

Review of: "The Dual Role of Culture in Evolutionary Play: Anthropogenic Expansion Vss Destruction of Biodiversity"

Meriel Jones¹

¹ University of Liverpool

Potential competing interests: No potential competing interests to declare.

This is an interesting and thoughtful account of human culture and biodiversity destruction.

It is good to read the discussion and evidence about whether indigenous, pre-industrial people have cultural norms that prevent the exhaustion of natural resources. As the author exemplifies, Western industrial technologies rapidly deplete fauna and flora. However, there are also well-documented examples of extinctions of megafauna in New Zealand, South America, and Europe in pre-industrial times. The author's thesis that previous societies were more aware and conserving of the local flora and fauna needs stronger evidence that this was actually the case, and not simply that fewer people in past human populations inflicted damage more slowly.

The question of why some animals and plants have been domesticated, and whether they can be domesticated, is indeed an interesting one. What makes humans and an animal species more predisposed to become interdependent? The author considers whether there is a single definition of 'domesticated', and the factors in this interrelationship, especially whether the species or variety can live without the agency of humans, and indicates that there is not. Definitions of 'domesticated', 'wild', and 'gene' are needed for clarity in the discussion.

The wild ancestors of many domestic animals and plants do not exist anymore, indicating that a one-way transition has occurred. As the author points out, a 'non-shattering' trait in plants, especially cereals, is very advantageous for humans so that ripe seeds remain on the plant, but disadvantageous for plants since there will be no natural seed dispersal. A trait such as this is obvious, but humans have undoubtedly selected for others. For example, the flavour and cooking characteristics of domesticated plants are very important but less easy to assess than features such as yield, starch or oil content, and storage qualities. There is an important role for seed banks to store this biodiversity before it is lost.

Very many traits are polygenic. Thus, the concept of selecting for one allele of a gene for a trait, although very valuable in the history and initial understanding of genetics, is not relevant to most traits. Is the concept of 'genetic purity' appropriate to apply to a landrace, where part of the reason for its existence is that the seeds have enough genetic diversity to give acceptable yields in diverse agronomic situations? There will certainly be extensive allele diversity ('genetic impurity') at loci that have not been subject to intensive human selection, as evidenced in all genome sequencing projects of crop plants.

The timescales and locations for many of these domestication events are distant and large. It would be helpful if the author were able to extract what information there is about this from the sources cited. There have been substantial

movements of human populations over time that can conflate events.

I find the statements about domesticated plants and animals being omitted from considerations of biodiversity surprising, since they form the origin of the study of genetics and are a prominent part of current molecular genetics. However, the author is certainly correct in considering that there should be a wider and deeper understanding of the origin and nature of our domestic animals and plants, involving culture and history as well as science and economics, as discussed towards the end of the manuscript.

Finally, about whether dingoes are feral dogs, this recent report of recent DNA analysis suggests a complex situation.

<https://theconversation.com/new-dna-testing-shatters-wild-dog-myth-most-dingoes-are-pure-206397>