

## AGE-INDEPENDENT OSTEOPATHOLOGY IN SKELETONS OF A SOUTH AMERICAN CERVID, THE PATAGONIAN HUEMUL (*HIPPOCAMELUS BISULCUS*)

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**ABSTRACT:** The huemul (*Hippocamelus bisulcus*), an endemic Patagonian deer, has been endangered for decades. Although conservation in Argentina has been directed at the 350600 remaining huemul, the population has not recovered. In initial studies on the potential effects of diseases on huemul population dynamics, skeletal remains collected between 1993 and 2007 in the Andes (4145°S, 71.572°W) were examined macroscopically for osteopathologic changes. Bones from six huemul were free of lesions, findings were inconclusive in 13 huemul with less than three bones, and osteopathologic processes were detected in 13 adults. Considering the limited remains/case, the prevalence of osteopathy (52%) among adults probably is conservative; 63% showed mandibular, 100% maxillary, and 78% appendicular lesions. Although predation represented the actual cause of death, the observed skeletal lesions would affect predator avoidance, possibly explaining the low average adult age (3.1 yr) and lack of population recovery. Compared with other studies in ungulates, huemul were affected at a younger age, and they had more severe pathologic changes. Due to the chronic nature of disease, low huemul population density, physiognomy, and spatiotemporal pattern of lesions, we discard senescence; gender; fulminating infections; congenital anomalies; metabolic, endocrine, genetic, or neurologic disorders; parasitism or marasmus; and fluorosis as primary etiologic factors. We hypothesize that generalized secondary chronic alveolar osteomyelitis and osteoarthritis in huemul is related to the nutritional ecology of these animals. Selenium deficiency, which impairs bone metabolism and causes periodontitis in ruminants, occurs in the region and it is more prevalent at high altitudes. Traditional winter grounds at low elevations, sometimes far from high mountains, have been converted to livestock production, which has eliminated migratory behavior and keeps huemul in remote high-elevation refuges. Although this descriptive study contributes to huemul conservation, additional approaches are needed to investigate the etiology of this osteopathy and to close other gaps in knowledge on biology and ecology of huemul.

**Key words:** Arthritis, chronic alveolar osteomyelitis, *Hippocamelus bisulcus*, huemul, lumpy jaw, osteopathology, periodontitis.