

Conservation of the Asian Houbara Bustard In the UAE: Cultural Contexts and Initiatives

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(Fig. 1. The Asian Houbara Bustard (*Chlamydotis macqueeni*), 20/02/19)

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I. Abstract

Over the past few decades the Asian Houbara Bustard (*Chlamydotis macqueenii*), and the African Houbara Bustard (*Chlamydotis undulata*) have been classified as vulnerable on the IUCN Red List. This phenomenon is due to the over cultivation of the houbaras' natural habitat, desertification, and the extensive hunting of the species.

The houbara bustard is a historically symbolic bird, most notably associated with falcon hunting. The conservation of the houbara is important for both environmental and cultural reasons. It has a unique status in Emirati culture. Just like the Arabian Oryx, the Houbara Bustard has been overhunted; and similarly, great efforts have been made to increase their populations.

This paper focuses on the cultural position of the houbara, looking back on the historical significance of the houbara. Also, falcon hunters have been interviewed to determine attitudes regarding its cultural significance, the level of awareness regarding the vulnerability of the houbara, and whether or not they are willing to consider alternative hunting practices. This paper also discusses conservation efforts being done in the UAE. Working with conservation organizations such as The National Avian Research Center and the Dubai Desert Conservation Reserve allowed me to collect field data and determine whether or not these initiatives are successfully increasing houbara populations in the UAE.

The U.A. E's houbara conservation initiative is highly achievable given the right strategy and planning. Linking the survival of the houbara bustard to the ancient art of falconry has proved to be successful, not only conserving the United Arab Emirates natural environment but also its identity.

II. Introduction and Literature Review

A. Introduction

The conservation of the Asian Houbara Bustard (*Chlamydotis macqueenii*) in the UAE is an important example of how conservation of a species and ultimately the environment, is possible when all parties involved feel that it is beneficial. The need for cultural representation linked with the survival of a historic species has found to be a successful conservation management plan. One of the biggest pressures contributing to decades of houbara bustard decline worldwide is unregulated hunting, including falconry. Falcon hunting is integral to Emirati identity and heritage, making this subject a sensitive but interesting one. Falconry is still being practiced in the UAE and the rapid decline of houbara bustards since the 1950's has not only been a concern for environmental conservationists but also falcon hunters, the houbara being their favorite prey. The conservation success achieved by the UAE was by managing initiatives where both parties, falcon hunters and conservationists alike, could work together and compromise in order to address all concerns.

Falconry has been an ancient form of hunting in Arabia for centuries and has become a pillar in the identity of Gulf countries including the UAE. The falcon is the U.A. E's national emblem, which represents strength and heritage. Also, the falcon has become a national symbol due to the founding father Sheikh Zayed Al Nahyan passion for the falcon and falconry. Sheikh Zayed's efforts in the area of environmental protection have become a legacy, fueling further ongoing initiatives in houbara conservation.



(Fig. 2. Quote by Sheikh Zayed on enviornmental protection)

Sheikh Zayed's insistence on houbara conservation was respected and extended after his death. This has led to the survival of the species in the UAE and abroad. Indeed, the UAE is the number one contributor to houbara conservation in the world. The International Fund for Houbara Conservation (IFHC), established by Sheikh Zayed in the 1970's, today overlooks all of UAE's preservation plans for Asian houbara conservation. The IFHC also care for the North African Houbara (*Chlamydotis undulata*), the only other species of houbara bustard. The IFHC has captive breeding centers in Morocco, UAE, Kazakhstan, and reintroduction programs in Uzbekistan, Jordan, Kuwait, Bahrain, Saudi Arabia, Oman and Pakistan. The main captive breeding center in the UAE is the National Avian Research Center (NARC) located in Sweihan.

Conservation of the houbara is not only important in relation to the falcons and falconry. The houbara is important in and of itself, adding to the biodiversity of the UAE and other countries from which it migrates. Biodiversity in such a difficult climate as the one in the UAE will ensure greater resilience in the context of future global warming.

In order to get a clearer understanding of conservation efforts in the UAE, it was essential to gather field data by collaborating with falcon hunters and conservation groups like the National Avian Research Center (NARC) and the Dubai Desert Conservation Reserve (DDCR). By conducting a survey with falcon hunters, it was possible to assess houbara conservation awareness in the country. The questionnaire used for the survey was intended for average falcon hunters. It tried to assess how much falcon hunters know about the overall status of the houbara bustard in the UAE, the cultural significance of falconry and the houbara, and whether or not the hunter is flexible regarding the evolution of the sport, possibly changing to technology over live prey. The other important data gathering collaboration was effected through short stints with the NARC and DDCR in order to grasp firsthand what conservationists are doing in the field. For almost a decade one of the houbara reintroduction sites chosen by NARC is the DDCR. I was able to attend the first 2019 release in February and monitor the Houbaras in the reserve for the month after. Field observation and surveying in the DDCR of the 250 Houbaras released gave me general insight into IFHC houbara reintroduction programs in the UAE. I also visited the NARC houbara breeding center in Sweihan, which allowed me to understand the very first steps taken in the reintroduction management of the species.

What also makes the UAE's approach to the houbara bustard most interesting is the additional work being done in the framework of houbara conservation. Great examples of cross beneficial conservation and sustainable strategies can be found in the Al Marzoom and Telal Resort protected areas. Both places have become large protected areas where the houbara bred by the IFHC have been released and falconry is legal. Guns and personal vehicles are forbidden, there is restricted access to people and falcons must have passports for legal verification. By protecting these large areas from overgrazing, limiting human presence and forbidding guns, not only is houbara conservation being achieved but other species of fauna and flora can flourish. The opening of these areas to sustainable hunting decreases the need for illegal trafficking of houbaras and falcons into the UAE and reduces the necessity for falconers to travel abroad where houbara conservation laws are less applied. These areas also have educational centers and falconry schools for environment conservation and sustainable hunting awareness.

These sustainable models of protected areas are proving not only to be beneficial to conservationists and falcon hunters, but also tourism. Eco tourism and Emirati culture are simultaneously promoted with activity options in reserves such as guided camel safaris, overnight camping, Emirati cuisine and crafts, and poetry and falconry festivals. The UAE has done a good job locally and internationally in preventing the extinction of the houbara and by doing so has also been able to build a positive international conservation reputation and showcase their identity to all visitors who come to the UAE.

B. Historical and Cultural Background

Falconry has been a hunting necessity for thousands of years in the Arabian Peninsula. A passage on falconry is mentioned in the Epic of Gilgamesh written around 2700 B.C.E (Gwin et al. 2018), giving an indication of how long this practice has been in this region of the world. Early descriptions of hunting with falcons in the peninsula date back to 700 years ago mentioned in the chronicles of Oussama. Before falconry ever became a sport, it was

considered a survival tool for bedouins living in this desert environment which was scarce in food. Before guns and later vehicles were introduced into the region in the 1950's, the falcon was a highly valuable tool for hunting. Guns and ammunition existed before the discovery of oil in the mid-20th century but because of the scarcity of ammunition, bullets were only used in extreme cases such as tribal warfare or important events like weddings and not during hunts where ammunition could be easily wasted when missing live prey. Unlike in forests or jungles, the hunters in a desert terrain have difficulty hiding themselves from prey and are very visible from very far distances. Therefore, the falcon, being able to fly very fast and for long distances, became vital in catching prey. The main prey falcon hunters caught and up till today still do, are desert hares (*Lepus capensis*), Eurasian collared doves (*Streptopelia decaocto*), stone curlews (*Burhinus oedipnemos*), and most prized of all, the Asian Houbara Bustard. The houbara has been a historical and up to the modern period, a favorite catch for falcon hunters. Due to their size, being twice as big as a falcon, they are a big prize to catch providing lots of meat to eat. (Bailey et al. 1998)

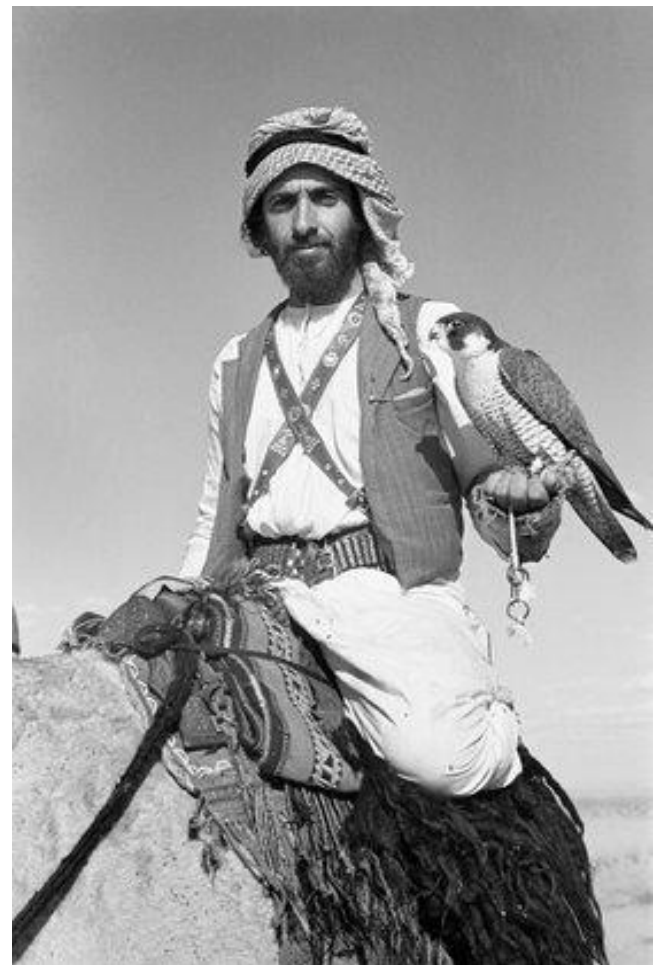
As it is a migratory bird, large numbers of houbara would come from the Asian steppes starting in October to spend up to seven months in the warmer UAE desert environment. The houbara bustard's main habitat are semi desert terrains with scattered shrubbery vegetation. Historically falconry was predominantly practiced in the south and west of the UAE. Migratory falcons coming from central Asia and eastern Europe were also caught here. The native falcon, the Lesser kestrel (*Falco naumani*), a resident breeder in the UAE and the smallest of all falcons (Gross et al. 1996) was not used for hunting. The bigger and stronger saker falcons (*Falco cherrug*), peregrine falcons (*Falco peregrinus*) and lanner falcons (*Flaco biarnicus*) have the capability to catch bigger prey like the houbara. In the wild, falcons do not normally hunt prey bigger than themselves but the local bedouins were able to train falcons coming over the Arabian Gulf to kill larger animals, even to attack and injure gazelles before the hunter could finish them off. (Bailey et al.1998)

The migratory falcons would be caught and trained for around three weeks before the large waves of houbara bustards would arrive in the UAE in October and November. The falcon was a vital source of nourishment for the family and in return the hunter would give some of the catch to the falcon or the family would find mice or lizards around the house to

feed it. The falcon became integral to the life of the hunter and his family, forming a very strong bond. Once the hunting season for houbara was over around April, the hunter would let the falcon go back into the wild. During a time, when the UAE had scarce resources, it was difficult for most families to keep a falcon year-round and they had to let it go, hoping to catch and retrain another falcon the next year. (Bailey et al.1998)

Falcon hunting was also an important time for social bonding between the hunter and his sons, spending hours together in the desert teaching this timeless practice. In the more prominent families of the UAE, the hunting seasons for houbara became a social event with hunting parties, sometimes comprising twenty men and their camels, spending entire days venturing deep into the desert, competing with each other as to how many houbaras they could catch (Bailey et al. 1998). The competitive element in catching houbara was another reason why houbara bustards were favorite prey for the falconers, even until today. Compared to other smaller prey, capturing a houbara was a challenge for the hunter and falcon. Despite being double the size of a falcon, houbaras are very agile in the air and aggressive in defense (Gwin et al. 2018), in some cases able to injure the falcon by spraying its urine, which is highly acidic.

With the rapid development of the UAE due to oil exploration in the mid-20th century, falconry gradually went from being a vital necessity to a hobby and sport. Sheikh Zayed, passionate about falconry witnessed this shift in attitudes and tried to find ways to conserve the practice, which he thought was more than just a pastime. The correlation of Sheikh Zayed Al Nahyan with the conservation of the houbara is highly significant. Sheikh Zayed embodies Emirati identity and pride. He is the renowned founding father of the UAE (in 1971) and highly



(Fig. 3. Sheikh Zayed with falcon in 1948)

admired for his forward-thinking policies, which changed the Emirati way of life drastically. Emiratis had such a high level of confidence in him as a leader that he was highly influential when it came to policy making. One characteristic which made Sheikh Zayed such a captivating leader was his determination to find a healthy balance between economic prosperity and Emirati identity for his people. Sheikh Zayed lived in the UAE before and after the rapid development of his country and was famous for his attachment to its traditions while accepting beneficial societal changes which would come from opening up to a globalized world. One important legacy which he wanted to leave for future generations was the preservation of nature. For him, local identity and way of life was strongly attached to the surrounding environment and preserving it was a crucial obligation. As a falconer himself Sheikh Zayed saw the opportunity to use his influence to encourage a relationship between a local tradition such as falconry and the preservation of the UAE natural environment. (Wheatcroft et al. 2013)

“Falconry depends on the healthy populations of the quarry, such as the Houbara, and they in turn depend on the continuing health of their breeding and wintering grounds. Falconers thus have a concern for natural habitats and for the sustainable use of resources. During my own lifetime I have seen many remarkable changes and achievements occur in the Middle East. Oil has brought immense benefits for the welfare of our people. But progress can also pose problems for nature – pollution of land and sea, unwanted development and spoiling of natural areas, and disturbance of quiet places which once gave refuge to wildlife.”

Sheikh Zayed Quote (Wheatcroft et al. 2013)

Falconry might be categorized as a sport today but even sports play an important role in nation building and identity consolidation. In a rapidly evolving country with globalization and exposure to new cultures and the arrival of people of different nationalities, falconry is a local tradition which must be maintained for national identity. For the past decade falconry has regained popularity in the UAE. A 2009 rough estimation indicated that there were roughly 5,000 falconers in the UAE alone, making it the highest per capita in the world. Interestingly, due to a relatively similar societal evolution in neighbouring GCC countries,

falconry has become quite an important pastime on a regional level (Wakefield et al. 2012). The Arabian Peninsula holds half of all falconers in the world, falconry which also includes hunting with Eagles and Hawks (Gwin et al. 2018). In 2010, falconry had an international breakthrough when it was recognized by the United Nations Educational, Scientific and Cultural Organization (UNESCO), and added to the list of Intangible Cultural Heritage of Humanity. The UAE played a central role in preparing and co-ordinating with UNESCO to make falconry internationally recognized. In doing so the UAE became leaders in falconry preservation and to some extent in all matters surrounding falconry, such as the conservation of the houbara bustard. (Wakefield et al. 2012)

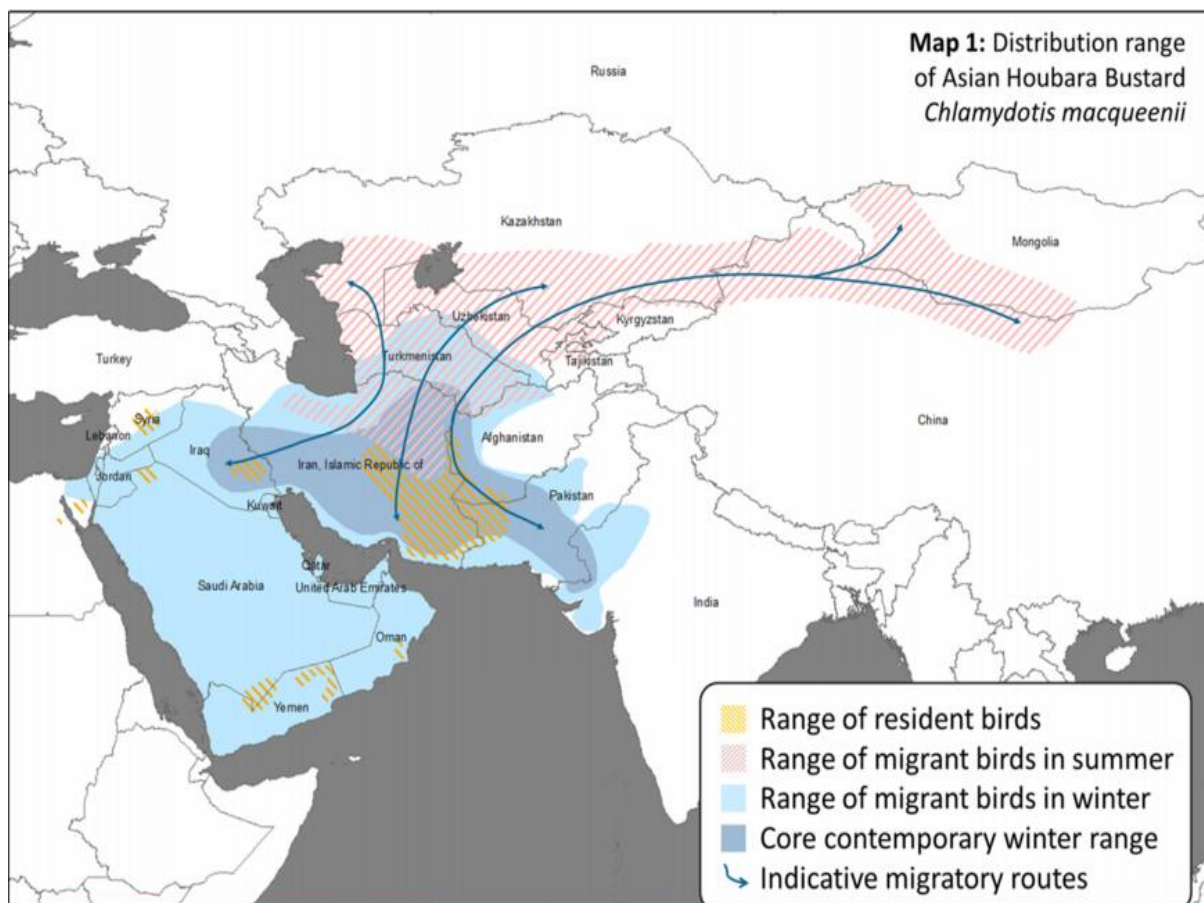
The falconry we know today went through great evolution in a short amount of time but one aspect which has never changed is the strong bond the hunter and falcon must achieve in order to have a successful hunt. Unlike most other sports, falconry embodies a strong bond between the hunter and falcon in an outdoor setting. Considering this, there is opportunity to promote the sport and spontaneously promote nature.

C. The Houbara Bustard and Conservation

The houbara bustard comprises two different species. The Asian Houbara (*Chlamydotis macqueenii*), found primarily between the Sinai Desert in Egypt, the Arabian Peninsula and up to central Asia and Mongolia. The North African Houbara (*Chlamydotis undulata*) is found primarily all across North Africa and the Canary Islands. The houbara bustard's natural habitat is vast semi-arid regions with scattered vegetation cover found in pebble sandy deserts. The houbara is able to live in extremely dry climates due to its capability to obtain the little amount of water it needs from plants. The preferred vegetation for the houbara is scattered shrub plains where houbara can find insects, invertebrates, rodents, and small vertebrates to eat. It can also hide from predators by kneeling behind the shrubs and using the pebbly sandy surface as camouflage. The houbara most actively looks for food at dawn and dusk, and rests hidden during the day. The female houbara can lay up to 3 eggs on average, which are covered by brown spots in order to blend into the sandy shallow hole nest. The incubation period lasts up to three weeks and after two months of hatching and raising by the mother the chicks become juveniles and capable of surviving on their own.

The male houbara is not involved in the incubation process or the raising of the houbara chicks. (Aspinall et al. 2010)

The Asian Houbara is a migratory bird which can travel 7,500 Km in a single year. A rough estimation of the Asian Houbara population is between 79,000 to 97,000 globally. The majority of the houbara population comes from Kazakhstan, which is also the biggest breeding ground. Smaller resident breeding grounds have been found in Pakistan, Afghanistan, Iran, Iraq, Syria, Egypt, Oman, Saudi Arabia, and Yemen. During the winter months, the houbara migrates southwards towards the warmer regions like the Arabian Peninsula. During summer months the houbara migrate back to Kazakhstan and other cooler regions, Uzbekistan, Kyrgyzstan, Tajikistan, Mongolia, and China. (Combreau et al.2011)



(Fig. 4. Migratory Cycle of the Asian Houbara Bustard, Allinson et al.2014)

Due to several decades of population decline the houbara bustard is classified as globally threatened according to the International Union for Conservation of Nature (IUCN) Red List. If the population decline stays at the same rate as today, in 20 years 30% to 49% of the current population won't exist. (Allinson et al. 2014)

On a global scale, including in the UAE, hunting and poaching was and is the biggest threat to the houbara bustard. With the discovery of oil and the rapid development of the country starting in the 1960's in the UAE. Falconry evolved from a survival necessity to a competitive sport. The introduction of air-conditioned all-terrain vehicles replaced the camel, giving less safe space for the houbara to reproduce and replenish its population numbers. The influx and ease of access to guns and ammunition gave an unfair advantage to the hunters. Guns were being used to hunt the houbara, sometimes completely replacing the falcon. The houbara was not the only species in the Arabian Peninsula affected by this evolution in hunting; the Arabian Ostrich has been considered extinct since the 1940's, and the Arabian Oryx and Leopard were on the brink of extinction in the 1960's due to the same phenomena. The gun and vehicle allowed for bigger and more prey to be killed with ease and had drastic effects on Arabian wildlife. (Bailey et al. 1998)

Sheikh Zayed first handily observed this change in hunting tradition and could see regulation had to be imposed if UAE wildlife were to be preserved.

"I set out on a hunting expedition in open country. My game was a large herd of gazelles spread over a wide area. I followed them and began shooting. Three hours later, I stopped to count my bag and found I had shot fourteen gazelles. I pondered over this for a long time. I realized that hunting with a gun was no more than an outright attack on animals and a cause of their rapid extinction. I changed my mind and decided to restrict myself to falconry only."

Sheikh Zayed Quote (Wheatcroft et al. 2013)

In order to prevent the overhunting of the houbara and other species of the Emirati wildlife, Federal Law No. 9, 1983 was put into action, making it illegal to shoot birds or to hunt gazelle and hares in the UAE. (Gross et al. 1996)

Other technological evolutions adopted by falconry put pressure on the houbara bustards. Walkie talkies greatly improved communication between hunters who could now tell each other where prey could be found. GPS equipped cars permitted optimal organization between the hunting parties and allowed the hunter to go deeper into vastly deserted areas. Another evolution in falconry in the UAE occurred due to the influx of wealth in the country. Unlike before, it became more affordable for Emiratis to have a falcon year-round. Now instead of hunting with one or maybe two falcons, it became affordable to have twenty to thirty falcons who could be continually taken out for practice and hunting. (Allinson et al. 2014)

The wealth also allowed hunters to travel abroad when there was a ban on hunting the houbara locally. UAE and other GCC countries have implemented stricter hunting rules for decades now which has produced international controversy. In reaction to the difficulty of hunting openly in the Arabian Peninsula GCC nationals can now afford to transport their large numbers of falcons and hunt without limit in countries which have less regulations on hunting, for example Pakistan and Kazakhstan. This has had a devastating effect on houbara populations in countries which don't have enough funding for conservational management. (Allinson et al. 2014)



(Fig. 5. Houbara hunting in Baluchistan province, Pakistan. February 2015)

The houbara bustard has become highly valuable due to its rarity. The demand for illegal goods in the UAE has contributed to poaching and illegal smuggling on a wide scale. Not only houbara but also falcons are smuggled into the country, putting pressure on the falcon species as well. For example, large numbers of smuggled adult houbara, chicks, and eggs from neighbouring countries like Iran, Pakistan, and Oman illegally enter the UAE. The NARC receives live and dead houbara bustards from UAE authorities. An estimated 133 houbaras were confiscated by UAE customs between 2009 and 2013. (Allinson et al. 2014)

To prevent the poaching and smuggling of houbara and other threatened species Federal Law No.11, 2002 was established, making it illegal to transport or trade endangered species of wild flora and fauna in or out of the UAE. (Gross et al. 1996)

The second greatest pressure on the houbara is agriculture, more specifically animal husbandry. Uncontrolled livestock grazing by camels and goats decimates entire areas of vegetation which houbara and other wildlife species depend on. Also, houbara nests are on the ground sheltered by desert shrubs and become vulnerable to trampling by large herds. With the rapid development of the UAE and the growth of the cities and a rapid increase in demand for animal products, parts of the country which were completely isolated but vegetated became agriculturalized, pushing out houbara populations. (Allinson et al. 2014)

On a smaller scale, other pressures on houbara include urban sprawl, recreational activities, and global warming. Large scale industrial development throughout the country such as oil exploration, powerlines, water pipelines, and road building, destroys houbara habitat and contaminates the soil. Recreational activities such as camping, and dune bashing leaves waste and deteriorates desert vegetation. Global warming disturbs houbara migratory cycles and deteriorates desert vegetation needed for houbara survival in such harsh conditions. (Allinson et al. 2014)

Dealing with the decline of the houbara bustard became a national challenge for internationally recognised conservation and cultural preservation. To centralize this conservation effort The International Fund for Houbara Conservation (IFHC) was established. The organization, founded by Sheikh Zayed Al Nahyan, adopted the latest scientific capabilities and techniques to replenish the declining houbara population. In 1977 research on the houbara bustard and its habitat began in the Al Ain Zoo. In 1982 the first captive bred houbara chick in the UAE was hatched. In 1989 the National Avian Research Centre (NARC) was created to breed captive houbaras on a large scale. In 1995 and 2006 two captive breeding centres for the North African houbara were established in Morocco. In 2011 a captive breeding centre was opened in Kazakhstan, a country which holds half of the world's total houbara population. In 2012 a second centre was opened next to NARC, The Sheikh Khalifa Houbara Breeding Centre - Abu Dhabi. The IFHC is also involved in reintroduction programs outside of the UAE, including in Jordan, Iraq, Kuwait, Bahrain, Saudi Arabia, Oman, Pakistan, Turkmenistan, Uzbekistan, and Mongolia. Today the IFHC oversees all houbara conservation programs in the UAE and is a large contributor to houbara conservation efforts in several other countries. (IFHC, 2019)

In many cases, the UAE's conservation management plan for the houbara is intertwined with falconry. For example, in the Al Mamoura building where the Environment Agency headquarters is located, one also finds the head office of the Emirates Falconer's Club, situated right across from the International Fund for Houbara Conservation (IFHC) head office. From that same office houbaras provided by the IFHC can be bought at around 2,000 Dhs each, but only if the buyers and their falcons have legal documentation. Keeping track of falconers will hopefully prevent them from going abroad to hunt and buying illegal houbaras which have been poached and smuggled into the country. The funds gained from legally selling these houbaras go to the organization. The Emirates Falconers' Club is a government subsidized organization headed by Chairman Sheikh Hamdan bin Zayed Al Nahyan, the ruler's representative in the Western Region. (EFCD)

The organization mainly handles projects which have to do with falconry conservation, such as funding the Mohamed Bin Zayed Falconry and Desert Physiognomy School. The school

is located just outside of Al Ain in the Telal Resort, in the Bu Artah protected area, which is around 5,000 acres. The school teaches young and older students falconry and the importance of sustainable hunting. It also has a collection of traditional falconry equipment and photographs of Sheikh Zayed hunting with falcons. Since 2017, the Telal Resort offers hunting of houbaras but only with falcons. For each houbara caught the hunter pays roughly 2,000 Dhs. The resort also offers overnight desert camping with Emirati cuisine. Also, there is an Emirati heritage village next to the resort. (Telal Resort Al Ain, 2017)

Another recently opened protected area for falconry is the Al Marzoom hunting reserve, which opened in 2017. The hunting reserve is located between Abu Dhabi city and Tarif in the western region. The reserve has become a fenced off protected area where houbaras from the IFHC are released. Falconry is accepted if falcons have legally certified passports. No guns are allowed, and hunts can be done on camel back. The entrance fee is 500 Dhs and each houbara caught costs roughly 2,000 Dhs. The reserve also has a fishing bazaar where Emirati heritage is promoted. The reserve activities include falconry competitions and poetry conventions. (Al Marzoom, 2016)

These reserves are very good examples of sustainability, embodying what Sheikh Zayed had in mind regarding the need to conserve both falconry and the houbara bustards. The conservationists and falcon hunters both benefit from these initiatives and work together instead of confronting each other. Finding a compromise reduces the incentive for falconers to find illegal and unregulated alternatives to practice their sport. By creating these large fenced areas not only are falconry and the houbaras benefited but so are other species of animals and vegetation. An additional benefactor from these protected areas is tourism. These sites have attracted tourists who are also exposed to heritage villages and bazaars which showcase Emirati culture and history. These areas have become conservation hubs where not only nature is preserved but also Emirati identity.

D. NARC, DDCR, and Falconers

In order to understand first-hand, the pressures and the remediation of the houbara bustard in the UAE, it was important to do field work in addition to questioning people working in the conservation organizations as well as falconers. On field observation and data gathering provided an opportunity to do research and thus assess literature already written about protection and cultural integration.



(Fig. 6. Houbara tunnels, last stage of rearing before wild release. 13/06/2019)

The National Avian Research Centre (NARC), was built in 1989 and is the first and largest captive breeding centre in the UAE, established by the International Fund for Houbara Conservation (IFHC). Reneco, a French environmental consultant company, was chosen to run the centre's research, breeding and release programs since the beginning of operations (Beauchamps et al.2009). The breeding process begins with selecting males with different genetic characteristics to optimize survival chances depending on where the houbara will be relocated. The two main categories of traits which differentiate houbaras in the NARC from one another is resident and migratory. Some houbaras will be purposefully bred to have resident breeding traits, meaning they will have genetic encoding which is adaptable to a desert climate. This will differentiate them from migratory houbaras which are bred to adapt to the migratory conditions they will meet between Central Asia and the Arabian Gulf. The resident breeders are released in the UAE and their genetics is meant to enhance their chances of contributing to local propagation. Migratory houbaras are released in reintroduction programs outside the UAE and serve as a backup gene pool in the unlikely

event there is population decimation in Kazakhstan. Similarly, the NARC holds stocks of North African Houbara Bustards.

After artificial insemination of the females, eggs are collected and put in machines where humidity and temperature are regulated. Each incubator is able to hold hundreds of eggs at a time. After three weeks of incubation the hatchlings are sent to the rearing building where humans treat any sicknesses or weaknesses. They also teach them what to eat. After 4 weeks of rearing, the juveniles are sent to shaded tunnels made of netting where they reduce the provision of water, mealworms, and alfalfa grass to accustom them to live crickets. They also begin to decrease their contact with humans. In that way they get used to the desert environment. Today the NARC breeds over 40,000 houbaras yearly. Most are designated for release in the UAE and abroad.

The NARC have around 30 release sites in the UAE. Some of these release sites are protected areas such as the Dubai Desert Conservation Reserve (DDCR) and the Al Houbara Baynouanh protected area, monitored by the Environment Agency- Abu Dhabi (EAD). Other releases sites are associated with the Falconers Emirates Club, including the sustainable falcon hunting grounds, the Al Marzoom hunting reserve and the Al Ain Telal Resort.



(Fig. 7. NARC release sites, from left to right, red squares indicating Al Houbara protected area, Al Marzoom hunting reserve, Telal Resort, and the DDCR, 2018)

The Dubai Desert Conservation Reserve (DDCR) began as the 27km² Al Maha resort in 1999 and officially became a protected area in 2003. The DDCR is today 225 Km², which makes up 4.7% of the total land area of the Emirate of Dubai. The DDCR represents the UAE'S desert landscape if left alone. It is home to culturally symbolic species of flora and fauna, such as the Arabian Gazelle, the Spiny-Tailed Lizard, and the Ghaf Tree. One crucial policy set up by the DDCR was to limit human activity in the area by fencing the entirety of the reserve and restricting access to the general public. As well as regulating the visitors coming into the area, camel farms were removed from the zone in order to prevent the overgrazing of desert vegetation. By doing so, the natural reserve has been able to become a haven for desert wildlife and is successful in replenishing endangered species populations, like the Arabian Oryx. (DDCR, 2019)



(Fig. 8. Herd of Camels on the outside of the DDCR fencing, 04/03/19)

Talking to the falconers allowed me to better understand the link between falconry and the houbara bustard. Four falconers filled out the questionnaire. Four is a small sample size but should still provide some understanding of the average falconer in the UAE.

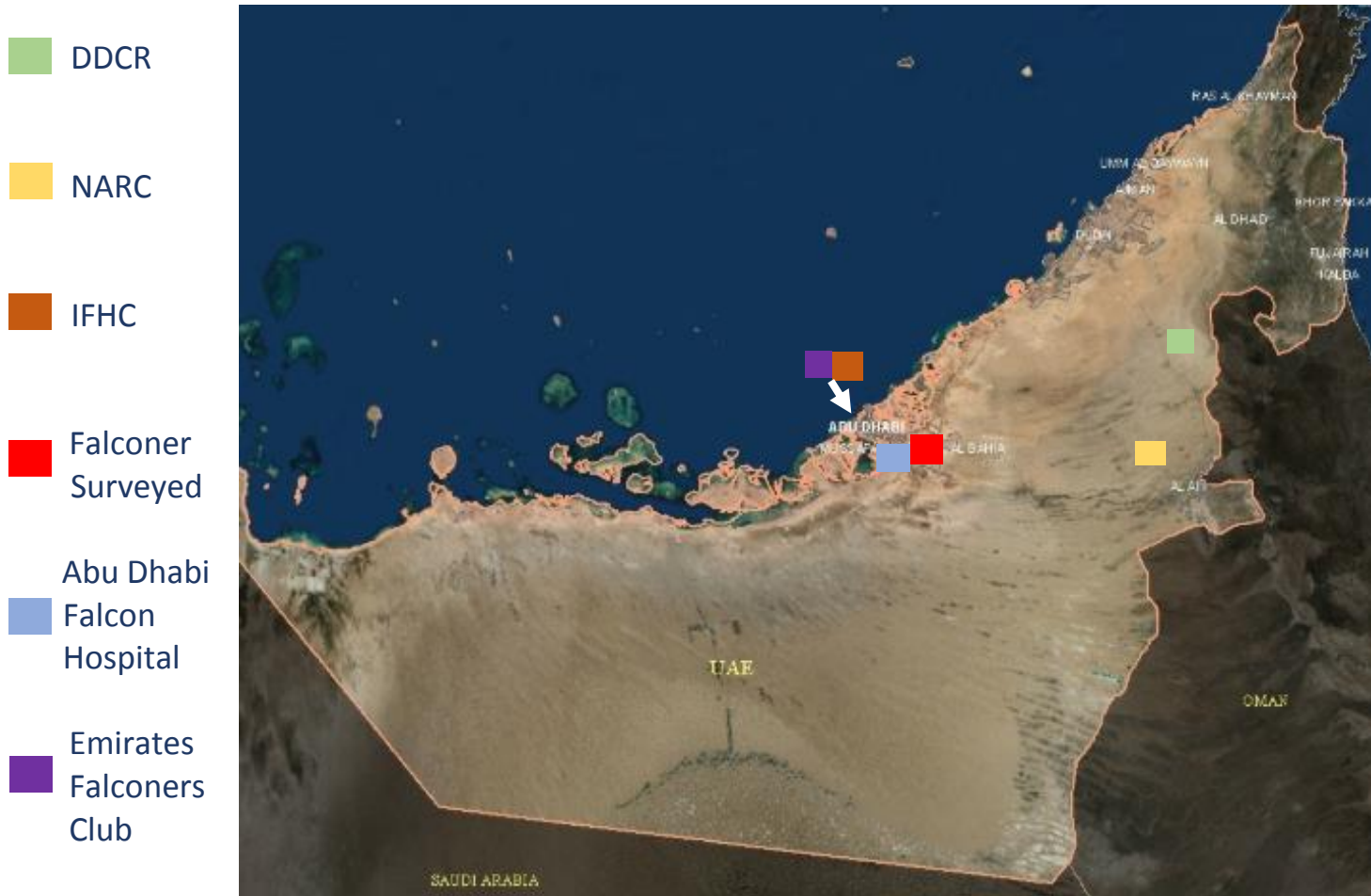


(Fig. 9. Houbara release by NARC and DDCR, site 2, 18/02/19)

Since December 2010, the NARC has released houbaras in the DDCR in the hope of successfully reintroducing this species into this protected area. NARC, with the collaboration of DDCR, released 250 adult houbara bustards into the DDCR at 9am on the 18th of February 2019. Coming from the NARC breeding centre in Sweihan, the houbara bustards were tagged with black ankle rings which were numbered. Three release sites, with different characteristics, were specifically chosen to monitor the newly released houbaras' adaptation to their new environments. I had the opportunity to assist the release and monitor the reintroduction of the houbara for 3 weeks after the release.

III. Material and Methods

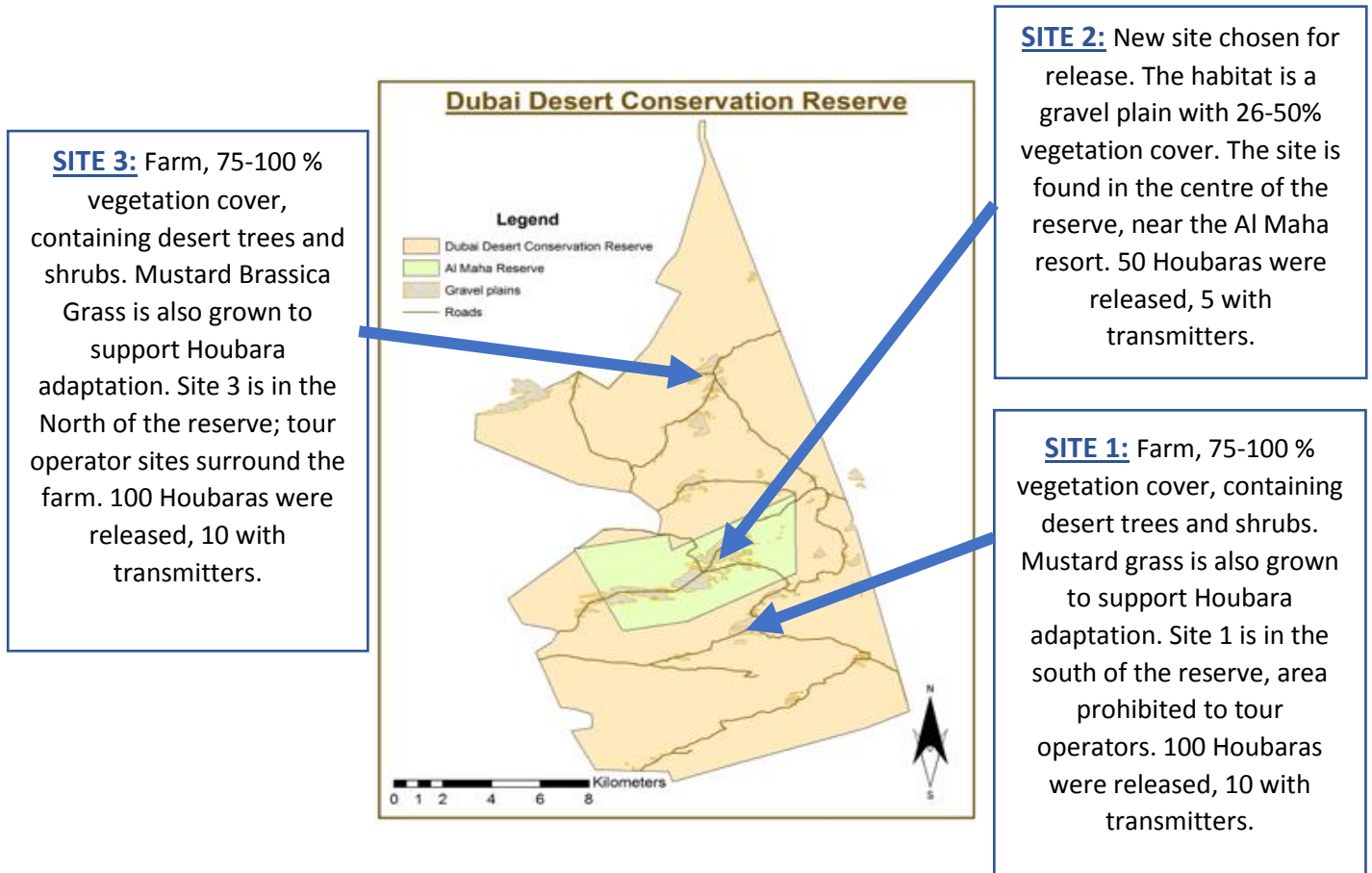
A. Locations



(Fig. 10. Satellite Image of UAE, locations went to for thesis research, 10/06/19)

B. NARC and DDCR Houbara Release

The release locations were in the north, middle, and south of the reserve in the interests of an even distribution. Release sites 1 and 3 are farm sites and had already been used as release sites in previous years. The farms only grow natural desert vegetation such as desert shrubs and Ghaf trees. Mustard Brassica grass is grown to support houbara reintroduction. Release site 2 is a semi vegetated gravel plain and is a new release site, used to determine if houbara can adapt to this zone of the reserve.



(Fig. 11. Houbara release sites in the DDCR on February 18th, 2019)



(Fig. 12. Houbara in Mustard Brassica Grass enclosure, 23/02/19)

After the release, a daily three-week survey of the houbara bustard was conducted in order to monitor the early stages of adaptation to the DDCR.

Using a Garmin GPS navigation appliance with Garmin BaseCamp, a map viewing GIS software, the DDCR was broken down into numbered grids. Monitoring was mainly done from the DDCR's designated roads for vehicles, represented by the dark blue lines, which cover the entirety of the reserve. The roads include all farms, tour operating sites, Al Maha Resort, and the 225 km border fence of the DDCR. At other times it was required to go on foot to monitor areas which were inaccessible by vehicle. The blue dots represent where the houbara were spotted. The red circles represent clusters of blue dots.



(Fig. 13. Garmin Basecamp appliance and map of DDCR, with tracks monitored and locations of houbaras, 08/03/19)

A quail, possibly a sand quail, stands in a desert landscape. The bird has mottled brown and white plumage, a long neck, and a small crest. It is standing on sandy ground with sparse, dry grass. In the background, there are rolling sand dunes under a clear sky.

When houbaras were spotted, the GPS location, grid number, habitat, vegetation cover, weather, moon position, ankle ring numbers and colour, gender and behaviour of the houbara was photographed and recorded.

Dubai Desert Conservation Reserve

Houbara Monitoring Sheet

Date: 22/02/12 Observers: Basil Weather: Cloudy Moon: Full Method: Ornitho Line
Transect

Transect Start Location: N: 24-85250 E: 055-65775 Start Time: 12:27

Transect End Location: N: 24-82663 E: 055-65708 End Time: 12:50

Start ODO Meter: 0.0 End ODO Meter: 1.5 Total KM: 1.5

Ring no.	Ring color	Sex	Group size	Time	GPS WP	Location		Grid no.	Houbara Behavior	Ground Cover	Habitat	Comments (Pic no., etc)
						North	East					
C357	Red	F	1	12:27	820	2485890	055.66040	67	14	3	2	100-845+-7470

Behavior Codes

1: Sitting 6: Take off

2: Display 7: Flying

3: Standing 8: Dead

4: Walking 9: Tracks

5: Running 10: Feeding

Ground Cover

0: No vegetation

1: 1-5%

2: 6-25%

3: 26-50%

4: 51-75%

5: 76-100%

Habitat

1: Shifed Dunes

2: Vegetated Dunes

3: Sandy Plains

4: Gravel Plains

5: Farms

6: Rocky (Nazwa)

Page no.: 23

(Fig. 15. Sample of monitoring sheet used during 3-week survey of DDCR)

C. Falcon Hunter Survey

In order to conduct this survey, a questionnaire was given out to four falconers. The questionnaire comprised eleven questions, each question in English and Arabic. The questions were designed to investigate the significance of falconry and the houbara to Emiratis, the level of awareness regarding houbara vulnerability, the practice of falconry today, and whether there is any future possibility of removing the houbara from falconry culture altogether. Names, ages, nationalities and professions were also asked in order to get an idea of the average demographics of falconers.

Questions for a Falcon Hunter / اسئلة موجهة الى هواة الصيد بالصقور

الاسم / Name: Roshid Al Amiri الوظيفة / Profession: Lawyer
العمر / Age: 29 الهاتف / Telephone: +971 56 213 0221
الجنسية / Nationality: Emirati العنوان الإلكتروني / Email: bentley_sure@yahoo.com

1) How long have you had falcons? / متى بدأت ممارسة الصيد بالصقور؟
1 year

2) Has your family always had falcons? / هل تعلمت أجيال عائلتك على ممارسة الصيد بالصقور؟
☒ Yes No لا نعم

3) What is the significance of Falcons in Emirati culture? / ما هو سبب أهمية الصقور في حضارة الإمارات؟
Falconry is a crucial part of the culture and has been embedded within it since before the birth of the UAE.

4) What is the significance of Houbara in Emirati culture? / ما هو سبب أهمية طائر الحبارى في حضارة الإمارات؟
It is a traditional bird that has been hunted within the region.

5) Is the Houbara Bustard an endangered species in the UAE and abroad? ☒ Yes No
هل تعد طيور الحبارى مهددة بالانقراض في دولة الإمارات و خارجها؟ لا نعم

6) What is the best prey to catch with your falcon? / ما هي أفضل فريسة لاصطيادها بصقرك؟
Pidgeon as it's legal to catch and abundant

7) What prey is legal to hunt? / ما هي أنواع الفريسة التي يُسمح صيدها حسب القانون؟
Pidgeon and mice

8) What prey is illegal to hunt? / ما هي أنواع الفريسة التي يُمنع صيدها حسب القانون؟
Houbara, Kurawan

9) Should the hunting of the Houbara be legal? / هل تعتقد أنه يجب تصريح صيد الحبارى؟
Yes ☒ No لا نعم

10) Do you travel abroad to go falcon hunting? / هل تسافر للخارج لممارسة الصيد بالصقور؟
Yes ☒ No لا نعم

11) Do you see the future of falcon hunting only using technologies, like drones, and not using live prey anymore? Yes ☒ No
هل توافق على استعمال وسائل أخرى للصيد بالصقور بدلاً عن الحبارى؟ لا نعم

(Fig. 16. Sample of questioner answered by one of the falconers)

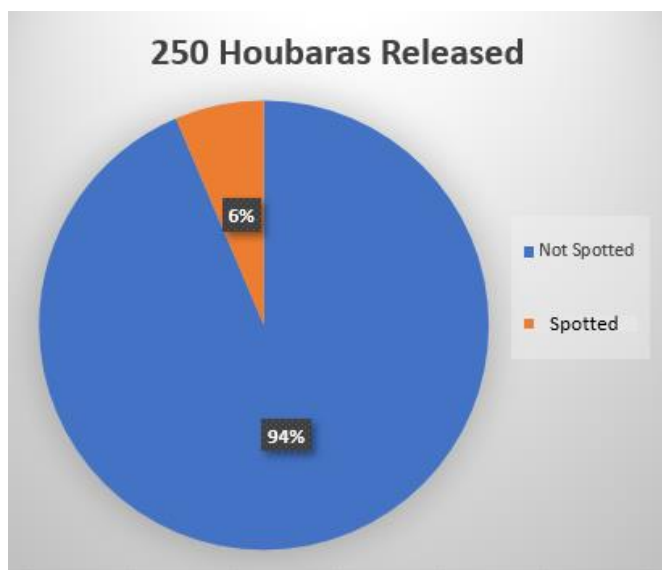
IV. Results

A. Houbara Release

Out of the 250 houbaras, with black ankle rings, released in February 2019, 16 were spotted.

Table 1. Houbaras spotted during the 3-week monitoring of the DDCR. Recording of their ring number, ring colour, sex, behaviour, location and habitat.

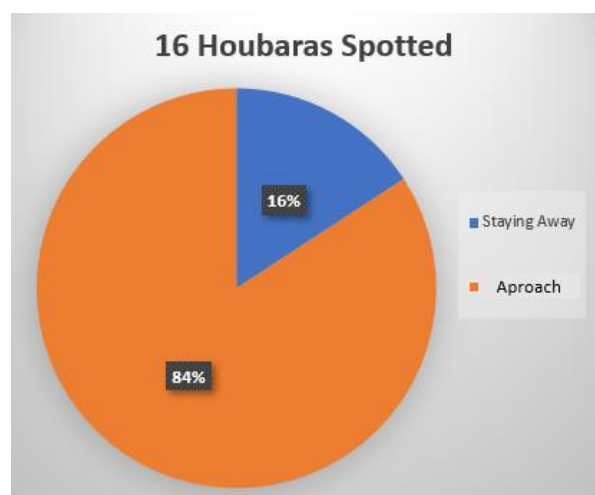
Ring Number	Ring Colour	Sex	Behaviour	Location	Habitat
6907	Black	Male	Walking, Staying away	Site 2	Gravel Plain
7810	Black	Male	Feeding, Approaching	Grid No. H11	Farm
J609	Black	Male	Walking, Approaching	Grid No. G7	Camp Site
-	Red	Male	Displaying, Staying away	Site 3	Farm
-	Red	Male	Feeding, Staying away	Site 3	Farm
J651	Black	Female	Feeding, Staying away	Site 3	Farm
C233	Red	Male	Walking, Staying away	Grid No. G8	Farm
?84?	Black	Male	Standing, Staying away	Site 3	Farm
-	Red	Female	Feeding, Staying away	Site 3	Farm
C357	Red	Female	Sitting, Staying away	Grid No. G9	Shifted Dunes
J515	Black	Male	Walking, Approaching	Site 1	Farm
7835	Black	Male	Displaying, Approaching	Site 1	Farm
7869	Black	Male	Walking, Approaching	Site 1	Farm
7809	Black	Female	Walking, Approaching	Site 1	Farm
7787	Black	Male	Feeding, Approaching	Site 3	Farm
7803	Black	Female	Feeding, Approaching	Site 3	Farm
J039	Black	Male	Feeding, Approaching	Site 3	Farm
1021	Green	Male	Running, Staying away	Site 3	Farm
7821	Black	Male	Walking, Approaching	Grid No. F11	Gravel Plain
J060	Black	Female	Sitting, Approaching	Grid No. F09	Gravel Plain
7863	Black	Male	Sitting, Approaching	Grid No. F09	Gravel Plain
7864	Black	Female	Walking, Approaching	Grid No. E11	Horse Farm



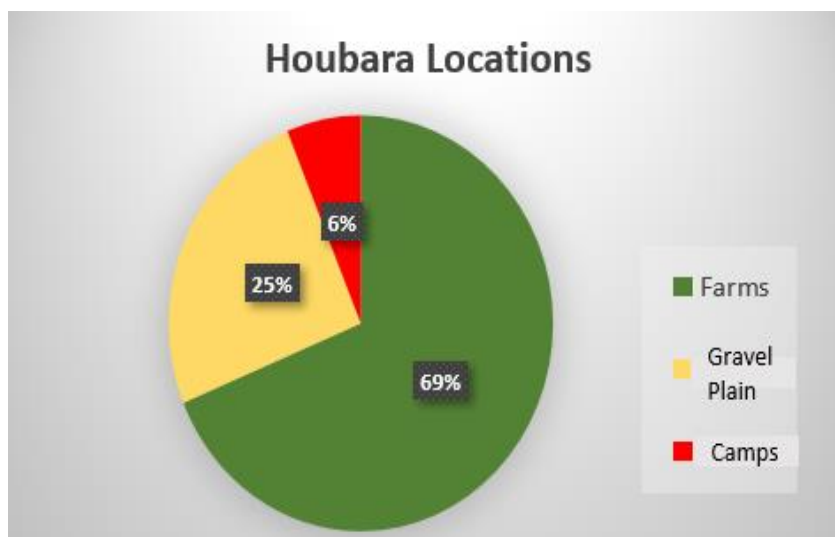
Out of the 250 houbaras released in the DDCR, 16 were spotted.

(Fig. 17. Percentage of houbaras spotted and not spotted after release)

Out the 16 houbaras spotted, 13 approached.



(Fig. 18. Percentage of houbaras approaching and staying away)



(Fig. 19. Percentages of locations where houbaras were found)

Out of the 16 houbara spotted, 12 stayed in farms and camps.

B. Falcon Hunter Survey

These are the overall results of the survey. (See appendices for all four questionnaires).

Table 2. Accumulated responses of all four falconers.

Questions	Overall Responses
1) How long have they had falcons?	Between 1 to 3 years.
2) Falcons in the family?	2 YES, 2 No
3) Significance of falcons?	<ul style="list-style-type: none"> - The falcon has always been a companion to people in the Arabian Gulf. - The falcon has always been an important source of nutrition for people in the Arabian Gulf. - Falconry is an old tradition embedded in local culture. - Sheikh Zayed had a huge influence because he loved falconry.
4) Significance of houbaras?	<ul style="list-style-type: none"> - Historical animal in local wildlife. - One of U.A. E's icons like the Gazelle - Local species which represents Sheikh Zayed's vision of conservation.
5) Is the houbara endangered?	4 YES
6) What is the best prey?	<p>2 said the houbara</p> <p>1 said the karawan (Stone Curlew), because of abundance</p> <p>1 said pigeon, because it is legal and abundant</p>
7) What prey is legal to hunt?	Pigeon, rabbits, ducks, and mice
8) What prey is illegal to hunt?	Houbara, stone curlew, gazelle, and desert hare
9) Should hunting houbara be legal?	2 YES ,2 NO
10) Do they travel abroad to hunt?	2 Yes, 2 NO
11) Can technology replace live prey?	1 YES, 3 NO
12) Age?	Between 27 to 30 years old.
13) Nationality?	All Emirati.
14) Profession?	<p>2 Financial analysts</p> <p>1 Planning assistant manager</p> <p>1 Lawyer</p>

V. Discussion

A. Houbara Reintroduction

After three weeks of release, the majority of monitored houbara bustards were found in release sites 1 and 3. The houbara depend on the mustard brassica grass purposely grown for them and large numbers of insects found in these farms. Other locations where houbaras were mostly found in the DDCR were man-made campsites, operated by tour operators, and other farms like camel or horse farms, where houbaras are fed by tourists and staff. One crucial observation found on the field was that 13 out of the 16 houbaras released in the DDCR had signs of a high level of domestication. The houbaras would approach and sometimes follow the observer or staff working on the farms and tour operating sites, expecting to be fed. For example, one houbara J609, released in February this year stayed in the campsite for weeks and approached staff and tourist without hesitation.



(Fig. 20. Houbara ankle ring number J609 in campsite, 20/02/19)

A large portion of the houbaras spotted but who stayed away from humans were houbaras with red or green ankle rings, houbaras released in previous years. Only 3 out of the 16 spotted, with black ankle rings, stayed away from humans.

Taking into consideration that only 16 out of the 250 houbaras released were spotted, the other 234 were not observed and accounted for. Because only 16 houbaras could be recorded using this method of surveying the DDCR, it is not possible to confirm that high levels of domestication are the main reason for houbaras low level of survival rate during reintroduction.

According to the NARC a rough estimation of 10% of all houbaras released in the UAE show signs of high dependence on human presence once released into the protected areas. One explanation for this behaviour is that since these houbaras were exposed to humans since they were born it is normal that they would associate them with survival. The rearing of the houbaras is all done by humans and not houbara mothers. This system of upbringing is put into place in order to breed as many houbaras as possible yearly. Female houbaras are naturally able to rear 3 to 4 chicks in one year. With human intervention much larger numbers of houbaras can be bred and houbara populations replenished at a faster rate.

The NARC breed roughly 40,000 houbaras a year and if rearing were done by female houbaras it would be impossible to breed this many yearly. Since the first reintroduction programs, there has been much improvement and the NARC is still working on many ways to decrease the percentage of houbaras showing signs of domestication. The 16 spotted could have very well been the most domesticated of the 250 houbaras released, while the other 234 made greater efforts to avoid human presence in the DDCR by staying in remote areas in the reserve or flying outside the fences. Even though there is a low percentage of survival during release, in the long run there is a stable population being put in place (Azar et al. 2018).

The DDCR is a well-protected and ecologically hospitable area for successful houbara reintroduction. Being able to personally witness houbaras released from several years ago and on one occasion finding a houbara nest, shows a minor but a good sign of houbara restoration in U.A. E's desert environment.



(Fig. 21. Houbara nest in the DDCR, 15/04/19)

B. Falconry in the UAE

According to the survey falconry is considered to have been a vital source of food for local people of the Gulf and strongly embedded in Emirati culture. Sheikh Zayed had a big influence on promoting the practice since he was a falconer himself. The houbara is also considered a historical source of nutrition and an icon to the Emiratis, representing Sheikh Zayed's vision of environmental protection. Even though some of the falconers travel abroad and hunt illegal species, they all seem to be aware which species are legal and illegal to hunt and that the houbara is an endangered species, here and abroad. It is also interesting to see that for the time being new technologies such as drones cannot replace live prey in the hunt, still making the houbara important to falconry.

The falconers questioned were young Emirati men who have a high educational background according to their jobs and have only recently been practicing falconry.

Given the sample size of 4, the survey gives some insight but ultimately not a good understanding of falconry in the UAE. For example, after reading the literature on falconry and speaking to falconers face to face, most falconers in UAE today have lower paying salaries than the 4 falconers in this survey. In order to get a more precise survey it would have been better to have at least 15 to 25 questionnaires, the more the better. The questioner had certain limitations, for example it was time consuming to ask the falconers to print the questionnaires, fill them out, and resend them to me. If sending them by email wasn't an option, trying to meet the falconers for them to fill the questionnaires face to face was also time consuming. Another limitation was the yes or no questions. When face to face with them, there was an opportunity to extract a lot more information. Perhaps using a different method of surveying would have been preferable to an eleven-question questionnaire.

VI. Conclusion

The U.A. E's initiatives for houbara preservation have made them leaders in conservation of that species, so much so that they have also become crucial in replenishing houbara populations in other countries. Sheikh Zayed's decision to find a balance between falconry and houbara preservation has been proven successful as seen today in sustainable projects such as regulated hunting reserves. The UAE has done a good job in making falconers part of the solution.

The houbara has historically proven to lend a competitive edge to falconry compared to smaller prey like hares and doves and is strongly embedded in cultural roots for Emiratis. Having spoken to falconers, it seems they are not ready to give up on live prey but are still aware of the dangers of overhunting. In large part due to U.A. E's investment in falconry and houbara conservation, a successful management plan has been put in place in order to promote awareness on the status of the houbara, as exemplified by the Sheikh Mohamed falconry school and the Emirates Falconers Club. The houbara is considered so essential to falconry that the group most concerned for its survival might be the falconers themselves.

Organizations such as the NARC and the DDCR have been successful in bringing back the houbara from the brink of extinction. The NARC breeds over 40,000 houbaras yearly and work hard to produce even more. The NARC also gains more knowledge on the species and continually finds better ways to successfully reintroduce the houbara back into UAE's desert environment. One of these well managed desert environments is the DDCR, which is an important release site for houbaras. The DDCR acts as a sanctuary for the houbara and many other iconic endangered species, a protected area where they can flourish and replenish their populations.

The older traditional way of life in the UAE paints a beautiful picture of man's strong relationship with nature. The story of wild falcons becoming part of the family for a season and then released, represents a time when man knew how to live in nature while taking care of it. In a rapidly developing country like the UAE where there are lots of examples of unsustainable ways of living, falconry reminds Emiratis of a time when earlier generations were in hardship but more connected with their surrounding environment. Sheikh Zayed's influence on environmental protection has stressed falconry and the houbara. The falcon symbolizes an entire nation and identity but the conservation of the houbara bustard represents the preservation of a way of thinking, when man could coexist with nature and still flourish.

"It is truly said that we borrow the world from our children and hold it in trust for them. The traditional sport of falconry was passed down to us from our fathers, from a time when we were closer to nature and life was more simple. It is a constant reminder to us of the forces of nature, of the inter-relationships between living things and the land they share, and of our own dependence on nature."

Sheikh Zayed Quote (Wheatcroft et al.2013)

VII. Appendices

أسئلة موجهة إلى هواة الصيد بالصقور / Questions for a Falcon Hunter

الاسم / Name: حمدان الدعمان
العمر / Age: 30
الجنسية / Nationality: إماراتي

المهنة / Profession: مستشار مالي
الهاتف / Telephone: 052-999 2122
البريد الإلكتروني / Email:

- 1) How long have you had falcons? / متى بدأت ممارسة الصيد بالصقور؟
ثلاث سنوات
- 2) Has your family always had falcons? / هل تعاليت لجيل عائلتك على ممارسة الصيد بالصقور؟
Yes No لا (نعم)
- 3) What is the significance of Falcons in Emirati culture? / ما هو سبب أهمية الصقور في حضارة الإمارات؟
الصقور تراث قديم، والشيخ زايد طيب الله ثراه كان له أثر كبير لهذه الطيور مثل صيغرة الرجاى ومسابقات الهجن
- 4) What is the significance of Houbara in Emirati culture? / ما هو سبب أهمية طائر الحبارى في حضارة الإمارات؟
هي جزء من تاريخ ~~الصيد~~ المسابقات ومن الحياة البرية لحد اليوم
- 5) Is the Houbara Bustard an endangered species in the UAE and abroad? Yes No
هل تُعد طيور الحبارى مهددة بالانقراض في دولة الإمارات وخارجها؟ لا (نعم)
- 6) What is the best prey to catch with your falcon? / ما هي أفضل فريسة لاصطيادها بصقرك؟
أفضل فريسة لي هي الكروان لأنها سكاكرة عن الحبارى
- 7) What prey is legal to hunt? / ما هي أنواع الفريسة التي يُسمح صيدها حسب القانون؟
الحمام والبط
- 8) What prey is illegal to hunt? / ما هي أنواع الفريسة التي يُمنع صيدها حسب القانون؟
الحبارى، الكروان، الأرنبة البرية والغزال
- 9) Should the hunting of the Houbara be legal? / هل تعتقد أنه يجب تصريح صيد الحبارى؟
Yes No نعم (لا)
- 10) Do you travel abroad to go falcon hunting? / هل تسافر للخارج لممارسة الصيد بالصقور؟
Yes No نعم (لا)
- 11) Do you see the future of falcon hunting only using technologies, like drones, and not using live prey anymore? Yes No
هل توافق على استعمال وسائل أخرى للصيد بالصقور بدلاً عن الحبارى؟ نعم (لا)

أسئلة موجهة إلى هواة الصيد بالصقور / Questions for a Falcon Hunter

الاسم / Name: *Roshid Al Amiri*

الوظيفة / Profession: *Lawyer*

العمر / Age: *29*

الهاتف / Telephone: *+971 56 213 0221*

الجنسية / Nationality: *Emirati*

البريد الإلكتروني / Email: *bentley_sure@yahoo.com*

1) متى بدأت ممارسة الصيد بالصقور؟ / How long have you had falcons?

1 year

2) هل تعلمت أجيال عائلتك على ممارسة الصيد بالصقور؟ / Has your family always had falcons?

☒ Yes

No

لا نعم

3) ما هو سبب أهمية الصقور في حضارة الإمارات؟ / What is the significance of Falcons in Emirati culture?

Falconry is a crucial part of the culture and has been embedded within it since before the birth of the UAE.

4) ما هو سبب أهمية طائر الحبارى في حضارة الإمارات؟ / What is the significance of Houbara in Emirati culture?

It is a traditional bird that has been hunted within the region.

5) هل طائر الحبارى مهدد بالانقراض في دولة الإمارات وخارجها؟ / Is the Houbara Bustard an endangered species in the UAE and abroad?

☒ Yes

No

هل تُعدّ طيور الحبارى مهددة بالانقراض في دولة الإمارات وخارجها؟ لا نعم

6) ما هي أفضل فريسة لاصطيادها بصقرك؟ / What is the best prey to catch with your falcon?

Pidgeon as it's legal to catch and abundant

7) ما هي أنواع الفريسة التي يُمنَح صيدها حسب القانون؟ / What prey is legal to hunt?

Pidgeon and mice

8) ما هي أنواع الفريسة التي يُمنَح صيدها حسب القانون؟ / What prey is illegal to hunt?

Houbara, Kurawan

9) هل تعتقد أنه يجب تصريح صيد الحبارى؟ / Should the hunting of the Houbara be legal?

Yes

☒ No

لا نعم

10) هل تسافر للخارج لممارسة الصيد بالصقور؟ / Do you travel abroad to go falcon hunting?

Yes

☒ No

لا نعم

11) هل توافي على استعمال وسائل أخرى للصيد بالصقور بدلاً عن الحبارى؟ / Do you see the future of falcon hunting only using technologies, like drones, and not using live prey anymore? Yes ☒ No

هل توافق على استعمال وسائل أخرى للصيد بالصقور بدلاً عن الحبارى؟ لا نعم

أسئلة موجهة إلى هواة الصيد بالصقور / Questions for a Falcon Hunter

صام صبر تخطيط / Profession/الوظيفة: عمور أسامة آل محمود / Name/الاسم
 090 3674587 / Telephone/الهاتف: 29 / Age/العمر
 الإمارات / Nationality/الجنسية: / Email/العنوان الإلكتروني:

- 1) How long have you had falcons? / متى بدأت ممارسة الصيد بالصقور؟
 بدأت منذ سنتين
- 2) Has your family always had falcons? / هل تعاقبت أجيال عائلتك على ممارسة الصيد بالصقور؟
 Yes No لا نعم
- 3) What is the significance of Falcons in Emirati culture? / ما هو سبب أهمية الصقور في حضارة الإمارات؟
 لعبت دوراً هاماً في حياة العرب، فكانت رمزاً يمتز بها كل عربي وفلسطيني، وكانت وسيلة يعتمد عليها لحطب الطعام وتستخدم كعقارة رجعية الفرائس.
- 4) What is the significance of Houbara in Emirati culture? / ما هو سبب أهمية طائر الحبارى في حضارة الإمارات؟
 كانت ولا تزال رمزاً أصيلاً عن رموز الدولة، حيث عاشت في جابيتها وتكاثرها نفعياً لرؤية المنفردة التي منحها زايد بن سلطان آل نهيان الحفاظ عليها وإفادة استدامتها.
- 5) Is the Houbara Bustard an endangered species in the UAE and abroad? Yes No
 هل تُعد طيور الحبارى مهددة بالانقراض في دولة الإمارات و خارجها؟ لا نعم
- 6) What is the best prey to catch with your falcon? / ما هي أفضل فريسة لاصطيادها بصقرك؟
 الأفضل في الحبارى
- 7) What prey is legal to hunt? / ما هي أنواع الفريسة التي يُمنع صيدها حسب القانون؟
 الحمام والأرانب
- 8) What prey is illegal to hunt? / ما هي أنواع الفريسة التي يُمنع صيدها حسب القانون؟
 الحبارى، والكروان، والأرانب البرية
- 9) Should the hunting of the Houbara be legal? / هل تعتقد أنه يجب تصريح صيد الحبارى؟
 Yes No لا نعم : في حواس معينة فقط
- 10) Do you travel abroad to go falcon hunting? / هل تسافر للخارج لممارسة الصيد بالصقور؟
 Yes No لا نعم
- 11) Do you see the future of falcon hunting only using technologies, like drones, and not using live prey anymore? Yes No
 هل توافق على استعمال وسائل أخرى للصيد بالصقور بدلاً عن الحبارى؟ لا نعم

أسئلة موجهة إلى هواة الصيد بالصقور / Questions for a Falcon Hunter

الاسم / Name: محمد الوظيفة / Profession: طيار
العمر / Age: 21 الهاتف / Telephone: 050 9977490
الجنسية / Nationality: الإمارات Email:

- 1) How long have you had falcons? / متى بدأت ممارسة الصيد بالصقور؟
سنتين
- 2) Has your family always had falcons? / هل تعاقبت أجيال عائلتك على ممارسة الصيد بالصقور؟
Yes No نعم
- 3) What is the significance of Falcons in Emirati culture? / ما هو سبب أهمية الصقور في حضارة الإمارات؟
- الصقور تانق ربيقتا في لكل عربي
- 4) What is the significance of Houbara in Emirati culture? / ما هو سبب أهمية طائر الحبارى في حضارة الإمارات؟
جزء من الحياة البرية
- 5) Is the Houbara Bustard an endangered species in the UAE and abroad? Yes No
لا نعم
هل تُعد طيور الحبارى مهددة بالانقراض في دولة الإمارات و خارجها؟
- 6) What is the best prey to catch with your falcon? / ما هي أفضل فريسة لاصطيادها بصقرك؟
الحبارى
- 7) What prey is legal to hunt? / ما هي أنواع الفريسة التي يُسمح صيدها حسب القانون؟
الحمام
- 8) What prey is illegal to hunt? / ما هي أنواع الفريسة التي يُمنع صيدها حسب القانون؟
الحبارى وكروان
- 9) Should the hunting of the Houbara be legal? / هل تعتقد أنه يجب تصريح صيد الحبارى؟
Yes No نعم
- 10) Do you travel abroad to go falcon hunting? / هل تسافر للخارج لممارسة الصيد بالصقور؟
Yes No نعم
- 11) Do you see the future of falcon hunting only using technologies, like drones, and not using live prey anymore? Yes No
هل توافق على استعمال وسائل أخرى للصيد بالصقور بدلاً عن الحبارى؟ لا نعم

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