



Rapid Assessment of Jebel Milhan

December 30, 2009 – January 3, 2010

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Report on Rapid Assessment of Jebel Milhan, December 30, 2009 – January 3, 2010

Background: Jebel Milhan is a large massif in Western Mahwit governorate that rises to circa 2,500 masl. Separated from Jebel Hufaash by Wadi Yuur, Milhan is sparsely populated, deeply cut with numerous wadis and densely vegetated. In 1996, two German nationals, Hans-Joachim Schmidt and his wife Maria Geburzi, visited Milhan and developed a deep love for the area and its people. Although the Schmidts speak little Arabic they repeatedly visited the area, forming close friendships with a number of the inhabitants. Because Hans had heard local reports of Arabian Leopards (*Panthera pardus nimr*) from Milhan he decided to train and contract a local coffee farmer, Nasser Ahmed Yehya Qassem, to monitor a Trailmaster TM 1550 infrared remote camera system in an effort to document leopard presence on Milhan. Starting in December 2006, Hans and Nasser were able to photograph a Striped Hyena (*Hyaena hyaena*) and Small-spotted Genet (*Genetta genetta*), but the camera was stolen in April 2007, reportedly by one of Nasser's neighbors. The alleged thief, Khaled Mohamed, subsequently spent a period of time in jail and was released only after his brothers paid a fine of

YR 130,000. According to Nasser, he and a local schoolmaster by the name of Omar each spent 15 days in jail with capital punishment apparently having been discussed by the authorities because it was rumored that Nasser was using high tech equipment to send sensitive information to a foreigner via satellite. Although common sense eventually prevailed, the stolen camera has not been returned/recovered and the case is therefore technically still open.

I initially contacted Mr. Schmidt on February 25, 2008 after receiving his contact details from the German Embassy. Mr. Schmidt had previously requested that the embassy assist him in obtaining a license from the government of Yemen to deploy a second camera on Jebel Milhan. As a result of this request the embassy drafted a letter to the Yemen Ministry of the Interior dated February 4, 2009. From the point of our initial contact, I followed up on the license request, principally through the Yemen Ministry for Water and the Environment and the Environmental Protection Authority. On December 7, 2009, after a long series of email exchanges, telephone calls, and office visits between various parties, I finally obtained a letter sanctioning Nasser's use of a second remote camera on Milhan from Omar Baeshen of the EPA. The letter had been signed by Yemen Minister for Water and the Environment, HE Abdulrahman Al-Eryani on November 18, 2009.

Objectives: The objectives of the current visit to Jebel Milhan were:

- 1) To deliver the letter/license to Nasser so that he could recommence the camera trap survey on Jebel Milhan,
- 2) to demonstrate foundation support for Hans and Nasser's work on Jebel Milhan,
- 3) to assess the probability that wild Arabian leopards still live on Jebel Milhan, and
- 4) to find out what local attitudes and expectations with regards to leopards and the work of Hans and Nasser on Jebel Milhan are.

Participants: Mr. David Stanton and Mr. Gerhard Lichtenthaler

Itinerary:

Wednesday, December 30: Depart Sana'a International Airport for Hodeidah on Saeedah flight FO 170 at 8:00 AM. Travel by taxi to Bajil. Travel to Jebel Hufaash above Wadi Yuur by Land Cruiser pickup. Walk to Nasser's home below the village of As Sowat on Jebel Milhan.

Thursday, December 31: Foot survey of Wadi Shaharah (a tributary of Wadi Yuur on the Milhan side of the wadi).

Friday, January 1: Walk from Nasser's home through As Sowat to As Saba' high on Jebel Milhan.

Saturday, January 2: Walk from As Saba' to Adhra'. Taxi from Adhra' to Washitah. Taxi from Washitah to Mahwit.

Sunday, January 3: Taxi from Mahwit to Sana'a.

Narrative account of the trip: Following the short flight to Hodeidah we quickly found transport from Hodeidah International Airport to Bajil from where we attempted to call Nasser several times. As he was at that time en route from Jebel Milhan to Bajil, mobile coverage was poor so we were unsuccessful until approximately 10:30 AM. Nasser met us at Abu Ramzi restaurant from where we went to the Bajil suq to buy a few provisions as we were uncertain what food would be available on Jebel Milhan. Nasser arranged transport to Jebel Milhan and we stopped for an early lunch with the driver and other passengers prior to our journey to Milhan.

Mohamed, the driver, turned left into Wadi Yuur a few kilometers east of the Bajil checkpoint and we drove quite quickly for two hours on rough tracks through Wadi Surdud, past Wadi Raboa' and Wadi Sara and on Jebel Hufaash. Mohamed dropped us off near the village of Qarn Al Qadoom and we walked across Wadi Yuur to Nasser's isolated coffee farm at around 1135 masl, a few hundred meters below the village of As Sowat. There we received generous hospitality although it was obvious that Nasser and his family were very poor and could ill afford to feed their strange visitors for any length of time.

Nasser's farm consists of a few terraces planted with coffee and qat. Millet is grown between these perennial crops. They also have a couple of papaya 'trees' and at least three mango trees. Livestock consists of three cows, a donkey, two dogs, a cat, and at least two guinea fowl. Nasser and his wife have three sons and Nasser has another son, Yousuf, now 15, by a previous marriage. His daughter from his first marriage died many years before at the age of five by falling into the family cistern, knocking herself unconscious, and drowning in the water it contained. Nasser's 70 year-old father lives with his second wife a few hundred meters across a minor tributary of Wadi Yuur, his first wife having died two years ago. She is buried in a terrace barely 30 meters from the front door of Nasser's father's house.

Not long after we arrived at Nasser's farm, Khaled, the alleged camera thief, appeared and a heated exchange ensued with Nasser's wife eagerly joining the shouting match. Khaled gave the impression of suffering from a mild intellectual deficiency that could conceivably affect his judgement. After a few minutes he left and we never saw him again.

That evening was spent getting acquainted, and eating a simple meal of bread and vegetables. Nasser and his wife chewed qat quite late into the evening and she smoked a *mada'ah* with considerable expertise. I was surprised when she unhesitatingly fed her youngest child, Muhib, in front of we two foreign men.

Following a breakfast of unleavened bread soaked in warm milk and many cups of *bun Milhani* we set off on foot at around 9:30 to explore Wadi Shaharah, a tributary of Wadi Yuur where Nasser had previously set up the camera and where he stated that in the winter of 2008 he saw a female leopard with two cubs. Wadi Shaharah has a permanent pool at its mouth which Nasser says is filled with "*microbat*" and therefore unfit for human use. The wadi is otherwise very inhospitable to people being densely vegetated, particularly with the type of prickly pear cactus that is so common in this area. Progress through the wadi was slow due mainly to the fact that Nasser had to hack through dense groves of cactus with a homemade machete. Our movement was further impeded by the fact that in many places there was no clearly defined trail and it became obvious that this is a place where people rarely venture although we did find evidence of abandoned terraces and fragments of trail.

As we climbed higher into Wadi Shaharah we saw much evidence that it was used by animals, particularly Striped Hyenas (*Hyaena hyaena sultana*). We found cattle bones, baboon skulls, and many piles of hyena scat. Nasser showed us possible den sites which he stated were where the leopards lived, but I was unable to find any confirming evidence such as footprints, fur, or the bones of animals that had obviously been eaten by a leopard. However, further up the wadi we found the remains of two Rock Hyraxes (*Procavia capensis jayakari*) that could have been eaten by leopards as these animals are probably too agile for hyenas to catch (see Figs 1 and 2). Rock Hyraxes are also preyed upon by

Verreaux's (*Aquila verreauxii*) and Bonelli's Eagles (*Hieraetus fasciatus*) and since we saw two of the latter it is possible that the hyraxes had been predated by an eagle. I also noticed a deposit or two of what I took to be small carnivore scat; possibly Small-spotted Genet (*Genetta genetta*) or White-tailed Mongoose (*Ichneumia albicauda*).



Fig. 1: Hyrax remains in Wadi Sharahah



Fig 2: Second Hyrax remains in Wadi Shaharah

(Photos by David Stanton)

On our return to Nasser's homestead we stopped at his father's house where we found the old man apparently suffering from a malaria attack. We were fed a meal of unleavened bread and cheesy yoghurt and several cups of *bun* by Nasser's stepmother before continuing our journey to Nasser's home, arriving slightly before the onset of night. By this time it was well known in the area that Nasser had a couple of 'interesting' guests so several men showed up including Omar, the schoolmaster from As Sowat.

Conversation that evening centered on the history of the camera and the letter (generally referred to as *al rukhsah* – 'the license') which Gerhard and I had brought to Nasser. Much discussion as to who should be given photocopies of the license ensued and it was decided that Nasser should also attempt to get a letter from the governor of Mahwit endorsing his mission. Plans were made as to how we would all go to Mahwit together to petition the governor for this letter. The gathering chewed *qat* late into the night and once again Nasser's wife joined the group to chew and smoke, feeding Muhib as before.

In discussing leopards Omar pulled a Kalashnikov bullet out of his pocket which he says that he keeps because when he is guarding the cows at night he hears large animals that he thinks are leopards and he needs the bullet for protection. Omar asked what would happen if Nasser succeeded in photographing a leopard and I replied that the government *might* be interested in developing a protected area. This idea was greeted with enthusiasm because the consensus on Jebel Milhan is that the region is neglected by the government and a *mahmiyah* would mean better roads and communications such as those on Jebel Hufaash. I attempted to make the gathering understand that a protected area was only a remote possibility and that if it were to happen many years would pass before it became a reality.

The next morning we had a slightly earlier breakfast than the day before and Gerhard negotiated our departure by foot for As Saba'. We set off at around 9:00 AM and it took roughly 40 minutes to reach As Sowat where we were fed for the third time that morning by Omar, the schoolmaster and local representative for the Ministry of Human Rights. We continued up the mountain on the car track, stopping to refill our water bottles at a large spring several hundred meters above As Sowat. We followed the road into As Sabra where we were feasted by some of Nasser's friends, one of whom claimed that the Al Hothis released monkeys into Sada'ah with tape players strapped to their backs which played "*Allah akbar*" over and over as a means of demoralizing government troops.

At this point the trail diverged from the road and we climbed steeply to over 2,000 masl. We continued walking to Al Markah and from there to As Saba' on a trail that has only been in existence for the past 10 or 12 years, with parts of it having been blasted from the raw rock. We were shown the place where the people of As Saba' previously had to climb up a rope to get to the higher ground and were told that prior to the new track a French tourist had slipped down the rope, cutting both of his hands badly as the rope slipped through them. On this and every subsequent occasion that we reached this spot, local men were eager to show us how the villagers used to climb the cliff where smooth hand and footholds indicated many years of use.

To reach As Saba' we had to pass through a village gate which we were told would have been locked at night some 40 or 50 years ago. We waited near the village generator while Nasser prayed and were interrogated by many of the village children and served *bun milhani* by an older woman who lived in a nearby house. We were then shown to the house of Ali Mohamed who had one of the village's few TVs. At one point there were 26 men and boys from the village watching the constantly changing channels since Ali controlled the remote and kept flipping through the programs which consisted of various Arabic news channels and a Turkish soap opera. Prior to dinner we were told that a man named Abdullateef had seen a mother leopard with cubs in Wadi Hateb below the village during Ramadhan. When dinner arrived only Ali, his small son Suleiman, and our party of three ate; everyone else continued to watch TV. By 9:00 PM, most of the people had left so the TV was turned off and we all went to sleep.

The next morning, after being given a complete tour of the village we set off relatively early for Adhra', passing by the fork to Al Markah where a mentally impaired man wanted us to pay him YR 500 to climb up the cliff where the rope had previously been tied. We resisted his pleas as we feared for his safety and walked down the mountain as he shouted "*Aib, aib!*" at us. In the village, some of our companions told us that 25 or 30 years previously a battle between Al Markah and As Saba' had produced at least one fatality. Several hundred meters down the trail we encountered a dead lamb with no head leaning against the rocks at the side of the trail. As I examined the sheep I was told that it had been killed by a leopard, but I saw no convincing evidence of this. We didn't stay for long as the ground was covered with fleas that must have come from the sheep and which climbed up our legs in droves.

We continued on to the village of Sharif where we found a constant line of children, many of whom were boys, carrying water from the spring to the village. We were told that the round trip takes up to an hour and a half and that each child makes from four to ten trips every day. We were offered a car to the next village but we continued to walk. En route we met a man named Mohamed who fixes gas appliances, walking from village to village with a bag full of stove and lamp parts and a few tools. He offered some fresh coffee beans to Gerhard who politely refused the gift. For some time we stayed together but because of my slow pace, Mohamed asked if it would be all right for him to go on ahead and he quickly walked out of sight. Mohamed walked cheerfully back to Adhra' at a brisk pace, stooping every few seconds to throw loose rocks off of the rough track.

When we finally reached Adhra' we found the road and the village to be as thickly littered as any place we had ever seen, including Hadiboh. Nasser has a friend in Adhra' and though he was not at home we ate a very lavish meal of bread, rice, *fatah*, bananas and apples served by the "man of the house," 15 year-old Abdul Karim who thoughtfully licked a serving spoon clean before presenting it to Gerhard so that he wouldn't have to eat with his hands. Gerhard tactfully declined the offer.

After lunch we hired an *abu debbah* (early model Toyota Landcruiser) to take us to Washitah where we caught a lift in a hilux for Mahwit. In Mahwit we thanked Nasser, paid him for his services, and made tentative plans for the future.

Results: During the course of our time on Jebel Milhan I took rough notes of what we observed with an eye to recording conditions that might be conducive to sustaining a leopard population in the area.

1) Terrain: The terrain is very rugged, densely vegetated, and sparsely populated. There are large expanses that are uninhabited and/or rarely visited by people with enough inaccessible and secluded locations that leopards could conceivably live there without being discovered. Based on the prevalence of abandoned terraces and statements about the worsening water situation, it would appear that there is a net emigration from Milhan which has positive implications for wildlife.

2) Vegetation: The vegetation is surprisingly dense and diverse, especially on the eastern flanks of the mountain in and around Wadi Yuur. Although my botanical knowledge is limited, vegetation ranges from non-vascular mosses (particularly on the mist-soaked western flank), through grasses, succulents (e.g. *Aloe sp.*, *Euphorbia sp.*, *Opuntia sp.*, *Caraluma sp.*), to a variety of shrubs and trees. In some places in Wadi Shaharah the vegetation is so dense as to be impenetrable. The “bottle tree” (*Adenium obesum*) is locally common on the Wadi Yuur side of Jebel Milhan where it is locally known as “*Aden*” (possibly a corruption of the generic name or a local name from which Forskal originally derived the latin). Nevertheless, the density and variety of vegetation provides potentially good forage for leopard prey and a great deal of cover that could conceal leopard movements. Interestingly, we found an example of *Hydnora africana*, a rare and very local plant which is highly coveted by people who know it for a cheesy outgrowth of its roots that is eaten. According to Dr. Tony Miller, Director of the Centre for Middle Eastern Plants at the Royal Botanical Garden in Edinburgh, this is a very interesting record that represents only the third specimen from North Yemen. Dr. Miller further stated that he would not have expected it to occur on Jebel Milhan.

3) Water: Obtaining adequate water is a perpetual problem for the inhabitants of Milhan with a lack of water appearing to have caused the abandonment of many previously occupied areas. Abandoned terraces are a common sight on Milhan. We observed a variety of open pools and springs that are sufficiently isolated to potentially provide leopard prey with drinking water. I assume that in some of the more inaccessible places water exists that could be exploited by wildlife, including leopards.

4) Local Attitudes: Throughout our stay on the mountain we were repeatedly told that there are leopards on Milhan. People appeared to be more or less accepting of this fact and didn’t demonstrate any particular animosity towards the animals. We did encounter one man between As Sowat and As Sabra who said that Nasser was “crazy” but I was unable to ascertain whether or not this was because of negative feelings towards leopards. Although there must be numerous arms on Jebel Milhan as there are elsewhere in Yemen, we only saw one Kalazhnikov and one pistol the whole time we were there and it appears that people do not generally carry arms. According to Nasser, since shells now cost YR200 each, people hunt less than they used to.

5) Potential Prey: When assessing habitat for its potential to support a large predator such as an Arabian leopard, one must ask is, “Is there anything here that they could eat?” On the eastern side of Milhan which is flanked by Wadi Yuur, food would appear to be little problem. Hamadryas Baboons (*Papio hamadryas*) are abundant on this part of the mountain and can be easily seen and heard daily. On the western flank of the mountain we neither heard nor saw baboons or their scat and were told that ‘they come here, but not all the time.’ While there is plenty of good habitat for Rock Hyrax (*Procapra capensis jayakari*) on both sides of the mountain we didn’t see any living examples. We found the carcasses of two that had obviously been eaten by some predator in Wadi Shaharah and were shown a midden of hyrax scat although it did not appear fresh. When I asked if people hunted hyrax, Nasser replied that because cartridges in the suq now cost YR 200 each, people no longer hunted. In fact, during our whole time on Milhan we only saw one man carrying a Kalazhnikov and heard only one gunshot which I have good reason to believe was fired by this man.

There appears to be a healthy population of Striped Hyenas (*Hyaena hyaena sultana*) (See Fig. 3) on Milhan and we saw much evidence of their presence, particularly on the eastern side of the mountain. Although I know of no records of Arabian leopards preying on hyenas, they could conceivably take young ones. We know from Hans and Nasser’s camera

trapping that there are also Small-spotted Genets (*Genetta genetta*) (See Fig. 4) on the mountain and Nasser also described a mammal that I identified as probably being a White-tailed Mongoose (*Ichneumia albicauda*). In fact, we did find the scat of small carnivores in a few locations but we could not identify these.



Fig 3: Striped Hyena in Wadi Shaharah



Fig. 4: Small-spotted Genet in Wadi Shaharah

(Photos by Hans-Joachim Schmidt and Nasser Ahmed Yehya Qassem)

Other mammals that Nasser stated exist in the area include Cape Hare (*Lepus capensis*), Indian Crested Porcupine (*Hystrix indica*), Brandt’s Hedgehog (*Hemiechinus hypomelas*), “foxes” possibly (*Vulpes vulpes arabica*) and/or (*Vulpes cana*), and Honey Badgers (*Melivora capensis pumillio*) which he stated to be “very common.” Gazelles (*Gazella gazella cora*), Ibex (*Capra ibex nubiana*), Wolf (*Lupus lupus arabs*), and Caracal (*Caracal caracal schmidtzi*) were said to be absent. Nasser made no mention of Gordon’s Wildcat (*Felis silvestris gordonii*) or smaller mammals such as jirds.

Arabian Partridge (*Alectoris melanocephala*) exist widely on Milhan and were either heard or seen daily during the survey on both sides of the mountain. When asked about monitors (*Varanus sp.*) Nasser stated they were present, but he could not confirm the existence of *d hubs* (*Uromastix sp.*). He stated, however, that Arabian Cobras (*Naja haje arabica*) were common and that he catches them when he sees them. Agamas were surprisingly scarce on the ground although we did see an adult male Hadhramawt Agama (*Acanthocercus adramitimus*).

Presumably, there are a numerous small mammals, reptiles, birds, amphibians, and possibly arthropods that could help sustain leopards during lean times. Potential prey observations are summarized in Table 1 below:

Taxon	Observations	Comments
Hamadryas Baboon (<i>Papio hamadryas</i>)	Seen and heard daily on the eastern flank of Jebel Milhan. Not observed in the western portions of the mountain though people state that they do come to that side of the mountain.	Baboons approach the settlements above Wadi Yuur closely. Up to three troops are visible at any one time. Scats are common in and above Wadi Yuur.
Rock Hyrax (<i>Procapra capensis jayakari</i>)	Two predated individuals and one old scat midden observed in Wadi Shaharah on Dec. 31 st .	Eaten by people but said to be hunted less and less due to the high cost of cartridges.
Striped Hyenas (<i>Hyaena hyaena sultana</i>)	Plenty of evidence in Wadi Shaharah on Dec. 31 st including heaps of scat, footprints, dens, and old bones including one Hyena skull. Camera	Said to be common; our evidence supports this.

	trapped by Hans and Nasser in early 2007.	
Small-spotted Genets (<i>Genetta genetta</i>)	Camera trapped by Hans and Nasser in early 2007. Scat found that could be from this species.	Said to be common. Locally known as 'Urj
White-tailed Mongoose (<i>Ichneumia albicauda</i>)	Scat found that could be from this species.	Said to be common
Cape Hare (<i>Lepus capensis</i>)	Not observed	Said to exist in Wadi Yuur
Brandt's Hedgehog (<i>Hemiechinus hypomelas</i>)	Not observed	Said to exist
Honey Badgers (<i>Melivora capensis pumillio</i>)	Not observed	Said to be common. Locally known as 'Aksh
"Foxes" (<i>Vulpes vulpes arabica</i>) and/or (<i>Vulpes cana</i>)	Not observed	Said to exist
Gordon's Wildcat (<i>Felis silvestris gordonii</i>)	Not observed	No information about this species was obtained
Arabian Partridge (<i>Alectoris melanocephala</i>)	Heard on both sides of the mountain each day of the survey. A flock of three was seen near Sharif on Jan. 2.	A familiar bird which is widespread on Milhan but apparently not abundant.
Monitor lizards (<i>Varanus sp.</i>)	Not observed	Said to be present
Hadhramawt Agama (<i>Acanthocercus adramitimus</i>)	One adult male observed near As Sabra	Surprisingly few were observed during the survey
Dhubs (<i>Uromastix sp.</i>)	Not observed	Unfamiliar to Nasser
Toad sp., possibly (<i>Bufo dhufarensis</i>)	Toads were heard calling in the vicinity of Nasser's farm on Dec. 30 and 31 st	Although it is unlikely that Arabian leopards would eat toads, their presence on Milhan is noteworthy.
Caracal (<i>Caracal caracal schmitzi</i>)	Not observed	Said to be absent, which I find surprising
Gazelles (<i>Gazella gazella cora</i>)	Not observed	Locally extinct or never present
Ibex (<i>Capra ibex nubiana</i>)	Not observed	Locally extinct or never present

Table 1: Potential Leopard Prey Observations

Birds: Throughout the survey bird species were recorded. As they bear no special impact on the purpose of this survey (except perhaps for the Arabian Partridge) their occurrence will simply be noted in table 2 below:

Species	Comments
Yellow-billed Kite (<i>Milvus aegyptius</i>)	Only a few seen, mainly near the foothill villages on the west on Jan. 2
Griffon Vulture (<i>Gyps fulvus</i>)	Three unoccupied vultures were noted between As Saba' and Al Markah. A few Griffon Vultures were seen in the high mountains. There is a concern about the vultures at Milhan because many people keep cattle here. As I found an empty ampule of injectable diclofenec near Nasser's house, the possibility exists that the people on Milhan use this anti-inflammatory drug on their cattle. Gyps vultures that feed on animals treated with diclofenec quickly die of kidney failure and it is therefore imperative to look more closely at the situation on Milhan with regards to its vultures and the use of diclofenec.
Common Buzzard (<i>Buteo buteo vulpinus</i>)	A single wintering individual was noted above Wadi Shaharah on Dec. 31
Bonelli's Eagle (<i>Hieraetus fasciatus</i>)	A pair of Bonelli's Eagles was seen above Wadi Shaharah on Dec. 30 and 31
Kestrel (<i>Falco tinnunculus</i>)	Single birds were seen on both the east and the west sides of the mountain

Arabian Partridge (<i>Alectoris melanocephala</i>)	Small flocks were heard on both sides of the mountain. Three or four birds were seen flying across a wadi near the village of Sharif on the west side of the mountain
Helmeted Guineafowl (<i>Numida meleagris</i>)	Domestic guinea fowl are kept by some of the residents of Milhan
Rock Dove (<i>Columba livia</i>)	Only one flock noted in Wadi Hateb on January 2
Red-eyed Dove (<i>Streptopelia semitorquata</i>)	Heard calling near Wadi Shaharah on Dec. 30 and 31
Laughing Dove (<i>Streptopelia senegalensis</i>)	A pair foraging on Nasser's terraces on Dec. 31 and Jan. 1
White-browed Coucal (<i>Centropus superciliosus</i>)	Not seen, but when I pointed out a White-spectacled Bulbul to Nasser he said that it wasn't a bulbul. He then did a perfect imitation of a White-browed Coucal which he confirmed from my description of the bird. He stated that they call coucals "bulbul"
Hume's Tawny Owl (<i>Strix butleri</i>)	Heard from both sides of Wadi Yuur on Dec. 30 and 31
Alpine Swift (<i>Apus melba</i>)	One seen at the pass between Al Markah and As Saba' on Jan. 1
Little Green Bee-eater (<i>Merops orientalis</i>)	Noted in Wadi Yuur on Dec. 30 and 31
African Rock Martin (<i>Ptyonoprogne fuligula</i>)	Seen on both sides of the mountain all days
Long-billed Pipit (<i>Anthus similis</i>)	One recorded above Sharif on Jan. 2
White-spectacled Bulbul (<i>Pycnonotus xanthopygos</i>)	A few seen on both sides of the mountain all days
Black Bush Robin (<i>Cercotrichas podobe</i>)	One noted near the mouth of Wadi Yuur on Dec. 30
South Arabian Wheatear (<i>Oenanthe lugentoides</i>)	Several seen on both sides of the mountain all days
Little Rock Thrush (<i>Monticola rufocinerea</i>)	One noted in Wadi Shaharah on Dec. 31 with a second near As Sabra on Jan. 1
Blue Rock Thrush (<i>Monticola solitaries</i>)	One noted at Wadi Shaharah on Dec. 31
White-breasted White-eye (<i>Zosterops abyssinica</i>)	Seen most days on both sides of the mountain
African Paradise Flycatcher (<i>Terpsiphone viridis</i>)	Three individuals seen on Dec. 31: two in Wadi Yuur and one in Wadi Shaharah
Palestine Sunbird (<i>Nectarinia osea</i>)	Noted in small numbers most days on both sides of the mountain
Southern Grey Shrike (<i>Lanius meridionalis buryi</i>)	One seen in Wadi Shaharah on Dec. 31
Tristram's Grackle (<i>Onychognathus tristramii</i>)	A few birds noted in Wadi Shaharah on Dec. 31 and a few above Wadi Hatab on Jan. 2
House Sparrow (<i>Passer domesticus</i>)	A few noted around As Sabra on Jan. 1
African Rock Bunting (<i>Emberiza tahapisi</i>)	At least two birds seen on Dec. 31 in Wadi Shaharah and one near As Saba'

Table 2: Bird Observations

We received numerous, sometimes contradictory reports of leopards which are summarized in table 3 below:

Date	Reporter	Location	Details
During Ramadhan 2009	Reported by Ali Mohamed in As Saba' The observer's name was 'Abdulateef'	Wadi Hatab	'A mother with cubs' – villagers in As Saba' insist that leopards live in the "empty places" on Jebel Milhan
"The same time last year." i.e. Winter 2008	Nasser Ahmed Yehya Qassem	"Al Sha'ab al Ma"	'A mother with two cubs'
"3 years ago"	Nasser Ahmed Yehya Qassem	Wadi Yuur	'Somebody set a monkey trap and caught a young leopard which was killed'
Date not established	Nasser Ahmed Yehya Qassem	"Al Sha'ab al Ma"	"Dead cub." Nasser produced the bones which are definitely those of a small carnivore. Nasser concluded that it was a leopard cub on the basis of spotted fur which he did not collect, but I believe them to be the bones of a Small-spotted Genet. The bones will be submitted to a taxonomist for confirmation.
"8 years ago"	Nasser Ahmed Yehya Qassem	"Here" i.e. near his coffee farm	'When guarding the qat I saw a leopard. That was the last time I saw one here.'
"15 – 20 years ago"	Nasser Ahmed Yehya Qassem	As Sowat/Wadi Yuur	'Cows and sheep were killed by leopards. Now people don't take their livestock to where the leopards are.'
"When I was six or seven" i.e. circa 37 - 38 years ago	Nasser Ahmed Yehya Qassem	As Sowat	'A leopard got into a corral and killed 20 sheep'

Table 3: Summary of leopard reports recorded during the survey

Conclusions: The habitat at Jebel Milhan certainly seems suitable for Arabian Leopards, being scarcely populated, extremely rugged with many impenetrable areas, and a variety of potential prey items. People on both sides of the mountain claim that there are leopards in their regions and it seems possible that a small population of these apex predators could exist by systematically utilizing the uninhabited areas in the deep wadis around Milhan. However, the similarity of reports ("a mother with cubs") and the readiness of Nasser to erroneously identify small carnivore bones as those of a leopard cub reaffirms the necessity to be circumspect about all eye-witness accounts of leopards.

In my opinion, the habitat at Milhan is suitable to support at least a small, transient population of Arabian leopards. Given the quality of the habitat, the scarcity of human inhabitants, the abundance of potential prey items, and the persistence of leopard reports from the area, the possibility that Arabian leopards persist on Jebel Milhan, at least on a passing basis as they move through suitable habitat in Yemen's Western Escarpment has to be taken seriously. However, until confirming evidence in the form of a photograph, tissue sample, or carcass is produced, we must consider the existence of a leopard population on Jebel Milhan as unproven.

Recommendations: Based on our results Jebel Milhan warrants more thorough investigation. I would therefore suggest the following:

- 1) A thorough search of the literature to determine what has already been published on the biology of the area.
- 2) A complete biodiversity assessment of Milhan by Yemeni botanists and zoologists.

3) A complete canvassing of the villages on Milhan to get a better record of local leopard observations and attitudes. I believe that Nasser could reliably be employed to successfully undertake this task. It is necessary to develop an effective survey tool/questionnaire to be used in this effort.

4) Because Nasser Ahmed Yehya Qassem has the technical skills and demonstrated commitment to undertake a trail camera survey I recommend that the foundation continues to support his efforts to photograph wildlife including Arabian leopards in Wadi Shaharah.

5) I further recommend that we conduct a follow-up visit to assess the possibility of deploying a second camera in a different location.

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This trip would never have happened had it not been for the pioneering work of Hans-Joachim and Maria Schmidt on Jebel Milhan. Hans has been very active in encouraging me to undertake this mission and has devoted a considerable amount of time and money to supporting Nasser and making sure that things were progressing with regards to the "license." Gerhard Lichtenthäler was an excellent companion and a constant inspiration and motivator throughout the trip showing sympathy and understanding to the people of Jebel Milhan and otherwise serving as an excellent ambassador for Western peoples in the hinterlands of Yemen. HE Abdulrahman Al-Eryani has provided unstinting support for my work for years and checked up on us twice while we were on Milhan. To all of these people who have been so instrumental in ensuring the success of the rapid assessment, thank you!

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