

Regeneration patterns and persistence of the fog-dependent Fray Jorge forest in semiarid Chile during the past two centuries

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The persistence of rainforest patches at Fray Jorge National Park (FJNP) in semiarid Chile (30°40'S), a region receiving approximately 147mm of annual rainfall, has been a source of concern among forest managers. These forests are likely dependent on water inputs from oceanic fog and their persistence seems uncertain in the face of climate change. Here, we assessed tree radial growth and establishment during the last two centuries and their relation to trends in climate and canopy disturbance. Such evaluation is critical to understanding the dynamics of these semiarid ecosystems in response to climate change. We analyzed forest structure of six forest patches (0.2-22 ha) in FJNP based on sampling within 0.1ha permanent plots. For the main canopy species, the endemic *Aextoxicon punctatum* (Aextoxicaceae), we used tree-ring analysis to assess establishment periods, tree ages, growing trends and their relation to El Niño Southern Oscillation (ENSO), rainfall, and disturbance. The populatio