

FENCE LEADS TO MASS MORTALITIES OF THREATENED UNGULATES IN MAHAZAT AS-SAYD PROTECTED AREA IN ARID CENTRAL SAUDI ARABIA

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Die-offs of large numbers of globally threatened Arabian oryx (*Oryx leucoryx*), and Arabian sand gazelle (*Gazella subgutturosa marica*) were recorded from 1999 to 2008 in the fenced Mahazat as-Sayd Protected Area in western-central Saudi Arabia. We found that mortality of these animals occurred every year during summer months when the rainfall is negligible. Deaths were due to starvation because of reduced availability, accessibility and quality of food plants in the area.

The population of Arabian sand gazelle between 1991 to 2008 was estimated as 66, 120, 220, 300, 450, 413, 812, 856, 1034, 1104, 1245, 1683, 700, 800, 1537, 1200, 800, and 654 respectively based on Distance sampling technique. During the stressful summer months between 1991 and 2008, large numbers of dead Arabian sand gazelles were recorded in Mahazat as-Sayd PA. Between these years, the number of dead sand gazelles were 13, 12, 3, 5, 0, 9, 0, 31, 939, 644, 8, 0, 77, 21, 77, 679, 302 and 151 respectively (Ostrowsky and Ismail 2000, Ismail 2005, Ismail and Strauss 2006, Ismail 2007, Islam *et al.* 2007, and Shah *et al.* 2008). (Figure 1). Most of the dead gazelles were found under large green *Acacia tortilis* or *Maerua crassifolia* trees, which were typical shading places for ungulates at Mahazat during summer months. More dead gazelles were found in the vicinity of the external Mahazat as-Sayd fence especially southern and south-north and north-western parts of Mahazat as-Sayd.

The population of Arabian oryx from 1988 to 2008 was estimated as 9, 19, 31, 42, 89, 128, 170, 221, 326, 355, 405, 415, 413, 469, 523, 547, 529, 605, 614, 550 and 378 respectively. On 2nd December 2008, N (population size) of Arabian Oryx was 378 or with 95% CI was 113 to 432 oryx with total number of observations 47, survey effort 231.1 km and the mean group (cluster) size was 5.45. The mortalities of Arabian oryx have also been recorded since the re-introduction and die-offs of 30, 34, 26, 35, 20, 37, 36, 12, 46, 71, and 159 animals were recorded between 1998 to 2008. Most of the dead animals were calves and lactating females. Arabian Oryx are free-ranging animals and move long distances in search of food and the Mahazat fence prevents this movement especially during the stressful summer periods when food availability is extremely low and finally animals die near the fence.

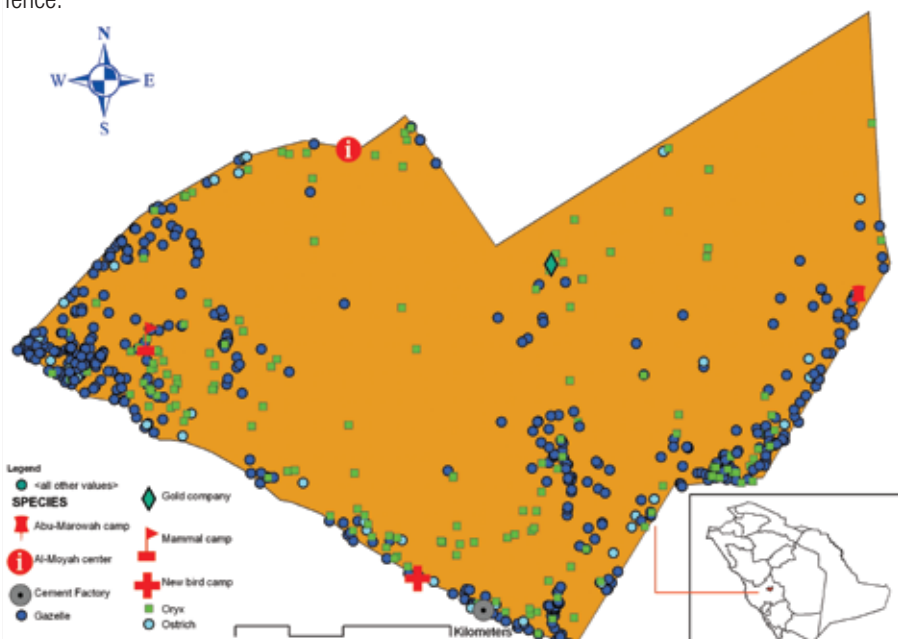


Figure 1: Locations of carcasses of Arabian oryx, Sand gazelle and ostrich in Mahazat as-Sayd Protected Area in Saudi Arabia during 2006, 2007 and 2008 (Most of the carcasses were recorded near the north-western, southern and south-eastern parts of the Reserve mainly under green *Acacia* or *Mearua* trees, which were sites with typical thermal cover that are required for ungulates at Mahazat during summer months while in the north-eastern part very few carcasses were recorded which could be due to less vegetation in that section).



Plate 1: Skulls of Arabian oryx that are systematically kept in one camp of Mahazat as-Sayd Protected Area (© K. Ismail)

Mortalities of ungulates were higher in 1999-2001, 2006, 2007 and 2008. Grazing of Arabian oryx habitat depends on rainfall and animals move over great distances in response to rain. The fence around Mahazat as-Sayd PA prevents natural movements of animals, and artificially concentrates the ungulate populations into possibly unfavourable habitat. The sand gazelle is a highly gregarious and migratory species, moving long distances in search of good quality pastures. Populations of sand gazelle in Central Asia are also known to migrate over large distances, covering several hundred kilometres. It is therefore likely that by preventing natural movements of sand gazelles and Arabian oryx, fencing may have reinforced the effects of stressful conditions such as drought. To reduce the catastrophic effects, a Strategy and Action plan was developed in August 2008 to manage oryx and gazelle within the Reserve and with provision for food and water at the five camps in the Reserve as an emergency plan to minimize mortalities.

A fully referenced version of this article can be found on the WME News website.



Plate 2: A Weak Arabian Gazelle just before its death near the fence (©M. Z. Islam)



Plate 3: A dead Arabian Oryx found under the dry *Acacia* tree (©M. Z. Islam)