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**ANTHROPOGENIC FEEDING OF RED KITES IN SWITZERLAND:
MOTIVATIONS AND CONSEQUENCES**

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Abstract

The provision of food for garden birds is one of the most widespread and popular forms of human-wildlife interaction throughout western countries. Yet despite its popularity, little is known about the reasons why people feed wild birds, especially raptors. Although bird feeding can have a positive impact on both the birds and the people feeding them, there are also undesirable side effects. Increasing complaints from neighbours of such feeding sites in recent years have shown that there is an existing conflict. So far, there is only little knowledge about the negative effects that feeding sites can have on surrounding neighbours and what factors influence whether a person feels disturbed by the feeding or not. Our study aimed to explore the motivations behind red kite feeding, which represents an increasing trend in Switzerland. By interviewing 20 people who regularly feed red kites, we found that pleasure, connecting with nature and the desire to nurture are the main reasons why people provide food for red kites in several Swiss regions. The further objective of this study was to analyse the disturbing factors for people living near these feeding sites in detail with a mixed methods approach. First, eight people living close to feeding sites were interviewed to explore their attitudes and concerns towards the red kite feeding. The information gained from the semi-structured interviews served to develop a questionnaire, which was used to survey 70 people during the following quantitative stage. Analysing the responses, we found several disturbing factors that can result from feeding sites, with noise pollution, food waste and bird excrements being the most important ones. Furthermore, we found that the relationship between the people providing food for birds and their neighbour determines how that person perceives the feeding. Understanding value orientations and attitudes of stakeholders involved in such a conflict is crucial for developing solutions and compromises. By highlighting the attitudes and motivations of both feeders and their neighbours, our study facilitates future conflict management.

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1. Introduction

With increasing urbanisation around the world, more and more people are losing their connection to nature, and impressive experiences such as wildlife encounters have become rare (Cox and Gaston, 2018; Miller and Hobbs, 2002). At the same time, the practice of backyard bird feeding has grown considerably in recent decades and has become a globally widespread form of human-wildlife interaction (Cox and Gaston, 2018; Jones, 2018; Reynolds et al., 2017). One of the main reasons for this trend might be that feeding wild birds is one of the few remaining ways that allows humans to experience nature in urban areas (Cox and Gaston, 2018; Dayer et al., 2019; Goddard et al., 2013). It is estimated that in some western countries around half of urban households are putting out food for songbirds on a regular basis (Davies et al., 2012, p. 20; Galbraith et al., 2014; Gaston et al., 2007). However, reconnecting with nature by watching feeding birds is by far not the only reason why people provide food for birds. The different motivations for bird feeding can be very complex and range from avoiding food waste to making amends for the devastation of the environment by humans (Jones, 2011; Jones and Reynolds, 2008). Recent studies have also found that both the presence and viewing of urban wildlife can have a calming effect on people and a positive impact on mental health (Capaldi et al., 2014; Cox et al., 2017; Cox and Gaston, 2016; Jones, 2011).

Wildlife has existed in urban areas since records began (Soulsbury and White 2015). There are reports about scavengers entering settlements in search of food dating back to the time of the ancient Egyptians (Dixon, 1989). All wildlife in urban areas interact with humans in some way, which is hardly avoidable due to the high density of human populations in cities (Soulsbury and White, 2015). However, there are wide differences in how wildlife uses the urban environment, which has significant impacts on human-wildlife interactions (ibid.). Such interactions between wildlife and humans in settlement areas can be perceived as positive, neutral, or negative (ibid.). Negative interactions with wildlife are often labelled as human-wildlife conflict and recent years have seen an increase in conflicts such as urban-nesting gulls or foxes living in settlement areas (Caluori and Hunziker, 2001; Davison et al., 2011; Redpath et al., 2015; Rock, 2005). The species involved in a conflict tend to have a broad diet, which contributes to their ability to live in a densely populated area (Charles and Linklater, 2013). However, it is not uncommon that such human-wildlife conflicts underlie a human-human conflict between people with different views and attitudes (Dickman, 2010; Redpath et al., 2015). Values and attitudes are influenced by factors such as gender, cultural background, age and experience, which thus determine whether an interaction with wildlife in a particular situation is perceived as positive or negative (Dickman, 2010; Soulsbury and White, 2015; Young et al., 2010). These factors can additionally affect how strongly a person perceives a possible negative effect. Attitudes and behaviour are relatively insensitive to evidence and knowledge, making them hard to change, which results in such conflicts being complex and difficult to resolve (St John et al., 2019). Conflict management should consequently focus on identifying value similarities among the parties involved, build upon them and seek compromise, rather than highlighting differences (Manfredo, 2008; St John et al., 2019). Understanding how individuals respond to wildlife and considering the attitudes of both parties of a conflict is key in understanding and dealing with human-wildlife conflict situations in settlement areas.

Such human-human conflicts can arise, for example, when birds of prey are being fed in settlements. In western countries, not only the feeding of passerine birds is a common activity, but also the deliberate placing of meat for birds of prey such as the red kite (Orros and Fellowes, 2014). In western Switzerland, the provision of anthropogenic food for red kites is a widespread human behaviour (Cereghetti et al., 2019). This provision of food includes intentional feeding, but also unintentional feeding through slaughter waste or food scraps, which are known to be targeted by red kites. Although the percentage of people involved in red kite feeding is small compared to the feeding of passerine birds, the mass of food being distributed for red kites is sufficient to provide food for a considerable number of birds

(Cereghetti et al. 2019). Even though the feeding of raptors can be a great spectacle and facilitate the search of food for these birds, not everyone shares the excitement about this activity. There are several undesirable consequences for people living close to a feeding site that can result from the provision of food for the red kites. Over the last few years, bird care centres and bird conservation organisations such as the Swiss Ornithological Institute have been increasingly contacted about the feeding of raptors. These questions often concerned red kites and came from people feeding birds themselves, or from people who had noticed such feeding sites. The requests did not only include questions about the necessity of such feedings, but partly also complaints. The increasing number of such complaints in recent years, coming from residents living near a feeding site, has shown that there is a need to better understand these kinds of conflicts. So far, very little is known about the possible negative effects arising from red kite feeding sites. In order to give proper recommendations, it is important to understand the situation from both feeders' and their neighbours' perspectives.

The aims of this study were therefore to (1) investigate what the different motivations for red kite feeding are; (2) analyse in detail, what traits of red kite feeding sites disturb neighbours and; (3) identify which factors determine whether a person feels disturbed by a feeding site or not. While there have already been a few studies in the past focusing on the different motivations for backyard feeding of passerine birds, it is not clear whether the motivations for the feeding of raptors are the same. To investigate the different motivations for the provision of food for raptors and the feeders' general attitude towards wildlife, 20 people who intentionally feed red kites were interviewed using a quantitative questionnaire. It is assumed, that motivations of the feeders of red kites are similar to the motivations of people who feed passerine birds, which are mainly pleasure, the desire to nurture and survival aid (Chapman, Renée Anne, 2015; Clark et al., 2019; Schreiber, 2010). To better understand how neighbours of feeding sites perceive such red kite feedings, a mixed methods approach was applied. This two-step approach allowed for a deep understanding of the views and experiences of the respondents. First, seven qualitative interviews with neighbours living close by a feeding site were undertaken, enabling the identification of possible disturbing factors resulting from the feeding. Factors such as noise, bird excrements and food scraps were expected to be important disturbing factors. The following quantitative surveys in settlement areas allowed for a statistical analysis of those disturbing factors and helped to understand, which factors influence the perception of the disturbance. It is assumed, that factors such as distance to the feeding site, the number of red kites, and the relationship with the feeder have an important influence on the perceived disturbance of the feeding. This study provides insights into the conflicts arising from the increasing popularity of raptor feeding by the general public, and should facilitate future conflict management by providing appropriate feeding recommendations.

2. Materials and Methods

2.1. Study species and study region

The red kite (*Milvus milvus*) is a facultative scavenger and the third largest bird of prey in Switzerland. Its foraging behaviour is opportunistic and varies according to region and season (Aebischer, 2009). Carrion is likely to play a much greater role than live prey during all seasons of the year. In the 19th century and the first half of the 20th century, the once common red kite was severely decimated by shooting, poisoning and nest plundering. As a result, it disappeared as a breeding bird in large areas. In Switzerland, the population did not start to recover until after 1940. Nowadays, Switzerland is estimated to be home to 2800-3500 breeding pairs, which is around 10% of the world population of red kites (Knaus, 2018). For this study, red kite feeding sites situated in Switzerland in the cantons of Aargau, Basel, Bern, Freiburg, Lucerne, Schaffhausen, Thurgau and Zurich were considered.

2.2. Quantitative study of feeders

Quantitative information about the people who feed red kites was obtained through a survey. The questionnaire (Appendix B) for the survey consisted of four sections covering (1) the practice of bird feeding; (2) the different motivations to feed red kites; (3) possible conflicts arising from the feeding and (4) standard demographic details. The statements for the motivation section of the questionnaire were largely taken from Clark, who has undertaken a similar study in 2019. This allowed for a later comparison of the results from this study with the findings from previous research about the motivations for garden bird feeding. The motivational themes identified by Clark (2019) and used in the questionnaire in this study are presented in Table 1. The respondents were asked to indicate on a Likert scale of 1 to 5 (1 = disagree and 5 = agree) how much they agreed with the respective statement.

Table 1 Listed are the motivational themes with corresponding statements included in the survey.

Subject	Statement in Questionnaire
Duty	I feel obligated to feed the red kites because otherwise they don't find enough food.
Survival	I feed red kites to help them survive.
Companionship	I like to think of the red kites I feed as <i>my</i> birds.
Observation	I feed the red kites so that I can observe them better.
Connection with nature	Feeding the red kites makes me feel connected to nature.
Avoiding food waste	I feed the red kites to avoid wasting food.
Make amends	I see feeding as a way to make amends for the damage humans are doing to the environment.
Pleasure	Feeding the red kites is my passion.
Nurture	I like to take care of living things.

The surveys were performed during the winter of 2020/2021 and a total of twenty feeders were interviewed. To recruit the feeders for the survey, they were either contacted via e-mail in advance of the survey or contacted directly via the phone. Five feeders were visited at their home, where the interview was conducted. The other feeders preferred not to be visited due to the Corona pandemic. Four of them chose to fill out the questionnaire themselves, the rest of the interviews were undertaken over the phone. It is understood that the answers may deviate from each other due to the different survey methods. However, due to the small sample size, it was decided to analyse the responses in the same way, regardless of the survey method.

2.3. Qualitative study of neighbours: Participants and procedure

The aim of a qualitative interview is to collect knowledge, experiences or perspectives of respondents in an oral conversation, whereby the course of the conversation is controlled and shaped less by the interviewer and more by the interviewee (Döring and Bortz, 2016). Qualitative approaches have their foundations in health and social research, but they are increasingly being used in conservation research, especially when it comes to interactions between humans and wildlife (Clark et al., 2019; Pérez et al., 2011). During a qualitative interview, respondents are able to answer flexibly and comprehensively, which allows for deeper and broader insights into the research topic compared to questionnaire data (Döring and Bortz, 2016). The goal of the qualitative part of the study was to understand the various problem factors arising from feeding sites and to find out about the general attitudes of the respondents towards wildlife and red kites in particular. The findings from those interviews formed the basis for the following quantitative surveys.

Seven guided interviews were conducted using a semi-structured questionnaire guide (Appendix C) (Döring and Bortz, 2016). This guide helped to direct the discussion and to ask specific questions if necessary (Helfferich, 2011; Kruse and Schmieder, 2014). However, the discussions were flexible so that additional topics not included in the questionnaire guide could be discussed at any time. The interviews were performed during September and October 2020 and were undertaken with adults living close by a feeding site. Due to the Corona pandemic, one person requested to undertake the interview over the phone. All the other interviews took place at the respondent's home, which provided an informal setting for the discussion. Six of the interviews were carried out with one person, one interview was conducted with a couple, resulting in a total of eight people that were interviewed. The respondents had previously contacted the Swiss Ornithological Institute, stating that one of their neighbours regularly feeds red kites. To recruit the respondents for the interviews, they were contacted via e-mail. The interviews were split evenly between younger (≤ 55 years of age) and older (> 55 years of age) respondents. The initial goal of splitting the interviews evenly between male and female respondents was not reached, due to the difficulty of recruiting participants for the interviews. Thus, six females and two males participated in the interviews. In the following chapters, women younger than 55 and women older than 55 are each assigned a letter in order to ensure anonymity and distinguishability at the same time (e.g. woman, younger A). Since only two men were interviewed, they are distinguished as male younger and male older. The duration of the discussions was between 30 and 60 minutes. This time frame included a warm-up phase that allowed the respondent and interviewer to become acquainted, as well as the main part of the interview, where all the relevant topics were explored. Each interview was recorded with a mobile phone, which allowed the subsequent writing of a transcript. The discussions were conducted in Swiss German, but the transcripts were written in High German, to facilitate the later processing of the transcripts. The parts of the interview that seemed important for the thesis were transcribed word for word. Topics that differed from the research questions were only transcribed roughly, or partly omitted. After completion of the qualitative interviews, a detailed analysis of the transcripts was undertaken to identify themes for the development of the subsequent questionnaire (Kuckartz, 2016).

2.4. Quantitative study of neighbours: Participants and procedure

The quantitative information about the neighbours of feeding sites was obtained through an oral survey based on the findings from the qualitative study. The questionnaire (Appendix D) consisted of four sections covering: (1) possible disturbing factors of the feeding site; (2) general attitudes towards wildlife and red kites; (3) the relationship with the feeder and (4) standard demographic details. The sections about disturbing factors and general attitudes towards wildlife consisted of a series of statements (derived from the findings of the interviews), which respondents agreed or disagreed with on a Likert scale of 1 to 5 (1 = disagree and 5 = agree). All interviews were conducted over the phone and the respondents were selected based on a convenience sample. All respondents who were contacted, were known to live near a feeding site. In some cases, however, it was not known with certainty whether feeding

was still taking place. Therefore, in the case of respondents who claimed not to be aware of the feeding, it was unclear whether this was true or whether they simply did not want to talk about the issue.

The questionnaire was initially tested on two people living close to a feeding site and a few questions were excluded from the further surveys after the pretest, to shorten the duration of the interview. The surveys were conducted from October to November 2020. Participants were not informed about the survey in advance and were called spontaneously. In total, 70 people were contacted, eight of which said they did not know anything about the feeding and therefore did not want to participate in the survey. Of the 62 people participating in the survey, 13 answered that they were unaware and therefore not bothered by the feeding. In these cases, the section about the various problem factors arising from feeding sites was skipped and only the questions about the attitudes towards wildlife and demographic details were asked.

2.5. Statistical analysis

The statistical analyses were conducted in the program R (R version 4.0.3). The package lme4 was used to compute a binomial generalised linear mixed model and a generalised linear model (Bates et al., 2015). The numeric explanatory variables were checked for correlations in both models (>0.7). No correlations were found amongst the explanatory variables and therefore all variables remained in the models. To draw predictions from the models, package sim was used to simulate Bayesian posterior distributions (Korner-Nievergelt et al., 2015).

Number of red kites at feeding sites

We assumed, that the number of red kites influenced the presence of disturbance. Therefore, to investigate the effects of the feeding site specific variables (amount of food, type of food and location) on the number of red kites, using a general linear model. The information for the variables included in this model was based on the quantitative survey from this study, data from a survey from Cereghetti (2019) and reports from the public, which resulted in a sample size of 28. The variable “type of food” included the information, whether meat is fed or not (0/1), and the variable location stood for whether the feeding takes place within or outside of the settlement area (0/1). To determine the average amount of food provided for the red kites per week, the average food quantity per feeding and the average feeding frequency was multiplied. The resulting continuous variable “amount per week” was z-transformed for the subsequent analysis. Using a backwards stepwise selection based on AICc values, it was concluded, that the best model is the full model including all three explanatory variables (Appendix A).

Disturbing factors

A generalised linear mixed model with binomial distribution and the response variable presence of disturbance (0/1) was used to investigate the effects of distance, acquaintance, age, gender and type of hometown on whether a person feels disturbed by the feeding site or not. The data set for this model was based on the quantitative surveys with neighbours living close to feeding sites. Here is a short description of what the individual variables mean: “Presence of disturbance” means, whether the respondent feels disturbed by the feeding or not, “Distance” represents the distance from the neighbour to the feeding site, “Acquaintance” indicates whether the respondent knows the feeder or not, “Type of hometown” involves the categories ‘city’, ‘agglomeration’ and ‘countryside’ and indicates where the respondent grew up. The sample size was 70 respondents. The two explanatory continuous variables ‘age’ and ‘distance’ were z-transformed. Feeding site ID was included in the model as a random factor, to account for the dependent structure of responses originating from the neighbours living around the same feeding site. A backwards stepwise selection based on AICc value was then done to find a reduced model with only significant variables. No model with an AICc value smaller than 4 was found and it was therefore decided to keep all variables in the model for the further analysis. By comparing the final model to a generalised linear model using a

likelihood-ratio test, the significance of the random effect was tested (R-package 'RLRsim'). The likelihood-ratio test showed no significant effect of the random effect 'feeding site' on the model, which was therefore excluded from further analysis. This resulted in the final model being a generalised linear model without random effect. To find out whether the variable 'number of red kites' has a significant influence on the final model, the variable was included as an additional fixed effect. The analysis showed no significant effect on the model, therefore the variable was excluded from the final model.

3. Results

3.1. Quantitative Results "Feeders"

A total of twenty people who regularly provide food for red kites participated in the survey. Nine respondents were female, eight were male and in three cases, the participants indicated that they feed red kites as a couple (male and female). 35% of the respondents were between 40-70 years old and 65% were over 70 years of age. Seven of the respondents started with their feeding over ten years ago and six of the feeders mentioned that they began to practice the feeding less than four years ago. The rest has been feeding for about 5-9 years.

3.1.1. Feeding practice

The first part of the survey focused on questions regarding the feeding practice of the feeders. The majority of the feeders stated that they feed the red kites exclusively with chicken, mostly chicken necks (Figure 1). The chicken necks are usually purchased frozen and thawed before the feeding. The feeders indicated that they tried out different types of meat at first, but realised that the red kites responded best to chicken necks, as they could easily grab it. Therefore, this type of meat is preferred by many feeders. Also, according to the feeders, chicken necks are fairly cheap compared to other meat they find at supermarkets. Especially when large quantities of meat are provided for the birds, the regular purchase of meat can be a financial challenge for the feeders. This is another reason why chicken necks are used by many people who feed red kites intentionally. Five of the respondents stated that they feed red kites with kitchen waste. This category includes bread and pizza crusts, cheese, pasta etc. Four respondents mentioned that they use slaughter waste as feed. These feeders either obtain the meat parts from a local butchery, or in the case of one feeder, own a butchery. The rest of the feeders use other types of meat, such as ham, that they buy for the birds, or feed the red kites with cadavers such as mice and birds that they take from their cats.

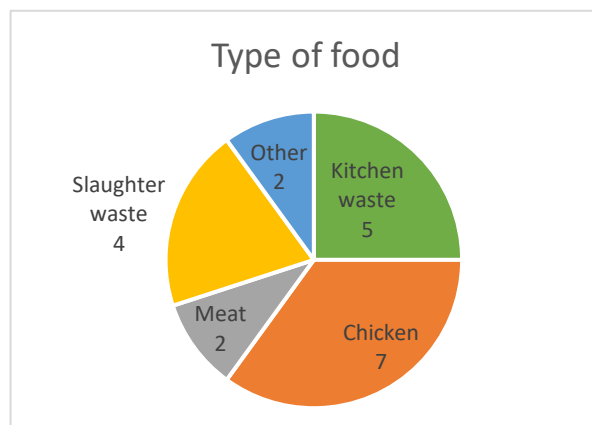


Figure 2 The figure shows the type of food used by the feeders. Most of the feeders use chicken to feed the red kites, six respondents use slaughter waste or other type of meat and the others indicated that they feed kitchen waste such as bread, pasta or cheese (n=20).

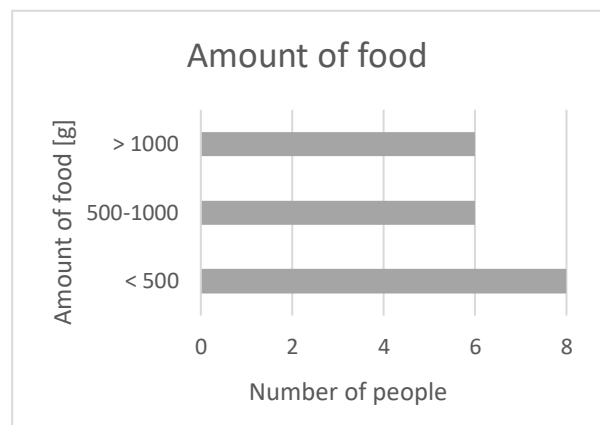


Figure 1 Eight feeders provide less than 500g of food, six respondents feed between 500-1000g of food and six feeders provide more than 1kg of food at each feeding (n=20).

The feeders were additionally asked about the amount of food they provide for the birds with each feeding. The majority of the feeders indicated that they feed less than 500g per feeding (Figure 2). Six respondents mentioned that they feed between 500-1000g each time and six feeders stated, that they feed over 1000g, with the largest amount being around 7kg per feeding. Regarding the frequency of the feeding, most of the feeders indicated that they provide food on a daily basis (Figure 3). Seven feeders mentioned that they feed the red kites 3-4 times per week and three feeders said they feed 1-2 times per week. Only two feeders stated that they feed less frequently, approximately every two weeks. The feeding predominantly takes place during the whole year (Figure 4). Only a small part of the respondents mentioned that their feeding is limited to the winter and one person said they feed only in summer, because the two red kites they feed are not present in their area during winter.

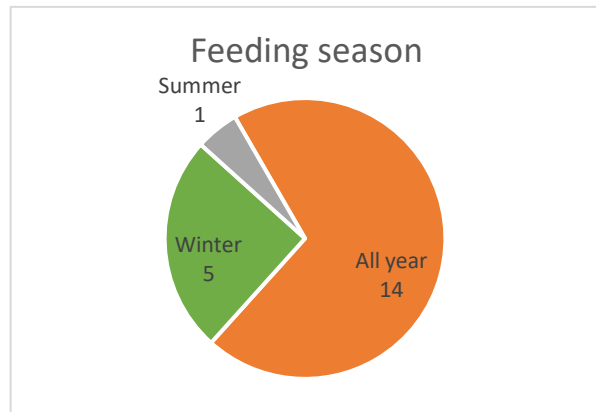
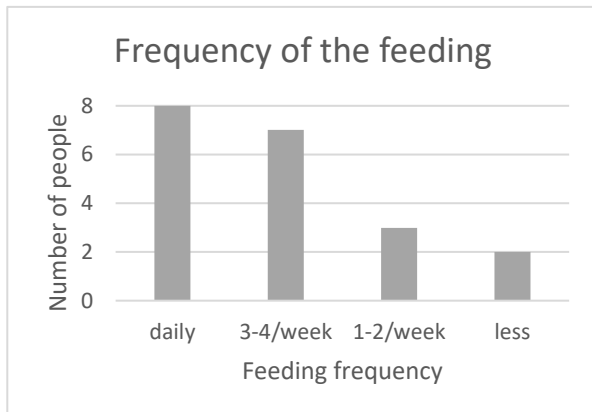


Figure 4 The figure shows the frequency of the feeding. Most of the respondents feed the red kites daily, seven feeders provide food 3-4 per week and three feeders 1-2 per week. Only two respondents stated, that they feed approximately every two weeks (n=20).

Figure 3 In the figure can be seen during what season of the year the feeders provide food for the red kites. Most feeders feed during the whole year, five feeders only during winter and one feeder only during summer (n=20).

3.1.2. Motivations for red kite feeding

The objective of the second part of the survey was to learn more about the different motivations of the feeders to provide food for red kites. The respondents were each presented with different statements and asked to indicate how strongly they agree with each statement on a 5-point Likert scale. Table 2 shows the median score derived from the Likert scale. For the three themes “Pleasure”, “Nurture” and “Connection with nature” respondents gave very high ratings. In contrast, the themes “Companionship” and “Making amends” had mixed responses, and with “Duty” and “Avoiding food waste” only few respondents agreed.

Table 2 Median Likert scores from respondents to a quantitative survey (n=20) investigating the motivational themes for feeding red kites and their feelings during the feeding. The Likert scale was used from 1 to 5 where 1 = disagree and 5 = agree.

Motivation	Median score	Feelings	Median score
Connection with nature	5	Calm and relaxed	5
Pleasure	5	Pride	4
Nurture	5	Excited about new bird species	4
Survival	4	Happy about many birds	3.5
Observation	4		
Companionship	3.5		
Making amends	3.5		
Duty	2		
Avoiding food waste	1		

Furthermore, the feeders were asked about their feelings occurring during the feeding of red kites. 35% of the feeders said they feel happy when they see a lot of red kites coming to the feeding (Table 2). For other feeders, it is rather the contrary. Some mentioned that they would prefer if less birds would come to the feeding, because with the large number of red kites coming, they have to buy larger amounts of food. One respondent said he prefers not to have too many come, otherwise it disturbs the neighbours. One respondent also explained that she is not happy about the large number, because it confirms her theory that the kites do not find enough food. According to her, if they would find enough food, they would not come to get the meat she provides. When asked about how the respondents feel when seeing a new type of bird arriving at the feeding, more than half said they are excited. However, many feeders mentioned that it was rather unusual for new bird species to arrive, because the red kites usually dominated the feeding site. The answers to whether the respondents feel proud about their feeding were quite opposed, with 7 feeders disagreeing and 11 rather or fully agreeing. 80% of the feeders agreed or rather agreed with the statement “feeling calm and relaxed” during the feeding. The feeders who answered with “neither nor” or “disagree” explained that they feel excited, rather than relaxed, when watching the feeding, stating that for them the feeding is a great spectacle and thrilling to observe.

3.1.3. Potential conflicts

The last topic of the survey concerned possible conflicts. First, respondents were asked in general terms whether they could imagine potential conflicts arising from the feeding. One feeder answered: “Yes, I hope that the birds do not stop hunting themselves and just wait for me.” This raises the question of a possible dependence of the birds on feeding. Secondly, the feeders were asked more directly whether someone in their neighbourhood had already complained to them about the feeding. Some feeders stated that there had never been any conflicts, with some feeders saying: “No, on the contrary, it is always an attraction for guests.”

Some respondents, however, indicated that they were aware of the fact that some neighbours are not pleased with the feeding. They mentioned that they had already been approached directly by their neighbours (or even by the police or a gamekeeper that the neighbours contacted) and asked to stop with the feeding. One respondent even said she could well understand that it is not enjoyable for residents when the kites drop chicken wings. She herself would not find it appealing to sit outside in the summer and then have meat scraps on the table. On the other hand, one feeder said that she could not understand why the neighbours are upset. She said that the red kites did not hurt anyone. Another respondent explained that she deliberately feeds at the edge of the forest, so as not to bother local residents. In addition, she only feeds in the morning and does not feed when dogs walk by, so they do not eat the meat she provides. According to her, agriculture has changed in a way that birds of prey no longer find enough mice, therefore she does not see why she should stop feeding.

3.2. Qualitative Results “Neighbours”

Eight different themes were identified from the qualitative interviews, involving negative consequences of feeding sites for their surrounding neighbours. These themes were incorporated into specific questions in the quantitative questionnaire for the subsequent surveys. The subjects identified during the qualitative interviews are outlined in this section along with indicative quotations from respondents.

Food scraps

Several respondents mentioned food scraps in their gardens as a negative effect of the feedings. The red kites regularly drop parts of their catch over the settlements, usually when they are fighting over the food. Depending on the type of food, neighbours find leftovers such as bread, spaghetti or chicken legs in their gardens or their swimming pools.

„What really bothered us was that they just dropped the meat everywhere. [...] Sometimes whole chicken legs were lying there. [...] Our neighbour once had one in his pool, and he wasn't very happy about it. Or on the road, in our driveway, you often saw it” (male, older).

(Uns hat eigentlich vor allem gestört, dass die einfach das Fleisch so überall fallen gelassen haben. [...] Manchmal sind ganze Poulet Schenkel dagelegen. [...] Der Nachbar hatte einmal einen im Pool gehabt, da hat er sich nicht gerade gefreut. Oder auch auf dem Weg, bei uns in der Einfahrt hat man es oft gesehen.)

„I don't have to have food scraps from others in my garden, I don't need that” (female, younger B). (Ich muss nicht Lebensmittelreste von anderen in meinem Garten haben, das brauche ich nicht.)

„[The red kites] once dropped a piece of meat from the air and it fell on my bedroom window ledge and I woke up in the morning and thought, what is this now? „Läck”, is that a naked dead bird, but it was a small piece of meat that they dropped” (female, older C). ([Die Rotmilane haben] mal in der Luft einen Mocken Fleisch fallen gelassen und mir auf den Sims im Schlafzimmer und ich wache am Morgen auf und denke mir, was ist jetzt das? „Läck“ ist das ein nackiger toter Vogel, dabei war es ein Möckli Fleisch, das sie fallen lassen haben).

Apart from being disgusted by the remains of food, some neighbours are also concerned that their pets or grandchildren might eat the rotten food and fall sick from it. This behaviour has already been observed by two respondents:

“And when, for example, the neighbour's son started eating the meat from the ground because he thought it was sausage or “Wienerli”. It suddenly became dangerous” (male, younger). (Und wenn dann beispielsweise der Sohn der Nachbarin angefangen hat, das Fleisch zu essen vom Boden, weil er gemeint hat das sei Wurst oder Wienerli. Das ist dann plötzlich gefährlich geworden.)

„When the dogs see it, they grab it and it's gone. You don't know how old this meat is, whether it's still good or not“ (female, older B). (Wenn die Hunde das sehen, dann schnappen die das, dann ist es weg. Man weiss ja nicht, wie alt dieses Fleisch ist, ob das noch gut ist oder nicht.)

Bird droppings

Another negative effect mentioned by several respondents are bird droppings from the red kites and other birds attracted by the feeding.

„Sure, there can be bird droppings occasionally, but everything is just really covered in shit. Even if you put up a parasol, you always have to make sure that it's not full right away” (female, younger A). (Klar kann es mal einen Vogelkot haben, aber es ist einfach alles richtig vollgeschissen. Auch wenn man einen Sonnenschirm aufspannt, muss man immer schauen, dass dieser dann nicht gleich voll ist.)

„I'm more bothered by the seagulls because they defecate everything. And we have a swimming pond where, of course, they come onto the pond in winter and eat what they were given and then poop in it” (female, older A). (Mich stören mehr die Möwen, weil sie alles verkacken. Und wir haben einen Schwimmteich, wo sie natürlich im Winter auf den Teich kommen und fressen was sie gekriegt haben und kacken dann rein.)

Apart from being annoyed by the excrements on their house, cars and garden furniture, some respondents also mentioned, that the bird droppings could damage the façade of their house. This is especially an issue for residents living in houses with a preservation order.

„Of course, cleaning roofs and things like that is a real hassle for us, [...] you don't just go up on the roof to clean these things. And I also have the feeling that it causes erosion over time.

We have to comply with all the regulations for a listed building. We're not allowed to take out any windows without some kind of notification, so we really take care of the house. And there are so many birds that damage it with the acid or I don't know what" (female, younger A). (Das ist für uns natürlich total mühsam, Dächer und so Sachen zu putzen, [...] man geht auch nicht einfach so schnell aufs Dach um diese Sachen zu putzen. Und ich habe auch das Gefühl das greift mit der Zeit an. Wir müssen hier alle Auflagen einhalten bei einem denkmalgeschützten Haus. Wir dürfen keine Fenster rausnehmen, ohne dass das irgendwie angemeldet ist, also wir tragen echt Sorge zu dem Haus. Und es sind halt so viele Vögel, die das dann durch die Säure oder ich weiss auch nicht kaputt machen.)

Noise pollution

Another disruptive factor mentioned by many neighbours of feeding sites is the noise pollution caused by the birds. Some residents feel disturbed by the whistling sound of the red kites, one respondent even stated that he felt psychologically stressed by the constant bird calls.

„And what really started to stress me out was this whistling [...]. You could also hear it inside, it really almost drove me crazy. [...] Then we thought no, again, now it's starting again. [...] Suddenly it was a constant topic for us“ (male, younger). (Und was mich dann wirklich angefangen hat zu stressen ist dieses Pfeifen [...]. Das hat man auch drinnen gehört, das hat mich wirklich fast wahnsinnig gemacht. [...] Wir dachten dann nein, schon wieder, jetzt fängt das schon wieder an. [...] Es war plötzlich ein Dauerthema bei uns.)

Other residents were more annoyed by the noise caused by other birds attracted through the feeding, such as crows.

„The crows are very loud, especially on a Sunday morning or so, they make a huge amount of noise. There are about 20 of them sitting on the neighbour's roof and they have a lot to say to each other“ (female, younger A). (Die Krähen sind sehr laut, gerade an einem Sonntagmorgen oder so, die machen einen riesen Lärm. Es sind ungefähr 20 Stück, die beim Nachbar auf dem Dach sitzen und sich einiges zu erzählen haben.)

„They make a tremendous amount of noise. Then the others who live there say they can't sleep anymore“ (female, younger B). (Die machen einen riesen Lärm. Dann sagen die anderen, die dort wohnen, sie können nicht mehr schlafen.)

Crows

The problem of the noise pollution was exacerbated by the high number of crows attracted by the feeding, as mentioned in the previous quotations.

„After four months of living there, I had to say I couldn't take it anymore. You started to get really upset. Because you were simply woken up in the morning, but that also had to do with the crows, it attracted an extremely large number of crows, which then simply wandered around on the roof“ (male, younger). (Nach vier Monaten dort zu leben musste ich sagen, ich halte es nicht mehr aus. Man hat angefangen sich wirklich aufzuregen. Weil man einfach am Morgen geweckt wurde, aber das hatte auch mit den Krähen zu tun, es hat extrem viele Krähen angezogen, die sind dann einfach auf dem Dach rumgelaufen.)

Not only the noise created by the crows is an issue for several neighbours, but also the destruction in the gardens that a large number of birds can cause.

„Basically, we could tolerate it if they didn't destroy our garden so much. On the one hand because they peck at the fruit or shit all over them. Or they take the whole garden apart“ (female, younger A). (Grundsätzlich könnten wir es tolerieren, wenn sie unseren Garten nicht so kaputt machen würden. Einerseits weil sie die Früchte anpicken oder vollscheissen. Oder sie nehmen den ganzen Garten auseinander.)

Threat

Some neighbours also mentioned, that they find the red kites threatening. This is mainly due to the large number and due to the constant circling above the house.

„Over there, I find the number very frightening. There are now up to 20 or 30“ (female, younger B). (Da vorne finde ich die Anzahl sehr erschreckend. Das sind inzwischen bis 20 oder 30.)

„It's nice, but it's a bit scary when 20 of them come and circle around in the air all the time“ (female, older C). (Es ist schon schön aber es ist irgendwie ein bisschen unheimlich, wenn so 20 Stück kommen und immer in der Luft herumkreisen.)

Others even fear that the red kites and other birds of prey pose a danger to their small children or pets.

„You really felt threatened. You had [...] a very uneasy feeling when [the son] was playing outside and [the red kites] were circling above him“ (male, younger). (Man hat sich wirklich bedroht gefühlt. Man hatte [...] sehr ein ungutes Gefühl, wenn er draussen am Spielen war und sie über ihm gekreist sind.)

„And we also have an animal shelter down the road and [the owner of the shelter] usually has puppies in the spring and puts them outside in the meadow. She's just scared when the birds come in droves that they will grab a puppy. And my other neighbour is afraid, she just had a baby in January, and in the spring she took it outside a bit with the buggy and just said she was afraid when so many birds were flying around“ (female, older C). (Und wir haben eben ein Tierheim weiter unten und sie hat im Frühling meistens Welpen und setzt sie nach draussen in die Wiese. Sie hat einfach Angst, wenn die Vögel scharenweise kommen und einen Welpen packen. [...] Und meine andere Nachbarin hat Angst, sie hat frisch ein Baby gehabt im Januar, und hat es im Frühling mit dem Wagen ein bisschen nach draussen gebracht und hat eben gesagt sie hat Angst, wenn so viele Vögel rumfliegen.)

Behavioural change

Most of the respondents observed a behavioural change in the red kites, compared to before the feeding or compared to earlier years. The neighbours noticed that over time, the red kites kept coming closer and closer to their houses and gardens.

„I had the feeling, maybe it was just my impression, but I had the feeling that they were getting closer and closer“ (male, younger). (Ich hatte das Gefühl, vielleicht war das auch nur meine Empfindung, aber ich hatte das Gefühl, sie kommen immer wie näher.)

„[...] They come really close now, they fly really low between the houses. They never used to do that“ (female, younger C). ([...] Sie kommen wirklich nahe jetzt, sie fliegen richtig tief zwischen den Häusern durch. Das haben sie früher nie gemacht.)

Also, some respondents mentioned, that the number of red kites kept growing over the months or years of feeding.

„What just bothers me is that it's getting out of hand. I mean, it's getting more and more“ (female, younger B). (Was mich einfach stört, es nimmt überhand. Also, es wird immer mehr.)

Wildlife

Another negative effect resulting from feeding sites can be the increasing occurrence of other wildlife, attracted by the feeding. The respondents mentioned, that they witnessed an increasing number of foxes in particular, but also martens and badgers.

„It then attracted a fox of course, because there were little pieces of meat all over the garden or even on the car. [...] I think it's safe to say that the fox was looking for food in our garden that [the neighbour] fed to the red kites. I am convinced of that. We also heard a badger once at night. I think that just attracts wild animals“ (male, younger). (Es hat dann natürlich den Fuchs angelockt, weil es kleine Fleischstücke im ganzen Garten verteilt hatte oder sogar auf dem Auto. [...] Man kann glaube ich gut sagen, dass der Fuchs in unserem Garten nach Futter gesucht hat, dass [die Nachbarin] den Rotmilanen verfüttert hat. Da bin ich überzeugt. Wir haben auch einen Dachs gehört einmal in der Nacht. Also ich denke, das zieht die Wildtiere einfach an.)

The respondents stated that they don't wish to have wildlife come into their garden, because they see a possible danger in it.

„I don't necessarily want a fox or a marten on my doorstep, I don't need that either. Because they are wild animals. If they are there, they are allowed to be there, because we have a foxhole down there, we know it's there. But just don't bring it to my front door, that's simply dangerous“ (female, younger B). (Ich will auch nicht unbedingt den Fuchs oder den Marder vor der Haustür, das brauche ich auch nicht. Weil das sind Wildtiere. Also wenn er da ist dann darf er auch da sein, weil wir haben da unten auch einen Fuchsbau, der ist da, das wissen wir. Aber einfach nicht vor die Haustüre holen, das ist einfach gefährlich.)

„That was actually very frightening, because I saw fox droppings in the garden and thought, no, now the little one can't play outside anymore, because you really have to be afraid. Now you have such a great garden and he can't go out anymore. And actually only because of the neighbour who feeds birds, which is just not natural“ (male, younger). (Das war eigentlich sehr erschreckend, weil ich habe dann Fuchskot gesehen im Garten und dachte, nein jetzt kann ja eigentlich der Kleine gar nicht mehr draussen spielen, weil man wirklich Angst haben muss. Jetzt hat man solch einen tollen Garten und er kann nicht mehr raus. Und eigentlich nur wegen der Nachbarin, die Vögel füttert, was einfach nicht natürlich ist).

Unnatural

The previous quotation includes another topic mentioned by many of the respondents. Apart from the negative consequences of the feeding, the interview participants were also asked about their general opinion towards bird feeding. Their answers were very similar – almost all of them felt that feeding is unnatural and unnecessary, especially if it's done during the whole year.

„I don't think you need to feed animals all year round. [...] Because somehow it's unnatural. I find it unnatural“ (female, older A). (Ich finde nicht, dass man Tiere das ganze Jahr füttern muss. [...] Weil irgendwie ist es unnatürlich. Ich empfinde es als unnatürlich.)

„You don't feed wild animals and certainly not during the summer. Well, if there's a 2-meter-thick snow cover then I can understand it. But biology actually says, that the strongest survives. Basically, that's my knowledge“ (female, younger C). (Wildtiere füttert man nicht und schon gar nicht im Sommer. Also, wenn es jetzt eine 2 Meter dicke Schneedecke hat, dann kann ich es verstehen. Aber die Biologie sagt ja eigentlich, der Stärkere überlebt. Grundsätzlich ist das mein Wissen.)

„I just think the birds find food themselves, you don't have to keep feeding them. Unless it's [...] a very cold winter, then I say yes. But otherwise nature is there and they find something to eat“ (female, older C). (Ich finde einfach, die Vögel die finden schon Nahrung, man muss nicht immer noch füttern. Ausser eben es ist [...] ein ganz kalter Winter, dann sage ich ja. Aber sonst ist die Natur da und sie finden was zu fressen.)

„If they want to feed the birds, let them. Whether it's intelligent or not, I think you change the natural behaviour a little bit“ (male, older). (Wenn sie die Vögel füttern wollen sollen sie das machen. Ob es intelligent ist oder nicht, ich finde man verändert das natürliche Verhalten ein bisschen.)

One person also mentioned, that the feeding of wildlife could cause problems in the future:

„I don't think that's really natural, it just shouldn't be done. [...] As long as they have to look after themselves, they won't be so trusting towards humans. I think it's simply dangerous when a wild animal becomes extremely trusting of humans, and that will cause problems at some point“ (female, younger B). (Das finde ich nicht wirklich natürlich, das sollte einfach nicht sein. [...] Solange die selber für sich schauen müssen, werden sie auch nicht gegenüber dem Menschen so zutraulich. Ich finde es einfach gefährlich, wenn ein Wildtier extrem zutraulich wird dem Menschen gegenüber, das gibt irgendwann Probleme.)

General attitude towards red kites

Lastly, the respondents were asked to give a statement about their attitude and feelings towards red kites and wildlife in general. Some respondents mentioned that they actually have positive feelings towards red kites.

„A whistle like that, then they are high in the air, that actually gives me a nice feeling. That's why I like them a lot. I know them from the past. We once made a brief move to the country for five years and there were lots of them there. I always liked to see and hear them. I also like to hear them here“ (female, older A). (So ein Pfiff, dann sind sie hoch in der Luft, das gibt mir eigentlich ein schönes Gefühl. Deshalb habe ich die sehr gerne. Ich kenne die von früher. Wir haben mal einen kurzen Sprung aufs Land gemacht für fünf Jahre und dort hatte es viele. Ich habe die immer sehr gerne gesehen und gehört. Ich höre sie auch hier gerne.)

One respondent said, that she does not feel bothered by the feeding. On the contrary, it is normal to her that there are wild animals around, because she lives in the countryside.

„I am a nature person, I like animals. [...] I like to be in nature, and a critter just makes a bit of a mess, so if you can't stand that any longer, then yes, you're a bit sad“ (female, older C). (Ich bin ein Naturmensch, ich habe gerne Tiere. [...] Ich bin gerne in der Natur, und ein Tierchen macht halt ein bisschen Dreck, also wenn man das nicht mehr aushalten mag, ja dann ist man ein bisschen arm.)

Others said, that they like wild animals in general, but not in their garden:

„Well, I don't have anything against wild animals, but so close, I don't really think that's a good thing“ (female, younger B). (Also ich habe nichts gegen Wildtiere, aber so nahe, das finde ich nicht wirklich gut).

„When we were driving in towards the Gurnigel, and we saw [the red kites] flying in the distance, we said, that's a beautiful bird. But you just don't want it in your garden“ (male, younger). (Wenn wir irgendwie Richtung Gurnigel gefahren sind, und man hat sie in der Weite fliegen sehen haben wir gesagt, das ist schon ein schöner Vogel. Aber man will ihn einfach nicht bei sich im Garten.)

The opinion of two respondents was, that humans are actually the problem. Through our constant expansion, humans are taking away the habitat of wildlife. Therefore, it is not surprising that wild animals invade settlement areas. However, we should not feed them additionally.

„Well, it's like this, of course, their habitat is becoming more and more limited. [...] They don't really have any peace and quiet in the forest. Our forest is a recreation area, you have bikers, you have joggers, you have people with walking sticks, you have all kinds of things. We have many horses there, many people who go into the forest with their horses. So they are no longer undisturbed, that's just the way it is“ (male, older). (Also es ist natürlich so, dass deren Lebensraum wird natürlich immer mehr eingeengt. [...] Die haben ja eigentlich keine Ruhe da im Wald. Der Wald bei uns ist ja Naherholungsgebiet, da haben Sie Biker, da haben Sie Jogger, da haben Sie Leute mit Stöcken, da haben Sie alles Mögliche. Wir haben viele Pferde da, also viele die mit den Pferden in den Wald gehen. Also, die sind nicht mehr ungestört, das ist einfach so).

„My view is that we are taking away the habitat of these animals. So, we have to adapt. [...] They should have their space, they are allowed to have it. We are actually the cripples, the bad guys. But we don't have to feed them, because nature regulates a lot itself if we let it“ (female, younger C). (Meine Auffassung ist es, dass wir diesen Tieren ihren Lebensraum nehmen. Also, wir müssen uns anpassen. [...] Die sollen ihren Raum haben, den dürfen sie auch haben. Wir sind eigentlich die Krüppel, die Bösen. Aber, wir müssen sie nicht zufüttern, weil die Natur reguliert ganz viel selber, wenn man sie lassen würde.)

3.3. Quantitative Results “Neighbours”

Of the 62 people who participated in the survey, 44 were female and 18 were male. 80% were over 50 years of age and 20% were between 20 and 55 years old. Respondents described the place where they grew up as urban area (18%), suburban and villages (16%) or countryside (67%). 20% of the respondents lived within 30 meters or less from the feeding site, 31% between 31-60 meters and 49% further than 60 meters away from the feeding site, with a maximum distance of 400 meters.

3.3.1. Disturbing factors

Of the 13 different feeding sites where residents were contacted, only people living around the same three feeding sites stated that they feel disturbed by the feeding. In this section, only the answers of the people living around these three feeding sites are considered (n=25). When these respondents were asked, whether or not they feel disturbed by the feeding site in general, 52% answered yes and 44% no. 64% of respondents agreed or rather agreed with the statement that red kites keep coming closer and closer to their gardens and houses, which is referred to as “Behavioural change” in Figure 5. Seven to eight respondents each fully agreed with the statements about “Food scraps”, “Excrements” and “Noise”, which shows that these are the three main disruptive factors for residents in these neighbourhoods. Around half of the respondents agreed or rather agreed with the issue of other wildlife attracted by the feeding. Only 3 out of 25 people agreed or rather agreed with the statement about red kites being a threat for their children or pets. However, one of these 3 respondents stated that she does not see the red kites as a threat for her pets or children, but rather for the traffic, because, according to her, the red kites would sometimes fly dangerously close over the road. Additionally, a few respondents perceive the large number of red kites as frightening or “scary”. Only one of 25 respondents agreed to crows being a problem, showing that around these three feeding sites, crows do not seem to be an important disturbing factor for the residents.

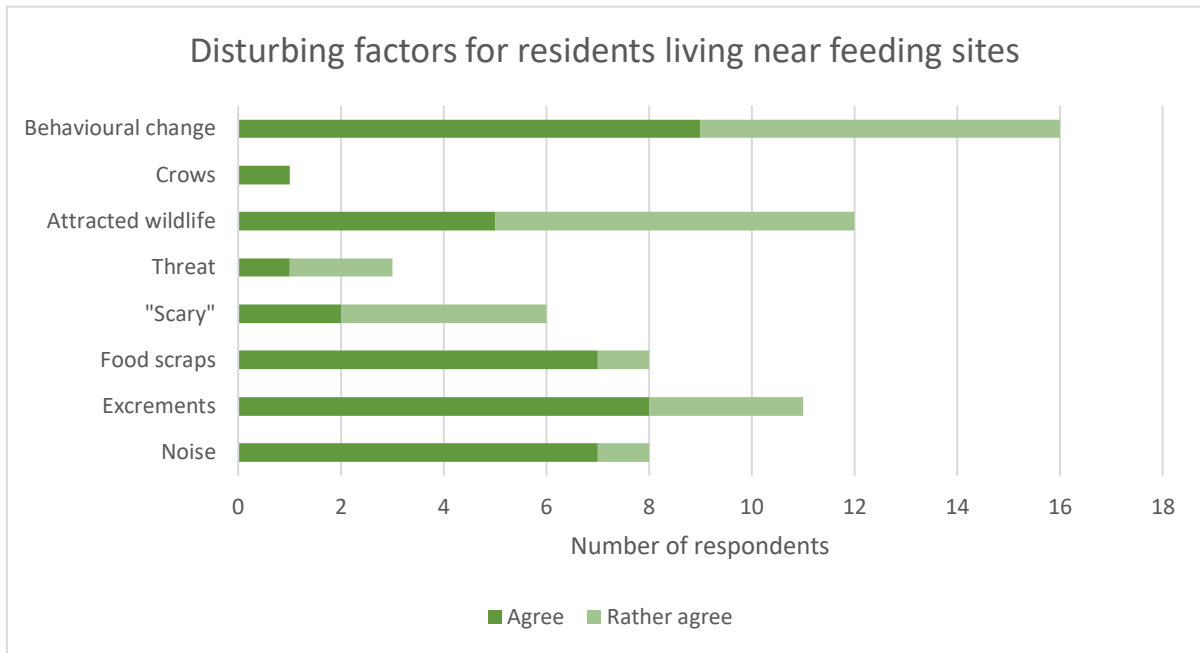


Figure 5 The various disturbance factors for people living near red kite feeding sites are presented here. Factors such as "Food scrap", "Bird excrements" and "Noise" seem to be the most disturbing for people. 64% of respondents agreed or rather agreed with the statement, that red kites keep coming closer and closer to their gardens and houses. Red kites being a threat and crows and the least important disturbing factors (n=25).

Statistical analysis

During the statistical analysis, we found a significant effect of the variable acquaintance on the presence of disturbance (Table 3). This means that the likelihood of a neighbour being disturbed by the feeding increased if that person knew the feeder (Figure 6). In addition, we found that the distance to the feeding site had an effect on whether a person felt disturbed by the feeding or not. This shows the trend that the smaller the distance, the higher the probability of disturbance (Figure 7). We could not show that this effect was significant, however we assume that the effect would be stronger with a bigger sample size.

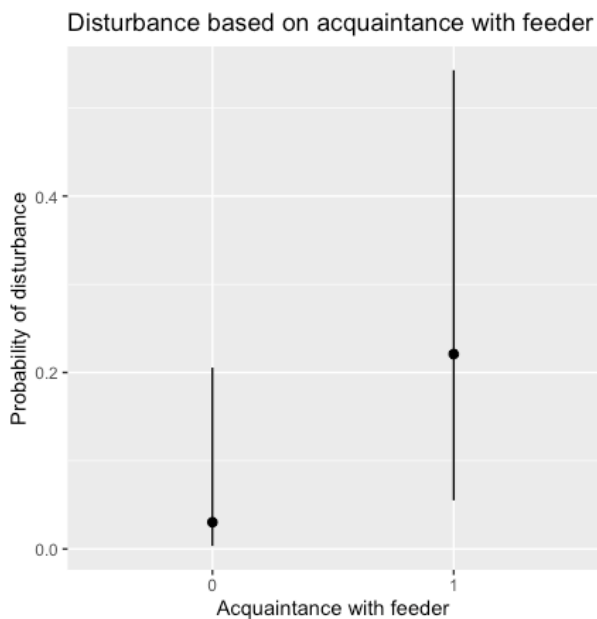


Figure 7 Disturbance probability in relation to acquaintance with the feeder (0 = doesn't know feeder; 1 = does know feeder) based on the generalized linear model (Table 3). Shown are predictions for women who grew up in the countryside and know the feeder, with mean age (65.5 years) and mean distance (83.3m).

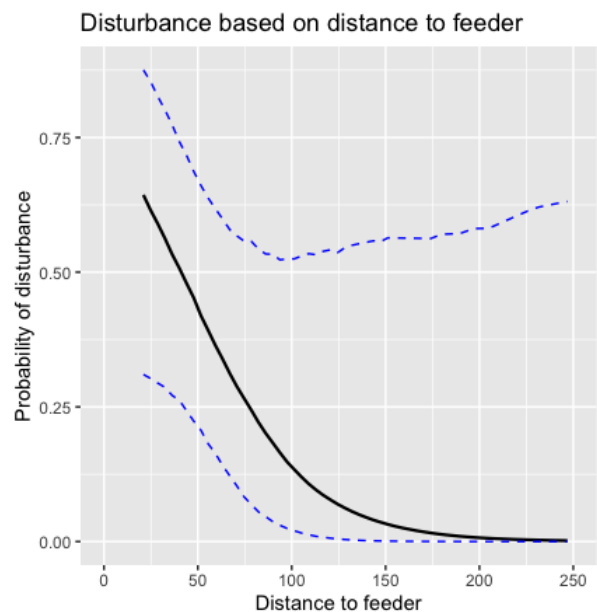


Figure 6 Disturbance probability in relation to the distance to the feeder based on the generalized linear model (Table 3). Shown are predictions for women who grew up in the countryside, know the feeder, with mean age (65.5 years).

Table 3 Estimates of the full model analysing factors associated with presence of disturbance. Coefficients with 95% credible interval not overlapping zero are denoted significant effects and highlighted in bold font. Numeric variables are scaled. N=60 (respondents).

Explanatory Variable	Estimate	CrI
Intercept	-3.99	-7.18 – -1.14
Distance	-2.23	-4.61 – 0.24
Acquaintance (known)	2.17	0.38 – 3.89
Age	-0.02	-0.86 – 0.89
Gender (M)	0.62	-0.98 – 2.30
Type of hometown (countryside)	0.59	-1.64 – 2.57
Type of hometown (city)	0.44	-2.24 – 3.15

3.3.2. General opinion about red kite feeding

During the qualitative interviews, it became clear that some of the participants considered feeding to be unnecessary or unnatural. Therefore, respondents of the quantitative survey were also asked to indicate on a Likert scale how much they agreed with the statement "I consider the feeding to be unnecessary". Of the 62 respondents, 48% agreed with the statement and 28% said that they rather agree. The respondents were further asked to give a short statement on their opinion regarding the feeding. Most of the statements were "unreasonable", "unnecessary" or in some cases "a complete nonsense". The majority of respondents stated that the feeding should not take place during the whole year, but "in winter, when there is a lot of snow, it can be appropriate." Only few respondents answered, that they are "perfectly all right" with the feeding.

3.3.3. General attitude towards wildlife and red kites

92% of respondents agreed or rather agreed (49 fully, 8 rather) with the statement that they are not bothered in general by red kites visiting settlements. When asked whether the respondents enjoy observing the red kites, 94% of respondents agreed or rather agreed (47 fully, 11 rather). Several respondents added that they find the red kites "magnificent" and "fascinating" birds. Additionally, some respondents mentioned that they maintain a nature garden to provide more biodiversity, especially to help the songbirds in winter. Some added that, for them, it is normal for wildlife to enter settlement areas, because "that is part of living in the countryside". One respondent stated that: "I can't understand the people who get upset about the feeding at all. Our neighbourhood is very rural, which means there are wild animals."

3.3.4. Relationship with the feeder

Finally, the respondents were asked whether they knew the person who feeds red kites personally or not. The responses were almost equally distributed: 52% indicated they knew the feeder, 48% said they did not. To find out more about the relationship between the feeder and their neighbours, the respondents were also asked to give a short comment about their connection with the person feeding. Many respondents gave similar answers. Namely, they knew the feeder but did not talk to them about the feeding. Or the respondents stated that they knew the person and had never had any positive contact with them. Some respondents reported that they had already asked the feeders to stop. However, according to them, the feeders were very intransigent and there was no point in talking to them further. One respondent even mentioned that he has the feeling the feeder intentionally started feeding even more after he confronted her. Only two respondents (both female) spoke of a positive relationship with the feeder. They both lived close to the same feeding site and were therefore talking about the same person, saying that she is a very nice lady. They defended the feeding and said that the woman knew what she was doing and was doing it right. Lastly, there were some respondents who said that they were bothered by the feeding, but accepted it. Everyone has their "weaknesses" and in the case of their neighbours, it is the feeding.

Most neighbours who have sought direct conversation with the feeder, asking them to stop, stated that the confrontation was not successful. "The feeders won't listen to reason, they are intransigent" was mentioned again and again during the interviews. Unfortunately, in several cases, instead of seeking a conversation with the person feeding, neighbours apparently contacted the municipality, game wardens or even the police directly, complaining about the feeding. When these authorities showed up at the feeder's house, they caused an act of defiance from the person feeding, causing one feeder to say: "I don't want to conform, I do what I want. No one has to tell me what to do. I don't see why I should stop feeding."

4. Discussion

With increasing urbanisation, opportunities for people to experience nature are decreasing, due to the loss of green spaces and the increasing focus on indoor living (Bratman et al., 2012; Clark et al., 2019). At the same time, providing food for garden birds is rapidly gaining popularity (Jones, 2011). Today, feeding birds is one of the most common intentional interactions between humans and wildlife. The extent of this practice has only been determined in a handful of countries, and a small number of studies have investigated the possible motivations for bird feeding. However, despite the undoubted financial impact and influence on bird welfare, it is still unclear why so many persons invest their time and money in bird feeding (Cox and Gaston, 2016; Jones, 2011; Robb et al., 2008). Understanding the attitudes and motivations of people who feed birds is crucial, as they determine how their feeding practices affect the surrounding urban ecosystem (Galbraith et al., 2014; Manfredo et al., 2017). In Switzerland, there is an increasing trend of not only the feeding of passerine birds, but also the deliberate feeding of raptors. Here, we investigated the reasons why people feed raptors in Switzerland at the example of red kites. The primary contribution of our study is a detailed exploration of the various problems that can result from feeding birds of prey such as red kites, an outcome based on a combination of qualitative and quantitative methods. We found that there are a variety of motivations, with pleasure, desire to nurture living things and connection to nature being the strongest. At the same time, there are residents living near such red kite feeding sites who increasingly complain about the negative impacts of the many birds coming to the feeding, showing that there is a conflict between the feeders and their neighbours. In order to resolve this conflict, it is crucial to study the attitudes and motivations not only of the feeders, but also of the residents affected by them. This study shows that noise pollution, food scraps such as chicken or pasta and bird excrements are the main drivers of conflict. Furthermore, this study found that whether or not a person feels disturbed by the feeding depends on their relationship with the feeder. The simultaneous investigation of both, the feeding motivation and the problems posed by the feeding, allows for the development of solutions and compromises to this existing conflict.

4.1. Motivations for red kite feeding

Even though bird feeding is probably the most important human-wildlife interaction in Western countries, relatively little research has been done to find out more about the different motivations for the provision of food for birds (Jones, 2018). The studies on motivations for bird feeding so far have been conducted mostly in Australia, New Zealand and the United Kingdom and concern mainly birds that are fed with seeds (Chapman, 2015; Clark et al., 2019; Galbraith et al., 2014; Howard and Jones, 2004). To date, little is known about the motivations for bird feeding in Switzerland and, in particular, the reasons why people feed raptors. Within this context, our study provides insights into the practice and into the different motivations for feeding red kites in Switzerland.

The most frequently mentioned motivations during the surveys in this study were the joy and passion that feeding brings as well as the desire to nurture living things. Equally important in this study was the motivation "Connection with nature" and "Observation", confirming the findings from previous studies in Australia and the UK (Chapman, Renée Anne, 2015; Clark et al., 2019; Howard and Jones, 2004; Schreiber, 2010). The motivation "Companionship", while not as important as other motivations, is understandable. Feeding birds offers an important

form of companionship, especially for people living alone (Jones, 2018). 50% of the feeders who participated in this study answered that they agree or rather agree with the statement “I like to think of the red kites I feed as *my* birds.” Several feeders have been feeding the red kites for many years and have built up a relationship with them, with some feeders calling them “my darlings” or “Patrouille Suisse”. Some feeders stated that the red kites recognise and start calling to them as soon as they leave the house.

While other studies (Clark et al., 2019; Galbraith et al., 2014; Schreiber, 2010) found that the positive enhancement of bird survival is a major motivation for people feeding, this is not the case for most people feeding red kites. Several respondents of this study stated that their feeding is only a support, but, due to the small quantity they feed, it is not enough for the red kites to survive on. However, some feeders providing quantities as high as 7kg with each feeding, were convinced that without their feeding, the red kites would struggle to find enough food. It can therefore be concluded that for people feeding passerine birds, the positive enhancement on bird survival is a more important motivation than for feeders of birds of prey. Also, bird survival only seems to be a major motivation for people feeding large quantities to red kites. Another difference can be found concerning the feelings people have during their feeding. The fact that bird watching can have a calming and relaxing effect on the people who feed birds is true for the majority of respondents, confirming the results from Cox & Gaston (2016). However, several feeders stated that they feel excited, rather than relaxed, when watching the red kites that come to the feeding. The respondents explained that the feeding can be a great spectacle, not only for them, but also for the guests they invite. This seems to be a difference compared to the feeding of passerine birds, as this has not been mentioned in other research concerning the motivations for bird feeding. The fact that feeding is perceived by some as an impressive spectacle can be explained by the size of the red kites and the speed with which they grab the food provided for them. For some feeders, this probably means that the more red kites come to the feeding, the bigger the spectacle. However, this is only true for a few feeders because, as mentioned, the larger number of birds leads on the one hand to problems in the neighbourhood (which some feeders want to avoid) and on the other hand to higher costs for the procurement of food.

4.2. Acceptance of red kites in settlement areas

This study found that the majority of people living near feeding sites do not generally dislike red kites appearing in their settlement. In fact, most people stated that they enjoy observing red kites and find them fascinating and beautiful birds. This might be due to the longing for an intact nature as also shown for urban foxes (Caluori and Hunziker 2001). Urban wildlife thus contributes to the reintegration of the natural into the urban living environment. Furthermore, some believe that wildlife are being deprived of their natural habitat by the expansion of human habitat, as well as the impoverishment of agricultural land, which was also stated for red kites by several respondents during this study.

Even though most respondents generally accept wildlife in their settlement, there are limits and feeding sites attracting raptors are not always liked. Several persons mentioned that, for them, red kites and other birds attracted by the feeding have become excessive, are losing their natural shyness, and are coming “too close”. In recent years, there have been increasing reports in newspapers of red kites stealing barbecue meat from the garden. Of course, the red kites cannot distinguish which meat is laid out for them and which is meant for human consumption. „[...] I think [the red kites] are really beautiful and they should also have their habitat, but the natural habitat. Because, if we feed them, there will be even more and then they will stay there“ (female, younger C). „The natural space for the bird is not in our garden“ (male, younger). „We are a residential neighbourhood here, we are not in the middle of nature“ (female, younger B).

Neighbours of feeding sites seem often to have similar attitudes towards red kites as city dwellers towards urban foxes: *“I do not have any problems with the fox ... but he belongs in the forest and out in the countryside. ...He must make fox dens in the forest. He is a forest animal and does not belong in the city”* (Caluori and Hunziker, 2001). Not only did neighbours of feeding sites observe a change in the red kite’s behaviour, but several also stated that the numbers of red kites are becoming higher every year. While this is mainly a concern to the neighbours, even for feeders this can be a problem. Due to the large number of kites that come to the feeding site, the feeders must buy more food, which can result in high monthly costs, especially when meat for human alimentation is being fed.

Our study also found that there is a difference in the acceptance of feeding of red kites, or “large birds”, as they have been called by some respondents, compared to the feeding of passerine birds. Several respondents who disagreed with the feeding of red kites mentioned that they fed small songbirds themselves, but they do not understand why someone would feed raptors. There are several possible explanations for why feeding songbirds is much more accepted than feeding raptors. As became clear during the surveys of this study, many people have respect for large birds of prey and do not want them in their garden. In addition, some people are disgusted by raw meat and especially offal fed to birds of prey, which is not a problem with grain feed for songbirds. Besides, it is probably a matter of habit. Small birds like house sparrows, tits and finches are regularly seen up close in the garden and on balconies, whereas raptors are usually only seen from a distance. Furthermore, there seems to be a clear difference in acceptance between year-round and winter feeding. While feeding during winter is widely accepted, most people do not agree with feeding during the whole year. This traditional view of wild bird feeding is true for the majority of countries where feeding is practiced and winter-only feeding is the norm (Jones, 2018). However, nowadays, a movement towards year-round feeding can be observed throughout the Northern Hemisphere. This is also confirmed by the findings of this study. Only five of the feeders stated that they feed only during winter, while (with one exception of summer only feeding) all the other respondents feed during the whole year. Of course, in many countries – primarily in warmer climates – bird feeding has always been a year-round practice. This change therefore refers to countries where winter-only feeding was the norm for a long time.

In this context, the interviews raised the question of whether people should intervene with the natural cycle at all. Many feeders are convinced that their provision of food is necessary. According to some feeders, humans have changed nature so much that it is difficult for wild animals to find enough food. Therefore, it is important to support the birds and other wildlife, especially during the winter months. The neighbours often do not support this view. Although bird feeding during winter is widely accepted, many respondents find that interfering with nature through the provision of meat and leftover food is not a good idea. *„I am annoyed by people who interfere with nature“* (female, younger C). *„That is misunderstood animal love [...]. I think it's better if nature can balance itself out. If there is a cold winter, then the sick animals survive less and the healthy animals survive, but that also passes on the healthy genes. [...] A healthy population that keeps itself healthy would be better“* (female, younger B). In addition, many neighbours of feeding sites feel that feeding is unhealthy for the birds and suspect that it is harming them rather than helping them. However, not only local residents worry about the health of the birds, but sometimes the feeders themselves. This is shown by the fact that the questions about bird feeding received by bird protection organisations sometimes also come from feeders directly. These concerns are not unjustified. The provision of food may be influencing the birds in various ways (Jones, 2018). While some of the effects can be positive and improve the birds’ welfare during times of scarcity, enhancing their survival and increasing breeding success (Nägeli, 2019), there are also possible negative effects. For instance, natural prey, such as small mammals and songbirds, may suffer from greater predation pressure from the high number of birds of prey (Malpass et al., 2017). Local breeding birds can be severely disturbed by the many arriving competitors. Furthermore, diseases can spread more quickly due to large gatherings of birds of prey, which is a general problem occurring at feeding sites (Dhondt et al., 2007; Galbraith et al., 2017; Robb et al., 2008; Robinson et al., 2010). Several

studies on the relationship between the amount of supplementary food and the abundance of local birds have shown that there are many more birds in places with many feeding sites, meaning that the density of birds is closely correlated with the density of feeders (Fuller et al., 2008; Jones, 2018). The increasing number of individuals due to higher carrying capacity can influence competition, prey populations and predator populations, thus changing the whole system. Anthropogenic food certainly has an impact at the ecosystem level and due to the increasing amount of food provided for birds together with the trend towards year-round feeding, fundamental changes not only to bird communities but possibly even entire ecosystems can be expected.

With so much human-provided food so easily available, the possibility of birds becoming dependent upon anthropogenic food supplements is a primary concern for both advocates and opponents of bird feeding, with some people worrying that birds might even lose their natural foraging skills (Howard and Jones, 2004; Jones and James Reynolds, 2008; Reynolds et al., 2017). This concern was also raised in interviews during this study. There are in fact examples of avian populations being entirely reliant on supplementary food in winter, such as Anna's hummingbirds (*Calypte anna*) in Canada, which feed from heated feeders supplying sugar solution (Jones, 2018; Reynolds et al., 2017). Birds may change their overwinter strategy or alter their migration route, which can be observed in red kite populations in Switzerland (Aebischer, 2009; Courter et al., 2013). However, it is difficult to disentangle various other potential influences on migration behaviour, such as the effects of climate change (Reynolds et al., 2017). On the other hand, several studies investigating the dependency of supplementary food in resident species have found that a variety of species with easy access to anthropogenic foods visit feeders only sporadically, with their diet comprising mainly natural food sources (Fleischer et al., 2003; Jones, 2018; Reynolds et al., 2017; Robb et al., 2008). In Australia for example, adult Australian magpies continued to provide natural foods to their nestlings even when large supplies of favoured foods were readily available (O'Leary and Jones, 2006). When during a period of 25 years a population of North American Black-capped Chickadees (*Poecile atricapillus*) was studied, no evidence of dependency on feeders was found, even when the feeders were suddenly withdrawn in harsh winters (Brittingham and Temple, 1992). An explanation for this pattern could be that birds are used to move around in response to the availability of resources (Jones, 2018). People who provide food for birds eventually stop, because they leave, retire, or die. When that happens, the birds usually just move on (Jones, 2018). Therefore, even though bird feeding can alter birds' behaviour and activities, as previously discussed, it can be concluded that, apart from times when conditions are obviously challenging (such as long-lasting snow cover or droughts), the birds most likely do not rely on feeders (Jones, 2018). This may also explain why red kites come in such high numbers to feedings, which is another question that was raised during the interviews. As mentioned, red kites are opportunists when it comes to their foraging behaviour. Since food provided by humans is very easy to reach, they have an interest in coming to the feeding site. However, if the feeding site disappears, they move on to another food source.

4.3. Disturbing factors for neighbours of feeding sites

This study found that there are multiple consequences resulting from feeding sites that can be disturbing for the neighbours living around them. The disturbing factors mentioned the most during the quantitative surveys were food scraps, excrements, and noise pollution. Food scraps such as pasta and chicken bones are a problem for residents mainly because they feel disgusted by them. However, some residents also fear that the rotten food scraps will be eaten by passing dogs or children playing in the garden and that they could fall ill from them. Moreover, the wild animals attracted by the food scraps, such as martens, foxes or badgers, can lead to further problems. The presence of badgers in urban areas can result in damage to gardens and buildings, mainly through sett (subterranean burrow) excavation (Ward et al., 2016). Some people are afraid of being infected with the fox tapeworm (both human and pet infection is feared), others are annoyed by the mess the wild animals leave behind, for example when tearing up rubbish bags (Caluori and Hunziker, 2001). Another reason why people dislike seeing foxes in their settlement is the fear of fox predation on their pets or even attacks by

foxes on humans (Caluori and Hunziker, 2001). The problem of bird droppings is perceived by residents mainly in the resulting laborious cleaning of their garden furniture and house facades. In severe cases, residents explained that they were unable to hang their laundry outside to dry, because it would immediately be covered with bird faeces. The noise caused by the birds is sometimes perceived by neighbours as very annoying, so that some are awakened by it in the morning or even feel psychologically stressed.

The results of this study are similar to a study on disturbance by urban-nesting gulls (*Larus argentatus* and *L. fuscus*) in England (Rock, 2005). Herring and Lesser Black-backed Gulls are opportunistic and omnivorous, taking advantage of a wide range of feeding situations. Owing to their noisy and aggressive nature, urban gulls are a major concern for residents, businesses, visitors and those who have to address the problems (Rock, 2005). The perceived problems associated with roof-nesting gulls are noise, mess and aggression, in that order, as shown by the increasing levels of complaints to local authorities (ibid.). Gull droppings can be costly to remove from windows and facades, especially if not removed quickly. Less tangible are the indirect losses when urban gulls dominate a town, which can lead to shoppers and tourists actively avoiding areas where gulls are aggressive and noisy. This aggressive behaviour does not (yet) seem to be a problem with red kites. Several respondents mentioned the aggressive behaviour of red kites towards crows that also come to the feeding, but not towards humans. There were two respondents who mentioned red kites attacking someone they knew, although they were not 100% certain it was really a red kite and not another raptor. What was mentioned during the qualitative interviews, however, was that people were frightened by the sudden close appearance of red kites in their garden. „*I was just shocked at how close the red kite came to the house and to me. I mean, it really did come down right next to me in the meadow, in my garden, I was so startled*“ (female, younger B). Also, some respondents stated that they found the large number of red kites threatening. It is therefore conceivable whether, with increasing numbers of red kites (and crows in some cases) in settlement areas, the problem can take on similar proportions to the problem with urban gulls.

4.4. Factors affecting the probability of disturbance

Although many respondents of this study do not seem to have a problem with red kite feeding or do not even know about it, there are some that are greatly disturbed by it. Factors such as gender, age and experience can influence values and attitudes and thus be determining factors in whether an interaction with wildlife in a particular situation is perceived as positive or negative (Dickman, 2010; Soulsbury and White, 2015). Therefore, several variables that potentially influence people's attitudes concerning the feeding of red kites were investigated. The analysis showed a significant influence of the variable "Acquaintance" on the presence of disturbance, meaning that a person is more likely to be annoyed by the feeding when they know the feeder personally (or at least know who the person feeding is). Almost all respondents who stated that they know the feeder were quite clear about the fact that they do not like the person or do not have a positive relationship with them. On the other hand, the few people who mentioned a positive relationship with the feeder, stated that they think of the feeding as a positive thing and that they support the person feeding. It can therefore be concluded that, due to the bad relationship with the feeder, the feeding is not accepted, whereas in the case of a positive relationship, the neighbours of feeding sites are less likely to be bothered by the feeding. However, it is not clear whether the feeding caused the bad relationship between the feeder and the neighbour or whether the relationship was already strained in the first place and the feeding worsened the situation.

We also found a negative effect of the distance to the feeding site on the probability of disturbance. The closer the person lived to the feeding site, the higher the probability of disturbance. The distance from the neighbours who feel disturbed by the feeding to the feeding site was between 20-70 metres for all of them. This effect was not significant but this might be mainly the case due to the low sample size. It can therefore be assumed that with distances larger than 100 metres to the feeding sites, disturbances are less likely to be present. We did not find gender, age or type of hometown to be significant predictors for the presence of

disturbance in the model, suggesting that those factors might not be important drivers for disturbance. Further research may include other variables such as education, wealth and cultural background to better investigate the factors affecting the perceived disturbance.

The significant positive effect of the amount of food on the number of red kites could be expected. This result supports the observation that, where there are more feeders (thus more available food), there are more birds (Jones, 2018). During the quantitative surveys in this study, it became clear that many respondents are not happy about the large number of birds coming to the feeding. However, the sample size of feeding sites was very small, and with a larger sample of feeding sites an effect of the number of red kites on the probability of disturbance would be expected.

Other factors that have not been included in the statistical analyses are variables such as trees or time of feeding. Neighbours of feeding sites having several trees in their garden complained that the red kites and other birds, such as crows, always waited for the feeding in their gardens and were very noisy. Therefore, the composition of the garden can also affect how much a person is affected by the birds. Furthermore, the regularity of feeding can have an influence on the behaviour of red kites. If the feeding of the red kites always takes place at the same time, the kites already expect the feeding minutes beforehand and can therefore be very demanding and cause a lot of noise. It can be assumed that if feeding happened irregularly, this problem would be less present. It is expected that these effects mainly concern neighbours living close by, while the neighbours living further away are not affected.

4.5. How can this conflict be solved?

The different values and attitudes that people hold are based on experience and social norms and have often been passed down through generations. These values determine what people perceive and how they behave in certain situations. For both, individuals and groups, values serve as a measure for assessing whether actions, events and people are desirable or undesirable (Manfredo et al., 2017). In relation to wildlife, two primary value orientations have been identified that shape human–wildlife relationships: utilitarianism and mutualism (Jacobs et al., 2014; Manfredo et al., 2016; St John et al., 2019). People holding a utilitarian view of wildlife believe that wildlife exists for human use and enjoyment and prioritise human well-being over wildlife. In contrast, mutualists view wildlife as capable of relationships of trust with humans and deserving similar rights as to people. As an example, St. John et al. (2019) investigated the different attitudes of hunters and conservationists concerning the management of red grouse (*Lagopus lagopus scoticus*) and hen harriers (*Circus cyaneus*) in the English uplands, which represents a classic, persistent conflict. They conducted over 500 surveys with respondents from field sport or nature conservation organisations. They found that the majority of respondents affiliated with field sport organisations reported utilitarian value orientations. On the other hand, most pro-raptor and pro-bird respondents were driven by mutualist beliefs, indicating they did not support shooting or management of wildlife. Finding a consensus between both stakeholders proved to be very difficult, as attitudes that are related strongly to underlying values can be hard to change.

In the red kite feeding conflict presented in this study, the attitudes that people hold determine on one hand, why people feed red kites and, on the other hand, how people living close by a feeding site perceive the feeding. The distinction between mutualistic and utilitarian view can also be shown by the stakeholders involved in this conflict. The neighbours of feeding sites often argue mutualistically. Although they find red kites very beautiful and fascinating birds, they think that they should not be fed, to avoid harming them. At the same time, most feeders, whose motivation for feeding is to help the birds survive and support them, also act out of a mutualistic attitude. This shows that even though both feeders and their neighbours hold rather mutualistic views towards wildlife, both sides interpret differently how the relationship between humans and wildlife should take shape. On the other hand, there are feeders who feed the red kites for the spectacle and for their enjoyment, whose attitude can be interpreted as rather

utilitarian. It can be argued that these feeders are feeding for self-benefit rather than primarily for the benefit of the birds. Such feeders are probably more likely to feel personally attacked if they are asked to stop with the feeding than those who feed purely for the benefit of the birds. However, based on the results of this study, it is difficult to draw a clear distinction between these two attitudes, as most feeders reported feeding both for the benefit of the birds and for their own pleasure.

When people start feeding red kites, they are often unaware of the negative effects that can result from their feeding for their neighbours and the nature. Since the red kites, crows and other birds often take the food, fly away, and consume it on the neighbours' roofs or trees, the feeders do not always realise what it means for the neighbourhood. Only when they are confronted, they may become aware of it. Those feeders who know about the consequences are partially considerate. Some feeders mentioned during the interviews that they now feed at the edge of the forest and no longer in the residential area, to avoid disturbing the neighbours. There are also cases where the feeders have stopped feeding altogether in response to complaints from the neighbourhood. However, there are also feeders who stated during the surveys that they do not really care about what the neighbours think, as the birds are more important to them than a good relationship with their neighbours. Lastly, there are feeders who are aware of the negative effects but do not want to stop feeding, because they have built a relationship with the birds and feel obliged to support them. These feeders partly describe an inner conflict, as they do not want a neighbourhood dispute, but also do not want to stop feeding. Resolving the conflict can therefore not only help the neighbours, but also the feeders.

When elaborating solutions to such conflicts, several studies have proven that trying to change behaviour through educational programmes is often unsuccessful (Heberlein, 2012; Manfredo et al., 2017; St John et al., 2019). New knowledge may not lead to a change in attitudes. The results of this study partly confirm this issue. In cases where gamekeepers or bird conservation experts have approached feeders directly and informed them about the negative consequences that can occur, this has not prevented them from continuing to feed. On the contrary, it can even lead to the feeder providing even more food for the birds out of spite and no longer being amenable to discussion. This shows that the feeders' behaviour cannot simply be changed by information. As the relationship between feeders, neighbours and communities is already negatively prejudiced in some cases, to re-establish the dialogue between the stakeholders represents a considerable challenge. In order to solve this conflict, a willingness to engage and seek compromises is required (Armitage et al., 2009). Rather than trying to change the attitudes of the people providing food for red kites, value similarities among the involved parties should be identified and solutions and compromises should be designed based upon those shared values (Heberlein, 2012; Manfredo, 2008; St John et al., 2019). Although both sides have different interpretations of what coexistence with wildlife in general and red kites in particular should look like, there are commonalities in values among feeders and neighbours of feeding sites. Both sides have expressed that they find red kites very beautiful and fascinating birds and enjoy observing them. If the feeders are not willing to stop feeding altogether, it is important to find a solution that minimises the disturbance while maintaining the pleasure of feeding for the feeders. Based on the results of this study, there are a number of proposed solutions that can improve the situation:

- Feeding should only be done in places further away than 100 m from the settlement area.
- The amount of food should be small enough so that the spectacle for the feeders remains, but only a few red kites and other birds come to the feeding.
- Feeding irregularly at different times of the day can prevent birds from already waiting to be fed and thus cause noise.
- Food should be used that the birds can easily grasp and thus creates less waste (e.g. no bones, pasta or rice).
- Since year-round feeding is a problem for many, restricting the feeding to winter-only feeding would reduce the disturbance to a few months per year.

It is not clear whether a reduced amount of food really reduces the number of red kites coming to the feeding site, since, according to the feeders, the number of red kites is even very high, when by far not all of them receive a piece of meat. This connection could be investigated by a feeding experiment, in which the weekly amount of food was varied and the response in the number of red kites to the amount of food was studied. In addition, it can be difficult, especially for older people, to move the feeding site to a location outside the settlement area. Here, with the support of the neighbourhood, a feeding site could be sought together.

5. Limitations of the Study

There are a few limitations to this study that should be considered. First of all, this study was conducted during the Corona pandemic, with case numbers constantly increasing. Therefore, the originally planned method of door-knocking had to be adapted and it was decided to interview respondents only by telephone for the quantitative analysis. This meant that the questionnaire had to be kept rather short and that all persons not registered in the telephone directory were excluded from the surveys. Furthermore, the interviews were conducted in autumn, when it was still quite warm. Since some feeders only feed during winter or feed larger quantities in winter than in summer, it can be assumed, that the results of the study would have been different if the interviews had been conducted in winter or spring. Finally, it should be mentioned that the sample size of the quantitative surveys was relatively small. We assume that the influences on the disturbance that concern the neighbours (e.g. distance to the feeding site) could be studied relatively well. However, the sample of feeding sites was particularly small, which made it difficult to investigate the influences of the feeding site on the presence of disturbance. Therefore, the results should be taken with caution.

6. Conclusions

This study has highlighted the different attitudes and motivations of both feeders and their neighbours involved in the red kite feeding conflict. While the provision of food often presents a great passion for the people feeding, it can result in a great annoyance for their neighbours. The study has found that, in addition to red kites, other birds, particularly crows, can be a problem for the neighbourhood. Trying to solve such a conflict through education has proven to be unsuccessful, meaning that simply informing the feeders or even prohibiting the feeding will most likely not lead to a resolution of the conflict. If the police or the gamekeeper go directly to the feeders to discourage them from feeding, this can lead to the opposite. The feeders can feel misunderstood and sometimes refuse to talk about the subject at all, which further aggravates the conflict. Instead, common ground and compromises should be found. Such compromises can take different approaches, depending on how and what feeders feed and on what disturbs the neighbours. Conflicts rarely occur when the distance to the feeding site is over 100m and one solution is therefore to move the feeding site to a location outside the settlement. The residents may still consider the feeding unnecessary, but they no longer feel disturbed. The factsheet that has been developed based on the results of this study is intended to explain the perspective of both the feeders and their neighbours to the other party involved, which will hopefully facilitate conflict resolution. Furthermore, the proposed compromises should serve as an assistance to communities for conflict management.

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Appendix A

Number of red kites at feeding sites

We found that the amount of food provided per week has a positive influence on the number of red kites (Table 4). The higher the amount of food that is provided, the higher the number of red kites that appear at a feeding site (Figure 8). We could not find an effect of the type of food or the location of the feeding on the number of kites.

Table 4 Estimates of the linear model investigating factors affecting the number of red kites at feeding sites. Coefficients with 95% Credible interval not overlapping zero are denoted significant effects and highlighted in bold font. N=24.

Explanatory Variable	Estimate	CrI
Intercept	2.17	1.32 - 3.01
Amount per week	0.88	0.39 - 1.36
Meat (yes)	0.42	-0.53 - 1.37
Settlement area (yes)	-0.02	-0.98 - 0.83

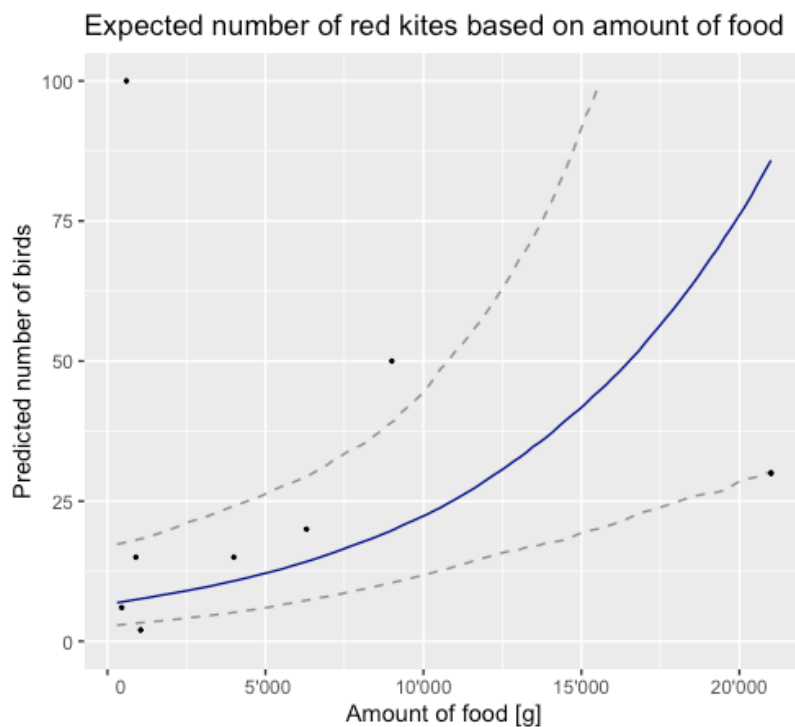


Figure 8 Predicted number of red kites in relation to amount of food provided by feeders per week based on the linear model (Table 4). Points represent the data points. The blue line shows the prediction, the dashed lines show the 95% Credible interval (CrI). Predictions are shown for meat = 1 and settlement area = 0.

Appendix B

Date:

Age:

Gender:

Feeding practice

1. Do you currently feed or have you ever fed red kites and other birds?

- Yes Yes, but not anymore No

2. Where do you feed the birds?

- In the garden Meadow near the house Edge of the forest
 Other (please specify):

3. During what season of the year are you feeding?

- Winter Spring Summer Autumn All year

4. What type of food do you use?

- Meat With bone Boneless Cooked Raw
 Kitchen waste
 Cheese
 Slaughter waste
 Other (please specify):

5. Where does the food you use come from?

- Supermarket
 Butchery
 Slaughterhouse
 Other (please specify):

6. How frequently do you feed the birds?

- Daily
 3-4x/week
 1-2x/week
 Fortnightly
 Monthly

7. How big is the average amount of food per feeding?

- < 200g
 200 – 500 g
 500 – 800 g
 800 – 1000 g
 > 1 kg

8. For how long have you been feeding the birds?

- < 1 year
 1-2 years
 3-4 years
 6-10 years
 > 10 years

9. Has the feeding changed in the last few years (in terms of type of food, frequency, etc.)?
If yes, please describe briefly:

Motivational factors

10. Who or what was the most important influence for you when you started feeding birds?

- Parents Friends Neighbours Children Having a garden
 Other (please specify):

11. The following statements are about the possible reasons that motivate you to feed red kites. Please indicate how much you agree with the statements:

	Disagree	Rather disagree	Neither nor	Rather agree	Agree
I feel obliged to feed the birds that come to my home.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeding the red kites makes me feel connected to nature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like to think of the red kites I feed as <i>my birds</i> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feed the red kites so I can observe them better.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feed birds to help them survive.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feed birds so that I don't waste food.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeding birds is a way to make up for the damage that humans do to the environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeding birds gives me pleasure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like to take care of living things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. When you think about your feelings during bird feeding, how much do you agree with the following statements?

	Disagree	Rather disagree	Neither nor	Rather agree	Agree
I don't have strong feelings towards bird feeding; it's just something I do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It makes me happy when a large number of red kites show up for the feeding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get excited when I discover a new bird species in my garden.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel proud that I am doing something for nature and the environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel calm and relaxed when I watch the red kites during the feeding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Can you imagine potential conflicts arising from bird feeding? Please describe briefly:

14. Has anyone in your neighbourhood ever complained to you about the feeding?

Appendix C

Interview Guideline

Name	
Address	
Date	
Duration	

1. Introduction

- Can you tell me a bit about yourself, where you grew up and what you do for a living?
- You described by email that someone in your neighbourhood regularly feeds red kites. Could you tell me how this usually takes place?
- Can you briefly describe how you perceive feeding in everyday life?

2. Main part

Problem factors

- What are the main problem factors for you?
- What bothers you most about the situation?

Effects on everyday life

- What impact does feeding have on your everyday life?
- Does it bother you every day, or only now and then?
- How much does it limit you in your everyday life?

Conflict/relationship with the neighbour

- What is your relationship with the feeder? Do you know each other personally?
- For how long has the conflict existed?
- Have you already tried to talk to them directly?
- Would you like your neighbour to stop feeding altogether, or what would have to change for you to be able to live with it?

Other questions

- What is your attitude towards wildlife in settlement areas?
- Do you enjoy observing the red kites and other wildlife?

3. Maintenance questions

- Can you elaborate on that a bit more?
- Can you give me an example of that?
- Is there anything else you would like to say on the subject?
- The aspect you just mentioned is very interesting. Can you tell me a bit more about it?

4. Follow-up questions and redirection

- May I ask again what exactly you meant by that?
- This aspect is very interesting, but it leads away from my actual question. May I ask you again how you mean XY?

Appendix D

Date:

Name:

Address:

Demographic details

Gender	
Age	
Grown up (city/village/countryside)	

1. Are you aware of anyone feeding (or having fed) red kites in your neighbourhood?

Yes No

2. Would you say you feel disturbed in any way by the feeding?

Yes No

Disturbing factors

3. The following statements are about the possible disturbing factors of the feeding. Please indicate how much you agree with the statements:

	Disagree	Rather disagree	Neither nor	Rather agree	Agree
I'm bothered by the noise the birds make.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Our house or garden is full of bird droppings regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The birds drop meat or food scraps in our garden.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find it scary when I see so many birds of prey circling in the sky.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The birds of prey pose a danger to my pets/children.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I noticed that the feeding attracts other wildlife (fox, marten, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The crows bother me more than the red kites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the feeling that the number of birds of prey is constantly increasing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the feeling that the red kites are getting closer and closer to my house/garden.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. The following statements are about your perception of red kites. Please indicate how much you agree with the statements:

	Disagree	Rather disagree	Neither nor	Rather agree	Agree
I like to observe wildlife.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In principle, I have nothing against red kites circling over settlement areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I enjoy watching the red kites fly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am a nature person and like to be outside.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think feeding the red kites is unnecessary, nature should regulate itself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. What is your opinion about the feeding of birds and birds of prey in particular?

Neighbourhood conflict

6. Do you know the person feeding the red kites personally?

Yes No

7. Have you already tried to talk directly to the person feeding the red kites about the subject?

Yes No

8. If so, what was the outcome of the conversation?

9. Is there anything else you would like to say on the subject?



In der Schweiz gibt es eine Vielzahl an Personen, die regelmässig Rotmilane und andere Raubvögel füttern. Obschon die hohe Anzahl an Raubvögeln, die zur Fütterung erscheint, ein grosses Spektakel sein kann, erfreuen sich nicht alle daran. Besonders wenn sich die Fütterungsstellen mitten im Siedlungsgebiet befinden, kommt es zunehmend zu Konflikten in der Nachbarschaft. Anhand von qualitativen Interviews und quantitativen Befragungen mit Fütterern und betroffenen Anwohnern von Fütterungsstellen wurden die unterschiedlichen Motivationen zur Rotmilanfütterung und die dadurch entstehenden Probleme für umliegende Nachbarn untersucht. Die wichtigsten Ergebnisse aus den Befragungen und Interviews sind in diesem Merkblatt zusammengefasst.

Weshalb füttern Menschen in der Schweiz Rotmilane?

Die Motivationen für die Fütterung von Rotmilanen können sehr unterschiedlich sein. In einem Punkt sind sich aber fast alle Fütterer einig: Die Fütterung macht ihnen Spass, teilweise ist es sogar ihre grosse Leidenschaft. Ausserdem ist bei vielen der Wunsch nach Pflege sowie die Möglichkeit, die faszinierenden Vögel aus der Nähe zu beobachten, ein wichtiger Grund für das Füttern. Für viele ist die Fütterung auch eine Möglichkeit zur Verbindung mit der Natur, wonach sich einige Menschen sehnen, welche in Siedlungsgebieten leben. Auch ist es einigen Fütterern wichtig, die Vögel bei der Nahrungssuche zu unterstützen, was sie besonders für die Wintermonate als wichtig empfinden.

Was stört Nachbarn von Fütterungsstellen am meisten an der Fütterung?

Besonders der Lärm, den die Rotmilane und andere Vögel, die durch die Fütterung angezogen werden, verursachen, stört die Anwohner von Fütterungsstellen. Ausserdem stellen für viele die zahlreichen Exkrememente, welche die Vögel auf den Fassaden und Gartenmöbeln hinterlassen, ein Problem dar. Dazu kommen in einigen Fällen Essensreste (z. B. Pouletschenkel oder Pasta), welche die Rotmilane, teilweise im Kampf mit anderen Vögeln, fallen lassen, die dann bei den Anwohnern im Garten liegen bleiben. Diese Essensreste können wiederum dazu führen, dass Wildtiere wie Fuchs oder Marder angezogen werden. Zudem haben viele Befragte festgestellt, dass die Rotmilane ihr Verhalten ändern, zunehmend frecher werden und

sich immer näher an die Menschen herantrauen. Im Sommer häufen sich in den Medien Meldungen von Personen, denen ein Rotmilan das Fleisch vom Grill gestohlen hat. Fast alle befragten Anwohner von Fütterungsstellen halten die Fütterung für unnötig und befürchten, dass diese den Vögeln schaden könnte.

Welche Auswirkungen kann die Fütterung auf Vögel haben?

Nebst den Auswirkungen, welche die Fütterung auf die Nachbarschaft haben kann, sind auch einige Effekte bekannt, welche die Fütterung auf Vögel und andere Lebewesen beinhalten kann:

- Veränderung des Zugverhaltens (weniger Abwanderung in den Süden im Winter)
- höherer Bruterfolg und dadurch höhere Anzahl an Individuen
- höherer Prädationsdruck auf Singvögel und Kleinsäuger
- Krankheitsverbreitung an Fütterungsstellen
- Veränderung von Ökosystemen

Welche Lösungen gibt es?

Sowohl die fütternden Personen als auch deren Nachbarn beschreiben den Rotmilan als ein faszinierendes Tier, das sie gerne beobachten. Diese Erkenntnis zeigt, dass es zwischen Fütterern und deren Nachbarn eine Gemeinsamkeit gibt. Auf dieser Basis und anhand der Erkenntnisse aus den Befragungen wurden Lösungsvorschläge entwickelt, welche die negativen Auswirkungen für die Nachbarschaft auf ein Minimum reduzieren und gleichzeitig den fütternden Personen die Freude an der Aktivität nicht nehmen sollen. Für die Umsetzung ist ein gegenseitiges Verständnis und eine gewisse Kompromissbereitschaft auf beiden Seiten entscheidend.

Lösungsvorschläge

- ❖ Unregelmässige Fütterung, damit sich die Vögel nicht daran gewöhnen und vor der Fütterung Lärm verursachen
- ❖ Die Futterstelle ausserhalb des Siedlungsgebietes anlegen, mindestens 100 m von den Häusern entfernt
- ❖ Nur geringe Futtermengen verfüttern, damit weniger Vögel zur Fütterung erscheinen
- ❖ Futter verwenden, das keine Reste hinterlässt (kein Reis, Pasta, Knochen)
- ❖ Nur im Winter füttern, da die Akzeptanz von Winterfütterung höher ist als die Akzeptanz von Ganzjahresfütterung