Supplement to "Robustness of mutualistic networks under phenological change and habitat destruction"

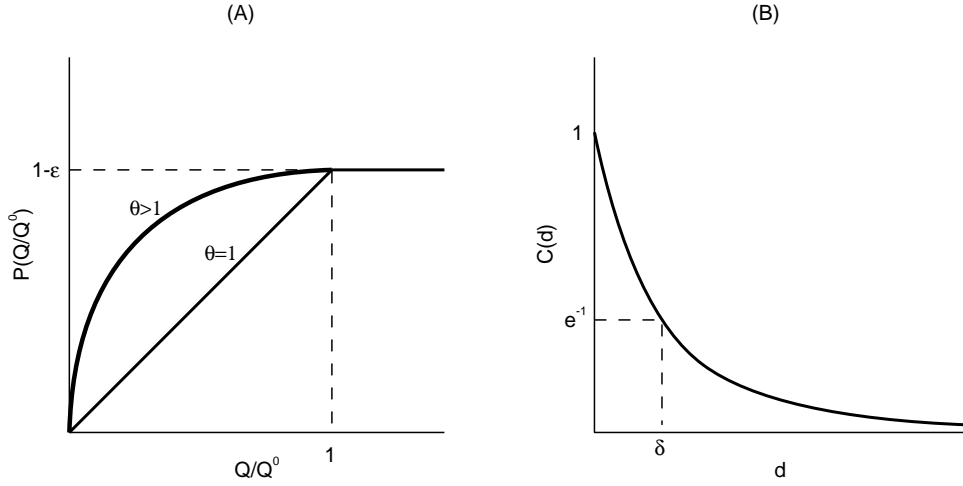Tomás A. Revilla, Francisco Encinas-Viso and Michel Loreau

Figure S.1: Survival and colonization probabilities. (A) The probability P that a species survives in a site increases with the ratio between the number interaction-days Q at the site, and the number of interaction-days if all its mutualists where locally present Q^0. The parameter $\theta \geq 1$ is the *tolerance* against the loss of interaction-days. An increase in the number of interaction-days may result in $Q > Q^0$, then $P = 1 - \epsilon$, where ϵ is a baseline site extinction probability. (B) The probability C that a site is colonized by a species from another site decays exponentially with the distance d between sites, where δ is the *dispersal range* of the species and e the base of natural logarithms.
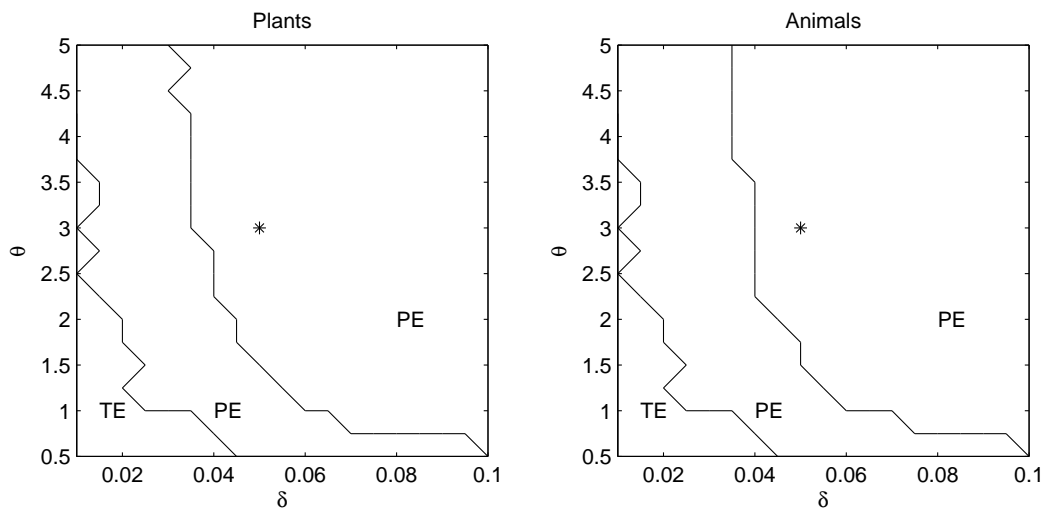
Figure S.2: Diagram of tolerance θ (varied in steps of 0.25 units) versus dispersal range δ (varied in steps of 0.005 units) showing regions of total (TE), partial (PE), and no extinction (NE) after 200 years, for 26 plants and 109 pollinators. Each θ vs δ combination was replicated 100 times. The θ and δ chosen for the simulations are indicated by * and listed with the rest of the parameters in Table 1 of the main text.
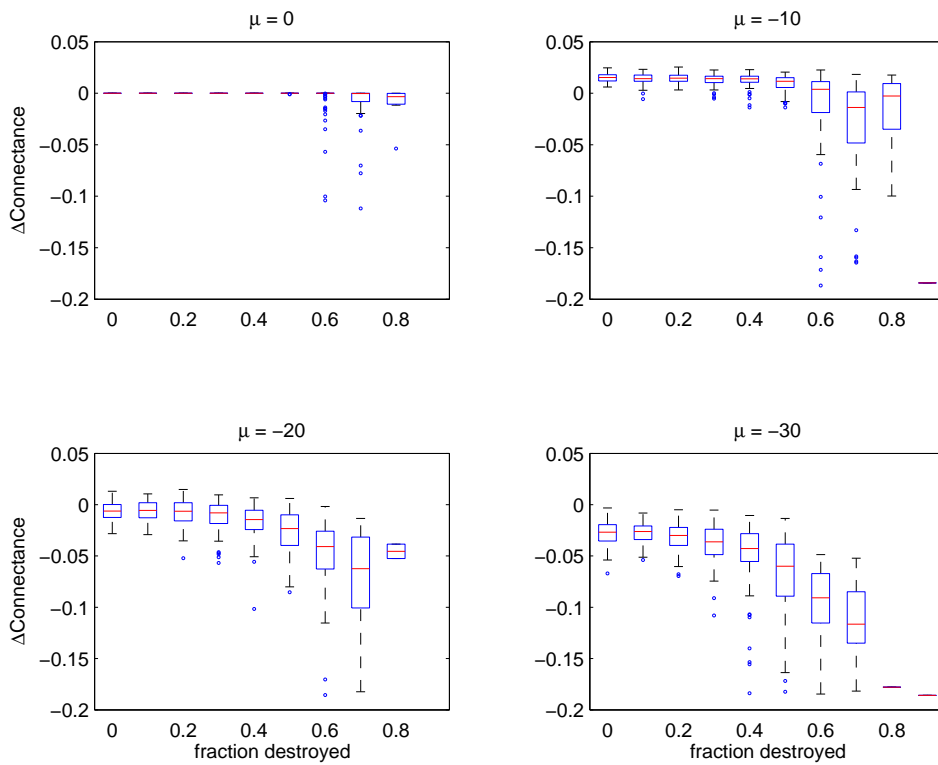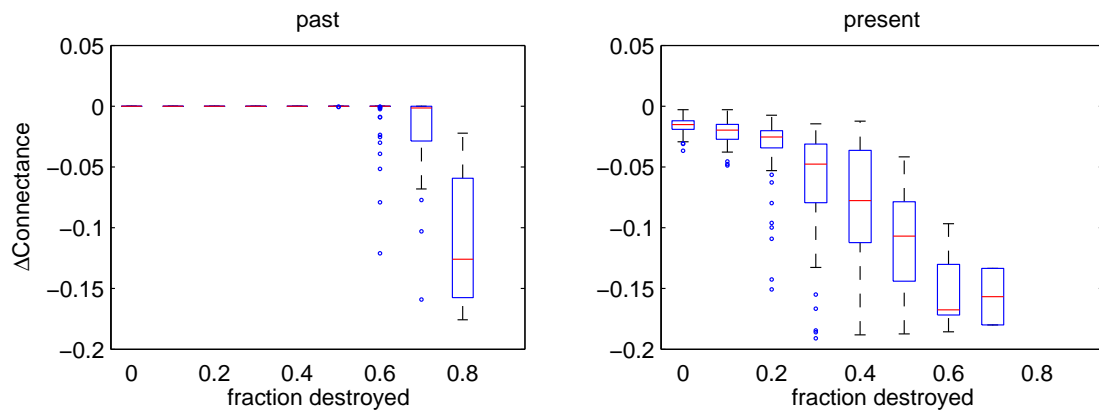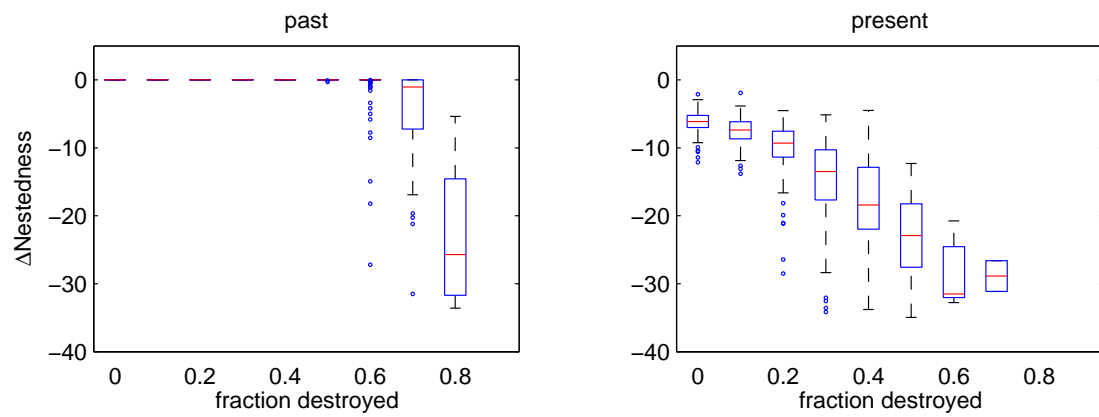
(a) Connectance
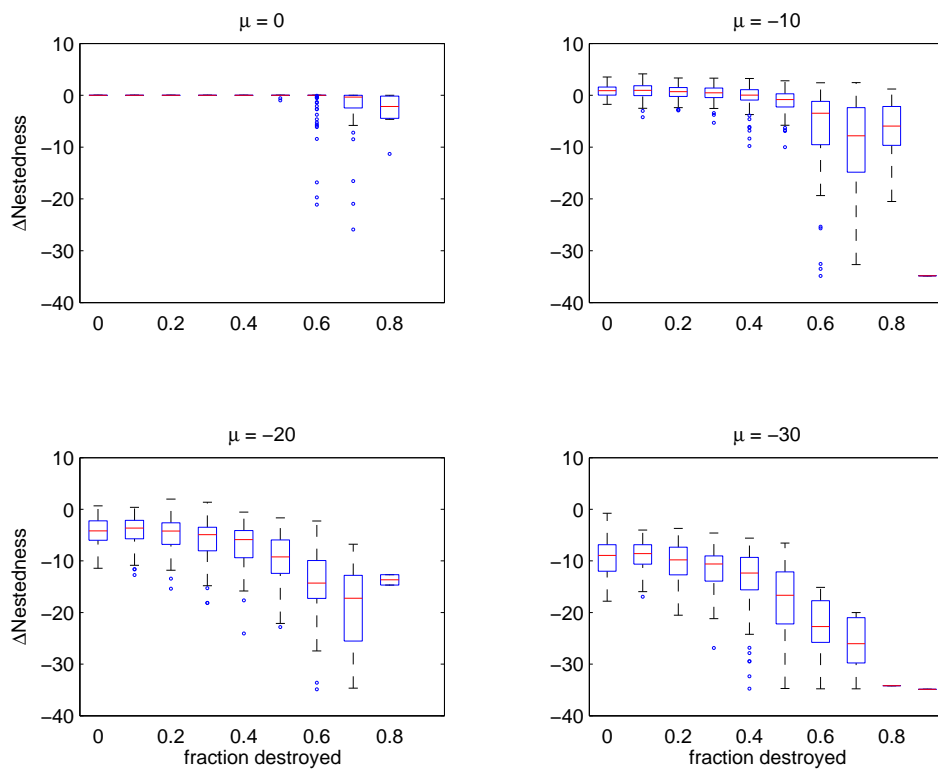
(b) Nestedness

Figure S.3: Changes in global connectance and nestedness against the fraction of sites destroyed, under different projections of phenological shift (μ). The boxplots comprise the 1st, 2nd (median line) and 3rd quantile over 100 simulations.

(a) Connectance

(b) Nestedness

Figure S.4: Changes in global connectance and nestedness against the fraction of sites destroyed, under past and present day phenologies (scenario of historical change). The boxplots comprise the 1st, 2nd (median line) and 3rd quantile over 100 simulations.