



## Type designation for *Cyclachaena xanthiifolia* (*Euphrosyne xanthiifolia*) (Heliantheae, Asteraceae)

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### Abstract

*Cyclachaena xanthiifolia* (*Iva xanthiifolia*) is a North American member of the Heliantheae–Ambrosiinae (Asteraceae), which is currently accepted in the genus *Euphrosyne*. It is a nitrophilous plant, usually growing in disturbed grounds related to human activities, and this fact has probably favoured its introduction and naturalization in Eurasia and New Zealand. As part of the taxonomical work on the Iberian Compositae, typification of the name *Cyclachaena xanthiifolia* is effected here by selection of a lectotype and an epitype from the material housed at FR (Frankfurt am Main, Germany). The protologue and original material are discussed, and pictures of the relevant material are presented. Some historical aspects are also discussed to justify typification.

**Key words:** Ambrosiinae, Compositae, *Cyclachaena*, epitype, *Euphrosyne*, *Iva*, lectotype, nomenclature, typification

### Introduction

The tribe Heliantheae (sensu Panero 2007) includes about 113 genera and ca. 1500 species mostly native to the New World, in Central and South America. Many members of this group are nitrophilous plants, usually growing in disturbed grounds related to human activities. Consequently, many taxa have been introduced around the world, and they often have become invasive and noxious weeds (cfr. Holm *et al.* 1979, Kadereit & Jeffrey 2007, Mabberley 2008, Boy & Witt 2013, EPPO 2014, among others).

*Cyclachaena xanthiifolia* Fresenius (1836: 1, 4) is probably native to the prairies of central USA, though is currently widespread in North America from southern Canada to northern Mexico (Jackson 1960, Strother 2006). This species is sometimes accepted as *Euphrosyne xanthiifolia* (Fresen.) Gray (1853: 85) in Heliantheae subtribe Ambrosiinae (cfr. Panero 2007: 445), a solution that we favour here.

In the 19<sup>th</sup> century, this species was introduced accidentally and has become invasive in central and eastern Europe (cfr. Smoljaninova 1959, Follak *et al.* 2013). It has also been reported as a casual xenophyte in western Europe, eastern Asia and New Zealand (Bonnot 1948, Smoljaninova 1959, Aedo *et al.* 1984, Heenan *et al.* 2004, Howell & Sawyer 2006). Being pollinated by wind as many other Ambrosiinae, pollen of this species causes allergic diseases (Gergen *et al.* 1987, Weber 2002), and is responsible for significant problems for human health. This plant is also reported as a potential risk for agricultural crops and arable land in central Europe (Hunyadi *et al.* 1998, Hodişan 2009).

As part of the revision of some genera of Asteraceae for the ‘Flora iberica’ project, the name *Cyclachaena xanthiifolia* (*Euphrosyne xanthiifolia*) is typified here. Original material relevant for typification was located among Fresenius’s collections at Frankfurt am Main (FR), and a lectotype is designated. However, as this lectotype is almost lacking flowers, an epitype is designated to warrant traditional use of the name. Pictures of the selected types, conserved among the historical collection at FR, are included. Furthermore, some historical aspects justifying typification are discussed.

Fresen.” [sic], and ii) “Culta in hort. bot. 1836. / Sem. in Missouri super. legit / Maximilianus Princ. Neovid.” An additional identification label, added by S. Dressler in 2011, indicates “*Iva xanthiifolia* Nutt. / “Typus von *Cyclachaena xanthiifolia* Fresen.” This second sheet fits the protologue and can be considered original material.

The remaining vouchers show fragments gathered either in September 1882 by H.T. Geyler (FR-0035770, as ‘*Cyclachaena xanthifolia*’) or in September 1908 by M. Dürer (FR-0035767, FR-0035768, and FR-0035769; they all are duplicates of a single gathering, identified as ‘*Iva xanthifolia* Nutt.’). Although the source plants were probably descendants of the first introduced individuals and have relevance to the authentic material (or even were “clonotypes”), those four sheets however cannot be regarded original material, and are not suitable for the purpose of type designation. These sheets can all be accessed online via SeSam Collection Management System (<http://sesam.senckenberg.de/>).

## Lectotype and epitype selection

In the protologue of *Cyclachaena xanthiifolia*, no unequivocal indication is found of a holotype or any cited specimen, as defined in Art. 9.1 of the ICN. The indication of provenance (“planta ... a sereniss. principe Maximiliano ... in sylvis prope Fort Union aliisque locis Missouri superioris lecta”) cannot be accepted as citation of specimens because it is not clear whether Wied-Neuwied collected specimens or any other material such as seeds.

The sheet FR-0035771 (Fig. 1) is the only extant original material at FR of *C. xanthiifolia* (*Euphrosyne xanthiifolia*), but it does not bear any annotation by Fresenius about its type nature, nor it being a new taxon. Therefore, we cannot be sure it was the one specimen and/or the only element (Art. 9.1 Note 1) used for the description in the protologue, and hence we designate it as lectotype (Art. 9.2 & 9.11, ICN) of that name (cfr. McNeill 2014). However, although it includes fragments fitting the protologue and the current concept of the taxon, it almost lacks flowers and shows no trace of the typical paniculiform inflorescence of the species. To prevent imprecise application of the name and to warrant its further use, we designate the sheet FR-0031884 (Fig. 2) as an epitype (Art. 9.8, ICN) supporting the selected lectotype, since it includes a well-developed inflorescence and leaves allowing easy and unequivocal identification.

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