GROWTH AND ESTABLISHMENT RESPONSES OF TWO PROSOPIS SPECIES OF PERU AND CHILE TO ENSO PRECIPITATION EVENTS

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El Niño Southern Oscillation is often associated with disaster since it can either greatly increase precipitation events, in quantity and/or intensity, or it comes associated with important droughts. However, increased precipitation in drylands could potentially be used for improving the regeneration of plant communities and therefore restoring degraded ecosystems. The main objective of the EU-INCO project ELNIÑO (Regeneration of Semi Arid Plant Communities: ENSO and Herbivory Control) is to study how to use ENSO rainy events to shift from a degraded landscape to more productive ecosystems in semiarid northern and southern Peru, and north-central Chile. We used two Prosopis species, P. pallida in Peru and P. chilensis in Chile, to first determine their possible growth response to rainy events, and then to evaluate whether temporal establishment patterns were or not correlated with precipitation. Classical dendrochronology tools as well as spectral and wavelet analysis have been used to study these relations. Our results show that growth of both Prosopis species positively correlates to precipitation, most clearly in northern Peru, while temperature has a weaker effect. Precipitation threshold for establishment was calculated plotting the probability of a logistic fitting and a t-test to increasing values of precipitation against percentage of established trees. For both species, this threshold is around 80 mm, despite living in quite different environments and having distinct states of survivorship expectative (P. chilensis is vulnerable and P. pallida is not at risk). Growth similarities between the two species have also been found by other authors. Possible explanations for the different conservation state of the two populations and a possible future scenario under increasing ENSO events are discussed (Acknowledgement: This work was supported by the EU-INCO project ELNINO; ICA4-CT-2001-10051).