



DROUGHT AND FLOOD PERIODS MODULATE FOOD WEB STRUCTURE IN AMAZONIAN LAKES

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Climate change is expected to increase extreme droughts and floods worldwide, impacting the structure of freshwater food webs. However, its consequences at higher levels of organization and how it alters the structure of food webs in wetlands remain unclear. Here, we used a database of 30 Amazonian lakes to analyze how food web metrics respond to drought and flood periods. Our food webs include species-specific trophic links to 612 species of fish, microcrustaceans, rotifers, ciliates, phytoplankton, fine and coarse particulate organic matter, plants, macroinvertebrates, and bacteria. Nine food web metrics were calculated, including number of nodes, number of links, link density, connectance, generality, vulnerability, mean omnivory, fraction of basal nodes and fraction of top nodes. Food web metrics differed between drought and floods periods. The number of nodes (drought: 61.6 ± 14.8 (mean $\pm$ Std); flood: 122 ± 42.3), number of links (drought: 586 ± 233 ; flood: 1716 ± 967), link density (drought: 9.22 ± 1.94 ; flood: 13.1 ± 3.36), generality (drought: 12.8 ± 2.62 ; flood: 24.8 ± 13.4), vulnerability (drought: 10.3 ± 2.16 ; flood: 12.9 ± 2.11) and fraction of basal nodes (drought: 0.277 ± 0.0737 ; flood: 0.416 ± 0.128) were all higher in the flood period. Conversely, connectance (drought: 0.152 ± 0.0259 ; flood: 0.112 ± 0.0212) was higher in the drought period. These findings highlight that drought can trigger a simplification by shortening and flattening wetland food webs. This drought-induced simplification results from species loss, which reduces the number of trophic links. Consequently, interactions among the remaining species become stronger, suggesting lower food resource availability. During the flood period, food webs are more diverse, with more trophic links and greater resource availability. Our results provide empirical evidence of how wetland food webs may respond to future climate change.

Palavras-chave: *Biodiversity; Food web; Freshwater; Wetlands; Drought*

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