Arabian Gazelles: Taxonomy and Phylogeography

Torsten Wronska1,2,3,4, Timothy Wacher2,3, Robert L. Hammond2,3,4, Bruce Winney2,3,4, Kris J. Hundertmark2,3, Mark J. Blacket2,3, Osama B. Mohammed2,3,4, Sawsan A. Omer2,3,4, William Macasero3,4, Martin Plath1, Hannes Lerp1 and Christoph Bleidorn2

Introduction

The phylogeny of the Arabian gazelles is generally not well understood (e.g., Groves 1996). Morphological traits were commonly used as a basis for classification leading to frequent misclassifications. Sister group relationships within the genus are only poorly resolved and there are still lively debates about the status of certain taxa (e.g., Wronska et al., unpublished). The aim of this project is to characterize several Arabian, African and Asian gazelle species using molecular tools while including several taxonomically unclear “species”. First results are presented here.

Genetic divergence in Mountain gazelles

An analysis of mitochondrial DNA data of Mountain gazelle’s (Fig. 1) unraveled two reciprocally monophyletic genetic lineages within the presumed species Gazella gazella:

1) a northern clade from Galilee the Golan Heights and
2) a clade comprising all other ‘G. gazella’ from the Arabian Peninsula and the Arava Valley in the southern Negev (Fig. 2).

Taxonomic status of Sand gazelles

Analyses of mitochondrial data revealed polyphyly within Goitred gazelle (Fig. 3, Gazella subgutturosa), resulting in two distinct clades (Fig. 4):

1) on the Arabian Peninsula, Iraq, Jordan, Syria and Turkey (Gazella marica; Sand gazelle)
2) one genetically diverse larger clade from the rest of its Asian range (Gazella subgutturosa; Goitred gazelle)

The closest relative of the Sand gazelle is the Slender-horned gazelle (G. leptoceros).

In order to overcome the limitation of mitochondrial markers further investigations are needed not only including other (nuclear) markers but also morphological, behavioral, and life-history traits.

References