# Increasing temperatures shift demographic variables in terrestrial ferns, promoting different responses in temperate and tropical species

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**Abstract (not more than 300 words)**

Ferns are important components of ecosystems around the world, especially in tropical rainforests. In spite of this, research about the impacts of global change on fern species is very scarce. Some previous studies inform that fern species may be sensitive to climate change, in particular the gametophytic stage of life. The objective of this work is to report data on the impact of increased temperatures over the germination dynamics of four terrestrial fern species, two tropical (*Amphineuron immersum* and *Christella subpubescens*) and two temperate (*Dryopteris affinis* and *Athyrium filix-femina*). Also, we aim to detect if there are any differences in the responses between tropical and temperate species.

Spores were cultured *in vitro* following standard procedures. Plates were grown under controlled conditions of temperature, photoperiod, humidity and light intensity. Plates were subjected to two different temperature scenarios: T1 representing the mean annual temperature of each of the sampling locations, and T2 representing an increased temperature of T1+8ºC. Germination percentage was recorded daily counting 100 spores randomly selected. These values were introduced in predictive mathematical models to evaluate the germination behavior under different scenarios of climate change.

Our results point out that increased temperatures significantly shift the demographic kinetics of all the species, produced via reduction of the germination rate of the spore bank (reduction of both maximum percentage and velocity of germination, but not the latency period of the spores). The estenoic species (temperate *D. affinis* and both tropicals) suffer more than the eurioic *A. filix-femina*, whose ample distribution could indicate a better suitability to face environmental change. At the community level, and in a larger term, fern communities will experiment changes in diversity and composition, with a higher negative incidence over those less plastic species with a lower adaptive capacity.

Keywords— *climate change, fern communities, gametophyte population, germination kinetics*

**Professional Biography (100-150 words)**

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**Any Comments:**