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Editor's note.....

Dear Readers!

We proudly present the e-newsletter for the session April 2022. This year we recently celebrated Earth Day on 22nd April 2022. EarthDay.org wants to draw everyone's attention to the return on investment (ROI) of "Investing in the Earth". A worldwide commitment to sustainability could revolutionize the global economy by investing in sustainable industrial development, green energy production and climate change. The last decade (2011-2020) was the warmest on record thus this year's Earth Day aims to drive positive action for our planet, diversify, educate and activate the environmental movement worldwide. Everyone can invest in the planet by removing and reducing the trash and litter, shifting reusable utensils and bags with you, composting your kitchen waste and switching to clean energy.

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Photo by: Masud Badi (Sp. Name: *Anas poecilorhyncha*)

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Cover photos by: Mukesh H. Koladiya (Sp. Name: *Cassia fistula*)

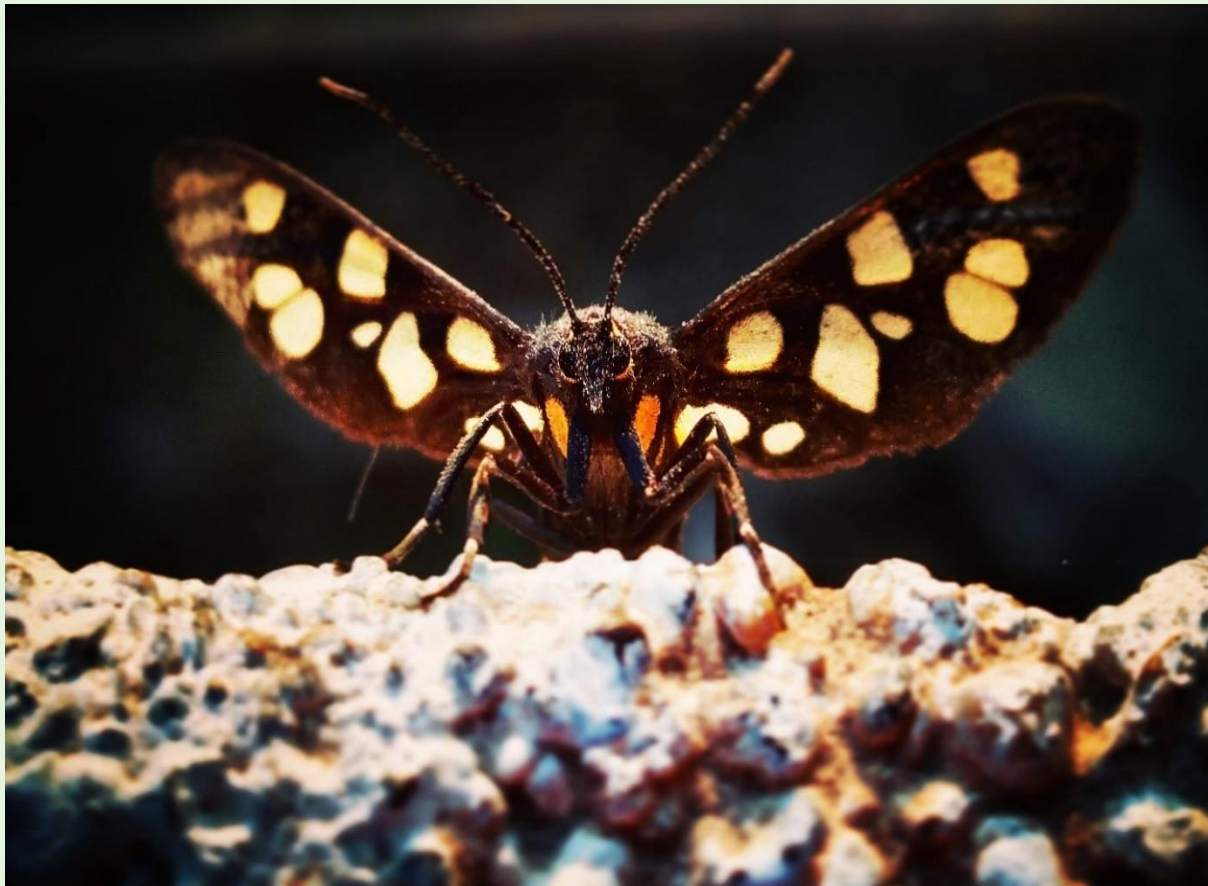


Photo by: Karan Thakkar (Sp. Name: *Amata passalis*)

1. Amazing Whale Calls

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Whales are the largest mammals that live in the oceans around the world. There are two types of whales: toothed and baleen. Toothed whales have teeth, which are used to hunt and eat squid, fish, and seals. The baleen whales are filter feeders for which they have baleen plates or baleen bones for consuming shoals of small fish or clouds of zooplankton and krill in the sea. Species such as blue whales, humpback whales, and grey whales are examples of baleen whales. Baleen whales are larger than toothed whales. The baleen plates are made of keratin, the very substance found in our hair, nails, and the outer layer of skin. The other whales, such as beluga or sperm whales, have teeth while the narwhal's have a "horn" a long tooth protruding through its lip. They are warm-blooded mammals who nurse their young and breathe air. A thick layer of fat called blubber insulates them from cold ocean waters. for the most part. Right whales and bowheads are skimmers or grazers and gather food by swimming slowly, open-mouthed through dense patches of it. Humpbacks, blue whales and fin whales are gulpers; their throats are expandable and enable them to take enormous mouthfuls of seawater and sieve out their prey. The grey whales are the most coastal baleen whales that live in shallow water and feed on benthic organisms by sifting the mouthfuls of mud on the seabed to collect the prey with their baleen plates. Rorquals are the biggest baleen whale are sleek, slender, streamlined whales, with pointed heads and flippers. They are lunge-feeders and have deep 'throat grooves' extending from the mouth to their belly button. Throat grooves are long folds in the skin which expand when they feed. As the whale gulps huge quantities of seawater, the throat bulges like a giant balloon.

Most baleen whales are migratory and tend to follow the same basic migratory pattern. Some, humpbacks and grey whales make very long, seasonal migrations. The baleen whales migrate to feed in cold water areas for as long as possible in the summer months and then swim to warm, calm water nursery areas. Whales roam throughout all of the world's oceans, communicating with complex and mysterious sounds. Whales, particularly humpbacks, produce otherworldly vocalizations that can be heard for miles underwater. The songs, complex combinations of moans, howls, and cries that can



continue for hours, are produced when whales push air around in their heads, and then amplify the sounds through a blob of fat that perches on the top jaw. It's thought that whales communicate through their calls, which researchers believe can be heard for thousands of miles. Baleen whales do not echolocate but they do make sounds to communicate with one another, display and attract mates, repel rivals and establish territories. Different baleen whales use a variety of sounds including singing, moans and short pulses. Whales also emit low-frequency sound waves. These sound waves can travel very far in water without losing energy. Researchers believe that some of these low-frequency sounds can travel more than 10,000 miles on some levels of the ocean.

Bioacoustics is the study of sounds produced by animals. To listen to animals underwater, scientists use an instrument called a hydrophone. Hydrophones are waterproof devices that produce electricity when subjected to changes in pressure. These electrical impulses are converted back to sound waves that we can hear by a computer. The sounds produced by large whales are often in a frequency range far lower than the human ear can be perceived. When you listen to some of the sounds below, they may have been sped up many times over so that your ears can perceive them. Bioacoustics is a major area of study for whale researchers. The humpback whale's song is probably the most complex in the animal kingdom. Researchers study their songs and use this information in many areas of marine research and technology. The humpback song, which is made up of repeated themes, can last for up to 30 minutes and some humpbacks sing for hours at a time. Some of these sound waves are high frequency. If you could see these sounds, they would look like tall, pointed mountains. These waves are like hills that are widespread apart. Only the males sing and all-male humpbacks in the same region sing the same song. The song itself changes over time, making it different from year to year. The songs generally occur during the breeding season, suggesting that they are related to breeding.

Hearing is a well-developed sense in all cetaceans, largely because of the sensitive reception of waterborne vibrations through bones in the head. The humpbacks also hear well. Sound is exceptionally important to marine mammals living in the ocean. Where the sound waves travel at a faster rate than in the air. The whale ear is a tiny opening that closes underwater. The bone structure of the middle and inner ears is modified from that of terrestrial (land-based) mammals to accommodate hearing underwater. The range of frequencies that whales use is from 30 Hertz (Hz) to about 8,000 Hz, (8 kHz). Humans can



only hear part of the whales' songs. We aren't able to hear the lowest of the whale frequencies. Humans hear low frequency sounds starting at about 100 Hz.

One of the leading researchers into humpback whale sounds, Katy Payne, has noted that whale songs sound very similar to the calls of elephants. also, studied elephant sounds and has found similarities between these two species. Scientists have framed whale songs as something similar to bird songs: vocalizations designed for attracting potential mates, or warnings to competitors.

The larynx was originally thought to be the site of sound production in cetaceans but experiments on live, phonating dolphins showed that the larynx does not move during vocalizations. Although the exact site of the sound generation is still debated. It is presumed that the elaborate nasal sac system is said to be involved in sound production. Current hypotheses assume whales combine sounds (units) into patterns (phrases) to construct the displays (songs) that reveal their fitness to possible mates.

All whales have different qualities that make each of them unique, the humpback whale stands out for its communication skills. Humpback whales can communicate farther than any other whale and, for years, their special sounds have been researched extensively. A particular stand out of their musical skills is their social sounds, an Australian humpback whales have an array of vocal sounds - at least 34 different ones have been recorded. Each one of these individual sounds has a purpose, for these sounds represent the context in which the whales are speaking. Observations from the East coast of Queensland indicate that males perform very song-like sounds that are more regularly used during the breeding seasonal migrations and use mating season use complex series of repetitive vocal patterns. These sounds are performed for longer distances and can last up to thirty minutes at a time.

Whales also use their tails and fins to make loud slapping noises on the surface of the water to communicate nonverbally. The sound can be heard for hundreds of meters below the surface known as "Lobtailing" is believed to be a warning sign of aggression or a tool to scare schools of fish together, for which the whale holds its tail above the water and swing it around before slapping it on top of the surface. They use a variety of noises to communicate and socialize with each other. The three main types of sounds made by whales are clicks, whistles, and pulsed calls (NOAA,2021). Humpback whales produce songs that last several hours. Blue whales and fin whales produce low-frequency sounds



that can travel 2,000 miles (3,200 km) or more. Sperm whales produce the loudest sounds of any animal; up to 230 decibels. Loud sounds carry even more punch when travelling through the water since the water is much denser than air. Sperm whale clicks are far more amplified in the ocean than they would be on land. A sperm whale's click of 200+ dB in the water would 'only' be 174 dB in the air.

While research is still underway to understand the surface behaviour sounds, it is clear that these sounds do signify something important to the whales. Researchers record the sounds but will need to wear headphones to pick up the low-pitched noise, which sounds a bit like heartbeats. Scientists are unsure of what role they play in the communication between whales, but they occurred when female whales were in the company of males. To watch the whales and hear the whales singing beneath the water it is best to choose Tonga, (located in the South Pacific) Norway, Maui, Hawaii Baja and southern Mexico, Roca Partida, an oceanic pinnacle of the Socorro Islands and Queensland. In the Stellwagen Bank National Marine Sanctuary, NOAA scientists attached sensors to whales to track their movement patterns. They hope to learn about the whales' behaviour and communication as well as to observe how human interaction affects their behaviour.

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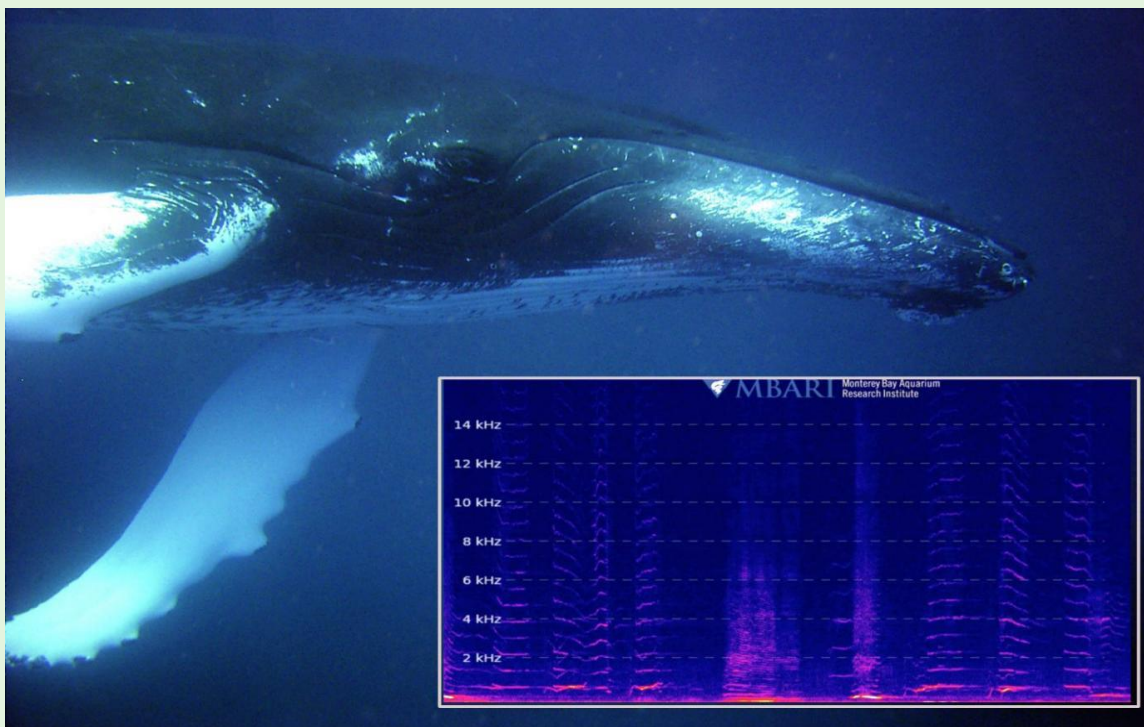


Photo source: [You Can Now Listen To A Livestream Of Whale Sounds 24/7 | Here & Now \(wbur.org\)](#)



2. Focus Group Discussions: A tool of Social Science Research

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What is Focus Group discussion (FGD)

Focus group discussions (FGDs) are a method adopted in qualitative research in which a meeting of a small group of people having specialized knowledge or interest in a particular topic is held at a fixed place and time to find out their perceptions and attitudes on the subject matter. FGDs can be applied at any stage of the project or programme cycle from design through to evaluation. Qualitative methods are effective in identifying intangible factors, such as social norms, socioeconomic status, gender roles, ethnicity and religion and similar issues. This method of data collection provides information for drafting complex descriptions of how people experience a given research issue as well as the behaviours, beliefs, opinions, emotions, and relationships of individuals. In qualitative research, only a sample of a population is selected for any given study. Hence the objectives and the characteristics of the study population determine the number of participants to be recruited, the location, the approach to be used and the criteria for the selection of the focus group. Each research team develops guidelines for the introductory comments by the researcher to the potential participants at each site. The participating members will be informed about sampling method and then written or oral consent is obtained and approved by the Ethical committee. The crucial element of FGD is the facilitation for which the mediator should ensure even participation, careful wording of the key questions, maintaining a neutral attitude and appearance, and summarizing the session to reflect the opinions evenly and fairly.

FGDs are typically carried out with between 6-12 people. They are normally based on a shortlist of guiding questions, designed to probe for in-depth information. Discussions typically last between one and two hours. FGD can be used at the design or planning stage to help shape a project or programme or during implementation to provide ongoing feedback; and also, during reviews and evaluations. This method of data collection is considered particularly useful for generating a large amount of qualitative information in a relatively short period of time. If time and resources are permitting, a project or



programme would hope to continue to carry out FGD on a particular topic or question until the saturation point is reached – that is the point at which no new information is generated and findings become repetitive (INTRAC, 2017). Where this is not possible projects or programmes have to plan for an appropriate number of FGDs based on the available time and resources. This is normally a matter of judgement and common sense.

How it works

The steps are generally followed while designing and implementing FGDs (USAID, 2011). are shown below:



Strengths and weaknesses

There are clear benefits associated with FGDs. For example, they are participatory methodologies that can fully engage different stakeholders in collecting and analyzing information. Focus group interactions can enrich the quality and quantity of information

generated through Speaker and listener processes, and in some cases, the discussions can reveal ideas or solutions for particular challenges and problems. Generally, FGDs can generate insights more quickly and cheaply than key informant interviews or surveys. However, there are times when FGDs are not appropriate, or when facilitators need to take particular care. Some of these are described below:

- In some cultures, and on certain topics, people are more comfortable expressing themselves freely in groups than on their own. In other cultures, and for other topics, the opposite is true. Facilitators should know beforehand the topics that can safely be covered within a focus group and which cannot.



Photo By: Ajay Gohel

Glimpse of FGD

- FGD facilitators need to be sensitive to the hierarchies and power differentials within the group. It is important that the facilitator should not allow discussions to intrude on areas of sensitivity or controversy.
- At the beginning of the discussion itself, the mediator should explain the confidentiality of the points discussed by each individual, for what purpose the meeting has been held and to whom the report is to be presented and how it will be used.
- Explain you will be confidential, that you invite them to be confidential and what will happen to the information they give you. If there will be a report, explain who it will go to
- A good understanding of the subject, problem, or topic to be investigated. This includes both theoretical knowledge and practical experience.



- Proficiency in the language in which discussions will be conducted. FGDs cannot be conducted through an interpreter or by a third person, no matter what types of skills he/she has.
- There can be great disagreement if groups are not homogenous, so it is important to form groups of people that are comfortable discussing issues with one another.
- FGDs can be time-consuming to plan and implement, and the findings may be difficult to analyse. FGDs are resource-intensive as at least two facilitators are normally needed for each session. FGDs are harder to facilitate than individual interviews, so facilitators need skills and experience.
- As stated earlier, FGDs are qualitative methodologies and should not be used on their own when statistical analysis is required. FGDs should not be subject to statistical sampling methods, and should not be used to generate quantitative indicators.

Do's and Don'ts

Do's

- Hold the FGD in a comfortable place, where there will be no interruptions.
- Create an informal atmosphere so that participants feel comfortable.
- Select participants to ensure equality and trust between group members, and between members and the facilitator.
- Ensure understanding and agreement within the group at the start itself about the purpose of the discussions.
- Respect the right of all participants to speak and be listened to.
- Agree on an open and transparent method of recording the discussion, such as flip charts.
- Be the naive listener or the naive observer.
- Act like the participants and you are equal.
- Look innocent, as if you didn't know things, even if you do. If someone seems shy, do not pressurize them to speak.

Don'ts

- Don't allow your own personal biases to prevent you from being objective in listening to, and observing participants.
- Don't get into arguments with participants or seek to dominate the discussions.



- Don't allow discussions to continue if it is clear that some participants are uncomfortable.
- Don't allow one or two participants to dominate the discussions.
- Don't develop too many questions or areas of enquiry – two to three guiding questions should be enough.
- Don't allow the discussions to go on too long, past the point where participants become tired.
- Do not ask leading questions (ones that might suggest you are looking for a particular answer).
- Do not ask 'yes or no' questions, as this does not open up discussion, though if you inadvertently.
- Do not gossip about the focus groups after the study.
- Do not ask double-barreled questions. People cannot answer two questions at once.

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USAID (2011). Performance Monitoring and Evaluation Tips: Conducting focus group interviews. Number 10. (http://pdf.usaid.gov/pdf_docs/pnadw110.pdf)

INTRAC,2017. Focus Group discussions.



Photo by: Viral Vadodariya



3. Heat exposure may lead to poor mental health: a climate change perspective

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The relation between climate change and extreme heat events has been established as the frequency and intensity of extreme weather are increased. Research have predicted various models of climate change which indicate that heatwaves will become more frequent and intense, especially at higher altitude and latitudes. Apart from these biomes, the densely populated urban settlement will become more vulnerable (Luber and McGeehin, 2008).

Australian scientists have reviewed a study on the association between high ambient temperatures as well as heatwaves and mortality and morbidity related to the mental health of persons for the period January 1990 to November 2020 (Liu *et al.*, 2021). They have observed that even a 1⁰C rise in atmospheric temperature may lead to a significant increase in morbidity such as mood swings, mental health, schizophrenia, neurotic and anxiety disorders. The vulnerability to these climatic variations of people living in tropical and subtropical climate zones, especially aged persons and children is expected to be proportionately increasing. Higher temperatures have been shown to increase the incidence of self-violence and suicide. It is also associated with criminal cases between 2010 and 2099 (Ranson, 2014) and additionally causes an estimated 30,000 murders, 200,000 cases of rape, and 3.2 million burglaries.

March 2020 was the hottest month in India as per the Indian Meteorological Department (IMD) since, 1900. As an example, there are reports stating the number of patients admitted for mental health cases increased at the Central Institute of Psychiatry (CIP) in Ranchi. The increasing rate of pollution in the Indian cities is mainly related to the combustion of fossil fuels which tend to increase the ambient atmospheric temperature. The study from Ranchi indicates the possible impacts of a rise in atmospheric temperature on people residing in densely populated other cities in India. There are many factors that stimulate such incidence in summer periods, such as poverty, loss of income



and employment, nutritious food, family and societal issues and diseases as well and all these factors need to be investigated in the light of the social commitments of scientists and social workers.

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Photo by: Viral Vadodariya



4. An observation on species of Moths (Insecta: Lepidoptera) at the campus of Gujarat Institute of Desert Ecology

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Insects are one of the largest groups of animals with more than a million described species. They are known to occupy nearly all environments, though only a few from the marine environment. Lepidopterans are successful groups of insects as they are found on all continents, except Antarctica and the majority of the Lepidoptera are found in the tropics. Moths consist of 45 super families and more than 157,424 described species (Nieukerken *et al.*, 2011). It constitutes 10% of the total described species of living organisms (Mallet, 2007). There are over 120 families of moths all over the world.

Lepidoptera is one of the largest orders in terms of species diversity in the class Insecta. It includes some of the most beautiful insects which are known by the name Butterfly. Larval stages of Lepidoptera are often considered a pest for many species of agricultural plants and also forests. But the adults are very important pollinators for many plants. Lepidopterans are also a very important food resource for many species of Birds, Reptiles, amphibians and even mammals like bats.

Moths are represented by more than 40 different Super families. It is interesting to note that Butterflies are outnumbered by the Moths in terms of species as there are only around 17,000 species of butterflies compared to more than 1,50,000 months.

Watching nature and observing insects is a hobby for many people. In the light of the climate change scenario and the temperature rise in the land many species tend to migrate and find suitable habitats. Because of human interference with the nature, removing the vegetation at an alarming rate and the application of chemicals to eradicate the pests that affect the food crops, forest fire, and increasing atmospheric temperature several species of moths and butterflies have been lost from their habitats or migrated to high altitude habitats. The butterflies and moths are found in the wild where plants are available. To an onlooker on the insets in the garden or field, the two groups are indistinguishable because of their resemblance. The most obvious difference between



butterflies and moths is their resting wing position. Moths rest with their wings open, whereas butterflies tend to rest with their wings closed. However, many butterflies “sun bake” with their wings open. Similarly, the moth antennae tend to be leaf or feather shape in most species and that of butterfly tend to be long, bare and evert from the head in a club shape with a bulb at the end. Although this is normally the case, there are some moths that have slender antennae rather than feathered, such as the Zodiac Moth, however, the antennae on these moths tend to be straight rather than curved. Moths have a frenulum, which is a wing coupling device that ensures the wings travel together during flight. Butterflies do not have this. Further, the moths active in the darkness and butterflies are diurnal due to the light adaptation of their eyes. In general, moths have superposition eyes, which reflect light at the same angle that they take it in. Whereas, butterflies have apposition eyes, which work by gathering multiple images and combining them in the brain.

Moths observed in the campus of GUIDE from December 2021 to April 2022 are communicated through this article. Opportunistic observations of Lepidopterans were photographed with a smartphone camera. Based on the morphological characters visible in the photographs moths were identified using the available literature, a citizen science portal ([A Community for Naturalists · iNaturalist](#)), as well as ([welcome to the moths of India website!](#)).

A total of 14 species (Table-1) of moths were recorded. A detailed study may reveal the presence of much more species of Lepidopterans as the campus is home to a wide variety of Plants.

To date, the study on the diversity of Moths from the Kachchh district is very minimum except for a single extensive survey carried out by Charles George Nurse (1903) an English military officer, naturalist, ornithologist and entomologist in the late 18th century. After that, there are virtually no publications on Moths of the district. Charles George Nurse was one of many British military officers who made significant contributions to the knowledge of the natural history of India. Not only the Kachchh district but many other districts of Gujarat also remain underexplored with respect to moths. This suggests that moths are probably being ignored in Gujarat like some other groups of terrestrial animals like Myriapods, Land Mollusca, Scorpions etc.





1. *Diaphania indica*, 2. *Hyposidra* sp., 3. *Isturgia* sp.,
 4. *Artaxa* sp., 5. *Olene* sp., 6. *Oraesia emarginata*,
 7. *Streblote siva*, 8. *Nausinoe geometralis*,
 9. *Scopula addictaria*

Photos by: Karan Thakkar



Table-1: Checklist of Lepidopterans identified from the GUIDE campus

Family	Species	Month of observation
Geometridae	<i>Scopula addictaria</i>	December
	<i>Pingasa</i> sp.	December
	<i>Hemithea</i> sp.	December
	<i>Isturgia</i> sp.	December
	<i>Cleora</i> sp.	January
Erebidae	<i>Achaea janata</i>	December
	<i>Olene</i> sp.	January
	<i>Artaxa</i> sp.	February
	<i>Oraesia emarginata</i>	February
Crambidae	<i>Ptychopseustis</i> sp.	December
	<i>Nausinoe geometralis</i>	December
	<i>Diaphania indica</i>	December
Lasiocampidae	<i>Streblote siva</i>	January
Sphingidae	<i>Hippotion celerio</i>	March

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5. An insight on the Endangered Plant Species *Leptadenia reticulata* (wight & arn.) From Mandvi, Kachchh District

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This plant is a climber commonly found in tropical and subtropical regions of Asia and Africa like India, Madagascar, Mauritius, Peninsula, Philippines, Sri Lanka and Myanmar. In India is widely distributed from Sikkim, Nilgiris, South India, Himalayan ranges, Gujarat, Konkan, Punjab, Khasia hills, Deccan and Karnataka. It grows in the sub-Himalayan tracts of Punjab, Utter Pradesh and throughout the Deccan Peninsula up to an altitude of 900 m and is found particularly in hedges. In Gujarat, it is called Jivanti, Swarn Jivanti or Dori and is known as Cork Swallow –Wort in botanical literature. This plant has been observed growing on the *Prosopis* tree at Bheraiya village of Mandvi taluka of Kachchh district.

Leptadenia reticulata Wight and Am. is a much-branched laticiferous twining shrub of the family Asclepiadaceae. Flowers are greenish-yellow, and in many-flowered cymes (in lateral or sub axillary cymes), the follicles are sub woody and turgid. The stem is cylindrical and bent occasionally with deeply cracked bark. Leaves are ovate, cordate, coriaceous, glabrous above and more or less finely pubescent beneath. The plant grows well in sandy-loam and alluvial black and on red laterite soils where plenty of sunlight is available.

Taxonomy

Kingdom:	Plantae
Subkingdom:	Tracheobionta
Division:	Magnoliophyta
Class:	Magnoliopsida
Subclass:	Asteridae
Order:	Gentianales
Family:	Asclepiadaceae

Recently the cultivation of this plant has been encouraged by the pharmaceutical companies as it possesses the appetizer, aphrodisiac, anti-cancerous and antibacterial



properties which can be adopted in the treatment of leukoderma, and skin diseases, leucorrhoea, asthma, heart problems, Diabetes and so on. This multi-utilitarian medicinal herb offers several promising medicinal values, and hence, can be used in the present-day therapeutic practices to treat various human ailments. With its revitalizing rejuvenating, and lactogenic properties (Sivarajan and Balachandran, 1994) is the main component in many herbal formulations (Mohanty *et al.*, 2017) formulations like Chywanprash, Speman etc. This plant is used as one of the ingredients in many herbal formulations. The therapeutic potential of this herb is because of the presence of diverse bioactive compounds such as α -amyrin, β -amyrin, ferulic acid, luteolin, diosmetin, rutin, β -sitosterol, stigmasterol, hentricontanol, a triterpene alcohol simiarenol, apigenin, reticulin, deniculatin, and leptaculatin (Sastry *et al.*, 1985). Its principal constituents are leptadenol, leptidin β -sitosterol, β -amyrin acetate. It is especially known for its stimulant and restorative properties in Ayurveda and it is also an important constituent of many well-reputed ayurvedic herbal medical practitioners.



Fig:1. *Leptadenia reticulata* Fruits

The exponential growth of nutraceutical and cosmeceutical consumers has increased the demand for plant raw materials (Swamy and Sinniah, 2015). In recent years, the demand for medicinal and aromatic plants has grown rapidly because of accelerated local, national, and international interest notably from the pharmaceutical, nutraceutical and aroma industries. *L. reticulata* is in great demand in both local and international markets, with dry powder costing INR 1400/kg and flowers up to INR 100/kg. It is speculated that the demand for herbal medicinal products will grow up to USD 5 trillion by the year 2050 (Swamy *et al.*, 2016). This species is listed as a threatened endangered plant because of



overexploitation, unscientific harvesting, and habitat loss. The wild resources are unable to meet the current demand because of restricted distribution and seasonal availability. Further, the wild resources of *L.reticulata* have been depleted by overexploitation through various anti-social practices, and thus, it has been listed as an endangered species (Rawat, 2008). Hence, cultivation remains the only sustainable alternative. Although farmers and industries are ready to cultivate the herb, its low percentage of germination, non-availability of genuine plant materials, and a lack of knowledge about its cultivation practices pose a challenge for its commercial cultivation. The increased demand from pharmaceutical, nutraceutical, and veterinary industries has prompted its large-scale propagation. Today, various medicinal plants are commercially cultivated to meet the ever-increasing global demand for plant metabolites used by the pharmaceutical industries (Sathyanarayana *et al.*, 2007; 2008). Scientific data on the botanical, propagational, phytochemical, biological, and conservational aspects of *L. reticulata* (Bawra *et al.*, 2010) are available however, its commercial cultivation is hampered because of the non-availability of genuine planting material and the lack of knowledge on its agronomical practices. However, the higher market value and global demands for *L.reticulata* have forced farmers to consider cultivating it in recent times. Plant tissue culture as a biotechnological approach is widely employed as an alternative source to obtain sufficient genuine planting materials for commercial cultivation and to conserve the plants in their natural habitats (Prakash *et al.*, 2016). Most biological studies on *L.reticulata* are restricted to crude extracts, and many biologically active compounds are yet to be identified to claim the traditional uses of *L. reticulata* into evidence-based uses.



Photo by: Rakesh Poptani

Fig: 2. *Leptadenia reticulata* Flower



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6. Plant trees than philanthropy

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In the 5th century BCE, Greek playwright Aeschylus coined the term philanthropy. It symbolises "love of humanity." Today, philanthropy encompasses all types of charity and is frequently characterised as providing donations of "time, talent, and fortune" to aid others. Philanthropy is strong because it has the ability to impact everyone and change the world for the better. Philanthropy is not about self-importance or elevating oneself above others. Philanthropy and its ability to change the world include offering your time, possessions, or even providing good words or advice to help others. It's about helping others who are less fortunate and caring for other people. Helping others and caring for the wellbeing of the less fortunate can transform the world, whether you know them or not. One person's modest act of kindness or generosity can change someone else's life.

An excellent example of philanthropy is living in harmony with the environment and trees. Trees and shrubs are very important in the ancient culture and scriptures of India. In ancient times, trees are called tree deities and considered a typical example of "Altruism" the principle and moral practice of concern for the happiness of other human beings or other animals, thereby attaining an esteemed being both materially and spiritually, and that is why it is said, "Trees are more than altruism" (altruistic falanti tree). The trees protect us from the cold, heat, rain and the wounds of the sharp weapons like axe and razors. They provide us with fruits, flowers, gums, wood, herbs, shades etc. all our lives. They purify the atmosphere and take in carbon dioxide. When the universe was created, there was an integration between the creations, both animals and plants and nature and were in equilibrium. Such coordination has been broken down irreparably over the globe, the atmosphere, water and land in the present era. Man, himself has done a lot of damage to the environment and nature in the name of development. The forests and shrubs are constantly being removed repeatedly and destroyed with chemicals so that new shrubs or trees are not being grown to replace the space again. In the recent decades, there were natural calamities which are unusual in the early times have induced humans to realize the scope of nature restoration in the context of global warming. As the temperature rises, so do the ice caps melt and the sea level rises. The world is beginning



to receive the terrible warnings of the destruction of the world and nature is responding to mankind in its language.

Trees bring good rainfall and at the same time increase the cooling of the environment, which in turn reduces heat. As well as the roots of the trees cling to the soil thus stopping the erosion of the soil by trees and forests and at the same time increasing the fertility of the soil. Lord Krishna himself told Arjuna in Shrimad Bhagavad Gita that the best tree among the trees is Pipalo which is my Vibhuti form and gives the large quantum of oxygen among all trees. Poet Narasimha Mehta has also said, "Wind, water, land, earth and the sky are blossoming."

It is heartbreaking to see patients, children, young people, and the elderly wandering from place to place for treatment and without oxygen in the worst days of the Corona epidemic. Oxygen is for sustaining life and is present in the air which is shared by all living beings. This time Bhalbhala is well aware of its importance in life and its value. The lush green fields and lush forests have been cut down and replaced with cement, concrete forests and high-rise buildings erected by the government and other industrialists and the sin that has been committed has resulted in the helplessness of ordinary and poor people. Is. Today trees and the environment are being destroyed and industries are developing in the race for development. Overdevelopment is the name of destruction, realizing this truth and obeying all the laws of nature and at the same time fully protecting and stopping the overexploitation and nourishing them to overcome the sufferings of the people is the need of the present time. We shall recall the words of Swami Vivekananda "Service to the public is service to the Lord." and "all living beings are the embodiment of the divine self". that is why serving the people is our prime duty and religion.

What do trees do for us?

Trees provide innumerable services to humankind and other living organisms on earth. They supply food through photosynthesis to man and animals. They protect and fertilize the soil and hold soil moisture. Plants control the warmth of the earth and purify the air by absorbing carbon dioxide. The forest attracts more rain and keeps the earth greener. The trees give us fruits and medicine. Vegetation is a blessing to mankind and provides shade and a nesting place for birds and other animals. The timber, spices, oils, chemicals and fuels are of commercial value. Plants control cyclones and storms and a lot more.

A study by a team of 38 scientists reports planet is home to 3.04 trillion trees, and that there are 422 trees for every person on Earth (Nature e, September 2015). A human



breathes about 9.5 tons of air in a year, but oxygen only makes up about 23 per cent of that air, by mass. Among the highly populous countries, India (population, 1.267 billion) has a tree population of only 35 billion, leading to just 28 trees per person compared to Brazil which has 301 billion trees (1,494 per person), Canada 318 billion (8,953 per person), and China 139 billion (102 trees per person). With our efforts towards restoration and reduction of deforestation, it is expected we can improve the proportion of man to trees in the coming decades. Thus, trees give a lot to mankind as well as all living beings and the whole world, so trees are an invaluable gift of nature for living beings and mankind, so we should all grow more and more trees together.



Photo by: Mukesh H. Koladiya (Sp. Name: *Ficus benghalensis*)

“The truth is: the natural world is changing. And we are totally dependent on that world. It provides our food, water and air. It is the most precious thing we have and we need to defend it.”

—[Sir David Attenborough](#)



7. Invited Talk/Webinar Participation/Publication/Event

✚ Research Paper

Ravinesh, R., Biju Kumar, A. and Preetha, K. (2022) Diversity of Conidae (Neogastropoda: Conoidea) from Kerala coast, India, Molluscan Research, 42 (1), 1-18.

Dabessa, M., Lakew, A., **Devi, P.** and Teressa, H., 2022. Effect of Environmental Stressors on the Distribution and Abundance of Macroinvertebrates in Upper Awash River at Chilimo Forest, West Shewa, Ethiopia. (<https://doi.org/10.1155/2021/6634168>)

✚ Book Chapter

Ravinesh, R. and A. Biju Kumar (2022) Collection, preservation, and documentation of estuarine and marine benthic invertebrates. pp 33-82. In: Prince S.G., Salom, G.T.V. and Krishnakumar, S. (Eds) Ecology and Biodiversity of Benthos, Elsevier Radarweg 29, PO Box 211, 1000 AE Amsterdam, Netherlands.

Trivedi N., Sharma R., Mondal A.S., **Dixit D.** (2022). Recent Advances in Biotechnology of Seaweeds: An Overview. Sustainable Global Resources of Seaweeds Volume 1 Bioresources, Cultivation, Trade and Multifarious Applications, Editors: Rao A.R. and Ravishankar G.A., Springer, 2022, 627-644.

✚ Book

Patterson Edward, J.K., **Ravinesh, R.** & Biju Kumar, A. 2022. Molluscs of the Gulf of Mannar, India and Adjacent Waters: A Fully Illustrated Guide, (Dekker, H. & Oliver, P.G. Eds.). Suganthi Devadason Marine Research Institute, Tuticorin & Department of Aquatic Biology & Fisheries, University of Kerala, India, 524pp.

✚ Events

Campus Bird Count 2022 was held in various campuses across India from February 18 to February 21, as part of the 'Great Backyard Bird Count' hosted by Bird Count India in collaboration with eBIRD. ([campus bird count 2022 - bird count India](#))



8. Upcoming Seminars/ Conference/ Events/ Internship

✚ Events

National Moth Week, 11th annual, July 23-31, 2022 ([National Moth Week – Exploring Nighttime Nature](#)).

International Day for Biological Diversity, 22nd May, 2022.

International Day for Otter, 25th May, 2022.

✚ Conference

Global Landscapes Forum Africa Digital Conference 2022, September 15th, 2022 ([GLF Africa digital conference 2022 - global landscapes forum events](#))

Student Conference on “Conservation Science-New York 2022”, October 3-7, 2022 (<https://www.amnh.org/research/center-for-biodiversity-conservation/convening-and-connecting/sccs-ny>)

An online three-day workshop (paid) on “Thesis Writing” is being organized on 27-29 May 2022 by Chandigarh University, Mohali-Punjab. (https://bit.ly/WP_THESIS*)

✚ Internship

Biodiversity Collaborative Internships 2022: taking stock of public expenditure to restore and sustain Nature in India 2022, 05.06.22 to 31.07.22. (<https://drive.google.com/file/d/1anclmiSWNRZQBFIAM4KlfGB78yuG8tUa/view>)

Wildlife & Conservation Biology Research Foundation is invites application for Internship, training, & Dissertation, 2022. (www.wcbresearch.in)

✚ Certificate Course

PG Certificate Program in Dryland Studies for the year of 2022-23 by ABIDAT is a partnership between the Aban Group of India and the Ben Gurion University of the Negev (BGU), Israel. ([Home| ABIDAT](#))

“In reality, studies show that investments to spur renewable energy and boost energy efficiency generate far more jobs than oil and coal.”

— [Jeff Goodell](#)

