

Peer Review

Review of: "Does Palaeolithic Resource Management Leading to Domestication Explain Human “Modernity”?”

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Reviewer Comments – Conceptual and Chronological Issues

The manuscript by **Maciej Henneberg** proposes that Palaeolithic resource management of large mammals may have initiated domestication processes that ultimately contributed to human self-domestication and “modernity”. While the paper is thoughtful and wide-ranging, several fundamental conceptual and chronological issues weaken its central argument.

1. Mischaracterisation of self-domestication

Human self-domestication is not an outcome of active or intentional management. It emerges passively from human niche construction—stable camps, predictable resources, reduced intra-group aggression, and social selection against reactive aggression. Framing self-domestication as downstream of proto-management or early herding reverses the causal direction. The human niche precedes and enables domestication; it is not created by it.

2. Chronological inconsistency in domestication pathways

The established domestication timeline contradicts the proposed sequence. Self-domestication traits (neoteny, reduced aggression) appear in the Upper Palaeolithic. Early commensal species (dog, mouse) predate sedentism and agriculture, driven by waste, food remnants, and proximity—not management. Domestication of herbivores (sheep, goats, cattle) occurs **only after** cereal and legume agriculture created fodder surplus, storage, fencing, and reproductive control. This order strongly supports self-

domestication and commensal attraction as prerequisites for later herd domestication, not consequences of it.

3. The biological impossibility of “herding wild animals” and the problem of neoteny

The manuscript implicitly assumes a manageable intermediate state between wild herds and domesticated ones. From an ethological and neurobiological perspective, such a state is unstable or effectively non-existent. Truly wild ungulates exhibit extreme flight responses, heightened stress sensitivity, and rapid dispersal under perceived threat, making sustained proximity to humans biologically implausible.

Even minimal human presence can elicit disproportionate escape behaviour in wild animals. For example, a captive wild gazelle in quarantine at a wildlife rehabilitation facility was observed to climb an approximately six-metre vertical wall in response to a human briefly peering through a narrow observation opening. Such reactions illustrate the magnitude of stress responses in genuinely wild animals and highlight the categorical difference between wild and domesticated—or incipiently domesticated—states.

Critically, the proposed herding or resource-management framework also fails to explain **neoteny**, a defining and ubiquitous feature of domesticated species. Neotenic traits are observed not only in domesticated ungulates, but also in taxa for which herding or active management is biologically irrelevant or impossible, including dogs, cats, mice, and guinea pigs. Because neoteny reflects selection on developmental timing, stress reactivity, and behavioural maturation, its presence across commensal and synanthropic species strongly indicates that domestication is driven by passive selection within a human-constructed niche rather than by active management practices. Without prior selection for reduced reactivity, tolerance to humans, and altered developmental trajectories, repeated close contact would more likely result in injury, dispersal, or mortality rather than stable human–animal coexistence. Consequently, long-term herding or management of wild animal populations prior to domestication is not supported by biological or developmental evidence.

4. Conflation of hunting strategies with domestication processes

Selective hunting, prey choice, or following migratory herds do not constitute management leading to domestication. These behaviours lack reproductive control, multigenerational selection, and stable

human–animal coexistence. The manuscript occasionally blurs the boundary between hunting optimisation and domestication, which weakens mechanistic clarity.

5. Overextension of taphonomic arguments

While taphonomic bias rightly cautions against absence-of-evidence arguments, it cannot substitute for missing biological mechanisms. Taphonomy explains why evidence may be scarce; it does not justify processes that are ecologically and behaviourally implausible. The lack of early evidence for managed wild herds reflects not only preservation bias but likely the non-existence of such systems.

Overall assessment

The manuscript's central premise—that active resource management or proto-herding could drive domestication and human self-domestication—is not supported by biological, developmental, or chronological evidence. Human self-domestication predates agriculture and herbivore domestication; wild animals exhibit stress and flight responses incompatible with sustained management; and neoteny, a defining feature shared by all domesticated species including dogs, cats, mice, and guinea pigs, cannot be explained by herding-based mechanisms. Together, these lines of evidence indicate that domestication is best understood as passive selection within a human-constructed niche, with agriculture-enabled herbivore domestication occurring only later. Reframing the manuscript around this causal direction is necessary for biological plausibility.

Given that the core explanatory mechanism is inconsistent with established chronology and biology, the paper falls below the threshold of a robust explanatory framework, despite its integrative intent.

Declarations

Potential competing interests: No potential competing interests to declare.