinae and is characterized by have shrubby habit, sometimes scandent, cypsela obpyriform or obovoid, fleshy when mature, and striate, paleaceous receptacle, with acuminate apex, and a inconspicuous coroniform pappus or lacking.

Tilesia has three species, occurring in the humid tropical forests of the Americas (Panero 2007), however only *Tilesia baccata* (L.) Pruski (Fig. 6B) occurs in Brazil (Alves 2022) which

is characterized by twig decumbent, cylindrical and grooved, leaves lanceolate or ovate, dichasial capitulescence (Fig. 7A), ray florets neuter, yellow, pale carenate (Fig.7D), involucral bracts bisseriate or trisseriate (Fig. 7B) and pappus absent.

These characteristics are compatible with the plates of *Buphthalmum scandens* and *Buphthalmum equinum* (Vellozo 1831). Vellozo (1831;1881) considered two different morphotypes of *T. baccata* as two distinct species of *Bulphtalmum* probably because the habit plasticity, and the variation in leaf margin and in the apex of the ray flowers.

Furthermore, in the observations of *B. scandens*, Vellozo (1881) mentions "*Caeteris immediate praecedenti omnino coharet. Sicuti etiam tempore eflorescentiae, et loco habitationis*", that is, that the habitat and flowering time are the same for *B. equinum* and *B. scandens*.

The ray flowers of *Tilesia baccata* are neutral, however, in the illustration of *B. equinum* and *B. scandens* the ray flowers are pistillate. In fact, this must have been an illustrator's error, as in other cases of FF illustrations (see notes from *W. herbacea*).

Although the illustration of *B. equinum* allow the identification eyes, it is not well detailed, with some diagnostic features missing. Thus, an epitype was chosen from a modern specimen, collected along the Estrada Real in Cunha, according to the ICN Art. 9.9 (Turland et al. 2018).

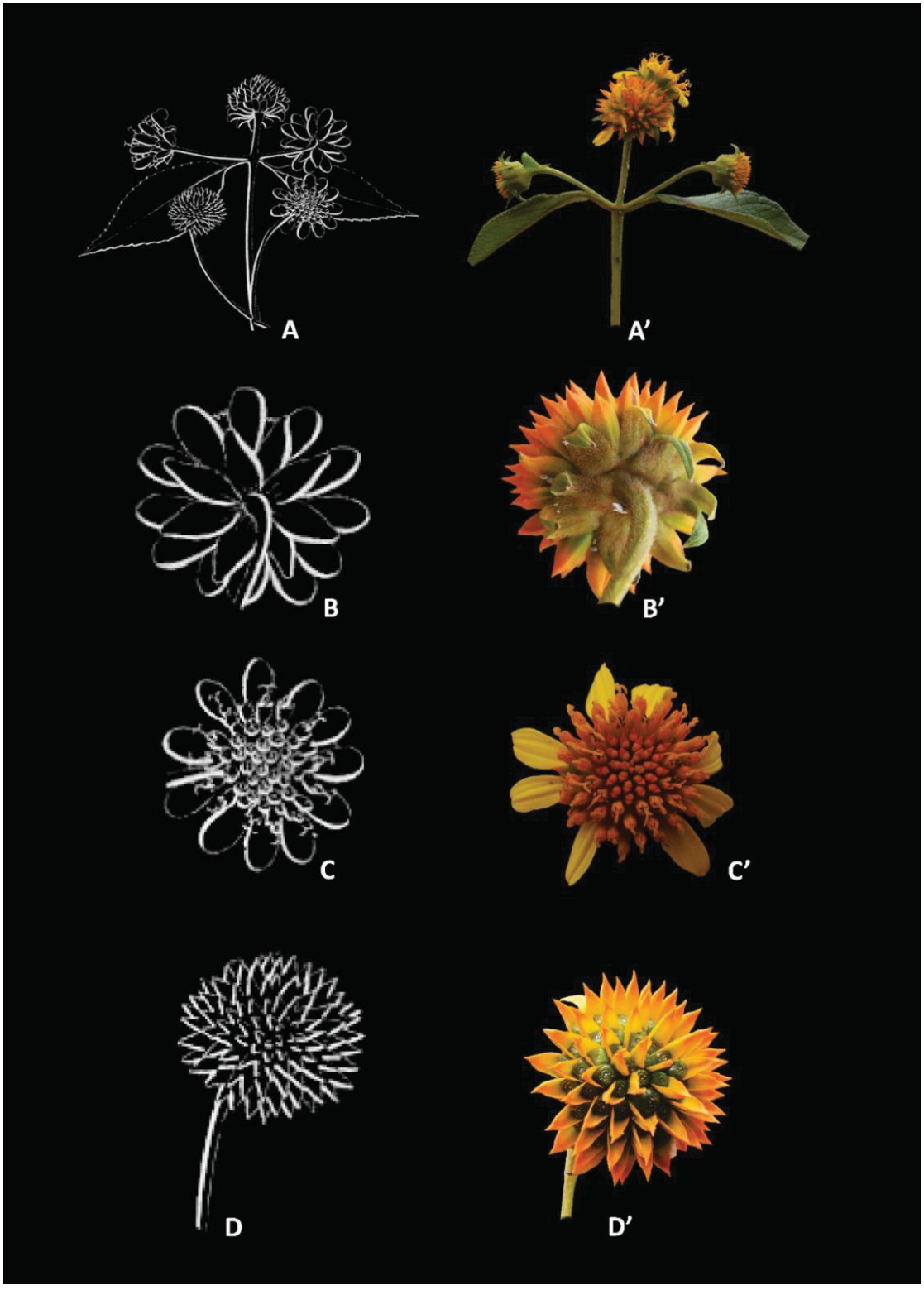

Fig. 7. Comparison of a fresh specimen of *Tilesia baccata* with fragments of the lectotype illustration of *Buphthalmum scandens*. A-A'. Dichasial capitulescence. B-B'. Involucral bracts in a head with developing cypselae. C-C'. Radiate heads. D-D'.

Head with developing cypsela, showing the carenate pales with acuminate apex. Photos by A-B-C-D. *plates from National Library*; A'-B'-C'-D'. *Remor 381* (CTBS).

Geographic Distribution*—Tilesia baccata*** has an occurrence record for Ecuador, Peru and possibly Colombia (Pruski 1996). In Brazil, the species has a wide distribution occurring in all Brazilian states (Alves 2022) (Fig. 13C).

***Additional Specimens Examined*—Brazil.—**Acre: Cruzeiro do Sul, Mata ao lado oposto ao Rio Jurua 7°37'52.0"S 72°40'12.0"W [-7.63111019134521 -72.6699981689453], 05 Sptember 1980, *Oliveira, PSMC., Garcia, LS. 11492* (UEC); Amazonas: Maués, 2 km south of, 2 km. south of Maués, 3°15'00.0"S 57°24'36.0"W [-3.25 -57.41], 24 April 1974, *Campbell, DG. P22146* (INPA); Bahia: Alcobaça, Área de Restauração Natural da Fibria, 17°27'46.4"S 39°32'10.8"W [-17.462889 -39.536333] 16 October 2017, *Lozano, ED. Daniel, VA. 3932* (MBM); Ceará: Fortaleza, Campus do Itaperi da Universidade Estadual do Ceará, 3°47'50.9"S 38°33'35.8"W [-3.797472 -38.559944], 18 May 2008, *Lucena, E.M.P. et al. 103* (EAC); Distrito Federal: Brasília, Embrapa CTZL, 15°57'02.0"S 48°07'25.0"W [-15.950555 -48.123611], 04 March 2012, *Araci Molnar Alonso 318* (CEN); Goiás: February Alexânia, Estrada de terra á 500m da ponte sobre o rio Corumbá, 16°08'35.0"S 48°36'12.0"W [-16.143056 -48.603333], 18 February 2003, *Pereira-Silva, G. et al. 7161* (HUFU); Maranhão: Rosilândia, BR 316, 3°29'30.0"S 45°15'04.0"W [-3.49166989326477 -45.2510986328125], 09 December 1979, *Nunes, E., Martins, P. EAC 7657* (EAC); Mato Grosso: Paranatinga, Beira da estrada Gaúcha do Norte, 13°14'31.9"S 53°04'46.9"W [-13.2421998977661 -53.0797004699707], 28 March 1997, *Dário, F.R. et al. 1089* (ESA); Mato Grosso do Sul: Novo Mundo, Rod. BR-1263, 1km L, 23°56'17.2"S 54°16'14.9"W [-23.9381008148193 -54.2708015441895], 07 February 1993, *Hatschbach, G. et al. 68561* (MBM); Minas Gerais: Montes Claros, Norte de Minas, 16°44'06.0"S 43°51'42.1"W [-16.7350006103516 -43.8616981506348], 17 January 2004, *PRATES, F.B.S. s.n.* (MCCA); Paraná: Palmas, Rio Iratim, afluente do Iguaçú, 26°18'21.0"S 51°35'35.0"W [-26.3058333 -51.5930555], 10 March 2009, *L.M.C. 349* (FURB); Pará: Tomé Açu, 2°40'23.0"S 48°14'22.0"W [-2.6730556 -48.2394444], 08 April 2007, *F.C.A. 1974* (MFS); Pernambuco: Arcoverde, Sítio Olhos d'Água, 8°27'57.0"S 36°59'49.0"W [-8.465833 -36.996944], 02 October 2009, Constantino, M.R.L. et al. 1240 (HUFU); Rio Grande do Sul: Torres, São Jacó, 29°20'07.1"S 49°43'36.8"W [-29.3353004455566-49.7268981933594], 16 November 1992, *Jarenkow, J.A. 2189* (FLOR); Rio de Janeiro: Petrópolis, Santo Antonio, 22°30'18.0"S 43°10'43.0"W [-22.5049991607666-

43.1786003112793], 10 May 1866, *Glaziou, A. 9907* (P); Santa Catarina: Jaraguá do Sul, Rio da Luz, Sítio Morro Kassner, 26°32'16.0"S 49°10'21.0"W [-26.5377777 -49.1725], 06 January 2022, *Kassner-Filho, A. 7969* (FURB); São Paulo: Cunha, Estrada Real Cunha-Paraty, bairro Monjolo, [-23.086389 -44.911667], 23 March 2022, *Remor, D. 381* (CTBS); Sergipe: Itabaia, Parque Nacional da Serra de Itabaiana, 10°46'23.0"S 37°21'21.0"W [-10.773056 -37.355833], 28 March 1997, *Vicente, A. 13* (ASE); Tocantins: Road from righway BR-153 to Itaporã, 12 km. west of village of Presidente Kennedy. Fazenda Primavera Ribeirão Feínho., Presidente Kennedy Mun, 8°30'02.2"S 48°36'02.9"W [-8.5006 -48.6008], 03 February 1980, *Plowman, T. C. 8320* (NY).

4. *Wedelia foliacea* (Spreng.) B. L. Turner, Phytologia 72(5): 392. 1992. *Aspilia foliacea* (Spreng.) Baker, Fl. Bras. (Martius) 6(3):193. 1884. *Viguiera foliacea* Spreng. Systema Vegetabilium, editio decima sexta 3: 616.1826. TYPE: Brasil: A. Regnell I. 189 (neotype, designated by Alves and Bringel (com. pers): BR barcode BR0000005234110 image!).

Buphthalmum arvense Vell. Fl. Flum. 341. Icon. 8: tab.133. 1831 [1827]. Brasil, São Paulo [Habitat campis apricis mediterraneis transalpinis prope pagum Boavista]. Lectotype (designated here): [icon ined.] "Syng. Polyg. Superf. BUPHTHALMUM *arvense* Tab.133''. (Seção de Manuscritos, Bibiot. Nac., Rio de Janeiro No. (I-17,4,2-mss1198657_136) (Fig. 9A). Epitype (designated here): BRAZIL, São Paulo: Cunha, Estrada Real Cunha- Paraty. Campo sujo, antropizado, 19 Out 2021, *Remor 299* (CTBS 6421; isoepitype UPCB!). **New synonim**.

Taxonomic Notes—*Wedelia* Jacq. belongs to the tribe Heliantheae, subtribe Ecliptinae, being one of the most representative genera in Brazil in a number of species (Panero 2007).

Historically, *Wedelia* Jacq. has been positioned next to *Aspilia* Thouars. (Alves and Bringel 2022) and their circumscription is mainly based in the presence or absence of pistil in ray flowers. However, the taxonomic delimitation of these genera is controverting among authors, reflecting the different circumscriptions (Strother 1991; Robinson 1992; Turner 1992).

Fig. 9. A. Lectotype of *Buphthalmum arvense* Vell. B. *Wedelia foliacea* (Spreng.) B. L. Turner *in vivo*. Plates by National Library and photo by Henrique Moreira.

Alves (2019), through his study with molecular data, corroborates the synonymization of *Aspilia* under the concept of *Wedelia*, proposed by Robinson (1992) and proposes a new circumscription for the genus, also based on the morphology of the cypsela.

The species of *Wedelia* are characterized by heads solitary, paleaceous receptacle, monocline disk flowers, achene with a small apical constriction, and coroniforme pappus, with or lacking awns, cypselas usually with elaiosome or scar, carpopodium bilobate (Strother 1991; Turner 2004; Panero 2007*)*.

Wedelia foliacea (Fig. 9B) presents the herbaceus and cespitose habit, with a small xylopodium, small size, and axillar sterile branches, leaves opposite, with shortly petiole, variably shaped blade, generally lanceolate, trinervate, margin slightly serrate (Fig. 10C), head generally solitary (Fig. 10B), receptacle paleaceous, ray florets neuter, usually yellow. These

characteristics are compatible and can be observed in the illustration (Vellozo 1831) and diagnosis (Vellozo 1881) of *Buphthalmum arvense.*

During the expeditions of this study, *Wedelia foliacea* was collected during the rainy season at the end of October and beginning of January. The specimen was collected in rocky vegetation on the Estrada Real on the Cunha-Paraty route. *Buphthalmum arvense* was noted by Vellozo, from belonging to "*prope pagum Boa Vista*". According to Pastore et al. (2021) the latter refers to the chapel of Boa Vista in the municipality of Cunha.

Although the illustration of *Buphthaum arvense* allows the species identification, Vellozo does not illustrate the cypsela. As the taxonomic delimitation of *Wedelia* and *Aspilia* genera is still very confused a specimen collected in the municipality of Cunha (São Paulo), a typical locality of FF, during the field expeditions of this work was selected as epitype in order to help interpret the name in accordance with the Art. 9.9 of the ICN code (Turland et al. 2018).

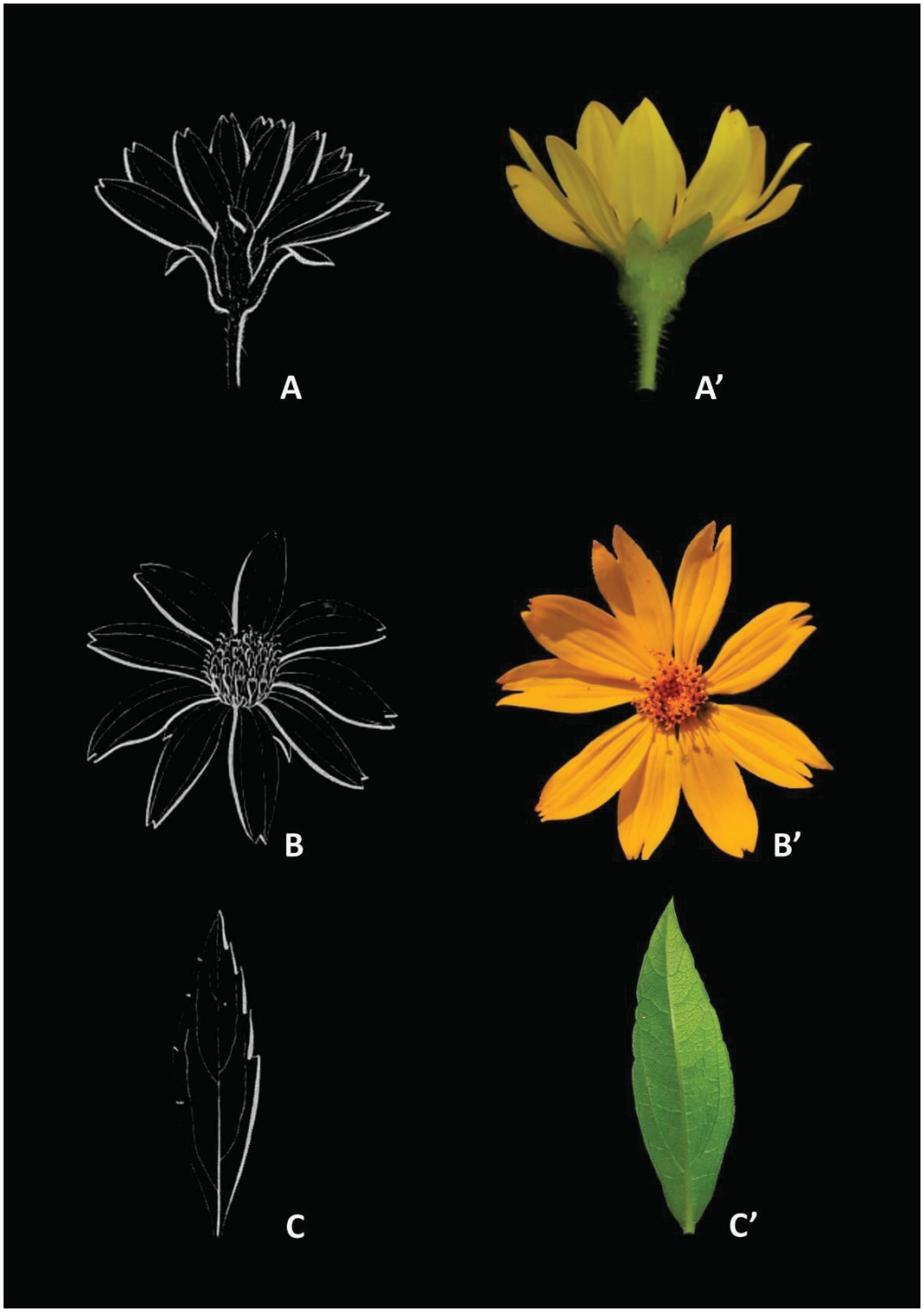

Fig.10. Comparison of a fresh specimen of *Wedelia foliacea* with fragments of the lectotype illustration of *Buphthalmum arvense*. A-A'. Involucre campanulate. B-B'. Heads radiate. C-C'. Leaf with slightly serrate margin. Photos by A-B-C-. *plates from National Library*; A'. *Remor 299* (CTBS); B'-C'. *Henrique Moreira*.

***Geographic Distribution*—** In Brazil, the species occurs in the Federal District and in the states of Bahia, Ceará, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Rio Grande do Sul, Rio de Janeiro, Rondônia, São Paulo, Sergipe, and Tocantins (Santos 2022) (Fig. 13D).

***Additional Specimens Examined*—Brazil.—**Bahia: Pindobaçu, Serra da Paciência, 10°56'36.0"S 40°24'28.0"W [-10.943333 -40.407778], 10 April 2001, *Jesus, N.G. 1362* (HUEFS); Ceará: 5°29'53.9"S 39°19'14.2"W [-5.4983 -39.3206], December 1838, *Gardner 1731* (BM); Goiás: Flores de Goiás, Serra Geral de Goiás (Serra dos Gravias), entre a BR-020 e Formoso, [-14.298889 -46.99], 10 October 1997, *Silva, MA. et al. 3387* (UEC); Mato Grosso: Porto Murtinho, Fazenda São Pascoal, 21°05'56.0"S 56°48'53.0"W [-21.098889 1 -56.814722], 11 December 2005, *Pott, V.J. et al. 8528* (HUFU); Mato Grosso do Sul: Bonito, Fazenda Baía das Garças, Próximo à sede, direção cachoeiras do Aquidaban, 21°01'29.0"S 56°51'06.0"W [-21.024722 -56.851667], 11 November 2002, *Pott, VJ. et al. 5975* (MBM); Minas Gerais: Uberlândia, Estação Ecológica do Panga, [-18.9186000823975-48.2771987915039], 23 September 1992, *Barbosa, A.A.A. 882* (HUFU); Paraná: Palmeira, Rodovia do Café (BR 376) , km 552, 55 km de Ponta Grossa 25°25'45.8"S 50°00'23.0"W [-25.4293994903564 -50.0064010620117], 15 February 2006, *Souza, V.C et al.* 32064 (ESA); Rio Grande do Sul: Capão da Canoa, 29°44'44.2"S 50°00'34.9"W [-29.7455997467041 -50.0097007751465], 30 November 1992, *Hashimoto, G. 20963* (SP); Rio de Janeiro: Itatiaia, 22°29'46.0"S 44°33'47.9"W [-22.4960994720459 -44.5633010864258], 29 October 1970, *Apparício, P. D. 13926* (CEN); Rondônia: 12°16' 42"S 61°54' 57"W [-12.2781 -61.9161], 01 October 1973, *Maguire, B. 57005* (MG); Santa Catarina: São Joaquim, 28°17'38.0"S 49°55'54.1"W [-28.2938995361328 -49.9317016601562], 17 November 2008, *Silva, JM. 7236* (MBM); São Paulo: Cunha, Estrada Real Cunha-Paraty. Campo sujo, antropizado, 23°04'15.0"S 44°56'05.7"W [-23.070833 -44.934917], 19 October 2021, *Remor, D. 299* (CTBS); Sergipe: Parque Nacional da Serra de Itabaiana, 10°46'23.0"S 37°21'21.0"W [-10.773056 -37.355833], 01 August 2007, *Amaral, L. 107* (ASE); Tocantins: Dianopólis, Beira de estrada, após Lagoa Bonita, 11°44'26.0"S 46°40'57.0"W [-11.740555 -46.6825], 03 September 2003, *Cavalcanti, T.B. 3444* (CEN).

5. *Calea mediterranea* (Vell.) Pruski, Sida 21(4): 2024 (2005). *Buphthalmum mediterraneum* Vell., Fl. Flumin. (Icones) 8: t. 135. 1827 [1831], (lectotype, designated by Pruski 2005, p. 2024): t. 135, Vell., Fl.Flumin. (Icones) 8. 1827 [1831] (Fig. 11A).

Taxonomic Notes— The diagnostic characteristics observed in the illustration of *Buphthalmum mediterraneum* (Vellozo 1831) such as whorled leaves reduced in size along the base, lanceolate and pubescent external filaments, paleaceous receptacles, umbelliform capitulescence and radiated heads (Pruski 2005) allowed us to recognize the species portrayed by Vellozo within the genus *Calea* L. This priority of *Buphthalmum mediterraneum* was rescued by Pruski (2005), who combined it in the genus *Cale*a, *C. mediterranea* (Fig. 11B).

Based on the original locality description (Vellozo 1881), "*Habitat campis apricis mediterraneis transalpinis*", *Bulphthalmum mediterraneum* Vell. has its original locality in typical cerrado vegetation in the municipality of Cunha in the border region of the states of São Paulo and Rio de Janeiro, as interpreted by Pastore et al. (2021).

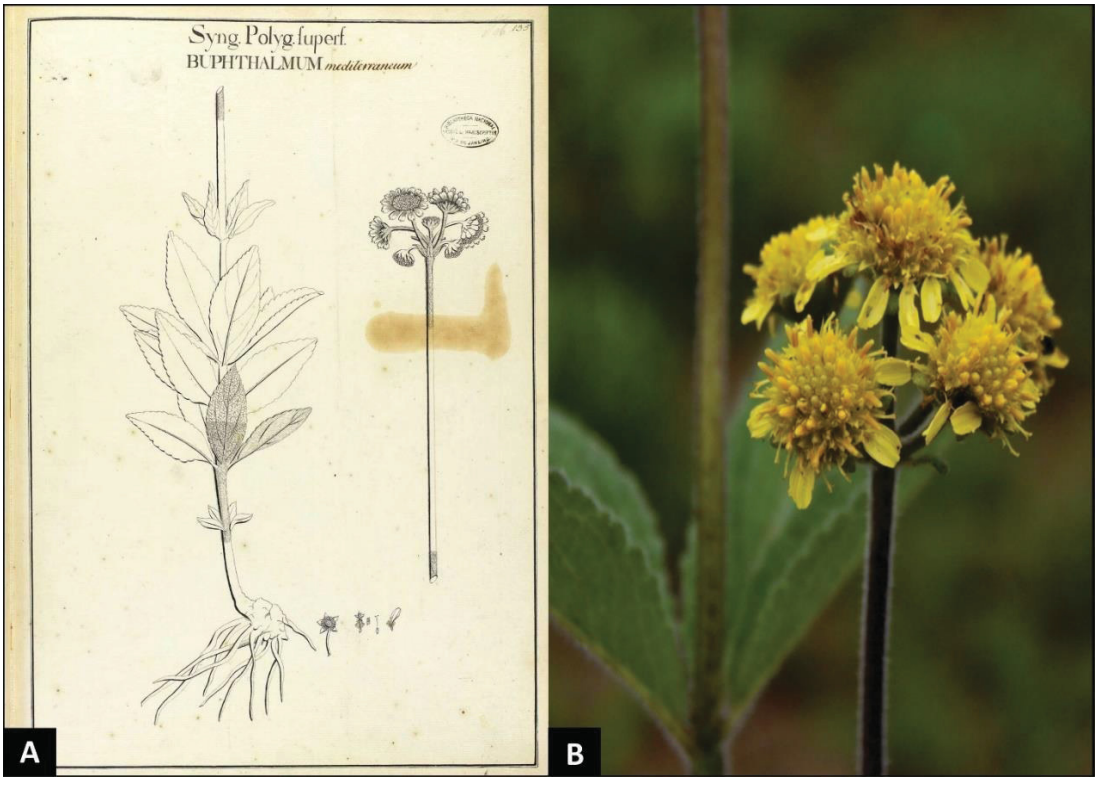

Fig. 11. A. Lectotype of *Buphthalmum mediterraneum* Vell. B. *Calea mediterranea* (Vell.) Pruski *in vivo*. Plates by National Library and photo Henrique Moreira.

***Geographic Distribution*—**The species occur in Brazil, Paraguay, and northern Argentina (Pruski 2005). In Brazil, *Calea mediterranea* occurs in the Federal District and in the states of Espírito Santo, Goiás, Minas Gerais, Mato Grosso, Mato Grosso do Sul, Paraná, and São Paulo (Reis-Silva et al. 2022). During the collection expeditions, no specimens of *Calea mediterranea* were collected in the field in the municipality of Cunha along the Estrada Real route, however, according to SpeciesLink (2023) the species occurs in the surrounding municipalities of São José dos Campos and Mogi Guaçu, growing in cerrado vegetation similar to those of the municipality of Cunha (Fig. 13E).

***Additional Specimens Examined*—Brazil.—**Espírito Santo: Distrito Federal: Goiás: Mossâmedes, Reserva Biológica da Serra Dourada, 16°07'36.1"S 50°12'54.0"W [-16.1266994476318 -50.2150001525879], 26 November 2010, *Teles, A.M. et al. 1018* (UFG); Mato Grosso: Campo Alegre, 15°36' 01"S 56° 35' 59"W [-15.6000 -56.6000], 26 October 1970, *Hatschbach G. 25223* (US); Mato Grosso do Sul: Aquidauana, Entre as Fazendas Rancharia e Retirinho, Sub região Aquidana, Pantanal, 19°57'17.0"S 55°59'58.0"W [-19.954722 -55.999444], 12 November 1995, *Pott, A. 7615* (HUFU); Minas Gerais: Ituiutaba, Serra do Corpo Seco, 19°02'00.0"S 49°28'04.0"W [-19.033333 -49.467778], 17 November 2012, *Teodoro, V.M. 1070* (HUFU); Paraná: Ponta Grossa, Parque Estadual de Vila Velha, 25°05'42.0"S 50°09'42.8"W [-25.0949993133545 -50.1618995666504], 19 March 2012, *Poliquesi , C.B. et al. 8212* (FURB); São Paulo: Moji Guaçu, "Campos das Sete Lagoas", Fazenda Campinha, just north of Rio Moji-Guacu, 6.0 km. NNW of Padua Sales, 22°14'31.2"S 47°08'31.2"W [-22.242 -47.142], 04 December 1961, *Eiten, G. 3555* (US).

6. *Acmella ciliata* (Kunth) Cass. Dict. Sci. Nat., ed. 2. [F. Cuvier] 24: 331. 1822. *Spilanthes ciliata* Humb., Bonp. & Kunth, Nov. gen. sp. ed. fol. 4: 163. 1820. *Ceratocephalus ciliatu*s (Humb., Bonpl. & Kunth) Kuntze, Revis, gen. pi. 1: 326. 1891. Protologue: Crescit prope Chipo et Santa Fé de Bogota, alt. 1360 hex. o Floret Augusto". TYPE: Colombia. Near Chipo and Santa Fé de Bogotá, Aug. 1801, *Humboldt & Bonpland s.n.* (holotype, designated by Jansen (1985, p.36): P00322382.

Cotula piper Vell. Fl.Flum. 342. Icon. 8: tab.136. 1831 [1827]. Brasil, São Paulo [Maritimis aeque ac mediterraneis habitat]. Lectotype (designated here): [icon ined.] "Syng. Polyg. fuperf. COTULA *piper* Tab.136'' (Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17,4,2; mss1198657_139) (Fig. 12). **New Synonym**.

Taxonomic Notes— *Acmela* Rich. ex Pers. belongs to the tribe Heliantheae, subtribe Spilanthinae (Panero 2007). In Brazil, 17 species occur in all phytogeographic domains, with only three being endemic (Nakajima 2022).

Acmella is characterized from roots strongly fascicled at base or occurring at nodes, opposite leaves, petioles winged or unwinged, receptacle high-conic, ray florets sometimes inconspicuous and only slightly shorter to slightly longer than the involucre, pistillate, cypsela compressed, long ciliate cypselae and pappus with delicate awns (bristles) (Jansen 1985).

The plate of *Cotula piper* display features generally found in *A. cilliata* like the creeping and decumbent stems, rooting at the nodes, petiolate leaves with ovate blade, pilose peduncle, radiate heads, numerous disc florets, and ray florets brief in size, cypsela moderately ciliate and pappus absent.

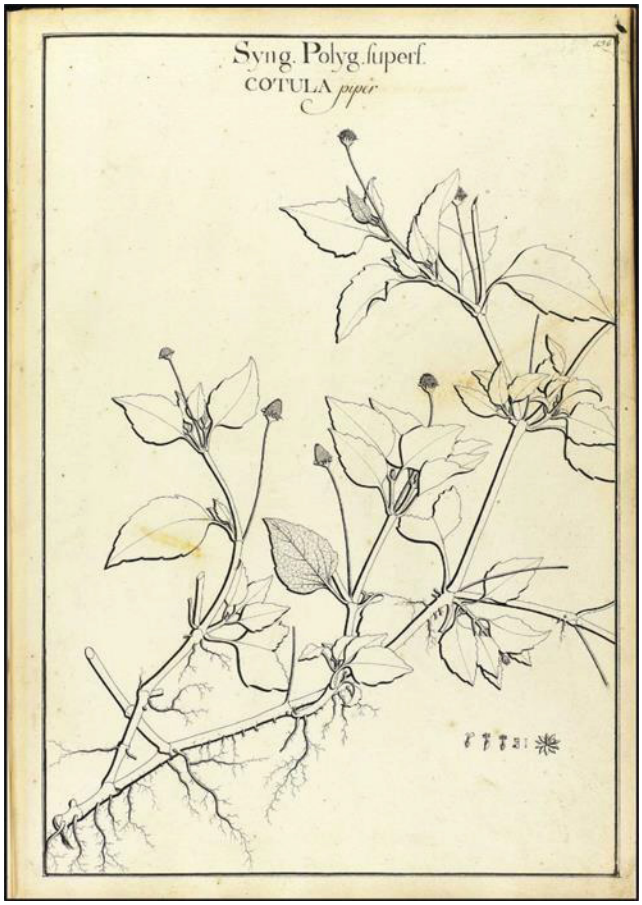

Fig. 12. Lectotype of *Cotula piper* Vell. Plate by National Library.

Vellozo (1881) cited as the original locality the term "*mediterraneis*", i.e. Cunha municipality according to Pastore et al. (2021), but also mentions "*maritimis habitat*" being a correlation to the state of Rio de Janeiro (Pastore et al. 2021) which indicates that the species were found in Cunha municipality (São Paulo state) and Rio de Janeiro state.

***Geographic Distribution*—** In Brazil, *Acmella ciliata* occurs in the states of Acre, Amazonas, Bahia, Goiás, Mato Grosso, Minas Gerais, Pará, Paraná, Piauí, Rio de Janeiro, Santa Catarina, São Paulo, Tocantins, and in the Federal District (Fig. 13F).

***Additional Specimens Examined*—Brazil.—**Acre: Sena Madureira, Rio Caeté, Seringal Guarani, Rio Caeté, Seringal Guarani. Mata de várzea, solo arenoso, 10°07'00.0"S 69°13'00.0"W [-10.116667 -69.216667], *Santos, J.L. 468* (INPA); Amazonia: Amazonas, RDS Piagaçu-Purus, Comunidade Uixi, 3°53'54.0"S 61°22'23.2"W [-3.89832997322083 -61.3731002807617], 12 July 2007, *Machado, CC 320* (INPA); Bahia: Barracão de Cima, Jacobina, 11°10'50.2"S 40°31'05.9"W [-11.1806001663208 -40.5182991027832], 06 July 1996, *Bautista, HP. et al. 3558* (MBM); Ceará: Fortaleza, horta comunitária, bairro Lagoa Redonda, 3°43'02.0"S 38°32'35.2"W [-3.71722006797791 -38.543098449707], 09 April 2019, *Lima, T.M.F.G. s.n.* (EAC); Distrito Federal: Brasília, [-15.866667 -47.85], 11 February 1987, *Equipe do Jardim Botânico de Brasília 840* (HEPH); Goiás: Piranhas, Ca. 2 km, 16°31'12.0"S 51°49'12.0"W [-16.52 -51.82], *Irwin, H. S. 17693* (NY); Mato Grosso: Núcleo do Ariopuanã, Próximo a Cachoeira de Dardanelos, 10°06'00.0"S 59°24'00.0"W [-10.1 -59.4], 16 May 1997, *Mota, CDA da 1722* (INPA); Minas Gerais: Viçosa, Campus da UFV, Viveiro da Vila Gianetti, 20°45'14.0"S 42°52'54.8"W [-20.7539005279541 -42.8819007873535], 16 June 1992, *Carvalho, A.F. 13* (VIC); Pará: Paraná: Pernambuco; Piauí: Oeiras, Moist places near Oeiras, 7°01'31.0"S 42°07'52.0"W [-7.0252799987793 -42.1310997009277], May 1839, *Gardner, G. 2223* (HUEFS); Rio de Janeiro: Nova Friburgo, Cônego, Rod. D. João VI, 219, [-22.2819004058838 -42.5311012268066], 11 December 199, *Anjos, R. 7* (HUNI); Santa Catarina: Tubarão, 28°28'00.1"S 49°00'24.8"W [-28.4666996002197 -49.0069007873535], 03 May 1999, *Campos, N. s.n.* (HUCS); São Paulo: Ubatuba, Parque Estadual da Serra do Mar, núcleo Picinguaba, casa da farinha, trilha raza, 23°19'51.0"S 44°49'49.9"W [-23.330833 -44.830528], 24 May 2014, *Ferreira, P.L. 26* (SPFR).

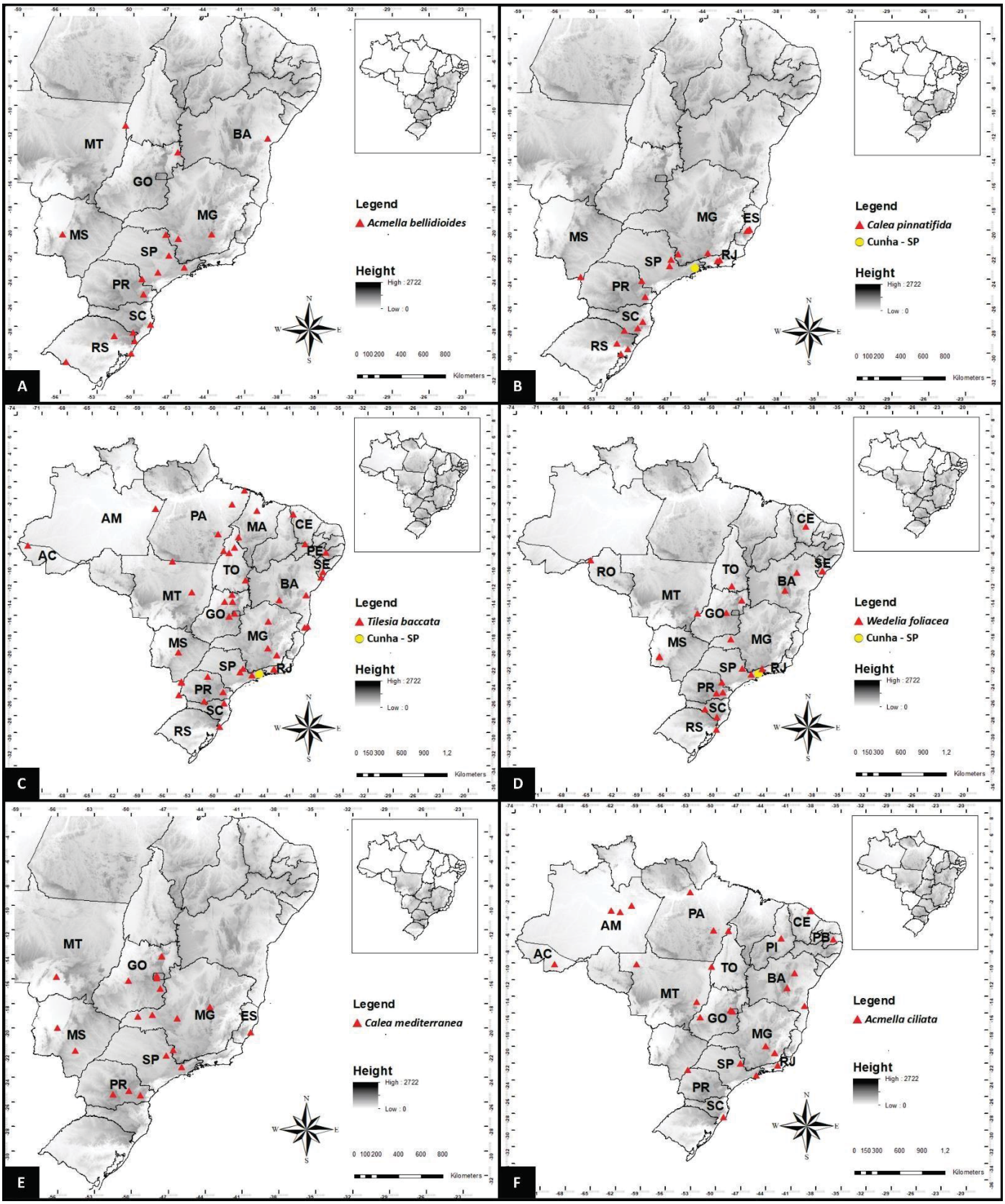

Fig. 13. Map of the geographical distribution of: A. *Acmella bellidioides*. B. *Calea pinnatifida*. C. *Tilesia baccata.* D. *Wedelia foliacea*. E. *Calea mediterranea.* F. *Acmella ciliata*.

7. ***Wedelia trinervia*** (Vell.) Remor, Bringel & J.F.B. Pastore. *Eclipta trinervis* Vell. Fl. Flum. 342. Icon. 8: t.137. 1831 [1827]. TYPE: [Icon ined.] "Syng. Polyg. Superf. ECLIPTA *trinervis* Tab.137" (Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17, 4, 2; mss1198657_140.). (Lectotype, designated by Remor *et al*. (2023, no prelo) (Fig. 14A).

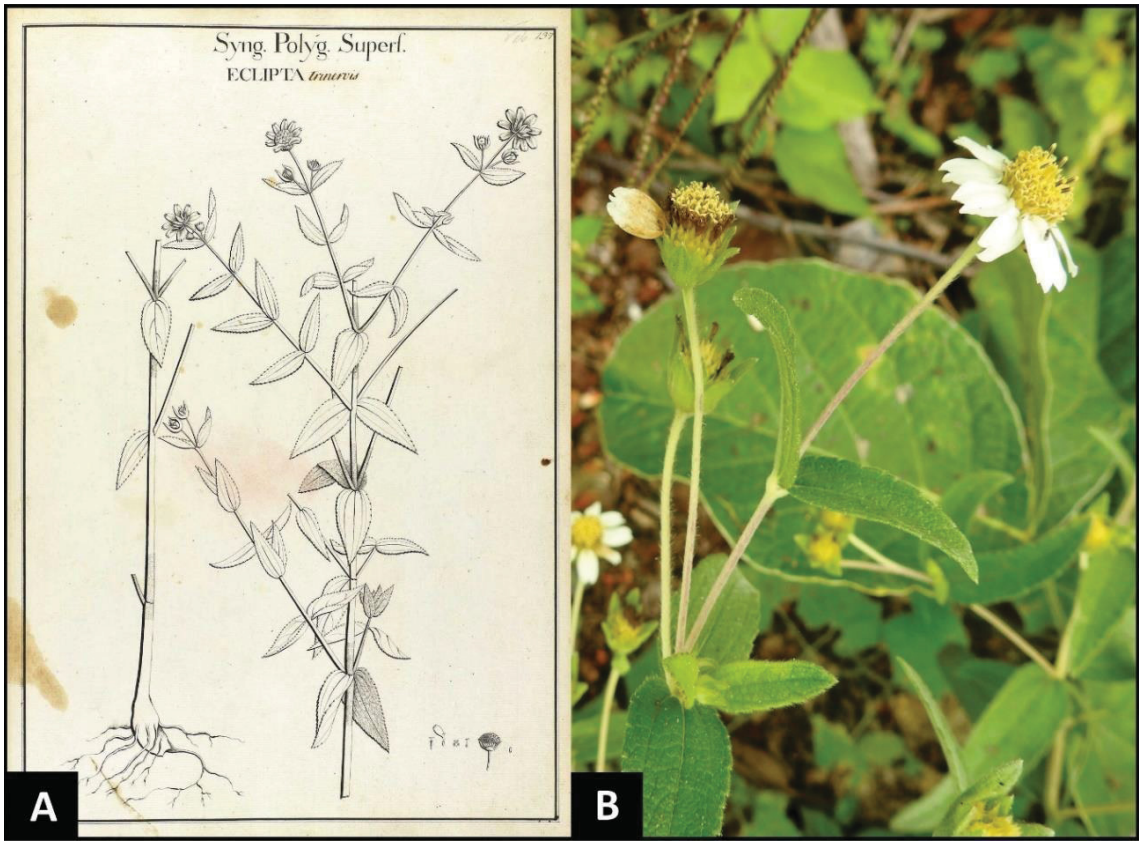

Fig 14. Lectotype of *Eclipta trinervia* Vell. B. *Wedelia trinervia in vivo*. Plate by National Library and photo by Leonardo Jales Leitão.

***Taxonomic Notes*—**Among all the Brazilian species of the genus, *W. trinervia* (Fig. 14B) is the only one that has pistillate ray flowers with a white corolla while the disc flowers have a yellow corolla. This species was treated as *Wedelia trichostephia* (Alves and Bringel 2022) however the older name *Eclipta trinervis* Vell. validly published on a plate of 1831 has preference. This new combination was elaborated by Remor et al. in press (2023, see chapter IV).

Geographic Distribution and Habitat—*Wedelia trinervia* occurs in the domains of Cerrado and the south portion of the Atlantic Forest, occurring in all states of the Central-west region, also Minas Gerais and São Paulo (from the Southeastern region), Paraná, Rio Grande do Sul, Santa Catarina (from the Southern region) in Brazil, and also reaching southeastern Bolivia and northern Paraguay (Fig. 25A).

***Additional Specimens Examined*—Brazil.—**Goiás: Aparecida de Goiânia, Chácara Jatobá, divisa com Hidrolândia, 16°5'33"S 49°14'19"W, [-16.0925 -49.238611111111], 05 January 2007, *Pastore, J.F.B*. 1727 (CEN); Caiapônia, BR-158, ca. 44.3 km de Caiapônia, sentido Jataí, entrando 250 m lado esquerdo, 17°18'32"S 51°52'53"W [-17.308888888889 -51.881388888889], 10 February 2015, *Mendoza*, *J.M.* 4750 (CEN); Monte Alegre de Goiás, Estrada de Monte Alegre a Teresina, cerca de 15 km de Teresina, 13°18'58"S 46°59'40"W [-13.316111111111 -46.994444444444], 24 February 2006, *Bringel* 299 (CEN); Mato Grosso do Sul: Rod. MS-178, 20km S de Bodoquena, Bodoquena, Mato Grosso do Sul, 20°32'19"S 56°42'54"W [-20.538611111111 -56.715], 08 February 1998, *Ribas, O.S. & Pereira, L.B.S.* 2606 (MBM).

8. *Dimerostemma brasilianum* Cass., Bull. Sci. Soc. Philom. Paris 1818: 58. 1818. As *Dimerostemma brasiliana*. [herbiers de Jussieu et Desfontaines, sur des échantillons apporteés de Lisbonne par Geoffrey, et originaires du Brésil] Brazil, s.d., *anonymous s.n.* Lectotype: (FI [barcode] FI067250 [Herb. Desf.], designated here; isolectotype P–JU [barcode] P00673449 digital image!).

Eclipta quinquenervis Vell. Flum. 343. Icon. 8: tab.125. 1831 [1827]. Brasil, São Paulo [Habitat campis apricis medit. Transalpinis prope pagum Cunha]. Lectotype (designated here): [icon ined.] "Syng. Polyg. Superf. ECLIPTA *quinquenervis* Tab.138''(Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17, 04, 002; mss1198657_124) (Fig. 15A). Epitype (designated here): BRAZIL, São Paulo: Cunha, Condomínio na Mata Atlântica, mas é área de Cerrado, 20 Out 2021, *Remor 312* (CTBS 6434!; isoepitype UPCB!). **New Synonym**.

Taxonomic Notes—*Dimerostemma* Cass., tribe Heliantheae, subtribe Ecliptinae, has approximately 25 species. In Brazil, the genus currently has about 19 species, being the main

center of diversity, with several endemic species (Moraes and Semir 2009). It is characterized by campanulate involucre, with the leaf-like outer phyllaries, pappus uncostrict coroniforme with awns displaying an extension of phytomelanin from the body of the cypsela to the base of the awns (Moraes and Semir 2009).

Dimerostemma brasilianum (Fig. 15B) is odd among Brazilian species being the only one displaying ray florets that are very reduced in size (Moraes and Semir 2009), what is clearly recognized in Vellozo's plate (1831). Added to that this species has wide ovate outer phyllaries (Fig. 16A), shortly petiolate leaves, in opposite orientation (Fig. 16C), surface abaxial tomentose, margin serrate, reinforcing the identity of *Eclipta quinquenervis* Vell.

Dimerostemma brasilianum was frequently collected in Cunha municipality, either in the rainy or dry seasons, in typical Cerrado vegetation. The frequent occurrence of *D. brasilianum* in cerrado vegetation of Cunha coincides with original notes on *Eclipta quinquenervis*, in the FF, "*Habitat campis apricis mediter. transalpinis prope pagum Cunha*" which also corroborates with the reinterpretation of Pastore et al. (2021).

Fig.15. A. Lectotype of *Eclipta quinquenervis* Vell. B. *Dimerostemma brasilianum* Cass. cerrado vegetation in the municipality of Cunha. Plates by National Library and photo by Danielle Remor.

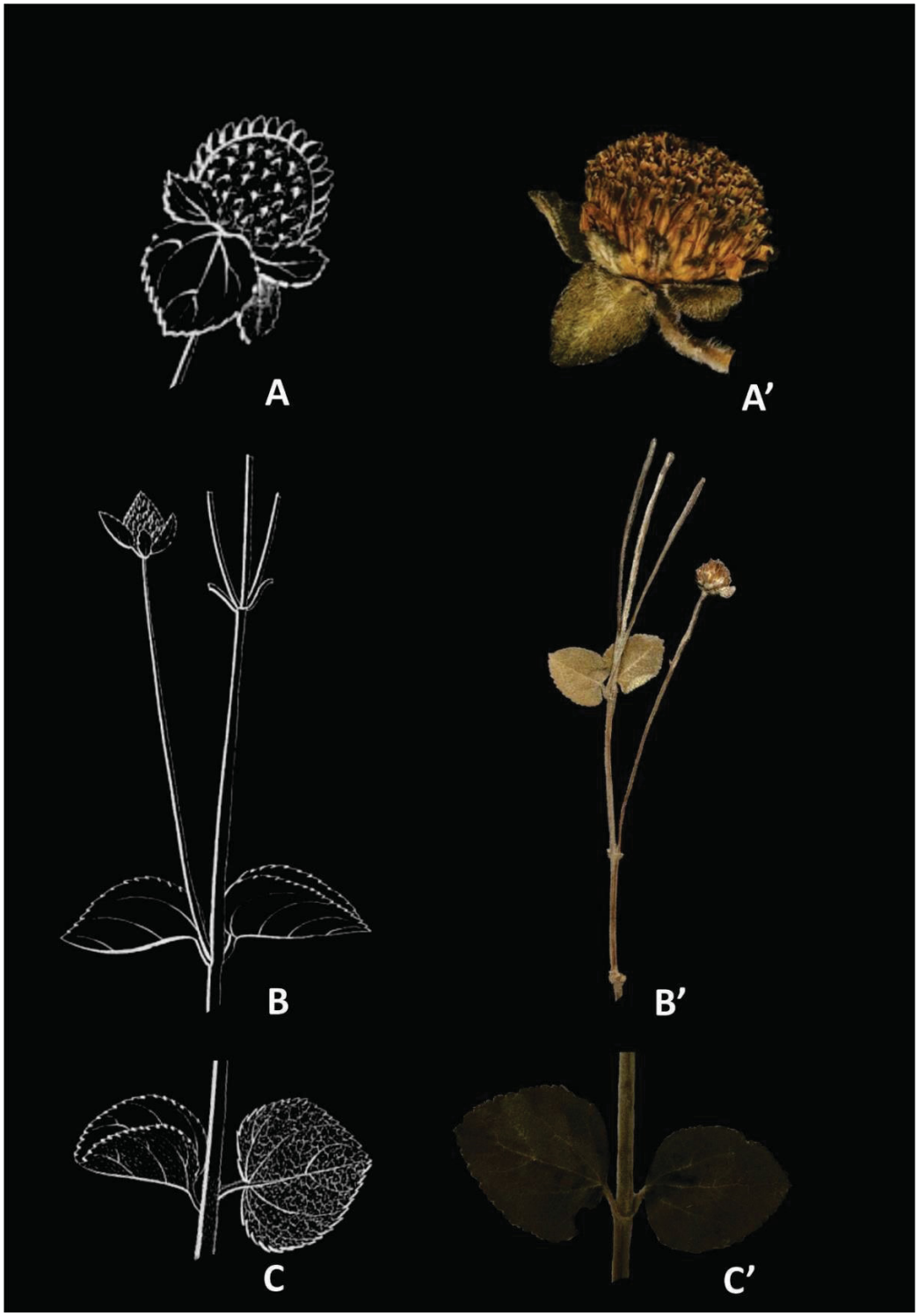

Fig.16. Comparison of a fresh specimen of *Dimerostemma brasilianum,* with fragments of the lectotype illustration of *Eclipta quinquenervis*. A-A'. Wide ovate outer phyllaries. B-B'. Stem arrangement. C-C'. Opposite leaves with petiolate shortly. Photo by A-B-C. *plates from National Library*; A'-B'-C' *Remor 312* (CTBS).

Although the illustration of *Eclipta quinquenervis* is sufficient identification of the species, in *E. quinquenervis* was not represented with the fruits, so an epitype was assigned from a modern specimen to accurately support the application of the name in accordance with Art. 9.9 ICN (Turland et al. 2018). The epitype chosen here was collected during our field expeditions in the municipality of Cunha (SP), typical locality of *E. quinquenervis.*

There is a chance of the original materials of *Dimmerostema brasilianum*, be also original ones for *Eclipta quinquenervis*. The note: "*Brésil? Apportè de Lisbonne par le M. Geoffroy*" [Brazil? Brough from Lisbon by the Monsieur Geoffroy] on P00673449 (Fig. 17) reveals it belongs to the 'Herbarium Lusitanicus' collection, i.e. the set of specimens plundered by Geoffroy Saint-Hilaire at the Museu D'ajuda (Lisbon) which included 117 specimens of Friar Vellozo (see further discussion in Hamy 1908; Moraes 2009; Pastore et al. 2022).

***Geographic Distribution*—**The species grows in cerrado, grassland and campo rupestre vegetation. In Brazil *Dimerostemma brasilianum* occurs in the Federal District and in the states of Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, and São Paulo (Moraes and Semir 2009) (Fig. 25B).

***Additional Specimens Examined*—Brazil.—**Distrito Federal: Brasília, Clube Águas Correntes. Região de Saia Velha, DF-495, 16°03'00.0"S 47°56'00.0"W [-16.05 -47.933333], 27 April 2004, *Proença, C. 2760* (UEC); Goiás: Cocalzinho de Goiás, 20 km N. of Corumbá de Goiás on road to Niquelândia, in valley of Rio Corumbá. Serra dos Pirineus, 15°45'00.0"S 48°43'48.0"W [-15.75 -48.73], 18 November 1968, *Irwin H. S. 18790* (NY); Mato Grosso: São José do Rio Claro, Fazenda Cachoeira de Pau. Savana Arborizada (cerrado) sobre afloramento rochoso, 13°31'12.0"S 56°19'12.0"W [-13.52 -56.32], 14 June 1997, *Souza, V.C. 18135* (ESA); Mato Grosso do Sul: Minas Gerais: Ibiá, MG 230, distante 2km da BR-262, 19°28'42.0"S 46°32'20.0"W [-19.4783334 -46.5388889], 02 March 1889, *Walter, BMT 56* (UB); São Paulo:

Cunha, Condomínio na Mata Atlântica, mas é área de Cerrado, 23°05'24.1"S 44°57'39.0"W [-23.090028 -44.960833], 20 October 2021, *Remor, D. 312* (CTBS);

Fig. 17. Specimens deposited at the Muséum National d'Histoire Naturelle.

8. *Ichthyothere quinquenervia* (Vell.) R.C. Pereira & J. Semir ex Remor & R.C. Pereira, Brittonia 74 (4): 1-7. 2022. *Torrentia quinquenervis* Vell. Fl. Flum. 348. Icon. 8: t. 149. 1831 [1827]. TYPE: [Icon ined.] “Syng. Polyg. Segreg. TERRENTIA *quinquenervis* Tab.149” (Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17, 04, 002; mss1198657_124). (Lectotype, designated by Remor *et al*. (2022, p. 2) (Fig. 18A).

Taxonomic Notes—The genus *Ichthyothere* Mart. belongs to the tribe Millerieae Lindl. and has 18 species for Brazil, of which four are endemic (Gandara 2023).

Terrentia Vell. (1831) was named after Joannis Terrentii Lyncei. Vellozo (1881) included only *Terrentia quinquenervis* in *Terrentia*, and thus this name fits under the generic-specific description and is validly published according to Art. 38.5 and 38.6 of the ICN (Turland et al. 2018).

Fig.18. A. Lectotype of *Torrentia quinquenervis* Vell. B. in *Ichthyothere quinquenervia* (Vell.) R.C. Pereira & J. Semir ex Remor & R.C. Pereira *in vivo*. Plates by National Library and photo by Henrique Moreira.

Pereira (2001) in his thesis reestablished the priority of Vellozo's name in *Ichthyothere quinquenervia* (Fig. 18B) (see chapter four) as a species with wide morphological variation but highlighted that the terminal cymose inflorescence ending in three heads is a diagnostic trait that can be recognized in Vellozo's plate (1831) (Remor et al. 2022), however, his thesis did not constitute an effective publication and therefore cannot be considered validly published in accordance with Art. 7.10 and 7.11 of the ICN (Turland et al. 2018).

Thus, the priority of Vellozo's name was recovered by Remor et al. (2022). For *Terrentia quinquenervis*, Vellozo mentions the *"habitat campis apricis mediterraneis transalpinis"* making possible reference to the occurrence of the species in Cunha and cerrado vegetation (Pastore et al. 2021), which is reinforced by Pereira (2011) and Gandara (2022) who comment that the species occurs mainly in the phytogeographic domain of the Cerrado.

***Geographic Distribution*—**Mainly in the "Cerrado" phytogeographic domain (Pereira 2001; Gandara 2022), in vegetation of cerrado *sensu stricto* (Ribeiro and Walter 2008), shrubby grassland ("campo sujo", Ribeiro and Walter 2008), and rocky grassland ("campo rupestre", Conceição et al. 2016). In Brazil, this species occurs in Distrito Federal and in the states Goiás, Mato Grosso, Minas Gerais, Paraná, São Paulo, and Tocantins (Pereira 2001; Gandara 2022) (Fig. 25C).

***Additional Specimens Examined*—Brazil.—**Distrito Federal: Brasília, Asa Norte, Parque Burle Marx - Parque Ecológico Norte; 15°46′ 04"S, 47°55′47"W [-15.767777777778 - 47.929722222222], 03 September 2009, *J.B.A. Bringel Jr. 244* (CEN, HUFU, UB); Goiás: Flores de Goiás, Serra Geral de Goiás (Serra dos Gravias), entre a BR-020 e Formosa/MG, 10 Oct. 1997, *M.A. da Silva et al. 3394* (IBGE, US); Minas. Gerais: Brumadinho, Serra da Calçada, Retiro das Pedras; 20°.093056"S, 43°.983611"W [-20.091297222222 - 44.015369444444] 12 Sep 2001, *P. L. Viana 175* (BHCB); Joaquim Felício, Parque Estadual da Serra do Cabral; 17°757,499"S, 44°.172199"W [-17.827391666667 - 44.261011111111], 02 Nov 2009, *E. K. O. Hattori; J.A.N. Batista 1024* (BHCB; HUFU); Moeda, Serra da Moeda, Próximo a Estrada que liga Moeda a BR-040; 20°19′59"S, 44°03′10"W [-20.333055555556 - 44.052777777778], 18 Oct 1997, *A. Salino 3592* (BHCB, US).

9. ***Wedelia herbacea*** (Vell.) Remor, Bringel & J.F.B.Pastore comb. nov. *Helianthus herbaceus* Vell. Fl. Flumin. Icon. 8: t.145. 1831 [1827]. Lectotype (designated here): [Icon ined.] "Syng. Polyg. Superf. HELIANTHUS *herbaceus* Tab. 145" (Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17, 4, 2; mss1198657_148.) (Fig. 19A). Epitype (designated here): BRAZIL, São Paulo: Estrada Real de Cunha, beira de estrada, 21 Mar. 2022, *Remor 415* (CTBS 7119).

Wedelia macrodonta DC. Prodr. 5: 539. 1836. TYPE: in campis editis prov. Sancti-Pauli Brasiliae and Taubaté, novemb. flor legit cl. Lund 861 (holotype: G-DC barcode 00455314 [image!]).

Aspilia reflexa Schultz Bip. ex Baker. In: Martius. Fl. Bras., 6(3):196. 1884. *Wedelia reflexa* (Baker) B.L.Turner, Phytologia 72 (5): 394. 1992. TYPE: *Habitat in campis Brasiliae orientalis; e. gr. in prov. Minas Gerães and Lagoa Santa: Warming!: ad Caldas.* Regnel

III. n. 774. (lectotype, designated by Santos (2001, p. 64); C! isolectotype: S-R-443! BR0000005235988!)

Aspilia setosa var. *reflexa* (Sch.Bip. ex Baker) Chodat, Bull. Herb. Boissier, ser. 2. 3:721. 1903.

Herbs decumbent up to 60 cm tall; branches herbaceous, cylindrical, striated, indument pilose; internodes 25-56.5 mm long. **Leaves** decussate, green, sessile, blade lanceolate, elliptic or obovate 5-32 × 31.5-74 mm, apex acute or attenuate, margin conspicuously serrate, base obtuse, attenuate, adaxial surface and abaxial strigose, venation brochidodromous. **Heads** radiate, solitary or dichasial, peduncle 36.5-59.5 mm long., involucre campanulate, biseriate, phyllaries green, apex dull green; outer series 6.5- 8 × 12.5-14 mm, elliptic to ovate, foliaceous, indument densely strigose; inner series 0.5- 8 × 10-12 mm, elliptic, scarious, margin lacerate, indument glabrous to glabrescent. **Receptacle** flat, paleaceous, palea 9 × 3 mm, oblong to lanceolate, yellow, apex acuminate, 1-nerved. **Ray florets** 10-12, neuter, corolla yellow, liguliform, limb 5.5 -12.5 mm, apex bilobed, adaxial surface glabrous, abaxial surface sparsely pilose to glabrescent. **Disc florets** 38-45, hermafrodite, corolla tubulose, yellow, 2.5-3 mm long, 5 lobes ca. 0.5-0.1 mm long, vascular bundle yellow, anthers brown, 2.5-3 mm., apical appendage ovate, light yellow; style branch yellow, 4.5-5.5, linear, apex papillose. **Cypsela** brown, 2.0-5.0 mm long, obovate, carpopodium with base pilose, pappus 2-awned.

Taxonomic Notes—The description from *H. herbaceus* features accessory elements that are not illustrated on the plate, and help confirm its identity, as the pilose stem, sessile leaves, pilose indument, serrate leaf margin and short peduncle with one flower terminal (Vellozo 1881).

Although Vellozo (1881) mentions erect stem in the description, *Wedelia macrodonta* is characterized as a procumbent herb, but this characteristic was not represented by the illustrator and chirographer of FF, which leads us to believe that the person who collected it was different from the one who described, as well as the person who illustrated the plates, since Vellozo's expedition consisted of more than 40 people (Menezes 2021).

In the case of FF, the description is not faithful to the illustration in several cases. An example of this is the plate of *Cytisus unilateralis* Vell. where it is possible to clearly see in the illustration a creeper plant that has leaves arranged on a single side of the branch, however in its description the plant is mentioned with an erect stem, which again assumes that the person illustrating was different from the person that describing (Menezes et al. 2023).

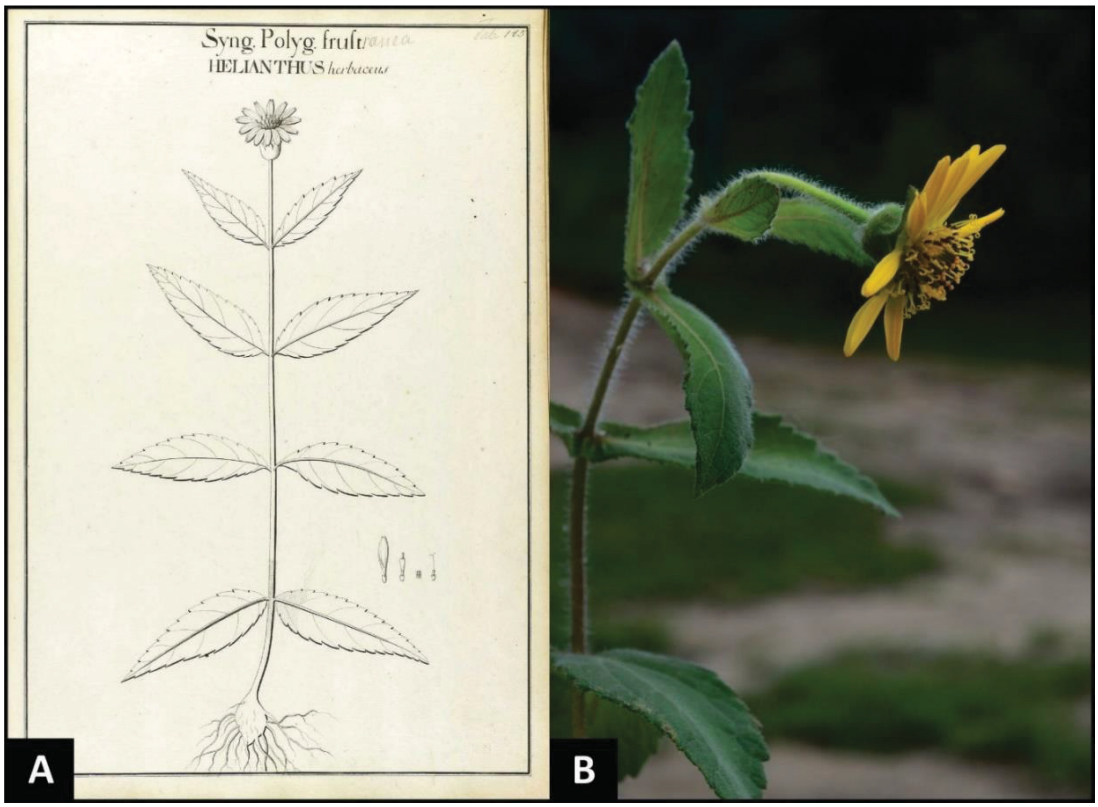

Fig 19. A. Lectotype of *Helianthus herbaceus* Vell. B. Epitype of *Wedelia herbacea* collected on the Estrada Real road in Cunha (*Remor 415* (CTBS)). Plate by National Library and photo by Danielle Remor.

Furthermore, the description of *H. herbaceus* mentions "*oblong leaves*", which again differs from the illustration that shows lanceolate leaves, a characteristic present in *W. macrodonta* (Fig. 20C).

Wedelia herbacea (Fig. 19B) was collected in the wet and dry seasons along the Estrada Real in Cunha. Vellozo mentioned as a typical locality for *H. herbaceus* the "*habitat campis apricis mediterraneis transalpinis prope pagum Cunha"*, which is correspond to cerrado vegetation in the municipality of Cunha (Pastore et al. 2021).

Following the example of other species of Heliantheae *s.l.* described by Vellozo (Pruski 2005; Remor et al. 2022a; Remor et al. 2022b) the publication date of *H. herbaceous* is assumed as the date of the Icones (Vellozo 1831) instead the date of the complete description (Vellozo 1881), in compliance with the articles 38.7, 38.8, 38.9 from ICN (Turland et al. 2018). In light of the careful analysis, the name *Helianthus herbaceus* is herein revised and interpreted as the

older name of the species now known as *Wedelia macrodonta*. Therefore, a epitype was assigned based on a modern specimen collected along the Estrada Real in Cunha in order to provide a full detailed specimen, and to accurately supporte the application of the name according to Art. 9.9 of ICN (Turland et al. 2018).

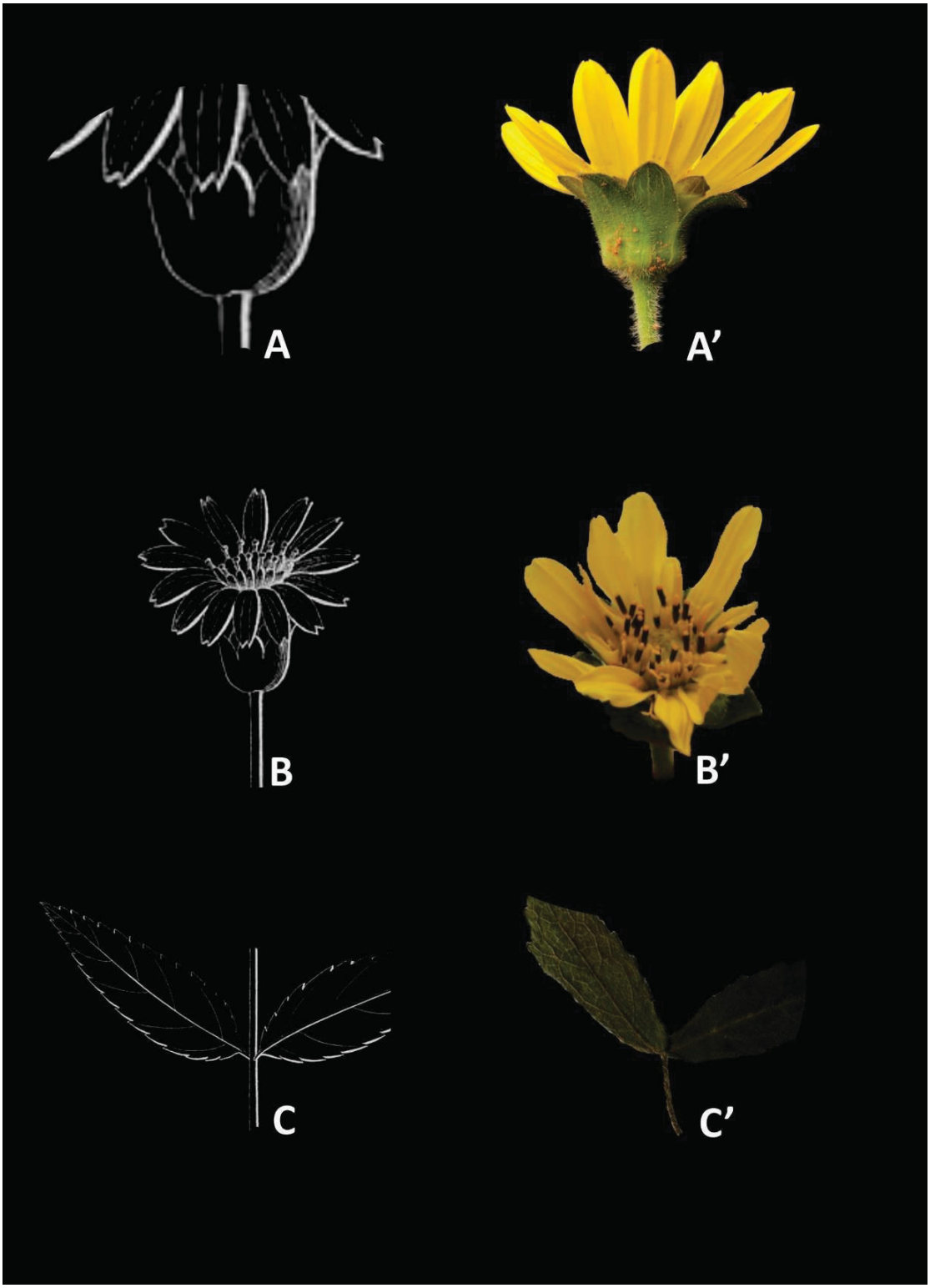

Fig. 20. Comparison of a fresh specimen of *Wedelia herbacea,* with fragments of the lectotype illustration of *Helianthus herbaceus*. A-A'. Campanulate involucre. B-B'. Radiate heads. C-C'. Leaves with serrate margin. Photos by A'-B'-C'. *plates from National Library*; A'-B'-C'. *Remor 415*(CTBS).

Geographic Distribution— *Wedelia herbacea* occurs in the cerrado and cerrado *lato sensu,* and rocky grassland ("campo rupestre") in the states of Minas Gerais, Paraná, and São Paulo (Fig. 25D).

Phenology—Flowering every month of the year.

Additional Specimens Examined—**Brazil.—**São Paulo: Estrada Real. Beira de estrada. Cunha, Brasil, 23°3'27"S 44°58'27"W [-23.0575 - 44.974167] 25 March 2022, *Remor, D. 415* (CTBS); Estrada do bairro do Jericó. Barranco em beira de estrada. Cerrado arbóreo., Cunha, São Paulo, Brasil, 23°7'37"S 44°59'19"W [-23.127028 - 44.988694], 20 Oct. 2021, *Remor, D.*
317 (CTBS); Mogi Guaçu. Fazenda Campininha, Martinho Prado., Mogi Guaçu, São Paulo, Brasil, 22°22'20"S 46°56'32"W [-22.372200012207 - 46.9421997070312], 17 Nov.1980, *Mantovani, W 1255*.

10. *Helianthus brasilicus* Vell. Fl. Flum. 346. 1831 [1827]; Icon. 7: tab. 146. 1831 [1827]. Brasil, São Paulo [Habitat campis mediterraneis transalpinis]. Lectotype (designated here): [icon ined.] "Syng. Polyg. frust. HELIANTHUS *brasilicus* Tab.146''(Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17,4,2; mss1198657_149) (Fig. 21).

Taxonomic Notes— The plant illustrated on the plate of *Helianthus brasilicus* (Fig. 21) display adventitious roots, slightly tuberous, thicky stem, shortly petiolate leaves, with whole to slightly serrate margin, radiate heads, neuter ray florets and pappus with two awns. These characters suggest that the species illustrated by Vellozo (1831) is possibly a species of the genus *Aldama* La Llave & Lex.. However, it was not possible to reach the species level, since the Vellozo (1831, 1881) plate and diagnostic does not bring enough details for this.

Fig. 21. Lectotype of *Helianthus brasilicus* Vell. Plate by National Library.

The name *Helianthus brasilicus* is considered here published in 1831, because the plate indeed includes analyses which helps its identification ICN (art. 38.7), however the analysis is not enough detail to led us interpret assertively which species was illustrated.

11. *Ambrosia polystachya* DC. Prodr. [A. P. de Candolle] 5: 526 (1836). Protologue: “in Brasiliae prov. Sancti-Pauli locis culti humidis nov. et dec. flor. legit cl.” TYPE: Lund; etiam vídeo in h. Mus. Imp. Bras. sub n. 460!”.

‘*Ambrosia maritima* Vell.’ *Florae Fluminensis*. 400: 1881 non *Ambrosia maritima* L., Sp. Pl. 2: 988 (1753). Material de referência: [icon ined.]: “Monad. Polyand. AMBROSIA *maritima* [Tab.] 26” (Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro; No. I-17,05,002; mss1198659_030). Published plate in Florae Fluminensis Icones, v. 8, tab. 26. 1831.

Taxonomic Notes— *Ambrosia maritima* Vell. non L.' is a quotation made by Vellozo (1829, 1831, Fl. Flum. 400. 1831 [1825]; Icon. 10: tab. 26. 1831 [1827] for the name *Ambrosia*

maritima L., Sp. 2: 988. 1753. (1836). Therefore, '*Ambrosia maritima* Vell.' is considered without nomenclatural status. However, taxonomically, the plate illustrated and the description of '*Ambrosia maritima* Vell.' refers to *Ambrosia polystachia* DC. (Sampaio and Peckolt 1943).

12. *Verbesina triradiata* Vell. Fl. Flum. 336. 1831 [1827]; Icon. 7: tab. 115. 1831 [1827]. Brasil, São Paulo [Habitat campis apricis mediterraneis transalpinis]. Lectotype (designated here): [Icon ined.] "Syng. Polyg. Superf. VERBESINA *triradiata* Tab.115" (Seção de Manuscritos, Bibliot. Nac., Rio de Janeiro No. (I-17, 4, 2; mss1198657_118) (Fig. 22).

Taxonomic Notes—The genus *Verbesina* L. is placed in the tribe Heliantheae, subtribe Verbesininae, with about 300 American species, most of which are recorded from Mexico and the Andes (Panero 2007). In Brazil, the species occur in the phytogeographic domains of the Caatinga, Cerrado, Atlantic Forest, and Pampa (Moreira 2022).

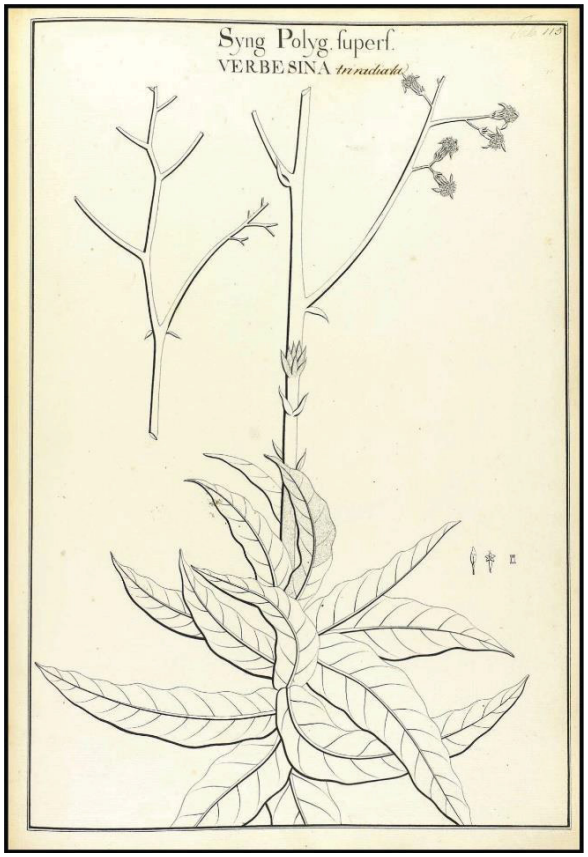

Fig. 22. Lectotype of *Verbesina triradiata* Vell. Plate by National Library.

Their species are subshrubs, shrubs, rarely trees, with alternate or opposite leaves with entire to dissected blades, corymbiform or paniculiform capitulescence, and winged cypsela with awned pappus (Moreira and Cavalcanti 2020). Some of the main features of *Verbesina* such as winged cypsela and aristate pappus of two narrow awns was not illustrated nor mentioned in the description of *Verbesina triradiata* (Fig. 22) (Vellozo 1831; Vellozo 1881).

According to Moreira and Cavalcanti (2020), the only Brazilian species that has this characteristic is *Verbesina macrophylla* (Cass.) S.F.Blake, however, this species has leaf morphology and flower color different from those described by Vellozo

13. *Calea triantha* (Vell.) Pruski, Sida 21(4): 2027 (2005). *Aster trianthus* Vell. Fl. Flum. 337. 1829 [1825]; Icon. 7: tab. 120. 1827 [1831]. Lectotype (designated by Puski 2005: p.2027): tab. 120, Vell., Fl. Flumin. (Icones) 8. 1827 [1831] (Fig. 23A).

Fig. 23. Lectotype of *Aster trianthus* (Vell.) Pruski. B. *Calea triantha* in field cerrado vegetation in the municipality of Cunha. Plate by National Library and photo by Danielle Remor.

Taxonomic Notes—The genus *Calea* occurs in South America, with its center of diversity placed in Brazil. This genus comprises subshrubs, shrubs or vines, with striate phyllaries, anthers yellow, prismatic cypsela and a pappus of scales.

Within this context, the characteristics observed in the illustration of *Aster trianthus* at FF (Vellozo 1831) as leaves opposite, ovate, serrulate, heads radiate, ray florets yellow and style with long branches, are characteristics that suggest that the illustrated species is *Calea triantha* combination elaborated by Pruski (2005).

Calea triantha (Fig. 23B) was collected in Cunha in typical cerrado vegetation, which is mentioned in its original location described by Vellozo who mentions the term "*campis apricis mediterrasneis transalpinis*" linked to cerrado vegetation and the municipality of Cunha (Pastore et al. 2021)

Geographic Distribution—*Calea triantha* occurs in the phytogeographic domains of the Cerrado and Atlantic Forest, in the states of Minas Gerais, Paraná, Rio Grande do Sul, Santa Catarina and São Paulo (Fig. 25E).

***Additional Specimens Examined*—Brazil.—** Minas Gerais: Poços de Caldas, Campo do Saco, 21°50'20.0"S 46°33'53.0"W [-21.838889 -46.564722] 30 October 1981, *Leitão Filho, H.F. et al. 1347* (UEC); Paraná: Curitiba, 25°25'40.1"S 49°16'23.2"W [-25.4277992248535 -49.2731018066406], 21 March 1962, *Hatschbach, G. 8909* (MBM); Rio Grande do Sul: Guaíba, Bairro Passopetim, 30°06'50.0"S 51°19'30.0"W [-30.113899230957 -51.3250007629395] 25 March 1985, *Keiichi M. M. 2361* (MO); Santa Catarina: Lages, Morro de Tributo, 27°48'58.0"S 50°19'34.0"W [-27.8160991668701 -50.326099395752], February 1966, *Mattos, J. 13328* (MCN); São Paulo: Cunha, Condomínio 'Alpes de Cunha', área com fitofisionomia de cerrado, 23°05'24.2"S 44°57'39.0"W [-23.090056 -44.960833], 11 January 2022, Remor, D. 335 (CTBS).

14. *Wedelia monantha* (Vell.) Remor, Bringel & J.F.B. Pastore, Phytotaxa 545 (1): 1-7. 2022. *Aster monanthus* Vell. Fl. Flum. 337. Icon. 8: t.121. 1831 [1827]. TYPE: [Icon ined.] "Syng. Polyg. Superf. ASTER *monanthus* 121". Manuscript Sect. Of Torre do Tombo, Lisbon, PT-TT-MSLIV-2778_m0249. Icon ined. Copy in Manuscript Sect., Bibliot. Nac., Rio de Janeiro No. I-17, 04, 002; mss1198657_124. (lectotype, designated by Remor *et al*. (2022, p. 104) (Fig. 24.A). Epitype: BRAZIL. São Paulo: Cunha, Estrada Real Cunha-

Paraty. Área arborizada, próximo de curso d'agua. Marcas de recente passagem de fogo, 19 Out 2021, *Remor 301* (designated by designated Remor *et al*. (2022, p. 104): CTBS 6423!; isoepitype UPCB!).

Taxonomic Notes—The genus *Wedelia* Jacq., belongs to the tribe Heliantheae, subtribe Ecliptinae, and comprises 24 species in Brazil with occurrence in all geographic domains (Alves and Bringel 2022).

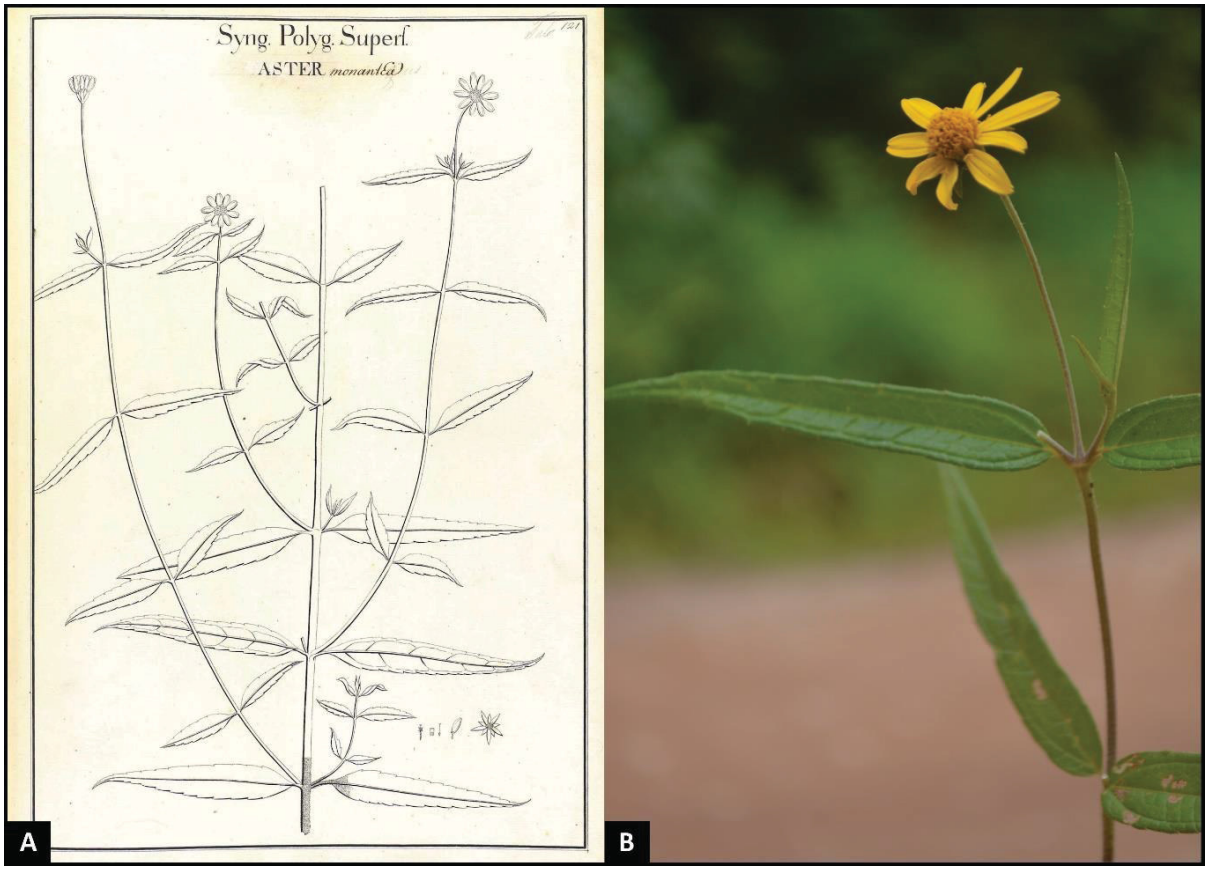

Fig. 24. A. Lectotype of *Aster monanthus* (Vell.) Pruski. B. *Wedelia monantha* in field cerrado vegetation in the municipality of Cunha. Plate by National Library and photo by Danielle Remor.

Ray florets pistillates, pappus coroniform, heads solitaire with a long peduncle, together with the lanceolate, with distinct petiole are diagnostic for the specie illustrated for *Aster monanthus* Vell. that allow the recognition of the species. The name *Aster monanthus* Vell (1831) takes precedence over *Wedelia subvelutina* DC. (1836). This combination was elaborated by Remor et al. (2022). *Wedelia monantha* was collected in Cunha on the Estrada

Real on the Cunha-Paraty Route (Fig. 24B), in October, January and May. In his description, Vellozo (1881) mentions the "*habitat campis apricis mediterraneis transalpinis*".

Geographic Distribution—*Wedelia monantha* occurs for the most part in the Atlantic Forest domain, but also in the ecotone regions with patches of the savanna vegetation (cerrado *sensu stricto*). The species occurs in the Brazilian states of Minas Gerais, Rio de Janeiro, São Paulo, and Paraná (Fig. 25 F).

***Additional Specimens Examined*—Brazil.—**Minas Gerais: Ouro Preto, Sujo, Saramenha, 20°17'15"S, 43°30'29"W [-20.2875003814697 -43.5080986022949], 13 January 1942, *Magalhães 1025* (ESA, IAN); Passa Quatro, Distrito de Pinheirinhos, Estrada da fazenda São Bento, 22°23'25"S, 44°58'0"W [-22.3903007507324 -44.9667015075684], 28 December 1979, *Nunes 186* (ALCB, CEN, RB); São Roque de Minas, Parque Nacional da Serra da Canastra, Cachoeira Casca D'Anta, Trilha para guarita de baixo, 20°14'43"S 46°21'57"W – [20.2453002929688 / -46.3657989501953], 10 June 1996, *Nakajima et al.* 1982 (HUFU, US); Santa Rita do Sapucaí, Cerca de 4 km de Santa Rita do Sapucaí em direção a São Sebastião da Bela Vista, 22°12'27.26"S, 45°44'15.29"W [-22.2075 -45.7375], 29 January 2016, *Souza et al. 40124* (CEN); Santos Dumont, Serra da Mantiqueira, Beira do córrego, 21°27'24"S, 43°33'9"W [-21.4566993713379 -43.5525016784668], 14 October 1979, *Krieger 16737* (HUFU); Paraná: Cerro Azul, Serra da Canha, 24°49'25"S, 49°15'40"W [-24.823600769043 -49.261100769043], 03 October 1973, *Hatschbach 31607* (MBM); Ibid., Rio Piedade, 24°49'25"S, 49°15'40"W, 24 April 1997, (MBM, US); Bocaiúva do Sul, 25°12'22"S 49°6'54"W [-25.2061004638672 -49.1150016784668], 27 January 2005, *Barboza. et al. 1016* (MBM); Rio de Janeiro: Itatiaia, km 8., 22°29'46"S, 44°33'48"W [-22.4960994720459 -44.5633010864258], 08 January 1947, *Duarte & Edmundo 814* (ALCB, RB); Petrópolis, Ranche: Mauro Large, 22°30'18"S, 43°10'43"W [-22.823600769043 -43.261100769043] *Warming 663* (P); S. Antonio, 23 March 1872, *Glaziou 5615* (P). São Paulo: Cunha, 23°4'12"S, 44°57'36"W, 12 December 1996, *Souza et al. 786* (ESA); Ibid., Estrada real após o bairro do Monjolo, saindo de Cunha, 23°7'26"S, 44°52'04"W [-23.123889 -44.867778], 07 November 2019, *Pastore & Menezes 5792* (CTBS); Mogi das Cruzes, Vila São Geraldo, 23°31'22"S, 46°11'18"W [-23.5228004455566 -46.1883010864258], 09 November 1937, *Hashimoto 65* (CEN); São José dos Campos, Ca. 8.0 km SW em linha reta da praça principal de São José dos

Campos, 23°10’13”S, 45°52’48”W [-23.1703 -45.88], s.d., *Mimura 226* (NY, US); São Paulo, Parque Estadual de São Paulo, 23°32’24”S, 46°37’48”W [-23.5400009155273 -46.6300010681152], 04 May 1994, *W. Hoehne 1377* (UEC); Idem, Campo de Congonhas, 23°32’24”S, 46°37’48”W [-23.5400009155273 -46.6300010681152], 13 November 1941, *Hoehne 810* (UEC); Santo Antônio do Pinhal, 22°49’12”S, 45°39’36”W, 11 June 1992, *Sartori et al. 26591* (UEC).

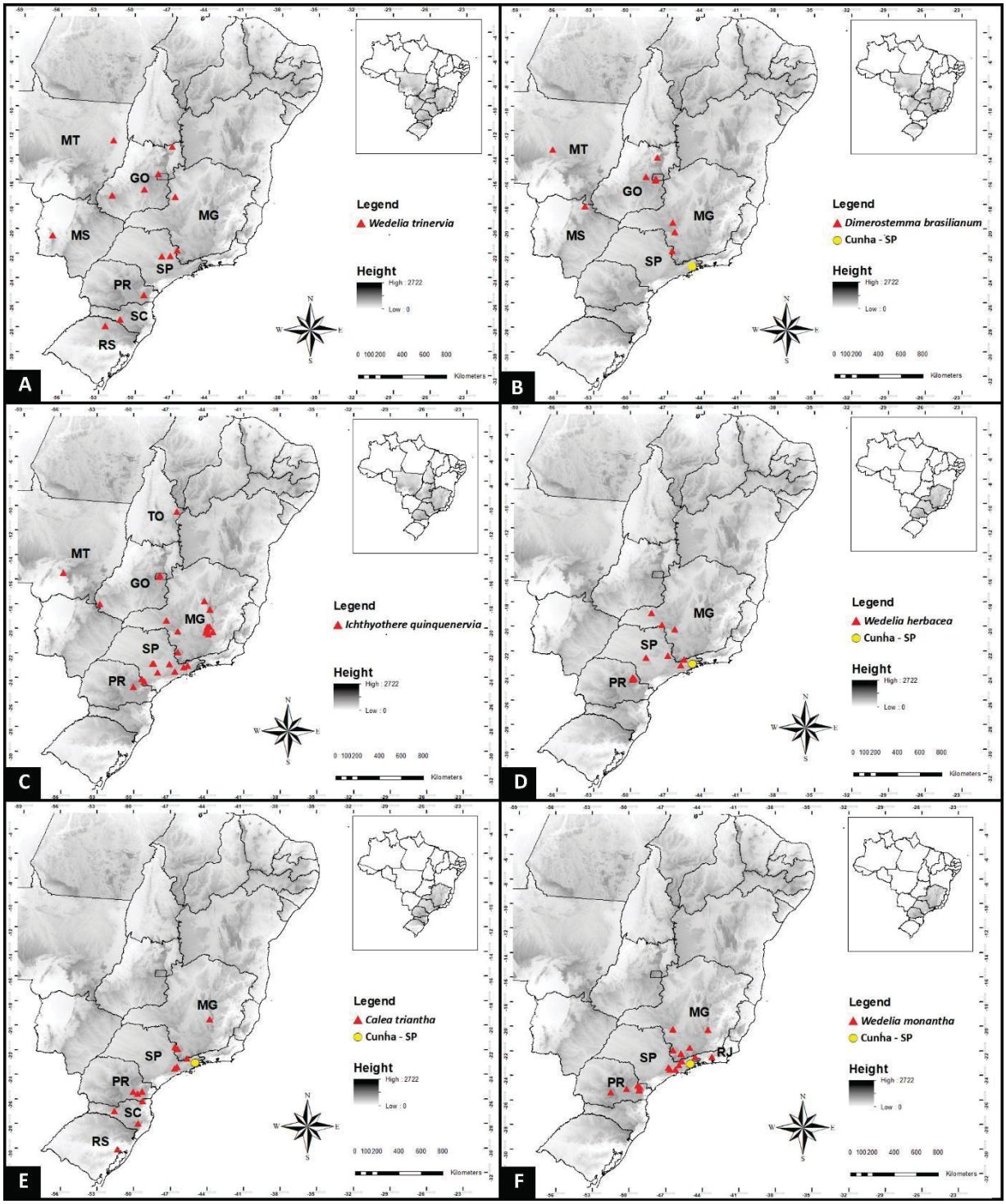

Fig. 25. Map of the geographical distribution of: A. *Wedelia trinervia*. B. *Dimerostemma brasilianum*. C. *Ichthyothere quinquenervia*. D. *Wedelia herbacea*. E. *Calea triantha*. F. *Wedelia monantha*.

Acknowledgments

DR is grateful for the master's scholarship (603138/2021-00) funded by the Coordination for the Improvement of Higher Education Personnel (CAPES). The first author thanks Manuella Aparecida Cosme Galan Yamamoto for her company and help in the field expeditions; Aristônio Magalhães Teles for the support given to the genus *Verbesina*; Vínicius Resende Bueno for the tips in the taxonomic discussions, and also Leonardo Kellet Coelho for helping to produce the distribution maps. JFBP gratefully acknowledges the financial support of the National Council for Scientific and Technological Development (CNPq) (grant 302972/2020-0).

Author Contributions

DR conducted the fieldwork, identified the specimens, prepared the figures, and distribution maps, and led the writing of the article. JBAB contributes to the analysis of collections, identification, and nomenclatural and taxonomic review of the species, in addition to writing in the article, adding intellectual and critical content. JFBP contributed to the writing of the article, and with the nomenclatural revision added intellectual and critical content.

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CAPÍTULO II

A new combination in *Wedelia* (Asteraceae-Heliantheae-Ecliptinae) from Brazil

Uma nova combinação em *Wedelia* (Asteraceae-Heliantheae-Ecliptinae) do Brasil

*Artigo já publicado no periódico *Phytotaxa* (ISSN 1179-3163) e formatado de acordo com as normas da revista.

DOI: https://doi.org/10.11646/phytotaxa.545.1.9

A new combination in *Wedelia* (Asteraceae-Heliantheae-Ecliptinae) from Brazil

DANIELLE REMOR[1,4*], JOÃO BERNARDO DE A. BRINGEL JR.[2,5] & JOSÉ FLORIANO B. PASTORE[3,6]

[1] Programa de Pós-Graduação em Botânica, Universidade Federal do Paraná, 81531-970, Curitiba, PR, Brasil, Paraná.
[2] Universidade de Brasília, Instituto de Ciências Biológicas – ICB, Campus Universitário Darcy Ribeiro, Asa Norte, 70910900 -
Brasília, DF – Brasil.
[3] Universidade Federal de Santa Catarina, Campus Curitibanos, Caixa Postal 101, Rod. Ulysses Gaboardi, km 3, 89.520-000,
Curitibanos, SC, Brasil.
[4]danielle_remor@hotmail.com; https://orcid.org/0000-0002-4374-2448
[5]jbbringel@gmail.com; https://orcid.org/0000-0001-8423-2930
[6]jfpastore@hotmail.com; https://orcid.org/0000-0003-4134-7345
**Author for correspondence*

Abstract

An overlooked name *Aster monanthus*, described in Vellozo's Flora Fluminensis, is here revised and transferred to the genus *Wedelia*, as *W. monantha*. Field trips to the most likely original locality for *Aster monanthus* (Estrada Real in the Cunha municipality of São Paulo state, Brazil), along with a revision of herbarium specimens, were made. A full species description, with a distribution map and taxonomic notes, is provided. All relevant names have been lectotypified and epitype for Vellozo's name chosen.

Keywords: Compositae, Ecliptinae, Flora Fluminensis, nomenclature, taxonomy

Introduction

Vellozo's Flora Fluminensis (hereafter FF) is the first post-Linnaean Brazilian taxonomic treatment of the flora. Its manuscript was completed in 1790, a partial text published in 1829 and the accompanying plates in 1831. It was finally published in its entirety only in 1881 (Carauta 1969; Carauta 1973). This monumental work included descriptions of 1,639 plant species, with their respective plates published in eleven volumes (Bediaga & Lima 2015).

The manuscript and the original drawings of FF are kept at the National Library of Brazil in Rio de Janeiro (Bediaga & Lima 2015), with copies of parts of the original plates also preserved in the National Archive of Torre do Tombo (Lisbon, Portugal). The itinerary of the expedition led by the Franciscan friar Vellozo (1741–1811) and collaborators through the states of Rio de Janeiro and São Paulo included the route between Paraty and Cunha along the Estrada Real (Lima 1995; Pastore *et al*. 2021). The title of Vellozo's work, 'Flora Fluminensis', refers in terms of its geographic scope to the state of Rio de Janeiro. However, Pastore *et al*. (2021) provided evidence that a significant part of its described species originated in the municipality of Cunha (São Paulo state), since many of the toponyms mentioned by Vellozo are found in that municipality.

Asteraceae is one of the most important families treated in FF, with its plates occupying the entire volume 8 and part of volume 10 (Pruski 2005). Of the total number of its 156 names treated in FF, 70 have their likely origin in the municipality of Cunha (SP) (Pastore *et al*. 2021). A number of names described in FF have not yet been revised. The genus *Wedelia* Jacquin (1760: 28), including as synonym *Aspilia* Thouars (1806: 12), is the largest genus of subtribe Ecliptinae (Heliantheae) with approximately 110 species distributed across tropical regions of the world, mainly in the Americas (Panero 2007). The name *Aster monanthus* Vellozo (1831: 121) is being here revised and interpreted as the oldest name for the species currently known as *Wedelia subvelutina* Candolle (1836: 540), thus a new combination is proposed, and a lectotype and epitype designated.

Material and Methods

To prepare the distribution map we analyzed all records of *Wedelia monantha* (identified as *W. subvelutina*) in the virtual database of speciesLink (2021), selecting only the records that could have the identification confirmed by image. The map of geographical distribution is made in software Quantum GIS v. 3.0 (QGIS Development Team 2015). When the original geographic coordinates of these specimens were not available, coordinates of the municipal seats were used. For the morphological description, and phenological and habitat information we used online databases (Reflora – Herbario Virtual 2021, SpeciesLink 2021, Jstor, Global Plants 2021), filtering only the records which had image available and that could have the identification confirmed; additionally specimens in herbaria CEN and CTBS were analyzed *de visu*.

Taxonomic treatment

Wedelia monantha (Vell.) Remor, Bringel & J.F.B.Pastore, ***comb. nov.*** *Aster monanthus* Vellozo. Flora Fluminensis (1831 [1827]: 121). **Lectotype designated here**: [Icon ined.] "Syng. Polyg. Superf. ASTER *monanthus* 121" Manuscript Sect. Of Torre do Tombo, Lisbon, PT-TT-MSLIV-2778_m0249. Icon ined. Copy in Manuscript Sect., Bibliot. Nac., Rio de Janeiro No. I-17, 04, 002; mss1198657_124 (Fig. 1). **Epitype designated here**:—BRAZIL. São Paulo: Cunha, Estrada Real Cunha-Paraty, 23°05'05.8"S, 44°55'29.8"W, elev. 884 m, 19 October 2021, *D. Remor 301* (CTBS 6423!, Fig. 2; isoepitype UPCB!).

= *Wedelia subvelutina* Candolle (1836: 540). **Lectotype designated here**:—BRAZIL. "In palustribus Prov St Paul", 1835, *Lund 865* (G00455250!). Remaining syntypes:—BRAZIL. São Paulo: H. Imp. Bras. n° 408 [probably *Sellow*] (barcode G0045240!).

= *Wedelia scandens* Gardner (1845: 125), non *W. scandens* Clarke (1876: 136). **Lectotype designated here**:—BRAZIL. [Rio de Janeiro] "Organ Mountains, in bushy places by the sides of streams", January 1837 [cited as February in Gardner 1845], *Gardner 506* (K000895455!; isolectotypes E00433333!, GH00014080!, K000895454!, NY00278026!, NY00278027!, P00710039!, P02515241!, US00385722!, W0065048!).

Herbs or vines; twigs erect, cylindrical, indument sericeous to villous, internodes 27.5–98.5 mm long. **Leaves** opposite, green, petiole 1–1.4 mm long, blades oblong-lanceolate to narrow-ovate, 6.5–83×12–15.5mm, apex acuminate or mucronate, margins serrate or serrulate, base cuneate or oblique, adaxial surface scabrous, abaxial glabrous, 3- veined from the base. **Heads** solitary, radiate, peduncle 5–6.5 mm long, sericeous or strigose; involucre 3.5–5×6 mm, campanulate, bisseriate; phyllaries greenish, apex dull-green, foliaceous, ovate or elliptic, strigose; receptacle slightly convex, paleaceous, paleae 4.5–5 mm long, conduplicate to concave, oblanceolate, apex acute or acuminate, stramineous, 1-nerved, pubescent to sparsely pubescent. **Ray florets** 8–9, corolla liguliform, pistillate, yellow, tube 1–1.5 mm, limb 9.5-10 mm, oblong, apex bilobate, abaxial surface sparsely pilose. **Disc florets** 22–25, monocline, corolla tubulose, yellow, tube ca. 1.3 mm long, 5-lobed, lobes ca. 0.6 mm long, sparsely glandular-punctate, sparsely pilose at vascular bundles, anthers black 1–1.5 mm long, appendage deltate, black, glandular-punctate externally, style branch yellow, 1–1.2 mm long, linear, apex hispidulous. **Ray cypsela** obovate, 3.6–3.7 × 3.1–3.3 mm, triquetrous, compressed, apex sparsely setose, surface rugose, margin thickly winged, wings not differing in color and

surface; disc cypsela not seem. **Pappus** coroniform, apex laciniate, pale yellow, 0.2–0.4 mm long, hispidulous. Fig. 3.

Comments:—Although a description of *Wedelia monantha* was absent from the first edition of FF of 1829, published only in 1881, its plate was published in 1831. That plate includes elements that may be clearly recognized as *analysis*, according the ICN Art. 38.7, 38.8 and 38.9 (Turland *et al*. 2018). The pistillate ray flowers, coroniform
pappus, isolated heads with a long peduncle, together with the lanceolate, with distinct petiole are diagnostic for the species illustrated in the *Aster monanthus* plate. This species is currently treated as *W. subvelutina* by Alves & Bringel Jr. (2020). However, the older name, *Aster monanthus*, validly published in a plate from 1831, has priority over it.

Another remarkable feature of *W. monantha*, and also of the majority of the other species of this genus, is the trinervate leaves. Although it is not possible to clearly recognize the trinervate leaves in the plate from Vellozo (1831), the pattern of venation drawn is similar to the pattern found in some specimens from Rio de Janeiro (*Glaziou 5615*, *Warming 663*) and Minas Gerais (*Nunes 186*), in which the perimarginal veins are not as thick as the primary one, rather a slight perimarginal vein can be recognized, resembling a brochidodromous pattern. We believe that the age of the leaf and habitat conditions are responsible for this variation.

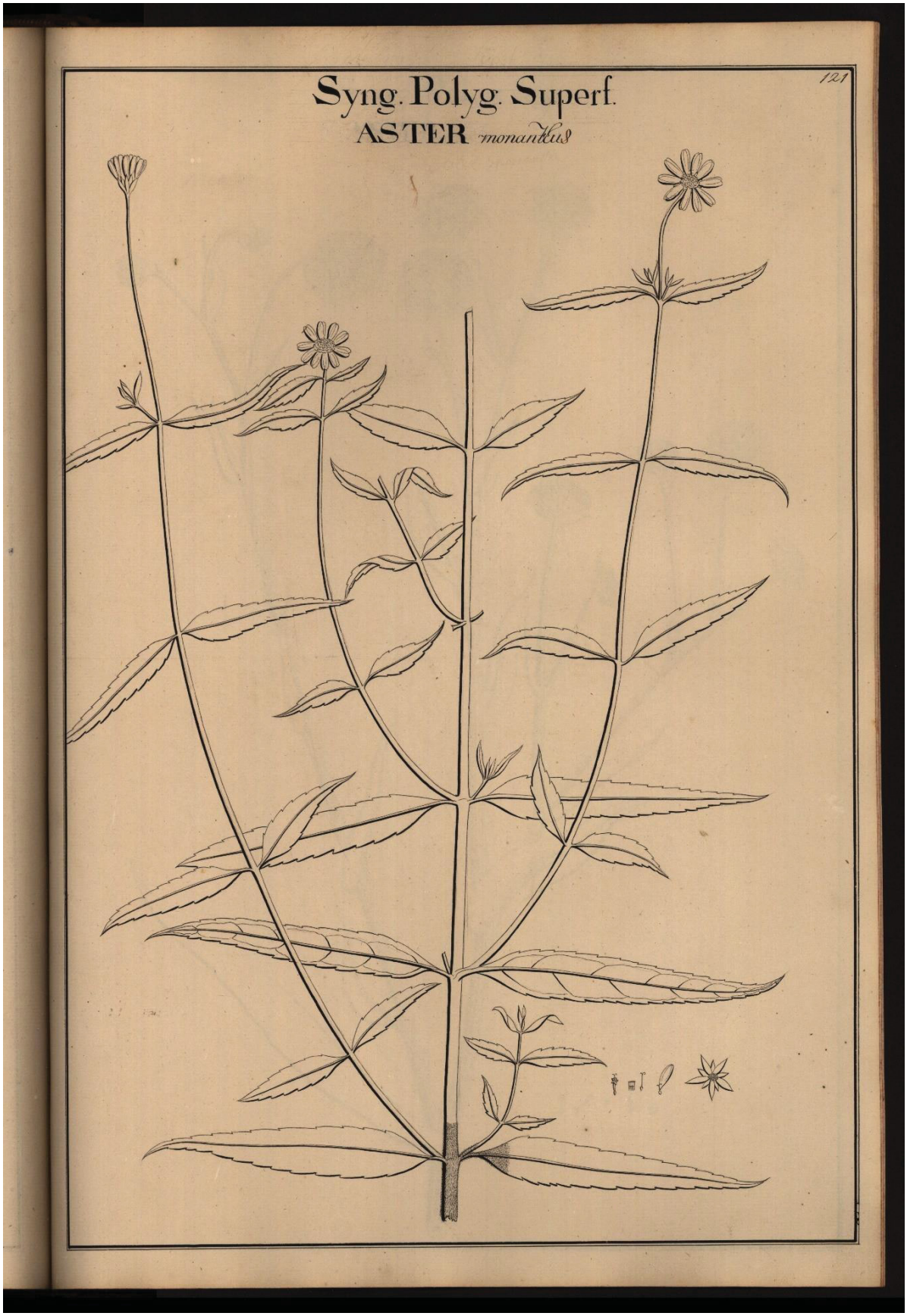

FIGURE 1. Lectotype of *Aster monanthus* Vell. [= *Wedelia monantha* (Vell.) Remor, Bringel & J.F.B.Pastore], from Vellozo's Fl. Flumin. (Icones) 8: t. 121 (1831).

FIGURE 2. Epitype of *Wedelia monantha* (Vell.) Remor, Bringel & J.F.B.Pastore [=*Aster monanthus* Vell.].

FIGURE 3. *Wedelia monantha* (Vell.) Remor, Bringel & J.F.B.Pastore in the field in Cunha (São Paulo state). (Photos: D. Remor).

Vellozo (1881) described the original habitat of *A. monanthus* as "*habitat campis apricis mediterraneis transalpinis*", interpreted by Pastore *et al*. (2021) as originated in the municipality of Cunha (São Paulo state). Since the original specimens are considered lost (Carauta 1973; Bediaga & Lima 2015; Pastore *et al*. 2021), the only set of original material is the plates preserved in the National Archive of Torre do Tombo (Lisbon) and the National Library of Brazil (Rio de Janeiro) Biblioteca Nacional (Rio de Janeiro). Therefore, an epitype has been accordingly designated on the basis of a modern specimen collected along the Estrada Real in Cunha.

Although the illustration of *Aster monanthus* is sufficient for identification of the species by specialists, the illustrations in the Flora Fluminensis cannot be considered complete in all of the species representative features. Therefore an epitype was assigned based on a modern specimen collected along the Estrada Real in Cunha in order to provide a full detailed specimen, and so, accurately supporting application of the name according to Art. 9.9 (Turland *et al*. 2018).

Habitat, distribution and phenology:—*Wedelia monantha* occurs for the most part in the Atlantic Forest domain, but also in the ecotone regions with patches of the savanna vegetation (*cerrado sensu lato*). It is usually found on the margin of forests, more rarely in open marshy fields. The species occurs in the Brazilian states of Minas Gerais, Rio de Janeiro, São Paulo, and Paraná (Fig. 4) flowering from October to April. Curiously, in the Checklist of the Spermatophyta of the State of São Paulo no species of the genus *Wedelia* is mentioned (Wanderley *et al*. 2011).

Material examined:—BRAZIL: Minas Gerais: Ouro Preto, Sujo, Saramenha, [20°17’15”S, 43°30’29”W], 13 January 1942, *Magalhães 1025* (ESA, IAN); Passa Quatro, Distrito de Pinheirinhos, Estrada da fazenda São Bento, [22°23’25”S, 44°58’0”W], 28 December 1979, *Nunes 186* (ALCB, CEN, RB); São Roque de Minas, Parque Nacional da Serra da Canastra, Cachoeira Casca D’Anta, Trilha para guarita de baixo, [20°14’43”S 46°21’57”W], 10 June 1996, *Nakajima et al.* 1982 (HUFU, US); Santa Rita do Sapucaí, Cerca de 4 km de Santa Rita do Sapucaí em direção a São Sebastião da Bela Vista, [22°12’27.26”S, 45°44’15.29”W], 29 January 2016, *Souza et al. 40124* (CEN); Santos Dumont, Serra da Mantiqueira, Beira do córrego, [21°27’24”S, 43°33’9”W], 14 October 1979, *Krieger 16737* (HUFU); Paraná: Cerro Azul, Serra da Canha, [24°49’25”S, 49°15’40”W], 03 October 1973, *Hatschbach 31607* (MBM); Ibid., Rio Piedade, [24°49’25”S, 49°15’40”W], 24 April 1997, *Silva et al. 1942* (MBM, US); Bocaiúva do Sul, [25°12’22”S 49°6’54”W], 27 January 2005, *Barboza*. *et al*. *1016* (MBM); Rio de Janeiro: Itatiaia, km 8., [22°29’46”S, 44°33’48”W], 08 January 1947, *Duarte & Edmundo 814* (ALCB, RB); Petrópolis, Ranche: Mauro Large, [22°30’18”S, 43°10’43”W] *Warming 663* (P); S. Antonio, 23 March 1872, *Glaziou 5615* (P). São Paulo: Cunha, [23°4’12”S, 44°57’36”W], 12 December 1996, *Souza et al*. *786* (ESA); Ibid., Estrada real após o bairro do Monjolo, saindo de Cunha, [23°7’26”S, 44°52’04”W], 07 November 2019, *Pastore & Menezes 5792* (CTBS); Mogi das Cruzes, Vila São Geraldo,

[23°31’22”S, 46°11’18”W], 09 November 1937, *Hashimoto 65* (CEN); São José dos Campos, Ca. 8.0 km SW em linha reta da praça principal de São José dos Campos, [23°10’13”S, 45°52’48”W], s.d., *Mimura 226* (NY, US); São Paulo, Parque Estadual de São Paulo, [23°32’24”S, 46°37’48”W], 04 May 1994, *W. Hoehne 1377* (UEC); Idem, Campo de Congonhas, [23°32’24”S, 46°37’48”W], 13 November 1941, *Hoehne 810* (UEC); Santo Antônio do Pinhal, [22°49’12”S, 45°39’36”W], 11 June 1992, *Sartori et al. 26591* (UEC).

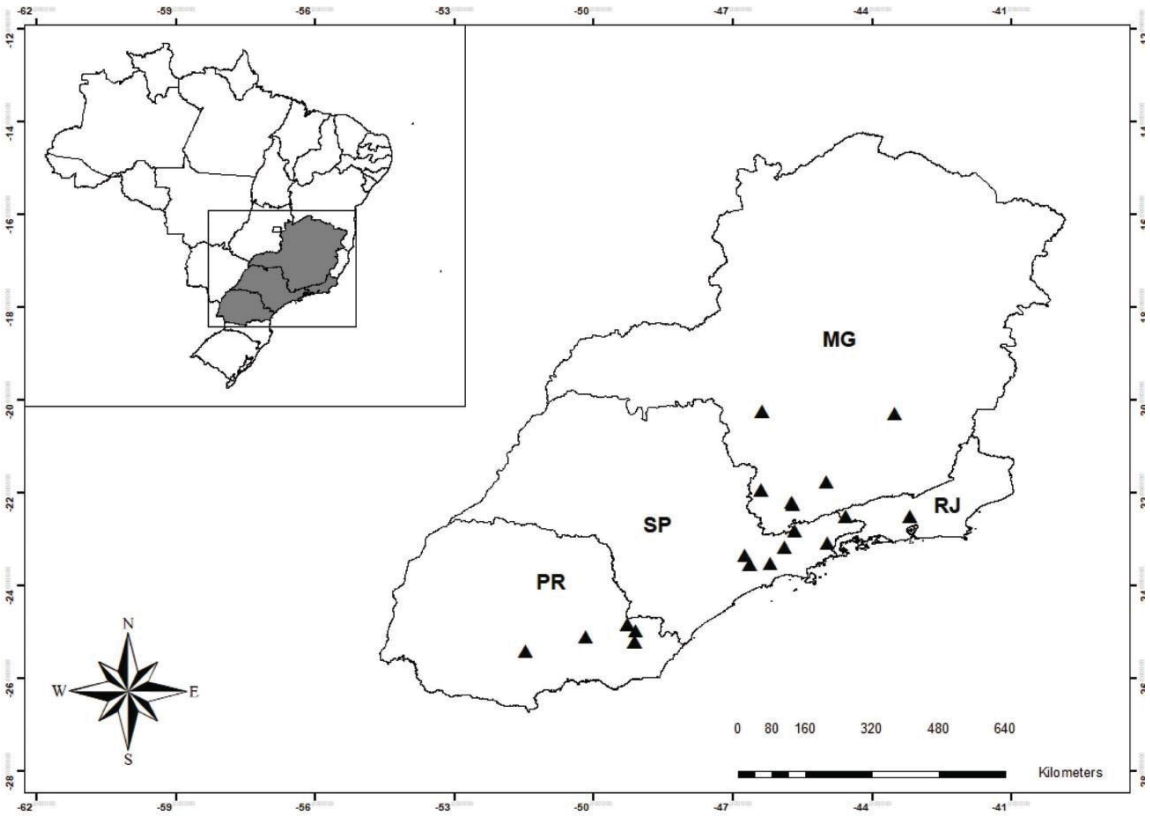

FIGURE 4. Map of the geographical distribution of *Wedelia monantha*. (Map: D. Remor).

Acknowledgements

This study was financed by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior-Brasil (CAPES) via Master’s degree scholarship grant (603138/2021-00) to the first author. JFBP is gratefully acknowledges financial support of the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) (grant 302972/2020-0) and Alex Popovkin for the English language review of the manuscript.

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CAPÍTULO III

A new combination in *Wedelia* (Ecliptinae: Asteraceae) for Brazil: rescuing the Vellozo's name priority

Uma nova combinação em *Wedelia* (Ecliptinae: Asteraceae) para o Brasil: resgatando a prioridade do nome de Vellozo

*Artigo submetido ao periódico *Kew Bulletin* (ISSN 1874-933) e formatado de acordo com as normas da revista.

New combination in *Wedelia* (Ecliptinae: Asteraceae) for Brazil: rescuing the Vellozo's name priority

Danielle Remor[1,4*], João Bernardo de Azevedo Bringel Jr.[2,5] & José Floriano Barêa Pastore[3,6]

[4]Programa de Pós-Graduação em Botânica, Universidade Federal do Paraná, 81531-970, Curitiba, Paraná, Brazil.
[5]Universidade de Brasília, Instituto de Ciências Biológicas– ICB, Campus Universitário Darcy Ribeiro, Asa Norte, 70910900 -Brasília, Distrito Federal, Brazil.
[6]Universidade Federal de Santa Catarina, Campus Curitibanos, Caixa Postal 101, Rod. Ulysses Gaboardi, km 3, 89.520-000, Curitibanos, Santa Catarina, Brazil.
danielle_remor@hotmail.com; https://orcid.org/0000-0002-4374-2448
jbbringel@gmail.com; https://orcid.org/0000-0001-8423-2930
jfpastore@hotmail.com; https://orcid.org/0000-0003-4134-7345
**Author for correspondence*

Summary. *Eclipta trinervis* Vell. (Asteraceae), described in the Vellozo's *Florae Fluminensis* is here revised and transferred to the genus *Wedelia*, as *W. trinervia*. Its identity corresponds to the species currently known as *Wedelia trichostephia* DC., which we interpret as a misapplied name and whose type specimen is not known. *Wedelia trinervia* is recognized by the ray flowers with white corolla, while disc flowers have a yellow corolla, the sessile leaves with basally acrodromous venation, and heads usually with bracteolate peduncle. A description, distribution map, comparative photographic plate, and taxonomic notes are provided. All names discussed are here typified.

Key Words. Compositae, nomenclature, taxonomy.

Introduction

Wedelia Jacq. (1760: 28) is currently the largest genus of the subtribe Ecliptinae, including about 110 species occurring mainly in tropical Americas, but worldwide distributed, (Robinson 1981; Panero 2007). It is characterized by: heads solitary, paleaceous receptacle, monocline disk flowers, achene with a small apical constriction, and coroniforme pappus, with or lacking awns, cypselas usually with elaiosome, carpopodium bilobate (Strother 1991; Turner 2004; Panero 2007). In Brazil, there are only 24 species listed as *Wedelia* (Alves & Bringel 2022), but 65 species are treated under the genus *Aspilia* Thouars (Santos 2022), which was formally considered as a synonym by Robinson (1992), who was further followed by others authors (Turner 2004; Panero 2007; Bueno & Nakajima 2020).

Florae Fluminensis (hereafter FF) is a late XVIII-century Brazilian taxonomic treatment led by Friar José Mariano da Conceição Vellozo (Bediaga & Lima 2015). In this work, Vellozo and collaborators described 1640 species, and 104 generic names cataloged in 12 volumes (11 volumes of prints and 1 of text) from their eight-year expedition (1782-1790) between the captaincies of Rio de Janeiro and São Paulo along the route of the Estrada Real between Paraty-Cunha (Bediaga & Lima 2015).

The delay in the publication of the full text of the FF has resulted in the loss of priority for most of the names designated by Vellozo (Carauta 1969), which is one of the reasons why the FF has been revisited from a taxonomic perspective. Botanical families such as Polygalaceae (Pastore 2013), Passifloraceae (Cervi & Rodrigues 2010), and Solanaceae (Knapp *et al.* 2015) among others have already had their names revised.

Asteraceae is one of the botanical families of FF composing all of volume eight and part of volume ten (Pruski 2005). However, although it is one of the largest families in this important work, it has not yet had all of its names reviewed. The generic name *Wedelia* was not recognized in FF, thus the eventual species of this genus were described under other generic names, thus recently a new combination for a Brazilian species of *Wedelia* was presented by Remor *et al*. (2022) based on the FF name *Aster monanthus* Vell. (1831: 121) being recognized as an older name than *Wedelia subvellutina* DC. (1836: 540).

Once again as a result of a work that is still in progress, we have the discovery of another Brazilian species of *Wedelia*. The name *Eclipta trinervis* Vell. (1831: 136) is revised here and has its priority regained as the oldest name for the species which is now known as *Wedelia trichostephia* de Candolle (1836: 288).

Material and Methods

A distribution map of the species was prepared in Quantum GIS v. 3.0 software (QGIS Development Team 2015) based on the analysis of all occurrence records of *Wedelia trinervia* (identified as *W. trichostephia)* in the virtual database speciesLink (2021). When the original geographic coordinates of these specimens were not available, county coordinates were used. The borrowing of *W. trinervia* specimens deposited in the herbarium of Embrapa Genetic Resources and Biotechnology (CEN) was performed for the elaboration of comparative plates by means of the CorelDRAW Graphics Suite program and Corel® PHOTO–PAINT™ X7 (https://www.coreldraw.com/br/product/coreldraw/). For this, photographs were taken with a câmera coupled to a stereomicroscope (Tecnival).

Taxonomic Treatment

Wedelia trinervia (Vell.) *Remor, Bringel & J.F.B.Pastore,* **comb. nov.** *Eclipta trinervis* Vellozo. Florae Fluminensis (1831 [1827]: 136). **Lectotype designated here**: [Icon ined.] "Syng. Polyg. Superf. ECLIPTA *trinervis* 136" Manuscript Sect., Bibliot. Nac., Rio de Janeiro No. I-17,4,2; mss1198657_140. (Fig. 1).

Trichostemma hispidum Cassini. (1827:410). Protologue "in Brasiliâ". Type: P-JU "not found [nom. ilegitime] replaced by *Trichostephus hispidus* Cassini. (1830: 618). Dict. Sci. Nat., ed. 2. [F. Cuvier] 60: 618 (1830)."

Wedelia pallida Gardner (1848:288). Type: ¯BRAZIL. ‘’Dry Campos near Natividade, Province of Goyaz’’, 1839, *Gardner 3283* (Lectotype, designated here, K000895446!e; isolectypes P00710023!e, P007120024!e, P00710025!e, NY00278020!e, NY 00278021!e, NY 00278022!e).

Wedelia macrodonta var. *parviflora* Hassl., Repert. Spec. Nov. Regni Veg. 14: 177 (1915). Type: PARAGUAY, "In campo in regione cursus superioris fluminis Apa", 1901-1902, *E. Hassler 8163a* (holotype G).

Herbs or shrubs; twigs erect, cylindrical, striated, indument from the bottom glabrous to sparsely hispid, indument froom the high villose to tomentose, internodes 28-82 mm log. *Leaves*

opposite, decussate, green, sessile, blades 12.5-21.5 x 28.5-67.5 mm, oblong-lanceolate to narrow ovate, apex acute, margin dentate or serrate, base cordate or obtuse, adaxial surface strigose, abaxial glabrous to sericeous, glandular-punctate, venation basaly acrodromous (trinervate). *Capitulescence* thyrsoid, dichasial paraclades usually with only one bracteolate peduncle. *Heads* radiate, peduncle 12-29.5 mm long., involucre 8.5-9 x 4.5-7.0 mm, campanulate, bisseriate, phyllaries greenish, apex matte green, foliaceous, outer series 3-3.5 x 6-7.5 mm, elliptic to ovate, inner series 3.5-4 x 6-6.5 mm, ovate to obovate, apex acute to acuminate, glandular-punctate, outer surface strigose to tomentose, inner surface glabrous; receptacle slightly convex, paleaceous, paleae 0.5-6.5 mm long, conduplicate, oblanceolate, apex yellow, acute or mucronate, ciliated, basaly 3-nerved. *Ray flowers* 7-11, ca. 12 mm long, pistillate, corolla liguliform, white, tube 2-2.5 mm long, pilose, limb 11.5-12 mm long, apex 2-3 lobed, abaxial surface sparsely pilose, glandular-punctate, adaxial glabrous. *Disc flowers* 24-26, ca. 4 mm long, monocline, corolla tubulose, yellow, tube 1-1.5 mm long, limb cylindrical, 5- lobed, lobes ca. 0.5 mm long, glandular-punctate externally, anthers black 1.5-2.0 mm long, apical appendage oval, yellow, glandular-punctate, style branch brown, 4.0-4.5 mm log, linear, apex pubescent. *Ray cypsela* 2-2.5 x 3.0-4.0 mm, black, obovate, 3-angled, surface rough, margin thickly keeled, keels not differing in color and surface, carpopodium inconspicuous. *Disc cypsela* 1.5-2.0 x 3.0-5 mm, black, ellipsoid or obovoid, 3-angled, surface verrucose tuberculate, margin with well-defined angles, carpopodium inconspicuous. *Pappus* coroniform, 0.2–0.5 mm long (Fig. 2).

HABITAT AND DISTRIBUTION. *Wedelia trinervia* occurs in the domains of Cerrado and the south portion of the Atlantic Forest, occurring in all states of the Central-west region, also Minas Gerais and São Paulo (from the Southeastern region), Paraná, Rio Grande do Sul, Santa Catarina (from the Southern region), in Brazil, and also reaching southeastern Bolivia and northern Paraguay (Map. 1).

PHENOLOGY. Flowering every month of the year.

SPECIMENS EXAMINED. BRAZIL. Goiás. Aparecida de Goiânia, Chácara Jatobá, divisa com Hidrolândia, 16°5’33”S 49°14’19”W, 05 January 2007, *Pastore, J.F.B*. 1727 (CEN); Caiapônia, BR-158, ca. 44.3 km de Caiapônia, sentido Jataí, entrando 250 m lado esquerdo, 17°18’32”S 51°52’53”W, 10 February 2015, *Mendoza*, *J.M.* 4750 (CEN); Monte Alegre de Goiás, Estrada de Monte Alegre a Teresina, cerca de 15 km de Teresina, 13°18’58”S

46°59’40”W, 24 February 2006, *Bringel* 299 (CEN); **Mato Grosso do Sul**. Rod. MS-178, 20km S de Bodoquena, Bodoquena, Mato Grosso do Sul, 20°32’19”S 56°42’54”W, 08 February 1998, *Ribas, O.S. & Pereira, L.B.S.* 2606 (MBM).

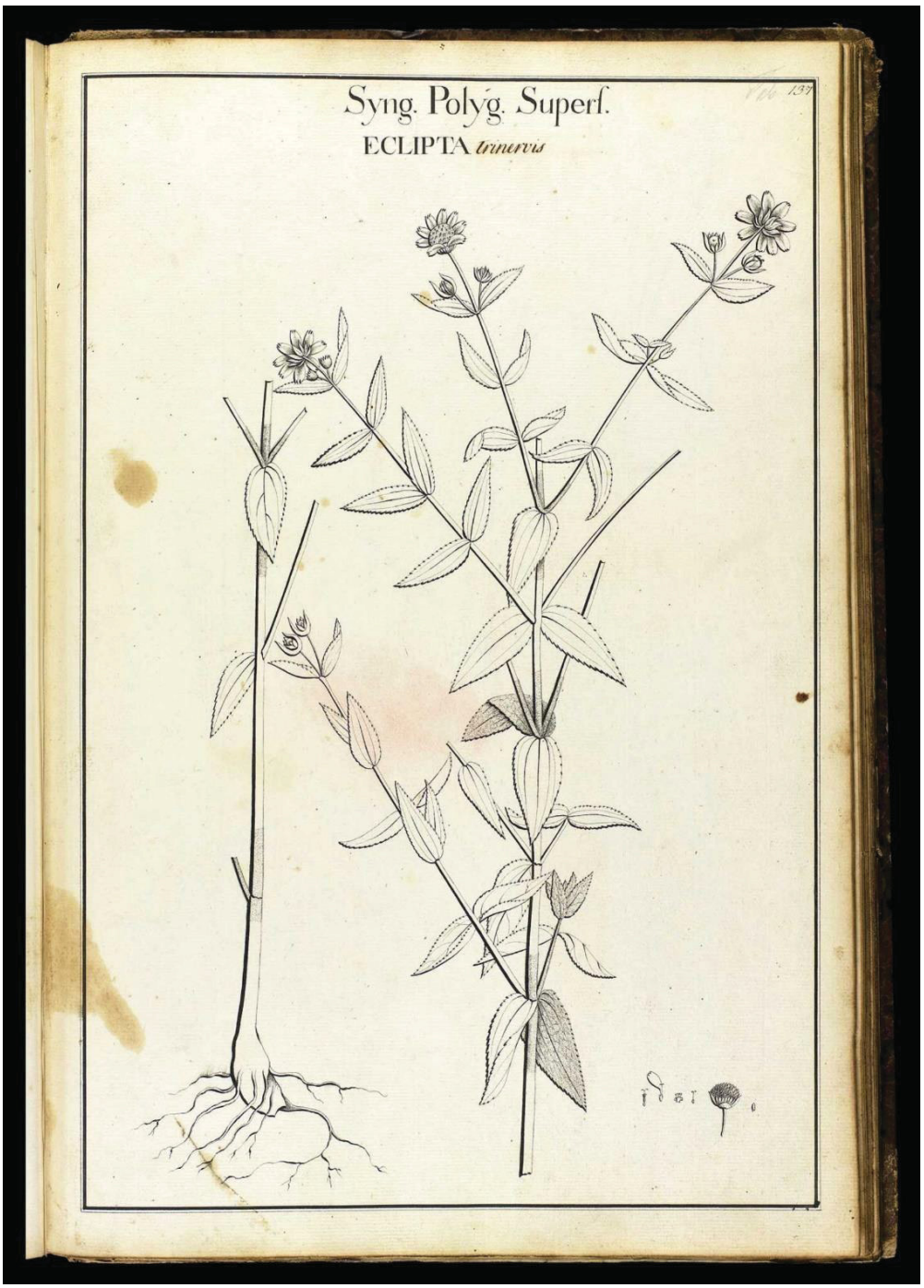


Fig. 1. Lectotype of *Eclipta trinervis* Vell. [= *Wedelia trinervia* (Vell.) Remor, Bringel & J.F.B. Pastore].

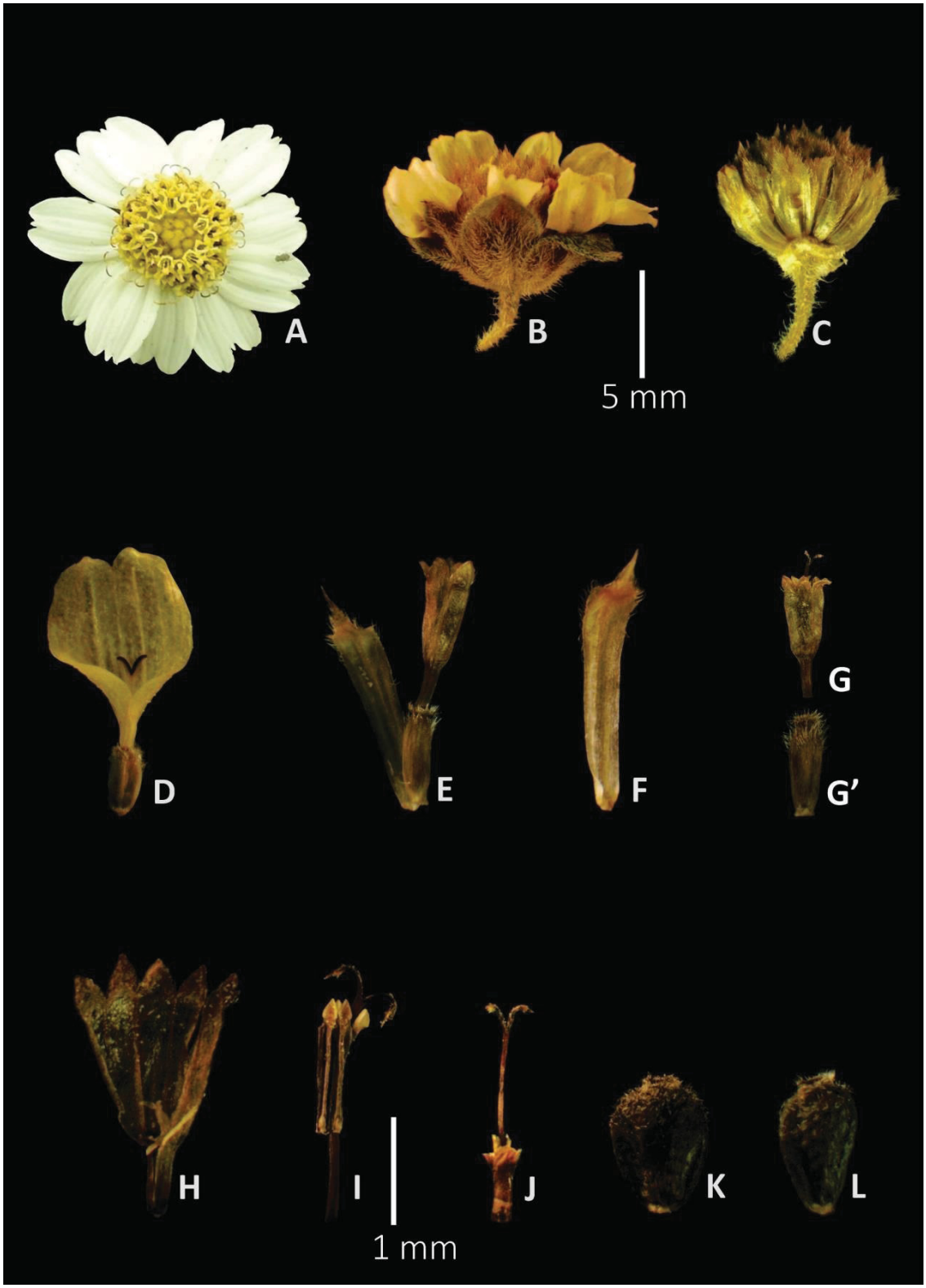


Fig. 2. *Wedelia trinervia*. **A**. head radiate. **B**. involucre of phyllaries. **C**. receptacle slightly convex. **D**. ray flower. **E**. disc flower and palea. **F**. palea. **G** and **G'**. corolla and pappus. **H**. corolla. **I**. pistillate and anthers. **J**. pistillate. K. Cypsela disc. **L**. Cypsela ray. **A-L** from *Pastore, J.F.B*. 1727.

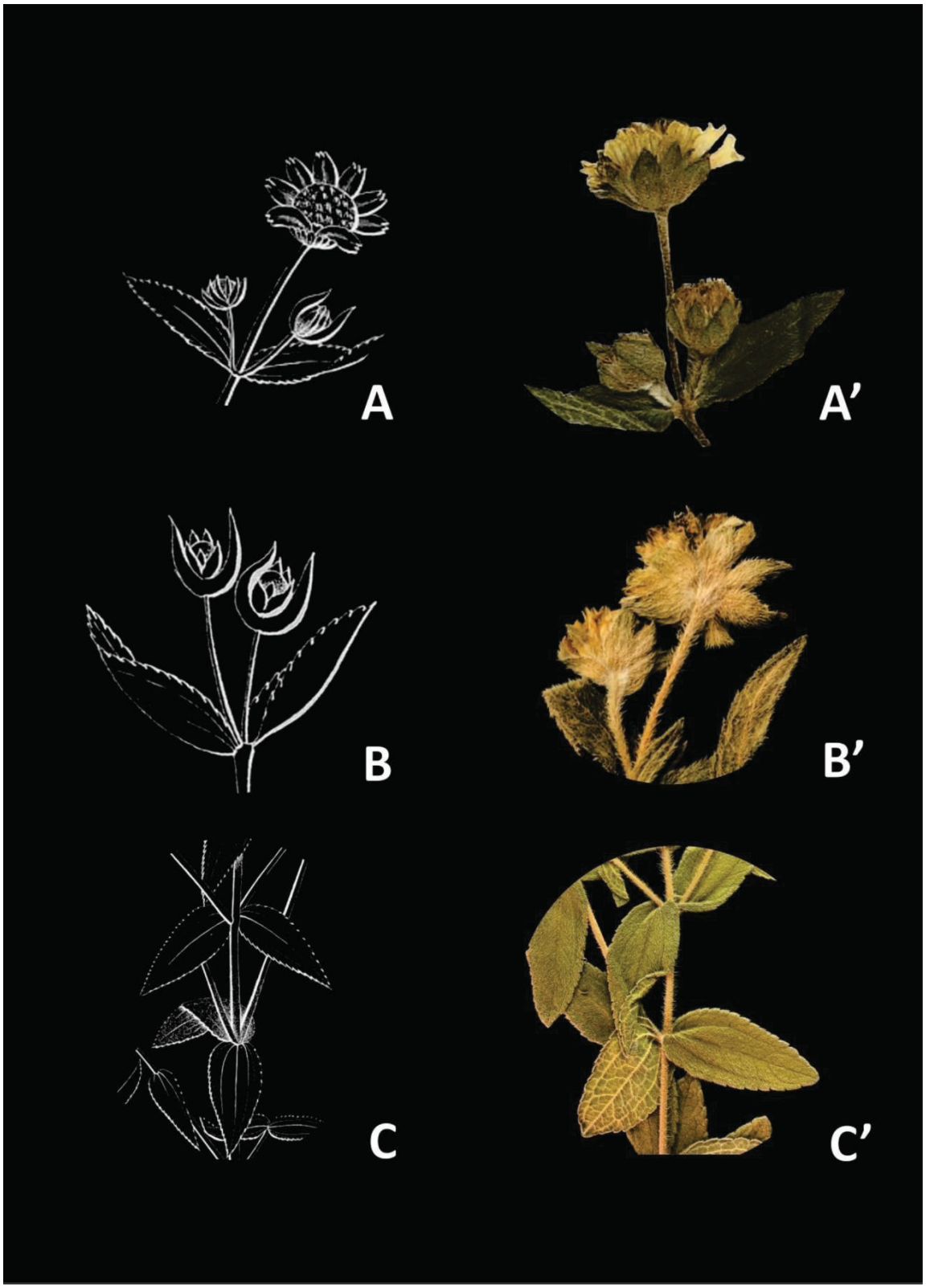


Fig. 3. Comparison of a fresh specimen of *W. trinervia* with fragments of illustration of lectotype of *Wedelia trinervia*. **A**. capitulescence showing a dichasic paraclad, in which only one of the lateral peduncles is bracteolate. **B**. sheath of phyllaries. **C**. narrow, sessile,

lanceolate to oval leaves with basally acrodromous (trinervate) venation. **A-C** de Ribas, O.S. and Pereira, L.B.S. 2606.

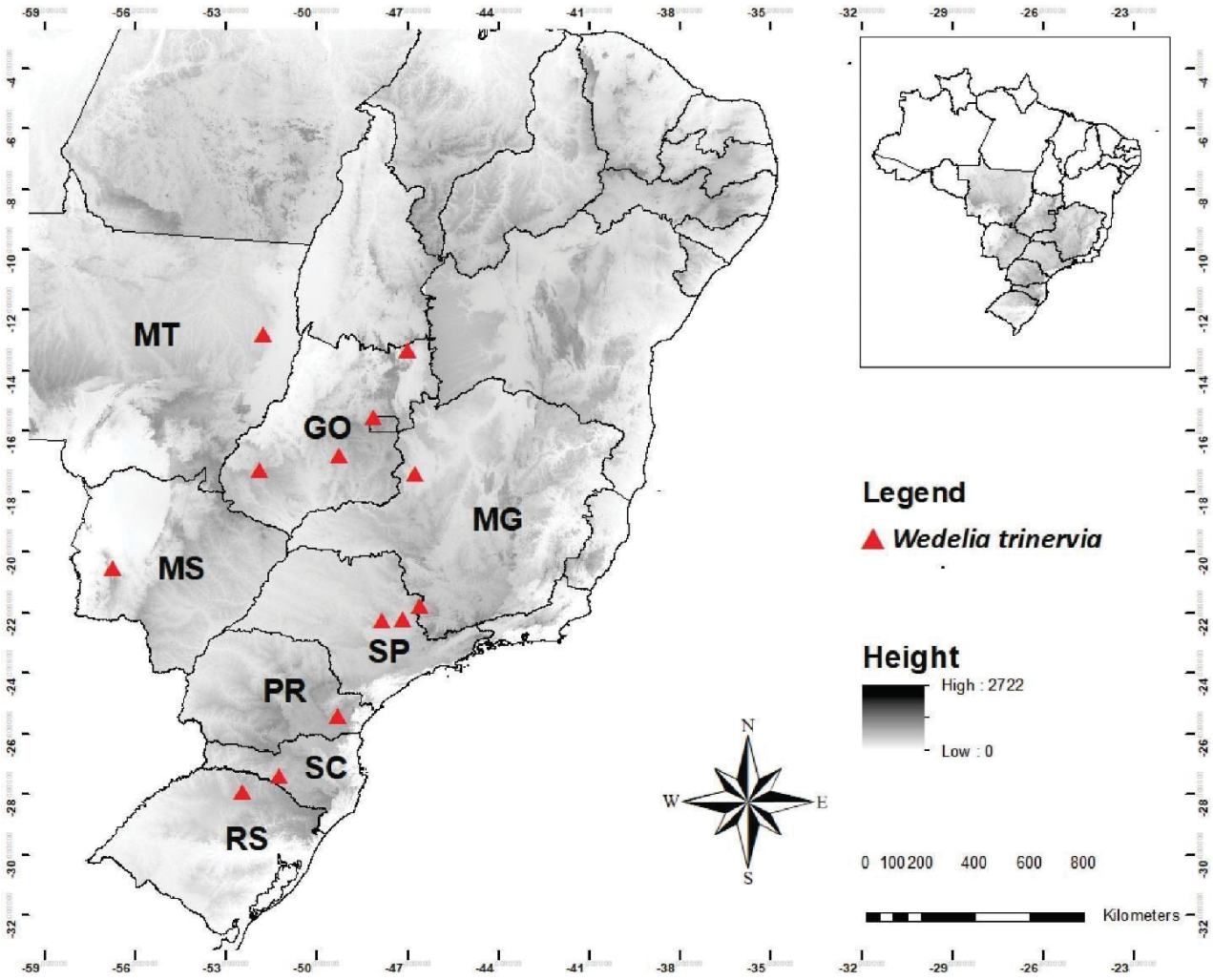
NOTES. Among the Brazilian species, *Wedelia trinervia* is unique in having pistillate ray florets with a white corolla, while disc florets display a yellow corolla. This species is currently treated as *W. trichostephia*, but the older name, *Eclipta trinervis*, validly published in an 1831 plate, has the priority. Although the plate of *Eclipta trinervis* (Vellozo 1831) does not show the color of the flowers, it includes elements that can clearly recognize its identity. These diagnostic characters are the lanceolate to narrow-ovate leaves, sessile, with basally acrodromous (trinervate) venation (Figure 1C), and the capitulescence displaing a dichasial paraclades, in which one or two of the lateral peduncles is bracteolate (Figure 1A). For reason of that, the date of valid publication of *Eclipta trinervis* is accepted as the date of the Flora Fluminensis Icones (Vellozo 1831), instead of the date when the complete descriptions were provided (Vellozo 1881), in compliance with ICN art. 38.7, 38.8 and 38.9 (Turland *et al*. 2018).

Wedelia pallida Gardner clearly represents the same species of *Eclipta trinervis* and is considered here as a later synonym. This species was incorrectly assigned by Baker (1884) as a synonym of *Wedelia macrodonta* DC., which actually is the older name of *Aspilia reflexa* Baker as pointed out by Robinson (1984). In the same way, the material that Baker (1884) examined and illustrated under the name *W. macrodonta* in Flora Brasiliensis actually is of *W. trinervia.*

Wedelia trichostephia Cass. ex DC. is an enigmatic name. Robinson (1884) mentioned that this species seemed to be the same species of *W. pallida,* from then until today the two names have been considered synonyms (Alves & Bringel 2022), although the type of *W. trichostephia* is not known. Cassini (1827) described the monotypic genus *Trichostemma* Cass., with *Trichostemma hispida* Cass., based on a material brought to the Jussieu's herbarium from Lisbon by Geoffroy (Saint-Hilaire). One year later Cassini (1828) replaced the name of this genus by *Trichostephium* Cass., due the previous name can be considered a homonym of *Trichostema* Gronov. (Lamiaceae) which has priority, but after that, he also changed again the spelling of the name by *Trichostephus* Cass. (Cassini 1829, 1830). De Candolle (1836), considered *Trichostephus* a synonym of *Wedelia* Jacq., and he treated the Cassini's species under the name of *Wedelia trichostephia* DC. since the specific epithet was already occupied by *Wedelia hispida* Kunth. No more information about the material examined was mentioned by De Candolle (1836), who only cited its Brazilian origin and provided a shorter description.

We could not find the type of *Wedelia trichostephia* at the P-JU herbarium or the general collection in P.

Although the type of *W. trichostephia* is not known, there are some conflicting features between its description (Cassini 1827; De Candolle 1836) and the species here treated as *W. trinervia.* According to original descriptions (Cassini 1827; De Candolle 1836), *W. trichostephia* has leaves shortly petiolate, solitary heads, and florets with the yellow corolla, while *W. trinervia* has sessile leaves, thyrsoid capitulescence, and ray florets with white corolla. Only a few specimens of *W. trinervia* from southwestern Goiás (Jataí and Caiaponia vicinities) seem to have all flowers yellow. Because of that, we prefer to consider *W. trichostephia* as a species of doubtful identity, and we don't include it among the synonyms of *W. trinervia,* anyway *Eclipta trinervis* is an older name than *W. trichostephia.*



Map 1. Map of the geographical distribution of *Wedelia trinervia.*

Acknowledgments

This study was financed by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior-Brasil (CAPES) via a Master's degree scholarship grant (603138/2021-00) to the first author. JFBP gratefully acknowledges the financial support of the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) (grant 302972/2020-0). Michelle Mota for her availability to check out the collection of the herbarium of P, and also to Leonardo Kellet Coelho for helping to produce the occurrence map.

Declarations

Conflicts of interests/competing interests. The authors declare no conflicts of interest/competing interests.

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CAPÍTULO IV

Solving another old and small problem: a new combination in *Ichthyothere* (Asteraceae, Millerieae) and the recognition of a name described by Vellozo

Resolvendo outro velho e pequeno problema: uma nova combinação em *Ichthyothere* (Asteraceae, Millerieae) e o reconhecimento de um nome descrito por Vellozo

*Artigo já publicado no periódico *Brittonia* ISSN (1938-436X) e formatado de acordo com as normas da revista.

DOI: https://doi.org/10.1007/s12228-022-09731-x

Solving another old and small problem: a new combination in *Ichthyothere* (Asteraceae, Millerieae) and the recognition of a name described by Vellozo

DANIELLE REMOR[1], JOÃO BERNARDO DE A. BRINGELJR[2], VINICIUS R. BUENO[3], JIMI N. NAKAJIMA[4], RITA DE CÁSSIA A. PEREIRA[5], AND JOSÉ FLORIANO B. PASTORE[1,6]

[1] Programa de Pós-Graduação em Botânica, Universidade Federal do Paraná, Curitiba, Paraná 81531-970, Brazil; e-mail: danielle_remor@hotmail.com; e-mail: jfpastore@hotmail.com
[2]Universidade de Brasília, Instituto de Ciências Biológicas – ICB, Campus Universitário Darcy Ribeiro, Asa Norte, Brasília, Distrito Federal 70910900, Brazil; e-mail: jbbringel@gmail.com
[3] Programa de Pós-Graduação em Botânica, Universidade Federal do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil; e-mail: vrbueno@outlook.com
[4] Instituto de Biologia, Universidade Federal de Uberlândia, Uberlândia, Minas Gerais, Brazil; e-mail: nakajima@ufu.br
[5] InstitutoAgronômico de Pernambuco, Av. General SanMartin, 1371 Bongi, Recife, Pernambuco, Brazil; email: ritapereiraipa@gmail.com
[6]Universidade Federal de Santa Catarina, Campus Curitibanos, Caixa Postal 101, Rod. Ulysses Gaboardi, km 3, Curitibanos, Santa Catarina 89.520-000, Brazil

Abstract. We provide here a new combination, ***Ichthyothere quinquenervia***, based on Vellozo's name *Terrentia quinquenervis* (Asteraceae, Millerieae). This species was formerly known under the name *Ichthyothere integrifolia*, and can be recognized by being an herbaceous plant with a terminal cymose inflorescence usually with three heads, and an involucre with three or four inner phyllaries. We also designate a lectotype for *Terrentia quinquenervia* and for some of its synonyms.

Keywords: Compositae, Florae Fluminensis, Heliantheae, nomenclature, taxonomy.

Resumo: Apresentamos aqui uma nova combinação, ***Ichthyothere quinquenervia***, baseada no nome de Vellozo *Terrentia quinquenervis* (Asteraceae, Millerieae). Essa espécie era conhecida anteriormente como Ichthyothere integrifolia e pode ser reconhecida por ser uma planta herbácea, com inflorescência terminal, cimosa, geralmente com três capítulos e invólucro com três a quatro brácteas involucrais internas. Designamos também um lectótipo para *Terrentia quinquenervia*, e para alguns de seus sinônimos.

Florae Fluminensis (hereafter, FF) is the first post-Linnean Brazilian flora (Vellozo 1881). It incorporates the results of dozens of expeditions led by Friar José Mariano da Conceição Vellozo (1742–1811) and collaborators. The expeditions were made, at the behest of viceroy D. Luís de Vasconcellos e Souza (Borgmeier, 1961) to the captaincies of Rio de Janeiro and São Paulo between 1782 and 1790 on the route between Paraty- Cunha by the Estrada Real (Lima, 1995; Pastore et al., 2021). Although the title refers in geographical terms to Rio de Janeiro state, Pastore et al. (2021) concluded that a significant proportion of their described names, in fact, had originated in the municipality of Cunha (São Paulo state).

Despite being a reference work for the taxonomic treatment of Brazilian plants, the location of the original specimens collected on Vellozo's expeditions remains unknown, although, Vellozo's manuscript and original FF illustrations are available in the Manuscript Section of the National Library of Rio de Janeiro (Pastore, 2013), and copies of some of the original plates are also preserved in the National Archives of the Torre do Tombo, Lisbon, Portugal. These plates have been treated as original material in a number of papers dealing with the Vellozo's names (e.g., Carauta, 1973). FF has recently been revisited by Bediaga & Lima (2015) for historical and contextual aspects, and by Pastore et al. (2021) for taxonomic aspects.

Asteraceae is one of the most important angiosperm families in this flora. It fills the entirety of volume 8 and part of volume 10 of the Icones (Pruski, 2005). Of the 156 names of Asteraceae mentioned in FF, probably 70 originated from the description of species collected in the municipality of Cunha (Pastore et al., 2021).

Ichthyothere Mart. (1830) is placed within the Heliantheae alliance — tribe Millerieae, Asteraceae (Susanna et al., 2020). It is a Neotropical genus of 30 species (Pereira, 2001; Frisby & Hind, 2013, 2014), occurring from Central America to South America, with the main center of diversity in the "Cerrado", a savanna phytogeographic domain of central South America (Pereira, 2001).

In her unpublished Ph.D. thesis, Pereira (2001) proposed a new combination in *Ichthyothere* for *Terrentia quinquenervis* Vell. (see notes), but the name was not considered to be effectively published according to Art. 29.1 and 30.9 of ICN (Turland et al., 2018). Recent works (Frisby & Hind 2013; Bueno 2018), including the Brazilian Flora Checklist (Gandara 2022) treated this species as *Ichthyothere integrifolia* (DC.) Baker, which is herein accepted as a later synonym. Therefore, a new combination based on the earliest available basionym is here proposed, along with a typification of all names involved.

Material and methods

Pereira's taxonomic revision (Pereira, 2001) was used for descriptive terminology, and the description was adapted from previous work (Bringel & Cavalcanti, 2009; Bueno, 2018). A map was prepared with Quantum GIS v. 3.22.1 (QGIS Development Team, 2021), using the SpeciesLink database (2022) of all available specimens and their geographic coordinates, or field records from herbaria labels. Photos were taken using a camera attached to a stereomicroscope (Tecnival) and photographic plates were generated using Corel® PHOTO–PAINT™ X7 (2018).

Taxonomic treatment

Ichthyothere quinquenervia (Vell.) R.C.Pereira & Semir ex Remor & R.C.Pereira, **comb. nov.** *Terrentia* (as *Torrentia*) *quinquenervis* Vell., Florae Fluminensis Icones. tab. 8. 149. (1827) [29 Oct. 1831].—Type: [Icon ined.] "Syng. Polyg. Segreg. TERRENTIA quinquenervis 149" (**lectotype, here designated**: Manuscript Sect., Bibliot. Nac., Rio de Janeiro No. I-17, 04, 002; mss1198657_124 [with a copy in the Sect. of Torre do Tombo, Lisbon, PT-TT-MSLIV- 2778_m0305.]) (Fig. 1).

Latreillea integrifolia DC. Prodr. 5: 504. 1836. *Ichthyothere integrifolia* (DC.) Baker, in Mart. Fl. Bras. 6 (3): 157. 1884.—Type: Brazil, São Paulo, "Brasiliæ prov. Sancti-Pauli ex h. Mus. imp. Bras. n. 447! (v.s. in h. Mus. Reg. Par.)" anonymous [probably *F. Sellow*] (**lectotype, here designated**: P barcode P00755918 [image!]; isolectotype GDC barcode G00468998 [fragment, image!]).

Latreillea serrata DC. Prodr. 5: 504. 1836—Type: Brazil, São Paulo, "in campis editis prov. St.-Pauli", 1835, P.W. *Lund 859* (holotype: G-DC barcode G00468997 [image!]).

Ichthyothere agrestis Baker in Mart. Fl. Bras. 6(3): 157. 1884. Protologue: "Habitat in campis sterilibus Brasiliae orientalis, in prov. Minas Geräes ad Congonhas do Campo: Stephan!; ad Caldas: Regnell III. n. 763 ex parte!, Sello n. 1020!".—Type: Brazil, Minas Gerais: Congonhas do Campo, 1844, M. D. Stephan s.n. (**lectotype, here designated**: BR barcode BR0000029140886 [image!]); Other syntypes: "Prov. Minas Geraes: Caldas, A.F. *Regnell III 763* (BR barcode BR0000008109576 [image!], K barcode K000486979 [image!], P

barcode P02447951 [image!], US barcode 00604138 [image!])",“in prov. S. Paulo, *F. Sellow 1020* [1024] (K barcode K000486981 [image!])".

Ichthyothere ovata S.Moore. Trans. Linn. Soc., Bot., ser. 2, 4(3): 387. 1895.—Type: Brazil, Mato Grosso, “Hab. Crescit in cancumine montium Serra da Chapada, ubi mens. Aug. florescit”: 1891, *S. L. M. Moore 192* (**lectotype, here designated**: BM!; isolectotypes NY barcode NY00345485 [image!], B [probably destroyed, image at F!]). Iconography: (Vellozo 1831, plate 149; Pereira 2001, page 175).

Perenial herbs, 0.2–0.4 m high, xylopodium underground systemwith many superficial buds, sometimes soboliferous, many aerial twigs, senescent after blooming, erect, cylindrical, brownish, hirsute, with multicellular, eglandular tichomes, internodes 3.5–6.5 cm long. Leaves opposite and decussate, sessile, chartaceous, concolorous, lamina 1.5–5.5 × 0.4–2.9 cm, ovate, lanceolate or elliptic, base rounded or cuneate, apex acuminate, margins denticulate, both surface glabrescent or glabrous, glandular-punctate, ciliate, venation basally acrodromous. Capitula heterogamous, disciform, arranged in glomeriform or umbelliform capitulescences of 3–7 capitula; peduncles 0.2–0.4 cm long, hirsute, ebracteolate;

FIG. 1. Lectotype of *Terrentia quinquenervis*

involucres 4×9 mm, globose; outer phyllaries 3, ca. 3mm long, deltate, apex acute, inner phyllaries ovate, ca. 5.5 mm long, apex rounded, pilose; receptacle conical, paleae ca. 3–4 mm long, obtrullate, pale white to pinkish, concave, apex obtuse, glabrous, glandular-punctate. Marginal florets 3–4, pistilate, corolla 1.5–4 mm long, narrow-tubular, white, hirsute; style branches 1–1.2 mm long, white, linear, apex acute. Disc florets 8–12, staminate with sterile gynoecium, corolla tubulose, 4–6.5 mm long mm long, white to pinkish, glabrous, glandular-punctate; anthers 1–1.3 mm long., black, apical appendages ovate; style undivided, white, apex papillose. Cypsela black, 4–5.6 mm long, obovate, glabrous; pappus absent. (Fig. 2).

Habitat, distribution and phenology.—Mainly in the "Cerrado" phytogeographic domain (Pereira, 2001; Gandara, 2022), in the cerrado sensu stricto (Ribeiro &Walter, 2008), shrubby grassland ("campo sujo", Ribeiro & Walter, 2008), and rocky grassland ("campo rupestre", Conceição et al., 2016). In Brazil, this species occurs in Goiás, Mato Grosso, Minas Gerais, Paraná, São Paulo, Tocantins, and Distrito Federal (Pereira, 2001; Gandara, 2022) (Fig. 3). Flowering and fruiting of *Ichthyothere quinquenervia* occurs from August to March. Flowering is also reported just after field burning.

***Additional specimens examined*.—BRAZIL. Distrito Federal:** Brasília, Asa Norte, Parque Burle Marx - Parque Ecológico Norte; 15°46′ 04"S, 47°55′47"W, 03 Sep 2009, J.B.A. Bringel Jr. 244 (CEN, HUFU, UB). **Goiás:** Flores de Goiás, Serra Geral de Goiás (Serra dos Gravias), entre a BR-020 e Formosa/MG, 10 Oct. 1997, M.A. da Silva et al. 3394 (IBGE, US). **Minas Gerais**: Brumadinho, Serra da Calçada, Retiro das Pedras; 20°.093056"S, 43°.983611"W, 12 Sep 2001, P.L. Viana 175 (BHCB); Joaquim Felício, Parque Estadual da Serra do Cabral; 17°757,499"S, 44°.172199"W, 02 Nov 2009, E.K.O. Hattori; J.A.N. Batista 1024 (BHCB; HUFU); Moeda, Serra da Moeda, Próximo a Estrada que liga Moeda a BR-040; 20°19′59"S, 44°03′10"W, 18 Oct 1997, A. Salino 3592 (BHCB, US).

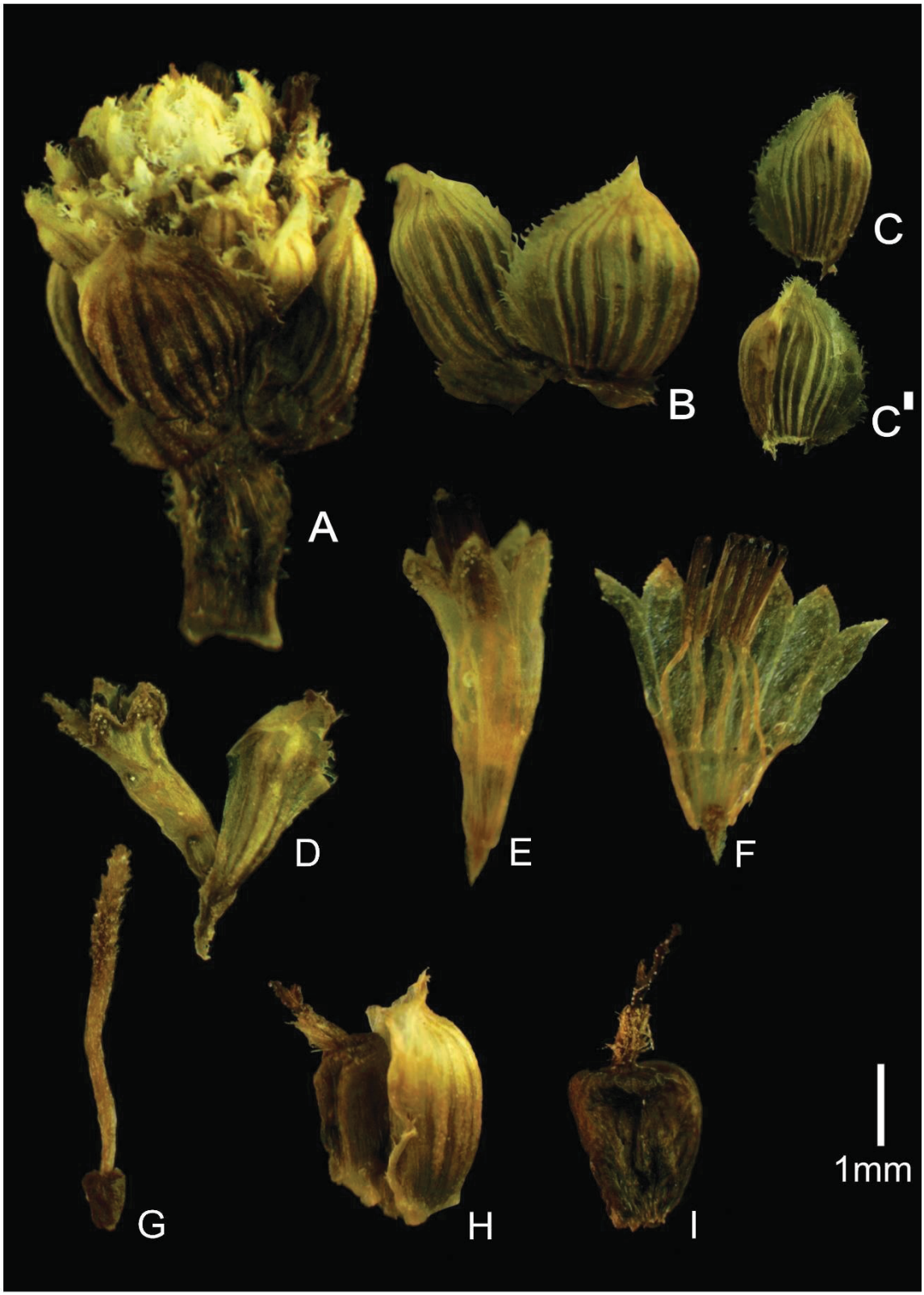

FIG. 2. Ichthyothere quinquenervia. **A.** Glomerule. **B.** Inner phyllaries; **C**. and **C′.** Inner phyllaries. **D.** Ray floret with inner phyllary. **E.** Disc floret corolla; **F.** Exposed disc floret

with black anthers. **G.** Style; **H.** Cypsela and inner phyllary. **I.** Cypsela. (*A. Salino. 3592*, BHCB). Photos: D. Remor

Notes.—Terrentia Vell. (1831) was named after Joannis Terrentii Lyncei. Vellozo (1881: 348) briefly described *Terrentia* by its fewphyllaried involucre, convex receptacle, striate scales (= paleae), capitula possessing hermaphrodite florets, 5-lobed corollas, bifid styles, and ovate cypsela with an involute bract but no pappus (Vellozo, 1881).

Vellozo (1881) mentioned in his description that the receptacle was bare (receptaculum nudum), he also stated that it was grooved, probably referring to the striate paleae. Vellozo (1881) included only *Terrentia quinquenervis* in *Terrentia*, and thus this name fits under the generic-specific description and is validly published according to Art. 38.5 and 38.6 of the ICN (Turland et al., 2018).

In the first publication (Vellozo, 1831), the original plate of *Terrentia quinquenervis* Vell. had a typographical mistake, as '*Torrentia*', which Index Kewensis (Jackson, 1893: 1090) accepted as a synonym of Ichthyothere Mart. This typographical error also currently appears in the IPNI (2022) database. The original plates from the Biblioteca Nacional and its copy in Torre do Tombo and the description later published by Vellozo (1881) bear the correct orthography of the generic name. The lectotype chosen here is the original plate, n° 149, housed in the Biblioteca Nacional (Rio de Janeiro).

In 1831, the illustrations of Vellozo's *Florae Fluminensis* were published (Carauta, 1973). Although finished in 1790, FF was only partially published in 1829, and the complete text with descriptions was issued in 1881 (Carauta, 1969, 1973). The events that led to the posthumous publication of FF are not known (Stellfeld, 1952), but during the eight-year period of 1782– 1790, Vellozo described 1639 plants in 396 genera, amounting to 11 volumes (Vellozo, 1881).

The delay in publication, however, caused a loss of priority for most of the names described, since most of them were published after the studies of naturalists who passed through Brazil, although they were not unaware of FF (Stellfeld, 1952). *Terrentia* (Vellozo, 1831) is an example (Pereira, 2007), as it lost its priority over *Ichthyothere* (Martius, 1830), which was published one year earlier. *Ichthyothere* was established by Martius (1830) through the description of *I. cunabi* Mart., collected in savanna patches from the Province of Rio Negro, in the upper Amazon region. *Ichthyothere* refers to the author's observation that the indigenous communities used the plant for fishing by stunning (Pereira, 2001).

Pereira (2001) circumscribed *Ichthyothere quinquenervia* as a species with wide morphological variation, but she pointed out that the terminal cymose inflorescence ending in three heads is a diagnostic trait that can be recognized in Vellozo's (1831) plate. Another diagnostic characteristic shown in the plate is the capitulum with three or four phyllaries in the inner series of the involucre. All other herbaceous species of *Ichthyothere* from Brazilian "Cerrado" [viz., *I. hirsuta* Gardner, *I. latifolia* (Benth.) Gardner, *Ichnanthus mollis* Baker, *I. rufa* Gardner and *I. terminalis* (Spreng.) Baker] display only two phyllaries in the inner series of the involucre. These features, along with the small, erect, and herbaceous habit and the small xylopodium shown in *T. quinquenervis* plate, confirm the identity of the plant. Although Pereira's thesis (2001) designated lectotypes for both *Latreillea integrifolia* and *Ichthyothere agrestis (*synonyms of *I. quinquenervia*), it did not constitute an effective publication and thus cannot be considered validly published according to Art. 7.10 and 7.11of the ICN (Turland et al., 2018). Therefore, both names, along with *Ichthyothere ovata*, are here lectotypified.

Finally, there are two specimens collected by Stephan Moore, deposited in the herbarium in Meise Botanic Garden (BR) under the name *Ichthyothere agrestis*. However, only one has Baker's handwritten label [BR0000029140886], whereas the other specimen, collected in a different year, cannot be considered a syntype. Furthermore, it seems to be *I. terminalis* or *I. rufa*, rather than *I. quinquenervia*.

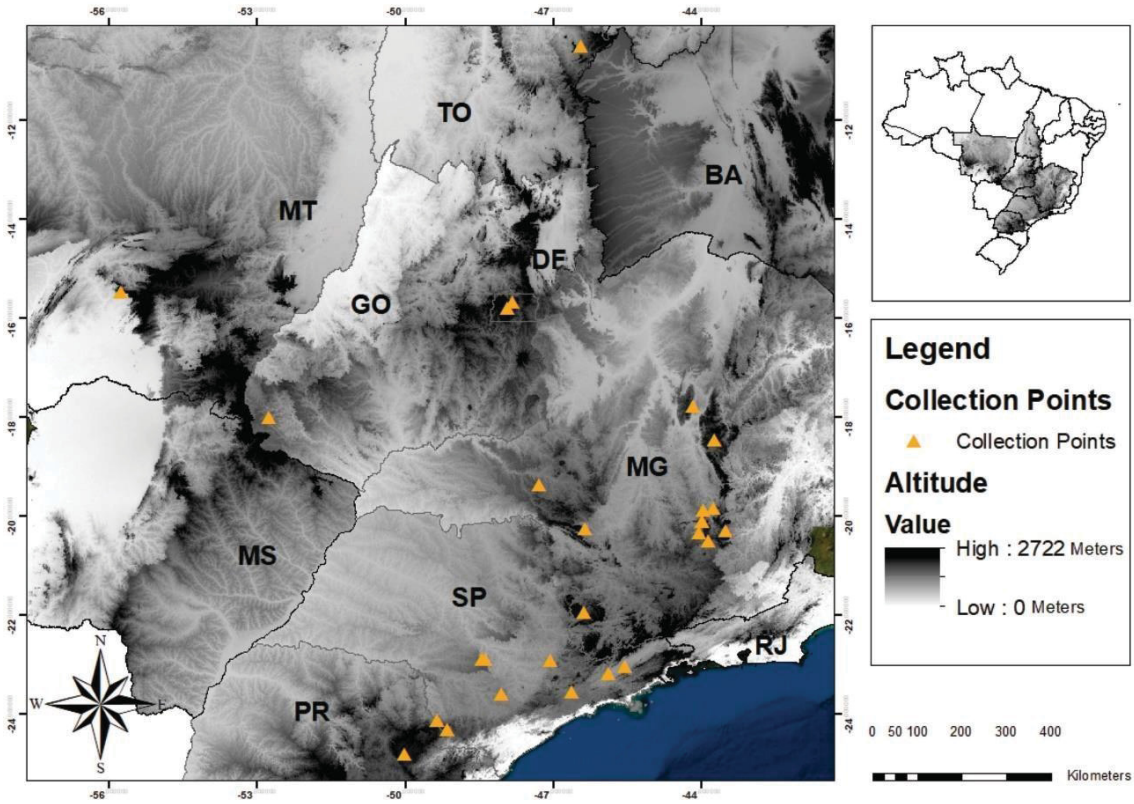

FIG. 3. Geographical distribution of *Ichthyothere quinquenervia*

Acknowledgments

This study is financed by Coordenação de Aperfeiçoamento de Pessoal de Nível Superior-Brasil (CAPES) by a master's degree (603138/2021-00) scholarship granted to the first author. JFBP gratefully acknowledges the financial support of Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) (grant 302972/2020-0). The authors thank Dr. Jefferson Prado for nomenclatural assistance for the *Terrentia* name, and also Leonardo Kellet Coelho for helping to produce the occurrence map.VRB thanks the Curator at HUFU, Dra. Rosana Romero, for the support during laboratory activities.

Declarations

Conflict of Interest

As far as we are aware, we declare that this paper represents no conflicts of interest or competing interests to anybody or any institution.

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7 CONSIDERAÇÕES FINAIS

Ao longo da análise criteriosa foram identificados 17 nomes para Heliantheae *sensu lato* (Asteraceae) na *Florae Fluminensis*. Foram resgatados a prioridade de quatro nomes de Vellozo, um para o gênero *Ichthyothere* (*I. quinquenervia*) e três para *Wedelia* (*W. herbacea*, *W. monantha* e *W. trinervia*), oito nomes foram sinonimizados, dois nomes não tiveram suas identidades confirmadas a nível específico e um (*Ambrosia maritima*) é uma citação de nome já descrito por Linnaeus (1753).

De todos os nomes que pertencem a Heliantheae *s.l.* apenas as novas combinações já elaboradas por Puski (2005) (*Calea triantha* e *C. mediterranea*) são abordadas na Flora e Funga do Brasil (2023). Até o momento, nenhum dos oito nomes de Vellozo designados aqui como sinônimos (*Bellis campestris*, *B. pedunculata*, *B. scandens*, *Buphthalmum equinum*, *B. scandens*, *B. arvense*, *Cotula piper* e *Eclipta quinquenervis*) constam na lista dos nomes da Flora e Funga do Brasil (FLORA E FUNGA DO BRASIL, 2023).

O principal recurso para identificação das espécies da *Florae Fluminensis* são as ilustrações (VELLOZO, 1831), podendo ser auxiliadas pelas diagnoses latinas (VELLOZO, 1829; 1881). As informações relatadas nas descrições muitas vezes corroboram com informações perceptíveis nas ilustrações. No entanto, nem sempre isso ocorre, como é o caso da descrição de *Wedelia herbacea* (=*Helianthus herbaceus* Vell.) que aborda características que não são perceptíveis na ilustração como o caule piloso e as folhas sésseis e pilosas.

Isso reflete para discussão de que existe uma heterogeneidade nas pranchas da *Florae Fluminensis*, já que as pranchas não trazem informações sobre o ilustrador. Diante da informação que a expedição de Vellozo contava com mais de 40 pessoas, pode-se concluir que a diversidade de mãos que compuseram as ilustrações da *Florae Fluminensis* concede a ela, de maneira geral, uma heterogeneidade quanto à qualidade das pranchas. Para isso, as expedições de coleta percorrendo a Estrada Real (Cunha-Paraty) são indispensáveis, sendo uma prática que pode auxiliar em casos em que a diagnose não coincide com a ilustração.

Há casos ainda em que alguns elementos da ilustração não são compatíveis com as características da espécie a qual o nome se aplica, como ocorre na ilustração de *Buphthalmum equinum* e *B. scandens* (=*Tilesia baccata* (L.) Pruski) que tiveram características não reportadas de forma eficiente, como as flores do raio que são ilustradas de forma pistilada.

O pápus, assim como a cipsela, são importantes caracteres taxonômicos para as espécies da família Asteraceae e especialmente em Heliantheae *s.l.*. No entanto, o pápus quase sempre é reportado como "*papus nullus*" (pápus ausente) nas descrições latinas de Vellozo (1829; 1881) e a cipsela apesar de ser descrita na maior parte das vezes como "*semina turbinata*, *semen oblongum*, *semen pilosum*" não foi ilustrada para nenhuma das espécies de Heliantheae *s.l.* da *Florae Fluminensis*.

Na ilustração de *Verbesina triradiata* Vell. o emaranhado de folhas lanceoladas que são ilustradas aparentemente partindo do mesmo ponto confundem o reconhecimento da espécie retratada. Características principais do gênero *Verbesina* L. como as cipselas aladas e o pápus de aristas finas não são desenhadas na ilustração e nem mencionadas na descrição de *V. triradiata* por Vellozo.

A ilustração de *Helianthus brasilicus* Vell. também não apresenta características suficientes para identificação da espécie ilustrada, porém a partir de informações como as folhas simples, flores do raio neutras e pápus com duas aristas, é possível dizer que a ilustração trata-se de uma espécie do gênero *Aldama* La Llave & Lex.

A reinterpretação do intinerário de Pastore *et al*. (2021) possibilitou a coleta de alguns exemplares de táxons descritos por Vellozo (1829; 1881). Para Asteraceae, 156 nomes são mencionados na *Florae Fluminensis*, desses segundo Pastore *et al*. (2021) 70 nomes apresentam ocorrência no município de Cunha (SP), dos quais 13 nomes se enquadram em Heliantheae *s.l.* sendo possível a coleta de sete espécies em Cunha durante as expedições de campo como *Wedelia foliacea* (*=Buphthalmum arvense*), *Calea pinnatifida* (*=Bellis scandens*), *Calea triantha* (*=Aster trianthus*), *Dimerostemma brasilianum* (*=Eclipta quinquenervis*), *Tilesia baccata* (*=Buphthalmum equinum* e *B. scandens), Wedelia herbacea* (*=Helianthus herbaceus*) e *Wedelia monantha* (*=Aster monanthus*), confirmando a ocorrência dessas espécies para o município, ligadas ao habitat "*mediterraneis*" interpretado como referência ao município de Cunha (PASTORE *et al*., 2021).

Contudo, após análise das ilustrações neste estudo, a quantidade de nomes de táxons que se enquadram em Heliantheae *s.l.* com provável ocorrência no município de Cunha foi ampliada, incluindo-se os nomes *Buphthalmum equinum* Vell*., B. scandens* Vell*., Cotula piper* Vell. e *Verbesina triradiata* Vell. A descrição de todos esses nomes menciona o habitat "*mediterraneis",* mas também os habitats "*maritimis*" e "*transalpinis*". Segundo a reinterpretação de Pastore *et al*. (2021) a região de divisa do município de Cunha (SP) é referida por Vellozo como "*transalpinis*", logo a menção dos habitats "*mediterraneis*'' e "*transalpinis"* na descrição desses nomes significa que as espécies podem ser encontradas no município de Cunha e na divisa estadual próximo a Paraty (RJ).

Das espécies coletadas de Heliantheae *s.l*., *Dimerostemma brasilianum* apresenta distribuição até então exclusivamente em áreas de vegetação de cerrado. O conhecimento sobre a distribuição geográfica dessa espécie também auxiliou na sua comprovação e na descrição do habitat mencionado por Vellozo reinterpretado por Pastore *et al*. (2021), como também enfatiza a ocorrência de vegetações de cerrado no município de Cunha.

Embora grandes nomes da botânica já tivessem conhecimento da obra de Vellozo, seu trabalho foi menosprezado, soma-se á isso os percalços percorridos para a publicação que resultaram na perda de prioridade da maioria dos nomes designados por Vellozo. Nota-se que a obra completa, com as descrições das *Flora Fluminensis* só foi efetivamente publicada três anos antes do tratamento taxonômico realizado para Heliantheae na *Flora Brasiliensis* (BAKER, 1884), que por mais de um século foi considerada a obra de maior relevância para a flora do Brasil. Os resultados deste trabalho, contribuem para evidência da importância científica da obra e de seu autor, que por muito tempo estiveram negligenciados.

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