



## Thoughts of a Travelling Ecologist, 2.

# Does the ecological study of managed habitats constitute "real" ecology?

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Ecology is not a very "old" science, with about one hundred years of history. In the early period, the general attitude was that the study of undisturbed ecological systems will provide us with clues of how the world is organised. To understand this world, we should study the regions, ecosystems, habitats that are still in their undisturbed condition, far from settlements, are uncultivated, and unspoilt. From these, we can form a picture how things should be. We can then use this knowledge to wisely manage other habitats, more under the influence of humans.

In other words, the yardstick was an Eden, not yet "contaminated" by humans. Even though from the earliest of days, some of the most influential studies in ecological theory were done in managed systems and on pests, such as Andrewartha and colleagues' famous long-term study of the population dynamics of thrips on a rose bush near his door (Davidson & Andrewartha, 1948), this "Eden as yardstick" perception was solidly held. Into this Eden came we, humans as intruders, not by our mere presence but by becoming numerous and starting to convert other habitats, and use more and more natural resources. In fact, we were "domesticating nature" (Kareiva *et al.*, 2007). These habitats then lost their attraction to ecology, said the ecologists, and handed them over to disciplines like pest management, fisheries science, forestry, etc.—that, in turn, often neglected their close links to ecology.

This "applied ecology" often meant only a passing familiarity with current ecological theory. This mentality survives in some corners up to today. Check out, for example, the writings of several scientists working in environmental risk assessment of transgenic plants: you will find more familiarity with chemical and toxicological concepts than with ecological ones. Worse than this are only the molecular biologists or plant geneticists who continue to pontificate about the environmental impacts of transgenic plants, without showing much awareness of even basic ecological concepts (Trewavas, 2008).

The "Eden" view, however, has always been incorrect, only we did not see this in our ignorance. At first, the Amazonian rainforest seems like the utmost of the undisturbed—now we know that it has been rather densely populated before the arrival of the Spanish colonisers, after which the European diseases killed many of the natives, and large areas were abandoned (Heckenberger *et al.*, 2003). So, what we believed to be pristine areas, were often not so. Apart from this, we know that a cultivated field does not become something profoundly different just because the original vegetation is changed, and temperatures will change—but the soil remains there, rain will fall, sun will shine. Neither the rules nor many of the former inhabitants will change. There remains a considerable level of biodiversity in cultivated habitats (Vandermeer & Perfecto, 2007). The continuing functioning of ecological

mechanisms in such habitats are now realised to be essential, and are conceptualised as "ecosystem services" on which productivity rests (MEA, 2005).

The pendulum is swinging. Now the study of human-influenced habitats is considered ecological study with full recognition, as the number of articles that study ecosystems under major human influence is increasing in major ecological journals. To find out about this, check the pages of the American journal "*Ecology*", or the *Journal of Ecology* or *Journal of Animal Ecology*. Apart from this, "applied" journals thrive, but also there, more and more theoretical ecology is published.

In fact, the pendulum may have started to swing too far: some ecologists now announce that the age of "new ecosystems" arrived, and ecology should concentrate on these (Hobbs *et al.*, 2006). These declarations display considerable hubris, and ignore our knowledge of historical changes in ecosystems. New species have caused profound changes in ecosystems for centuries. For example, several of the major forest-forming trees in temperate North America have changed their importance in the last 300 years (Hall *et al.*, 2002). Are these now also new ecosystems? How new are the ecosystems that developed after the Ice Age in the Northern Hemisphere? Are they also "novel"? I do not think so. Species have always moved leaving their "community", in part or in whole, behind. However noble the intentions of the ecologists proposing "novel" ecosystems, when they intend to call attention to the fact that these ecosystems often contain species that were transferred there by humans, the proposition is unjustified.

Still, all this is consistent with the paradigm shift in ecology, the acceptance of ecological studies in managed areas as "real" ecology. Today, more and more calls are heard not to try to exclude humans from the ecological equation. This does not, should not mean that we helplessly accept that the world has been profoundly altered, and there is nothing we can or should do about it (Didham, 2011). The calls for accepting the "new ecological world order" (Davis *et al.*, 2011) are siren voices (Lövei *et al.*, 2012). It is in our own interest as a species that we rein our impact on the world, that we do

not overextend our appropriation of the earth's resources as it will fall back on us, and endanger our future. Humans have caused large impacts, and the study of human-influenced habitats constitutes full-right ecology, even if we have not invented any sort of "new ecological world order".

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