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NERTHUS

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Edited by -

Dr. Sutapa Sanyal

Designed by -

Debjyoti Saha

E-mail ID -

natureclubzoology@gmail.com

Address –

Krishnagar, Nadia ,West Bengal

PIN - 741101

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Message from H.O.D

It gives me immense pleasure to express my views on the release of the 2nd edition of "Nerthus".The aim of our departmental magazine is to provide an opportunity for students to portray their topic of interest and share their ideas with special reference to the environment and biota. Our budding talents have made brilliant attempts to justify the theme of " Nerthus" enlightening various aspects of climate change and its adverse effects on living world. Travel story and photography have showcased the vibrant and fascinating nature. My heartfelt appreciation to the editorial team, my beloved students and my dear colleagues for making this happen. Hope, to continue this journey in coming days.

Dr. Sumana Das
Head , Department of Zoology

LETTER FROM THE EDITOR

Welcome to the Second issue of 'Nerthus', an e- magazine published by Post Graduate Department of Zoology, Krishnagar Govt College. This volume is dedicated to Biodiversity, Conservation, Climate Change and Sustainability. We received almost 70 articles .We encourage more practice-based articles, state-of-the-art content and critical review articles for our subsequent issues. This will help us in scoring high in performance measures in future and moving up the magazine in ranking lists. We will also change the cover page of the magazine time to time to reflect the changes in thrust area. We have the dedication and the passion poured out into this magazine. Our articles are penned and edited carefully. It is a golden opportunity for all of us to be allowed to be a part of this great endeavour.

Dr Sutapa Sanyal, Editor-in-Chief, NERTHUS

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Endangered Means There's Still Time

Snehashis Sarkar & Soubhik Mallick
U.G 5th Semester Honours
Department of Zoology
Email ID - sarkarsnehashis75@gmail.com & brightpaw99@gmail.com

Pinpointing the extinction of a species requires a clear definition of that species. If it is to be declared extinct, the species in question must be uniquely distinguishable from any ancestor or daughter species, and from any other closely related species. Extinction of a species (or replacement by a daughter species) plays a key role in the punctuated equilibrium hypothesis of **Stephen Jay Gould** and **Niles Eldredge .**

Wildlife traditionally refers to undomesticated animal species, but has come to include all organisms that grow or live wild in an area without being introduced by humans. Wildlife was also synonymous to game: those birds and mammals that were hunted for sport. Wildlife can be found in all ecosystems, deserts, forests, rainforests, plains, grasslands, and other areas, including the most developed urban areas, all have distinct forms of wildlife.

On National Endangered Species Day 2020, here are some endangered animal species in India that are on the verge of extinction. Among the classification of threatened species, the category critically Endangered corresponds to the greatest risk. In India, there are 70+ critically endangered animals. 300+ animals fall under the category of endangered. These include mammals, reptiles, birds, amphibians, fishes, corals and so on.

- ## When is a species considered critically endangered?

Critically endangered is the highest risk category assigned by the IUCN (International Union for Conservation of Nature) Red List to wild species. There are five quantitative criteria to determine whether a taxon is **threatened. A** taxon is critically endangered when the best available evidence indicates that it meets any of the following criteria:

1. Population have declined or will decrease, by greater than 80% over the last 10 years or three generations.
2. Have a restricted geographical range.
3. Small population size of less than 250 individuals and continuing decline at 25% in 3 years or one generation.
4. Very small or restricted population of fewer than 50 mature individuals.
5. High probability of extinction in the wild

Example of some Endangered Species:

The Indian rhinoceros (*Rhinoceros unicornis***) :** The Indian rhinoceros also called the **Indian rhino, greater one-horned rhinoceros** or **greater Indian rhinoceros,** is a rhinoceros species native to the Indian subcontinent. It is listed as **Vulnerable** on the **IUCN Red List** , as populations are fragmented and restricted to less than 20,000km sq(7,700 sq mi). Moreover, the extent and quality of the rhino's most important habitat, the **alluvial Terai-Duar savanna and grasslands** and **riverine forest**, is consider to be in decline due to human and livestock encroachment.

As of August 2018, the global population was estimated to comprise 3,588 individuals, including 2,939 individuals in **India** and 649 in **Nepal. Kaziranga National Park** alone had an estimated population of 2,048 rhinos in 2009. **Pobitora Wildlife Sanctuary** in **Assam** has the highest density of Indian rhinos in the world with 84 individuals in an area of 38.80 km sq(14.98 sq mi) in 2009.

Initially, numbers dropped due to hunting, but main threats to rhino are **poaching and habitat loss**. Poaching and illegal trade of rhino horn has increased sharply since 2007 and remains one of the major reasons rhino are endangered.

The Blackbuck (*Antilope cervicapra***):** The **blackbuck**, also known as the Indian antelope, is an antelope native to India and Nepal. It inhibits grassy plains and lightly forested areas with perennial water sources. It stands up to 74 to 84cm (29 to 33 in) high at the shoulder. Males weigh 20-57 kg (44-126 ib), with an average of 38 kg (84ib). Females are lighter, weighing 20-33kg (44-73ib) or 27kg (60ib) on average. Males have 35-75 cm (14-30 in) long, ringed horns, though females may develop horns as well. The white fur on the chin and around on the face. The coats of males show a two-tone colouration; while the upper parts and outsides of the legs are dark brown to black, the underparts and the insides of the legs are white. Females and juvenils are yellowish fawn to tan . The blackbuck is the sole living member of the **genus Antilope** and was **scientifically described** by **Carl Linnaeus** in 1758. Two **subspecies** are recognized.

Habitat: Black Buck live in open plains, grass lands, thorn and scrub lands.

The Blackbuck is an ungulate species of antelope and it is near threatened.the main threat to this species is poaching, predation, deforestation, habitat destruction, overgrazing, inbreeding and sanctuary visitors. So, Black Bucks are endangered

Blackbuck's presence in India: Black Buck are commonly found in Punjab, Rajasthan, Haryana, Gujrat, and parts of Central India. They are also easily spotted at the Corbett , Bandhavgarh, Velavadar and Kanha National Park in India.

The Nilgiri tahr (*Nilgiritragus hylocrius*)**:** The Nilgiri tahr is an **ungulate** that is **endemic** to the **Nilgiri Hills** and the southern portion of the **Western** and **Eastern Ghats** in the States of **Tamil Nadu** and **kerala** in **southern India**. It is the state animal of Tamil Nadu. Despite its local name, it is more closely related to thesheep of the genus **Ovis** than the ibex andwild goats of the genus **Capra**.

As few as 100 Nilgiri tahrs were left in the wild by the end of the 20th century. Since that time, their numbers have increased somewhat; in a comprehensive study of the Nilgiri tahr population in Western Ghats, the WWF-India has put the population at 3,122. Their range extends over 400 km from north to south, and **Eravikulam National Park** is home to the largest population. Per the wildlife census conducted by Kerala forest department in association with volunteers from College of Forestry and Veterinary Science under Kerala Agricultural University, from April 24-28, 2014, the number of animals in Eravikulam National Park has increased to 894 individuals. This is the highest ever count recorded in the national park, with the first census in 1996 finding

only 640 tahrs. The other significant concentration is in the **Nilgiri Hills**, with smaller populations in the **Anamalai Hills**, periyar National park, Palani Hills, and other pockets in the Western Ghats south of Eravikulam, almost to India's southern tip. A small population of tahrs numbering around 200 is known to inhibit the Boothapandi, Azhakiyapandipuram, Velimalai, kulasekaram, and kaliyal Ranges in the Kanyakumari district of Tamil Nadu and another small herd of less than 30 animals is known to inhibit Ponmudi Hills in Trivandrumdistrict of kerala.

- ## What should we do for endangered species?

  In 1957, the country's first conservation law ensured the protection of rhinos and their habitat. In the **Wildlife Protection Act of 1972** schedule I, hunting of blackbuck is prohibited. And it inhibits several protected areas of India including Gujarat(Gir Forest National Park) ,Bihar(Kaimur Wildlife Sanctuary),Madhya Pradesh(Kanha National Park) etc. And we -

  1. Reuse items in our household when we can, and buy products that produce less packing waste.
  2. Don't use harsh chemicals in our household.
  3. Can prevent soil erosion.
  4. Support an organization that fights to save Endangered Species **.**
  5. Need to increase social awareness.

- **Conclusion:** Due to destruction of habits, Wildlife has main threat. The construction of industries, houses, dams has left fewer areas where animals can breed, nest and feed. Preventing deforestation is an important method of habitat preservation. Planting new forests provides shelter and food for wildlife. By creating wildlife sanctuaries we can protect natural habitat. Habitat can be preserved by preventing deforestation.

  Forests and wildlife are the renewable natural resource and if all the planned programs are effectively executed, in a few decades the flora and the fauna will start flourishing. There's still time…

References:

https://www.wwfindia.org/news_facts/feature_stories/protect_the_indian_rhino_secure_our_grasslands/

https://en.wikipedia.org/wiki/Indian_rhinoceros

https://en.wikipedia.org/wiki/Blackbuck

https://www.britannica.com/animal/blackbuck

https://en.wikipedia.org/wiki/Nilgiri_tahr

https://www.keralatourism.org/munnar/nilgiri-tahr.php

Work Life Balance: That Enables Sustainable Performance & Human Development Keeping Sustainability Towards Environment

Ayan Bhattacharyya, Chayanika Ghosh, Dipanwita Das, Gupinath Sarkar, Harinanka Chakraborty

PG 3rd Semester, Department of Zoology, Krishnagar Government College.

Email ID - ronychakraborty1999@gmail.com

Abstract: It is proposed that sustainable human development can occur only when there is a reasonable work-life balance for humans.The emerging field of green work–life balance (growing from the work–life balance and sustainability fields) largely centres its analysis around the organisational benefits of green work–life balance policies. Consequently, it often focuses on the way in which individual behaviours can reduce the environmental footprint of the organisation and also focuses on maintaining a healthy-balanced lifestyle of the employees. This article explores the impact of an individual's work-life balance on his/her role—related engagement, thereby contributing to the sustainable human and nature development.

Keywords: Balance, Employee, Life, Sustainable, Work.

Introduction: Individuals form groups to perform work for development of human kind in general, either through profit or non-profit organizations. There is growing body of researchwhich shows that work-life balance of individuals benefits both, the employees and theorganizations. (Greenhaus & Powell, 2006) If individuals are not successful in maintaining awork-life balance, they are likely to experience difficulties in coping up with requiredperformance at workplace as well as in their family commitments. On a positive note, balanced work-life experiences are likely to improve the overall psychological well-being as well as increased satisfaction at work and in family domains (Grzywacz, 2000) Poor work life balance leads to poor job performance. Further, for most employees, invariably, the workplace culture and an individual's family culture are likely to bedifferent. Therefore, it is suggested that the presence of cultural intelligence can help people to cope better with work-life cross-cultural issues, leading to increased work engagement, and eventually a sustainable human development.A balanced work-life enhances the productivity of employees which is based on their performances. While balancing work-life, it is not about giving more priority to one domain and ignoring the other. It focuses on equal and balanced performance in both domains of personal and professional ends. If the work life balance policy is taken as green work life balance the sustainability of environment also can be checked.

Work-life Balance: Work-life balance is a broad concept including proper prioritizing between 'Work' (Career and Ambition) on one hand and 'Life' (Health, Pleasure, Leisure, Family and Spiritual Development, Sustainable Environment) on the other. A primary definition of Work-life balance is simply a balance between work and life (Valcour 2007). In the workplace it has become more important issue as it tends to exhibit positive result such as low turnover, work engagement, organizational citizenship behaviour, in-role performance, increased firm productivity, job satisfaction and organizational commitment (Konard & Mangel, 2000). A good work-life balance, said Chris Chancey, career expert and CEO of Amplio Recruiting, has numerous positive effects, including less stress, a lower risk of turnout and a greater sense of well-being. "Employers who are committed to providing environments that support work-life balance for their employees can save on costs, experience fewer cases of abcesntecism and enjoy a more loyal and productive workforce", said Chancey.

Research on work-life balance is primarily focused on parents (Duxbury and Higgins 1991) and their struggles with work-life issues as fathers and mothers. It has been claimed that focus on men's work-life issues is primarily used to explain either women's withdrawal from the workplace or to understand the wider relationship between work and home (Gregory and Milner, 2011). Women may now be taking a more carrier minded view, while men are becoming family oriented.

Louise Heslop and colleagues (2005) suggests that the work and family outcomes such as role interference, stress strain and life satisfaction are related to several strategies and orientation. A sentence that brings the idea of work life balance to the point is: "Work to live. Don't live to work"

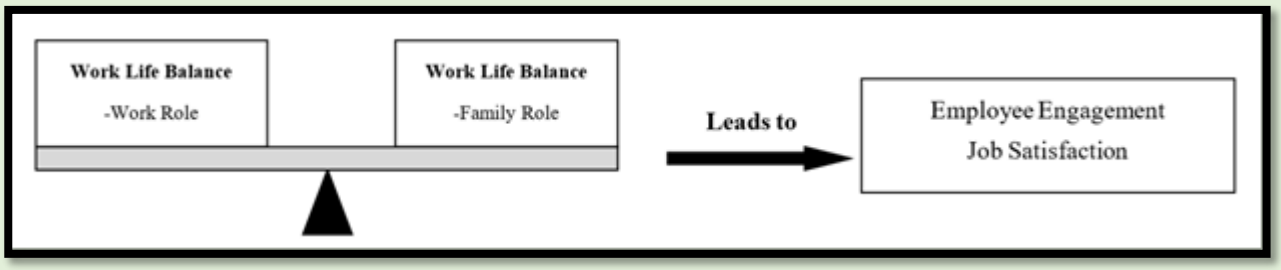
Cultural Intelligence: Hofsted (2010) defines culture as "the collective programming of the mind which distinguishes the members of one group or category of people from another." Cultural Intelligence or Cultural Quotient (CQ) is the "Capability to function effectively across national, ethnic and organizational cultures." Originally the term cultural intelligence and the abbreviation 'CQ' was developed by the research done by Chisrtopher Earley (2002) and Earley and Soon Ang (2003).

"Cultural intelligence: an outsider's seemingly natural ability to interpret someone's unfamiliar and ambiguous gestures the way that person's compatrots would"- Harvard Business Review.

Cultural Intelligence (CQ) is characterized as a multidimensional construct that includes the ability of an individual to function properly in (Early & Ang, 2003) socially different environments. CQ is measured on a scale similar to that used to measure an individual's intelligence quotient. People with higher CQs are regarded as better able to successfully blend into any environment, using more effective business practices, than those with a lower CQ.Cultural Intelligence refers to the cognitive, motivational and behavioral capacities to understand and effectively respond to the beliefs, values, attitudes and behaviors of individuals and groups under complex and changing circumstances in order to effect a desired change. The application and integration of cultural intelligence into the working and practices of local government is advanced by

community planner, Anindita Mitra in 2016 as a way to improve the effectiveness of local governments to respond to and serve a growing and diverse population. In the military sense, cultural intelligence is a complicated pursuit of anthropology, psychology, communications, sociology, history and above all military doctrine.

Role-related Work Engagement: Engagement of the employees should be done under the manner where an Employee gets the work mostly suitable to him or her. Engagement can be describedas the 'hands, head and heart' inactive, full work performance. It means engaged people allow themselves into what they do by getting fully involved. Furthermore, it is explained that,1. Engaged people who activated their body and physical energy to participate, they have the willingness to use their tenacity and perseverance toprepare andimprove. (Investing the hands)2. Engaged people who activated their mind, they have the willingness to think, to develop new thoughts and ideas to get solutions and actions, take responsibility to make decisions with the creative and innovative action plan, not only in term of rules and protocols. (Investing the head)3. Engaged employees permit themselves to become emotionally involved, finding meaning and taking pleasure in what they do. They fully immerse with the flow of work activities even though they face problem and difficulties, have fun and forget that they are concentrated.Being in a state of 'flow' characterized by focused attention, a clear mind, effortless concentration, preventing loss of self-consciousness, distortion of time and getting intrinsic enjoyment. These concepts are based on work engagement definition as a positive, fulfilling, work related state of mind that is characterized by vigor, dedication and absorption.In work-life balance the conflict between employees' home and work-life, organizations needed to not only provide work, family arrangements but also foster a culture that encouraged employees to use such arrangements. Employers should ensure their workers perceive a balance between work-family obligations to enhance work engagement.



Hurdles on achieving sustainable performance: There are many hurdles in the way of achieving sustainable work life balance related to satisfaction, perceptions of success in work, non-work role demands, low levels of conflict among roles, inter role enrichment. The hurdles are like, 1.In many times society already followed that, publics are interested to be part-time work, that's are harmful for the work.2. While the man was working any project, if it was part-time, they can include his personal work or activities, so both works are affected in very bad manner.3. The factor of job satisfaction plays a vital role in the attainment of sustainable performance and happiness, which further includes the aspect of payment satisfaction. But there is reduction in the motivational level among employers who are either underpaid or overpaid.4. An effective work culture promotes a friendly relationship among its employers as they share

similar ethics and values with strong belief while performing as a team and they attain a better level of satisfaction. Lack of these friendly relationships affects the work environment.5. Unhappy employees are less productive, less committed towards work performances.

Human work-life balance Solutions: Balance is an integral part of our life nowadays, work culture is mainly based upon the concept of balance between work and life due to the fast paced life and hectic schedules, it has become very difficult to achieve a perfect work life-balance. Recently, the working hours are not limited to office only, it has been dragged in the home through online. The '*work from home*' concept is being utilized by several private as well as government sectors. Previously, the employees were able to relax and take care of their other priorities which has been reduced in recent times. The amalgamation of tech and IT rendition, the entire scenario changed. Accessing resources is no longer a problem and work emails may arrive any time. This in turn, hinders the quality of work life. "Balance is not better time management but better boundary management. Balance means making choice and enjoying those choices" – Betsy Jacobson. A well-balanced work life does not mean about coming to and returning from working on time, it is about prioritizing things as per their importance. Thus, a perfect balance between work and personal life can be achieved very smoothly. Moreover, an imbalance also affects an employee's mental state, peace of mind and body. Hence, employees who can give equal importance on their well-being are undoubtedly feels more contended and satisfied and this reflects in their performance and behavior at work. Along with it, it also includes, attracting the best talents, higher retention rates, improved work culture and enhances employee engagement. So to get a good work-life balance, following solutions can be useful-

1. Taking Time off Between Work & Volunteering Time off: It helps to deal with stress and pressure related work. Our body is not designed to continue for long hours at a stretch. Slight physical movements like high knee walk or some desk exercises can be really helpful. This type of short breaks can help one to recover from fatigue and enhance working efficiency. Moreover, volunteering is a great way to remain social and build interpersonal connections. This also helps to boosts a company's CSR, that is Company Social Responsibility initiations.

2. Proper Planning and Time Management: It is very useful to plan the day-to-day activities at work for obtaining a good balance between life and work. It helps the individual to more accordingly and prioritize their actions following the importance of a task. In addition to that proper planning can save a lot of time at work and thus allows them to focus on other things.

3.Ecouraging a Healthy lifestyle and focusing on physical health: Another most important thing to achieve a well balance between work and life is to maintain a healthy lifestyle. Healthy employees are just like the jewels on crown. An unhealthy work-life balance can hamper one's physical and mental health, hence affecting their productivity to a great extent. Encouraging the employees to take up a healthy lifestyle also diminishes various health problems. It also helps one to stay energetic, a stress-free mind is a room of full clarity. A healthy lifestyle acts as a boosting agent to deal with stress and also acts as a great stress

management solution. A gym at office can help the employees to attain both physical and mental health stability as well as time consuming. Standing desks and trade-mill desks are also useful in this case.

4.Encouraging No Work at Home Policy post work hours: Very often, the employees drag their work to home to meet up the deadlines. It leads to buildup of tremendous pressure and work load which ultimately hinders the proper amount of rest needed by the human body. Further, it disturbs the social life of individuals that is necessary for a healthy mindset.

5.Hybrid Work Space and Allowing Remote Work: A hybrid workspace is the place of both worlds for working at home and in an office. They are a great solution for those who wants to get the taste of it. Encouraging work from home atleast once or twice a week can help to detox the employees from daily stress at the workplace. Working from home surrounded by their near and dear ones leaves a positive impact on employee's mind as they get such benefits, it frames a great sense of gratitude in their minds towards their employers. The ability to work from anywhere is a dream of every individual. It helps them to balance the travelling time as well as their working time. Moreover, it helps to fulfill their social commitments without missing out a work. *Workations* are the latest craze in the search for work-life balance after the pandemic, which is a blend of work and vacation.

6.Paid Vacation Time: Nowadays, vacation is no more a luxury, rather its much of necessity. Vacations are very crucial for employees. Letting the employees take long breaks without facing decrement in their wages can be effective. Vacation makes one feel more rejuvenated and refreshed after returning to work, yielding better productivity.

7.Maternity and Paternity Leaves: The incredible joy of being a parent can never be ignored and everyone wants to live this moment to the fullest. However, this comes with several responsibilities and obligations that no one is immune to and this can cause a hindrance as it comes to work life. So, to resolve this issue, paternity and maternity schemes should be made that will ultimately benefits the employees as well as the employers.

8.Child-care Facilities: Most parents whose children are below 5 years of age face a hard time struggling between responsibilities.This becomes more hectic when both the parents are working and they have to choose between work or life and this could severely affect their career and progress at work. So proper child care facilities can be implemented within the organizations or somewhere that's really close.

9. Designated Quiet Space: Having a designated quiet space at the workplace can keep the employees productive , happy and healthy. They can in turn use the place to reflect, mediate or even just take a break from the rush of the office. A quiet place should be a place where one can take a moment too cherish their thoughts, get focused and get work done. The room must be pleasant and well-kept having comfortable seating, plenty of greenery and a few good books or magazines along with some relaxing music.

Green Work Life Balance: Green Work Life Balance is based more on ideas of business sustainability, often focused on how consumption and production can be changed to reduce harm to the environment. For example, employees can conserve the environment through supporting environmentally friendly products, packing and production. They can make their commute to work more environmentallyfriendly through car-sharing (Rotaris & Danielis, 2018) and using public transport. They can reduce waste through efficient consumption (Agrawal & Gupta, 2018;) reducing their purchase of single use products and limiting their personal consumption and of organization to what's necessary. Flexibility to work at home increased pro-environmental behavioursat home, such as recycling, and led to greater environmental action at work. Thus, they illuminatethe way in which workplace practices that are not specifically linked to environmentaloutcomes can improve pro-environmental behaviours which leads toenvironmental sustainability.

Discussion: Sustainable performance and balanced work-life of employees leads the way for an organization to maintain its sustainability not for the internal matters but also in the external environmentwhich commonly covers the aspects of social, environmental and economical area. To maintainsustainable performance of an organisation, it is required to maintain the same of its employees with an effective work-life balance. If maintaining sustainable performance is challenging, then work-life balance is also difficult to maintain which will affect the environment adversely

.

Conclusion: The world of work is changing rapidly, and the Sustainable Development Goals are very much linked to work. Organisations are required to work on strategies and practices to attain sustainability in their performance as well as employees' performance too. The challenging factors like organisational change, job satisfaction, reasonable pay distribution, employee motivation and happiness, and working environment need an effective implementation of actions to attain efficiency which make employees more productive at professional end. Effective skills with better learning make an employee more productive towards the work performances of organization's activities. Green Work Life balance also should be implemented. That is a way by following which employees will stay focused towards the attainment of organisational goals and sustainable performance. Happy employees do better in case of balancing other life roles.

References:

Agrawal, R., & Gupta, S. (2018). Consuming responsibly: Exploring environmentally responsible consumption behaviors. Journal of Global Marketing, 31(4), 231-245. https://doi.org/10.1080/08911762.2017.1415402.

Ajith, M. &Patil, V. S. (2013). An Empirical Study on Work Life Balance for Role Prioritization of IT Employees. RVIM Journal of Management Research, 5(1): 31-40.

Duxburry, L.E & Heggins, C.A. (1991). Gender differences in work-family conflict. Journal of Applied Psychology, 76(1), 60-74.

Early, P.C(2002). A theory of cultural intelligence in organizations. In B.M staw & R. Kramer (Eds), Research in organizational behaviour (vol. 24, pp, 271-299). Greenwich, CT:JAI.

Early ,P & Ang S (2003). Cultural Intelligence: Individual interactions across cultures. Palo Alto, CA: Standford University Press.

Greenhaus, J. H., & Powell, G. N. (2006). When work and family are allies: A theory of work–family enrichment. Academy of Management Review, 31(1), 72–92. doi:10.5465/AMR.2006.19379625.

Greogory,A& Milner, S. (2011). Fathers and work-life balance in France and the UK: Policy and Practice. International Journal of Sociology and Social Policy, 31(1/2), 34-52.

Gretchen, S & Christine P. (2012) Creating Sustainable Performance. Havard Business Review, (Jan- Feb) http://hbr.org/2012/01/creating sustainable performance.

Grzywacz, J. G. (2000). Work–family spillover and health during midlife: Is managing conflicteverything? American Journal of Health Promotion, 14(4), 236–243. doi:10.4278/0890-1171-14.4.236.

Hardie, E., Kashima, E. S., & Pridmore, P. (2005). The influence of relational, individual and collective self-Aspects on stress, uplifts and health. Self and Identity, 4(1), 1-24. doi: 10.1080/13576500444000146.

Hofstede, G (2010). The GLOBE debate: Back to relevance. Journal of International Business Studies, 41, 1339-1346, doi: 10.1057/jibs.2010.31

Indu Rao (2017) Work-life balance for sustainable human development: Cultural intelligence as enabler, Journal of Human Behaviour in the Social Environment, 27:7, 706-713, doi: 10.1080/10911359.2017.1327391.

Konard, A.M & Mangel R. (2000). The impact of work-life programs on firm productivity. Strategic Management Journal, 21(12), 1225-1237. doi: 10.1002/(ISSN) 1097-0266.

Nohria, Nitin, Brevis Groysberg and Linda Eling Lee (2008) “Employee Motivation, A Powerful new model.” HBS Centennial Issue. Havard Business Review 86, NOS 7/8 (July – August) PP 78-84.

Rotaris, L., & Danielis, R. (2018). The role for carsharing in medium to small-sized towns and in less-denselypopulated rural areas. Transportation Research Part A: Policy and Practice, 115, 49–62.https://doi.org/10.1016/j.tra.2017.07.006.

Thriveni, K.K. et.al. (2012). Impact of Demographic Variables on Work-Life Balance of Women Employees (with special reference to Bangalore City), International Journal of Advances in Management and Economics, Vol. 1 (6), pp. 226-229. Valcour, M (2007) Work based resources as moderators of the relationship between work hours and satisfaction with work-family balance. Journal of applied Psychology, 92(6), 1512-1523.

Yadav, R. K., &Dabhade, N. (2013). Work Life Balance And Job Satisfaction Among The Working Women Of Banking And Education Sector – A Comparative Study. International Journal of Advancement in Education and Social Sciences, 1(2), 17-30.

Invasive Species And It's Impact

Shreya Dey & SrijitaMondal
B.Sc. 3rd Year Department of Zoology
Krishnagar Government College
Email ID - deytunadey@gmail.com

"These species are not inherently bad. They're just in the wrong place"
- David Lodge

"Invasive species"—they may not sound very threatening, but these invaders, large and small, have devastating effects on wildlife. Invasive species are among the leading threats to native wildlife. Approximately 42 percent of threatened or endangered species are at risk due to invasive species.

Human health and economies are also at risk from invasive species. The impacts of invasive species on our natural ecosystems and economy cost billions of dollars each year. Many of our commercial, agricultural, and recreational activities depend on healthy native ecosystems.

What Makes a Species "Invasive"?

An invasive species can be any kind of living organism—an amphibian (like the cane toad), plant, insect, fish, fungus, bacteria, or even an organism's seeds or eggs—that is not native to an ecosystem and causes harm. They can harm the environment, the economy, or even human health. Species that grow and reproduce quickly, and spread aggressively, with potential to cause harm, are given the label "invasive."

An invasive species does not have to come from another country. For example, lake trout are native to the Great Lakes, but are considered to be an invasive species in Yellowstone Lake in Wyoming because they compete with native cutthroat trout for habitat.

How invasive species spread ?

Invasive species are primarily spread by human activities, often unintentionally. People, and the goods we use, travel around the world very quickly, and they often carry uninvited species with them. Ships can carry aquatic organisms in their ballast water, while smaller boats may carry them on their propellers. Insects can get into wood, shipping palettes, and crates that are shipped around the world. Some ornamental plants can escape into the wild and become invasive. And some invasive species are intentionally or accidentally released pets. For example, Burmese pythons are becoming a big problem in the Everglades.

In addition, higher average temperatures and changes in rain and snow patterns caused by climate change will enable some invasive plant species—such as garlic mustard, kudzu, and purple loosestrife—to move into new areas. Insect pest infestations will be more severe as pests such as mountain pine beetle are able to take advantage of drought-weakened plants.

Threats to Native Wildlife :

Invasive species cause harm to wildlife in many ways. When a new and aggressive species is introduced into an ecosystem, it may not have any natural predators or controls. It can breed and spread quickly, taking over an area. Native wildlife may not have evolved defenses against the invader, or they may not be able to compete with a species that has no predators.

The direct threats of invasive species include preying on native species, outcompeting native species for food or other resources, causing or carrying disease, and preventing native species from reproducing or killing a native species' young.

There are indirect threats of invasive species as well. Invasive species can change the food web in an ecosystem by destroying or replacing native food sources. The invasive species may provide little to no food value for wildlife. Invasive species can also alter the abundance or diversity of species that are important habitat for native wildlife. Aggressive plant species like kudzu can quickly replace a diverse ecosystem with a monoculture of just kudzu. Additionally, some invasive species are capable of changing the conditions in an ecosystem, such as changing soil chemistry or the intensity of wildfires.

Economic Effect :

Invasive species may cause major economic losses to society, whether in the form of direct economic impacts, such as loss of agricultural or fishery production, or secondary economic impacts caused by human health issues. It has been estimated that a single IAS, the water hyacinth (*Eichhorniacrassipes*), cost Uganda US$112million in 1999. Similar examples of losses due to different IAS abound throughout the world (Table 1.2). However, IAS also have negative impacts on ecosystem services upon which humans depend. They change ecosystems in ways that affect flooding, erosion and silt accumulation, water quality and air quality. These are not so easily quantified and are often excluded from the analysis of costs associated with IAS.

Example of Invasive Species :

Feral pigs: Feral pigs will eat almost anything, including native birds. They compete with native wildlife for food sources such as acorns. Feral pigs spread diseases, such as brucellosis, to people and livestock. E. coli from their feces was implicated in the E. coli contamination of baby spinach in 2006.

European green crabs: European green crabs found their way into the San Francisco Bay area in 1989. They outcompete native species for food and habitat and eat huge quantities of native shellfish, threatening commercial fisheries.

The Argentine ant *(Linepithemahumile)* : Terrestrial invertebrate (Photo from Holldobler and Wilson 1990. The Ants. Cambridge University Press. Cambridge). The Cape region of South Africa is home to one of the worlds six Floristic Kingdoms, a major part of which is called Fynbos. Up to 30% of the plants of the Fynbos rely on native ants for their dispersal. These ants are attracted by nutrient-rich elaiosomes attached to seed. The native ants carry the seed to their underground nests where they eat the elaiosome and leave the seed intact, ready to geminate. In contrast the Argentine ants eat the elaiosomes but leave the seeds on the ground where they are vulnerable to fire or rodents. By displacing native ant species the Argentine ant has the potential of radically changing the Fynbos plant community. Additionally, the ants can deter pollinators of protea flowers, one of the symbols of the Fynbos. They are a pest in gardens where they protect scale insects and aphids. In orchards swarms of theseants will invade, taking over trees and destroying fruit crops. The Argentine ant is a global economic and environmental threat.

Cogon grass : Cogon grass is an Asian plant that arrived in the United States as seeds in packing material. It is now spreading through the Southeast, displacing native plants. It provides no food value for native wildlife, and increases the threat of wildfire as it burns hotter and faster than native grasses.

Curbing the Spread :

One way to curb the spread of invasive species is to plant native plants and remove any invasive plants in your garden. There are many good native plant alternatives to common exotic ornamental plants. In addition, learn to identify invasive species in your area, and report any sightings to your county extension agent or local land manager.

Regularly clean your boots, gear, boat, tires, and any other equipment you use outdoors to remove insects and plant parts that may spread invasive species to new places. When camping, buy firewood near your campsite (within 30 miles) instead of bringing your own from home, and leave any extra for the next campers. Invertebrates and plants can easily hitch a ride on firewood you haul to or from a campsite—you could inadvertently introduce an invasive to a new area.

Some major threat of invasive species in India :

Invasive alien species like Lantana and Cuscuta pose a threat to the ecosystems and lead to loss of biodiversity of the country, the government today said.

Invasive alien species are plants, animals, pathogens and other organisms that are non-native to an ecosystem and which may cause economic or environmental harm or adversely affect human health.

"The government is aware of the threats posed by Invasive Alien Species such as Lantana, Parthenium, Cuscuta on ecosystems and biodiversity of the country.

"In the national biodiversity action plan approved by the Union Cabinet on November 6, 2008, biological invasions by exotic species have been discussed as one of the major factors leading to loss of biodiversity in the country," Environment Minister Prakash Javadekar told the Lok Sabha.

He said that in terms of extent of distribution, Lantana is perhaps one of the most important invasive species in forest ecosystems of India and Indian Council of Forest Research and Education Dehradun as part of the exercise to re-evaluate the forest types of India observed that Lantana and Parthenium affected regeneration of teak.

Javadekar said that although there is no conclusive studies in this regard, these invasive species replace native plant species and grasses by adversely affecting their regeneration and growth due to allelopathy effect resulting in reduced biodiversity and availibility of food base of wild herbivores like deers.

"Herbivores are considered as the primary consumer of the food chains, at the top of which are tiger and other large carnivores. Therefore, decline in the population of mammalian herbivores has the potential to impact tigers and other large carnivores which are critically dependent on herbivores as prey base," the Minister said.

References :

https://www.nwf.org/Educational-Resources/Wildlife-Guide/Threats-to-Wildlife/Invasive-Species

http://www.issg.org/pdf/publications/gisp/gisp_trainingcoursematerials/management/managinginvasivesmodule1.pdf

https://economictimes.indiatimes.com/news/politics-and-nation/alien-species-threaten-indian-ecosystems-government/articleshow/48298977.cms?from=mdr

Endangered Species

Sukanya Saha, Zoology(Hons,) 5th Semester, Krishnagar Government College
Email ID - sukanyasaha4440@gmail.com

Definition :

An endangered species is an animal or plant species that's considered to become extinct in the near future, either worldwide or in a particular region. It is a type of organism that is threatened by extinction. Species become endangered for two main reasons: loss of habitat and loss of genetic variation. Endangered species is at risk of extinction because of a sudden rapid decrease in its population or a loss of its critical habitat. Previously, any species of plant or animal that was threatened with extinction could be called an endangered species. The need for separate definitions of “endangered” and “threatened” species resulted in the development of various categorization systems, each containing definitions and criteria by which a species can be classified according to its risk of extinction. As a rule, a range of criteria must be analyzed before a species can be placed in one category or another. A species can be listed as endangered at the state, federal, and international level. On the federal level, the endangered species list is managed under the Endangered Species Act.

How species become endangered ?

Endangered species may be at risk mainly due to human encroachment. The principal reasons are:

a) Deforestation : There are many reasons for deforestation. Humans cut the trees of forest for their own benefits such as agricultural expansion, wood extraction, road building and urbanization. As a result of which they loss their habitat

b) Over exploitation : Excess of poaching and overfishing as a result of which some animal become endangered. For example, elephants are poached for ivory and tigers for their skins and bones.

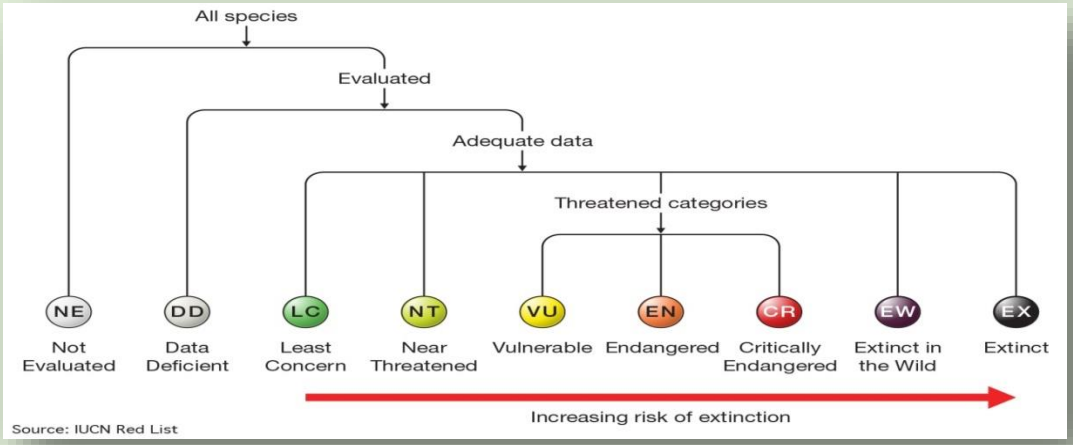
c) Invasive species : They have devastating effects on wildlife. Approximately 42 percent of endangered species are at risk due to invasive species. For example, Hawaiian thrush, which went extinct by 1985 in part due to invasive predators.

d) Over pollution :Any ecosystem can be affected by multiple types of pollution such as toxic chemicals, organic and inorganic contaminants enter the organisms through water pollution, noise pollution affects the lifestyle of birds and animals. Example Whales, seals, walruses, dolphins, manatees and penguins are affected by the plastic debris in the seas.

e) Climate change :Natural disasters – like floods, hurricanes, fires and tornadoes – are occurring more frequently. Besides, some islands like the Solomon Islands, no longer exist because of rising sea levels. Polar bear, Tiger, Snow leopard are affected by climate change.

Low birth rate, incurable disease also affects to the animals to become endangered.

A species become endangered extinct in the following manner.



Numerical data on endangered species.

A total number of 199 Species are under critically endangered species in India and 8,404 species are endangered throughout the world ,IUCN RED List 2021.

Why is conservation of those species essential ?

Once gone, they're gone forever, and there's no way to bring back them.

Plants and animals serve a crucial role in maintaining the ecosystem. When a species becomes endangered, it effects the ecosystem and the ecosystem goes out of balance. Losing even a single species can disturb the balance of the ecosystem, because the effects will be felt throughout the food chain. From providing cures to deadly diseases to helping in farming and agriculture , maintaining a healthy ecosystem , improving overall quality of life, the benefits of preserving threatened and endangered species are invaluable.

Preventive measures taken.

The Government has taken several steps for protection of endangered species of wild animals in the country, which are as following:-

I. Legal protection has been provided to wild animals against hunting and commercial exploitation under the provisions of the Wild Life (Protection) Act, 1972.

II. The Wild Life (Protection) Act, 1972 has been amended and made more stringent. The punishment for offences under the Act have been enhanced. The Act also provides for forfeiture of any equipment, vehicle or weapon that is used for committing wildlife offence(s).

III. Protected Areas such as National Parks, Sanctuaries, Conservation Reserves and Community Reserves covering important wildlife habitats have been created all over the country under the provisions of the Wild Life (Protection) Act, 1972 to conserve wild animals and their habitats.

What measures should can be taken ?

We should learn about endangered species in our locality. The first step of protecting the endangered species is learning about how important they are. There are various steps we can take to protect endangered species.

For example,

a) Dispose of waste properly.

We use many things in our daily life that are dangerous to the endangered animals. Plastic is such a dangerous compound. So we can use paper bags Instead of plastic.

b) Create a backyard wildlife habitat.

We would put bird feeders and other wildlife attractants, such as bird houses and baths.

c) Prevent pollution.

Pollution is a big danger for wildlife. The fluids from car, factories and pesticides, herbicides are attached to the nearby pond. It affects to the fishes and animals in the pond.

d) Don't Use Harsh Chemicals In Your Household.

Toxic chemicals used in laundry, housecleaning, dish washing and personal care products end up in underground waters, poisoning aquatic life and any animals that feed on them. Choose non-toxic products, or make your own.

Example:

a) Blue whale(*Balaenoptera musculus*)

blue whales are threatened by environmental change including habitat loss and toxics. Blue whales can also be harmed by ship strikes and by becoming entangled in fishing gear.

b) Tiger(*Panthera tigris*)

Tigers are endangered by several reasons like poaching, Illegal trade of parts, loss of habitat, human conflict, etc.

c) Giant panda (*Ailuropoda melanoleuca*)

They become endangered due to their difficulty reproducing, excessive poaching in the 80s and deforestation and mainly depleting their bamboo food source.

d) Snow leopard (*Panthera uncia*)

One big reason that snow leopards are endangered is because of poaching. Habitat loss, declines in natural prey species, and human-wildlife conflict are also the reasons to endanger of this big cat.

Significance:

1. Ecological significance

i.We are completely dependent on our ecosystem.An ecosystem is made up of several animals and plant species.When a single species become endangered it means that the ecosystem is slowly falling apart.

ii.Without healthy forests, grasslands, rivers, oceans and other ecosystems, we will lost our healthy environment like clean air, water, or land

2. Medical importance

i.Over 50% of the 150 most prescribed medicines were originally derived from a plant or other natural product.

3.Aesthetic

i.Depending on the ecosystem many tourism industry is situated.Every year, millions of people visit natural areas in the US and participate in wildlife related activities.

ii.From woodland hikes to beach going, outdoor activities are the second most popular travel activity

4.Agricultural

It plays a major role in the protection of species.

I.Many farmers set aside portions of their land as wildlife habitat and also work in partnership with groups such as Trout Unlimited to restore river and stream habitats for endangered and threatened fish and reptiles.

References:

https://www.britannica.com/science/endangered-species

https://www.nationalgeographic.org/encyclopedia/endangered-species/

https://www.endangered.org/importance-of-the-endangered-species-act/

https://www.nwf.org/Educational-Resources/Wildlife-Guide/Understanding-Conservation/Endangered-Species

https://en.wikipedia.org/wiki/Endangered_species

Explosion of Whale Carcasses

Sneha Sarkar
U.G 5th semester
Dept. Of Zoology
Krishnagar government college
Email ID - snehasarkar478@gmail.com

Abstract

It is not quite pleasant to see the phenomenon of explosion in an animal although at the same time it is quite interesting biologically and scientifically. There are several cases of explosion of whale body that generates gases inside their stomach and large internal organs. Mainly dead individuals show this phenomenon. After the gassy explosion ruptured internal organs come out. So it can be deadly for any individual just standing near the giant dead whale.

Introduction

When a whale dies in the wild, it sinks to the ocean bottom and gradually scavenged by the communities of big fishes, sharks and tiny worms. But this is a lengthy process of decomposition which can take so many years. This is also known as the whale fall.

But sometimes dead whale comes near the sea beach by the water current mechanism and can be exploded badly. The gas formed inside the body of the whale and the pressure created by those gases, is responsible for the bloody explosion

Why do whale explodes after they die?

- **The gassy explosion**

Gassy explosions are the natural part of decomposition in exploding whales. As blood circulation and respiration stops due to death, decomposition of cells and tissues occur by the microbes which are already present in the body. It leads to further proliferation of bacteria. The process produces gases like methane, carbon dioxide and nitrogen, those gases increase the pressure inside the hard covering of the whale. The trapped gases cause the whale to swell up like a balloon.

In normal condition those trapped gases would make their own way to come out through any orifice like the mouth or anus. But it is believed that the whale's own body weight seals or blocks all the orifices. So, there is no way for the gases to escape. Along with it the thick fat layer under the whale's skin, means the blubber makes the matter even worse. When the threshold pressure is passed, the big balloon like structure burst out and the explosion occur.

Why dead whales are dangerous?

As a result of a bloody explosion all the internal organs and fresh flesh come out from the ruptured body with a great speed that is 17.7m/s or about 40 mph.

The intensity of the explosion is high due to the large size of the whale and it can often shower bystanders with rotten organs. Many times the extreme intensity of the explosion carries pebbles and other debris with it which act like shrapnel and can cause injury to a bystander. Sometime it can be deadly.

Ecological Significance

Whales play a vital role in the marine ecosystem and help to combat the climate change. The more the whales there are, the healthier the ocean will be and less carbon dioxide there will be in the atmosphere.

Even the dead whales also play an important role in food chain .When a dead whale sinks down to the ocean bottom it creates a unique ecosystem for bottom dwelling organisms. It can attract a huge population of hag fish, shark and amphipods. Their body can weigh up 200 tons and contain massive amounts of fat and protein. The fortunate creatures experiencing the whale fall and welcome such a great source of nutrition.

References :

Bhatia, A. (2014, January 5). What's the pressure inside an exploding whale? Wired.

Huffington Post Canada. (2014, May 31).

Logan, N. (2014, April 28). Dead blue whales washing ashore in western Newfoundland. Global News.

National Oceanic and Atmospheric Administration. (n.d.). Protecting marine life.

O'Connor, J. (2014, May 1). . National Post.

Asian Palm Civet

Ratirupa Simlai
Zoology Hons ,5th semester, Krishnagar Government College
Email ID - ratirupa.simlai@gmail.com

Origin and Description:

The Asian palm civet (*Paradoxurushermaphroditus*), also called common palm civet, toddy cat and musang. They are small cat-sized mammals that live in South and Southeast Asia. Their long, stocky body is covered with coarse, shaggy hair that is usually greyish in color.The muzzle, ears, lower legs, and distal half of the tail are black, with three rows of black markings on the body. The tail is without rings.Its sharp claws allow climbing of trees and house gutters. In most parts of Sri Lanka, palm civets are considered a nuisance since they litter in ceilings and attics of common households, and make loud noises fighting and moving about at night.

Asian palm civets also feed on palm flower sap, which when fermented becomes toddy, a sweet liquor. Because of this habit, they are called “toddy cats” and Civets are also often called civet cats but in fact, they are not cats. They are more closely related to mongooses.

- LIFE SPAN- 15-24 YRS
- WEIGHT- 2-5 KG
- LENGTH- 48-59 CM

Distribution and Habitat:

Asian palm civets are native to India, Nepal, Bangladesh, Bhutan, Myanmar, Sri Lanka, Thailand, Singapore, Peninsular Malaysia, Sabah, Sarawak, Brunei Darussalam, Laos, Cambodia, Vietnam, China, the Philippines, and the Indonesian islands of Sumatra, Java, Kalimantan, Bawean and Siberut. Asian palm civets lead a solitary lifestyle,It usually inhabits primary forests, but also occurs at lower densities in secondary and selectively logged forest.It is also present in parks and suburban gardens with mature fruit trees, fig trees, and undisturbed vegetation. They the day they usually rest in trees or inside rock crevices are both terrestrial and arboreal, being active during the night with peaks between late evening until after midnight. During.

Population number:

- POPULATION TREND- Decreasing
- POPULATION STATUS- Least concern (LC)

Since 2008, it is IUCN Red Listed as Least Concern as it accommodates to a broad range of habitats. It is widely distributed with large populations that in 2008 were thought unlikely to be declining.In Indonesia, it is threatened by poaching and illegal wildlife trade; buyers use it for the increasing production of kopi luwak.According to the IUCN Red List, the total population size of the Asian palm civet is unknown. Currently, this species is classified as Least Concern (LC) on the IUCN Red List but its numbers today are increasing.

Ecological Significance:

The Asian palm civet is an omnivore feeding foremost on fruits such as berries and pulpy fruits as a major food source and thus help to maintain tropical forest ecosystems via seed dispersal. It eats chiku, mango, rambutan, and coffee, but also small mammals and insects.These animals also play an important role in the natural regeneration of some kinds of palms at GunungGedePangrangoNational Park as they feed on the seeds of those palms .

References :

https://en.m.wikipedia.org/wiki/Asian_palm_civet

https://www.pngitem.com/middle/imJhooi_iucn-transparent-least-concern-hd-png-download/

Earth is Dimming Due to Climate Change

Pritam Das, Sourati Sinha, Soumik Saha and Shontol Bhowmic

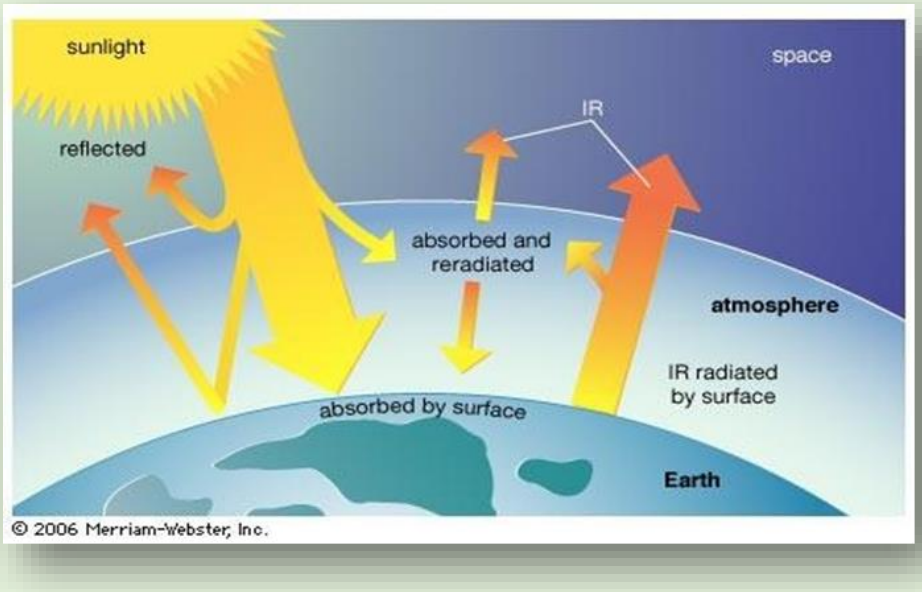
Zoology Department, Krishnagar Govt. College, B.Sc. 3rd Semester Zoology (H)

Email ID - bhowmicshontol@gmail.com , soumiksaha562@gmail.com

souratisinha73@gmail.com , www.pritamdas664422@gmail.com

What is Global Dimming:

By analogy to the well-known concept of global warming, global dimming refers to the currently occurring, widespread and significant reduction in global irradiance, that is the flux of solar radiation reaching the earth's surface both in the direct solar beam and in the diffuse radiation scattered by the sky and clouds. It is a concept that has been observed since systematic measurements began in the 1950s. It was coined by an English scientist working in Israel, known as Gerry Stanhill, who first spotted these effects. He compared Israeli sunlight records from the 50s with the current ones and was astonished to find a 22% drop in the sunlight. Intrigued by the records, he investigated the phenomenon further and found the same story almost everywhere he looked, with sunlight falling by about 10% over the US, 16% in parts of the British Isles and by up to 30% in parts of the Soviet Union.



Various regions observe different levels of global dimming. Till now, the Southern Hemisphere has seen very small amounts of global dimming while Northern Hemisphere has witnessed more significant reductions, to the tune of 4-8%. Regions such as parts of Europe and North America have observed partial recovery from dimming while parts of China and India have experienced an increase in global dimming.

Various Causes of Global Dimming:

1. Aerosols

They are a colloid of fine solid particles or liquid droplets in the air and other gases, which are believed to be the major cause of global dimming. Most aerosols in the atmosphere, only scatter light from the sun, sending back to space some of the sun's radiant energy as well as exerting a cooling influence on the earth's climate. Sulphate aerosols in the atmosphere are due to human activities and they have interfered with the hydrological cycle by reducing evaporation and may have reduced rainfall in some areas.

2. Particulate matter

These includesulphur dioxide, ash and soot, which are by-products of burning fossil fuels as well as internal combustion engines. Once they enter the atmosphere, they directly absorb solar energy and reflect back into the space radiation from the sun, before it reaches the surface of the earth. By reflecting the radiation from the sun back, they cause a dimming in the energy and light from the sun that reaches parts of the earth.

3. Water Droplets

Water droplets in the atmosphere may contain airborne particulates like sulphur dioxide, soot and ash, which form polluted clouds. These polluted clouds contain a heavier and larger number of droplets than normal clouds, which change the properties of a cloud, resulting in 'brown clouds. These clouds reflect light and energy from the sun back into space, resulting in global dimming.

4. Vapours

Vapour in the atmosphere could result from numerous sources such as evaporation from bodies of water. However, the vapor in question is that from planes flying high in the sky, called contrails. They reflect heat from the sun back into space, causing global dimming.

5. Wildfires

Over the last few years, wildfires have been more vicious than ever and in 2020 alone, wildfires have burnt more than a million acres in Oregon and more than 4 million acres in California. The wildfires have become so severe that entire cities are literally staying in some sort of dim light for days due to the amount of smoke in the atmosphere. Although the smoke will eventually clear, it adds to the causes of global dimming like particulate matter and the fine solid particles that cause global warming and global dimming.

Effects of Global Dimming

1. Effects on water

As a result of the reflection of solar energy away from the surface of the earth, the water in the northern hemisphere is becoming colder. This is resulting in slow evaporation and the generation of far lesser water droplets. As a result of these, there is a reduction in the amount of rain reaching these areas of the globe causing drought and famine situations. The tragic consequences of these are miserable lives, disturbed marine life and deaths due to starvation

2. Drought in sub-Saharan Africa

It has been established that the drought and famine of The Sahel, which killed thousands in sub-Saharan Africa in the 1970s was largely due to global dimming. The profound drought was first blamed on farmers in the region for degradation of the land and desertification but that idea has since been disproved and global dimming is understood as the leading cause.

3. Change in overall land temperatures

Again, as a result of global dimming which reflects solar energy and heat that was meant for the planet's surface, the overall temperature on land goes down. Global dimming means there is a blanket in the atmosphere which prevents all the heat from the sun from reaching us. This results in colder days and an overall change in global temperatures.

4. Effects on plants

Plants depend on light for photosynthesis. A decrease in sunlight or solar radiation will negatively affect photosynthesis in plants. The process in green plants uses light energy and converts water, carbon dioxide and minerals into oxygen and energy-rich organic compounds. Humans rely on the oxygen for survival, and so do other animals as well as bodies of water

5. It counters global warming

Global dimming is believed to be counteracting the actual effects of carbon emissions on global warming. This creates a catch-22 situation from which in defeating one evil against the environment, means exposing ourselves to another. If efforts are made to reduce particulate emission causing global dimming, it will enhance global warming and increase the global temperatures to more than double, making the planet uninhabitable.

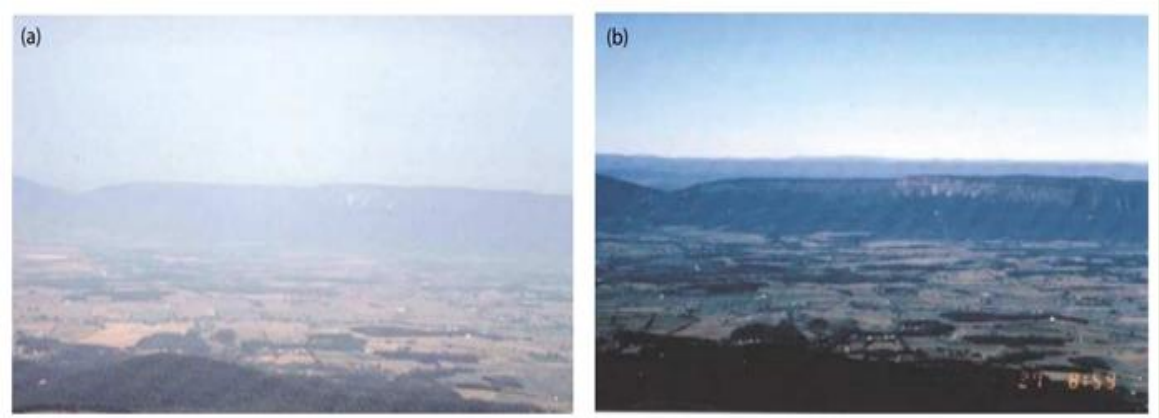


Fig. Effects of pollution-induced regional haze on visibility as monitored at the Skyland site, Shenandoah National Park, Virginia, USA: (a) visual range 40 km, cumulative annual frequency of occurrence 55%, and (b) visual range 250 km, cumulative annual frequency of occurrence <1%

Ways to Reduce Global Dimming

1. Switching to alternative sources of energy: Many nations that have or had high levels of global dimming can be characterized by the fact that they produce or produced their energy through the burning of fossil fuels. Burning fossil fuels releases carbon dioxide and other greenhouse gases, which contribute to global warming. At the same time, these gases also produce aerosols as a by-product of burning fossil fuels such as coal. These aerosols account for global dimming and in switching to alternative sources of energy, will reduce these aerosols and global dimming.

2. Reducing levels of pollution: Since the 1980s there have been campaigns and controls that have substantially reduced air pollution, a contributing factor to global dimming. Reducing pollution can control the amount of particulate matter and pollutants in the atmosphere which might bring about global dimming. Still, more needs to be done because airplane contrails are still providing some dimming

3. Controlling wildfires: Wildfires have an effect on the atmosphere by causing regional dimming, even if it is for some time. Wildfires occur all over the world throughout the year and minimizing or at least controlling them, will reduce dimming

4. Switching to nuclear energy: Nuclear energy is a much better alternative to fossil energy as it is free from producing outputs of carbon, yet it produces more electricity than wind and solar power. It is the best alternative in highly industrialized countries like the US and China. In China and India, for instance, they are shutting down coal plants and building more nuclear energy plants, which will see them lower their levels of dimming.

5. Driving less: Vehicles produce a lot of emissions that are harmful to the environment. These particles are highly attributed to both global warming and global dimming. If we drive less, we might clear the environment and reduce dimming. The ongoing Coronavirus Pandemic has had a positive effect on the environment by increasing air quality all over the world as most nations instituted lockdown measures. Factories were shut down and people were forced off the roads, reducing emissions.

The Future of Global Dimming

A verified and theoretically based explanation of global dimming is needed to establish that the restrictions to fossil-fuel combustion proposed in the Kyoto Protocol on Climate Change are indeed essential. Substantiation of the currently most plausible explanation of global dimming – enhanced cloud absorption of solar radiation due to the indirect aerosol effect – would provide a strong additional argument for reducing the use of fossil fuels. As these represent the non-renewable photosynthetic harvest of solar energy from the distant past, their conservation could, perhaps ironically, help to restore solar radiation to its former levels.

Reference: Gerald Stanhill (2001) "Global dimming: A new aspect of climate change".

Hawksbill Sea Turtle

Debjyoti Saha

Zoology Department, Krishnagar Govt. College, B.Sc. 3rd Semester Zoology (H)

Email ID - debjyotisaha07@gmail.com

Introduction :

Hawksbills are named for their narrow, pointed beak .They Considered by many to be the most beautiful of sea turtles for their colorful shells . They also have a distinctive pattern of overlapping scales on their shells that form a serrated-look on the edges. These colored and patterned shells make them highly-valuable and commonly sold as **"tortoiseshell"** in markets. The hawksbill sea turtle (***Eretmochelys imbricata***) is a critically endangered sea turtle belonging to the family **Cheloniidae**. It is the only extant species in the genus **Eretmochelys**. Their weight is 90-150 pounds & length is 30-35 inches .

Distribution:

Hawksbills are found mainly throughout the world's tropical oceans, predominantly in coral reefs. They feed mainly on sponges by using their narrow pointed beaks to extract them from crevices on the reef, but also eat sea anemones and jellyfish. Sea turtles are the living representatives of a group of reptiles that has existed on Earth and travelled our seas for the last 100 million years. They are a fundamental link in marine ecosystems and help maintain the health of coral reefs and sea grass beds.

DIET:

Hawksbills are omnivorous, consuming sea grasses, sea urchins, barnacles, small animals, and—their favorite food—sponges. In the Caribbean, as hawksbills grow, they begin exclusively feeding on only a few types of sponges, and they can eat an average of 1,200 pounds (544 kilograms) of sponges a year. However, in the Indo-Pacific, hawksbills continue eating a varied diet that includes sponges, other invertebrates, and algae. Interestingly, some of the sponges and small animals that hawksbills consume are toxic. The hawksbill's body fat absorbs the toxins without making the turtle ill.

Lifespan & Reproduction :

Hawksbills are estimated to reach maturity between 20 to 35 years of age, depending upon a variety of factors, especially resource availability. Although life expectancy remains unconfirmed, they are long-lived and estimated to live 50 to 60 years. Every 1 to 5 years, female hawksbill turtles return to nest on beaches in the general areas where they hatched decades earlier. Hawksbills generally lay three to five nests per season, which each contain an average of 130 to 160 eggs. The nesting season varies by location, but in most places occurs between April and November of each year. Hawksbills typically nest at night on small and isolated "pocket" beaches, with little or no sand and a rocky approach. They usually nest high up on the beach under or in vegetation.

DID YOU KNOW?

Hawksbills are important inhabitants of coral reefs. By consuming sponges, they play an important role in the reef community, aiding corals in growth. It's estimated that one turtle can consume over 1,000 pounds of sponges per year. Without them, sponges have the ability to overgrow corals and suffocate reefs.

Conclusion :

Hawksbills are considered Critically Endangered around the world by the IUCN Red List and are listed as Endangered in the US. Some researchers believe the Eastern Pacific hawksbill is likely the most endangered sea turtle population worldwide. Their population has declined more than 80% in the last century, primarily due to the trade in their beautiful carapace (shell), also referred to as “tortoiseshell.” Its carapace, brightly colored with intricate designs, is traded internationally for ornamental purposes. The shell is used for items such as jewelry, combs and brushes, and inlay in furniture and other decorative pieces .Hawksbills were hunted almost to extinction prior to the ban on the tortoiseshell trade. Japan imported an estimated 2 million turtles between 1950 and 1992. Despite the fact that the international trade of their shells is now illegal, there is still a thriving black market. Other threats include destruction of nesting and feeding habitat, pollution, boat strikes, coastal development, entanglement in fishing gear, consumption of their meat and eggs, and destructive fishing practices like dynamite fishing. Dynamite fishing uses explosives to stun or kill fish, usually on reefs, for easy collection. The practice also causes extensive damage to coral reefs and harms other animals that may be nearby. Although illegal, this destructive type of fishing is still widespread in Southeast Asia , Africa .

References:

https://www.worldwildlife.org/species/hawksbill-turtle

https://en.m.wikipedia.org/wiki/Hawksbill_sea_turtle

https://www.fisheries.noaa.gov/species/hawksbill-turtle

https://www.seeturtles.org/hawksbill-turtles

“Save Habitats Give Lives”

Gour Gopal Goswami

Zoology Department, Krishnagar Govt. College, B.Sc. 3rd Semester Zoology (H)

Email ID - Gourgopal2003@gmail.com

INTRODUCTION:

What is climate change?

Climate change refers to a shift in average weather conditions, including measures such as temperature, humidity, rainfall, cloudiness and wind patterns – and changes in the frequency or severity of these conditions. The Earth’s climate has changed throughout its history, in cycles that occur over very long periods of time. This is a natural process.

Today we tend to use the phrase ‘climate change’ to refer to the very rapid changes in the climate that we have seen over the past 50 years or so. The scientific evidence is clear that these changes are not being driven by long-term natural climate cycles. Instead their main cause is global warming and the human activities that cause it.

What is the Earth’s atmosphere?

The atmosphere is a layer of gases around the Earth. It protects the Earth’s surface from the sun’s harmful rays and contains the oxygen we breathe.

The atmosphere is mostly nitrogen and oxygen, but it also contains smaller amounts of other gases, including those commonly referred to as ‘greenhouse gases’. Greenhouse gases include carbon dioxide (CO2), methane, nitrous oxide and also water vapour.

What is global warming?

The sun’s rays shine on our planet and warm the surface of the Earth. Heat then radiates from the surface. Scientists have shown conclusively that greenhouse gases trap some of this heat in the atmosphere. Over the history of the Earth, this ‘greenhouse effect’ has helped keep the planet warm enough for life to flourish.

In recent years, the concentrations of greenhouse gases in the atmosphere have increased rapidly, particularly carbon dioxide. The increase in carbon dioxide has been caused mainly by the burning of coal, oil and natural gas – known as the ‘fossil fuels’. Around the world, fossil fuels are used by people as a convenient fuel for transport and electricity generation. They also provide heat in homes when they are burned, and are used in industrial processes. The clearing of forest land around the world has also contributed to the changes in the atmosphere: trees absorb carbon dioxide when they grow and release greenhouse gases if they are cut down and are burned or left to rot.

Carbon dioxide is now at concentrations approaching one and a half times the level at the time of the industrial revolution around 200 years ago . The more carbon dioxide there is in the atmosphere, the more heat is trapped, and the hotter Earth becomes. This process is known as ‘global warming’ – the rising global temperatures across the Earth’s lands and oceans.

Scientists have considered a host of factors that can affect the global temperature, including changes in the strength of the sun. They have high confidence that practically all of the global warming that we have seen recently is due to human actions, primarily those that have increased greenhouse gas concentrations in the atmosphere.

Habitat is defined as an area that provides the food, water, cover and space that a living thing needs to survive and reproduce. The quality and quantity of a particular type of habitat determines the number and variety of its inhabitants. Unfortunately, in altering or creating habitat for human uses, people often cause the loss or damage of habitat needed by birds and other wildlife. This loss and degradation of habitat has resulted in widespread declines and extinctions of many species.

It is not possible for people to live and prosper without affecting their surroundings. However, people do have the ability to consider the needs of other species and can choose to modify their activities to decrease the negative effects they have on wildlife habitat.

The Extent of Habitat Alteration :

People have had a tremendous impact on habitats worldwide. Approximately half the Earth’s land area has been transformed for human use: 11 percent each for farming and forestry, 26 percent for livestock pasture, and two to three percent for development (housing, industry, services, transportation). Forest cover has been reduced worldwide. The tropical forests in the Caribbean, Central and South America decreased by 670,000 km2 from 1980 to 1995, the greatest loss in the world during this time period. North America is experiencing forest regrowth after widespread clearing, yet forest quality is declining.

The losses of natural grassland are extreme. Since 1830, the provinces of Canada and the states of the U.S. have lost 20 percent to 86 percent of their short-grass prairies, 31percent to more than 99 percent of their mixed-grass prairies, and 83 percent to more than 99 percent of their tall grass prairies. Much of the grasslands in South America, such as the steppes of Argentina, have been degraded by overgrazing.

Two-thirds of the world’s rivers have been altered and regulated. More than 50 percent of all wetlands in the contiguous U.S., and many of the wetlands in Canada, have been drained or filled since the time of European settlement. Despite restoration projects, loss of wetlands in North America has slowed but not stopped. The rate of wetland loss in Latin America remains high.

Human-caused pollution is present in all oceans of the world, with three quarters of the pollution due to terrestrial run-off. The Gulf of Mexico, one of North America's most productive marine areas, is heavily affected by coastal development. It contains a 4,144 km2 "dead-zone" (area of little or no oxygen) caused by excess fertilizer and other pollutants.

Effects of Agriculture :

The effects of agriculture on the natural environment can be tempered by adopting more sustainable management practices. These include crop and pasture rotation, terracing and tillage reduction, easement programs that take marginal areas out of production, and natural pest controls, among others. Lands used for farming can support many forms of wildlife, though not usually the diversity found in unaltered landscapes. However, wildlife habitat is more likely to be found on agricultural lands than in areas of high human density. Habitat for some species may actually be gained or improved by farming. In eastern North America, for example, cutting of forests for pasture land benefitted a number of species adapted to grassland habitat. Also, flooded fields bared by tilling may provide attractive foraging areas for shorebirds.

Effects of Logging :

Natural forests are now recognized as dynamic places, subject to natural changes that affect the quantity and quality of available habitat. However, logging has resulted in disturbance on a scale unlike any caused by natural forces. At some time in the last 500 years, 95 percent of all U.S. forests were cut, leaving few old-growth timber stands. Over the last century, much of the North American forests have regrown or been replanted, increasing to 4.6 million km2 in Canada and U.S. (13 percent of the world's forest area).

Tropical forests continue to be lost, increasingly due to direct exploitation (timber harvest). Harvest is usually unsustainable, given that government oversight and incentives, trained foresters, and local land ownership are lacking or absent. In tropical forests worldwide, less than 1percent of logging in the 1990s was carried out in a way that permitted ecological recovery.

Effects of Development :

People need places to live and work, yet our patterns of settlement can have varied effects on wildlife habitat. Of all land uses, development is considered the most lasting form of habitat loss, since the presence of pavement and buildings hinders a return to natural conditions. Currently, three-fourths of the North American human population lives in urban areas, but the trend towards urbanization has slowed significantly. Most people in Latin America also live in urban areas, often large cities, but urbanization levels are expected to rise to 85 percent in the next few decades.

In general, the congregation of people in cities probably preserves more habitat than if the equivalent population was spread evenly across the land. However, unplanned urban growth can create slums of extremely poor environmental quality. Cities also have a large "footprint," drawing resources from the surrounding areas, and the increased activity in cities results in increased production of pollution.

Achieving a Balance :

People have chosen to dedicate some areas to wildlife habitat. The World Conservation Union, an international consortium of government agencies and conservation organizations, recommends that 12 percent of the world's land area be set aside for wildlife. In the Caribbean and Central and South America, the amount of land under some form of conservation protection is increasing, with 1.3 million km2 (6.6 percent of the land area) slated for strict protection. Although legal status does not always mean actual protection in this region, the designation of protected lands is a good start. In North America, 2.5 million km2 of land, freshwater and marine areas (9 percent of the total continent) is set aside for wildlife habitat.

Protected areas are essential for maintaining many forms of wildlife. However, not all land can be protected from human activity. Thus, our challenge is to create managed landscapes and alter our activities to provide for the survival of the maximum number of species, including our own.

References:

Intergovernmental Panel on Climate Change Fifth Assessment Report https://www.ipcc.ch/report/ar5/syr/

U.S. Global Change Research Project National Climate Assessment http://nca2014.globalchange.gov

U.S. Environmental Protection Agency Climate Change site https://www3.epa.gov/climatechange/

Climate Change in California

Our Changing Climate 2012: Summary report from the Third Assessment of Climate Change in California http://www.energy.ca.gov/2012publications/CEC-500-2012-007/CEC500-2012-007.pdf

Cal Adapt: Web-based tool allowing users to identify climate change risks throughout the state http://cal-adapt.org

California Climate Change: Official State of California site with resources on state wide climate change and initiatives to reduce greenhouse gas emissions http://climatechange.ca.gov

Effects of climate change on Fisheries

Poulami Das, Ankita Ghosh and Trisha Sanyasi

Zoology Department, Krishnagar Govt. College, B.Sc. 3rd Semester Zoology (H)

Email ID - 2002daspoulami@gmail.com , 01ankitaag@gmail.com , trishasanyasi0608@gmail.com

INTRODUCTION:

Climate change usage refers to any change in climate over time, whether due to natural variability or as a result of human activity. This usage differs from that in the Framework Convention on Climate Change, where climate change refers to a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. Climate change results from the collection of carbon dioxide in the atmosphere from humans burning of fossil fuels (oil, coal, gas), which causes the earth to warm.

Effects of climate change on fish resources:

The rising ocean acidity which is mainly due to the rise in carbon dioxide levels in the atmosphere leading to a decrease in the pH (a measure of the acidity or basicity of an aqueous solution) makes it more difficult for marine organisms such as shrimps, oysters, or corals to form their shells – a process known as calcification. Many important animals, such as zooplankton, that forms the base of the marine food chain have calcium shells. Thus the entire marine food web is being altered – there are 'cracks in the food chain'. As a result, the distribution, productivity, and species composition of global fish production is changing, generating complex and inter-related impacts on oceans, estuaries, coral reefs, mangroves and sea grass beds that provide habitats and nursery areas for fish. Changing rainfall patterns and water scarcity is impacting on river and lake fisheries and aquaculture production. Warming has already affected some fish species. As the water warms, fish need more oxygen to perform daily activities, like feeding. Change in temperatures, therefore, will change fish body size and fish distributions.

For marine life two irreversible challenges, posed by climate change, are increasing water temperatures and ocean acidification. Like a sponge, the ocean soaks up atmospheric heat and greenhouse gases such as carbon dioxide (CO2). Over the last ten years.

As the ocean absorbs more CO2 from the atmosphere, a series of chemical reactions occur that cause its pH level to decrease, meaning it becomes more acidic. This lowers the amount of carbonate ions available, which are used to help build shells or skeletons for oysters, clams, corals, crabs, pteropods, and more. These underwater animals are the building blocks of life for our oceans and if their populations were to decrease it would disrupt the entire marine food web. While fish don't have shells, a slight increase in acidity can still cause acidosis, abnormal growth, and impairment of their internal chemistry. Fish living in rivers, streams, lakes, and other freshwater environments can also be impacted by an imbalance in pH levels from acid rainfall.

Arab coastal areas most affected by climate change:

Egypt's Nile Delta with its coastal front on the Mediterranean is considered vulnerable to the impacts of climate change. In addition to expected rise in sea-level, shoreline erosion, stresses on fisheries and saltwater intrusion in groundwater create major challenges. Fragile and unique ecosystems such as the mangrove stands in the Red Sea and the Arabian Gulf, which stabilize shorelines and provide a habitat for many species, may also be threatened. The northern Egyptian lakes are also highly vulnerable to the impacts of climate change. Since the lakes are relatively shallow, climate change can lead to an increase in water temperature, which could result in changes in the lakes ecosystems and changes in yield.

Eastern Brook Trout :

On the other end of the spectrum, the eastern brook trout are dependent on coldwater habitats. These fish are identified by their dark green to brown coloring, red bellies and distinctive patterns of red and yellow dots. They are freshwater fish native to Eastern North America and are commonly found in lakes, streams, creeks, rivers and ponds.

Climate change is causing streams to warm, shrinking brook trout range because of their requirement for cold water. Climate change impacts have exacerbated other external stressors, like deforestation and land development their native regions. Eastern brook trout are also sensitive to water pollution caused by fertilizer runoff and acid rainfall caused by air pollution which have resulted in pH levels being too low to sustain them, according to the U.S Fish and Wildlife Service. These impacts are directly making their habitats unsuitable and affecting their spawning capabilities, meaning less brook trout in the future.

The Eastern Trout Joint Venture is a partnership between state and federal agencies, conservation organizations, academia, and regional and local governments to help advance restoration projects focused on resiliency to conserve and enhance eastern brook trout habitats.

Pacific Salmon:

Salmon are an integral part of people's lives in the Pacific Northwest, especially for tribes in the region. Their abundance and value has not only provided a sustained source of food for humans and wildlife, but also a growing economy. There are five species of Pacific salmon: the chinook, chum, pink, sockeye and coho. Salmon are vulnerable to climate change as they depend on cold, oxygenated waters to survive. Climate change is directly impacting their habitats by warming up freshwater streams, and ocean acidification could take a toll on the food they depend on.

Migration is an important part of salmon's life cycle. Known as the salmon run, salmon migrate from the ocean where they spend most of their adulthood to streams where they spawn. Dam construction and urban development have hindered the ability for salmon to swim to streams in order for them to reproduce, on top of climate change. Some populations of Pacific salmon, like the upper Columbia River chinook, are federally listed as endangered and require decisive action to bring them back from the brink of extinction.

Loss of Pacific salmon would be disastrous for wildlife like grizzly bears, orcas, and bald eagles that depend on them as a vital food source and for human communities that depend on salmon for their irreplaceable economic and cultural value.

Take action :

Climate change impacts such as more frequent and severe floods and droughts will affect the food and water security of many people. The impact and consequences of climate change on aquatic ecosystems, fisheries and aquaculture - and on the people that depend on them - remain uncertain and less well-known. The traditional fisheries sector operates in coastal areas therefore a call for action to minimize the effects of climate change on Arab region's fisheries resources is urgently required. This call for action also requires full support from relevant Arab official institutions to the bodies operating in the region dedicated to protect the sustainability of the fisheries resources and the environment.The General Fisheries Commission for the Mediterranean (GFCM) in which membership includes Arab states bordering the eastern and southern shores of the Mediterranean, the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) headquartered in Jeddah, Saudi Arabia as well as the relevant national and international fisheries and environmental organizations concerned. Support to these bodies will contribute in stabilizing and reviving the depleting fisheries stocks and save the resources for future generations by employing responsible fisheries operation.

Climate change is only one of much security, environmental and developmental challenges facing affected countries. Its impacts will be magnified or moderated by underlying conditions of governance, poverty and resource management, as well as the nature of climate change impacts at local and regional levels. Climate change is a compounding factor that regional fisheries managers cannot ignore that fishermen, fish farmers and fishing communities, particularly those in coastal areas, are vulnerable. It is not surprising; therefore, that the subject of climate change has been recognized as a fundamental development challenges that require special attention by policy and decision makers.

Effect of Climate Change on Polar Bear

Anurima Dey , Sayani Trivedi , Pronita Thakur

Zoology Department, Krishnagar Govt. College, B.Sc. 3rd Semester Zoology (H)

Email ID - anurimadey9@gmail.com , sayani2002trivedi@gmail.com , pronitathakur6@gmail.com

Climate change:

Climate change refers to long term shifts intemperature and weather patterns. Theseshifts may be natural, but since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels (like oil, gas and coal), which produces heat-trapping gases.

Every few years, the International Union for the Conservation of Nature (IUCN) publishes a “Red List”– an overview of the conservation status of threatened animal and plant species. The latest iteration, published in 2015, classifies polar bears as “vulnerable”, meaning they are facing a high risk of extinction in the wild.

Polar bear (Icon on Ice):

- Scientific name- Ursus maritimus
- Nick name- Historically, the polar bear has also been known as the "white bear". It is sometimes referred to as the "nanook", based on the Inuit term nanuq.
- Order-carnivora
- Family-Ursidae
- Gestation period-195-265 days
- Mass-450 kg (mature),150-250 kg (adult)
- Height-1.8-2.4 m (adult)
- Habitat-Polar bears’ primary habitat is sea ice. They use it as a platform to hunt seals. The map below shows the 19 different regions where polar bears live, extending across Arctic regions of Canada.

Climate change and polar bear:

Climate change particularly affects the Arctic region, where warmer temperatures are causing decrease in sea ice extent and thickness,coastal erosion, melting of glaciers and sea ice. For polar bears, the reduction in sea ice is now considered to be a major threat to their survival in more southerly areas of the Arctic because they use sea ice as a resting and hunting platform.

In Canada during summer there is absolutely no ice, thus polar bears must adapt to live on land until the season changes and it freezes. As they adapt to live on land, it provides them to have either little food or nothing until they can hunt again on ice. Hunting and living areas are reducing.

Changes in the timing of sea ice formation and break up limits the amount of time bears can feed off seals during late and early summer, hence limiting the amount of fat they are able to store for later seasons. Lower rates of food intake and storage correlates to low reproductive rates, and since females do not have sufficient fat and mass required for successful parturition.

Due to climate change, it is causing a horrible change in polar bears diet, they are suffering from starvation during a long period of time, which has led them to act upon each other as cannibals. As a matter of fact, it has never been seen polar bears killing each other for food , instead the only reason they would is for dominance or kill cubs so they can breed with the females.

Greenland/Denmark, Norway, Russian and the United States.

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Images of Climate changes effects on Polar Bear

Why should we care about polar bears:

Polar bears have a strong cultural significance for Arctic people, and beyond, polar bears are top predators in their food web, which means they play a vital role in the balance of their ecosystem. By helping protect the polar bear, we are helping to make sure the Arctic food chain stays healthy, for the benefit of wildlife and people in and beyond the Arctic. The Arctic provides fish for millions of people, including here in the UK.

How can we save polar bears:

1. Live a more Eco-Friendly Lifestyle- Use our cars less. We can reduce our energy use now to protect the sea ice habitat for polar bears by reducing the amount that we drive, because transportation is a leading cause of greenhouse gas emissions.

2. Recycle- A lot of garbage is being dumped and can cause major issues in our ecosystem. So next time you're looking to throw out a bottle or can may be just hold on to it until there is a recycling bin nearby.

Future of the polar bear:

Throughout the Arctic, polar bear populations are projected to decline by 30% by 2050, according to the World Wildlife Federation. A study published in 2020 took a detailed look at which polar bear populations are most at risk over this century. The scientists compared the needs of polar bears with Earth system model projections of temperature and sea ice for different areas of the Arctic. They found that as the climate continues to change, polar bear cubs are the most vulnerable and are at risk of not surviving to adulthood. On a more positive note, the scientists found that if greenhouse gas emissions are reduced to be more moderate over this century, polar bears in some parts of the Arctic will be able to survive even with increased risks

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References:

https://www.amnh.org/explore/ology/earth/ask-a-scientist-about-our-environment/how-can-we-save-polar-bear-from-extiction

https://www.carbonbrief.org/polar-bear-and-climate-change-what-does-the-science-say

https://scied.ucar.edu/learning-zone/climate-change-impacts/polar-bears

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Land Of Greenery

Titli Ghosh
ZoologyDepartment Krishnagar Govt College, B.Sc.3rd Sem
Email ID - titlighosh2403@gmail.com

"Society is all but rude,
To this delicious solitude."
----The Garden,

Since our childhood, we've all read the subject, environmental science. We all know about this topic. Still, how many people do obey those? How many people do protect them? Nowadays the concern about nature issues is increasing. Yet, it's not enough.

At this prospect, I can obviously say that Shillong, capital of Meghalaya, is such a different place. This place is also recognised by the name **'Scotland of the East'.** That picturesque beauty is a nourishment for our eyes and soul. The main attraction of this city is all the hills are totally covered with green trees and each and every house there are various kinds of plants, which is very much surprising for those who start their days seeing the buildings and live among the pollution in the atmosphere. The city has grown up in the lap of the nature. Therefore this trip was too exciting for us.

On 2nd October, in 2021 I started my journey from Dumdum Airport with my family and after 1 hour and 30 minutes we landed in Lokpriya Gopinath Bordoloi International Airport, located in Guwahati, Assam. Then again started for Shillong by car after having some food. This journey required a minimum of 3:00- 3:30 hours. After that we reached our destination. On the very next day, we visited the locality where our hotel was situated. During that time, I noticed what a neat and tidy place it is! Not only about the cleanliness but also the local people are too much responsible to their nature. There is a rule that none can use the road side as their toilet or if anyone has been caught doing so, that person must pay for that. The weather of that place is always cloudy and sometimes sudden rain also comes. Due to the cold weather we always wear sweaters even during the day time. The street dogs are very much hairy.

Actually, Meghalaya is a tribal state and there are 3 hills, named Khasi, Jaintia and Garo. By those names of the hills there are 3 tribes. Besides the majority of tribal people there are a lot of Bengali families that live and most of them came from Bangladesh. People from Bihar, U.P. also live there for their profession. This state is a matrilineal society where after marriage the groom comes to the bride's house. Women empowerment is very effective here. That is why criminal offences against women never happen here. You'll be definitely amazed after hearing the strange thing that no railways are in Meghalaya. So, the road is the only way for communication.

On 4th October, we travelled to Cherrapunji. On the way to that place there were so many falls and among those the 'Seven Sisters falls' are very much attractive. What a mesmerising beauty that was! In Front of our eyes the clouds gathered and covered the falls and at a glance again we could see the falls. It seemed that clouds were playing hide and seek with us. viewpoint named 'Mawsmai Cave' which was too adventurous for us. That cave was narrow and dark, so many people were afraid to cross, even my mother, but after being inspired by me and my father, she became successful in crossing the cave.

The next day we visited Shillong city. Elephant falls and Hydari park were awesome. In this park there was a little zoo. Police bazar was the main marketplace of this city. Then on 6th October, we went to Dawki and visited the India - Bangladesh border, Tamabil border. There was a Crystal clear lake but due to rain the mud water mixed with that lake's water. So, we couldn't see crystal clear water. Then we came to the cleanest village in Asia, Mawlynnong village where it seemed that all the trees were welcoming us. Chirping of birds, voices of many unknown insects, cold breeze and the fascinating view cherished our mind. It felt like time stopped here due to the mental peace which could be found there. But what could we do? We had to go to the next viewpoint, the root bridge, where we had seen how a bridge was made by the roots of the trees in a natural way. That was beautiful. Due to this pandemic, the Shillong peak viewpoint was closed to tourists. Our trip ended by visiting Rabindranath Tagore's house in Shillong from where he wrote "Raktakarabi" and "Shillong r Chithi".

This state has a rich bird diversity. Rufous Necked Hornbill, the Darter, Tawny Fish Owl, Blyth's kingfisher are found here. Herbivores commonly found are elephant, gaur, sambar, serow, barking deer etc. Omnivores like jackals, common fox, sloth bear, mongoose etc. And among primates Hoolock Gibbon, the only ape found in India and capped Langur both globally endangered species, are also found in this state. Reptiles such as the Bengal Monitor Lizard, Water Monitor Lizard and various snakes like the king Cobra, Indian Cobra, Indian Rock Python etc. are also found. Balpakram, Nokrek National park and Siju, Baghmara Pitcher Plant, Narpuh Sanctuaries, even Nokrek Biosphere Reserve, Garo hills Elephant Reserve are also there. I've got to know that wild animals in distress are rescued and brought to Lady Hydari Park,Shillong and Nehru Park cum Mini Zoo, Dana Gre for their veterinary care and treatment. After their recovery, all such animals are again released into suitable habitats. Every year, the Department also recognizes the selfless efforts of the individuals involved in animal rescue by bestowing ‘Wildlife Samaritan award’ upon hundreds of individuals during the Wildlife Week Celebration.

In Hydari park, mammals like, Sambar Deer, Barking Deer, Hog Deer, Rhesus Macaque, Himalayan Black Bear, Indian Porcupine, Slow Loris, Civet Cat, Leopard Cat, Himalayan Yellow Throated Marten, Stumped Tailed Macaque, Serow, Common Fox,Clouded Leopard, etc. and birds such as Indian Pied Hornbill, Northern Goshawk, Himalayan Griffon , Goose Bar Headed, Heron Pond, Owl Brown Fish, Pelican, Eagle Crested Serpent etc. are kept here. Asian Brown tortoises are also found here.

The staple food of the people in Meghalaya is rice with spicy meat and fish preparations. They rear goats, pigs, fowl, ducks and cows and relish their meat. The dishes of Khasis and Jaintia are Jadoh, Ki Kpu, tung rymbai, and pickled bamboo shoots; bamboo shoots are also a favourite dish of the Garos. Momos and Chowmein are in high demand also. Pineapples are available here and cheap also.

"When we have run our passion's heat,
Love hither makes his best retreat.
The Gods, that mortal beauty chase,
Still in a tree did end their race:"
---- Andrew Marvell.

Yes, it's right. Becoming closer to nature is a peaceful feeling that gives us a break from our monotonous lives.

Therefore we ought to protect our nature and the animals to retain the ecosystem and take a pledge to make everyone aware about this.

Way To Mangrove - A World Heritage

Name- SaptadipaChakraborti
Student of 5th semester (Department of Zoology)
Email ID - saptadipa2001@gmail.com

"Diversities in nature are unique features of nature, all admire;
Everything we see in everywhere has come from Nature as source."

Most probably,it was my first trip for 3 days after this global pandemic.As we wanted to explore the diverse green forest, we had planned to go to the world's largest mangrove forestin Sunderban. It was 12th November,the first day in Sunderban. That day we were on Buriganga river and the enchanting aspects of Sunderban really made us amazed.

Sunderban is the richest biodiversity hotspot in India known for mangrove that serves as the **biological buffer** between sea and land. It covers an area of 10,000 square km of which, inWest Bengal they extend over 4,260 square km across the South 24 Pargana and the North 24 Pargana.

The first day, we spent our whole day on boat, relishing the smell of green. The biogeography of Sunderban is really unique and the region harboursa rich diversity in terms of species content, ecosystems and habitat. As far as we know, Sunderban is the key home of more than **40 species of mammals, 163 species of birds, 56 species of reptiles, 67 species of crabs**. It was beyond our imagination that how species rich area it is. This deltaic ecosystem is the single largest continuous area in the world for the threatened **Royal Bengal Tiger**, the star attraction of Sunderban. Our tour guide had informed us about some endangered species in Sunderban, like- Royal Bengal Tiger**(*Panthera tigristigris*)**, the Estuarine Crocodile (***Crocodilusporosus***), Gigantic Dolpin(***Piatinlstagagetica***), Estuarine Hard Shelled River Terrapin(***Batagurbaska***).

Literally, the abyssal mangrove forest just snatched our mind away. It represents the largest mangrove diversity with 81 plant species. The Sunderban flora is chracterized by the abundance of Sundori (***Heritierafomes***), Goran(***Ceriopsdecandra***), Gewa(***Excoecariaagallocha***) all of which naturally grow in **saline alluvial soil**, are often used for building houses, boats and seen prominently throughout the area. But there is a decrease in standing volume of two species- sundori and gewa. Mangroves are atransition from marine to freshwater and terrestrial systems. While travelling by boat, we were noticing tangled mass of roots known as **Pneumatophores**which grow upward from the anaerobic mud to get the supply of oxygen and also noticed the **supporting roots** that keep the trees steady in the slushy soil.

The next day, we started our journey for the most awaited place **Saznekhali forest camp**. Within **Sunderban Tiger Reserve**, an area of 1330.12 sq km is designated as the core area which in the year of 1984 was declared as **Sunderban National Park.** The rest of the area is **Buffer zone**, a part of which in the year of 1976 was declared as **Saznekhali Wildlife Sanctuary.** It is very popular among tourists and treated as a gateway for Sunderban Tiger Reserve. In Saznekhali wildlife sanctuary, the estimation exercise(2020-21) located 12 tigers. Our tour guide filled us with much more effective information. We viewed everything from the watch tower. Many sweet water lakes are being created so that the wild animals can come and drink water and the tourists might be entertained. It's manmade **observation line**. It has a beautiful mangrove interpretation centre. Here, we saw Golpata(***Nypa fruticans***), Sundori,in aconserved way. Our luck did not favour us. We could not see the star attraction of Sunderban, the Royal Bengal Tiger but we saw crocodiles lying on the shore and spotted deer in the forest. We came to know that the SunderbanNational Park, the core zone of sunderban tiger reserve was named as**World Heritage Site**by **IUCN** on 11th December 1987.We had observed nylon nets been placed to prevent tigers from straying into human habitations.

It isLeaving the Saznekhali sanctuary, we ventured to explore the canopy of **Dobanki,** the south western part of Saznekhali. This place is famous for its newly built canopy walk. We were really mesmerized seeing the greenery everywhere.

A walk on this elevated canopy walk brought the feeling of walking at a height on a canopy of mangrove vegetation. From there, we went towards the most chirping place '**The birds watcher's paradise**'. Avifauna is very rich here with almost 286 species of birds including **the Endemic Brown Winged Kingfisher** (***Pelargopsisamauroptera***) and globally threatened **Lesser adjutants**. Our boat haulted here for almost 10 mins. It seemed that we had reached to the heaven of birds full of chattering. In the twilight, the sky was tinged with different colours and the birds came to their ultimate destination. It was awonderful picture.

The last day a cultural event had been organized in our resort. Some tribal people of Sunderban came to perform folk songs and dance which often centered around the folk heroes, God, Godesses specific to Sunderban. They have unwavering faith on **Bonobibi**, the goddess of forest in sunderban.

Actually, Sunderban is prone to human-wildlife conflict because of human habitation on the fringes of protected areas. A large number of people depend upon the biodiversity resources for their livelihood so they come to the forest for collecting honey, wood, timber which results in conflict. Most importantly, the biotic pressure and unsustainable exploitation of natural habitat, resulting a great loss of biodiversity. According to the local people, they had been suffering for a few years from environmental hazards like- cyclone, flood, climate change. Recently devastating Amphan had put their lives in a fix. One of them commented "our stomachs are full with brine water of flood".

The more we get closer the more we realize the vulnerability of Sunderban. We observed closely that lying in low coastal zone makes the Sunderban more vulnerable to the effect of the changing climatic conditions. Climate change is leading to the increased salinity and permanent submergence of land mass. This results in a critical loss of biodiversity. A beautiful life bubble was seen in Sunderban but for few years it has been declining.

Due to the increased population pressure, almost half of mangrove forest have been cut down for urbanization. It seems to be a striking imbalance between exploitation and replenishment, making the ecosystem more fragile. But we see that suitable strategies for conservation and maintenance of biodiversity and ecological condition are taken with involving the local people, Government and other organizations.

I felt that people get amazed like us seeing the serenity of mangrove. **Mangrove restoration**firstly needs to be prioritized. Mangrove have been proven to the best ecosystem baseddisaster risk reduction model across the globe. Meanwhile, the time of our departure came. Somewhere, I felt a little bit unsatisfied as I couldn't be able to see my most desirable royal Bengal tiger. But the soothing ambience of Sunderban partially took the initiative to neutralize my regret. After completing our wishful visiting sight, our journey was towards to Godhali which was our starting point. It was really a remarkable journey, poured us with full of delight.

PHOTOGRAPHY

The Blue -Throated Barbet

AlankritaNath
B.Sc 5th Sem, Krishnagar Govt. College, Zoology
Email ID - nathalankrita20@gmail.com

ORIGIN : The blue throated barbet species are distributed in Pakistan, India, Nepal ,Bhutan, Bangladesh, Myanmar, Thailand ,Laos ,Vietnam & China.

DESCRIPTION: They are medium-sized barbet, measuring 20-25 cm in length & weighing 60-100 grams. Their call is fast repeated 'tu- tu- tuk' sounds.

HABITAT: The natural habitat of these barbets include subtropical & tropical lowland forests, subtropical & tropical mountain forests,primary & secondary evergreen & deciduous forests.

BREEDING HABITS: Their breeding season is from March to July in India.They mostly excavate holes in trees for nesting.The clutch contains 2-4 white eggs without any markings.The chicks hatch out after 13-15 days.

ECOLOGICAL SIGNIFICANCE: The barbets are ecologically & economically important as they help in seed dispersal & cross pollination of plants.They also control several harmful insects including termites & teak defoliator caterpillars. Shrinkage of forest areas, removal of road-side trees, reduction of gardens & large-scale urbanization are detrimental for these useful birds. In some parts of India (eg. Arunachal Pradesh), people indulge in large scale killing of barbets. Therefore, like several other species of birds, barbets are becoming vulnerable. They deserve due consideration in country's biodiversity strategies & planning. The IUCN has categorized & evaluated the species & listed it as of ' least concern'.

Damselfly

Name- Hasim Imroj Biswas

B.Sc 5th semester, Krishnagar government college

Email ID - biswashasim040@gmail.com

ORIGIN AND DISTRIBUTION :

Damselflies are flying insects of suborder Zygoptera in the order Odonata.They are more or less similar to dragonflies ,which constitute other odontatan suborder, Anisoptera, but they are smaller and have slimmer bodies .When they are resting they fold their wings ,unlike dragonflies which hold the wings flat and away from the body .An ancient group,damselflies have existed since at least the Lower Permian , and are found on every continent except Antarctica.

NATURAL HABITAT :

Thedamselflies is found in fresh, running water in streams and marshes .Adults typically remain very close to the aquatic habitat from which they emerged .

FEEDING:

Naids are predacious ,feed on small aquatic invertebrates or fish . Adults are also predatory and feed on small flying insects such as midges .

ECOLOGICAL SIGNIFICANCE :

Damselflies are extremely beautiful, they are beneficial predators because they help control population of harmful insects. Adult consume large quantities of other insect such as flies, mosquitoes and moth and eat beetles and caterpillars. One way to conserve them is by avoiding indiscriminate use of pesticides. Damselflies are very important group of insects in stream and pond ecosystem. They are often used as an indicator whether water is clean or polluted. The quality of the environment can be monitored by damselflies as there presence is strongly affected by different factors such as water flow, pollution and vegetation.

The Sundew- A Carnivorous Plant

Debraj Ghosh

5th semester , Department of Chemistry

Email ID - debrajghosh241@gmail.com

Origin and description :

Drosera sp which is commonly known as the sundews, is one of the largest genera of carnivorous plants, with at least 194 species. These members of the family Droseraceae lure, capture, and digest insects using stalked mucilaginous glands covering their leaf surfaces. The insects are used to supplement the poor mineral nutrition of the soil in which the plants grow. Various species, which vary greatly in size and form, are native to every continent. Scientific name*: Drosera burmanni.*

Distribution and habitat :

Sundews generally grow in seasonally moist or more rarely constantly wet habitats with acidic soils and high levels of sunlight. Common habitats include bogs, fens, swamps, marshes, the tepuis of Venezuela, the wallums of coastal Australia, the fynbos of South Africa, and moist streambanks. Many species grow in association with sphagnum moss, which absorbs much of the soil's nutrient supply and also acidifies the soil, making nutrients less available to plant life. This allows sundews, which do not rely on soil-bound nutrients, to flourish where more dominating vegetation would usually outcompete them.

Ecological Significance :

Sundews were used as medicinal herbs as early as the 12th century, when an Italian doctor from the School of Salerno, Matthaeus Platearius, described the plant as an herbal remedy for coughs under the name herba sole. It has been used commonly in cough preparations in Germany and elsewhere in Europe. Sundew tea was especially recommended by herbalists for dry coughs, bronchitis, whooping cough, asthma and "bronchial cramps" Because of their carnivorous nature and the beauty of their glistening traps, sundews have become favorite ornamental plants; The mucilage produced by Drosera has remarkable elastic properties and has made this genus a very attractive subject in biomaterials research.

Great Green Bush - Cricket

Suparna Baroi, B.sc 5th semester , Krishnagar government college

Email ID - baroisuparna@gmail.com

ORIGIN AND DESCRIPTION :

Grasshoppers discovered that grasshoppers hail not from Africa ,as commonly throught but from sough America .where they arose 59 million years ago . Grasshoppers are medium to large Insects . Adult length is 1 to 7 cm . depending omn the species . The range in colour from green to alive or brown and may have yellow or red marking . and they have chewing maothparts two pairs of wings , one narrow and tough the other wide and flexible and long kind legs for jumping.

COMMON NAME :

GREAT GREEN BUSH-CRICKETS (*Hexacentrus japonicas)*

NATURAL HABITAT :

Grasshoppers inhabit nearly all terrestrial habitats including deserts , tropical forest grasslands, savannabs and mountain . some species are even aquatic and place their eggs in steme of water plants.They range in colour from green to olive or brown and may have yellow or red marking.

ECOLOGICAL SIGNIFICANCE:

Grasshoppers are beneficial and play a crtical role in the environment by making it a more efficient place for plants and other animals to thrive. They facilitate a natural balance in the decomposing and regrowth process of plants. Their wast is agood source of fertilizer.It is important that the populations of their predators are also at a healthy level in order to maintain the balance.

Iguana

Jyoti Debnath
BSc, 3rd year, Zoology Hon., Krishnagar Govt. College
Email ID - jyotidebnath5586@gmail.com

Physical description :

Iguanas are 6ft long including slender tail, ancient, herbivorous lizards with scaly skin. They have strong jaws with razor sharped teeth. They have white photosensory organ called Parietal eye & elongated scales starting from the midline of the necks down to tail. The well defined snout has two nostrils & dangling below the chin is a dewlap. Iguanaiguana is a large herbivorous lizard. The scientific name is derived from the original Taino name for the species, 'iwana'.

Bionomical name:

Iguanaiguana (Laurenti, 1768)

Native region :

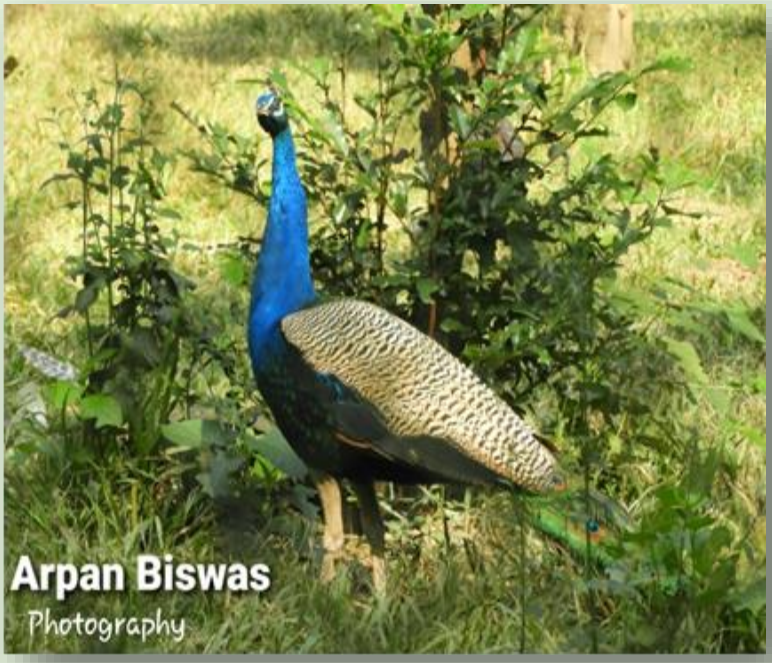
The iguanas are occur through out the tropical areas of Mexico, Central America, South America and the Caribbea

Ecological Significance :

Iguanas are very important as seed dispersers for many native plants. They can also indicate changes in the environment because reptiles are more sensitive to environmental changes.

The Indian Peafowl

Arpan Biswas, B.Sc 5th semester, Krishnagar Govt. College
Email ID - arpanbiswas539@gmail.com



Date: 20.12.2021 Location: Bethuadahari, WB

The Indian peafowl (Pavo cristatus), also known as the common peafowl, and blue peafowl, is a peafowl species native to the Indian subcontinent.

The Gharial

Arpan Biswas, B.Sc 5th semester, Krishnagar Govt. College
Email ID - arpanbiswas539@gmail.com

Characteristics:

The gharial (*Gavialis gangeticus*), also known as the gavial or the fish-eating crocodile, is a crocodilian in the family Gavialidae and among the longest of all living crocodilians. The gharial is olive-coloured, with adults being darker than young, which have dark brown cross bands and speckles. Its snout is very long and narrow, widened at the end, and with 27 to 29 upper teeth and 25 or 26 lower teeth on each side. Female gharials reach sexual maturity at a body length of 2.6 m (8 ft 6 in) and grow up to 4.5 m (14 ft 9 in). Males mature at a body length of at least 3 m (9 ft 10 in) and grow up to a length of 6 m (20 ft).

Interesting Facts:

- Gharials have between 106 and 110 interlocking, razor—sharp teeth, which help them catch slippery fish. The long, narrow snouts of gharials have low resistance, increasing their speed through water.
- Salt—excreting glands on the tongues of gharials help them tolerate saline (salty) environments.
- Of all crocodilian species, gharials have the largest eggs, weighing about 160 g (6.4 oz.) each.
- Adult male gharials have a rounded growth on the tip of their snouts, called a ghara. It enhances vocal communication by acting as a resonator that prdouces a loud buzzing call. The ghara is also a visual stimulus for females during the breeding season and helps with the production of bubbles during courtship displays.
- Gharials frequently bask in the sun to increase their body temperature, resulting in better mobility and digestion.
- Gharials have a structure at the back of the eye, behind the retina, called the tapetum lucidum, which enhances their night vision.

Ecological Significance:

Indian gharials are important predators of fish. Unfortunately the numbers of gharials are now so low that their effects on ecosystem may not be significant.

Mantis

Rumki Bala, Zoology hons. 5th semester, Krishnagar Government College

Email ID - kamalbala110@gmail.com

Origin and Description:

Mantises (*Mantis religiosa)* are distributed worldwide in temperate and tropical habitats. They have triangular heads with large compound eyes. Their forelegs are greatly enlarged and adapted for catching and gripping prey. They have a flexible joint between the head and prothorax that enables them to swivel their heads. They are also called praying mantis. They use camouflage to hide from predators and sneak up on prey. Different species vary in colours from dark brown to green. These colours allow them to blend into their natural surroundings such as tree bark or green plant leaves. Mantis have enormous appetites, eating various aphids, mosquitoes, caterpillars and other soft-bodied insects when young. Later they will eat larger insects, beetles, grasshoppers, cricket, and other pest insects.

Mantises are sometimes confused with stick insects, other elongated insects such as grasshoppers, or other unrelated insects with raptorial forelegs such as mantisflies. The closest relatives of mantises are termites and cockroaches , which are all within the superorder Dictyoptera .

Distribution and habitat:

Mantises are distributed worldwide in temperate and tropical habitats. They are generally live in the warmer regions. Most species live in the tropical rainforest, although others can be found in deserts, grasslands and meadowlands.

Ecological Significance:

A praying Mantis has a big appetite, so it’s fortunate that it is also an accomplished hunter.These insects help farmers and gardeners by eating moths, mosquitoes, roaches,flies and aphids, as well as small rodents in their fields and garden.Praying Mantis are a good sign of a healthy ecosystem.

Scarce Blue –Tailed Damselfly

Arjun sarkar, B.sc, 5thSemester, Krishnagar Govt. college
Email ID - arjunsarkar834@gmail.com

ORIGIN AND HISTORY :

Ischnurapumilio, also known as scarceblue-taileddamselfly, is found throughout Europeexcept in the north. The species is classified as scarce at first in the British Red Data Book of Insects (1987).In 2005 was considered for priority status in the UK Biodiversity Action Plan. This application was unsuccessful. The species is still a cause for concern from a conservation perspective due to loss of habitat and its tendency for ephemeral occupancy of remaining habitats. These species has a sparse and patchy distribution in Britain and is restricted to southern and western sites. The typical male has black abdomenwith a bright blue spot on tail(segment 8 and 9)Females undergo a change of color as they mature.The color of immature femaleis bright orange,the aurantiaca phase, but matures to a greenish-brown.

NATURAL HABITAT:

It usually found in shallow wetland sites suchslow flowing water, Itappears prefer early successionalhabitate with minimalvegetation, although some emergent plants are required at breeding sites.*I.pumilio* is thought to have very specific habitat requirements in Britain, which contribute to its apparent rarity.The species is said to be restricted to shallow, base-rich water with a slow flow-rate and to require a degree of openness in the form of bare, muddy ground and sparse vegetation. A common feature of most site is a degree of habitat disturbance, which maintains bare substrate, and openness of the vegetation.

ECOLOGICAL SIGNIFICANCE :

Damselflies are extremely beautiful, they are beneficial predators because they help control population of harmful insects. Adult consume large quantities of other insect such as flies, mosquitoes and moth and eat beetles and caterpillars. Damselflies are very important group of insects in stream andpond ecosystem. They are often used as an indicator whether water is clean or polluted. The quality of the environment can be monitored by damselflies as there presence is strongly affected by different factors such as water flow, pollution and vegetation.

The Little Saga of a ‘LITTLE BIRD’

QAINAT AFGA MANDAL
B. SC 3RD YEAR, KRISHNAGAR GOVT. COLLEGE
Email ID - qainat.a.mandal01@gmail.com

INTRODUCTION:

This story is about a little black bird. The Little cormorant ***Microcarbo Niger***is one of the four cormorant species that occurs in the Indonesian Archipelago. This species is widely distributed throughout the Indian subcontinent, China,Southeast Asia (Orta 1992,Johnsgard 1993). Three black cormorants(Little cormorant, Little Black Cormorant (*Phalacrocorax sulcirostris)* and Great cormorant (P. carbo)have been recorded within the Indonesian Archipelago. A fourth species, Little pied cormorant *M.melanoleucos*,is not considered here due to its striking black and white plumage.

HABITAT AND ECOLOGICAL SIGNIFICANCE:

The Little cormorant inhabits wetlands, ranging from small village ponds to large lakes.Wetlands are unique productive ecosystems where terrestrial and aquatic habitats meet.Wetlands play a critical role in maintaining their natural cycles and also supporting a wide range of biodiversities .These ecosystems serve as a “natural sponge” against flooding and drought, protect our coastlines and help fight climate change.

The Purple Sunbird

Srijani Biswas
B.sc honours,3rd year, Krishnanagar government college
Email ID - biswassrijani93@gmail.com

Origin and History:

The purple sunbird (*Cinnyrisasiaticus*) is a small bird in the sunbird family found mainly in South and Southeast Asia but extending west into parts of the Arabian peninsula. Like other sunbirds they feed mainly on nectar, although they will also take insects, especially when feeding young. They have a fast and direct flight and can take nectar by hovering like a hummingbird but often perch at the base of flowers. The males can appear all black in harsh sunlight but the purple iridescence is visible on closer observation or under good light conditions. Females are olive above and yellowish below.

Physical description :

This small sunbird has a relatively short bill, a dark and short square ended tail with distinctive sexual dimorphism. Less than 10 cm long they have a down-curved bill with brush-tipped tubular tongues that aid in nectar feeding.

Ecological Significance :

They are important pollinators of some plant species such as Butea monosperma, Acacia, Woodfordia and Dendrophthoe. but they sometimes steal nectar by slitting flowers such as Hamelia patens at the base. They are known to feed on small berries such as those of Salvadorapersica and cultivated grapes.

The Red-crested pochard

Srija Biswas
BSc, 3rd year, Krishnanagar Govt. College
Email ID - srijabiswas741102@gmail.com

Origin and History :

Nettarufina the red-crested pochard is a large diving duck. The scientific name is derived from the Greek word Netta which means “duck” and the Latin word Rufina which means “golden-duck”.

Physical description :

The males have red eyes, an orange-brown head,red beaks, and black bodywith white flanks. But, the less colorful females have dirty buff overall with pale cheeks, dark face, and rounded brown cap. When they fly, we can see a thick white wing stripe and whitish underwings.

Ecological Significance :

There is not too much information on the significance of red-crested pochards in the ecosystem. But there is a little that this species acts as a seed disperser and helps to control wetland plant populations.

Bionomical name : *Nettarufina* (Pallas, 1773)

Common name : Red-crested pochard

The Sun Conure

Mouli Chowdhury
BSc , 3rd year , Krishnanagar Govt. College
Email ID - moulichowdhury2019@gmail.com

Origin and History :

Aratinga solstitialis the sun parakeet , also known as the Sun conure , is a medium-sized , vibrantly coloured parrot native to northeastern South America . The adult male and female are similar in appearance , with predominantly golden-yellow plumage and orange-flushed underparts and face .

Sun conure is one of the more popular conure of its size due to its stunning plumage , its extraordinary disposition , and its exceptional quality as a companion bird . Sun conures are lively , vocal and expressive . This is a bird best known for its beauty and its big mouth . It is approximately 12 inches long and is most recognizable by its bright colouring .

Natural Habitat :

The Sun conure is native to South America , specifically Venezuela , Northern Brazil and Guyana . The Sun conure also may inhabit dry savana woodlands and coastal forests. They usually inhabit fruiting trees and palm groves .

Ecological Significance :

1 . There is not too much information on the significance of sun conure in the ecosystem . But it plays an important role in its **habitat by helping to propagate the forest** . Because not all of the seeds consumed are digested , many are passed in the bird's guano over new areas of the forest . Some species eat nectar and are important in the pollination of many species of plants in the tropical forests .

2 . They are best known for their **ability to precisely mimic souds , including human speech .**

The Wild Turkey

Soumyadip Choudhuri, B.Sc 5th semester, Krishnagar Govt. College
Email ID - soumyadipchoudhuri14122@gmail.com

Origin and Description :

The wild turkey (*Meleagris gallopavo)* is an upland ground bird native to North America, one of two extant species of turkey, and the heaviest member of the order Galliformes. It is the ancestor to the domestic turkey, which was originally derived from a southern Mexican subspecies of wild turkey.

The wild turkey is a large ground-dwelling bird that is 36-44 inches in length. It has a large, fan-shaped tail; long, stocky pink or gray legs; short, rounded wings; a bare head and neck and a small, down curving bill.

Distribution & Habitat :

The Merriam's wild turkey ranges through the Rocky Mountains and the neighboring prairies of Wyoming, Montana and South Dakota, as well as much of the high mesa country of New Mexico, Arizona, southern Utah and The Navajo Nation Wild turkeys typically forage on forest floors, but can also be found in grasslands and swamps.

Conservation Status :

Numbers seriously depleted by beginning of 20th century, but has been reintroduced to most of former range and established in new areas. Still increasing in many regions, and is now adapting to edges of suburban habitat in many eastern states.

Ecological Significance :

Wild turkeys provide food for their predators and impact populations of the plants whose seeds and nuts they eat.

White - Throated Kingfisher

Santu Biswas , B.Sc 5th semester , Krishnagar Government College
Email ID - santubis2000@gmail.com

ORIGIN AND DESCRIPTION:

Halcyon smyrnensis, the white-throated kingfisher also known as the white-breasted kingfisher is a tree kingfisher ,widely distributed in Asia.
This is a large kingfisher, 27-28 cm in length .The adult has a bright blue back, wings and tail .Its head, shoulders, flanks and lower belly are chestnut and the throat and the breast are white. The large bill and legs are bright red.

DISTRIBUTION AND HABITAT:

The white-throated kingfisher is a common species in a variety of habitats, mostly open country in the plains with trees, wires or other perches. This kingfisher is widely distributed in Asia from the Sinai east through the Indian subcontinent to the Philippines.
This king fisher is widespread and population are not threatened. Average density of 4.58 individuals per Km has been noted in the Sundarbans mangroves.

ECOLOGICAL SIGNIFICANCE :

The white-throated kingfisher serve as a good indicator of the health of an ecosystem. As they feed on small aquatic animals, toxins in the water affect them severely. A strong kingfisher population therefore usually means a healthy habitat .This type of kingfishers are also important predators throughout their range of small fish from freshwater habitats, thus controlling their populations.

Gaint Golden Orb -Web Spider

Santu Biswas , B.Sc 5th semester , Krishnagar Government College
Email ID - santubis2000@gmail.com

ORIGIN AND DESCRIPTION :

***Nephila pilipes* ,** also known as gaint golden orb weaver , is a species of golden orb-web spider . It resides all over countries in East and Southeast Asia as well as Oceania.

N.pilipes display female gigantism and male dwarfism. In terrestrial animals, *N.pilipes* have the most size differences between males and females. Females are large and grow to a body size of 30-50 mm, with males growing to 5-6 mm. The first, second, and fourth pairs of legs of juvenile females have dense hairy brushes, but these brushes disappear as the spider matures. The *N.pilipes* golden web is vertical with a fine irregular mesh.It is not symmetrical, with the hub usually nearer the top.

DISTRIBUTION AND HABITAT:

N.pilipes prefers moist habitats with no direct sunlight. It can be found in Japan, China, Vietnam, India, Nepal, Sri Lanka, Australia etc. In Australia, most ***N.pilipes*** are found in rainforest habitats in northern and eastern Australia, where climate is humid and vegetation offers shade against direct sunlight. In general, this spider are distributed along coastal lines, where precipitation is ample. However, reports show that this spider can be found in dry sclerophyll and low and low shrublands, hundred miles away from the coast. N. pilipes can survive in many climate types, including temperate coastal, Mediterranean, subtropical and tropical savannah climates.

BITES IN HUMANS :

The bite of N. pilipes to humans is rarely reported. Its bites are likely similar to other orb-weaving spiders, which are reported to cause acute symptoms, including muscle pain, feeling of tightness, and reflexes exaggeration. Treatment with Calcium gluconate can relieve victims from acute pains. Antiserum treatment can speed the victim's recovery.

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"Better for man were he

and

Nature more familiar friends."

- ALEXANDER SMITH

E-mail Address

natureclubzoology@gmail.com

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Krishnagar Government College

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