

WORKPACKAGE 3 – INTELLIGENCE AND ADAPTATION

DELIVERABLE 14 – FIELD REPORT FOR TARTU, SPRING

CONTEXT

GENERAL CONTEXT

Solutions for cohabitation between species, especially between humans and other animals, are not easy to generalize successfully. A lot of factors must be taken into account, from ethological point of view, from anthropological point of view but also from semiotic point of view. One of the least taken into account aspect is probably the animals' agency.

We know that animals of the same species don't communicate, behave or interact in the same way in different places (McGowan 2001; Freeberg 2012), sometimes even leading to geographical cultural norms (Whiten, Horner, de Waal 2005). Again, the particularly complex cognitive abilities of corvids (Fleming 2010) make them very interesting subjects for case-study about animal's agency.

INSIDE THE PROJECT

As the project aims to propose semiotic solutions for cohabitation that could be generalized, different aspects have to be taken into account, and this case study aims to address the question of animal agency. By studying the behaviour, habits, geographical and cultural norms of corvids, this step aims to map more precisely the way corvids adapt, understand and create semiosis in their environment, in order to understand on which points a generalization of solutions would have to focus.

RESEARCH QUESTION AND HYPOTHESIS

QUESTION AND SUBQUESTION

This deliverable is part of the Case study 3, aiming to study the relationship between the agency of some liminal species, like corvids, and the generalization of semiotic solutions for a better cohabitation of species in cities. The main question of this Case study is: How can we generalize semiotic solutions for human/animal cohabitation in different environments/cities?

This field report is a part of a field work distributed during all the length of the project. This field work aims more precisely to answer the question: What elements of behaviour should be acknowledged when trying to generalize a semiotic solution?

HYPOTHESIS OF THIS STEP

The general hypothesis of this Case study is that some species are particularly well-adapted to human contact, and their behaviour can be different depending on behaviour and culture of humans they live with. Their adaptability and intelligence must be taken into account when exporting urbanism solutions to another country, culture or climate.

The hypothesis of this collection of steps (from Deliverable 12 to Deliverable 19) is that some particular behaviours, having an influence on human beings, pets or infrastructures, must be taken into account to

generalize solutions for cohabitation. But these behaviours can change during time of the year and city of living. Pointing out these changes is important to understand how to create generalizable solutions, but also how to take into account animal's agency.

METHODOLOGY

METHODOLOGICAL CHOICES

Two complementary approaches were used for investigating the particular period that the nesting season is. First, places already explored during D12 and D13 were explored again, looking for nests (ancient or new ones) and potential nesting activities. Second, some places described as previous known areas in the birds monitoring report (see link in the References and links section) were investigated.

Part of the investigations and observations were conceived and organized as practical field training for students of the Semiotic Department. Some pictures and videos taken for this deliverable are the work of Egert Käesel (BA student, third year) and Hanna-Annika Kuulmets (MA student, first year).

An observed area was considered as a nesting area or probable nesting area when at least one of the following conditions was present:

- Direct observation of one or two individual(s) actively building or fixing a nest.
- Direct observation of a probable pair inside or on the top of the nest.
- Observation of a group of nests in the same tree or in close tree, and at least one of the following conditions:
 - o Direct observation of individual gathering nesting material on the ground.
 - o Presence of multiple adults of the same species in the trees where the nests were observed, even if not directly in the nests.

All observations are gathered in a Field Diary (see Figure 1 for a sample of Field Diary). Field Diary is part of the section Previous documents attached. For each observation, was noted:

- Number of the entry, in order to spot any missing entry in case of format change
- Date (in YYYY/MM/DD format for a better archive management) and time (as precisely as possible)
- Weather (for influence on specimens but also on pictures) and temperature (as precisely as possible)
- Place (in the localisation is not a specific address, all information useful to find the localisation were noted)
- Number of specimens (or at least an estimation, in case of a big flock or if they are in movement making difficult to count them)
- Any useful observation: behaviour, attitude, other species present, signs of stress or calm, presence of humans etc.
- If pictures or videos could be taken, the number of the picture or rush where the observation can be seen (see Figures 2 and 3 for examples of interesting observations caught in tape)

All the photo and video were copied on an external hard drive and named in way that could allow anyone to easily find the material needed (see Table 1 for the nomenclature). All these files are stored without any cosmetic treatment, cut in the tape or modification, according to the Data Management Plan, validated by the grants' office.

ISSUES AND PROBLEM SOLVING

Some places registered as previous nesting areas were under planned urban works when we tried to investigate. Obviously, these areas would not be chosen for nesting this season.

A probable same issue appears in the surrounding of Delta building. The area is full of nests from previous seasons, but all of them are empty, and the state of some suggests that they are not used for more than one year. One of the students suggested that the corvids could have flee the area during and after the building of Delta center, which is two years old.

The nesting area for *C. cornix* is still unfound. A probable emplacement is in Raadi Cemetery, but this place was not investigated with the students for safety reasons and will request a separate observation alone, as one pair nesting here is known for sometimes attacking humans during the nesting season.

POINTS OF VIGILANCE

The nesting season is still at its beginning. More observations must be conducted through May and June in order to follow the all period and perhaps have a better idea of how successful each pair, area, group was at producing, protecting and raising younglings.

RESULTS

RAW RESULTS

Some nesting behaviours (gatherings materials, building new nest or fixing an old one) were observed for *C. frugilegus* and *C. cornix*.

Some registered former nesting areas are still unoccupied this year, and the state of some nests indicates that it was probably the same last year.

Previous cohabitation patterns, observed in autumn and winter observations, are now absent: nesting areas are clearly “monospecies” (or at least presenting only one species of corvids, it is still possible that smaller birds, like *Cyanistes caeruleus*, *Parus major* or *Passer domesticus*, also observed in these areas, also nest near corvids groups).

Nesting area was clearly identified for *C. frugilegus*. Nest building was observed for *C. cornix*, and more observations are necessary to confirm the nesting area. Nesting area of *C. monedula* is still unknown, but observations made by Timo Maran (Department of Semiotics, Tartu University) suggest that Raadi Park could be a relevant spot.

Vocalizations increased, but this is not specific to the corvids family.

No attack, or even aggressive behaviour toward humans has been observed in these nesting areas.

INTERPRETATION

As suggested in Deliverable D12, patterns of cohabitation are fragile during nesting season. This could be explained by the predatory risk corvids species can represent for eggs and chicks of each other. Marko Mägi (Institute of Ecology and Earth Sciences of Tartu) explained that predatory behaviour from *C. monedula* on *C. cornix* eggs was been observed.

This aspect should be compared with observations in Paris and cohabitation between *C. corone* and other birds occupying the same ecological niche, like seagulls.

Patterns of cohabitation with other species, especially ducks, remain unchanged.

Aggression toward humans, as described by Marko Mägi regarding the pair in Raadi Cemetery, should clearly be seen as an exception.

MILESTONE 3 – PROGRESS REPORT

IMPACT OF RESULTS

Behaviours identified as focus point in Deliverable D12 are starting to show their seasonal variability in a more detailed manner. The variability of these behaviours during summer time (Deliverable D15) will be observed and integrated to the current observations, in order to obtain a more general view of behavioural patterns through the year (Deliverable D20).

Behavioural changes during nesting season should be compared with potential modification during the same period in Paris (Deliverable D19).

ISSUES, PROBLEMS OR LACKING

All nesting areas are not yet spotted for all the studied species. Intermediate observations will be necessary, especially for *C. monedula*. A final observation field work is scheduled with the students, that could be used to do so.

NEXT STEPS

Next step of field observations should be in Tartu, in August 2022. Due to personal travel, it is possible that some useful observations of summer can also be gathered in Paris in July 2022.

GENERAL PROJECT – CURRENT STATE OF PLAY

IMPACT OF RESULTS

These results are not yet relevant, but these observations are clearly showing how important the seasonal variable is in corvids behaviour. It indicates that the methodology chosen (to have observations through the year with seasonal regular checkpoints) is a good one, but also that these checkpoints are more variable in time than initially thought. Complementary observations, even if not directly related to a seasonal checkpoint, are necessary.

PROPOSITIONS FOR OTHER ASPECTS OF THE PROJECT

ACADEMIC ASPECTS

It is too early to talk about academic use of these results, but the visual material can be used as a pleasant way to illustrate other results of the project (especially in Workpackage 1) at conferences (see document C1), with international partners (see document I1) or in a paper (see document P1).

POPULARIZATION ASPECTS

The pictures and videos taken will be useful for communication toward general public and potential partners, both in the website, through regular update posts, and through popularization videos, to be used on the website or during events.

Material created to train the students will be reused to create guidelines for general public willing to get involved in biodiversity monitoring and birds' watch.

NEXT STEPS

The visual material will be added to the blog. Video material will be prepared for a potential popularization video/short movie.

ANNEXES

REFERENCES AND LINKS

REFERENCES

- Fleming, Susan. 2010. « A Murder of Crows ». *Nature*.
- Freeberg, Todd M. 2012. « Geographic Variation in Note Composition and Use of Chick-a-Dee Calls of Carolina Chickadees (*Parus Carolinensis*): Geographic Variation in Chick-a-Dee Calls ». *Ethology* 118 (6): 555-65. <https://doi.org/10.1111/j.1439-0310.2012.02042.x>.
- McGowan, Kevin J. 2001. « Demographic and Behavioral Comparisons of Suburban and Rural American Crows ». In *Avian Ecology and Conservation in an Urbanizing World*, édité par John M. Marzluff, Reed Bowman, et Roarke Donnelly, 365-81. Boston, MA: Springer US. https://doi.org/10.1007/978-1-4615-1531-9_17.
- Whiten, Andrew, Victoria Horner, et Frans B. M. de Waal. 2005. « Conformity to Cultural Norms of Tool Use in Chimpanzees ». *Nature* 437 (7059): 737-40. <https://doi.org/10.1038/nature04047>.

LINKS TO WEBSITES AND DOCUMENTS

Monitoring of crows in Tartu report: https://tartu.ee/sites/default/files/research_import/2018-01/Vareslaste%20monitooring%20Tartus%20l%C3%B5pparuanne%2C%20leping%20M-030.pdf

ACKNOWLEDGEMENTS

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Timo Maran for his suggestion regarding the *Coloeus monedula* potential nesting area.

Marko Mägi for precious information about the predatory behaviour between different species of corvids.

DOCUMENTS

PREVIOUS DOCUMENTS ATTACHED

Field diary (PDF version – 21/04/2022)

Data Management Plan (PDF version – 18/01/2021)

TABLES AND FIGURES

Observation: Probably two groups (one of *C. cornix*, one of *C. frugilegus*) resting together in the same tree without any sign of stress or aggression (see pictures P01 to P04).

Entry n°: 36

Date & time: 2022/03/01 – 10:55

Weaver: Cloudy – 3C°

Place: Uus 55

Number: 1

Observation: Drinking in a pond of freshly melted snow (see pictures P01 & P02)

Entry n°: 37

Date & time: 2022/03/06 – 17:25

Weaver: Clear – 4C°

Place: Uus 55

Number: Around 350 (see picture P01)

Observation: A large flock gathering in a tree (see video R01) before leaving all at once (see video R02).

Entry n°: 38

Date & time: 2022/03/14 – 14:15

Weaver: Clear – 8C°

Place: Emaiõgi, in front of Pikk bus stop

Number: 2

Observation: Two individuals of *C. cornix*, foraging for food near a group of ducks. At some point, either a crow came too close or tried to steal something, and was chased by a male duck (no image could have been taken).

Entry n°: 39

Date & time: 2022/03/29 – Afternoon

Weaver: Cloudy, windy, a bit snowy – 4C°

Place: From Tartu University to Pikk bus station, to Delta center, to Botanical garden entrance, to Reakoja plats.

Number: Probably around twenty *C.*

frugilegus and around 6 *C. cornix*.

Observation: We were on field work with students in order to localize probable areas of nesting. First encounter with a *C. cornix*, who was trying to empty a trashcan (see video R02). On the way from University to Pikk bus station, isolate nests were found (see pictures P02 and P03), one

seemed inhabited (see picture P04).

Individuals *C. cornix* were observed in the area, most of the time observing from a high spot (see pictures P05 to P07). In the courtyard beside Pikk bus station, we found a nesting area of *C. frugilegus* (see videos R03, R05 and R07). Some of them were exploring on the ground (see videos R04 and R08), while we were observed by some individuals on lamp, closer to us (see video R06). Two individuals were spotted gathering branches to repair or finish to construct a nest, with a possible cooperative behaviour (see video R09). On the way to Delta center, we first encountered three specimens of *C. cornix*, exploring on the ground (see video R10). We then found an important number of nests, apparently not occupied, close to the Delta center (see videos R12 to R14). Another large group of empty nests was found in front of the Botanical garden entrance (see videos R11 and R15). Another one, still empty, was found on our way to Reakoja plats (see pictures P08 to P11 and videos R16 and R17). Nesting area of *C. cornix* remained unknown.

Entry n°: 40

Date & time: 2022/04/11 – 11:30

Weaver: Clear – 8C°

Place: Uus 55

Number: 1

Observation: Resting in the tree, apparently enjoying the sun (see pictures P01 and P02).

Entry n°: 41

Date & time: 2022/04/12 – Morning

Weaver: Clear – 9C°

Place: From Tartu University to Delta

center, to Botanical garden entrance, to

Pikk bus station, to Tartu University.

Number: Probably around 15 *C. frugilegus*

and 6 *C. cornix*.

Observation: We were on field work with students in order to investigate the nests we found during the previous field work. On the way between Reakoja plats and Delta building, we found a *C. cornix* gathering

Figure 1 - Sample of field diary - Spring, Tartu

Nomenclature of the files				
Field observations format: CITY_SEASON_DATE_NATUREnumber				
City of observation	Season of observation	Date of observation	Nature of file	Number
P: Paris T: Tartu	A: Autumn SM: Summer SP: Spring W: Winter	Format YYYYMMDD	P: Picture R: Video rush	From 01 to 99, restarted in each folder

Table 1 - Nomenclature of the files for field observations.



Figure 2 - Video rush T_SP_220329_R07 of a pair of *Corvus frugilegus* building their nest.



Figure 3 - Picture T_SP_220301_P01 of a *Corvus cornix* drinking in a pond of melted snow.