

2010 : January 2010 - New Hot Papers : Jason Tylianakis on Global Changes to the Earth's Ecosystems

new hot papers - 2010

January 2010



Jason Tylianakis talks with *ScienceWatch.com* and answers a few questions about this month's New Hot Paper in the field of Environment/Ecology.



Article Title: Global change and species interactions in terrestrial ecosystems

Authors: Tylianakis, JM;Didham, RK;Bascompte, J;Wardle, DA
Journal: ECOL LETT, Volume: 1, Issue: 12, Page: 1351-1363, Year: DEC 2008

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(addresses have been truncated.)

SW: Why do you think your paper is highly cited?

Global changes to the Earth's ecosystems are possibly the greatest combined challenge that humanity must face. These changes are often studied independently, but their effects are likely to be interactive, which could exacerbate or even mitigate the effect of each driver in isolation, and have potentially devastating consequences for the structure and functioning of communities and ecosystems. Our paper brings together a large body of research on how these changes affect interactions between different species from different systems, and thus it provides an insight into what we may expect in the future.

SW: Does it describe a new discovery, methodology, or synthesis of knowledge?

It is a synthesis of nearly 700 published studies documenting the effects of all five major global environmental change drivers on a broad suite of species interactions.

SW: Would you summarize the significance of your paper in layman's terms?

There are no longer any ecosystems on Earth that are untouched by human influence. Global environmental changes drive extinctions and alter species distributions, and recent evidence now shows pervasive impacts on a variety of interactions between species. Species interactions are critically important for ecosystem stability and functioning, yet their fragility makes them vulnerable to

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environmental changes.

Each of the major drivers of global change (CO₂ enrichment, nitrogen deposition, climate change, biotic exchanges, and land-use change) have direct effects on species interactions, but the interactions between multiple drivers acting simultaneously hinder predictions of future responses. Summing up these individual changes across entire networks of species interactions yields unanticipated effects on ecosystems and the services they provide.

SW: How did you become involved in this research, and were there any problems along the way? Where do you see your research leading in the future?

Sooner or later, all field ecologists are confronted with the effects of human changes to the environment. It's almost impossible to avoid the topic. My lab group is currently working on responses of multitrophic communities and networks of interacting species to different environmental changes, and the impact of these on ecosystem stability and functioning.

SW: Do you foresee any social or political implications for your research?

Hopefully, researchers and policymakers will place more emphasis on managing multiple drivers of environmental change, rather than treating each problem (e.g., climate change) in isolation.

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KEYWORDS: CLIMATE CHANGE; CO₂; COMPETITION; DISEASE; FOOD WEB; GLOBAL WARMING; INTERACTION EFFECT; LAND-USE CHANGE; MYCORRHIZA; NITROGEN DEPOSITION; PARASITE; POLLINATION; SEED DISPERSAL; ELEVATED ATMOSPHERIC CO₂; MYCORRHIZAL FUNGAL COMMUNITIES; PLANT-HERBIVORE INTERACTIONS; ANIMAL MUTUALISTIC NETWORKS; WEAK TROPHIC INTERACTIONS; RECENT CLIMATE-CHANGE; FOOD WEBS; NITROGEN DEPOSITION; CARBON-DIOXIDE; HABITAT LOSS.

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