

Characterization of wild birds communities

as part of biosecurity management in breeding sites:

example of Houbara bustard conservation breeding in the United Arab Emirates

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Introduction and objectives

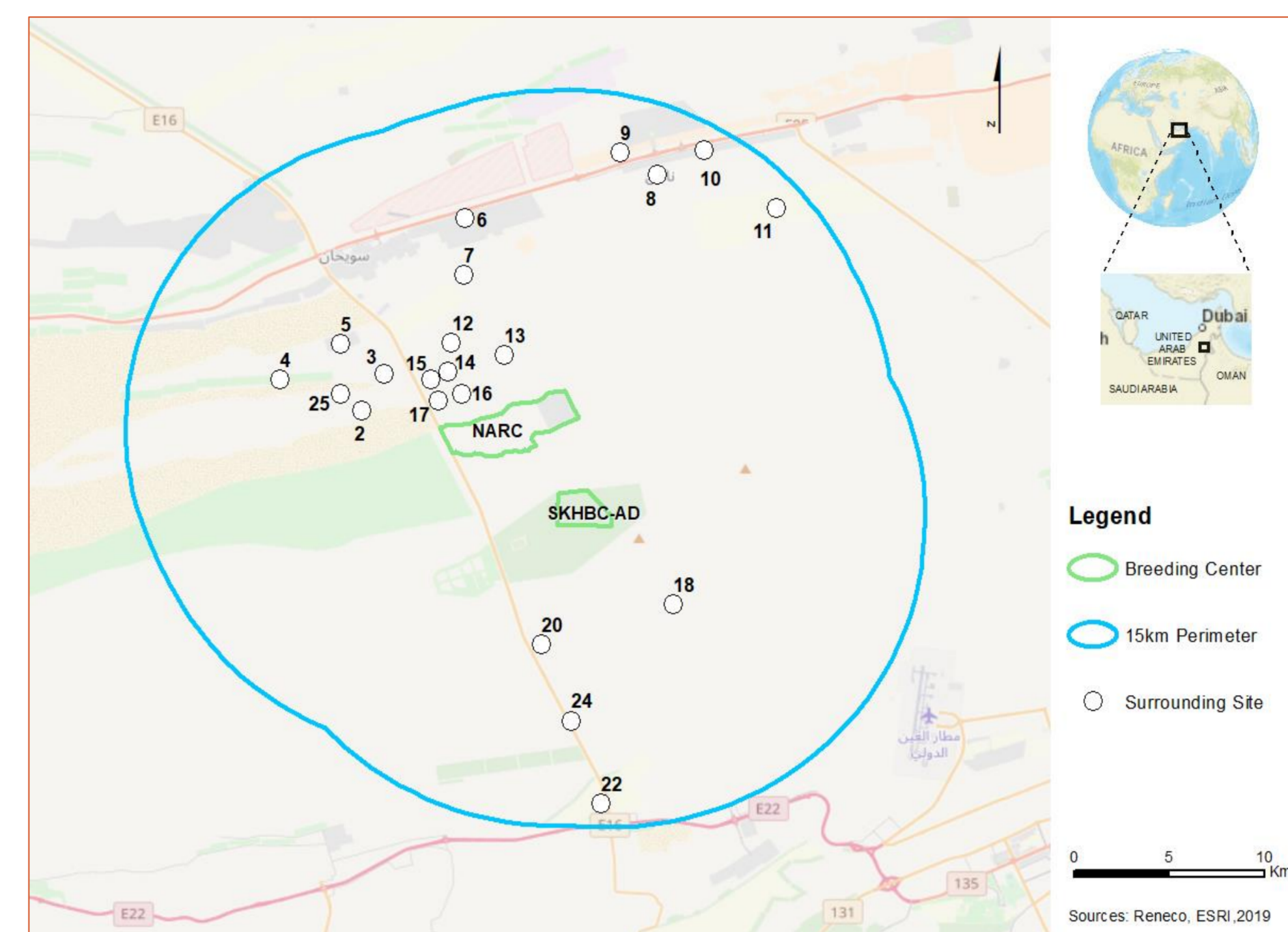
Interface between wildlife and livestock is a concern because of potential pathogens spillover (Jones et al, 2008 ; Wiethoelter et al, 2014).

Breeding facilities are attractive for wildlife, especially for wild birds (Bock et al., 2008).

To describe and quantify the wild birds-related risk, description of the wild compartment and its interactions with the captive compartment is an indispensable prerequisite.

We demonstrated the importance of making such a description through the example of conservation breeding of Asian Houbara bustard (*Chlamydotis macqueenii*) in the United Arab Emirates, using combined approaches: (i) inventory of bird species present on breeding sites and their surroundings, (ii) description of movements of main resident species in and out of the breeding sites and potential exchanges with surrounding sites, (iii) assessment of nature and frequency of contacts between wild birds and captive bustards.

Materials and methods



- Two breeding sites
- Jan 2016 to Dec 2017
- Capture-Recapture
- Census
- PIT tags detection
- VHF tracking
- Contacts analysis

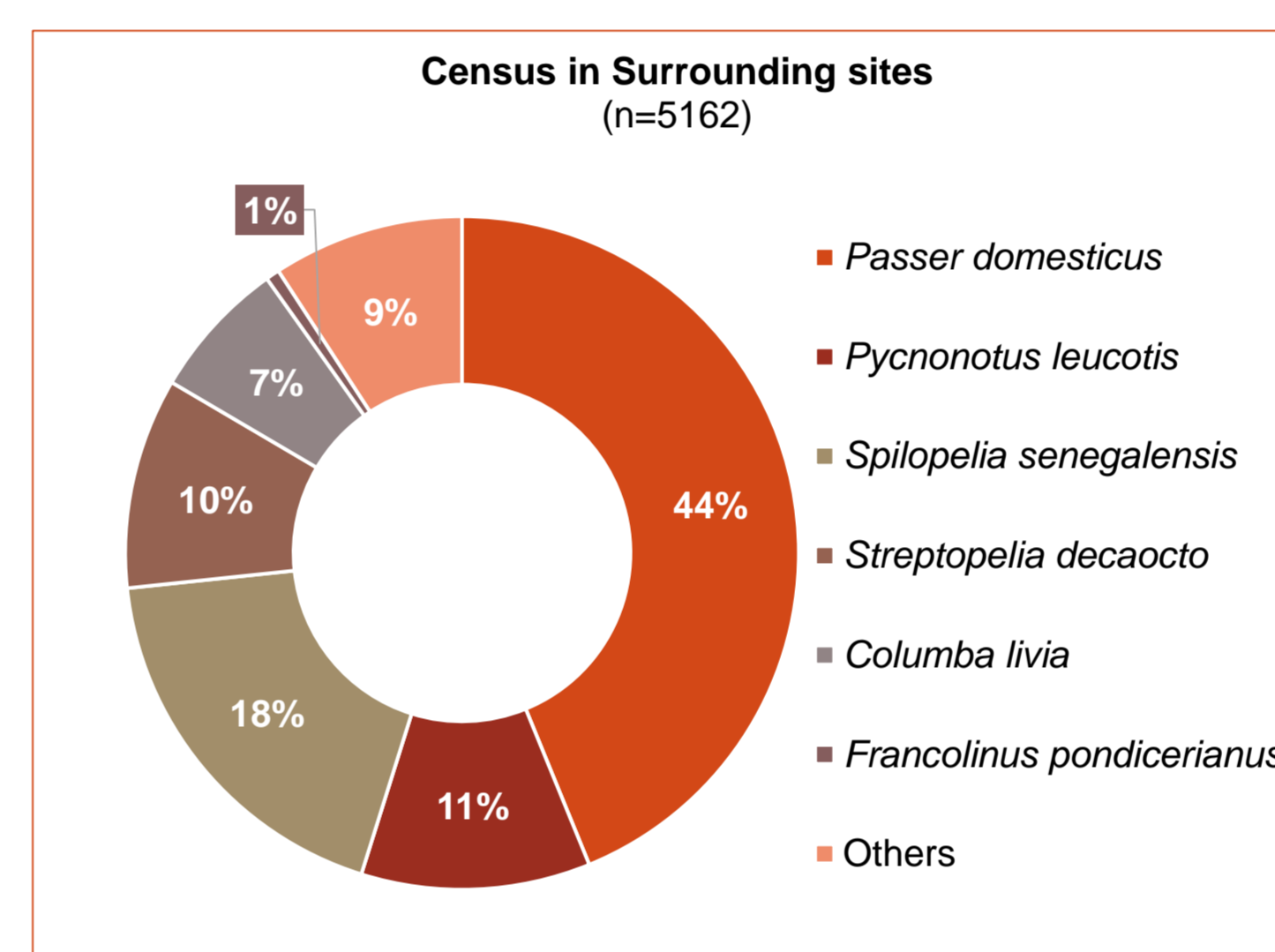
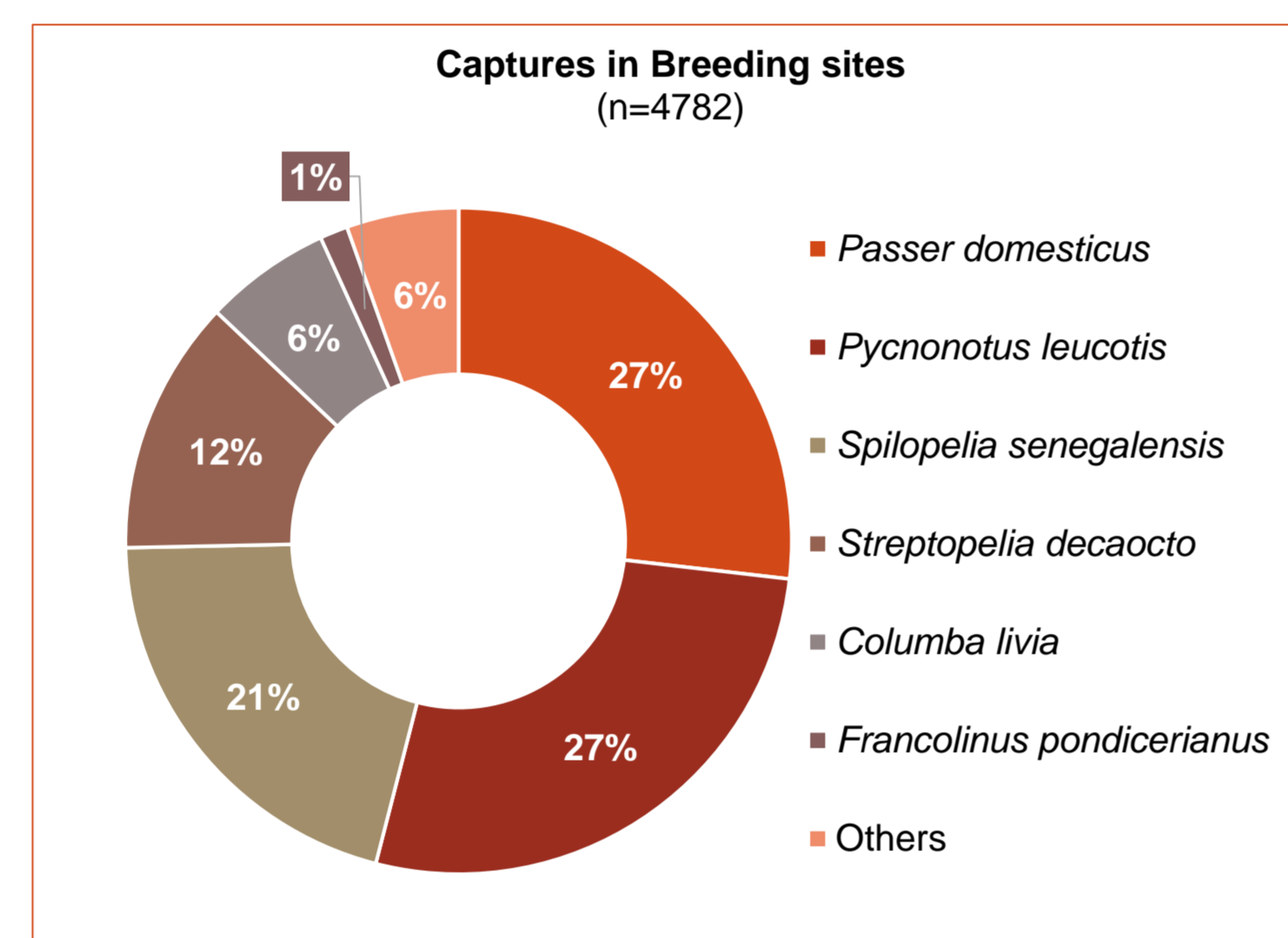
Figure 1. Houbara breeding sites of NARC and SKHBC-AD and surrounding sites (Abu Dhabi, UAE) inside a 15km perimeter. Surrounding sites were selected according to their attractiveness for wild birds (vegetation, resources, cattle, poultry, ...)

Results

Birds communities survey

- Breeding sites: 234 capture events, 4782 birds, 56 species, 6 species representing 94.6% of the sample (target species)

Figure 2. Species composition of birds captured on NARC and SKHBC-AD sites (Abu Dhabi, UAE) between January 2016 and December 2017. On the pictures, the 6 target species.



- Surrounding sites: 42 census events (10h), 5162 birds, 45 species, 90.8% target species

Figure 3. Species composition of recorded birds on the 21 surrounding sites around NARC and SKHBC-AD sites (Abu Dhabi, UAE) between March 2017 and October 2017.

Movements analysis

- PIT tags detection: 4401 tagged birds, 75 days of detection → only 1 detected individual

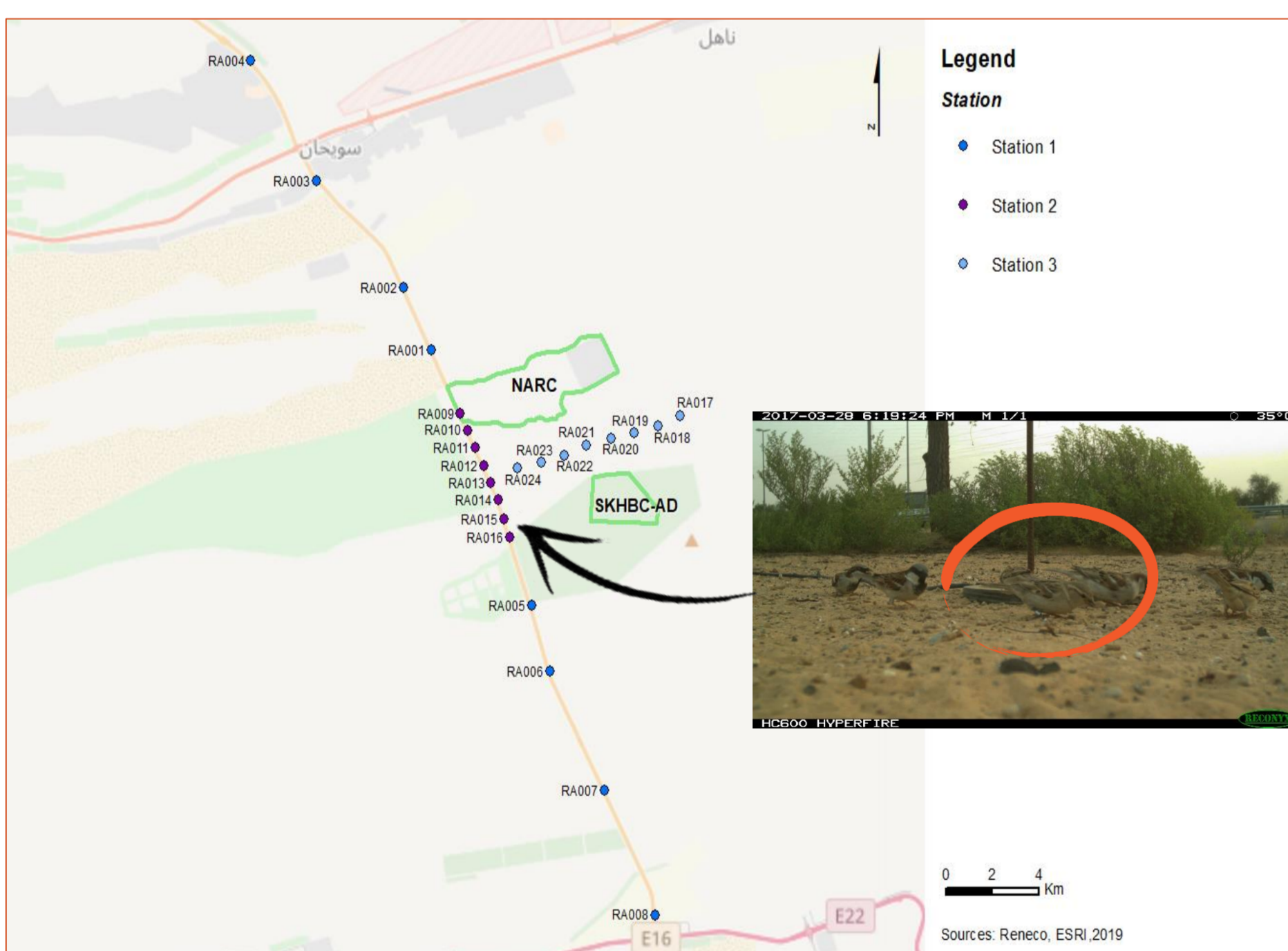
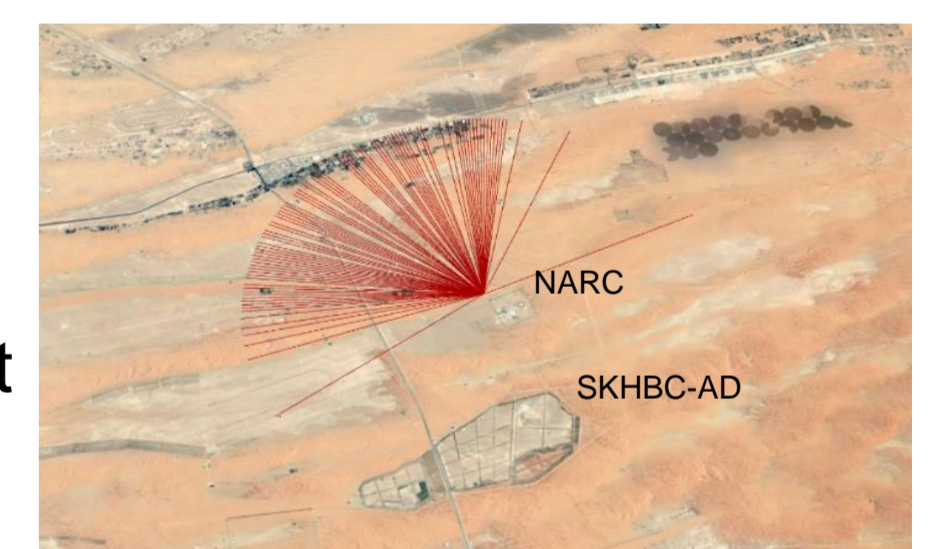


Figure 3. Stations and detection points used for PIT tags detection (Abu Dhabi, UAE) between January 2016 and December 2017. PIT tags (Passive Integrated Transponders) were detected using baited receiver antennas. On the picture, the only detected individual.

Figure 4. Daily patterns of VHF tracked birds from NARC site (Abu Dhabi, UAE) between November 5th 2017 and December 5th 2017. Each square stands for a tracking time slot, the empty ones mean the bird was not detected, the orange ones mean the bird was detected inside NARC, the red ones mean the bird was detected outside NARC. On the map, the recorded directions of tracked birds when out of NARC.

- VHF tracking: 17 equipped birds, 1 month of tracking → daily pattern for some birds, being alternatively in and out of the NARC site

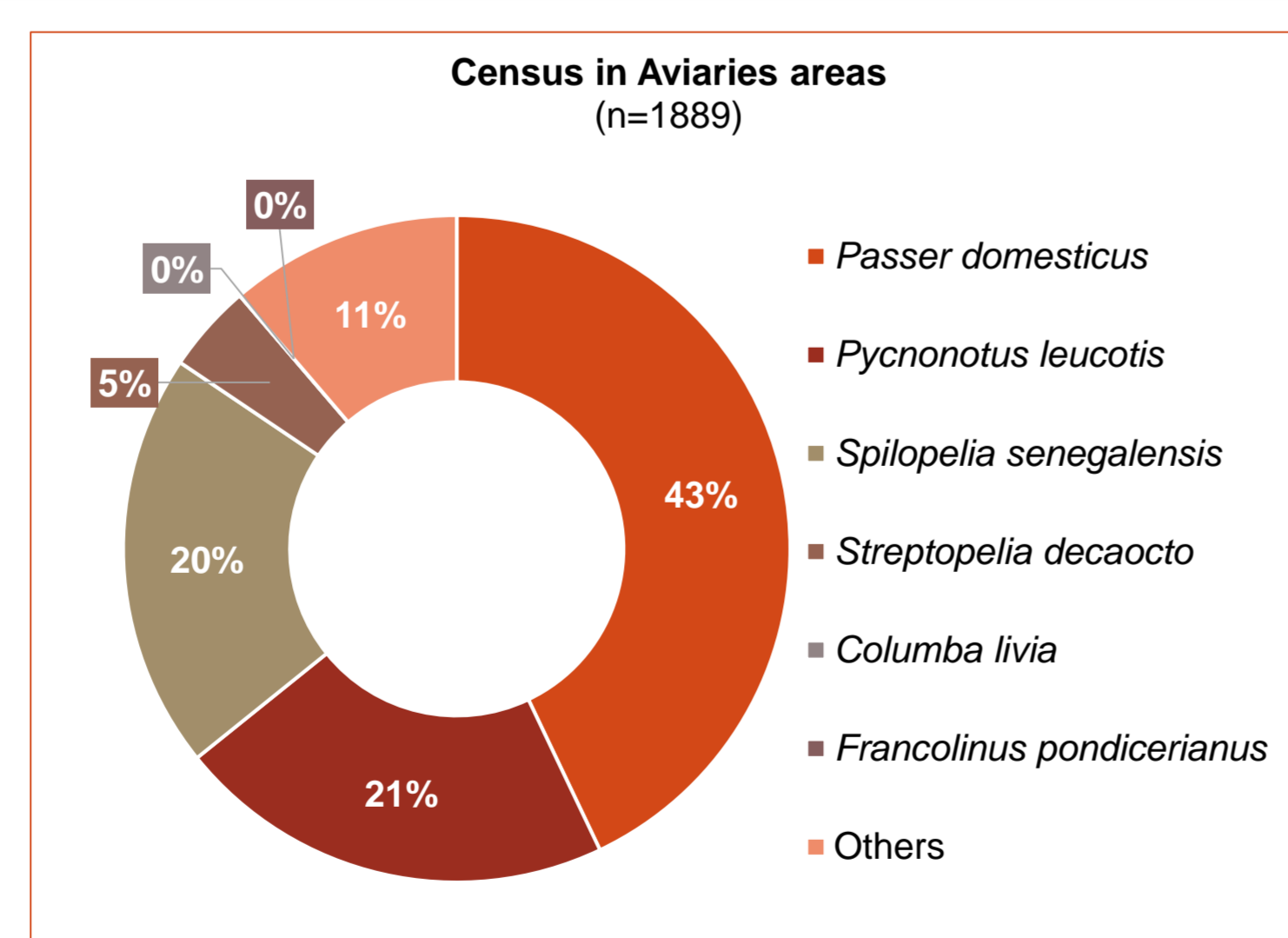


	05/11/2017	07/11/2017	12/11/2017	14/11/2017	19/11/2017	21/11/2017	26/11/2017	28/11/2017	09/12/2017	05/12/2017
Pycnonotus leucotis	Outside									
	Inside									
Spilopelia senegalensis	Outside									
	Inside									
Columba livia	Outside									
	Inside									
Columba livia	Outside									
	Inside									

Aviaries community and Contacts with captive bustards

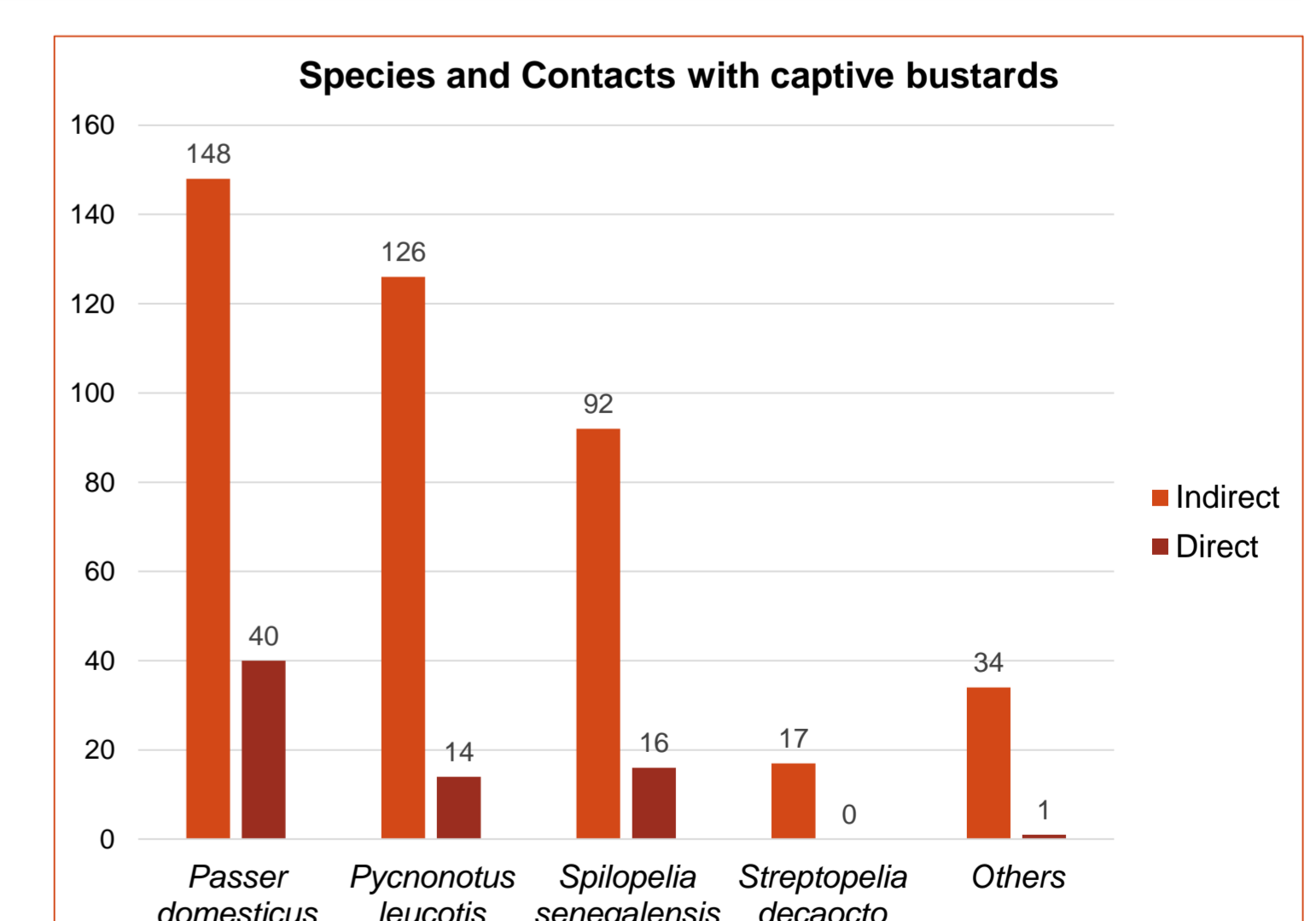
- Census in aviaries areas: 34 counting events (128h), 1889 birds, 20 species, 88.7% target species

Figure 5. Species composition of recorded birds in NARC and SKHBC-AD aviaries areas (Abu Dhabi, UAE) between October 2016 and November 2017



- Contacts analysis: 417 indirect contacts (perched on aviaries) with captive bustards (38.5% Passer domesticus), 71 direct ones (inside aviaries) (56.3% Passer domesticus)

Figure 6. Species composition of recorded birds involved in indirect and direct contacts with captive bustards in NARC and SKHBC-AD aviaries areas (Abu Dhabi, UAE) between October 2016 and November 2017.



Conclusions

- Birds communities of breeding site and surrounding sites are dominated by 6 resident species
- Only a fraction of the birds community is using the aviaries habitat
- Birds are moving out regularly from breeding sites, headed for northern surrounding sites
- Only few species are in contact with captive bustards

Acknowledgments

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