

THE WORKING GROUP ON URBAN SPARROWS
6th International meeting in Breda (Netherlands)
2019:20 21 March

The Working Group on Urban Sparrows (WGUS) is born in 2006, in response to the House Sparrow symposium at the 24th International Ornithological Conference (IOC) in Hamburg. WGUS members, researchers, conservationists, NGO's that investigate in the population changes and the potential causes of the Passer species, especially in the urban and suburban environment meet every two years since 2007.

The 6th meeting was held in Breda (the Netherlands) on the 20th and 21th of March 2019, as a cooperation between the city of Breda (Van Eekelen Rombout), Bird Protection Netherland (Koojmans Jip Louwe & Vreugdenhil Stefan) and ABLLOvzw/groep Terec UGent (De Laet Jenny).

Talks on the first day focussed on:

- The breeding success of House Sparrows in different biotopes
- The monitoring of House Sparrow populations in the Netherlands and Paris.
- Demographic data analysis in the Netherlands of 20 urban bird species including the House Sparrow.
- Efforts to protect urban House sparrows through the realisation of 'green stepping stones'.

On the second day an excursion in Breda was offered by the city of Breda that strives for a 'city in the park'. In the afternoon all participants got the opportunity to participate in the symposium '*Nature inclusive buildings*' organised by the city of Breda.

Here I present the abstracts of the talks on the 21th of March 2019.

WELCOME

As a welcome we presented a video of Dennis Summers Smith. As a world House specialist, he is now too old to travel but enjoyed our previous meetings, mostly in England for his convenience, very much. This talk can be obtained integral by sending a mail to: Jenny.delaet@ugent.be

UNDERGROUND TRASH CONTAINERS: BAD TIMES FOR THE URBAN HOUSE SPARROW?

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House Sparrows (*Passer domesticus*) are experiencing sharp declines in urban areas of Europe. The species follows the same negative trend in Spain. Several hypotheses have been proposed to explain this situation but its generalized urban decline seems to be linked to several factors. However, one of the most accepted hypotheses relates the decline to the increase of human socioeconomic status and tidiness in urban areas. In some towns and cities of the Valencian Community (Spain), communal above-ground trash containers are being replaced by underground ones (stainless steel chutes on the pavement that feed into underground chambers) to improve cleanness and avoid bad smells. A previous study showed that surface trash containers presented a positive effect on House Sparrow abundance. Our aim was to detect if House Sparrows were more abundant in areas with surface trash containers than in areas with underground ones. In winter 2018-2019, we recorded the abundance of sparrows by point counts in both kinds of areas in towns and cities from north to south of the Valencian Community. Our preliminary results showed that House Sparrows were more abundant in areas with surface trash containers which could be linked to higher food debris availability. The replacement of above-ground trash containers by underground ones implies a resources privation that could boost the decline of the species, especially in city centres and urban areas with a low green cover.

THE HOUSE SPARROW IN THE NETHERLANDS: TREND, DISTRIBUTION AND REPRODUCTION

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Thousands of volunteers count birds throughout the year, thereby supporting the research of Dutch bird populations. The main projects for this presentation are MUS, BMP and Nestkaart (Nest Record Scheme). Is there a decline in urban House Sparrows in the Netherlands?

Material and method

- MUS (Monitoring Urban Species) is a simple scheme for breeding birds in the built-up area <https://www.sovon.nl/nl/MUS> It started on initiative of Sovon (Dutch Centre for Field Ornithology, www.sovon.nl) in cooperation with Birdlife the Netherlands. It is a point counting (5 min. each) on 8-12 points (random chosen by computer) in a postal area. There are 3 periods of counting: 1-30 April, 15 May – 15 June (both dawn) and 15 June-15 July (evening, especially for Swift). In 2007-2016 the number of counting's grew from more than 1200 to 1800, in 450-650 postal areas. More than 30% of the 750 volunteers are female and 50% are new birders for Sovon. Since 2014 MUS is financed by the Network Ecological Monitoring (NEM, <http://www.netwerkecologischemonitoring.nl/>) a partnership of governmental organizations.
- BMP is the Breeding bird Monitoring Program for large and small scale area monitoring by territory-mapping.
- The primary aim of Nestkaart (the Nest Record Scheme) is to monitor the breeding performance of a wide range of birds annually.

Decline in 13 out of 20 urban bird populations

Since 2013 MUS is integrated in BMP (the Breeding birds Monitoring Program). The trends are calculated by CBS (Statistics Netherlands). Many breeding birds depending on or commonly found in an urban environment are on the decline. This applies to 13 out of the 20 urban bird species, including the House Sparrow, Western Jackdaw, Common Blackbird and the Common Starling. The crested lark has even fully disappeared from the city. In 2017, the European Serin population was only 1 percent of the total population in 1990.

In urban areas, only the Common House Martin has increased in number since 1990. The increase follows a decrease of around 80 percent in the preceding decades. Populations of six species have been stable since 1990, namely the Magpie, Eurasian Jay, European Greenfinch, Great Tit, Eurasian Blue Tit and European Goldfinch.

On the other hand, Magpie and Western Jackdaw populations have increased again in recent years. At the same time, however, the European Greenfinch, Great Tit and Long-Tailed Tit have seen a decline over the past ten years.

<https://www.cbs.nl/en-gb/news/2018/49/decline-in-13-out-of-20-urban-bird-populations>

Trend House Sparrow

After a steep decline in the eighties and nineties we see a stabilisation of the House Sparrow since the beginning of this century. In the agriculture area there is a difference between the higher part (increase) and the lower (decline). It's also the division between sand and clay/moor and respectively less and more urbanized. About 70% of the population is settled in the urban habitat. In the urban area there was a steep

decline (50% or more) in the nineties. In the last ten years (2008-17) we see a moderate decline. Therefore the main cause is in the lower part of the country (most urbanized) but in the higher part there is a light grow. Also in winter in 1980-2017 and in the last ten years the volunteers found a moderate decline.

Trend in the urban habitat

The recent results (including 2018) in MUS show a moderate decline in the last four years (in lower as higher part). This output we see also in the separate provinces so not only in the urbanized provinces.

Distribution

In November 2018 on the birders day of Sovon the Bird Atlas, Vogelatlas van Nederland, was presented. The fieldwork was in 2013-16 and gives a new focus on the breeding and winter birds. After the Blackbird the House Sparrow is the most common breeding bird (600.000-1.000.000 bp). Small scale farmland with farms en buildings and also (small) villages has the highest numbers of the House Sparrow. Low density was found in regions with large scale and open farmland, woods and in great cities, speciality in the western part of the country. All the maps are available on <https://www.vogelatlas.nl/atlas/soorten/soort/15910>

In the urban habitat the numbers in villages and small cities are the highest and low numbers in the great cities as Amsterdam, Rotterdam and Den Haag. Hardly House Sparrows are found in the centre of Amsterdam, but there are (still) breeding Swifts in high numbers <https://maps.amsterdam.nl/vogels/?LANG=nl> and also counted by MUS <https://www.sovon.nl/sites/default/files/doc/PDF-jes/dln117-4p.151-154.pdf> In a new city as Almere the numbers are almost ten times higher as in Amsterdam an old city.

Reproduction

In Nestkaart (Nest Record Scheme) <https://www.sovon.nl/nl/content/nestkaarten> yearly 7-55 records of the House Sparrow are received in the last ten years (total 258). This is too little to figure out yearly nest success. Therefore records in the decade are combined. Most nest cards are from the eastern part of the country (12% cities of >100.000 inh, 5% most urbanized part). Three clutches with a median of first egg laying 18 April, 20 May and 25 June. The second clutch has the highest nest success (89%) but the first clutch has the most fledgling per breeding attempt (3,2), second (3,1) en third (1,7). Not every pair starts a second or third brood; if we make a reset for that then 5,6 fledgling/pair/year (but far from complete). But it is in the range that was found in Great-Britain 3,3-6,1 in the beginning of this century (Peach *et al.* 2008). More nest cards are required but maybe in future the Dutch Garden Birdwatch (www.tuintelling.nl), RAS or Ring-MUS gives us more and better reproductive information.

Recent publicist and other projects

Each year we have in November the Sovon bird counters conference. Then we publish The State of the birds 2016 and it had the topic Urban birds <https://www.sovon.nl/nl/publicaties/vogelbalans-2016-stadsvogels>

CBS (Dutch Statistics) and Sovon publicist <https://www.cbs.nl/en-gb/news/2018/49/decline-in-13-out-of-20-urban-bird-populations>

In the next Breeding birds report 2017 the House Sparrow gets a great species chapter (publicist in March 2019).

In November 2018 on the birders day of Sovon the Bird atlas, Vogelatlas van Nederland, was presented <https://www.vogelatlas.nl>

In 2017 Sovon and Birdlife the Netherlands created a website about benchmarking urban birds by MUS. The results of your city are compared with similar districts in the rest of Holland. It is showing groups of birds with similar habitat requirements for example the group of birds which breed in houses www.stadsvogelindicator.nl Recent we managed a new update.

Reconstruction and insulation of building gives mostly a loss of breeding habitat or numbers especially for House Sparrow and Swift. MUS is an opportunity for monitoring the effects. This will start in 2019 by order of WOT N&M.

Discussion

We can speculate about the decline and the recent stabilisation of the House Sparrow. In Europe and many counties in NW-Europe (as BTO.org) in the recent decade there is also a stabilisation after a sharp decline <https://www.ebcc.info/?s=house+sparrow> Reconstruction of building gives mostly a loss of breeding habitat. Although we see that mitigation works. So new build is not always the killing of the House Sparrow. Maybe the loss of breeding sites is not the main course of the decline (see Swift Amsterdam and House sparrow in Almere). In the breeding season trees are important for the insects for the juveniles. Most trees in the urban habitat in Holland are non-native and provide significant less insects. The local government has nowadays also less budget. Management of green in the public space is reduced by chancing bush and shrub into lawn. In the recent ten years there was no decline but stable numbers of the urban House Sparrows in the Netherlands. The last four years we see a decline again. It's a trend not only in the most urban part but in all regions. It's too early for focussing on a cause but speculations are welcome. For decades we are already in the topic 'the decline of the urban' of the meeting. After a period of stabilisation in the recent years decline again in the Netherlands.

THE HOUSE SPARROW IN PARIS: DECLINE AND MONITORING

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Abstract

In 2008, the first results of the survey led by the Corif and the LPO over 5 years showed that Paris was an exception among European big cities: the population of House Sparrows was stable.

In 2017, we published a second set of results which revealed that Paris was no longer an exception. During the period, the population of House Sparrows had been divided by four.

The survey is being continued. It may now show the influence of the first measures implemented by the city authorities, like the ban of all chemical treatments in the streets and public parks.

We have recently started a second study. We are going to observe the behaviour of the sparrows of several dozens of colonies and try to describe the characteristics of their environment.

The goal is to understand the relationship between nesting sites, resting sites and feeding sites which are what we have called the «House Sparrow Trilogy».

This article will present the two sides of the study carried out in Paris about the House Sparrow:

- Since 2003, a census, still going on.
- From 2018, an additional study of colonies.

The census

In 2003, no study had been carried out on the evolution of the population of House Sparrows in Paris while several surveys showed an important decrease of the species in several main European cities.

In Paris, ornithologists had tried to define the total number of sparrows in the city, but none of these attempts seemed to be really convincing.

The two main birding societies of the Parisian region, the LPO (Ligue pour la protection des oiseaux) and the Corif (Centre ornithologique Île-de-France) decided to carry out a study that could show the global trend of the population of House Sparrows within the limits of the city. They decided to set up a simple census protocol so that a great number of societies members could participate.

To avoid the previous disappointments, it was decided that the study would focus on the evolution of the population and avoid any attempt to give a global number.

There were two periods in the census, as we published a first set of results in 2009 and a second one in 2017.

Over the five first years, the population of House Sparrows has been globally stable, making Paris an exception among European big cities. Except for a drastic drop in two districts. At that time, the question appeared to be: is this drop a preview of the future?

Between 2007 and 2016, the drastic drop had extended to the whole city: Paris was not an exception any more.

The protocol

First, two sets of horizontal and vertical lines have been drawn on a Paris map. They have been spaced to create 1000 intersections inside the city limits.

We randomly drew up to 200 of these crossings (fig. 1). They became our counting spots.

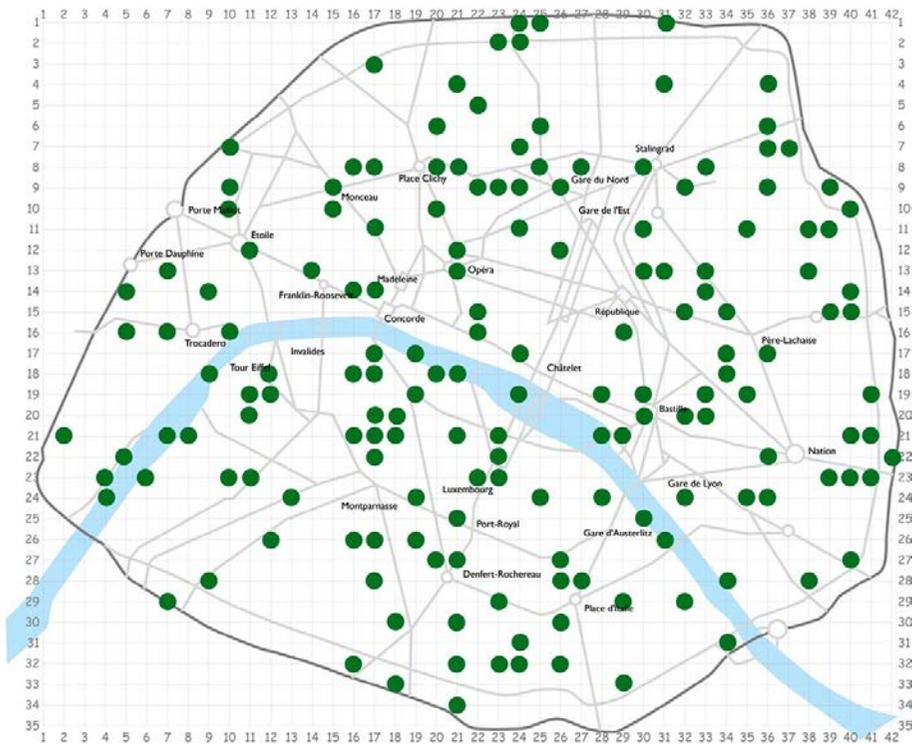


Figure 1. Counting spots drawn randomly on a grid with 1000 intersections

These spots were attributed to around 40 observers with a simple protocol which, of course, has not changed since.

The counting has to be made over a period of 10 minutes. The observers have to count the sparrows they can see with the naked eye or hear. At the end of the counting, they have to give an estimated number of sparrows seen or heard and a maximum number of sparrows contacted simultaneously.

There is one counting a year¹. It takes place within a period of ten days by the end of March and the beginning of April, always the same day in the week, always at the same time of the day, always by the same person, so that a possible bias would be constant. The consistency of observers has been difficult to keep. Although we tried to avoid it as much as possible, some counting points have had different observers. This has been taken into account in the statistical processing of the counting.

2008, the first results

The first finding of the results published in 2008 was that more sparrows were found in the south-eastern part of Paris (fig. 2) which are among the most popular quarters of the city.

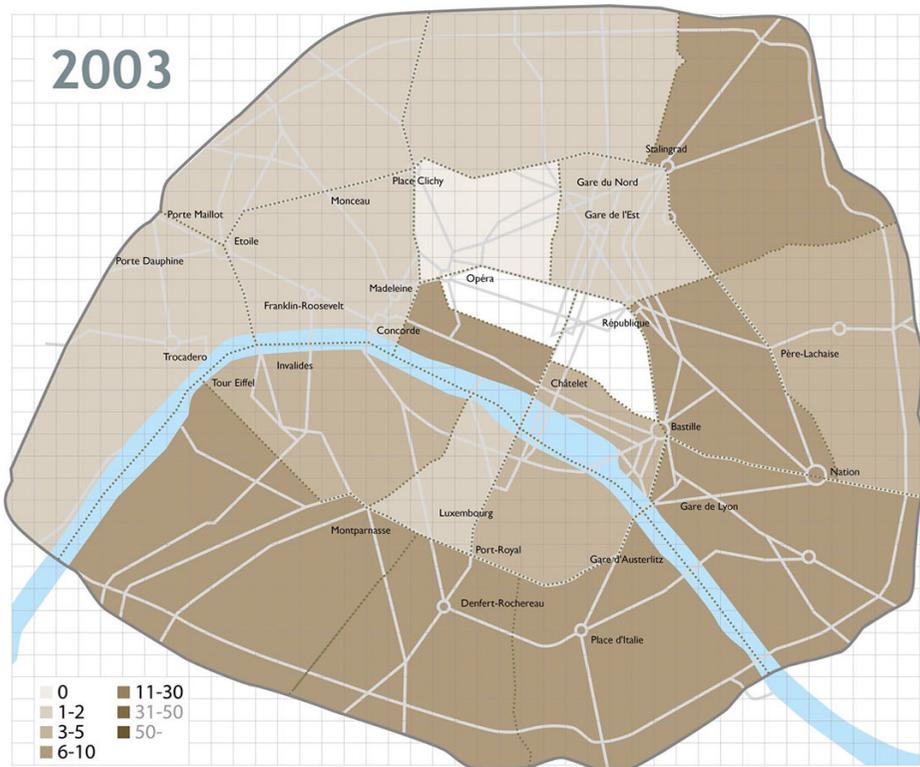


Fig. 2: Average number of sparrows by observation spot by district (arrondissement)

Between 2003 and 2007, the population of sparrows was found to be globally stable. Except for a drastic drop in the XIth (-92%) and XVth (-74%) arrondissements (fig. 3).

¹ In the first years, we made a counting in autumn. We quickly stopped them because we found that the result was not reliable as it could vary according to the breeding success or the dispersion of the young birds...

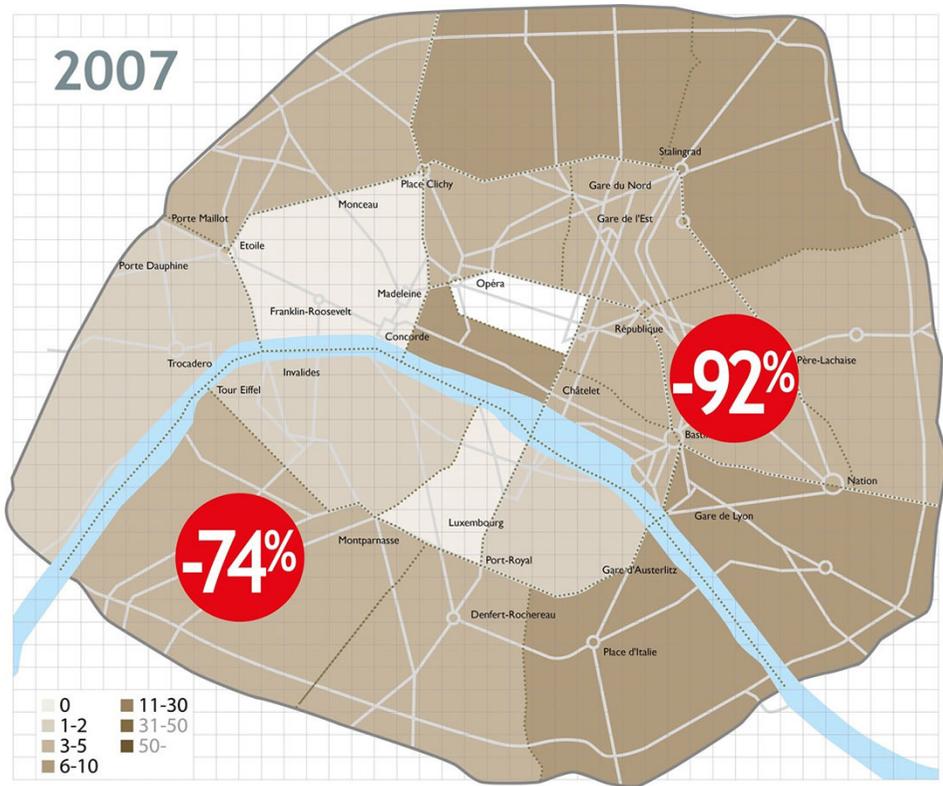


Fig. 3: Average number of sparrows by observation spot by district (arrondissement). A drastic drop in two districts

Those two districts are the most gentrified ones over the period: many buildings occupied by craftsmen and small industries were replaced by middle class dwellings.

Between 2003 and 2016, the global fall appeared to be 73%: three out of four sparrows have disappeared (fig. 4).

The line chart of the global evolution of the population over the whole period of the study shows a fall of 10,4% per year (fig. 4).

If the line is divided according to the two periods of the study (fig. 5), it shows a non-significant decrease of 4,8% per year between 2003 and 2007 and a 12,4% decrease between the longer period of 2007-2016.

The comparison between the maps (fig. 2, fig. 3 and fig. 6) showed that the population of sparrows had been levelled by the bottom. The drop in two arrondissements in 2007 was now found in the whole city. There is now a much smaller difference between the richer parts of Paris (north-west) and the most popular ones.

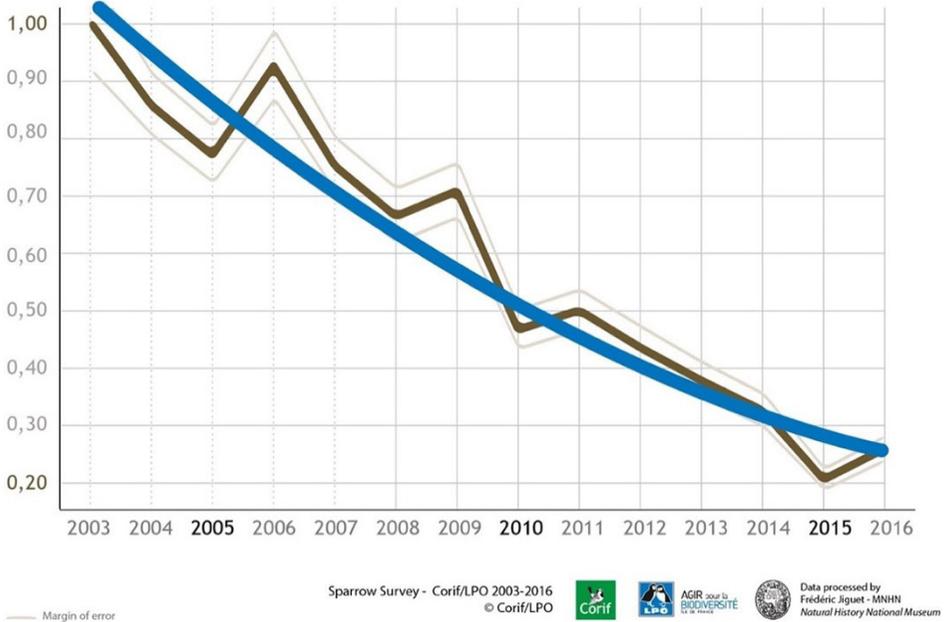


Fig. 4: Global evolution of the population of House Sparrows in Paris, 2003-2016

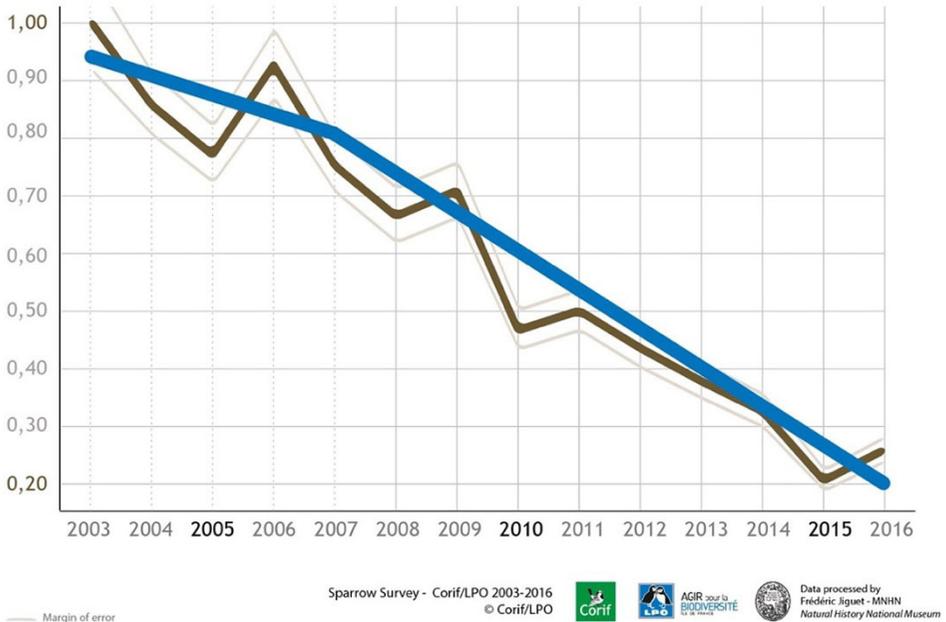


Fig. 5: Evolution of the population of House Sparrows in Paris over the two periods of the study, 2003-2007 and 2007-2016

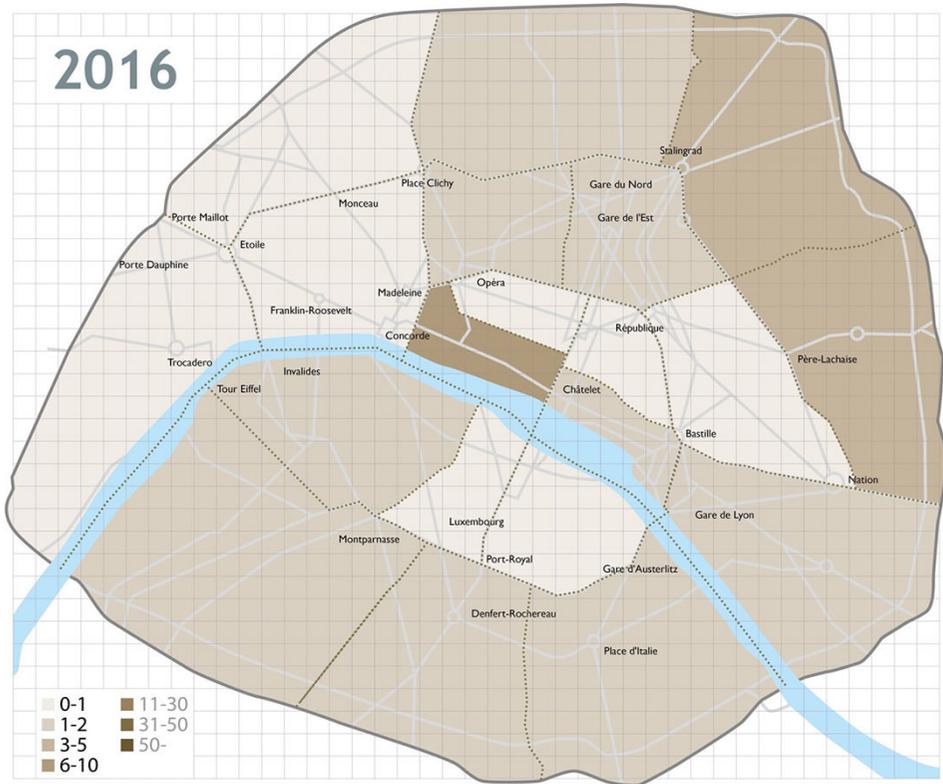


Fig. 6: Average number of sparrows by observation spot by district (arrondissement)

The line charts showing the evolution of the population of House Sparrows over the period of the study (fig. 4 and fig. 5) can be compared to the one of old real estate prices in Paris over a similar period (fig. 7).

Between 1998 and 2012, for example, the increase of the prices of old real estate in Paris is 375%, which means around 10% per year. This phenomenon is very similar to what happens in many other big cities of the world.

Over this period, many new buildings have been built, some others have been renovated, as well as yards, passage ways that are very common in some parts of Paris, specially the eastern ones. Wasteland has disappeared as new dwellings and offices developed. Small industries and craftsmen have moved to the cheaper suburbs.

This confirms the observation made in numerous cases: there is a link between the human socioeconomic status and the decline of the House Sparrow in urban areas. It has an influence on nesting places, vegetation, and more precisely grain and insects. Of course, this comes with other factors such as pesticides, herbicides, pollution, etc.

The influence of the Sparrowhawk has been sometimes mentioned. We tend to think that it is not pertinent in Paris: the fall of the House Sparrow occurred before



Fig. 7: Evolution of the price index of old real estate

the arrival of the Sparrowhawk in the city, and it occurred in districts where there was no Sparrowhawks.

The study of the colonies

In 2018, for several reasons, we felt the need to add a new side to our survey. First because more and more observers were very disappointed to repetitively go to counting spots where there were no sparrows anymore.

Then it appeared that if we wanted to implement concrete preservation measures, we had to set up a series of very practical recommendations to the city authorities, the private or social landlords, the city planners, the architects, the landscapers...

The first year of the study (2018) has been a sort of trial run but in 2019, the study is fully implemented. In April 2019, 211 potential colonies have been listed in Paris (and 11 in the suburbs). 87 are monitored by 43 observers. Three monitored colonies are situated in the suburbs as we had volunteers to take charge of them. We accepted the proposal as it appeared it would be interesting to compare them with the ones inside the city bounds.

The subject of the study

We know that the House Sparrows breed in colonies. The question we want our study to answer is: what conditions must a colony fulfill to succeed? We intend to develop an answer based on very concrete elements.

We set up two starting hypothesis:

- The colony must have a minimum size.
- To thrive, the House Sparrows need nests, shelter and food. We called this the “House Sparrow Trilogy”.

These hypothesis led to two questions:

- What is the minimum size of a colony?
- What is the perimeter of the House Sparrow Trilogy?

The information gathered

The observers are asked to fill two types of spreadsheets:

- The habitat questionnaire.
- The observation form.

Situation	On a building	Building type	Historic, ancient, modern, contemporary Monument, residential/office, industrial
	Not on a building	In a park or a garden	Public, private Ancient, modern
		In the street	Street lamp, street furniture...
		In wasteland	
		Other	Retaining wall, bank, bridge, bandstand...
Surrounding building		Density	High buildings, low buildings, small houses...
		State	In disrepair, under construction or renovation works, recently renovated, brand new
Vegetation		Layer	Trees, shrubs, grass, on a wall
		Type	Cultivated, spontaneous, absent
		Varieties	
Water		Presence	
		Type	Puddle, pond...
Bare ground		Presence	
		Type	

Fig. 8: Summary of the information gathered through the habitat questionnaire

The habitat questionnaire

This questionnaire is fulfilled once a year. Through a series of closed questions (fig.8), the observers are asked to describe the close environment of the nests, of the sheltering sites, of the foraging sites. The questions are about the age, type, density, state of the buildings, the presence and size of public or private gardens, the presence, type and size of the vegetation... The same questions are asked about the surroundings.

By comparing the characteristics of the sites chosen by the sparrows with the characteristics of the surroundings, we expect to define the sparrows preferences when choosing their nesting, sheltering or foraging sites.

The observations form

This spreadsheet is to be freely fulfilled all year long, and more intensely during the breeding season.

The observer can enter the date of the observation, the number of individuals, couples and young. The other fields concern the behaviour of the sparrows in relation with nesting, sheltering and foraging. For sheltering and foraging, a distance from the nest and a description of the vegetation can be noted. Some extra information can be populated about the surroundings and the presence of bare ground and puddles (or other forms of water presence).

We have also asked the observers who have any knowledge in plants to indicate the names of the varieties the sparrows appreciate. The observers are also invited to join photographs. This will help us to be more precise on the habitat description and evolution, as well as on plant species.

The goal of this spreadsheet is to get elements to know more about:

- The evolution of the colonies according to external conditions.
- The ability of external conditions to meet the needs of the sparrows.
- The ability of the sparrows to adapt to external conditions changes.

Outstanding issues

Will our study confirm our hypothesis on the “Sparrow Trilogy”?

We intend to carry out this study for four or five years. In any case, we will be able to describe precisely what makes a colony successful or not, with very tangible elements.

This should enable us to elaborate concrete measures to propose to the city authorities, the private or social landlords, the city planners, the architects, the landscapers... We tend to think that our proposals will be grounded on solid arguments. The last question is, of course: which measures will be implemented?

A HOUSE SPARROW’S DILEMMA: SHOULD WE BUILD THE NEST IN THE CITY OR THE COUNTRYSIDE?

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Urban areas represent new ecosystemic niches designed by and for humans; nevertheless, many other animal species share space with them. Overall, these ecosystems present disadvantages for urban wildlife, mainly related to the presence of humans and its activities, like air pollution. However, some animal species have been attracted by the new possibilities of cities, like the abundance of food resources. Here I explore these advantages and disadvantages from the perspective of a house sparrow for living in the city or in the countryside, especially during the breeding season.

An interesting approach, it is the ecophysiological approach to conservation issues. In particular, oxidative stress balance, which is an essential mechanism to adapt to life in the cities. According to obtained results, the substantial decline of the population of house sparrows, in the most highly urbanised areas in Europe, may be related to the oxidative stress urban birds experience in comparison with rural ones. Some environmental factors linked to urban environments, such as pollution and human-provided food, have been described as a challenge for the oxidative stress balance, in terms of increased oxidative damage or for failing to meet the needs of antioxidant system defences, or even both combined. The implementation of certain policy changes in cities, such as reducing pollution and conducting campaigns on how to feed wildlife may contribute to halting the decline of urban house sparrow populations.

DIFFERENCES IN BREEDING SUCCESS OF HOUSE SPARROW IN DIFFERENT BIOTOPES

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Based on individually color-ringed individuals, the breeding success of two populations of house sparrows in Leek, Groningen, the Netherlands was determined. A population in a sub urban area and a population in a rural area. We looked at the number of hatches and the number of young per hatch. The population in the rural area scores much better on both components.

The greatest difference between the two areas is the amount of native plants and presumably the supply of insects for the young.

THE REALISATION OF 'GREEN STEPPING STONES' TO SAFE THE URBAN HOUSE SPARROW

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The House Sparrow is one of the most wide spread passerine species in the world. Since several decades the species shows a serious population decline. Nowadays in human-dominated landscapes, natural and semi-natural patches are embedded in unsuitable urban habitat. In the past the House sparrow showed a clear continuous distribution of populations with an exchange of migrants by a 'stepping stone' mechanism. By this there was a dispersion between basic populations through small 'step

stones' in between. When circumstances become less optimal, these small populations disappear first. So the optimal connected landscape transforms in a more isolated habitat for house sparrow populations. Although the House sparrow is a small bird that can fly as well as any other songbird, the House sparrow is extremely sedentary.

Based on results concerning the 'home range' of the urban House sparrow, in the city of Ghent, we know that:

- The smallest home ranges (0.45 ha) exist in the urban area.
- There exists a correlation between the home range and the spatial distribution of vegetation (hedges and bushes).
- There exists a positive correlation between the home range and the body condition in the urban House Sparrow.

In two pilot cities Sint-Niklaas, 77.700 inhabitants and Dendermonde, 45.800 inhabitants, we selected 5 basic populations. In every population we put up 5-10 nest boxes. Outside the breeding season we caught house sparrows with mist nets and other traps to ring and measure them. In 2018 and 2019 we launched a citizen call to realise 'green stepping stones' with wall green, dense bushes, hedges and small herb fields. By this we wish to create new small step stones for dispersing House sparrows.

POPULATION TREND, REPRODUCTION AND SURVIVAL OF URBAN AND EX-URBAN HOUSE SPARROW POPULATIONS COMPARED WITH OTHER BIRD SPECIES IN THE NETHERLANDS

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Since 1950 cities in The Netherlands have grown constantly, from 2.5 million households in 1950 to 7.7 million in 2018. For few birds the habitat has grown this fast as for urban exploiters, such as the house sparrow. Despite the fact that their habitat has tripled, the numbers of urban birds have gone down over the last decades. 20 species of the Dutch avifauna qualify as urban birds; these species have the largest part of their population, or reach the highest population density, within the boundaries of human settlements. Most of the urban bird species, including the house sparrow, are in decline. Of those four are Red Listed.

Demographic bird data are collected from a bird ringing scheme in urban and ex-urban settings (on so called constant effort sites). Data from the 2011-2016 are analysed. For 10 bird species reproduction and adult survival can be compared between urban and ex-urban populations. On the average reproduction is lower in urban populations than in ex-urban populations, while adult survival is on the average higher in urban populations than in ex-urban populations. For house sparrow however both reproduction and survival are higher in the urban populations.

There was very little consistency between demographic differences in urban and ex-urban bird populations and population trend within this selected group of 10 bird species. Further research and more detailed analyses are needed.

HOUSE SPARROWS IN THE CITY CENTRE OF BREDA

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In contrast to many old Dutch city centres, the house sparrow is still widespread in Breda's centre. Figure 1 shows the distribution of house sparrows in Breda in 2008.

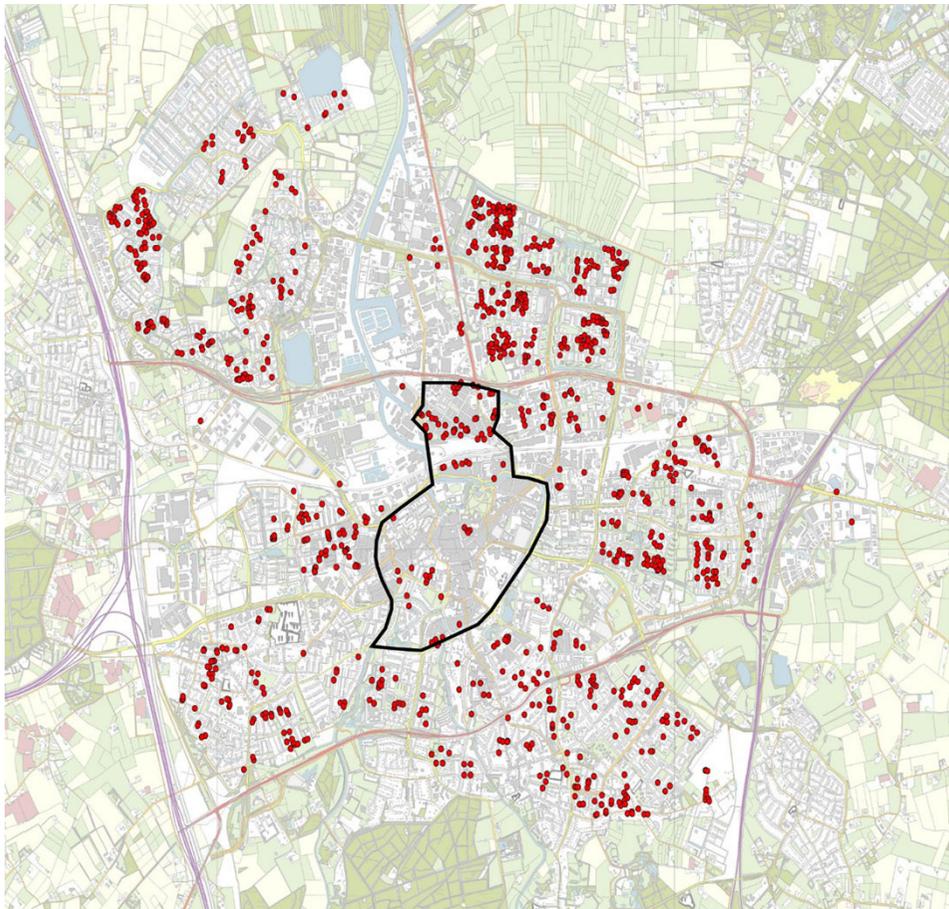


Figure 1. Distribution of the house sparrow *Passer domesticus* in Breda 2008. Each red dot is a single breeding pair (Data Westbrabantse Vogelwerkgroep)

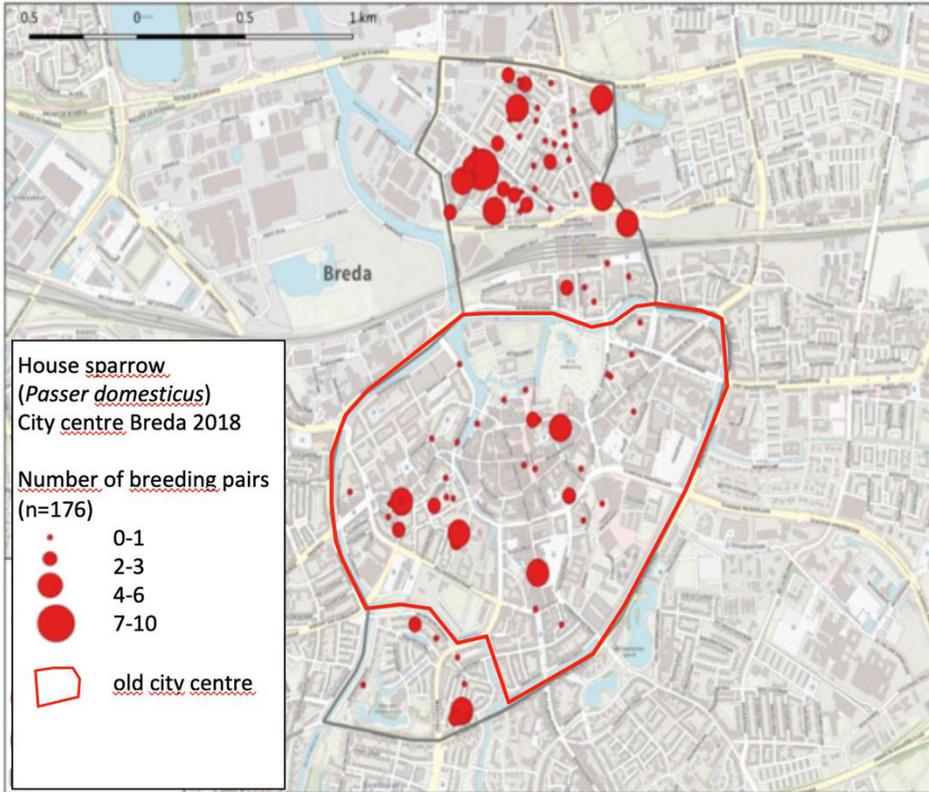


Figure 2. Distribution of the House sparrow in the city centre of Breda in 2018

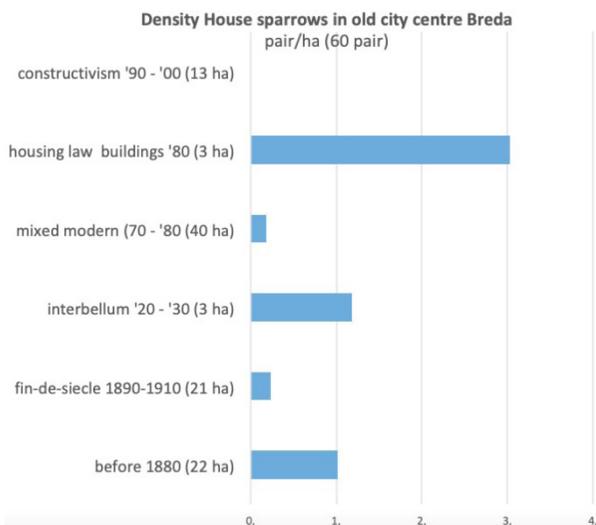


Figure 3. Densities of house sparrow nests in the old city centre of Breda

Current surveys indicate that this distribution has grown in recent years. Figure 2 displays the distribution of house sparrows in the city centre in 2018.

The building period of houses in the city appears to influence the density of the distribution of sparrow nests (figure 3). The highest density of sparrow nests is found in social housing neighbourhoods which were built in the early 1980s. In neighbourhoods that were built in the period after that, the house sparrow density is low. It is unclear whether this is caused by a lack of nesting facilities, food or suitable green areas.

In order to preserve the house sparrow in the historical city centre, various protection measures are being carried out. Targeted work is being done on expanding the population centres and connecting the subpopulations. For example, green corridors have been constructed and are ecologically managed, aimed at increasing the biodiversity. The edges of riparian vegetation in particular seem to be of great importance as a foraging site during the breeding season. In addition, efforts are being made to improve the food situation by greening the inner city and to improve the nesting sites by distributing nest boxes, which are made in social workshops. In 2019, experiments will be conducted with so-called basic biotopes. These experiments aim at investigating how to establish the ideal sparrow habitat in a small area. The successful approach will be widely implemented.

For over 750 years, the chirping of house sparrows has been a familiar noise in the city centre. Therefore, the house sparrow will not only receive attention from a biodiversity perspective, but is also included in the concepts of the forthcoming heritage policy. For example, a special sparrow pot was designed and taken into production by a local pottery. By involving residents, heritage experts and social workshops, an attempt is made to generate a broad involvement in the house sparrow and thus in the man-nature relationship.