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ORIGINAL RESEARCH

Hotspots of Wetland Area Loss in Colombia

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Abstract Wetlands are among the most productive ecosystems on the planet and they are being subjected to heavy pressure by human activities. Changes in wetlands due to human impacts have increased, and it is estimated that half of the global wetland area has been lost during the last century. Documented cases of wetland transformation confirm the trend in Colombia. We used official nationwide wetland maps and land cover maps to quantify the areas within wetlands with non-natural land cover, such as pasture or cropland; and we used spatial analysis tools to identify the regions of the country where greater wetland transformations have occurred. Approximately 24 % of the area of mapped wetlands has land cover types related to intensive rural land use. Pastures and other types of land cover related to raising cattle account for 4 million ha and cover 50 % of the transformed wetland areas. There are 14 different regions where wetland loss is the most critical in Colombia. We analyzed the wetland areas related to raising cattle, agriculture, deforestation, and mining separately and found different spatial patterns for each activity. Hence, different conservation policies should be implemented across the country to account for spatial differences in the drivers of change.

Keywords Wetland loss · Hotspot · Wetland change · Change drivers · Colombia

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Introduction

A wetland is an ecosystem in which geomorphologic and hydrologic conditions cause saturation of the surface for a duration that is sufficient for the formation of hydric soils and conditions that are favorable for hydrophilic vegetation (Jackson et al. 2014). Wetlands are among the most productive ecosystems on the planet, support millions of people and provide important services, such as improving water quality, reducing flood damage, supporting high levels of biodiversity and secondary productivity, and providing wildlife habitat (Yuan and Zhang 2010). According to Jackson et al. (2014), wetlands are constantly changing due to their destruction, creation and movement to different locations. Almost all wetlands are recent from a geologic perspective (i.e., less than 12,000 years). Although some areas with large concentrations of wetland are ancient, such as the Amazon, the wetland features themselves are constantly shifting because of fluvial dynamics and other natural processes. The main drivers of natural wetland change are eutrophication, sedimentation, erosion, glaciation, climate change, water table level changes, and sea level changes (Yuan and Zhang 2010; Ross and Adam 2013; Jackson et al. 2014).

Human activities are also responsible for wetland losses around the world. Wetlands are under heavy pressure because many people think that they are of little economic value relative to other economic activities, and also because the society often does not recognize the services provided by wetlands at all (Turner et al. 2000; Scholte et al. 2016). Changes in wetlands due to human impacts have significantly increased during the