

## TEACHER'S ACTIVITY REPORT 2016 - 2021

**FACULTY:**

Science

**DEPARTMENT/ COMMITTEE**

Environmental Sciences

**IQAC ACTIVITY No:**

SVC 2017-18 EVS RS 12

**NAME OF THE ACTIVITY:**

DATE	FACULTY	DEPARTMENT/COMMITTEE	COORDINATOR NAME
20 March 2018	Science	Environmental Science	Dr. Robin Suyesh
TIME: Evening (35 Days)	VENUE	NUMBER OF PARTICIPANTS	NATURE: Outdoor/Indoor
	New Delhi	4	Outdoor
<b>SUPPORT/ASSISTANCE:</b>	Environmental Science, Sri Venkateswara College		

BRIEF INFORMATION ABOUT THE ACTIVITY (CRITERION NO. - )::

TOPIC/SUBJECT OF THE ACTIVITY	<b>To understand developmental abnormalities in amphibians</b>
OBJECTIVES	Amphibian Abnormality Survey (June 2016 – March 2018)
METHODOLOGY	Field visit to outskirts of Delhi NCR near Aravali Biodiversity Park (45 Days)
OUTCOMES	Delhi NCR is a polluted city and urban biodiversity is constantly under stress because of it.  This study records the first report of developmental abnormality in amphibians from New Delhi.

**PROOFS & DOCUMENTS ATTACHED (Tick mark the proofs attached):**

Notice & Letters	<b>Student list of participation</b>	<b>Activity report</b>	<b>Photos</b>	Feedback form
<b>Feedback analysis</b>	News clip with details	Certificate	Any other	

Link for media

<https://timesofindia.indiatimes.com/city/delhi/city-pollution-takes-its-toll-frog-species-missing-eyes/articleshow/63372743.cms>

Attached Below

⑤ THIS STORY IS FROM MARCH 20, 2019

Mohammad Ibrar / TNN / Updated: Mar 20, 2018, 08:35 IST

 1 PTS
  FACEBOOK
  TWITTER
  LINKEDIN

[1 PTS](#)
[f FACEBOOK](#)
[t TWITTER](#)
[in LINKEDIN](#)
[e EMAIL](#)

 

## ARTICLES

- 1 Delhi pollution takes its toll, frog species missing eyes
- 2 Jeweller targeted near Shanti Van
- 3 With its latest TVC #AbWaght-HaiChamakh Rin celebrates the...
- 4 13 held in central Delhi crackdown



NEW DELHI: The high pollution in Delhi is proving a threat to the capital's smallest known vertebrate. The new generation of *Microhyla ornata*—a small yellowish brown frog—is showing physical deformities at birth such as the absence of eyes. These were established by research conducted by the environment science department of Delhi University's Sri Venkateswara College.

## ARTICLES

- 1 Delhi pollution takes its toll, frog species missing eyes
- 2 Jeweller targeted near Shanti Van
- 3 With its latest TVC #AbWagHaiChamakin Rin celebrates the...
- 4 13 held in central Delhi crackdown



According to Robin Suyesh, professor of environmental science in the college, the research aimed at studying the behaviour of these amphibians in the Central Ridge area, which is the [species'](#) natural habitat in Delhi. "In the course of our research, however, we found many individuals with missing eyes," said Suyesh.

The researchers determined that the frogs were suffering from "anophthalmia," or the absence of the left eye. "Scientific studies across the world have shown pollution, parasitic infection and ultraviolet radiation as the probable reasons for the developmental abnormality among amphibians," Suyesh pointed out. "Dehi, which happens to be one of the most polluted cities in the world, has seen the quality of habitat constantly degrading due to anthropogenic activities, which might be affecting its biodiversity."

The population of this species has gone down over the years due to loss of habitat. "Since they are small in size and are seen in the open for only a few months in a year, not many know that this amphibian even exists," the professor said.

year, not many know that this amphibian even exists," the professor said.

Suyesh revealed that amphibians are currently the most threatened group of vertebrates with more than one-third of the total known species facing extinction. "The amphibians are particularly sensitive to environmental changes and are hence considered to be barometers of environmental change because they are the first to react to any changes around them," Suyesh said.

Earlier research conducted in the Western Ghats has shown a high number of frogs with deformities. This alarmed scientists and environmentalists who found that such physical changes were caused by toxicity in the frog's environment and food chain." While the frog's Ridge habitat is "relatively less polluted", there is nevertheless a need to reduce pollution levels in Delhi to stop it from facing extinction.

**EXPAND**

**TASK LIST**

**JO HAMESHA  
HAMARI MADAD  
KARTE HAIN  
AB UNKI MADAD  
KARNE KE LIYE  
JAAGO RE**

**ISS BAAR  
#SABKELIYE**

*Jaago Re*

LET'S LEND A HAND OF SUPPORT  
TO OUR HELD HANDS  
AND GET THEM VACCINATED

**KNOW MORE**

## SPOTLIGHT

- 1 Manav Rachna hosts live session with the PM
- 2 What makes IIM the 1st choice for aspiring students
- 3 Here's why terrace waterproofing is a must

## TOI+ STORIES



**WORD**  
*Members*

Unlock your **blog's** true  
**revenue** potential



Convenience  
Assured quality  
Total transparency  
Lowest cost of maintenance\*

\*Source: Autodata's after sales maintenance cost study is the selected segments as on November 2020.



**Know More**



Convenience  
Assured quality  
Total transparency  
Lowest cost of maintenance\*

\*Source: Autodata's after sales maintenance cost study in the related segments as of November 2020.



Know More

HYUNDAI



NAME OF TEACHER & SIGNATURE	NAME OF HEAD/ COMMITTEE INCHARGE & SIGNATURE	IQAC COORDINATOR (SEAL & SIGNATURE)

For Reference

Criterion I	Curricular Aspects (planning & Implementation)	Criterion V	Student Support & Progression
Criterion II	Teaching Learning & Evaluation	Criterion VI	Governance
Criterion III	Research, Innovations & Extension	Criterion VII	Institutional Values & Best Practices
Criterion IV	Learning Resources and Infrastructure		

### Student team for the Eco Club activity: (2019- 2020)

#### Biosciences

1. Abdus Samad
2. Abhishek Singh
3. Jyotsna Karan

#### Biochemistry

1. Megha Srigyan

#### About the finding:

Amphibians are currently the most threatened group of vertebrates with more than one-third of the total known species facing extinction. Amphibians are also particularly sensitive to environmental changes and are hence considered as environmental indicators. In this study, we report the first finding of developmental abnormality in amphibians from the city of New Delhi. The species under study is *Microhyla ornata*, which also happens to be the smallest known land vertebrate from the city of New Delhi. The individual had “anophthalmia” (absence) of the left eye and the animal was reared in captivity from the late tadpole stage to sub adult stage (image below). Scientific studies across the world have shown pollution, parasitic infection and UV radiation as the probable reason for the developmental abnormality among amphibians. New Delhi, the capital city of India, also happens to be one of the most polluted cities in the world and the quality of habitat is constantly degrading due to various anthropogenic activities, which might be affecting its biodiversity. Possible reasons for the developmental abnormality are currently unknown and further scientific studies are required to understand the exact reason for this abnormality and the extent to which it is found.








## “First report of Development Abnormality in amphibians from the degrading habitat of New Delhi”

Abdus Samad<sup>1</sup>, Megha Srivastava<sup>2</sup>, Jyotsna Karan<sup>1</sup>, Abhishek Singh<sup>1</sup>, Robin Suyesh<sup>3\*</sup>,

<sup>1</sup> Department of Biological Science, Sri Venkateswara College, University of Delhi

<sup>2</sup> Department of Biochemistry, Sri Venkateswara College, University of Delhi

<sup>3</sup> Department of Environmental Studies, Sri Venkateswara College, University of Delhi

\*Correspondence: robins@svc.ac.in

---

**INTRODUCTION**

Amphibians are considered as environmental indicators, as they have permeable, unprotected skin, which makes them more sensitive to the environmental changes than other reptiles, birds or mammals. In our study of *Microhyla ornata*, we found an individual of late tadpole stage from New Delhi, having Anophthalmia (missing left eye) considered as a developmental abnormality. We reared it in captivity from the late tadpole stage to sub-adult stage. Scientific studies across the world have revealed, environmental pollution, parasitic infection and UV radiation as the possible reason of developmental abnormalities. The exact reason for this developmental abnormality is currently unknown but it may be due to the high level of pollution in the city of New Delhi and other anthropogenic activity which may be degrading its natural habitat. Future scientific studies are needed to understand the reason.

---

**METHODS**






**METHODOLOGY** 1: Sub adults and late stage tadpoles were captured using sieve (Image A-C) 2: Stages were checked for abnormality and released. 3: An individual which had Anophthalmia (left eye missing) was raised in vivarium till sub-adult stage (see result section). (Image D: An adult *Microhyla ornata*).

**RESULT**  
 “Anophthalmia” of the Left Eye





**CONCLUSION / CONSERVATION SIGNIFICANCE**



The species is currently known only from a single locality in the city.

Action plan is required to protect the species from further losing its habitat.

Species also face other threats like noise, direct human activities.

Scientific studies like ecology and behaviour is required urgently.

---

**ABNORMALITIES REPORTED IN AMPHIBIANS (REVIEW/IMAGES)**

**Anophthalmia**

- Missing of eye (A).
- Causative Teratogen – Not yet known
- Reported region- New Delhi (India), Western Ghats (India)

**Brachydactyly**

- Shortening of toe. The Metatarsal bone numbers are normal but phalanges (bones in toe) are reduced in numbers (F).
- Teratogen- Late exposure of retinoid in developing embryo
- Reported region- Minnesota, AU

**Ectromelia**

- Lower portion of the leg is missing which makes the limb incomplete (H). Digits are absent.
- Teratogen- Chemical reagents used in pesticides, Parasites, UV-B radiation
- Reported region- Minnesota

**Amelia**

- Absence of limb, the hip region is smooth. Pigmentation is usual (B).
- Teratogen- Early exposure of chemicals agents like retinoid in developing embryo, UV-B radiation, Parasites
- Reported region- Western Ghats, Minnesota (USA), Australia (AU)

**Polymelia**

- Presence of more than two forelimbs or rear limbs (E).
- Teratogen- Parasite like *Ribeiroia* cysts, pesticides, UV-B radiation
- Reported region- Minnesota

**Microcephaly**

- Small head, blunt and curved snout (I).
- Teratogen- UV-B Radiation, Pollution, Parasite
- Reported region- Minnesota

**Hemimelia**

- The affected bone is short but part of limb like distal limb and foot are present (C).
- Teratogen- UV-B radiation, Parasite, Pollutions
- Reported region- Minnesota

**Phocomelia**

- The missing of proximal portion of the limb, foot is attached much closed to the body. Proximal bone cannot be identified (G).
- Teratogen- Pesticides, Parasites, UV-B radiation
- Reported region- Minnesota

**Skin Web**

- Continuous band of a skin crossing a joint which restricts its movement (D).

We would like to thank Dr. P. Hemalatha Reddy, Principal, Sri Venkateswara College for her constant encouragement, guidance and continuous support.

**REFERENCES**  
 Field Guide to Reptiles and Amphibians, 3rd Edition, 2003, 000000.  
 Biological Science Report, Cohen et al., 2001, American Journal of Medical Genetics, Gardner et al., 1990, Journal of Experimental Zoology, Images-  
<https://www.shutterstock.com/image-vector/abnormal-amphibian>  
<https://www.shutterstock.com/image-vector/abnormal-amphibian>  
 Google Images



**SRI VENKATESWARA COLLEGE**  
(University of Delhi)

**Internal Quality Assurance Cell**

**Chairperson**

Prof C. Sheela Reddy  
Principal  
Sri Venkateswara College

**IQAC Coordinator**

Dr. N. Latha  
Department of Biochemistry

**External Members**

Prof Debi P Sarkar  
Department of Biochemistry  
University of Delhi South  
Campus

Prof Alo Nag  
University of Delhi South  
Campus

Dr. Gitanjali Yadav  
NIPGR, Delhi

**Internal Members**

Dr. Meenakshi Bharat  
Department of English

Dr. Lalitha Josyula  
Department of Electronics

Dr. Namita Pandey  
Department of Political  
Science

Dr. A. K. Chaudhary  
Department of Physics

Dr. K.C. Singh  
Department of Physics

Dr. Swarn Singh  
Department of Mathematics

Dr. Neeraj Sahay  
Department of History

Dr. Vartika Mathur  
Department of Zoology

Dr. Shruti Mathur  
Department of Commerce

Dr. Padma Priyadarshini  
Department of Sociology

Dr. Nimisha Sinha  
Department of Biochemistry

Shri D. Venkat Ramana  
A.O( I/C)

This is to certify that the Activity report (Teacher/Department /Society/Association)  
has been submitted for documentation to IQAC, Sri Venkateswara College,  
University of Delhi.

*N. Latha*

IQAC Coordinator  
Sri Venkateswara College  
**Coordinator, IQAC**  
**Sri Venkateswara College**  
**(University of Delhi)**  
**Dhaura Kuan, New Delhi-110021**

*C. Sheela Reddy*  
PRINCIPAL

Sri Venkateswara College  
**PRINCIPAL**  
**Sri Venkateswara College**  
**(University of Delhi)**  
**Dhaura Kuan, New Delhi-110021**

Website : [www.svc.ac.in](http://www.svc.ac.in)

E-mail : [iqac@svc.ac.in](mailto:iqac@svc.ac.in)