111-CRIMINAL "DOMESTICATION" OF ELEPHANTS

The domestication of animals and plants is a selection, sometimes made unconsciously, of specific, usually favorable, traits.

Context: (i) Some female elephants, and only females, lack tusks; (ii) Warfare in Africa, especially in Mozambique, has reduced populations of large herbivores in the Gorongosa National Park by >90%; poaching for ivory has exacerbated this trend in elephants.

Female elephants without tusks were obviously not targeted by poachers and consequently had higher fitness than females with tusks. The authors of a paper in [Science](1) calculated that tuskless females increased from 18.5% to 50.9% in war years in Monzambique (1977-1992). They also identified two candidate genes involved in the tuskless trait (*AMELX* and *MEP1a*). The absence of tuskless males is explained by assuming X-linked, male-lethal, dominant inheritance of the mutation, which is exactly what is observed for a mutant *AMELX*[2] in humans. This gene is involved in the growth of the maxillary lateral incisors, corresponding to the tusks in elephants.

There are also side effects of this unnatural selection. Male mortality, for example, will affect population recovery in the long term. Furthermore, animals with and without tusks eat different plants, thus causing changes in the entire landscape of the region.

The "unnatural" selection made "unconsciously" (with doubts about this unawareness) by man in populations of wild animals is the subject of another interesting work, which appeared in [PNAS](3). The best example they report is the selection of the size trait in fishing. Selection caused by fisherman's preference for large fish will obviously produce smaller sized fish with early sexual maturity and problematic fishing yields in the long run.

[1] https://www.science.org/doi/10.1126/science.abe7389

[2] By the way: *AMEX* and *AMELY* are specific for X and Y, respectively. Their sequence slightly differs in length and are used in forensic genetics to distinguish female from male DNA.

[3] https://pubmed.ncbi.nlm.nih.gov/19528656/