

SAVING THE ARABIAN LEOPARD IN YEMEN: HARNESSING THE POWER OF MOBILE TELEPHONY FOR CONSERVATION

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Conservationists have much to gain from partnering with mobile telecoms operators. As devices become ubiquitous and network coverage expands to reach more remote populations, mobile technology could become the conduit of choice to increase conservation awareness and collect information from the ground.

This is particularly true in Yemen, where the Foundation for Endangered Wildlife (FEW) is facing an uphill battle for the survival of the Arabian Leopard (*Panthera pardus nimr*). With less than 200 individuals estimated to remain in the wild throughout the Arabian Peninsula, it is categorized as critically endangered by the International Union for Conservation of Nature (IUCN), and at risk of imminent extinction unless drastic measures are taken for its protection across its limited range. Major threats include rampant human population growth leading to fragmentation and loss of leopard habitat; uncontrolled hunting from a heavily armed society; and poaching for purposes of addressing the demand for live leopards from GCC states, where wild cats provide a status symbol to those who own them. A lack of basic environmental consciousness among the population, and above all more pressing needs to deal with in an economically and politically difficult context, mean that wildlife conservation remains at the low end of priorities for people and government alike.

In the last years, FEW has conducted numerous camera-trap surveys in areas which have historically been leopard habitat. In 2011, this led to the first photographic evidence of leopards in the wild, when two different individuals were spotted in southeast Yemen, adjacent to the Omani border. Further traces of scats (animal droppings) and footprints have been recorded since then, providing hope that there is still time to prevent the leopard's extinction. Unfortunately, however, leopard presence in Yemen has been more forcibly confirmed through press reports of kills or captures. In July 2014, various Yemeni and international newspapers (Gulf News 2014) and websites reported the killing of two leopards around Sha'ib mountain in the area of Al Dhale', publishing pictures of the hunters proudly exposing their trophies. Despite being Yemen's national animal and protected by law, no effort has been made to arrest the perpetrators. The government's tenuous control of Al Dhale' province has not helped, the area being a hotbed of militancy.

It is in this context that FEW has initiated discussions in view of forming a partnership with a leading mobile operator in Yemen. In addition to being a conduit for communicating with end-users, mobile operators have access to a slew of data from subscribers, including information on user location, call records, billing information, and more or less accurate user directories, which can all provide a valuable contribution for conservation efforts. While private subscriber information is protected unless required by judicial authorities, the possibility to reach and interact with a large number of individuals throughout the territory can already address significant conservation needs.

These discussions have centred on a number of areas, including awareness raising through bulk messaging. At almost no cost to the operator, SMS messages can be sent to a selected subset of subscribers which are known to inhabit areas where research indicates that leopard presence is likely. These communications would include educational and awareness messages on the plight of the Arabian leopard. More importantly, interaction with subscribers can be initiated for crowd-sourcing purposes, in which SMS-based surveys of animal sightings can be conducted, recording responses in a database, and running a statistical analysis of the results. Such an analysis can eliminate the outliers, and provide an indication of past leopard presence, both chronologically and geographically. In turn, the analysis can be followed by more focused and more geographically specific camera-trap surveys, improving FEW's operational efficiency and reducing its costs. Interactions with subscribers can also help understand how the animal is perceived by them, and shed further light on the apparent reasons behind leopard persecution. For instance, where there are records of leopards posing a threat to a farmer's livestock, this can help the Foundation direct its efforts in lobbying for adequate legislation, in view of compensating farmers for any loss incurred due to leopard attacks.

Mobile technology can also be used in the context of law enforcement for the purpose of prosecuting individuals involved in the hunting and poaching of Arabian leopards. Phone or SMS-based tip-offs by informants, eventually against compensation through airtime credit, is a relatively straightforward mechanism which has been implemented with success in Eastern Africa (African Wildlife News

2014). However, mobile technology has more to offer. In the latest reported leopard killing of July 2014 in Yemen, local newspapers and social media published photographs of the hunters, clearly showing one of them placing a call (Yafa News 2014). Considering the knowledge that the killing happened around Sha'ib, and the time-stamp of the picture, it would be relatively easy for a government agency to analyse the operators' call records, and identify the subscribers who placed and received calls from the base transceiver stations located (BTS) in the area. By cross-referencing this information with user directories, the full details of the individuals could be obtained, and prosecution could effectively begin. The individual's location could be further identified with triangulation, leveraging information from the BTSs which indicate in real time the mobile numbers which are currently associated to it. By analysing the historical call records of the identified individual (numbers dialled and called from, along with time-stamps), the prosecuting authorities could then proceed to identify and understand the extent of the network involved, eventually leading back to higher profile persons which may have instigated the hunt for various reasons, or which may have purchased the trophy. Finally, legal provisions for the lawful interception of telecom conversations could further help authorities build the case and gather further evidence of the suspected hunters' involvement.

With careful planning and the forging of strong partnerships, leopard conservation efforts in Yemen could stand to benefit greatly from mobile technology. This should come at no or negligible incremental cost to operators, while allowing them to expand their social responsibility activities. As importantly, it could enable Yemeni operators to have a pioneering role in putting to use cellular technology for the benefit of conservation in the Middle East. Although the current political context does not lend itself to a focus on conservation by government, raising awareness and conducting leopard spotting surveys based on SMS could go a long way. FEW Yemen's nascent partnership with an operator is a first step in the right direction.

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