

Indicator Species & Climate Change (Birds) by Aditi Patoliya

Summary:

Birds are a crucial part of the climate system because they play many essential roles that show humans much about the current climate/ecosystem. Birds have many different kinds of adaptations; some are pollinators or even fruit-eaters. Pollinators and fruit-eating birds can show humans that the more plants there are, the more pollinating and fruit-eating birds exist as well. Birds can also be considered a keystone species as their presence affects the ecosystem diversity. Migration is one of the most significant signs of climate change since humans can interpret the climate in different areas based on the migration of a specific bird. For example, if birds change their route of migration, then humans can conclude that their usual route is probably different in a negative way. The egg-laying pattern of birds can also inform humans about climate change since early egg-laying indicates that the temperature indirectly affects the bird's lifestyles. When the temperature rises, the birds have to adapt to that new climate, and sometimes their body is unable to adapt so their time of egg laying is disturbed. Additionally, one of the most noticeable signs that show humans about environmental changes is the population of birds. If a particular bird species has a decrease in population, it could mean that the weather is unsuitable for the birds or that there is an increase in predators. Overall, birds can be considered as an alarm for climate change since the changes in their lifestyles convey many different ideas.

Definitions of key terms:

Indicator Species (Birds): An indicator species is one whose status provides information on the overall condition of the ecosystem and of other species in that ecosystem.

Ecosystem Services: Direct or indirect contributions that organisms make to an ecosystem.

Pollinators: Nectar-feeding birds that move pollen from flower to flower to help fertilize the seeds that eventually become new plants.

Keystone species: Species that indirectly affect other species through their presence or disappearance.

1-2 Case Studies

Case Study 1: A case study done by David Evers (Biodiversity Research Institute) showed that Mercury, a natural element, is a danger to wildlife because it spreads bacteria which can weaken birds' immunity to fight back against the new changes. In the study, it stated, "The major drawback of mercury, however, is that it becomes very toxic in the environment when converted by bacteria to an organic form called methylmercury". Additionally, the study mentioned that the population of birds can inform humans about the effects of Mercury and better define preservation policies. An example of a bird prevention policy is *The Migratory Bird Protection Act of 2020*, which was passed to prevent bird deaths during migrating seasons. To conclude, this case study shows how the lifestyle of birds can help humans understand the climate and ecosystem changes around the world.

Case Study 2: Another [study](#) done by Nikita Manglani, Chirag Shah, and Nainesh Modi reveals that the bird's migration is impacted due to climate change in direct and indirect ways. The study showed that due to changes in the climate, birds have changed their routes to migrate and the time of the year they migrate. They have noticed that sometimes the population of birds decreases because the excess heat makes them fatigued, which causes them to use more energy. Even the reproduction and timing of breeding changes when the climate is hard for the birds to adapt. One of the recent climate changes that interfere with the birds' lifestyles is shifting weather. Ultimately, this is another example of birds indicating that the weather is harmful to the biodiversity in an ecosystem, and in general, it shows that the atmosphere has major changes.

Significant People:

Molly Adams (she/they): She is the founder of the Feminist Bird Club, which was created in 2016. The Feminist Bird Club is a non-profit organization where people pursue their passion for birds while still being active in social justice all at once. Molly recently came out with a book called, "Birding for a Better World" which is basically a guide for bird-watching beginners. To check out more details about birding, visit Molly Adams' book about bird watching!

Phoebe Snetsinger: She is known for her amazing research on birds because she saw/recorded more birds than anyone else. In 1981, Phoebe's doctor had told her that she had incurable cancer, and so she decided to take one final trip to Alaska just to see birds. Her hopes were so high that she started to recover, and soon enough, her cancer returned, but she beat it once again. This happened a total of 5 times, and before her time was up, she had set a high record of viewing 85 percent of the species. Her dedication to her passion is truly an inspiration; she has set an example for everyone, and her journey gave the spotlight to all the birds and nature.

Action Steps:

Some steps people can take to learn more about the indicator bird species are:

- Join a bird-watching group!
 - Joining a bird-watching group will allow people to meet others who share similar interests and discuss/research indicator birds. This activity promotes more of a community feel because it shows society that there are other people who care just as much.
- Birdwatch alone!
 - Bird-watching can be an activity done alone, basically anywhere, because birds are present everywhere. Just searching for unique birds in different habitats can give humans a lot of different data. If people post something about their findings on social media, a lot of attention can be drawn, which can help people come together.
- A birding journal!
 - A birding journal can be a really easy yet effective way to keep track of bird species. Just noting down common birds that are seen in nature can also collect essential data over time. To learn more about bird journals, you can visit this [website](#)!
- Read any bird-related text!
 - There are so many books, poems, articles, and studies written about birds that teach humans so many unique facts about them. Just reading a small fraction of a book or study every week can help humans learn more about their lifestyles. You can visit this [website](#), which lists "The 25 Best Books about Birds". One of the most recent books about birding was written by Molly Adam; this [book](#) is a great start for beginners who have just gotten interested in birding!

Some physical steps you can take to help the migratory birds are:

- Make the windows obvious enough for the birds to see!
 - Oftentimes, the windows reflect the surrounding environment, such as trees and lakes, which makes the birds think that it is just another way. This causes them to crash into the windows and die. To learn more about how to make your windows more obvious, view this [website!](#)
- Turn the lights off!
 - Many birds migrate by following the stars at night, but since there are other sources of light at night, the birds get confused and lose their sight of the stars. So when they are attracted to a household light, they crash into a window or building. So, another easier way to help the migratory birds is to simply turn off the lights from dusk until dawn!

Resources:

<https://avianreport.com/birds-as-indicators-of-ecosystem-health/#:~:text=What%20is%20an%20indicator%20bird,as%20aspects%20of%20community%20com%20position.>

<https://studylib.net/doc/15335031/birds-as-indicators-of-the-world-around-us--case-study...>

https://www.researchgate.net/publication/368464776_Migration_of_Birds_in_the_Face_of_Climate_Change_A_Case_Study

<https://www.feministbirdclub.org/about>

<https://www.nytimes.com/1999/12/02/us/phoebe-snetsinger-68-dies-held-record-for-bird-sightings.html>

<https://www.audubon.org/climate/survivalbydegrees/county#:~:text=Rising%20temperatures%20and%20shifting%20weather,survive%20and%20raise%20their%20young.>

<https://www.congress.gov/bill/116th-congress/house-bill/5552/text>

https://media.audubon.org/decals_mike_fernandez.jpg?width=2400&height=1800&auto=webp&quality=90&fit=bounds&disable=upscale