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Poisoning of endangered Arabian leopard in Saudi Arabia and its conservation efforts

Many killings of leopards can be attributed to livestock protection. When catching goats, sheep, young camels or other domestic animals, leopards interfere with human activities and are seen as straight competitors. With the decrease of natural prey species, they have to more and more shift their diet to livestock, which increases their unpopularity. In most cases, they are also considered as a threat for human. As a result, leopard is hunted across its range, with different methods (trapping, poisoning, shooting). Poisoning using anticoagulant rat killer was common in the eighties, which was stopped in 1985 unlike trapping. A total of only five known incidences of poisoning of Arabian leopards *Panthera pardus nimr* have been recorded in Saudi Arabia between 1965 and 2014. Shepherds poisoned the carcasses of sheep, goats, camel thought to have been killed by a predator such as Arabian wolf *Canis lupus arabs*, striped hyena *Hyaena hyaena* or stray dogs and unfortunately, the predator in these instances was the elusive Arabian leopard.

The Arabian leopard is Saudi Arabia's flagship predator and is listed as Critically Endangered by the IUCN (Mallon et al. 2008, Boug et al. 2009, Islam et al. 2011), with an effective population of 100-250 across its entire range in the Arabian Peninsula (Islam et al. 2011). It is also considered to be a genetically distinct subspecies (Mallon et al. 2008). Known locally as Al nimr al-arabi, this leopard subspecies is small, adapted to desert habitats and endemic to the Arabian Peninsula. It once occupied the mountainous rim of the Arabian Peninsula, albeit at low densities given the harsh environment and limited prey base (Fig. 1).

Historically much of the leopard's range was located within the Kingdom of Saudi Arabia (Fig. 1), which decreased by about 90% since the 19th Century (Judas et al. 2006, Boug et al. 2009). Primary threats to the species are habitat degradation and fragmentation resulting from road or track construction (and which facilitate access for poachers), overgrazing by sheep and goats, construction of new houses (especially in rural areas), urbanization along the Asir Range on the Biljurashi Plateau, and mining or gravel extraction development. Depletion of the leopard's prey base and retributive killing are the greatest threats. Excessive illegal hunting has greatly

depleted key prey populations like the Nubian ibex *Capra nubiana*, Hyrax *Procavia capensis*, and Cape hare *Lepus capensis* (Al Johany 2007). As a consequence, the leopard has become increasingly dependent upon domestic stock for its subsistence, in turn leading to retaliation by those herders losing animals. Carcasses are poisoned and traps set to kill the predator whenever it is encountered (Judas et al. 2006). Although legally protected, the current law enforcement is ineffective (Al Johany 2007, Judas et al. 2006). Finally, there are reports of the sale of furs and rarely live animals sold in the market. For example one cat was sold for \$4,800 in the Al Khawbah market in 1997 (Judas et al. 2006). Leopard fat is valued by some locals for its perceived medicinal properties (Judas et al. 2006).

Incidences of leopard poisoning

A total of only five known incidences of poisoning of Arabian leopards have been recorded in Saudi Arabia between 1965 and 2014 (Fig. 1, Table 1). Shepherds poisoned the carcasses of sheep, goats, camel thought to have been killed by a predator such as Arabian wolf, striped hyena or stray dogs. Unfortunately, the predator in these instances was the elusive Arabian leopard (Fig. 2).

One of the first known poisoned leopards was in Fiqrah mountain in Hijaz range in Madinah province, where one leopard was found dead in 1992; the Saudi Wildlife Authority team investigated and confirmed the carcass was a leopard (A. Boug, pers. comm.). Al Johany (2007) interviewed local people who confirmed the presence of leopard some decades before in the Jabal Radwa. The Fiqrah mountain which is at about 1,800 m is barren and sparsely vegetated. Recent camera trap studies have confirmed the presence of wolf, striped hyena, Blanford's fox *Vulpes cana*, honey badger *Mellivora capensis*, honey collectors and hunters (Jackson et al. 2010).

The second site is An Namas in the South-western Highlands in Asir mountain, which was identified as a globally important biodiversity hotspots by Conservation International. The hills are above 2,000 m and the vegetation is dominated by thick juniper forest and rich in animal diversity that include Nubian ibex, mountain gazelles *Gazelle gazelle cora*, hyraxes, Blanford's fox and red foxes *Vulpes vulpes*, caracal *Caracal caracal*, Arabian wolves, striped hyenas and Arabian leopard (Nader 1996, Jackson et al. 2010). The carcasses of two leopards were found in January 2007. Since 2010, more than 70

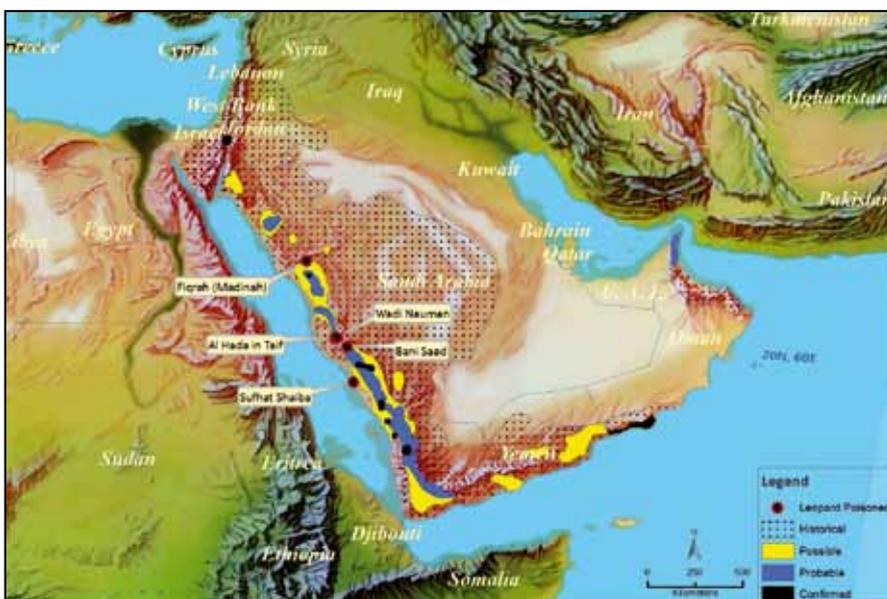


Fig. 1. Current distribution range of the Arabian leopard and sites where leopards recently have been poisoned in Saudi Arabia (map by M. Z. Islam and S. Davande).

Table 1. Location and details of dead Arabian leopards in Saudi Arabia.

Site name	Number & sex of Arabian leopard	Date found	Elevation	Nearest Town	Notes
Al Hada	One (sex not known)	1965	1,200 m	Al Hada near Taif	King Faisal bin Abdulaziz was given a stuffed leopard by people from Al Hada through Prince Mishal.
Fiqrah mountain	One (sex not known)	1992	1,197 m	Madinah Munawwarah (90km SE)	Carcass was collected (skull & legs) and submitted to SWA.
Sufhat Shaiba in An Namas	Two (1male,1female)	January 2007	2,210 m	An Namas (10km)	Poisoned leopards displayed on rock by the road, only photo available. SWA appointed two persons as wildlife rangers from the local tribe. Camera traps installed.
Bani Saad	One (adult male)	April 2011	1,800 m	Assuhan, Bani Saad (10km NE)	Skull, legs and tail were retrieved and kept at NWRC, Taif. Camera traps installed.
Wadi Nauman	One (adult male)	21February 2014	740 m	Al Hada (5km E) and Makkah (32km in W)	Herdsmen said a small camel killed by a 'leopard'. Camera trapping around the site didn't catch any leopard. SWA appointed three persons as rangers from the local tribe. Complete skin with head carcass is kept at NWRC, Taif.

camera traps were installed in An Namas and nearby areas.

Bani Saad was the third site where a male leopard was found dead in April 2011. The site is 65 km from Taif city in the south, where 25 camera traps were installed and key species recorded were Arabian wolves, striped hyenas, caracal *Caracal caracal* and foxes as well as local people and honey collectors.

A male leopard was found dead at the fourth site, Wadi Al-Nauman village near Al Hada, Taif. The complete skin along with head of the leopard was obtained on 23 February 2014 and 30 camera traps were installed in the mountains. Besides people, Arabian wolves, striped hyenas, honey badgers and Blanford's fox were pictured.



Fig. 2. Carcass of male Arabian leopard found in February 2014 at Al Hada Mountain near Taif.

According to the wildlife laws of the country, it is illegal to poison or threatened any animal. In the cases mentioned above, shepherds found dead livestock and poisoned them to reduce the incidence of livestock depredation. On finding the dead leopards, the shepherds were surprised as they expected wolves or stray dogs and were not aware of the presence of leopards in those areas. These incidents were acts of blind killing because shepherds were not targeting a specific species.

Saudi Wildlife Authority is working hard to save the Arabian leopard from extinction through a three-pronged initiative (Islam et al. 2011): (1) the captive breeding program where the National Wildlife Research Centre NWRC has 11 leopards (Boug et al. 2009); (2) measures involving research and wildlife studies including workshops, to learn more about the Arabian leopard and identify ways and means to protect it. This includes installing infra-red camera traps to monitor them and their movements; and (3) Public awareness where the National Wildlife Authority with its National Wildlife Research Center based in Taif visits schools, universities and other educational institutions to spread awareness about this Critically Endangered cat.

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