



PHYTOTAXA

107

Taxonomy and richness of nine genera of Amaranthaceae s.s. (Caryophyllales) in the Yucatan Peninsula Biotic Province

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Magnolia Press
Auckland, New Zealand

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(*Phytotaxa* 107)

74 pp.; 30 cm.

6 June 2013

ISBN 978-1-77557-194-0 (paperback)

ISBN 978-1-77557-195-7 (Online edition)

FIRST PUBLISHED IN 2013 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: magnolia@mapress.com

<http://www.mapress.com/phytotaxa/>

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ISSN 1179-3155 (Print edition)

ISSN 1179-3163 (Online edition)

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Abstract

Amaranthaceae s.s. (Caryophyllales) is a cosmopolitan family well represented in the Yucatan Peninsula Biotic Province (YPBP). The YPBP is a biogeographic area that comprises entirely three Mexican states (Campeche, Quintana Roo, and Yucatan), partially two Mexican states (Chiapas and Tabasco), northern Belize, and northern Guatemala (Petén department). Most of the available checklists of the vascular plants from the Yucatan Peninsula (YP) merely include taxa from the Mexican states of Campeche, Quintana Roo, and Yucatan. A study of the Amaranthaceae diversity in the YPBP in its expanded delimitation is here presented for the first time, on the basis of field surveys and examinations of the specimens kept in the main Mexican herbaria (CICY, ENCB and MEXU). Accepted names, main synonyms, morphological descriptions, phenology, habitat, elevation, ethnobotanical uses, vernacular Spanish and Mayan names, origin status, and digital illustrations are provided for each taxon. Keys of identification are also given. Each taxon was geographically mapped using ArcGIS software. Notes about diversity and distribution analyses were conducted comparing maps of distribution for each taxon considering vegetation types and climatic types characterizing the YPBP. A total of 28 species (with 4 varieties) representing nine genera of Amaranthaceae s.s. (excluding *Iresine*) occurring in the YPBP were studied. An estimate of the family diversity in the YPBP is increased here, as records of four new taxa are presented for this region. Results suggest that most of the taxa are natives, aliens, and/or weeds mostly occupying perturbed vegetation types. Only *Blutaparon vermiculare*, *Amaranthus greggii*, and *A. arenicola* show affinity to sand dunes primary vegetation. This new information about the distribution of Amaranthaceae s.s. in the YPBP, considering its invasion and origin status, can help to develop further studies focused on conservative approaching to know more about natural biogeographic regions such as YPBP.

Resumen

Amaranthaceae s.s. (Caryophyllales) es una familia cosmopolita bien representada en la Provincia Biótica de la Península de Yucatán (PBPY). La PBPY es una zona biogeográfica que comprende completamente a tres estados Mexicanos (Campeche, Quintana Roo y Yucatán), parcialmente dos estados Mexicanos (Chiapas y Tabasco), el norte de Belice y el norte de Guatemala (Departamento Petén). Los listados florísticos disponibles para las plantas vasculares de la Península de Yucatán (PY) incluyen los taxa que sólo se encuentran en los estados Mexicanos de Campeche, Quintana Roo y Yucatán. En el presente trabajo se estudió la diversidad de Amaranthaceae en la región biogeográfica conocida como la PBPY en su delimitación más amplia, la cual es presentada aquí por primera vez a través de la revisión de especímenes colectados en la PBPY y depositados en los principales herbarios de México (CICY, ENCB y MEXU). Nombres aceptados, sinónimos principales, descripciones morfológicas, fenología, hábitat, elevación, usos etnobotánicos, nombres comunes en Español y Maya, estado de origen e imágenes digitales son incluidos para cada taxón. También, se proporcionan claves taxonómicas de identificación. Cada taxón fue geográficamente ubicado y representado en mapas mediante el uso del software ArcGIS. Datos de diversidad y análisis de distribución se realizaron comparando mapas de distribución geográfica de cada taxón relacionado con tipos de vegetación y climas reconocidos para la PBPY. Un total de 28 especies (4 variedades) que representan nueve géneros de Amaranthaceae s.s. (*Iresine* fue excluido) presentes en la PBPY fueron estudiados. Se actualiza la estimación de diversidad de la familia para la PBPY incluyéndose cuatro nuevos registros para la región. Los resultados indican que la mayoría de los taxa son nativas, exóticas y/o malezas, ocupando principalmente tipos de vegetación perturbada. Tan sólo *Blutaparon vermiculare*, *Amaranthus greggii* y *A. arenicola* mostraron afinidad a vegetación primaria de tipo duna costera. Esta nueva información sobre la distribución de las Amaranthaceae s.s. en la PBPY y teniendo en cuenta sus estados de invasión y origen, puede ayudar a desarrollar temas de investigación en el contexto de la conservación de la biodiversidad en una región natural biogeográfica como lo es la PBPY.

Key words: Alien species, Caribbean subregion, distribution, morphology

Introduction

Amaranthaceae Juss. s.l. (Order Caryophyllales Juss. ex Bercht. & J. Presl) includes the family Chenopodiaceae Vent. according to the Angiosperm Phylogeny Group (2009) and Reveal & Chase (2011). The relationship between these families has been documented since the beginning of the XIX century and has been based on similarities related to floral morphology (e.g. small flowers, a perianth of tepals in one whorl,