

Chinese gazetteers documented decline of Hainan gibbons for over 400 years

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Credit: Zoological Society of London

(Phys.org)—A trio of researchers, two with the Institute of Zoology, Zoological Society of London and the other with the University of Queensland in Australia, has found they were able to trace the decline of the Hainan gibbon over the course of 400 years, by reading commissioned historical records. In their paper, published on the open access site *Proceedings of the Royal Society B*, Samuel Turvey, Jennifer Crees and Martina Di Fonzo describe what they found in the literature, what they learned about the demise of the Hainan gibbon, and why they believe what they learned might help the monkey-looking apes make a comeback.

The Hainan [gibbon](#) is under a very serious threat of extinction—currently there are only about 26 to 28 of them left, all living in their native China (on Hainan Island). There used to be many more, in fact, they used to dwell in over 20 of modern day China provinces, and were described as very common.

Charting the slow demise of a species, as the research trio note, is often difficult as it typically occurs over more years than a person can document. In this case, however, the researchers were aided by gazetteers working for Chinese bureaucracies over the past several hundred years. In addition to noting population and commerce activities, record-keeping was also done for natural resources, which included local animal sightings. Hainan gibbon sightings have been described in such logs for approximately 400 years, the team reports, giving them a way to track not just gibbon population declines, but the manner in which it occurred. They were able to see, for example, that as expected, gibbon populations declined as human populations rose. They were actually able to note declines by geographic area, and to correlate what they found with human population growth and land being converted from natural habitat to farming. Both, they say, clearly led to the current low numbers for the species.

The team also reports that they were able to see serious fragmentation of gibbon populations starting around the mid-eighteenth century, with population losses moving faster into the latter parts of the nineteenth century. They also found that the apes managed to hold out longer in higher elevation areas, but disappeared faster in the north and eastern regions.

On a more positive note, the team suggests that what they have learned might actually help prevent the disappearance of the Hainan gibbon altogether, because it could lead to a better conservation plan for those animals that still remain.

More information: Historical data as a baseline for conservation: reconstructing long-term faunal extinction dynamics in Late Imperial–modern China, Published 5 August 2015. [DOI: 10.1098/rspb.2015.1299](https://doi.org/10.1098/rspb.2015.1299)

Abstract

Extinction events typically represent extended processes of decline that cannot be reconstructed using short-term studies. Long-term archives are necessary to determine past baselines and the extent of human-caused biodiversity change, but the capacity of historical datasets to provide predictive power for conservation must be assessed within a robust analytical framework. Local Chinese gazetteers represent a more than 400-year country-level dataset containing abundant information on past environmental conditions and include extensive records of gibbons, which have a restricted present-day distribution but formerly occurred across much of China. Gibbons show pre-twentieth century range contraction, with significant fragmentation by the mid-eighteenth century and population loss escalating in the late nineteenth century. Isolated gibbon populations persisted for about 40 years before local extinction. Populations persisted for longer at higher elevations, and disappeared earlier from northern and eastern regions, with the biogeography of population loss consistent with the contagion model of range collapse in response to human demographic expansion spreading directionally across China. The long-term Chinese historical record can track extinction events and human interactions with the environment across much longer timescales than are usually addressed in ecology, contributing novel baselines for conservation and an increased understanding of extinction dynamics and species vulnerability or resilience to human pressures.

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