



## Studying carrion crows in Paris city

To better answer to stakeholders asking how to face disturbances caused by the numerous crows living in Paris city, a research study started in July 2015 under the lead of Frédéric Jiguet, professor at the National Museum of Natural History, following a request by the Paris environment services. The principle was first to capture and colour-ring crows, in order to study their movements and survival.

Five years later, more than 550 crows have been captured and ringed with coloured plastic rings engraved with a three-digit code, so that people visiting the city can relocate them. Citizens, not only birders, reported thousand of recoveries on this website, in Paris or at close proximity, but also far from the ringing sites. The first results are reported here according to the potential disturbances caused by the crows, and the programme proposes to find sustainable solutions to efficiently reduce disturbances and facilitate the long-term co-existence of crows and humans in cities.



Relocations of crows ringed in Paris revealed some long-distance spring dispersal of young crows in their second year, acknowledging that relocation probability is very high in Paris and around ringing sites, but very low away from the city. It should also be noted that long-distance records are all dead recoveries of crows trapped and killed by hunters. The take-home message is that Paris' crows are part of a meta-population functioning at a very large spatial scale, well beyond the Ile-de-France region. As a consequence, any attempt to reduce the number of crows by culling them locally would be inefficient – because of regular and permanent movements of crows in and out of the city.

### 1) Crows are too many

Crow numbers vary along the year but also along the day, with abundance peaking in autumn when first-calendar year individuals immigrate from the countryside, and at noon when people have lunch in parks and gardens. In Paris, most crows are immatures, aged 1 or 2, which do not breed. Young crows enter massively the city from July to October, with large numbers staying in parks where they find abundant and predictable food. They are highly mobile and move in and out of the city, while some individuals commute between large parks. Many individuals spend the day in Tuileries but move in late afternoon to join a roost in Jardin



des Plantes, which has numerous tall trees, closes before sunset and has no lighting at night. It is therefore easy to understand that any attempt to regulate crow numbers in one park could not be based on killing crows in that parks, as any defeated crow would be rapidly replaced by another one, as long as the site proposes resources. A better solution is to reduce the access to food resources (rubbish, lunch rests, feeders).

## 2) Crows spread the garbage from thrash cans

It is usual to see crows searching for food in public thrash cans, eventually throwing any items out of the can, until they reach some interesting food.



The best solution to limit this disturbance is to add a lid to the can, and to manage the garbage bags properly. This proves highly efficient in Jardin des Plantes and Jardin des Tuilleries.



It is also important to export the full plastic bags immediately, they should not be exposed out of the can before being taken away – otherwise the crows will use this opportunity to open the bags and take thrashes out.

## 3) Crows pluck grass and plants

If the grass and soil are alive, they hold worms, larvae and insects that are of great interest to crows. When gardeners have just planted new plants and flowers, some crows see this as an opportunity to access to the soil and look for food, by extracting the plant from the hole where it was planted. The solution is to install protective nets above the plantations in winter, so that the plants can develop their root system, to be removed in spring before flowering. This does not hamper grass mowing as lawns are not mowed in winter!



In Paris, many lawns host large white chafer larvae, in such densities that crows just pluck large grass areas to find them. An experimental design in Jardin des Plantes was implemented in the fall and winter 2019–2020, by un-mowing half the lawn plots, and carrying the usual mowing on the other half. At the end of the winter, un-mowed plots were less damaged than mowed plots – and also hosted more chafer larvae, so that the contrast in plucking is not due to the absence of larvae in tall-grass plots. In fact, a tall and dense grass probably reduces the detection of the larvae by the crows.



Grass plucking on mowed lawn plot



Reduced grass plucking when no lawn mowing



Chafer larvae (*Amphimallon majalis*) inhabit the upper soil as they feed on grass roots, and are a favourite prey of urban crows.



#### **4) Crows attack humans**

Each rare, there are a few reports of crows attacking humans in Paris. These attacks usually occur in May or June, when chicks leave the nest, and are always very restricted in space and time. They are due to the recurrent behaviour of rare deviant individuals which have no inhibition to humans, and do not hesitate to intimidate some humans if they consider they are too close to their offspring. Culling crows locally is no solution as such attacks are due to a particular individual. We tested the capture and temporary placement in an aviary of such a male in May 2017. Kept in captivity during 4 days, the bird flew directly back to its nest and did not attack people anymore that year. It was however reported to harass humans in June 2019 at chock fledging, and in May 2020 again – which proves that such behaviours are due to a few, rare and single individuals. A temporary removal of such birds is efficient to reduce the disturbance.



We hypothesize that the aggressive behaviour is due to a loss of inhibition towards human beings, which could occur in birds reared by humans. Attacking a ‘human’ too close to the nest or chicks would therefore be similar to attacking a congener for such hand-reared individuals. To test this, we started to colour ring juvenile crows reared in a wildlife care centre close to Paris, before releasing them in the wild, and plan to realize behavioural tests when such individuals will be relocated.



## 5) Crow mortality

When ringed crows are found dead in Paris parks, we try to get them autopsied. Death causes include haemorrhage (due to anticoagulant, so probably rat poison), other global bad fate (a global deteriorated body condition). The haemorrhage probably occurs when a crow has eaten a dead poisoned rat; rat control induces crow mortality.



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