



# ENVOICE

A Newsletter from the Department of Environmental Science, Vivekananda College, Thakurpukur, Kolkata

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## FROM THE DESK OF PRINCIPAL

On the eve of the release of the seventh issue of ENVOICE, I do express my heartfelt congratulations to all the members who are, directly or indirectly, involved with the preparation and publication of this version. The subject 'Environment' has already gained immense attention in developed and industrialized countries; in India too, we are much aware of the fact now-a-days after a series of dialogues among the Heads of the various Nations at different levels. As a fall out of the above, it is a good news to all of us that the Govt. of West Bengal has taken initiatives in the right direction to teach Environmental Science more efficiently and effectively at the school level by recruiting properly trained knowledgeable teachers through School Service Commission. Within our college periphery, ENVOICE is a significant contribution by the Department of Environmental Science to spread awareness on various environmental issues among the young learners.

I hope, the pertinent problems of our mother planet in present time are being seriously focused in the articles contributed to this publication.

Finally I express good wishes to all concerned once again and expect much more elaboration on ENVOICE in future.

Dr. Tapan Kumar Poddar,  
Principal  
Vivekananda College, Thakurpukur

## Be the Whistle Blower

Rajarshi Mitra

Head, Dept. of Environmental Science, Vivekananda College

The concern for environment is no longer a theory, but it has become a reality and people have become desperate to cut down the emission level as much as achievable. It took around 21 years to have a Paris convention which is believed to be the most successful CoP under the series of discussions initiated at Kyoto in 1994. Although some people are tagging it as legitimizing the emission and lifestyle of rich countries, but there should not be any doubt that it is a positive step ahead.

In India too, new ideas are being introduced as it is evident through the Odd-even drive by Delhi Government. The intention of the Government to make a greener Delhi is beyond doubt. But the question, how far it is justified to use judiciary in curbing the choice of people for using their own vehicle, remains unanswered. There are even controversies about the rate of success of this drive in January in cleaning up Delhi atmosphere. But even if there is a positive change, how can such directive be imposed upon? The question becomes more pertinent when we see indiscriminate felling of old trees for the sake of flyover and road widening projects everywhere, and the afforestation programmes are still symbolic to Environment Day celebration.

The time has come to act, and that too in the right direction and at right time without any intention of being in news and controversies. Our constitution reminds us about our fundamental duties for protecting the environment and similarly makes it States endeavour to maintain the ecological balance. So be sure before you do, that you are not doing any harm to environment.

## Isn't it too Hot?

Pranabashish Kantal

B.Sc 1<sup>st</sup> yr., Department of Environmental Science

In recent days, rise in temperature, rise in sea water level, melting of glaciers are becoming one of the headlines of the day. Summers at early April with mercury crossing 40°C has caused discomfort among masses and deep lines on the foreheads of environmentalists. Hospital beds are full with patients suffering from heat strokes and other summer-related diseases. People are dying in large numbers suffering from such diseases, causing deep concerns among people of all walks of life. But these problems rose nearly past few decades. The question arises: What is actually going wrong!

The major cause behind all of these is "Global Warming". This is similar to a greenhouse, where instead of glass, carbon- dioxide gas present in atmosphere traps solar heat. Otherwise the earth would be too cold , with no life on it. Forests convert this gas to oxygen thus maintaining its balance in nature .With the advancement in technology and population rise, man is greedily clearing the forest for timber, fuel, agriculture, industrialization and urbanization. The use of fossil fuels for transport and power is increasing exponentially. The forests, which act as lungs are fast depleting. As a result more carbon dioxide is released causing this great menace.

Global warming is causing a gradual increase in temperature and drastic change in climatic cycles. Rainfall patterns are changing along with change in

seasons. While parts of world is facing severe droughts, some others are facing severe floods, causing agricultural damage, disrupting normal life. This change have even gave rise to epidemics in several parts of the world. It has even aggravated to frequent cyclones and tsunamis which is destroying coastal flora, fauna and infrastructure, causing both ecological and economical loss. Glaciers are melting at a faster rate which is rising the sea levels at an alarming rate. If the same continues, in future cities like New York, Mumbai, Shanghai, etc. would entirely submerge in sea water.



Development can't be stopped at any cost. But, it is the responsibility of all stake-holders to curb these problems. Afforestation must be made a social habit and be encouraged at all levels. Cycling and walking should be made a healthy habit and use of private vehicles must be minimized. Preference

must be given to public vehicles, carpools and electric-run vehicles. Electricity must be judiciously used at domestic and commercial levels. Power plants must switch over to alternative sources like biofuel, wind energy, solar energy, etc.

By introducing strict laws like carbon-tax, rising fuel prices, restriction on deforestation and spreading awareness are a few steps by which government can control global warming. Media should take a keen enthusiasm against global warming as they can leave a great influence in people's thoughts and encourage them to live an eco-friendly life. This is a global problem and all nations should come together to combat global warming. It's a high time to ponder on "Isn't it too hot" and every one should take strict steps to save our coming future.

## The O-Zone

Vaskar Ghosh

B.Sc 3<sup>rd</sup> yr., Department of Environmental Science

Along with temperature, humidity, precipitation, and air pressure, air quality is a fact of life that we have become aware of as pollutants threatening our very own atmosphere. You may have heard of ozone, a form of oxygen gas. If we happen to ask ourselves whether ozone is bad for us the probable correct answer would be yes and no! In the lower atmosphere, high concentrations of smelly smog ozone gas known as tropospheric ozone can cause respiratory problems and disease. Small concentrations found naturally produced by lightning aren't a problem, but power plants and many industries release gases that can build up ozone. With the wrong weather conditions preventing the gas from dissipating, ozone becomes a major health hazard in smog. Though in the stratosphere where we don't breathe it, it isn't a problem rather beneficial. There it is our best protector against ultraviolet rays from the sun. Forget your SPF 50 sunscreen, the ozone absorbs radiation and takes it out of the picture. If the ozone layer were to disappear entirely the Earth would be flooded with UV radiations cancerous to humans and destructive to all life forms on the planet.

McMurdo Station, Antarctica's "big city" on Ross Island, has a winter population of about 100 people. There, the National Science Foundation has a headquarters known as the "chalet" and dozens of smaller buildings to house and supply expeditions like Solomon's with food, computer facilities, and transportation. Arrivals sometimes shuttle from the airfield to McMurdo on trucks with tank treads to grip the snow. McMurdo Station is on the coast, where ocean waters keep temperatures relatively warm. The annual mean temperature there is -15C to -10C. The vast frozen sheets of ice and 100 ft thick snow banks that cover most of the sun's rays and keep it from warming up. Temperatures above freezing are almost never recorded, the warmest temperatures at Vostok average -33C and the minimum -89C is the lowest ever recorded on earth. Penguins and seals along the shores and bacteria in

the soil account for most of the natural life on Antarctica.

Recently though a slow rise in the annual mean temperature is noticed by a shift of about 2C, the major reason behind this being pollution. What to do about the form of pollution produced mostly in urban areas may be harmful to people, animals and flora. Dr Susan Solomon did conducted a fieldwork in a place inhabited solely by penguins, with a team of 16 scientists to Antarctica in 1986, the year before the British Antarctic Survey had made the alarming discovery of a "hole" over the southernmost continent in the layer of ozone gas that surrounds the stratosphere. Scientists had suspected that the ozone layer might be thinning in the late 1970s, but suddenly the evidence had become frighteningly clear and worse than anyone thought. The question was why/ and why of all places Antarctica? Solomon a Chemist with the National Oceanic and Atmospheric Administration (NOAA), published a paper that showed how clouds of tiny crystals high above the polar region could help pollution damage ozone. The teams started collecting atmospheric samples and study the weather conditions. They set up a light instrument along with mirrors to measure the solar intensity. The teams measurements helped prove Solomon's theory. By interpreting the wavelengths of light received by their instrument, they learned that a compound called chlorine dioxide was present in unusually large amounts above Antarctica. The compound, one of a group that comes from chlorofluorocarbons (KLOR or FLOR or KAR bins), or CFCs, traces back to aerosol spray cans in bathrooms all over the world. Drifting through the atmosphere the chlorine gases met ice clouds in the polar region, and began breaking up ozone. Solomon's work on the Antarctic Expedition broke new scientific ground in our understanding of how human-produced chemicals can alter the planet's environment profoundly. As a result she testified before the United States Congress about the need to control chlorine gases. The Montreal Protocol, an international agreement to cooperate on the ozone problem, took place in part because of Solomon's Antarctic Expedition.

## **The Shark Crisis**

*Soham Chakraborty,*

*B.Sc. 2<sup>nd</sup> yr, Department of Environmental Science*

What comes to our mind when we hear about sharks, the huge ferocious predator that must have taken a million lives? But in reality, the truth is a little bit twisted. Although sharks are huge ferocious predators, they are not that harmful to human beings, unless provoked. As a matter of fact, out of 480 species of sharks, only 3 species have reportedly attacked human beings.

That being established, what exactly is the shark crisis?

It is the series of extinctions of shark species from the oceans due to overexploitation. One billion people across the world rely on sea food as their primary source of protein. This leads to 100million sharks being killed each year, mainly due to the shark fin trades and asbycatches of fisheries. The coastal countries including India are responsible for this. The shark fin trade facilitates the most gruesome killing of these animals, by removing their fins while they are still alive and then returning them to the ocean where they die a slow and agonizing death.

But then, why should we selfish human beings be concerned about that?

Well, we should be deeply concerned with the shark crisis because as self-obsessed human beings we should know that the extinction of sharks from the face of the oceans will ultimately affect our well-being.

Sharks are the keystone predators of the ocean, which implies that sharks keep the food web in check. If sharks are wiped out of the ecosystem, the ecosystem suffers huge damage and may even collapse. In the last 35 years, 11species of sharks became extinct from the West Atlantic ecosystem, leading to the dominance of their prey species, cownosedrays, skates, etc. The ecosystem not being able to support this, led to the extinction of several

small fishes and the collapse of fisheries in the region. Also, the prey base of sharks include species like turtles, stingrays, etc that feed on carbon storing vegetation. Scientists have predicted that with only one percent loss of carbon storing vegetation in oceans, millions of tons of carbon oxides are released in the atmosphere. Also, sharks being huge animals, sequester large amounts of carbon in their body, removing sharks from the ocean can disrupt the ocean's carbon cycle.

So basically, the extinction of sharks will lead to the collapse of the sea food industry, tourism industry, pharmaceutical industry among plenty others leading to the deaths of huge amounts of people and would also cause extensive global warming ultimately leading to the same.

And for the not so self-centered people who actually care about nature, shark crisis will lead to extinction of several marine species and may even collapse the oceanic ecosystem. Greenhouse effect will also dramatically increase if sharks are extinct.

The only way to stop these upcoming catastrophes is to completely put a ban on shark hunting for commercial purposes and a stop to illegal trading. Only this way, we can put an end to the shark crisis. There are no replacements for sharks in the oceans. The hugely important role that is played by sharks can only be played by sharks.

### **Let us hear from You**

*We are eager to listen from you on the quality and context of the articles published in this annual publication of Department of Environmental Science. So, please share your opinion.*

*e-mail: [envs.vc@gmail.com](mailto:envs.vc@gmail.com)*

*Phone: [033-24976023](tel:033-24976023)*

## Resource and Women: A story from ITANAGAR

*Sristi Jha*

*B.Sc 3<sup>rd</sup> yr., Department of Environmental Science*

Access to forests and forest based resources are crucial for the survival of rural households in Arunachal Pradesh because of the poor participation of women in the state.

A study conducted by Arunachal Pradesh State Commission for Women in collaboration with Rajiv Gandhi University (RGU) said, "Access to forests and jhum lands are central for ensuring food, nutrition and energy security."

It added that as a result of privatization, commercialization and degradation of forests in the state, women are losing their access to these resources.

"Women hardly have any control over the money that comes from commercial exploitation of the forests. Deforestation in some areas has increased the work burden of women in general and poor women in particular," said the report presented by Vandana Upadhyay, department of Economics, RGU on the occasion of International Women's Day.

The report added that women in Arunachal Pradesh are moving out of agriculture at a slower pace than males and most of them work in the informal sectors.

Saying the illiteracy rate among the women workers is higher than the male workers, it added that even when there is limited degree of diversification of occupation among the female workers they typically get jobs in the low-skilled, low-earning end of spectrum.

"Even when they are employed in non-agricultural occupations, particularly in govt services, a higher proportion of women workers are found in the lowest ranks of job hierarchy", said the report.

In 1991, while 55.9 percent of the male main workers were illiterate. In rural areas, the percentage of illiterate among main female workers was as high as 90 percent.

Women's participation in decision making continues to be very low in the state, but the Panchayati Raj System is expected to pave the way for greater gender equity in political participation.

The study revealed that female work participation rate in the state is higher than the national average but it has declined in 5 out of 16 districts during 2001-2011.

Informing that women migrants constituted 37.88 percent of the total women population in the state in 2011, it says majority of the female migrants from other states of the country have migrated because of marriage and movement of families, but many of them are 'economic migrants'.

"These migrant women workers typically find jobs in the unorganized sector mainly in construction, domestic work, retail trade in vegetables and in agriculture as tenants and agricultural labourers. They do not have access to any social safety nets and are often victims of sexual and economic exploitation by their employers, coworkers and others. Mobile female workers living in labour camps and work sites are the worst sufferers", reads the report.

Access to employment and earnings is vital for having control over resources as well as for participation on decision making processes, both within and outside the household. One of the fundamental aspects of gender discrimination, in all parts of the world, is the unequal access of women to gainful employment opportunities.

**The Education of Women  
is the best way to  
save Environment**

*E O Wilson*

## News from the Department

### Summary of Students Research project

#### **A study on Habitat Preferences of migratory waterfowl in reference to basic environmental parameters.**

*Kasturi Saha, Suraj Dhali, Arka Karmakar & Avishek Misra  
Department of Environmental Science*

Bird migration is the regular seasonal movement, often north and south along a flyway, between breeding and wintering grounds. Here in and around Kolkata, many bird species immigrates throughout the year. Among them winter migratory waterfowls are given much importance. In daytimes of winter a large number and variety of migratory waterfowls can be seen in a few water bodies like Santragachhi Jheel, East Calcutta Wetland etc. whereas some other similar water bodies are totally avoided by these waterfowls or very low number of waterfowls are seen there. Finding the reason behind it was the goal of this research. Students tried to differentiate various parameters of the water bodies visited by waterfowls and the ones avoided.

There is very limited information on the habitat preferences of migratory waterfowls. In absence of such information, it was difficult to predict how various chemical, physical and biological factors will impact the quantity and quality of available habitat for migratory wetland birds. The team of students visited wetlands at Santragachhi, Nalban, Rabindra Saravar and Shyamkhola and recoded the migratory bird population along with analysis of different basic water parameters. The surrounding conditions were also noted which includes the density and position of large trees around the wetland, human interferences etc.

However, even after a thorough study the team could not come to any definite overall conclusion. The factors working behind habitat preferences of migratory ducks have been truly complex and mostly unpredictable. That is a fact in case of many previous researches also. In this study the parameters have shown some patterns which led us to some probable conclusion. First of all, Santragachhi Jheel and Rabindra Sarobar are exceptional cases where assumed reasons are not working so much. In case of other habitats the migratory ducks seem to prefer less disturbed, well vegetated seemingly unpolluted water bodies. Although, these conclusions are drawn from a very limited research study, it may be the minimum base of the future studies in this prospect.

#### **National Seminar on Environmental Management and Sustainable Development**

The department successfully hosted a National Seminar on Environmental Management and Sustainable Development on 14<sup>th</sup> March 2015. Greenvoyage – The alumni association of the department was the collaborator in this occasion.

Resource persons from University of Calcutta, University of Kalyani, BIT, Mesra, Jharkhand and Urban Planning sector delivered their thoughtful speeches to make it a grand success. The audiences including students were really benefited through interactions with the experts.

#### **Envoyage Meet, 2015**

2<sup>nd</sup> Reunion of the department was held on 2<sup>nd</sup> October, 2015 in the college premises. It was really a nice occasion for the departmental alumni and teachers to cherish about.