Rediscover, Describe and Draw Birds

Overview

This learning unit requires students to keenly observe neighbourhood birds and document the observed species. Students will also make resources and interaction maps of a bird with its immediate environment, using the data they have collected.

Learning Objectives

(i) To make links between presence of birds, bird behaviour, variation in birds etc., and the environment (biotic/ abiotic/natural/artificial).
(ii) To observe life forms in their natural environment, and develop skills of observation, attention to detail, documentation- all integral to the scientific process.
(iii) To re-establish our fading connection to nature.

Background

What can human beings learn by studying birds? Why would one want to invest time and energy in such an exercise? How does the understanding of birds enhance our understanding of the world around us? Here are some learning possibilities:

Birds as indicators of the environment

We live in a rapidly changing world. Humans have modified the world's environment in drastic ways, and India is no exception. Our population is the second largest in the world, and its impact on the environment is rapidly increasing. This environmental change is impacting biodiversity at a rapid scale. For example, the population of vultures has declined drastically in the recent years because they feed on the carcass of cattle treated with a veterinary drug Diclofenac (a common drug administered to treat symptoms of inflammation, fevers, diseases, etc.), which is toxic to the vultures. Following this decline, some studies tried to draw a parallel between the increase in the number of stray dogs (which fed on decaying flesh that was now uneaten by vultures) and the incidences of rabies across India. Birds have also served to warn of environmental dangers. In the olden days, coal-miners used to carry caged canaries (bird) while at work; the canary would die if there was excess methane and/or carbon monoxide, which was poisonous to humans as well.

Today, as some of the best-documented animals on the planet, birds serve as indicators of environmental change; sea bird health informs us about fish populations, for instance. Birds can also tell us a lot about the history of the places they lived in. For example, the beaks of the famous Darwin's finches evolved because of extreme environmental changes. These environmental changes reduced the available food, and the beaks of the birds evolved to consume different foods like tougher seeds, insects, etc. This diversity in the shape of beaks thus, is an indicator of the history of changes in their environment, that is, in Galápagos Islands (in Ecuador). So, by following birds and learning about them, we are trained to notice changes in bird behaviour and their presence and absence. This knowledge is critical to maintain healthy, sustainable human habitations.

Declining sparrow population in India

Sparrows are common across the world and are seen along side with human habitation. But over the last couple of years, people in India started reporting absence or fewer number of house sparrows in their areas. This motivated the Citizen Sparrow Project, a citizen science project spearheaded by Bombay Natural History Society, together with a group of nature and conservation related organisations. They analysed over thousands of

reports from all over India and summarised the collected information in the form of a report. Though it was evident that some regions did show dwindling sparrow populations, the reasons for it are still unclear and debated. Based on these results, several initiatives were proposed to increase or restore sparrow populations across the country. To know more, visit: *http://www.citizensparrow.in*

Birds as teachers

Birds, like many other components of nature have informed and inspired many human inventions and innovations, and they continue to serve as a source of inspiration for many others. The invention of flight was directly inspired by the capabilities of birds. The simple physics problem of how birds transmit their complex songs is solved in a manner similar to many modern-day information technology systems. The extraordinary diversity of birds is reflected in their diverse beaks, which serve as probing tools, crushing tools, wood-chippers, insect-catchers, and many more. In essence, birds have evolved many tools millions of years before humans invented them, solving many simple design problems that we struggle with even today. The eyes of birds possess capabilities that are far superior to our own. Most birds can see colours and portions of the light spectrum that we, human beings, cannot. Falcons can see a small rabbit moving on the ground from hundreds of feet in the air. The possibilities of learning and inventing things inspired by birds are innumerable. The Japanese engineer, who was responsible for designing of the Shinkansen Bullet Train, was was inspired by the beak of a kingfisher (bird) to redesign the front part of the bullet train, which made the train more aerodynamic and energy-efficient.

The role of birds in ecosystems

Although we are commonly taught about birds as pests and eaters of crops, did you know that birds are also valuable part of a habitat? They play critical roles in maintaining forest ecosystems by eating fruits and dispersing seeds. Birds like Sunbirds (that have thin long curved beaks), Leafbirds, White-eyes, help in pollination, and may thus benefit the farmer by helping spread the crop. Many birds eat harmful insects, and serve as biological pest control, protecting crops from harm. Sadly, in the era of pesticides, many farm birds are being poisoned and are disappearing from their regular habitats. How might we save birds on farms, and how does this benefit people? Additionally, some birds can be apex predators while others are scavengers. Their role in the ecosystem food web is of paramount significance.

Lastly, it is interesting to note that many philosophers and scientists who have tried to make meaning of human beings' relationship with nature and all living things, have cited an aesthetic (beauty) dimension to valuing nature. Human beings are often filled with wonder by the physical beauty of nature, and derive a sense of fulfillment and satisfaction when amidst it. This, however, is a debated topic and subjective, to say the least.

Develop Skills Associated With Scientific Literacy

By learning to observe and study birds, a student learns basic life skills in observation and inference and paying attention to detail (*Do birds of the same species look different? How are they different from each other? Can you tell their songs/sounds apart?*). This will also help improve assimilation and retention of information. Historically, natural history sciences and many other sciences like astronomy, largely depended on systematic, prolonged and meticulous observations. Even today, many studies in ethology (science of animal behaviour) are observation-driven. Such an activity provides a good opportunity to hone those useful skills! Moreover, birds are part of folk-lore. We also hear phrases like “proud as a peacock”, “eagle eye”, “wise as an owl”, “the clever crow” etc. In real life though, birds play a crucial role in our ecosystem.

Observing birds and documenting their behaviour imparts several skills such as writing a scientific description, maintaining logs, organizing information, accurate scientific reporting etc. As a broader vision, this activity of observing birds aims to re-establish our fading connection to nature, which benefits health and well being (see Children & Nature Network and IUCN-CEC Report, 2012), and inculcate awareness of the diversity of living things. Students can also learn to make connections of a single species with its immediate environment. Knowing where and when you find certain birds may encourage school children to learn more about the geography and climate of that area. It may also encourage understanding of the various habitats birds occupy, from deserts to rain forests. Finally, because birds are generally conspicuous, beautiful, well-known and found in almost every corner of the world, they are ideal subjects for undertaking a simple study.

How is This Activity Connected to the Science Curriculum?

There are sporadic references to birds and topics relevant to understanding of birds across the NCERT science curriculum from class 6-9. In some chapters like “Diversity of living organisms” (class 9) and “Conservation of plants and animals” (class 8), there are explicit sections on Aves and bird migration respectively. Birds also feature in discussions about food chains, similarities of shape between bird and an airplane, food sources etc. While this activity does not offer one-on-one thematic mapping of concepts as presented in the textbooks, it does provide ample opportunities for the teacher to make connections with the science curriculum.

Materials Needed for Students

Notebooks, pen, pencil, colours. Binoculars, camera and field guides are optional.

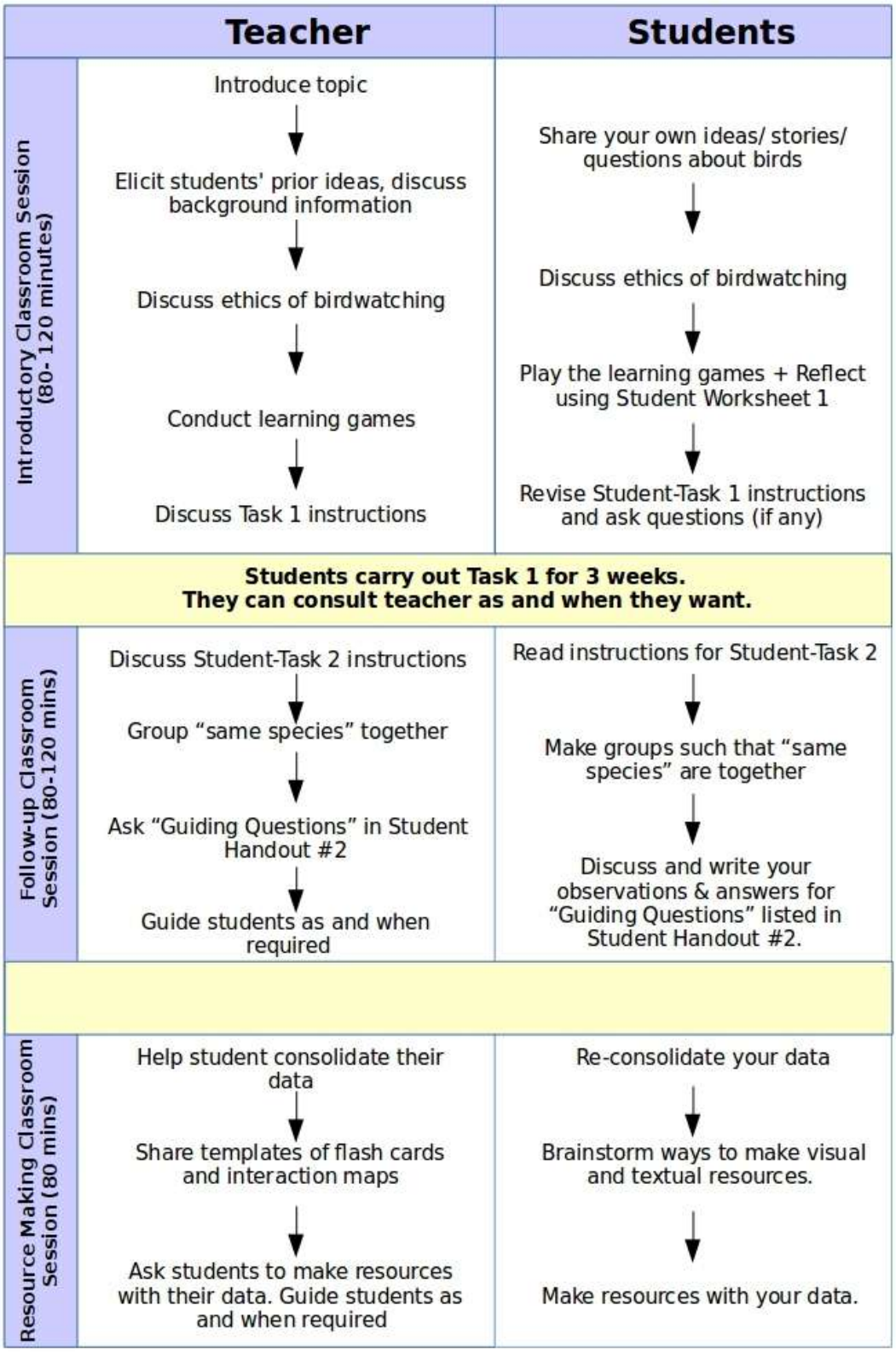
Prerequisite Science Concepts for Teacher Mentor

- A general understanding of bird anatomy
- A basic knowledge and understanding of different bird behaviours, and their role in the ecosystem would be an added advantage.

Time Required

A minimum of 3 indoor sessions over a month is recommended, each session being around 80-120 minutes. Students are expected to make observations *everyday* of the month. Outdoor component is variable. The activity can be extended over several weeks, months and a year, which will give opportunity to observe birds over different seasons.

Outline


Teacher
Students
Introductory Classroom Session (80- 120 minutes)
Introduce topic
Elicit students' prior ideas, discuss background information
Discuss ethics of birdwatching
Conduct learning games
Discuss Task 1 instructions
Share your own ideas/ stories/ questions about birds
Discuss ethics of birdwatching
Play the learning games + Reflect using Student Worksheet 1
Revise Student-Task 1 instructions and ask questions (if any)
Students carry out Task 1 for 3 weeks.
They can consult teacher as and when they want.
Follow-up Classroom Session (80-120 mins)
Discuss Student-Task 2 instructions
Group "same species" together
Ask "Guiding Questions" in Student Handout #2
Guide students as and when required
Read instructions for Student-Task 2
Make groups such that "same species" are together
Discuss and write your observations & answers for "Guiding Questions" listed in Student Handout #2.
Resource Making Classroom Session (80 mins)
Help student consolidate their data
Share templates of flash cards and interaction maps
Ask students to make resources with their data. Guide students as and when required
Re-consolidate your data
Brainstorm ways to make visual and textual resources.
Make resources with your data.

Outline of Activities

I. Introductory Session (80-120 minutes)

The teacher initially can draw out some responses from students regarding their prior knowledge on birds by asking some questions like: *What birds do you see commonly in school/home? Which is your favourite bird? Why so? Are there stories you have heard about birds? What is funniest thing you have seen a bird do? Describe the most colourful bird you have seen.*

The teacher can ask students to write down their responses in their notebook, which she can later refer to. The teacher can then share some interesting facts about birds to get them more interested and excited about the activity. Some of these points can be:

- There are roughly 9,000-10,000 species of birds in the world, of which around 1200 species can be found in India.
- Of these 1200, around 60 are endemic, means only found in India.
- Two of the most recently discovered birds of India are the Himalayan Forest Thrush (in 2016) and Bugun Liocichla (2006), both discovered in Arunachal Pradesh.

The teacher can also use some information given in the Background section for introducing birds. The teacher can make presentations, share videos or pictures etc. This will be followed by Basics and Ethics of Bird Watching with students [*Student Handout #1*] . Discussing these are absolutely essential and central to the activity.

Some fun learning games to prime students' observation skills

1. Choose a picture of some bird (e.g. Red Whiskered Bulbul), project it for students to see and get them to identify all the body parts using *Student Handout #1* as a key.
2. Silhouette Game: Collect some bird silhouette pictures and project them OR make flash cards. Ask students to guess what the bird might be and ask them to justify their answers. Use *Teacher Resource #1.*
3. Picture Card Game: Make picture cards of these 4 birds: House crow, Black Drongo, Indian Robin (Male), Asian Koel (Male). Use *Teacher Resource #2*. Divide the class into groups and give one picture card to each group. Ask them to describe the physical features of the bird in detail. Each group must write 5 features that help identify the bird. The 4 images may be pasted on a large sheet and displayed to the class. The teacher may read out observations of each group while the rest of the class guesses which bird she might be talking about. If you want to add more birds to this game, include Ashy Drongo, Indian Blackbird.
4. Teachers shows different behaviour clips of birds. These can be downloaded from the internet. Ask students to guess the behaviour using “Knowing terminology related to bird behaviour” in *Student Handout #1* as a key.

Students can be asked to reflect on what they have learnt by writing their responses on *Student Worksheet.*

Discuss instructions for Task 1, as listed in Student Handout #2.

Once instructions for Task 1 are discussed, take the students outdoors and let them decide which bird they want to observe OR assign one species to each student/ group. Remind students that they will have to observe the bird over several weeks, so for beginners, it's best to choose a commonly sighted birds like House Crow, House Myna, House sparrow, Blue rock pigeon, Black Kite, etc.

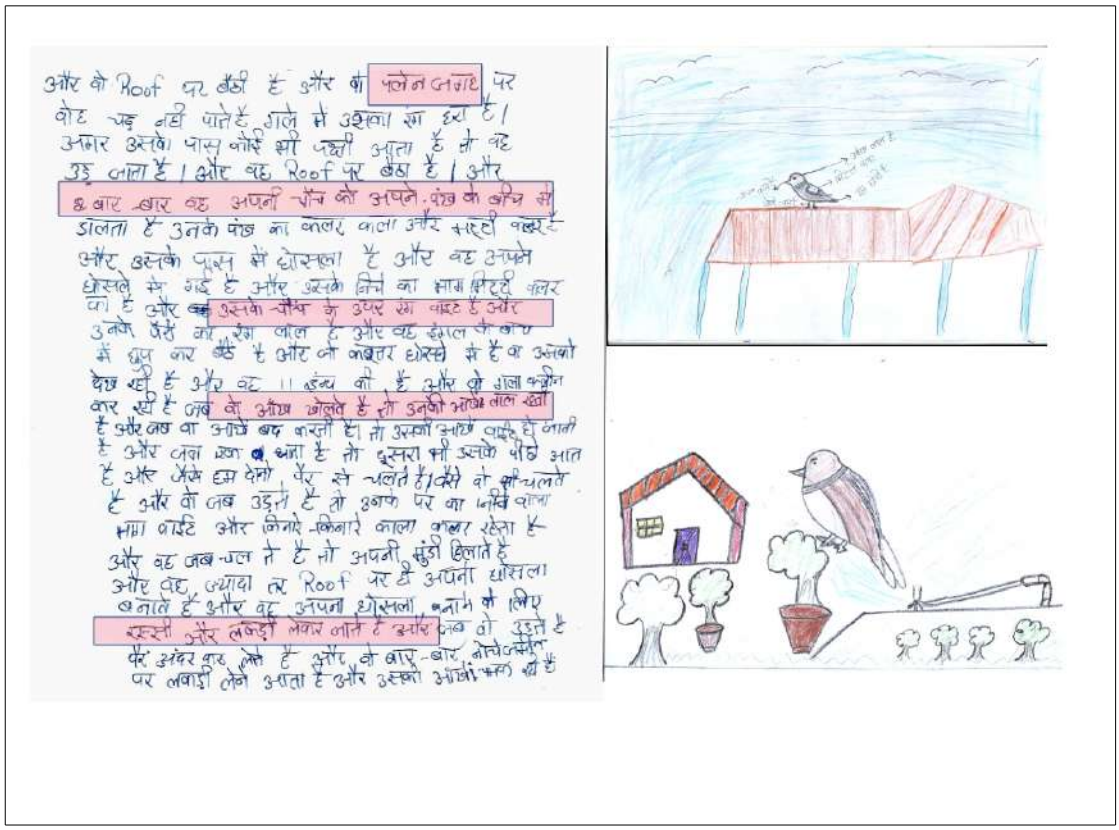


Image 1: Snapshot of grade 8 students' field notes

What to expect from students?

Encourage students to write rich descriptions of their observations and make detailed drawings. Below is a glimpse of what teachers can expect from students.

In general, observations will include the parameters and aspects mentioned in *Student Handout #3.*

Tips: Students are likely to find it difficult to go about the observation task as they would not know what exactly to observe. Ask students to refer to the "Observation guidelines" [Student Handout #3]. If they don't know what to observe, they can start to answer the questions listed in the observation guidelines sheet. Since the activity will introduce students to a variety of common bird behaviors, it will be helpful to familiarize them with some new terms using *Student Handout #1 (Figure 1).*

II. Follow-up Session, to be Conducted after 3 Weeks (80 to 120 minutes)

Discuss instructions for Task 2, as listed in Student Handout #2.

Once instructions for Task 2 are discussed, the teacher groups all the "same species" together. For example, all the groups who observed "House Crow" will now sit together and discuss their observations. They will try to identify similarities and dissimilarities in their observations. Teacher can guide them to see if any patterns emerge or if any generalizations can be made.

For example: *What is the diet of the bird? Or what was the bird feeding on?*

Some questions that the teacher can use to guide the group work are given in "Guiding questions for Task 2 [Student Handout #2]. Students will continue to make observations the following week as well. They can try to seek answers to questions that were discussed in this session.

Image 2: Group work during follow-up session 2
(Adapted from: Pixabay CC0 Creative Commons)

III. Resource Making Session, after 1-2 weeks (80 minutes)

Discuss instructions for Task 3, as listed in Student Handout #2.

Once instructions for Task 3 are discussed, students will once again consolidate their data like in the previous session. Students can now work in groups to make interaction maps or flash cards. The map is essentially a snapshot of all of the bird's interactions with its immediate surroundings. The map shows in brief all the interactions the pigeon has had with its immediate surroundings. Some of these components are living (can be marked in green) while some are non-living (can be marked in red). A flash card is essentially a card bearing words, numbers, or pictures that usually used as a learning aid. Templates of both are given in *Student Handout #2.* Students need not follow these templates exactly; they can use their imagination to make any sort of map to visualize the data they have collected over the last few weeks.

Important

1. The data in the resource (poster/flash card/map) should be a reflection of what students observed over the last 2-3 weeks or more. It should *not be copied* from books or the internet.
2. Encourage students to use the new terms they have been introduced to in *Student Handout #1.* (For e.g.: See *italicized words* in the interaction map in *Students Handout #2*)
3. If you/students think that data is not enough to make a resource, then continue observations for a few more weeks.
4. Note that *Student Handout #2* contains the summary of the student tasks instructions which teachers *may* hand out to students if needed.
5. Target learning trajectory: If your students have observed the bird below *(Image 3),* then try to get your students to move from level of descriptions mentioned in point 1 to description mentioned in point 5.

1. I saw a small black bird today.
2. I saw a small black bird today. It was as small as the palm of my hand.
3. I saw a black bird today. It was as small as the palm of my hand. *Its eye was black. It had a long tail.*
4. I saw a black bird, which had a *brown vent.* It was as small as the palm of my hand. Its eye was black. It had a long tail, *white legs and grey beak.*
5. I saw a black bird with a brown vent. Its height was as much as the palm of my hand, so that's *around 10cm*. Its eye was black. It had a long tail, *which it keeps up,* white legs and greyish beak. Its call was *high-pitched.*

Image 3: Describing an Indian Robin (Male): Example of a target learning trajectory:
Source: Challiyan of the Malayalam Wikipedia project/ Creative Commons

Advantages of This Activity

- The activity does not require students to have any specific pre-requisite domain or content knowledge. In fact, the activity can probably draw upon students' own experiences with birds.
- Even the teacher need not have in-depth content knowledge about birds (like bird-taxonomy, classifications etc) for this activity.
- The activity caters to multiple modes of expression: students will make written records, drawings, orally communicate with each other between and across groups.
- The activity will not use expensive equipment, only eyes and ears, pen and paper.
- This will be an outdoor learning experience which will involve teaching students to explore and discover their surroundings.
- This initial activity provides opportunities for many follow-up or sequel activities.

Limitations

- Identifications and classification is outside the scope of this study. Adding classification might make this activity more complex.
- Observations will be limited given that no equipment (binoculars, scope) is being used. However, providing such equipment is an option that schools may consider.

Significance of This “Local Context” Activity When Done Across India

- Diets/micro-habitats of common birds may show vast difference across India.
- Nesting materials of the same species can differ across various regions (rural/urban).

- Presence (common, uncommon, rare) of a species will vary across regions. For example: A bird that is rare in one region may be common in another region.
- Behavior variation across regions may be documented. For example, students can report song variation among the same species across India.
- Students can discuss and compare their observations with students from other parts (schools, regions) of the country using the Vigyan Pratibha Student Discussion platform.

Extension activities

If your students are keen on taking up this activity further, then you can suggest to them the following extended learning activities.

i. Students can be taught how to use and refer Field Guides, which can help them identify more birds in the area.
ii. Students can create a repository or database of birds of the surrounding area, by documenting them on flash cards or posters.
iii. Students can follow the same bird for an entire year and make notes on seasonal variation in behaviour and anatomy (for example, peacocks shed their long tails in the winter).
iv. Students can document cultural history and stories on birds, by interviewing elders in their neighbourhood. This could also serve as the starting point to a preliminary ethno-ornithology study or on the relationship between humans and birds.
v. Students may be encouraged to upload their observations and photographs on social media with appropriate hashtags (#).

Frequently Asked Questions (FAQs) for Teachers

1. What if the student asks me the name of a bird I don't know.

It is alright to *not* know the name of the bird. Gently talk to the student about how India is home to more than 1000 species of birds, and it may be difficult to keep tab of all their names. However, if you know the name of the bird (in regional/local language or other language), you can inform the student the same. Alternatively, you can tell the student that we can find out the name of the bird together. Ask him/her to describe the bird in detail (giving indication about size, shape, colour, beak). Point them towards books that may help them identify the bird (See Field Guides listed after this section). They should observe the behavior of this bird and describe it in detail, and then can go look it up later in books, should the need arise. You can also approach a local expert or get in touch with the HBCSE team if you have any queries.

2. What if students say that they are unable to observe details, because the bird is too far?

Tell them that even in the olden times, when binoculars and telescopes were not available, people made observations with their naked eye by learning where and how to find and watch birds. This is one way to train your eyes to become keen observation tools. Encourage your students to pick common birds that are easy to observe, but if a student takes up the challenge of a far away bird or an uncommon bird, encourage them to observe whatever they can. They may have to extend their observation time to get information about it. Even a few details are important ones.

3. I still don't understand what is it that students learn by watching birds?

One of the main reasons to get students to watch birds is to develop their skills of observation. Observational skill in this context would mean the ability to be perceptive about details of a complex natural environment. The skill of being a keen observer, to write scientific descriptions, meticulous data recording and maintenance, being perceptive to minute changes are all skills that is integral to any scientific process. So this activity is

directed more at understanding the process of science. And as mentioned earlier, it is also an attempt to re-establish our fading connection to nature.

4. Is there some way I can "teach" them to observe carefully?

Observation skills develop over time and with practice. You can try out some simple learning games, listed in session 1 prior to Task 1 (page no 49). Alternatively, you can ask all students to observe the same bird from their classroom window, for 5 minutes quietly. Use *Student Worksheet*. Then pool in your observations (behavioral traits of the bird) and write them on the blackboard. Use Student Handout #3 (observation guidelines) to direct their attention to some aspects of the bird. You can extend this exercise to the school grounds as well. So students will get an idea of how to go about the task. Also see question 8.

5. What if students are not making beautiful drawings?

Many scientists start off with hurriedly scribbling notes and keep a rough field diary of sketches, even birds drawn as stick figures! The important thing here is not the beauty of the drawing, but the message it conveys. Highlight to your students that the drawings are to help convey a message, and that the students need to convey their impressions of what they see. For this purpose, any drawing is beautiful! Also let them know that "more beautiful" drawings does not necessarily mean more marks/points.

6. What if students have some questions or doubts on a bird's behaviour, which I am unable to explain?

You can convert this into a learning opportunity. Answering "why" questions would need students to go beyond observation. They may have to seek answers from multiple sources. During the course of this activity, it is best for students to refrain from using internet, as they risk their observations getting diluted. However, after the observation tasks, if students are keen on finding answers to the questions they have, you can direct them to books and other sources, including internet. But do caution students about verifying their sources before referring to them. In the meantime, you too can look up information from various reliable sources, and guide students accordingly. Alternatively, the school can set up an informal "Ask an Expert" platform where students' questions are regularly sent to practitioners and experts in the concerned area, who are willing to attend to these queries. You are also welcome to get in touch with the HBCSE team in case you have such queries.

7. Can you suggest some ways to get children excited about birds and bird watching?

You can perhaps look up some relevant pictures on the internet and show them a slide show on some interesting bird species across the world and in India. You can show them pictures of India's most colourful birds or make them listen to India's most vocal birds and their songs. Alternatively, choose case studies (like that of the Vulture or House Sparrows) and narrate stories about some endangered birds and conservation efforts. There are also several games one can make around birds like Bird Bingo, quiz, puzzles etc., which can fuel some initial excitement among students to work on birds. Refer the listed web resources.

8. What if my students want to take photographs of the birds they observe?

This is fine, but make it clear that it's *not* mandatory for students to take photographs. Not all students may have the equipment to take photographs, and by making photographs mandatory, some students may be at a disadvantage. Also remind students that they should not get carried away clicking photographs; the focus should remain on the task given to them. Additionally, publicly acknowledge, applaud, encourage and give positive reinforcements to students who use basic tools to do their task. Students should *not* feel that they need expensive equipment to carry out this activity.

9. Is there some way I can informally check if my students' observation skills have improved?

A preliminary way to check this could be by asking students to repeat the trial task (mentioned in question 4 of the FAQ section), after 3-4 weeks. Ask all students to observe the same bird from their classroom window, for 5 minutes quietly. Compare their original notes and current notes and see if they are able to provide richer descriptions of birds now.

Field Guides for Bird Watching

A field guide is a book designed to help the reader identify plants, birds, animals and other objects of natural occurrence (e.g. rocks or minerals), especially when they are outdoors or "on field".

- Ali, S. (2002). *The book of Indian birds* (13th Edition). Mumbai: BNHS.
- Ali, S., Ripley, S. D. (2001). Handbook of the birds of India and Pakistan, together with those of Bangladesh, Nepal, Bhutan and Sri Lanka. 10 vols. New Delhi: Oxford University Press.
- Grimmett, R., Inskipp, C., & Inskipp, T. (2011). *Birds of the Indian subcontinent* (2nd Edition). London: Oxford University Press & Christopher Helm.
- Kazmierczak, K., and Ber van Perlo (Illustrator) (2000). A field guide to the birds of the Indian subcontinent. (1st Edition). London: Pica Press/Christopher Helm.

Web Resources for Teachers

The following links are useful resources for teacher to use in the indoor sessions. It also has background information about the topic.

- *Bird Count India: A presentation on "An Introduction to Birds and Birdwatching", includes a guide to common Indian birds, etc. : https://birdcount.in/event/gbbc2017/4/*
- *General Bird watching information in India:* http://www.birding.in/bird_watching.htm
- *Pictures of Indian Birds:* http://www.indiabirds.com/
- Early Bird is an initiative by Nature Conservation Foundation aimed at getting youngsters excited about Indian birds and to develop and distribute educational materials on the same- http://www.early-bird.in/
- *Indian Citizen Science Project:* http://www.migrantwatch.in/citizen_science_projects.php
- *eBird India portal is designed for Indian birdwatchers: h*ttp://ebird.org/content/india/about/
- *Indian Birds is a publication for bird watchers:* http://www.indianbirds.in/about-us/
- *Bird Count India: Supporting listing & monitoring of birds across India:* https://birdcount.in/
- *BirdSleuth is the K-12 education programme of the Cornell Lab of Ornithology:* http://www.birdsleuth.org/
- Eco Watch section of Teacher Plus Magazine: http://www.teacherplus.org/
- Vigyan Pratibha Student Discussion platform: https://vp.hbcse.tifr.res.in/forums/forum/students-forum/

Existing Activities Around Birds

Birdwatching is a well known activity done all over the world. A behavioral observation is an old tool of a scientist, or just a curious human being. Here are some already available bird watching related activities from the web.

- http://www.birds.cornell.edu/physics/lessons/elementary/pdfs/tm
- https://www.massaudubon.org/content/download/13465/209556/file/PreKTeachingUnit-

BIRDS.pdf

- http://sciencenetlinks.com/lessons/look-bird-watching-your-own-backyard/
- http://imnh.isu.edu/digitalatlas/teach/lsnplns/obvbrdlp.htm
- http://www.pbs.org/parents/catinthehat/activity_feeding_observing_birds.html
- https://lifestyle.howstuffworks.com/family/activities/outdoor/bird-watching-activities-for-kids.htm
- http://www.theteachersguide.com/birds.htm

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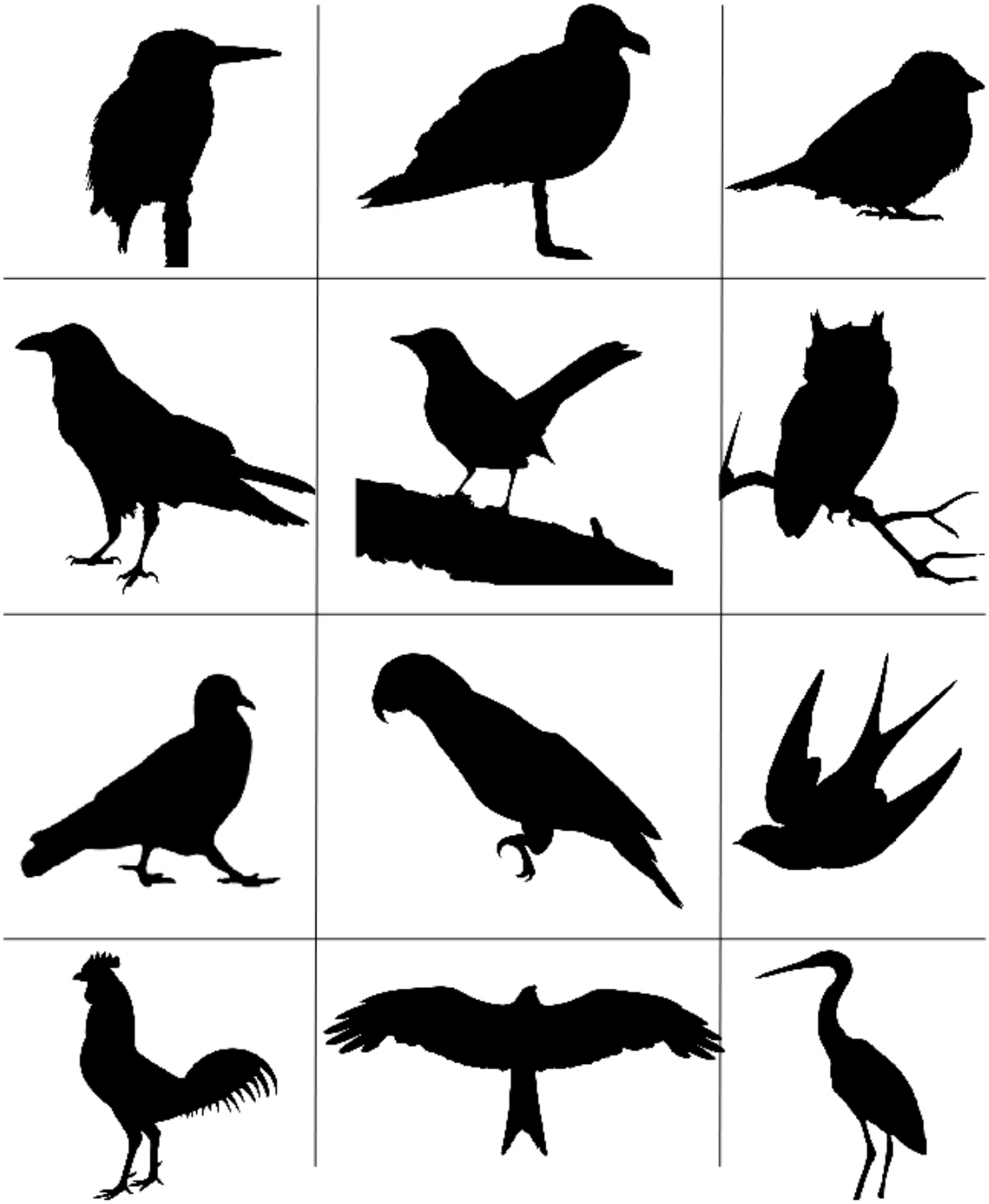
This learning unit on observing birds features in Teacher Plus magazine as a four part series (August 2018 onwards).

Printing Student Handouts: Note that ***Student Handouts #1, #2 and #3*** are two-pages each and thus can be printed back-to-back

Teacher Resource #1: Silhouette Game

Collect some bird silhouette pictures (below) and project them OR make flash cards. Ask students to guess what the bird might be, ask them to spell out reasons for their answers.



Answers (Top row onwards, left to right): Kingfisher, Gull (sea bird), Sparrow; Crow, Robin, Owl; Dove/Pigeon, Parakeet/Parrot, Swift/Swallow, Rooster/Cock, Kite/Raptor, Heron/Egret

Image Courtesy: Pixabay (Public Domain/ Creative Commons CCO); Sparrow image: Wikimedia Commons/derivative work of 4028mdk09 /Andreas Plank

Teacher Resource #2: Picture Card Game

Make picture cards of these 4 birds: House crow, Black Drongo, Indian Robin (Male), Asian Koel (Male). Divide the class into groups and give one picture card to each group. Ask them to describe the physical features of the bird in detail. Each group must write 5 features that help identify the bird. The 4 images may be pasted on a large sheet and displayed to the class. The teacher may read out observations of each group while the rest of the class guesses which bird she might be talking about. If you want add more birds to this game, then include Ashy Drongo, Indian Blackbird.

Bird names: (Top left, clockwise): House Crow, Indian Robin (Male), Black Drongo, Asian Koel (Male)

Image Courtesy: House Crow (Flickr/Lip Kee), Indian Robin (Wikimedia/ Challiyan), Black Drongo (Wikimedia/ rajuKasambe) and Asian Koel (Wikimedia/ Challiyan)

Student Handout #1

This learning unit requires you to keenly observe neighbourhood birds and document the observed species. Using the data you have collected, you will make resources like posters and interaction maps.

Introduction to the Bird Watching Activity

The scientific study of birds is called Ornithology. By learning to observe and study birds, you can learn basic life skills in observation and inference. Birds serve as indicators of environmental change, for example, health of seabirds informs us about fish populations. Birds can also teach us many things. They inspire many human inventions and innovations. For example, the design of the Japanese Shinkansen Bullet Train was inspired by the beak of a kingfisher bird. Birds also play a very important role in our ecosystem. They are help in pollination and seed dispersal, control crop pests, are predators to disease spreading animals like rats, and can also be scavengers.

A behavioral observation is an old tool of a scientist, or a curious human being. Animals and birds may reveal its secrets to those who are willing to observe patiently and keenly. By observing common birds, you may discover something interesting and learn something new. So let's do some bird watching!

Basics and Ethics of Bird Watching

- Keep your distance from the bird when you observe them.
- Never approach a bird so closely as to disturb it or make it fly away.
- Do not harm the natural surroundings just to observe the bird better. For e.g. stamping over plants, breaking twigs/branches to get an unobstructed view of the bird.
- Stay on existing paths, footpath, or trails and do not trample the field, crops, or fragile habitat.
- Do not encroach (trespass) into private property while bird watching. Always obtain permission from the land-owner before entering private lands.
- Do not be noisy.
- Do not feed the birds or play the calls of birds to bring them closer to you. Do not approach any nesting area/nest. Never handle eggs. Observe from a distance.
- Be extra careful about observing birds during the breeding season.
- If you think the bird is disturbed by your presence and it keeps flying away, then do not follow it.
- Moving around doesn’t necessarily mean you will see more birds. If you stand/sit in one place quietly and patiently, staying absolutely still, you can see many birds.
- If possible, wear dull coloured clothes while bird watching. Avoid strong smelling powders, creams, perfumes, lotions, etc.
- If you intend to click photographs of birds, then ensure you do not use flash especially if you are near nesting area/sites.

Remember, bird watchers must always act in ways that do not endanger the birds and its surroundings.

Knowing Terms Related to Bird Behaviour

Here are some of the behaviours that you may observe:

- Feeding: eating food or drinking water
- Flocking: birds grouping together, either during flying or while looking for food
- Flying: the act of staying in the air, by flapping wings or soaring
- Foraging: the act of looking around for food
- Mating: the action of birds coming together to breed
- Nesting: the act of building a nest, which is a structure to hold the eggs and chicks.
- Preening/Bathing: the act of cleaning oneself or another
- Roosting: a behaviour where birds settle in groups (or alone), at a particular area to rest/sleep.
- Singing or Calling: communication between birds
- Territorial display: the act of protecting a tree branch, nesting site or an area on the ground. This could also involve attacking/fighting another bird or animal.
- Walking/Hopping/wading/swimming: movement along the ground/water

Parts of a Bird: Learn Some New Terminology

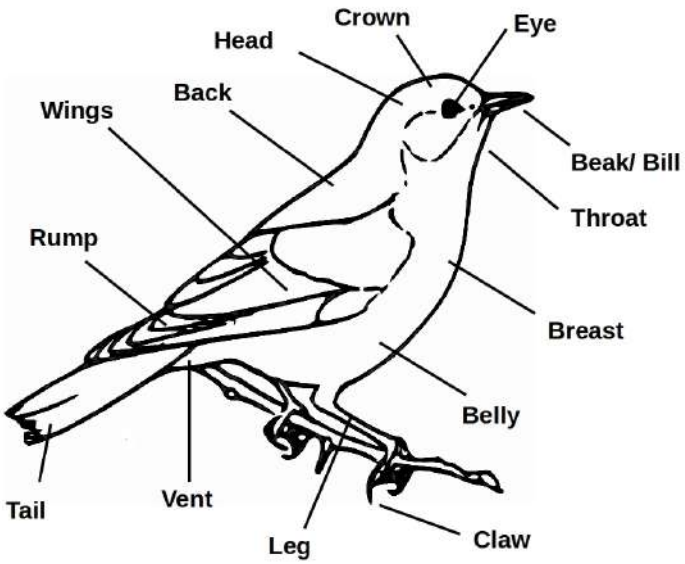


Figure 1: Parts of a bird

Adapted from: Pixabay (CC0 Creative Commons)

When you want to describe the bird, use the terms mentioned above for better description. For e.g.: The *bird's throat* was black in colour. It had a yellow *belly* and red *vent.*

Student Handout #2

Task 1: What to Do?

(Time: 10 minutes each, during the morning, noon & evening, for 3 weeks, individual activity)

- Carefully go through the “Basics and ethics of bird watching” [Student Handout #1]
- Choose a safe place in school/ near your home, where you feel there is bird activity.
- For 10 minutes during the morning, 10 minutes in the noon and 10 minutes in the evening, spend your time observing one species of bird, from your “observation point”.
- Write the following header information in your book: day, date, time, weather, location and for how long did you carry out your observation.
- Observe the birds patiently and quietly. Write down everything the bird does.
- Use the “Observation guidelines” [Student Handout #3] to make your notes.
- Refer Student Handout #1 titled “Knowing terminologies related to bird behaviour” and “Parts of a bird”. Try to use the terms introduced in your descriptions and drawings.
- Draw the bird, as you see it and label it. You can colour it if you want. It is alright if your drawing is not beautiful. Focus on drawing what you see.

Tip: You are free to write the descriptions in your own words, language and can use drawings, illustrations, flowcharts etc., to enrich your descriptions. Let us say, you are observing a House crow, and after few minutes, it flies away. Make a note of it and then continue observing another crow. You are welcome to observe the birds for more than 10 minutes also. Write what you find interesting about the bird or its behaviour.

Task 2: What to Do With Your Collected Data?

(Time: 80-120 minutes, to be done 3 weeks after Task 1, group work, along with the teacher)

1. Form groups with your friends who observed the same species. Discuss your observations.
2. Use “Guiding questions for task 2” listed in this handout to compile your findings. For e.g., for each question listed in the “guiding questions”, list responses from all observers.
3. Try to identify similarities and dissimilarities in your observations, for each question.
4. Look out for places where you would need to make more precise observations. For example, is the House crow only black colour? Or is it a combination of grey and black?

Tip: If you think you have less data/notes, then continue your observations for another one or two weeks. Then repeat task 2 with your friends.

Task 3: Documentation

(Time: 80 minutes, to be done 1-2 weeks after task 2, group work, along with the teacher)

1. Document the data you have collected by making a poster or flash card. You can also make digital resources (using computer). You can create a database of birds of the surrounding area.
2. Additionally, based on your data, make an interaction map which shows the bird's interactions with its immediate surroundings.
3. If you have observed any peculiar or interesting behaviour of a bird, then write a short report on it, giving exact details.

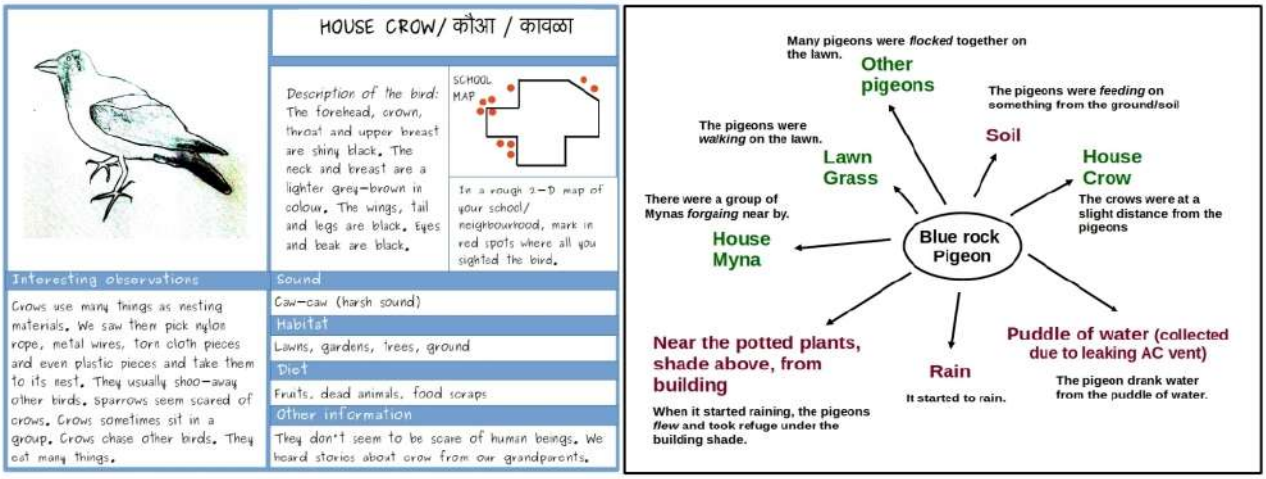


Figure 2: Templates: Example of a possible flash card (left) and an interaction map of a blue rock pigeon (right)

Important

- The data in the resource should be a reflection of what you observed over 3 weeks or more. It should not be copied from books or the internet.
- Try to use the new terms that have been introduced in Student handout #1 (For e.g.: See italicized words in the above interaction map)
- If you think that data is not enough, continue the observation for a few more weeks.

Guiding questions for Task 2

1. Where did you usually sight the bird (grass, shrub, ground, trees)?
2. Which time of the day did you most often sight the bird? When is it most active?
3. What kind of perch (higher branch, lower branch, ground) does the bird prefer?
4. Did the bird stay in the same spot for long or did it keep changing its location?
5. What was the diet of the bird?
6. Is the bird social (moves in a group), or usually seen alone?
7. Were the birds always sighted in pairs (male/female or male/male or female/female)?
8. Does the bird prefer to be near birds of its own kind (same species)?
9. Does the bird prefer to be near birds of different species ?
10. Is the bird very vocal (makes a lot of calls/noise) or quiet?
11. What are the biotic components (other members of the same species, other species of birds, other animals) that the bird interacted with.
12. What are the abiotic components (water body, soil) that the bird interacted with?
13. Did you see any nesting sites? How many of the birds were nesting?
14. Does the silhouette of the bird always appear the same?
15. What are the life forms (birds/animals/reptiles) that the bird seems to fear?
16. What are the life forms (birds/animals/reptiles) that the bird does not seem to fear?
17. Do the birds fly away if human beings are close by?
18. What was the most interesting observation you noted?
19. What behaviour (foraging, preening) was most often seen, when observing the bird?
20. Did you see any roosting sites? How many of the birds were roosting?

Student Handout #3

Observation Guidelines

Write down “who, what, when and where” about the bird you observed.

What were the birds doing?	
Was the bird looking for food (foraging)? If so, where?	Was the bird perched, flying or sitting? Was the bird swimming?
Did you observe birds nesting? *Caution: Never approach a nesting site. Observe from a distance.*	Did the bird walk or hop? Do you think the bird could walk/hop backwards? Did the bird sit?
Were there any chicks (did you hear them) present?	Was the bird staring at one place for a long time? If so, where?
How was the behaviour of the bird around the nest? Were the male and female both present?	Was the bird cleaning itself (preening) or bathing?
Did the bird seem restless, nervous, calling loudly? If yes, why?	Did the bird take a dip or dive in water? How long did it stay under water?
Did you see the bird picking up things (twigs, cloth, plastic, wires, grains, worms, stones)?	Did the bird feed on anything? If so, what was it feeding on ?
Do you think the bird was collecting nesting material? If so, what materials?	Did the birds show any signs of “territorial displays”?
Did the bird drink water? If yes, from where?	Was the bird resting in one place?
Did the bird ruffle its feathers?	Did the bird stand on one leg?
Any peculiar behaviour of the bird observed?	Was the bird continuously in one place?
Did you see the birds mating? (breeding)	Was the bird sleeping?
Did you see the bird urinate/ excrete waste? Do they do this often?	Did you see the bird fighting? If yes, with whom?
How do the birds look?	
Describe how the bird looks. Try and draw how the bird looks.	How many toes did the feet of the bird have? Draw the arrangement of the bird's toes.
What is the size of the bird?	What's the most prominent feature of the bird?
Do you think it is bigger/smaller than your palm?	What is the colour of the bird? Which parts were which colour?
Can you guess the height/weight of the bird?	What colour was the eye of the bird?
Did the bird try to camouflage itself with its surroundings? If yes, how?	Do all the members of the same species look same? If no, how are they different?
Describe and draw the shape of the bird's beak. What do you think might be its food?	Could you tell apart the male and female of the same species? How?
Draw the feet of the bird. What is the shape and colour of the feet?	Did either member (male or female) of the species look more colourful than the other?
Who was the bird with?	**How did the birds sound?**
Was the bird alone or was it seen in group? Give group numbers/sizes.	Was the bird singing or calling? If yes, describe how it sounded.
Did the bird tend to move in groups (flocking)?	Was the bird continuously making calls?
Was the bird always seen in pairs (male and female)?	Assign a mnemonic to the bird's call. (What would it sound like if you wrote it out in English?). (*Che-che-che, caw-caw, houp-houp*)
Did the group comprise of the same species or different species?	How was the tone of the bird- melodious, sweet, harsh, loud, screechy?
Did the bird interact with or get chased by any other animals (e.g. insect, dog, reptile)?	Did the bird sing when perching or when flying, or both?
Were there other animals or birds near the bird's nest (if observed)?	Did you find instances where you thought two birds were communicating with each other?

Where are the birds seen?	**When did you see the birds?**
Describe or draw the immediate surroundings of the bird.	Mention day, date, time, location, and duration of observation.
Was the bird easy to see or did it stay hidden?	Are they commonly seen during the day/night?
How long did it take you to find the bird again?	Are they commonly seen throughout the day?
How long did you watch the bird for? Also mention if you observed the same specimen for the entire duration of the observation.	Describe the weather. Was it cloudy/ sunny/ warm/ hot/ dry/ humid/ shade/ cold/ windy? Any idea about the temperature?
Where was the bird sighted: tree, ground, grass, shrub, water body, etc.?	Are they more easily seen during morning, afternoon, or evening?
What other signs (evidence) of birds did you see?	
Did you find any discarded feather? Draw and colour the feather you found.	Did you see bird droppings? (body waste)? Describe it.
Can you guess which body part the feather came from?	If so, what was the colour and texture of the bird's droppings?
Did you see any bird footprints? If yes, can you guess if this was a land or water bird?	Did you see a nest? If yes, what was the location of the nest?
Can you spot any other signs that indicated that a bird was there?	Did you see any dead specimen of a bird? If so, how do you think it died?
At the end of the day, what does the bird do?	
Did you find your bird roosting?	Does it roost alone or in a group?
Does it always roost in the same place/tree? If yes, which one?	If in a group, are other birds the same species or a different ones?
Describe their roosting behaviour.	Do they make a lot of noise or are they quiet?
Is the roosting site and nesting site same for the bird?	Does the bird come to the roosting spot at the same time every day or at different times of the day?

Note: Feel free to address any other aspects of birds as well. Direct your attention *not only* to the bird *but also* its immediate environment. The above questions are just meant to serve as pointers to initiate your bird observations.

Field Guides

- Ali, S. (2002). *The book of Indian birds*. Mumbai: BNHS; Grimmett, R., Inskipp, C., & Inskipp, T. (2011). *Birds of the Indian subcontinent*. London: OUP & Christopher Helm.
- Kazmierczak, K., & Ber van Perlo (2000). A field guide to the birds of the Indian subcontinent. UK: Pica Press/Christopher Helm.
- Grimmett, R., Inskipp, C., & Inskipp, T. (2011). *Birds of the Indian subcontinent* (2nd Edition). London: Oxford University Press & Christopher Helm.
- Robson, C. (2009). Field Guide To The Birds Of South-East Asia. Bloomsbury.

Student Worksheet

- What did you learn from the Silhouette Game?

- What did you learn from the Picture Card Game?

Trail Task: Choose a bird that can be easily seen from your class window/school. Observe the bird for 5 minutes and write down your observations here. Try to use the new terms you have learnt in the games and those listed out in *Student Handout #1.*