



Institutional Best Practices

Best Practice 1

Title of the Practice

Samyojana

Objectives of the Practice

- Reading and understanding scientific research paper/article
- Presentation and discussion of research articles

The Context

This year being a pandemic year, the students did not get a chance to do in-house projects and hone their research skills, an important part of Biotechnology. Hence an online research paper reading workshop was organized where students get a chance to interact with each other and noted scientists.

The Practice

Online learning programme organised by the department in association with Dr. Anil Kumar Challa, University of Alabama, Birmingham, and Dr. Reddy's Life Sciences, Hyderabad for research paper reading and discussion

Evidence of Success

A few students like Hemant Gabhane, Nidhi Makwana and Srushti Chipde attended every session and are now confident and ready to mentor the Samyojana 2020-21 Session. This practice has helped introvert students to come out of their shells and communicate and help each other.

Problems Encountered and Resources Required

The online platform for Samyojana was provided by Dr. Anil Kumar Challa, University of Alabama, Birmingham and the research articles were obtained from platform called "Perusall". The Sessions were held every Saturday from 7:30 pm to 9:30 pm. Samyojana started with fifteen students but a few students dropped out due to lack of time and consistent efforts required in reading and presenting papers.

Best Practice 2

Title of the Practice

Stingless Bee Rescue, Rehabilitation, Rehoming and Rearing

Objective of the Practice

- To rescue the stingless bee colony from the log at saw mills in and around Nagpur.
- Boxing (wooden box/hollow trunk of bamboo) of rescued bee and safe relocation to a place with better foraging to research on optimum box designs
- Domestication of these bees, for the production of bee products viz. honey, pollen and propolis.
- To encourage farmers to adopt stingless bee boxes for crop pollination and bee products.

The Context

Deforestation, the indiscriminate use of pesticides, and climate change have led to the precipitous decline of stingless bee populations worldwide. The conservation of these bees is critically important not only for the survival of the species, but also for the ecosystems they support. Agriculture industry is affected a lot due to the reduction in number of pollinators. Stingless bees being one of the important native pollinators around the agricultural fields, their conservation is the prerequisite of the time. The stingless bees perform buzz pollination, which is beneficial for cross-pollination, setting larger and more abundant fruit in tomatoes, brinjals, guavas, etc. Encouraging stingless bees on farms by protecting and enhancing their habitat will result in free, sustainable pollination with superior yields.

The Practice

The practice of Conservation of Stingless bees involves rescuing the bees from the site of habitat destruction, providing them new place to live and further rehabilitate them to place with better foraging habitat.

The first step of the practice is to obtain a stingless bee colony. One option is to search for wild colonies in trees that are to be fallen for road development, remodelling purpose in the city or any other reason and the second option is to regularly visit saw mills in search of nest in log. Once the trees with stingless bee colony that are to be cut down or are already cut are identified, the first step is

completed. The next step is to extract the colony from the tree and ensure its successful transfer. The tree log is cut with extreme care so that no damage is done to the colony. The colony is then opened up. Firstly, the brood is transferred to the wooden box designed for rearing of stingless bees. Care is taken to keep the brood intact. After the brood is transferred, the log is checked for stored honey and pollen pots. The honey and pollen pots are extracted without breaking them and transferred to the box. For the present study the box is with Palas (*Butea monosperma*) wood to help maintain the temperature. The size and shape are such that it provides adequate space for the colony to grow further but we are still working for optimum box design.

The colony is checked for any predators, that might enter during the colony transfer. After the extraction process is completed, the box is sealed using a transparency sheet to check the growth of the colony. All opening except the entrance is sealed so that no other insects or animals can enter the box. The lid of the box is closed. The box is kept at the place of extraction till the sunsets and is shifted to college. During shifting the entrance is closed so that no bees come out. In the college, the entrance is opened and stingless bee colony is kept under observation for a week. Once the colony is stabilized, the boxes are distributed to farmers to place it in their farms for pollination services.

This practice has helped a Ph.D. scholar to take Stingless bee biology as a Ph.D. topic. Many graduates and post graduate students are trained in the biology, behavior and rearing of stingless bees. The students understand the diversity and need for the conservation of the bees

Evidence of Success

This initiative of Department of Zoology has led to the rescue of about 50 stingless bee colonies till date. Out of the 50 rescued colonies, about 78% of the colonies are working well. The rescued and established colonies are being reared at the Botanical Garden of Hislop College, Raj Bhavan, Nagpur, BNHS Centre, Bhisli, Chandrapur, Aura Park, Kathalbodi, Bazargaon, Nagpur, Grace Farms, Mahurzari, Nagpur and at farm of Mr. Yugesh Girepunje, Kulpa, Lanji, Madhya Pradesh.

This practice of rescue and conservation of the stingless bees has been presented at International conference- WILDCON-2020, where it was appreciated and won 2nd prize as well.

Problems Encountered and Resources Required

The major problem encountered was the pandemic as the students were not allowed to be on field and continue the rescue of the stingless bees. The rescue and

rehoming of the bees was hindered and slowed down as normal movement of the people is restricted.

Notes

The practice can also be adopted by other institutes and stakeholders in conservation and Beekeeping. The Department of Zoology, Hislop College, Nagpur is open to provide free training to the staff, students of such institute/stakeholders in searching for the stingless colonies, its extraction and rescue. We are also ready to provide optimum wooden boxes design for domestication of stingless beekeeping and provide local floral data suitable stingless bee.

Any other information

The department have also connected with the Gondi tribe, from Gondia district of Maharashtra and have trained them to obtain honey from the stingless bees from forest without cutting the trees. The tribals are also trained to rear these bees in boxes so that they do not need to move to forest in search of honey. The honey can be extracted from the reared bee boxes. These boxes are placed at their homes and farmlands for pollination purpose.



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