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Hepatic flora of a Guatemalan cloud forest

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Abstract: We report here 92 species of liverworts from the "Biotopo Universitario para la Conservación del Quetzal", in the highlands of central Guatemala. Due to rapid habitat destruction in surrounding areas, this study - the first ever of the hepatic flora of a Guatemalan cloud forest- is an important baseline for future efforts to monitor environmental changes in this richly diverse ecosystem. With these additions the hepatic flora of Guatemala increases to 264 species.

Keywords: Liverworts, Central America, Guatemala, Marchantiophyta, Hepaticae.

Introduction

Neotropical cloud forests are among the world's most diverse ecosystems, known to possess high botanical richness and many endemic species (Gentry 1982 a,b; Gentry 1992). A considerable portion of the botanical richness of these ecosystems is due to terrestrial and epiphytic plants other than trees (Gentry & Dodson 1987; Gentry 1992); a large number of these are bryophytes (Sillet, Gradstein and Griffin 1995; Gradstein & Raeymaekers 2000; IUCN/SSC Bryophyte Specialist Group 2000; Kelly et al. 2004; Andersohn 2004). Among bryophytes, liverworts are most abundant in the epiphytic/epiphyllic biomass of the cloud forest (Sillet, Gradstein and Griffin 1995; Gradstein, Churchill & Salazar Allen 2001; Gradstein & Raeymaekers 2000; Kelly et al. 2004; Andersohn 2004).

Cloud forests are vulnerable to the threats posed by overpopulation and commercial exploitation of the land in third world countries (Gradstein 1992a,b; Sastre & Tan 1995). Bryophyte communities are altered as a consequence of deforestation; populations adapted to low exposure and high moisture, a large number of which are liverworts, are at higher risk (Gradstein 1992a,b; Gradstein, Churchill & Salazar Allen 2001). Liverworts can be used as biodiversity indicators and as monitors for ecosystem degradation in neotropical cloud forests (Romero 1999; Gradstein, Churchill & Salazar Allen 2001).

Central American forests, including cloud forests, are recognized as biodiversity and conservation hot spots in need of immediate attention (Henderson, Churchill & Luteyn 1991; Gentry 1992; Barthlott, Lauer and Placke 1996). Central America reportedly has the second richest liverwort diversity in the neotropics (Gradstein, Churchill & Salazar Allen 2001). Modern bryological inventories dedicated to liverworts in Central America have taken place mainly in Costa Rica, where some studies were dedicated to cloud forest liverworts (Gradstein et al. 1994; Sillet, Gradstein & Griffin III 1995; Dauphin 1999; Bernecker-Lücking 2000; Gradstein et al. 2001; Dauphin 2005; Holz & Gradstein 2005) and Panama (Stotler et al. 1998; Dauphin et al. 2006).

Southern Central America (Costa Rica and Panama) is considered by some authors as a priority area for conservation due to its high biodiversity (Gentry 1992; Gradstein 1992a,b). However, the rest of Central America has been neglected despite its habitat richness that promises high liverwort diversity, the almost complete lack of modern liverwort studies, and accelerated forest degradation. From northern Central America, a list of liverworts and hornworts has been published for Belize (Whittemore & Allen 1996), and