

**Endangered lodgers:
The world of building breeders
A Mystery-Game**

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1. The Mystery Gaming Method

The following section introduces the Mystery-Gaming Method, a key component of this lesson plan designed to engage students in exploring the subject matter. Though relatively new to biology, this method offers exciting opportunities for creating dynamic and interactive lessons. Rooted in problem-based learning, it helps students gain knowledge through solving puzzles (Grospietsch & Lins, 2023, p. 194).

How it Works

The method revolves around a central card containing the mystery, accompanied by optional "support cards" that offer hints or situational clues to help students solve the puzzle. While these cards provide assistance, omitting them can increase the challenge.

1. **Analysis Phase:** Students are introduced to a guiding question and encouraged to brainstorm initial ideas (Grospietsch & Lins, 2023, p. 195).
2. **Understanding Phase:** Here, students connect the guiding question with relevant concepts or use the available support cards to help them progress (ibid.).
3. **Synthesis Phase:** Students combine their findings to explain the original problem. This explanation can be shared either orally or in written form (ibid.).

It's important to note that there is often more than one correct approach to solving the mystery. Teachers can adapt the method for both digital and traditional classroom settings (Grospietsch & Lins, 2023, p. 195).

Customizing the Complexity

When applying the Mystery-Gaming Method to your lesson, it's crucial to carefully calibrate the complexity of the guiding questions and the difficulty of the puzzles. You want to ensure they are neither too simple nor overly challenging for your students (Grospietsch & Lins, 2023, p. 196).

Mühlhausen and Pütz describe the method as a structured puzzle where students must document their solution process. This documentation creates more connections between the discovered information, often culminating in a mind map (Mühlhausen & Pütz, 2018, p. 160). The ultimate goal is to encourage "networked thinking" (ibid., p. 161).

Developing Critical Thinking and Problem-Solving Skills

The Mystery-Gaming Method promotes scientific problem-solving by teaching students not to rely solely on hypotheses. Instead, they gather multiple pieces of information, link them to prior knowledge, and distinguish important details from less relevant ones. These are vital skills in today's information society, and they can be effectively honed through mystery games (ibid.).

Additionally, the method fosters real-world connections, motivating students by linking authentic problems to everyday life. It also encourages the transfer of knowledge by helping students create personal connections between the information and the guiding question, which can be visually reinforced using mind maps or information cards (ibid.).

Classroom Implementation

While the teacher prepares the guiding questions and information cards, the students work in small groups to solve the mysteries. After the group work phase, students present their findings to the class (Mühlhausen & Pütz, 2018, p. 162).

The central question or statement drives the activity, connecting the information cards to real-world problems. Although these problems often seem unsolvable at first, they prompt deeper thinking and analysis (Mühlhausen & Pütz, 2018, p. 163).

Once students are divided into groups, each group works on a unique problem. The groups are provided with an envelope containing a set of cards related to their topic. Their task is to create a mind map by organizing the cards on a poster, categorizing the information by relevance. Not all cards must be used, and students may also add additional facts. At the end of the session, the mind maps are finalized and presented to the class, showing the thought process behind their solution (ibid.).

During this phase, the teacher acts as a facilitator, observing and providing guidance when needed. Strategic questioning helps students uncover the connections between the cards and the mystery (Mühlhausen & Pütz, 2018, p. 165).

Reflection and Feedback

The group work is followed by a reflection session. Students can present their solutions either through traditional presentations or by conducting a gallery walk. In a gallery walk, small groups move around the classroom to view and comment on each group's poster. Afterwards, the class discusses the results, allowing everyone to share their thoughts (Fricke, 2018, p. 228).

This method is especially effective when introducing a new or complex topic, as it gives students a comprehensive overview. It also fosters a sense of appreciation, as each student has the opportunity to contribute to the final presentation, earning recognition from their peers and the teacher (Mühlhausen & Pütz, 2018, p. 164).

Encouraging Individual Problem-Solving

One of the key benefits of the Mystery-Gaming Method is its flexibility. It encourages students to explore multiple pathways to solving the guiding problem. While different groups may develop various approaches, there is typically one clear solution to the main problem (ibid.).

The final posters can be displayed in the classroom as a way to celebrate students' work and provide ongoing reference material for the unit. These posters can also be photographed and made digitally available (Mühlhausen & Pütz, 2018, p. 165).

Why Use the Mystery-Gaming Method?

This innovative method was chosen for this unit because of its high engagement potential. Already proven successful in subjects like geography, it offers a fresh approach to problem-based learning in biology. Students take on the role of detectives, solving a "mystery," which increases their interest and motivation.

By dividing tasks during group work and then presenting their findings, students not only develop a deep understanding of the subject matter but also improve their social skills and confidence. The poster creation process also taps into their creativity.

Overall, the Mystery-Gaming Method serves as an engaging way for students to connect prior knowledge with new information and demonstrate their understanding. The completed posters provide a lasting, visual reminder of the problem they solved, which can continue to inform the class long after the lesson ends.

2. Learning Objectives of the presented Teaching Unit

General Objective (GZ):

Students will gain an overview of the threats facing selected native building-nesting species (common swift, kestrel, jackdaw, house sparrow, barn swallow, and pipistrelle bat).

Specific Objectives (FZ):

1. Students will hypothesize why each species is endangered and identify potential contributing factors. *(Cognitive, Level III)*
2. Students will be able to present the solution process of the mystery for their assigned species using the provided instructions. *(Cognitive, Level I)*
3. Students will justify their solution process for the mystery based on the available information and identify relevant connections. *(Cognitive, Level III)*
4. Students will adhere to communication rules and show respect for each other during group work. *(Social)*
5. Students will justify their mystery solution using the provided materials and present their findings. *(Cognitive, Level III)*
6. Students will compare the threats and problems affecting their species with those of other building-nesting species covered in the lesson. *(Cognitive, Level II)*
7. Students will use their prior knowledge to propose at least one protection measure for a building-nesting species as a homework assignment. *(Cognitive, Level I)*
8. Students will become aware of the need to protect building-nesting species and realize that they can contribute to this effort. *(Affective)*

3. Methodology and Rationale for Using the Mystery Method

This lesson follows the exemplaric principle (Killermann, 2020, p. 45). Students explore the threats posed by humans to building-nesting species through a representative example. They also learn how they can contribute to the conservation of these species. It's important for students to understand that the species featured in the Mystery-Gaming activities are

just examples of broader environmental issues affecting many similar species. The goal is to build students' understanding of species within their local ecosystem, which is achieved by selecting several key cases (Killermann, 2020, p. 51). While each group only investigates one species, they are exposed to others during the presentations, expanding their knowledge of various building-nesting species.

This lesson also draws from the concept of genetic learning (Köhnlein, as cited in Killermann, 2020, p. 46). Through the Mystery-Gaming Method, students acquire knowledge through self-directed, playful exploration. Although they are provided with hints and information, the key task is for students to make connections and solve problems independently. Instead of receiving prepackaged knowledge from the teacher, students take initiative to discover solutions themselves (ibid.).

Genetic learning allows students to propose their own ideas, discover information, and actively engage in problem-solving (ibid.). Killermann highlights that this approach is particularly effective not only because of its high level of engagement and problem-oriented nature, but also because it teaches students how to learn and how to recognize patterns (Killermann, 2020, p. 46).

The Mystery-Gaming Method is therefore a great tool for introducing students to basic scientific thinking. Another essential feature of genetic learning is that students often gain more information than they strictly need, helping them develop cross-disciplinary competencies (Killermann, 2020, p. 47). Among the three pathways for genetic learning outlined by Köhnlein, this lesson uses the individual-genetic approach, where knowledge is created through the students' own initiative (ibid.). The method builds on prior knowledge and experiences, asking students to work with new, unstructured information to solve a problem. The goal is for students to logically organize this new knowledge through playful discovery (Killermann, 2020, p. 47).

3.1. Classroom Procedures

The Mystery Method in this lesson is rooted in problem-based learning. At the start of the Mystery Game, each small group is given a problem, presented as a puzzle, which they need to solve (Graf, 2012, p. 137). The teacher introduces the problem to the students by giving

them the "mystery question," encouraging them to understand the issue on their own (Graf, 2012, p. 138). If students struggle to grasp the core problem, they can use support cards or ask the teacher for hints. However, it's important that any assistance still allows students to think critically and solve the problem largely on their own.

The lesson is carefully structured, with students using the support cards to create a mind map during group work. This teaches them to solve a problem using scientific methods. To guide them through the process, students are provided with step-by-step instructions for solving the mystery.

While problem-based learning fosters problem-solving skills, it also supports other key competencies. As Graf (2012) states, problem-solving is a fundamental approach in biology and other empirical sciences (p. 138). By engaging with this method, students gain their first experience in biological inquiry, learning to identify and solve biological problems.

3.2. Teaching Materials

Various materials are used throughout the lesson to engage and motivate students. At the beginning of the class, images are shown to activate students' prior knowledge and encourage participation in the discussion. Before group work, the teacher provides instructions on how to solve the mystery. These instructions are reinforced through a PowerPoint presentation, which remains available during group work for students to refer to. This ensures that students can solve the mystery independently with minimal help from the teacher.

Students are also given question cards and supporting information, which they will use to create a mind map on a poster. This allows them to visually organize their ideas and present their solutions to the class.

The effectiveness of the lesson is closely linked to how well the biological phenomenon is illustrated. By making the lesson visually engaging, either through images or short videos, the students' interest and learning success are enhanced (Graf, 2012, p. 134). To further reinforce these concepts, teachers could consider organizing field trips focused on building-nesting species. This would provide students with a real-life context, helping them understand that these animals live close to humans and need protection. Project-based

learning activities, such as building birdhouses or collecting nesting materials, could also be incorporated, allowing students to actively contribute to biodiversity while gaining hands-on experience.

Although direct encounters with nesting species may be challenging due to their elusive nature, the lesson compensates with clear, engaging visuals. Follow-up field trips or projects offer a deeper level of engagement, encouraging continued interest in the topic beyond the lesson (Graf, 2012, p. 135).

3.3. Scientific Practices

Inquiry-based learning is a key scientific skill practised in this lesson (Killermann, 2020, p. 57). Students focus on investigating questions, solving problems, and discovering new information—skills that are central to the Mystery Method. Additionally, the lesson emphasizes the importance of presentation skills, as students are required to share their findings with the class.

The content knowledge students gain relates to building-nesting species and their habitats, such as their nesting sites and breeding seasons (Killermann, 2020, p. 62). Alongside this biological knowledge, students also develop key process skills such as communication and evaluation. Through group work, students exchange ideas and share their prior knowledge, strengthening both their communication skills and their teamwork abilities. In the final phase, they present their findings to the class, honing their public speaking and presentation skills.

Students also engage in evaluating biological concepts by learning about human-caused species decline and assessing its impact. This encourages them to think critically about conservation efforts and fosters a sense of responsibility for protecting local wildlife.

The Mystery Method is designed to spark students' interest and motivation. By allowing students to take control of the problem-solving process, the method fosters intrinsic motivation—students develop a genuine interest in the topic because they have the freedom to explore and discover solutions on their own (Killermann, 2020, p. 68).

3.4. Lesson Format

The lesson relies heavily on student-led learning. Most of the lesson is spent in group work, where each group uses the Mystery Method to solve a unique problem related to a specific building-nesting species. The teacher divides the class into six groups, following Killermann's recommendation that groups consist of three to five students (Killermann, 2020, p. 200). Each group is given a clearly defined problem and the necessary materials, which they solve within a set timeframe. The teacher acts as a facilitator, providing guidance when needed but largely allowing students to take ownership of their learning.

It's crucial that all group members contribute equally to the task. The teacher should monitor the group dynamics, ensuring that everyone participates, and that the workload is evenly distributed. Group size, task complexity, and timing can be adjusted depending on the class dynamics.

Group work also encourages students to develop social skills, especially when they are asked to collaborate with classmates they may not usually interact with. This promotes teamwork, a valuable skill for their future careers (Killermann, 2020, p. 200). Group work helps develop cognitive, affective, and social abilities, as well as problem-solving and communication skills (Killermann, 2020, p. 201).

In the introductory phase of the lesson, the whole class engages in a teacher-led discussion to activate prior knowledge. This discussion is relatively short, followed by an explanation of the group activity. During the group work phase, students work independently while the teacher acts as a facilitator. Finally, the results of the group work are presented to the class. During these phases, the teacher offers constructive feedback and guidance, helping students refine their ideas.

3.5. Assessment and Evaluation

Student progress is assessed continuously throughout the lesson. Initially, students discuss their species within their groups, with their progress being both oral and written, as they prepare to present their findings to the class. The group presentations serve as a verbal summary of the learning, and students use the mind maps they created during group work as visual aids for their presentations (Killermann, 2020, p. 234).

Killermann outlines four levels of assessment: reproduction, reorganization, transfer, and problem-solving (Killermann, 2020, p. 234). Students demonstrate reproduction by presenting their group's findings, while reorganization happens during group work when they organize their knowledge. Problem-solving is an integral part of the Mystery Method, as students work through new information to solve the puzzle. Transfer occurs during the presentations when students compare their solutions to those of other groups.

After the lesson, the mind maps can be displayed in the classroom, allowing students to revisit the material and reflect on what they've learned. Displaying the students' work also fosters a sense of pride and recognition for their efforts.

In conclusion, the Mystery Method promotes various competencies, from problem-solving and scientific inquiry to teamwork and communication. The open format encourages student autonomy and engagement, creating a classroom environment where intrinsic motivation can flourish.

4. How to Use the Mystery Method in Your Classroom

The Mystery Method is a dynamic, problem-solving approach that engages students by challenging them to solve a mystery in small groups. Here's a step-by-step guide to implementing this exciting method in your classroom:

4.1. Introduction: Engaging Students from the Start

Start by showing your students an image of a "crime wall" using a projector (Fig. 1). This serves as a silent prompt to spark curiosity. Encourage students to share their initial thoughts about the image in a short class discussion. Then, explain that they will become detectives for the day, using the Mystery Method to solve a puzzle related to the lesson.

Next, show them a collage of the bird species featured in the mystery questions (Fig. 2). This activates their prior knowledge and gives them a broad overview of building-nesting birds. Since this lesson is the conclusion of a unit, they should already have some knowledge of local species and the threats they face. The images help students make connections and raise their motivation by linking the lesson to what they've already learned.

4.2. Group Work: Solving the Mystery

Now it's time to introduce the Mystery Method. Divide the class into small groups of three to five students, depending on class size and dynamics. You can either assign groups or let students choose, but be mindful of potential distractions if friends are placed together. After groups are settled, explain the task clearly: they have 28 minutes to solve their assigned mystery question using support cards that provide key information.

Each group will create a "crime wall" or mind map on a poster. The mystery question goes in the center, with branches extending to different clues and hypotheses the group develops during their discussion. This visual representation will be essential for their presentation later.

4.3. Providing Support Without Giving Answers

During the work phase, circulate as a facilitator but avoid giving away answers. Let the students explore different possibilities and guide themselves. A projected PowerPoint slide (Fig. 3) can remind them of the steps for solving the mystery and organizing their poster. Each group will receive two envelopes: one with the mystery question and one with support cards containing additional clues (texts, images, QR codes for further research).

To keep the process flexible, consider providing extra questions for struggling groups or those who need more guidance. These can serve as conversation starters or give new directions without the teacher stepping in too much. If needed, you can adjust the difficulty based on your class's skill level.

4.4. Presentations: Sharing Discoveries

After half an hour, give students a few extra minutes to finalize their posters. Each group will then have six minutes to present their mystery and solution to the class. Encourage them to reflect on their thought process, explaining not just the solution but also the various ideas they considered along the way.

This phase is crucial for reinforcing both the content and students' self-confidence. Positive feedback from classmates and the teacher strengthens group cohesion and validates their hard work.

4.5. Wrap-Up and Homework

At the end of the lesson, assign a follow-up task: each student must research one measure they can take to protect building-nesting species. This assignment can be completed using the internet, books, or even family conversations. Display this as a PowerPoint slide so students can copy it into their homework journals.

5. Teacher Tips for Success:

1. **Encourage Open-Ended Thinking:** Emphasize that there is more than one solution to each mystery. This will reduce students' fear of giving the "wrong" answer and encourage creative problem-solving.
2. **Use Technology:** Incorporating QR codes and apps adds a modern touch and engages tech-savvy students. It also promotes independent research skills.
3. **Adapting for All Abilities:** Adjust the complexity of the mystery based on the class's needs. Provide extra hints or remove some if the group is advanced to ensure every student remains engaged.

4. **Manage Group Dynamics:** Monitor groups to ensure that all students participate equally. You can mix students strategically to promote collaboration across different social groups, helping them build teamwork skills.
5. **Use Visuals to Reinforce Learning:** Incorporating images, diagrams, and even QR codes to digital resources helps keep students engaged and makes abstract concepts more concrete.
6. **Reflection Time:** After each group presents, allow time for class reflection. What strategies worked? Were there any surprises in the solutions? This deepens understanding and fosters a collaborative learning environment.

5.1. Why the Mystery Method Works:

The Mystery Method is ideal for promoting critical thinking, collaboration, and inquiry-based learning. By allowing students to take charge of solving complex problems, it fosters a sense of ownership and intrinsic motivation. The method also develops essential 21st-century skills, such as problem-solving, communication, and adaptability.

This structured yet flexible approach can be adapted for various subjects and learning levels, making it a valuable tool for teachers seeking to energize their classroom while promoting deep, engaged learning.

6. Group Work Content

The Mystery Method involves six groups, each focused on a different building-nesting bird species. Each group receives a mystery question, along with optional guiding questions to help if they encounter difficulties. These guiding questions should only be used after students have explored the initial materials.

- **Group 1: Common Swift**

Mystery: "The roof tiles are shining like new, but the familiar melody is gone. Why?"

Solution: The renovation of the roof has blocked or destroyed the nesting sites of the birds. Students use a QR code to listen to bird sounds and identify the swift. Images of before-and-after renovations help them understand how construction

affects wildlife. The group concludes that renovations can impact local species, particularly during breeding season.

- **Group 2: Barn Swallow**

Mystery: "The bird rescuer is happy that the village won the 'most beautiful village' award, but she has more nestlings to care for than ever before. What happened?"

Solution: Due to the beautification efforts, natural materials like mud, which the swallows use to build their nests, are no longer available. Students analyze images of the village before and after improvements, along with complaints from villagers about dirty streets. The group learns how habitat changes can affect bird populations.

- **Group 3: House Sparrow**

Mystery: "New nesting boxes were installed in the industrial area, but the number of sparrows keeps dropping. Why?"

Solution: The sparrows need more than just nesting boxes—they also require a food source and vegetation. Students examine images of the industrial area and discuss whether the sparrows have access to everything they need to thrive.

- **Group 4: Jackdaw**

Mystery: "The city has successfully deterred unwanted birds from nesting at the church, but the 'tower guardian' is also missing. Why?"

Solution: The jackdaws, known as "tower guardians," have been affected by measures aimed at deterring pigeons. Students use a QR code to listen to the jackdaw's call and connect the dots between the species. They learn that deterrent measures for one species can impact others.

- **Group 5: Kestrel**

Mystery: "A new bell melody echoes in the Bayreuth church tower, but another sound is missing. What happened?"

Solution: The kestrel's nesting site in the church has been disturbed by renovations. Students use a QR code to listen to the kestrel's call and explore how construction

affects nesting sites. The group concludes by learning about conservation projects to protect kestrels.

- **Group 6: Pipistrelle Bat**

Mystery: "While Tim sees many pipistrelle bats at his grandmother's old house, they avoid his newly built home. Why?"

Solution: The modern design of Tim's house lacks the crevices and materials that bats need for shelter. Students compare images of both houses and discuss how building design can affect wildlife. They explore the unique needs of bats for roosting and how modern architecture often excludes them.

6.1. Learning Materials

a. PowerPoint Presentation



Fig. 1: Access 1 evidence board



Fig. 2: Access 2 evidence board

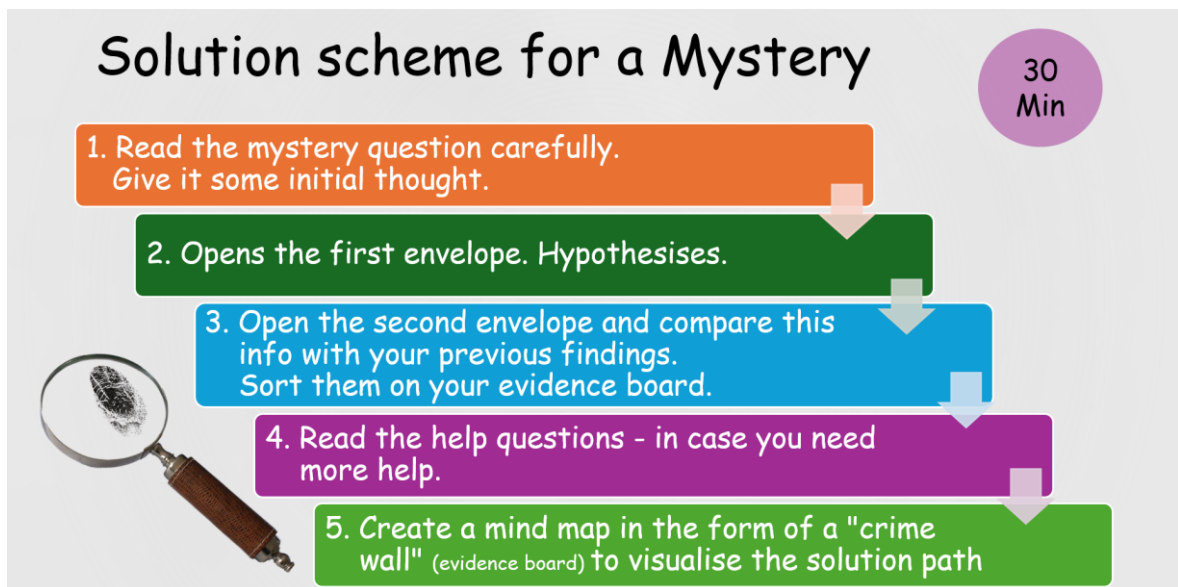


Fig. 3: Orientation during group work: Process of a mystery solution



Homework

🐦 Find other protective measures for the species you have learnt about!

🐦 Write down the measure that you like best and that you could imagine implementing on a post-it and bring it to the next lesson.

🐦 Let's collect our post-its on the posters.

You can use the internet or books as a source of information; you can also ask your family.

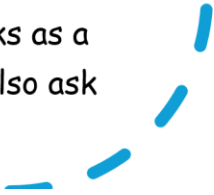


Fig. 4: Homework

b. Mystery Print Templates

Links of the QR Codes in the students' information materials:

SCAN ME



Swift (*Apus apus*)
audio file

<https://xeno-canto.org/586085>

SCAN ME



Jackdaw (*Coloeus monedula*)
audio file

<https://xeno-canto.org/72547>

SCAN ME



Church bells ringing

SCAN ME



Kestrel (*Falco tinnunculus*)
audio file

<https://xeno-canto.org/375133>

SCAN ME



Internet presence of a township in
Germany that promotes living spaces.
<https://www.ottenhofen.de/lebendiges-ottenhofen/falkenmonitor/>

Expert Group 1



Group 1: Swifts

Mystery-Question:

The tiles of the house roof shine in new splendour, only the familiar melody can no longer be heard, why?

1st envelope:

Scan the QR code to find out which melody it is

SCAN ME



swift





Roof before



Roof after



swift breeding sites



with chicks in the nest



Nesting aid for swifts

2nd envelope:

The swift spends most of its life in the air and only comes to the ground to breed. Here it seeks out a dark cavity or niche in the roof area of tall buildings. Swifts are migratory birds that spend the winter in Africa. They only come to us in summer, which is why they are also known as "summer messengers". The birds always return to their original breeding site, where they stay from the end of April to the beginning of August. However, the swift is often so inconspicuous that we humans often do not notice when it is nesting on our buildings. Their nesting site is small and the animals keep it clean. They are also rarely seen outside and are very fast. Unfortunately, this usually means that the nests are unknowingly destroyed during roof work.

Food: arachnids, hoverflies, mosquitoes and flying forms of ants and aphids

Nesting site: Swifts often nest on old buildings or flat-roofed buildings. They breed in colonies, which means that there are often several swift nesting sites on one building. They breed in dark cavities, for example in the eaves under gutters and tiles, in high wall holes or leaking louvre boxes. The entrance hole is very small and often not visible from below. They only make themselves known by flying in and out, calling and flying around. You can also usually see droppings on the guttering. The swift's nest is tiny and is usually only the size of a beer mat.

Breeding: Swifts breed once a year. They lay 2-3 eggs which are then incubated and have to be cared for after hatching. Swifts breed from around mid-May to mid/late July.

3rd envelope:

Help questions

What has been changed on the roof?

Which melody has disappeared?

Why might the swifts have disappeared?
Do they no longer like it on the roof?

Expert Group 2



Group 2: Barn Swallow

Mystery-Question:

The bird keeper is delighted that the village won the prize for the most beautiful village last year. But she can hardly enjoy her own garden anymore because she has so many more swallow chicks to look after this year. What has happened?

1st envelope:



Picture before village beautification



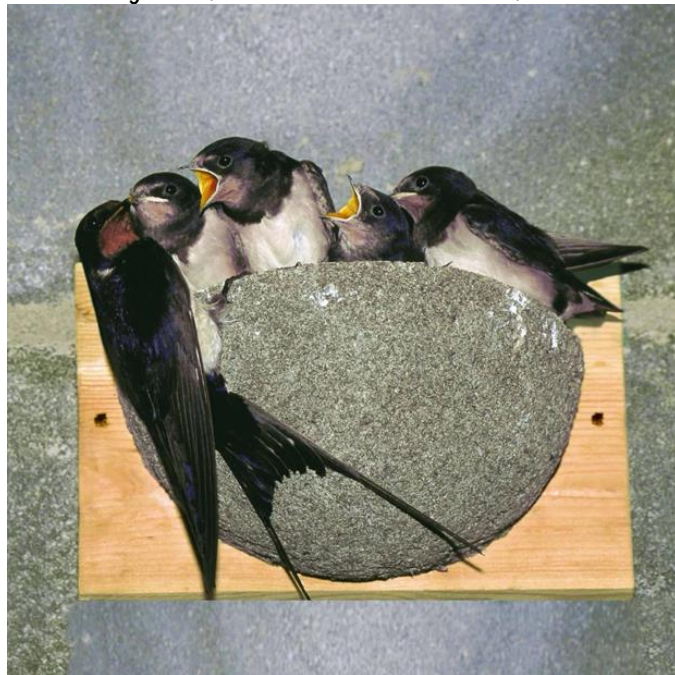
Picture after village beautification



Barn swallows



Nesting aid for barn swallows: artificial nest





Info: Bird Rescuer

Bird rescuers are people who volunteer their time to raise wild birds. When young birds are left behind, they are taken to wildlife rescue centres where bird rescuers look after them. Their tasks include, for example, feeding the birds every hour. Injured birds are also taken in and cared for. When the birds get better or are old enough to survive independently, they are released back into the wild.

Letter to the editor in Finkenflug

Dear Sir or Madam

I would like to draw your attention to a problem that has been bothering me and other villagers for some time. For some time now, Lindenstrasse has been in a catastrophic state and should be repaired urgently.

The deep potholes are not exactly good for cars, and when it rains the road becomes a muddy track. As a result, the road is no longer safe to use. The risk of accidents for pedestrians, cyclists and motorists is significantly increased.

In order to maintain the village's infrastructure, it would be advisable to renew the road. This is particularly attractive as the prize for village beautification will soon be awarded and our village would be a top candidate for the prize with a few renovations.

Yours sincerely,
Erwin Bird

The most beautiful village in Europe

Open letter from the mayor

Dear fellow citizens,

I am pleased to announce that our village has won this year's European Village Renewal Award.

This prize is awarded every two years to villages that present particularly outstanding initiatives to strengthen rural communities. There are several factors that are taken into account in the assessment, such as architecture or citizen participation in the process. Voting is carried out by an international jury, which selected our village as the winner!

The whole thing could only happen with the active help of the citizens. The green areas were replanted, the village fountain was restored and the streets were renewed, so that the well-known problem areas of the village were also remedied.

The official award ceremony will take place next Sunday on the village square. I look forward to seeing you there in large numbers.

Yours sincerely,
Mayor Müller

2nd envelope

Profile of barn swallows

Food: Mainly flying insects such as flies and mosquitoes

Habitat: Barn swallows live in rural areas. They feel at home in cowsheds and barns, where they often build their nests. They find food in fields and meadows, so they tend not to settle in urban environments.

Breeding: Barn swallows breed between April and June when they have returned from their warm winter quarters. They build their nests on vertical walls, ledges or beams inside buildings. The nest is built from loamy earth, which is interspersed with saliva and reinforced with blades of grass and hair. They often nest in colonies. Barn swallows usually breed a second time in the year.

Hazard

Barn swallows are losing nesting sites and food as village environments continue to decline and many small farms cease to exist. The asphaltting of paths in the village means that the animals are losing the clay puddles they need to build their nests.

Protection

Barn swallows can be protected by supporting and preserving small farms and farms in rural areas in particular. To ensure sufficient food, care should be taken to use little fertiliser on fields and to maintain areas of streams so that there are plenty of insects. In addition, nesting aids and clay can be provided so that the animals can build their nests.

3rd Envelope

Help questions

Why is the papper getting more and more bird chicks?

What could have been damaged during the village beautification?

Expert Group 3



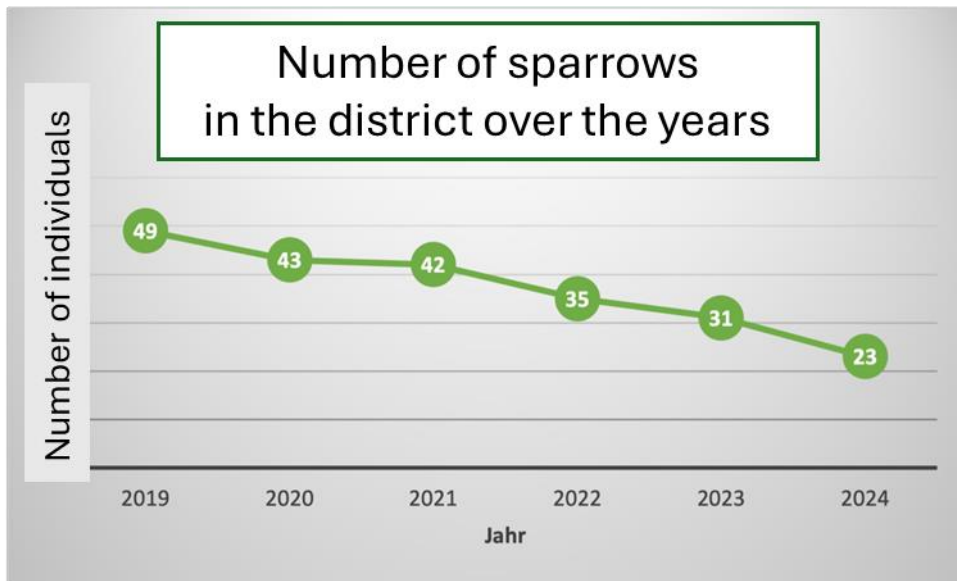
Group 3: House Sparrow

Mystery-Question:

New nesting boxes for birds have been installed in the industrial area in Bayreuth. Despite this, there are fewer sparrows in the area every year.

1st Envelope







2nd Envelope

Profile House Sparrow

Sparrow is actually just a nickname for some birds. This refers to the house sparrow, which breeds on the house. Sparrows breed in groups and look for places on buildings or tree hollows to build their nests. Sometimes they also breed in bushes, trees or nest in nesting boxes.

Sparrows mainly eat grains and seeds. They only feed insects to their young. When food is scarce, for example in the city, they also eat buds, household waste or breadcrumbs. Sparrows stay with us all year round.

Hazard

A lack of food and fewer green and wooded areas are the main reasons why there are fewer and fewer sparrows. There are also fewer and fewer nesting opportunities as the facades of houses are being sealed.

3rd Envelope

Help questions

What do sparrows eat?

What do sparrows need for their way of life?

What does the industrial estate look like? Are there enough facilities for the animals?

There are enough nesting sites. So what could be the reason why the sparrow population is declining?

Expert group 4



Group 4: Jackdaw

Mystery-Question:

The town has managed to stop unwanted birds from nesting on the church. However, the "tower guardian" is no longer to be seen, why?

1st Envelope

Scan the QR code to find out which animal is called the tower guardian:

SCAN ME







Letter to the editor newspaper:

Ladies and Gentlemen,

Unfortunately, over the last few months I have noticed that the church square and surrounding pavements are increasingly being soiled by bird droppings. It's not just me who has noticed this problem; many people no longer feel so comfortable and avoid the church square, which used to be a popular place to meet and relax. In some cases, you can't even sit on the park benches there as they are covered in bird droppings. This does not reflect well on our city and we urgently need to do something about it. The pigeons have multiplied too much in recent years and are not only nesting in the surrounding trees, but also in our beautiful church tower.

I hope that this terrible situation will soon be rectified and that our church square will be clean and inviting again.

Yours sincerely,
Sabina Hawk

2nd Envelope

Jackdaw profile

Jackdaws can be found almost everywhere. They live in towns and cities as well as in villages and can be found in agricultural landscapes, buildings and forests. They stay with us all year round and do not migrate south. Jackdaws live in groups and have a partner for life. The animals also forage together. They breed on trees, rocks, in nesting boxes or even chimneys.

Jackdaws have a varied diet.

They eat berries, fruit, nuts, mice, insects, snails, rubbish and fish.

3rd Umschlag

Help questions

Which birds are unwanted?

Where do jackdaws breed?

What was done to chase away the unwanted animals?

Expert Group 5



Group 5: Kestrel

Mystery-Question:

While a new bell melody has recently been ringing out in Bayreuth's city centre, a closer listen reveals that another voice is missing. What has happened?

1st envelope

Which voice is missing? Scan the QR code to hear the voice:

SCAN ME

SCAN ME



1.



2.



2nd Envelope

The kestrel is a predator and hunts small rodents such as mice, which it uses as food. It hunts these in fields or farmland. In the city, it mainly feeds on small birds such as sparrows. It also eats insects and lizards.

The kestrel does not usually migrate for the winter and, if it does, it travels locally in search of food.

Kestrels normally nest in rock niches and caves, but today they mainly nest on church towers or other tall buildings. Two thirds of the birds breed on church towers, also known as bell towers.

The breeding season for kestrels begins in mid-April. The pair of birds divide the labour so that the female broods and the male provides food. After the young have hatched, it takes about two months for them to fly out.

The entrance holes or niches on buildings are sometimes deliberately barred to drive away pigeons. However, this usually also drives away other animal species.

To counteract the dangers, special nesting boxes for kestrels can be installed, for example, so that the animals can also breed more easily in residential and urban areas.

Scan the QR code and collect information about an example of successful protection measures for kestrels:



SCAN ME

3rd Envelope

Help questions

Why does a new melody sound? What has been changed?

What else could have been changed?

Where do kestrels have their nests?

Expert Group 6



Group 6: Common Pipistrelle Bat

Mystery-Question:

While Tim can observe numerous pipistrelle bats at night at Grandma's old house, he doesn't understand why they avoid Tim's newly built house in the same street.

1st Envelope



bats



Bat roost (Nursery)



Grandma's house



Tim's house

2nd Envelope

Pipistrelle bats are, as the name suggests, very small and therefore fit into small crevices and cracks that they can use as roosts. A distinction can be made between summer and winter roosts. In autumn, the bats move into their winter quarters, also known as mating quarters, and produce offspring. In summer, the young are raised by the females in the so-called "nursery roosts", while the males live separately from them. The roosts are reused every year. The roosts can be in trees, but also in residential buildings or churches. They also live in tree heights, nesting boxes, window shutters or wall panelling.

The main food source of bats is insects, which they hunt at night using ultrasonic localisation.

The nursery roosts must not be disturbed at all in June and July, as the mother and her young are particularly vulnerable during this time.

Before any renovation work is carried out, it must first be clarified in which months the animals use the roost, where they stay and through which openings they fly in and out. Renovations should, therefore, only be carried out when the animals are absent and the roosts with entrance holes are maintained in such a way that the animals can still use them without any problems after the renovation. In the winter roosts, the animals hibernate and must not be disturbed or woken up under any circumstances. For example, they stay in open cellars.

To help the bats, you can install nesting boxes or nesting boards for additional space. In addition, existing roosts in old and tall trees can be maintained by preserving them.

The number of insects can be increased, for example, by hedges or flower meadows, and thus the food base for bats can be secured. Pesticides should be avoided to increase the diversity of insect species.

By buying organic agricultural products, everyone contributes to the preservation of insect-rich areas.

Many people associate bats with bad luck and find them scary. They deliberately destroy their roosts because they are afraid of them. However, this is a misconception and bats do not harm people. On the contrary, they eat insects and thus contribute to pest control in the home.

3rd Envelope

Help questions

What are the differences between Grandma's and Tim's house?

Where do bats have their roosts?

Look at the picture of the bats in the roost, where could it be?

c. Exemplary solution (in German)

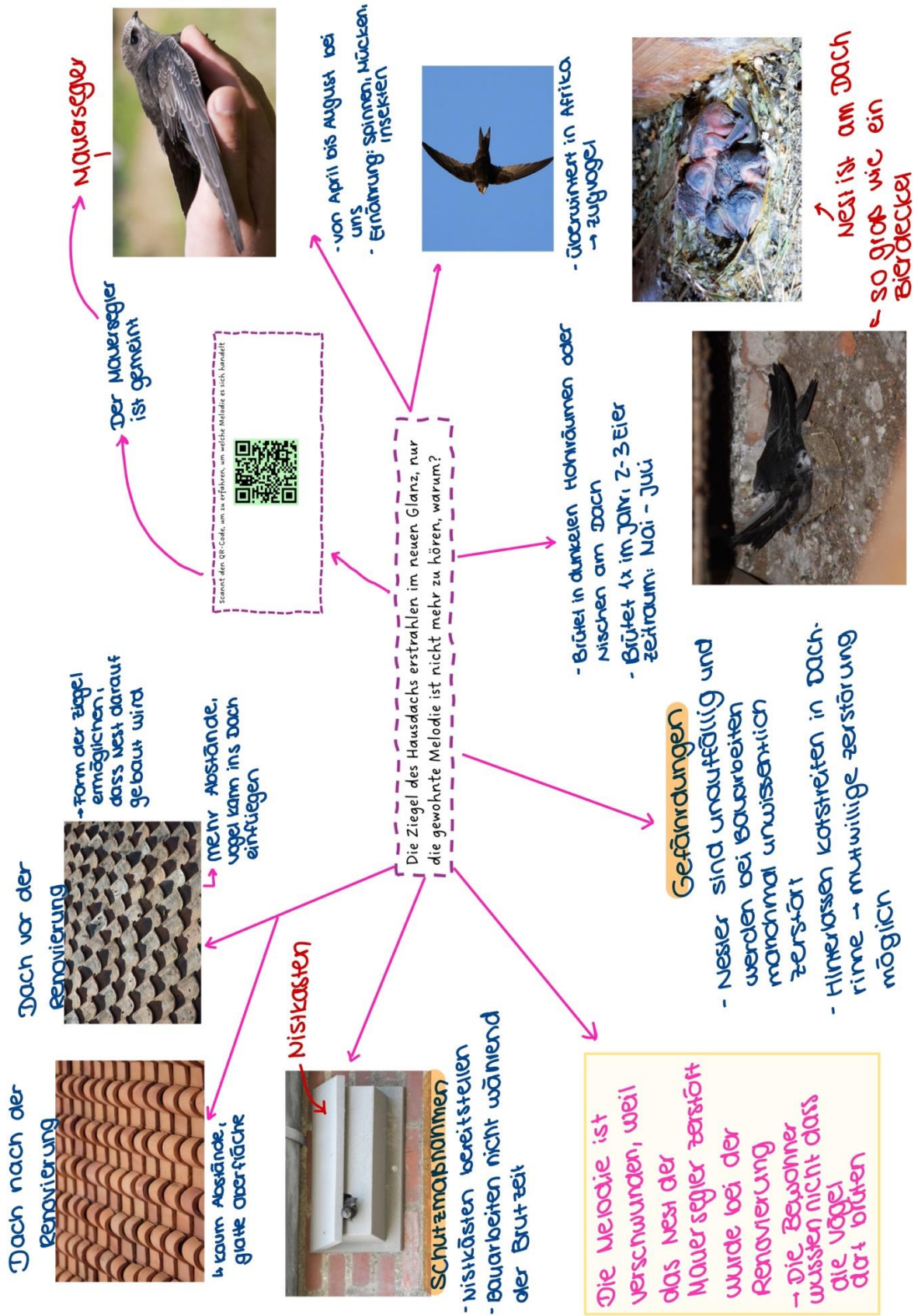


Fig. 9: Evidence board for the swift

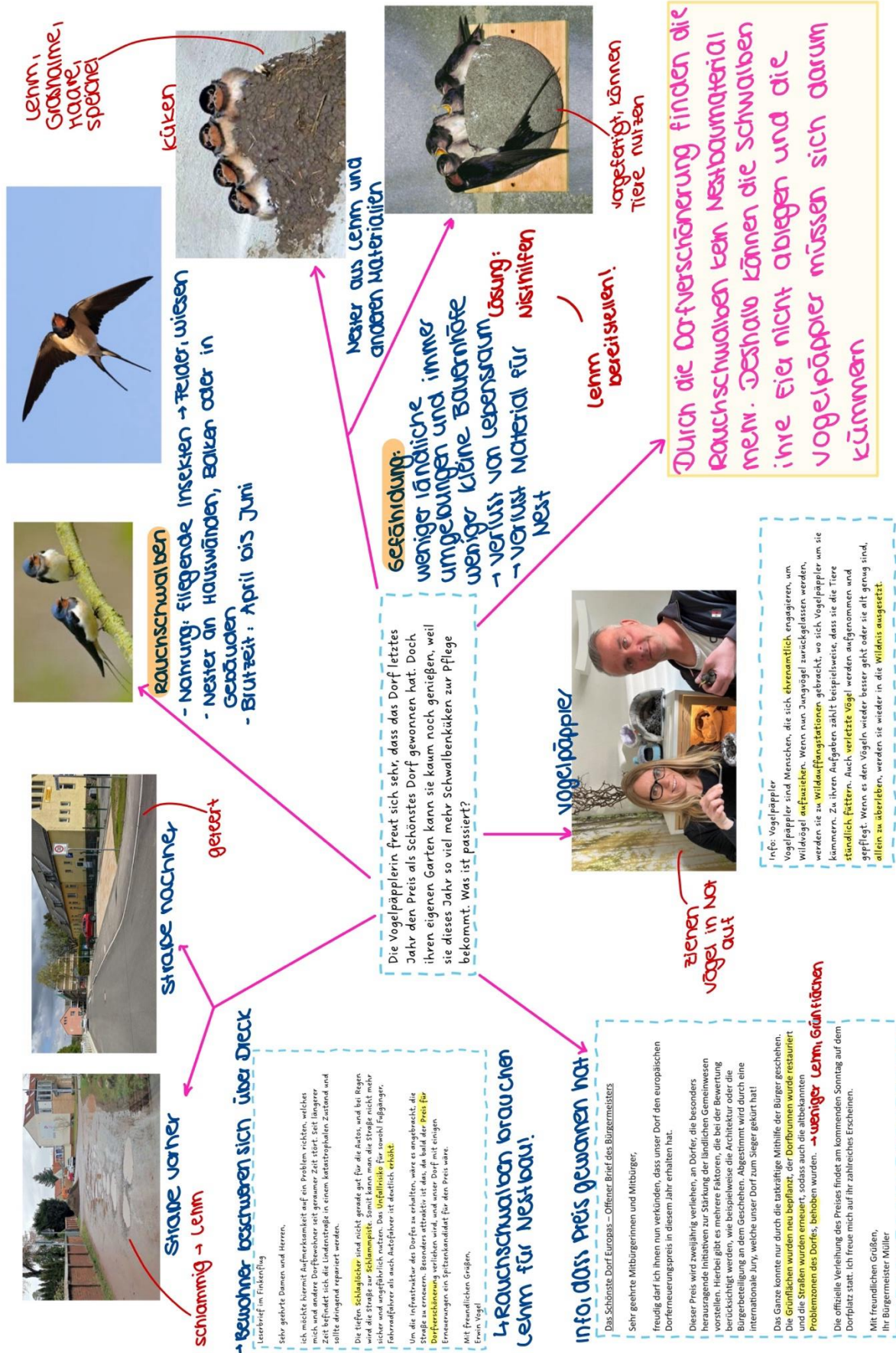


Fig. 10: Evidence board for barn swallows

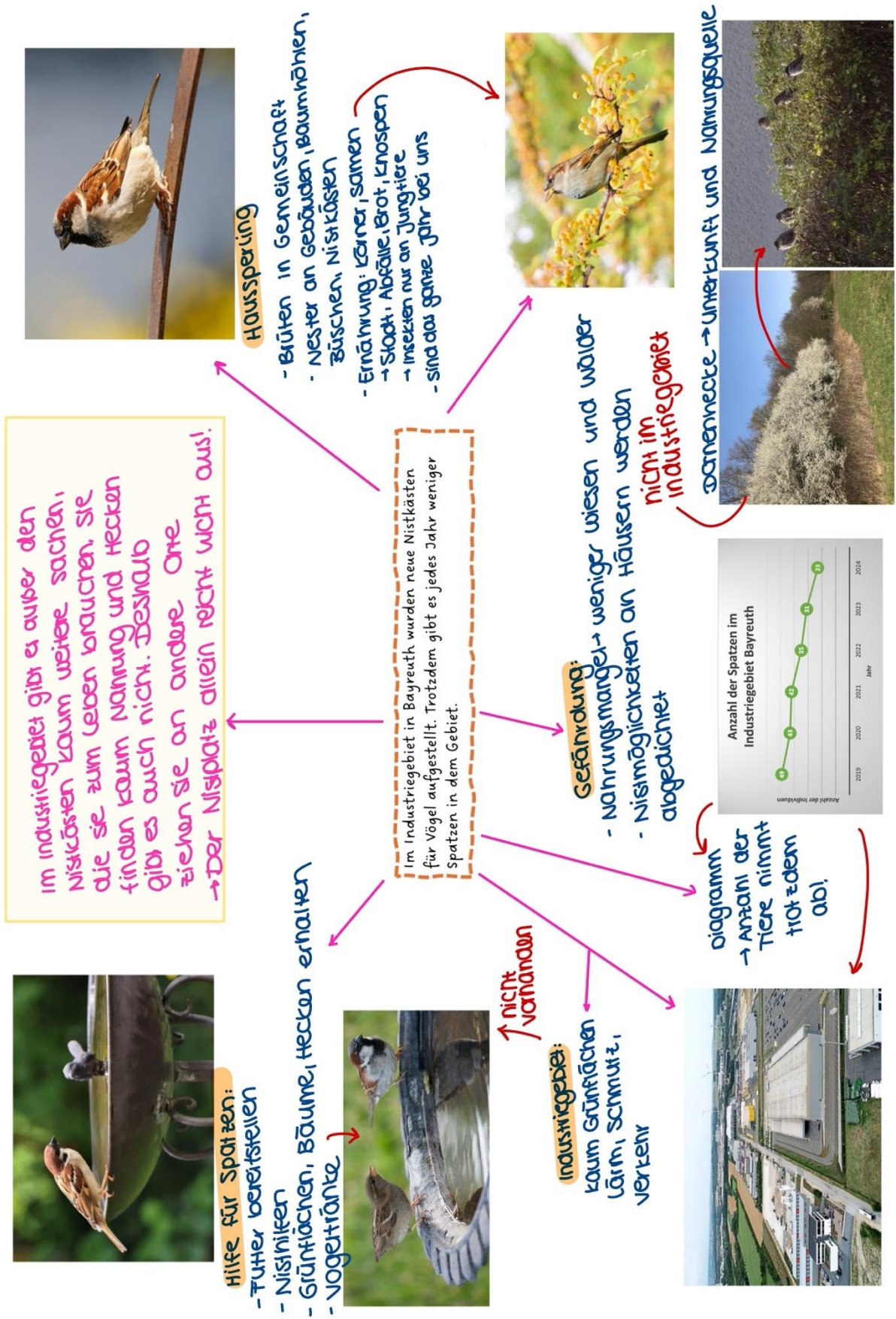


Fig. 11: Evidence board for House Sparrow

Tauben sind unerwünscht!
→ Machen Dreck
→ Stören Passanten

Die Stadt hat es geschafft, dass unerwünschte Vögel nicht mehr an der Kirche brüten. Jedoch lässt sich der „Turmwächter“ nicht mehr blicken, warum?

Einführung:
Beeren, Nüsse, Insekten, Abfälle...

Sie sind keine Zugvögel

Die Kirche

Die Dohle

Dohlen fliegen ein

Dohlen haben ihr Nest im Kirchturm

Dohlen haben auch ihre Nester!

Beschwerde über Stadttauben → Taubenkot, Nester im Kirchturm

vogelkot

Durch das Verschleichen der Tauben und die Vergämung wurden auch die Dohlen vertrieben, da diese ihre Nistplätze nicht mehr nutzen können.

Scannt den QR-Code, um herauszufinden, welches Tier mit dem Turmwächter gemeint ist:

Sehr geehrte Damen und Herren,
leider musste ich über die letzten Monate feststellen, dass der Kirchplatz und umliegende Gehwege vermehrt von Vogelkot beschmutzt werden. Dieses Problem ist nicht nur mir aufgefallen, viele Mitbürger fühlen sich dadurch nicht mehr so wohl und meiden den Kirchplatz, der vorher gerne als Treffpunkt und Entspannungsort angesehen wurde. Teilweise kann man sich nicht einmal auf die Parkbänke dort setzen, da diese auch mit Vogelkot beschmutzt sind. Das wirft kein gutes Licht auf unsere Stadt und wir müssen dringend was dagegen unternehmen. Die Tauben haben sich in den letzten Jahren zu stark vermehrt, und brüten nicht nur in den umliegenden Bäumen, sondern auch in unserem schönen Kirchturm.
Ich hoffe, dass dieser schreckliche Umstand bald behoben wird und unser Kirchplatz wieder sauber und einladend wird.
Mit freundlichen Grüßen,
Sabina Vogel

Fig. 12: Evidence board for the jackdaw

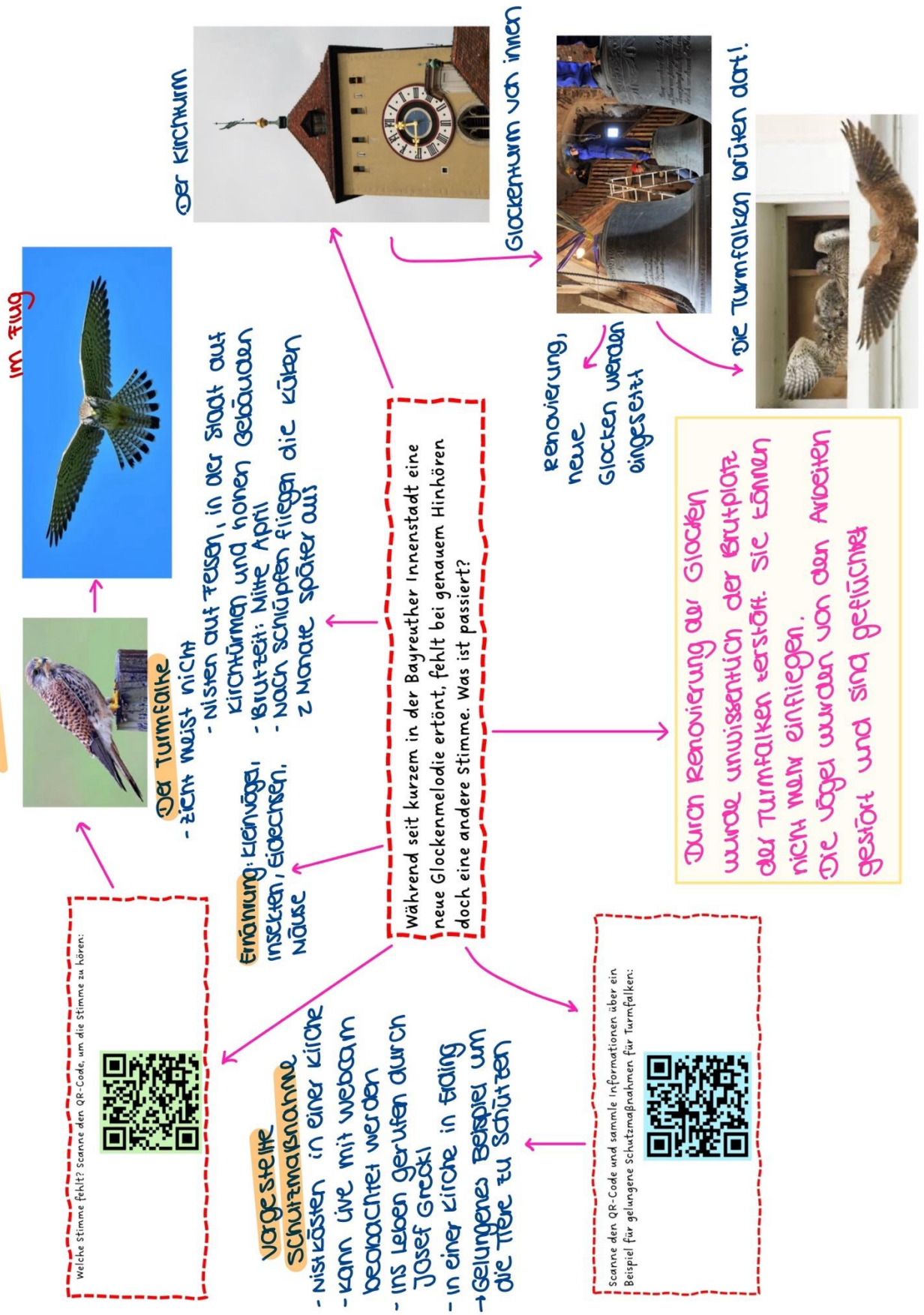


Fig. 13: Evidence board for the kestrel



Ernährung

Die Hauptnahrungsquelle von Fledermäusen sind Insekten, welche sie mittels Ultraschallortung in der Nacht jagen.

→ Für Manche Menschen unheimlich, ist aber ein Irrglaube! tragen zur Schädlingsbekämpfung bei, da sie Insekten fressen → viele zerstören aber die Quartiere bewusst, aus Angst

Zwergfledermaus

- sehr klein
- Spalten und Ritzen als Quartier
- Sommer- u. Winterquartier
- Quartiere in Bäumen, Gebäuden, Kirchen, Baumhöhlen, Nistkästen, Fensterläden, Wandverkleidung
- wochenstärben dürfen Juni/ Juli überhaupt nicht gestört werden!

↑ Nur nicht in kritischen Zeiten umsiedlung möglich bei Renovierung!

Um den Fledermäusen zu helfen, kann man Nistkästen oder Nistbretter für zusätzlichen Raum anbringen. Außerdem können bereits bestehende Quartiere in alten und hohen Bäumen durch dessen Erhalt gepflegt werden.

unbedingt zu beachten

Jeder kann zum Schutz und Erhalt der Gebäudeträger beitragen!



Nicht vorhanden da Flachdach!

Die Fledermäuse finden in Tims Haus keinen Unterschlupf, da es nicht gebäudebrückerfreundlich gebaut wurde!

Tims Haus

während Tim bei Omas altem Haus in der Nacht zahlreiche Zwergfledermäuse beobachten kann, versteht er garnicht, warum diese das neugebaute Haus von Tim in der selben Straße meiden.

Omas Haus

Schutzmaßnahmen



Neu, glatte Fläche, Flachdach, keine Balken
Hohes Dach, Offene Ziegel, raue Fassade
Oben kleine Fenster



Fensterläden

Balken mit Balken

→ Alles optimal für Fledermäuse

Die Anzahl von Insekten kann beispielsweise durch flecken oder Blumenvasen erhöht werden, und somit die Nahrungsgrundlage für die Fledermäuse gesichert werden. Schädlingsbekämpfungsmittel sollte vermieden werden um die Artenvielfalt von Insekten zu erhöhen.
Durch das Kaufen von ökologischen Landbauprodukten trägt jeder einen Teil dazu, insektenreiche Gebiete zu erhalten.

Fig. 14: Evidence board for the common pipistrelle bat