

PHYLOGENY AND GENETIC DIVERSITY OF CARACAL IN IRAN

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INTRODUCTION

Ranging across most of Africa and part of the Middle East, the caracal is a medium-sized member of cat family. Their light brown skin colour provides them with an increased camouflage advantage in their usual steppe or desert habitats (fig 1). Caracals are often called “siah-gush (black-eared)” or “yuzu” by the locals in some parts of Iran and are remarkably agile animals. They are mostly known for their vertical jumps and their ability to hit and hunt flying birds, sometimes as high as three meters from the ground.

DISTRIBUTION: Caracal are spread throughout most of Africa, except for the Sahara and Namib Deserts, the Congo and the equatorial forest belt of western and central Africa. Beyond Africa, the caracal is found in central Asia, southwestern Asia through the Arabian Peninsula, Israel, Turkey and extending into Turkmenistan, where the species is endangered, and as far southeast as central India (Sunquist & Sunquist 2002).

The fact that the dispersion and density of the Asian population is much less than the African one means the former requires more attention. Caracal is considered a rare animal in many parts of Asia (Breitenmoser, Henschel, and Sogbohossou, 2008; Sunquist & Sunquist, 2002). There is no specific information on the species' status in Iran, but it is believed that its population is decreasing due to habitat destruction. In Iran, caracals are found in the arid plains and rolling hills of the central and eastern parts of the country, with an additional population in southwestern Iran (Etemad 1985, Ziaei 1996) (Fig 2).

SUBSPECIES: Globally, the caracal population has eight known sub-species worldwide and the Asian sub-species is called *Caracal caracal schmitzi*. A small population in Turkmenistan and northeastern Iran is called *C. c. michaelis* (Ellerman & Morrison-Scott 1951, Nowell & Jackson 1996). The IUCN lists *C. caracal* as a species of least concern, but concedes that *C. c. schmitzi* is unclassified and *C. c. michaelis* is endangered; *C. c. michaelis* appears to be threatened in most of its range. Paucity of available information on caracals in Iran raises the important question as to what sub-species it constitutes.

GENETIC STUDY: Iranian researchers have recently started to use molecular genetic markers for a more accurate classification of the species, however, there is still a long way to go. After finishing genetic studies on the Persian leopard in collaboration with Iranian Department of Environment and University of Tehran, the Iranian Cheetah Society (ICS) has officially started to study phylogeny and genetic diversity of the caracal since 2011. This research project, undertaken in collaboration with the Department of Environment and University of Lisbon (Portugal), covers the entire country, especially steppes and deserts.

Due to lack of information about the caracal population in Iran and the scarcity of scientific data on the genetics of the local subspecies, the present research project is aimed at answering the following questions:

1. What is the phylogenetic position of the Iranian caracal in relation to caracals elsewhere?
2. What is the genetic diversity in different geographical regions of Iran?
3. Is there any genetic structure and gene flow among caracal subpopulations in Iran?

The preliminary steps have been taken and the primers have been designed. So far, more than 30 samples have been collected and laboratory analyses are ongoing. The research aims to take samples



Fig 1. Caracal (*Caracal caracal*) in Kalmand-Bahadoran, Yazd, Iran (© Ehsan Jannati)

from as many specimens as can be found, both from Iran and the species range, particularly in west Asian countries. The specimens can be carcasses, tanned skins, taxidermies or live animals. They are then genetically examined and sequenced. These tests have the advantage of being accurate and capable of leading to unpredictable findings.

REFERENCES

- Breitenmoser-Wursten, C., Henschel, P. and Sogbohossou, E. 2008. Caracal caracal. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <www.iucnredlist.org>. Downloaded on 01 June 2013.
- Ellerman J. R. and Morrison-Scott T.C.S. 1951. Checklist of Palaearctic and Indian Mammals, 1758 to 1964. Trustees of the British Museum, London, 810 pp.
- Etemad E. 1985: Mammals of Iran. 2nd Vol [Persian]. Iranian Department of Environment. 298pp.
- Sunquist, M. and Sunquist, F. 2002. Wild cats of the World. Chicago. University of Chicago Press. pp. 37–47.
- Nowell K., and Jackson P. (eds.), 1996. Wild Cats: Status Survey and Conservation Action Plan. IUCN/SSC Cat Specialist Group, 382 pp. www.globalwitcher.com/artspec_information.asp?thingid=35844. www.redlist.org
- Ziaie H., 1996: A Field Guide to the Mammals of Iran. Department of Environment, Tehran, 299 pp (in Farsi).



Fig 2. Caracal (*Caracal caracal*) in Siah-kuh protected area, Isfahan, Iran (Camera trap ©Iranian cheetah Society)