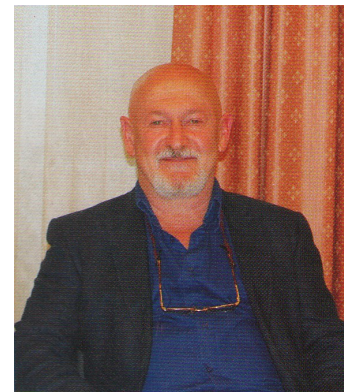


DOI: 10.3969/j.issn.2095-1787.2016.02.001

Thoughts of a travelling ecologist 10.

Will fighting exotics ever succeed?



Gábor L. LÖVEI

Institute of Applied Ecology, Fujian Agriculture and Forestry University, Fuzhou, Fujian 350002, China & Department of Agroecology, Aarhus University, Flakkebjerg Research Centre, DK-4200 Slagelse, Denmark

We live in the Age of Extinctions – the call for naming our time "Anthropocene" is no more than hubris and escapism from this colossal sin. Although the 6th mass extinction has possibly already started (Barnosky *et al.*, 2011), and it may prove the largest so far to be endured by life on Earth, efforts are needed not to turn this into the Age of Loneliness, when humans may find themselves Masters of the Earth – but alone (Wilson, 2014). The reasons for the high extinction rates are increasingly well recognised, and invasions by non-native organisms always appear near the top of the list (e.g. Pullin, 2002). When reading about invasive organisms, especially when we read about attempts at regulating or preventing their arrival to new locations, trying to limit their dispersal, or eradicate them from places they have reached, one cannot but notice a clear, forceful and unhesitant language. So much so that several ecologists pointed out that such "military style" language may not be necessary (Colautti & MacIsaac, 2004) and it can even undermine conservation efforts (Larson, 2005).

However, there are signs that our attitude to exotic, non-native organisms is not so clear-cut as one might think from the ferocity of our terminology connected to "invasive alien species". Let me mention a few, subjective examples.

I have to confess that I am drawn to biological diversity and this manifests itself even when I am a for-

eign town or country: I always try to visit the local market. And while I like people-watching, my main aim is not that. I am looking for interesting fruits, vegetables, and spices. If I find something novel, I try to taste it, or even take it home. I am not a good gardener, so I do not intend to plant these – but many friends beg me to have the seeds of an exotic vegetable, or plant, so that they could try growing it themselves (I refuse; could that be the reason for losing a few friends over the years?).

It is not only me; exotic plants and animals have always attracted travellers' attention. Columbus already brought back seeds of maize (*Zea mays*) when returning from his very first sailing to the Americas, in 1492. Potato (*Solanum tuberosum*), once it reached Europe, has quickly found its way to China (Mann, 2011). But human attention was not restricted to seemingly useful species. History has manifold examples that exotic organisms were much-prized presents to popes, kings and emperors. The arrival to Portugal, in 1515, of the first live Indian rhinoceros (*Rhinoceros unicornis*) in Europe, a present to the Portuguese king Manuel I, created a continent-wide sensation. This animal inspired a famous drawing by the German artist Albrecht Dürer, and the next year it was sent on, again as a present, to the Roman Catholic Pope of the time, Leo X. The story has not lost its power since, testified by the fine novel by Lawrence Norfolk (Norfolk, 1996).

Eminent and world-famous Austrian artist and architect, Friedensreich Hundertwasser, has made nature the centre of his life and art philosophy. He, in one of his manifestos, wrote: "When man thinks he has to correct nature, it is an irreparable mistake every time." (Hundertwasser, 1990). In the latter half of his life, he spent half a year in his New Zealand farm where he restored nature, and he wanted to be "one with Nature" even in his death: "I am looking forward to become humus myself buried naked without coffin under a tree on my land in Ao Tea Roa."

And what species of tree did he choose in this land, suffering from the impact of so many invasive species? A kowhai (*Sophora microphylla*), a much loved New Zealand tree, with its spectacular yellow flowers? A tall kahikatea (*Dacrycarpus dacrydioides*), emerging way above the top of the canopy? A stately totara (*Podocarpus totara*)? A mighty kauri (*Agathis australis*), that can live up to 2500 years – at least that is the estimated age of Tane Mahuta, standing in the Waipoua Forest of Northland? No – he chose the tulip tree (*Liriodendron tulipifera*), a North American exotic.

But this is not restricted only to lay people and artists. Last February, I visited my friend in New Zealand, who has recently retired from his field biologist job at the New Zealand Department of Conservation. He was researching the reasons for decline of several native New Zealand birds, and lead efforts to turn their decline around. He spent many years at the forefront of managing nature in New Zealand to restore it from the damage suffered due to invasions. While we were discussing various things of interest, he confessed that one of his dreams now was to breed – exotic pheasants.

There are countless other examples, but surely, one can argue, we have learnt our lesson, and today we are more aware of the perils of exotic organisms? Sure, but ... but there is that pull of the exotic, and it seems very strong. We realise that non-native organisms can create ecological havoc; there are numerous calculations estimating the damage, in monetary terms, caused by exotic, non-native organisms, either as known pests, or suddenly becoming one, after several years of peaceful existence in their new environment. Nonetheless, even eminent ecologists argue that

invasions will not cause a loss in biodiversity (Tilman, 2011), and there are calls to "end invasion biology" (Valéry *et al.*, 2013). Our attitudes seem really confused about this phenomenon of invasion, and especially about our own role in increasing invasion rates. We know we did it, but whether, when and how to change it, that is obviously less clear. Without pondering such questions deeply, we have no chance to prevent lasting damage to biodiversity via new and new invasions by exotic organisms.

We can cite the famous witticism: "We have met the enemy and the enemy is us" – for more than one reason. Apart from differences in values, half-baked thoughts about the roles of non-native species and about desirable states of habitats, we also have to decide how to relate to this innate human attraction to novelty, diversity, and the exotic, because this may become an unintended "back door" for invasives. There is still much work to do before we can live up to our responsibility as wise guardians of our planet.

References

- Barnosky A D, Matzke N, Tomiya S, Wogan G O U, Swartz B, Quental T B, Marshall C, McGuire J L, Lindsey E L, Maguire K C, Mersey B and Ferrer E A, 2011. Has the earth's sixth mass extinction already arrived? *Nature*, 471: 51–57.
- Colautti R I and MacIsaac H J, 2004. A neutral terminology to define "invasive" species. *Diversity and Distributions*, 10: 135–141.
- Hundertwasser F, 1990. *There Are No Evils in Nature. There Are Only Evils of Man*. [2016–04–08]. http://www.hundertwasser.at/pdf/no_evils_of_man.pdf.
- Larson B M H, 2005. The war of the roses: demilitarizing invasion biology. *Frontiers in Ecology and the Environment*, 3: 495–500.
- Mann C C, 2011. 1493: *How Europe's Discovery of the Americas Revolutionized Trade, Ecology and Life on Earth*. London: Granta.
- Norfolk L, 1996. *The Pope's Rhinoceros*. New York: Grove Press.
- Pullin A S, 2002. *Conservation Biology*. Cambridge, UK: Cambridge University Press.
- Tilman D, 2011. Diversification, biotic interchange, and the universal trade-off hypothesis. *The American Naturalist*, 178: 355–371.
- Valéry L, Fritz H and Lefeuvre J C, 2013. Another call for the end of invasion biology. *Oikos*, 122: 1143–1146.
- Wilson E O, 2014. *A Window on Eternity: A Biologist's Walk Through Gorongosa National Park*. New York: Simon & Schuster.