Background: Epiphyte removal forms part of routine management in shade coffee plantations.

Aims: Assess the current status of three population orchids growing in Mexican shaded coffee plantations and evaluate the effect of perturbing the transient behaviour of different life stages.

Methods: We modelled the short-term response of eliminating I) non-reproductive juveniles, or II) reproductive adult plants from coffee bushes, on populations of Oncidium poikilostalix, Lepanthes acuminata and Telipogon helleri (Orchidaceae). First, we calculated the transient dynamics per se and second, we made a perturbation analysis on population inertia. Finally, we made a comparison with a traditional sensitivity analysis.

Results: All three species showed different positive asymptotic growth rate: O. poikilostalix ($\lambda max = 1.106$), L. acuminata ($\lambda max = 1.209$), and T. helleri ($\lambda max = 1.012$). The effect of eliminating the major part of the juvenile or adult orchids gave population inertia in relation to steady state, respectively, (+19%, -24%) for O. poikilostalix, (+17%, -28%) for T. helleri and (+57%, -35%) for L. acuminata.

Conclusions: Eliminating juveniles or adults affects in different ways the short-term dynamics due to differential impact on size stages that have the non-linear effects associated with important disturbances that currently affect orchids growing in coffee plantations.