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continued on the back inside cover

Cover: Green Bee-eater with colour pencils and watercolor wash by Elakshi Mahika Molur.



Photographic evidence of bioluminescent mushroom *Mycena chlorophos* (Mycenaceae) from Goa, India

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Pankaj R. Lad⁵ & Grenville Dcosta⁶

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The first recorded scientific description of the *Mycena chlorophos* Miles Joseph Berkeley & Moses Ashley Curtis in 1860 occurred in the year Berkeley & Curtis 1860. The mushrooms grows in subtropical regions of Asia, especially Western Ghats in India, Sri Lanka, Indonesia, and even recorded in Japan.

The mushroom contains an enzyme called as luciferase, causing substrate luciferin which catalyzes in presence of oxygen. During this chemical reaction, excess energy is released, which is visible as light/ luminescence (Kaskova et al. 2017; Patil & Yadav 2022). This light is visible to naked eye in complete darkness in the form of pale green light. Studies suggest (Fleiss & Sarkisyan 2019; Patil & Yadav 2022) that luminescent nature of the mushroom is for spore dispersal by attracting insects.

The present scientific study is the first of its kind to provide photographic evidence of *Mycena chlorophos*, a bioluminescent mushroom from Goa, the only previously known record of the same is from a newspaper article, reporting its presence in Mhadei Wildlife Sanctuary in North Goa (Times of India travel 2019). The fungus was identified based on the current literature available

(Kushwaha & Hajirnis 2016).

On foot surveys were conducted during June 2022, as it was observed that the glowing mushroom grows during initial stages of monsoon. The surveys were conducted in the buffer area of Bhagwan Mahavir Wildlife Sanctuary (15.390 N 74.226 E) where the mycelium was observed during the monsoons. The area has a scant canopy, compared to the protected zone as it is open for wood logging and sand mining. As we are looking to enrich the habitat, this proved to be a trigger point for the study.

The surveys were divided into two stages: Stage 1—preliminary surveys, where the team recorded the presence of bioluminescence on decomposing wood. After narrowing down the potential sites, stage 2 was initiated. Stage 2—a focused search was carried out to identify and establish the presence of bioluminescent mushrooms. Wherever the bioluminescent mushroom was observed, photographs with GPS co-ordinates were taken. A total of 658 grids of 10 × 10m were placed using google earth and ArcGIS were placed.

The team kept regular records and certain

Editor: Anonymity requested.

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Image 1. *Mycena chlorophos* in light. © Arcane Conservancy.

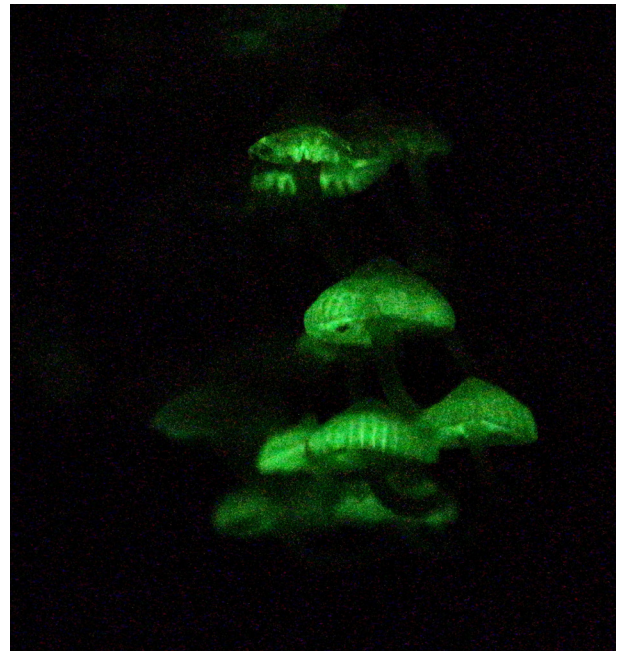


Image 2. Bioluminescent mushroom *Mycena chlorophos* emitting pale green light. © Arcane Conservancy.

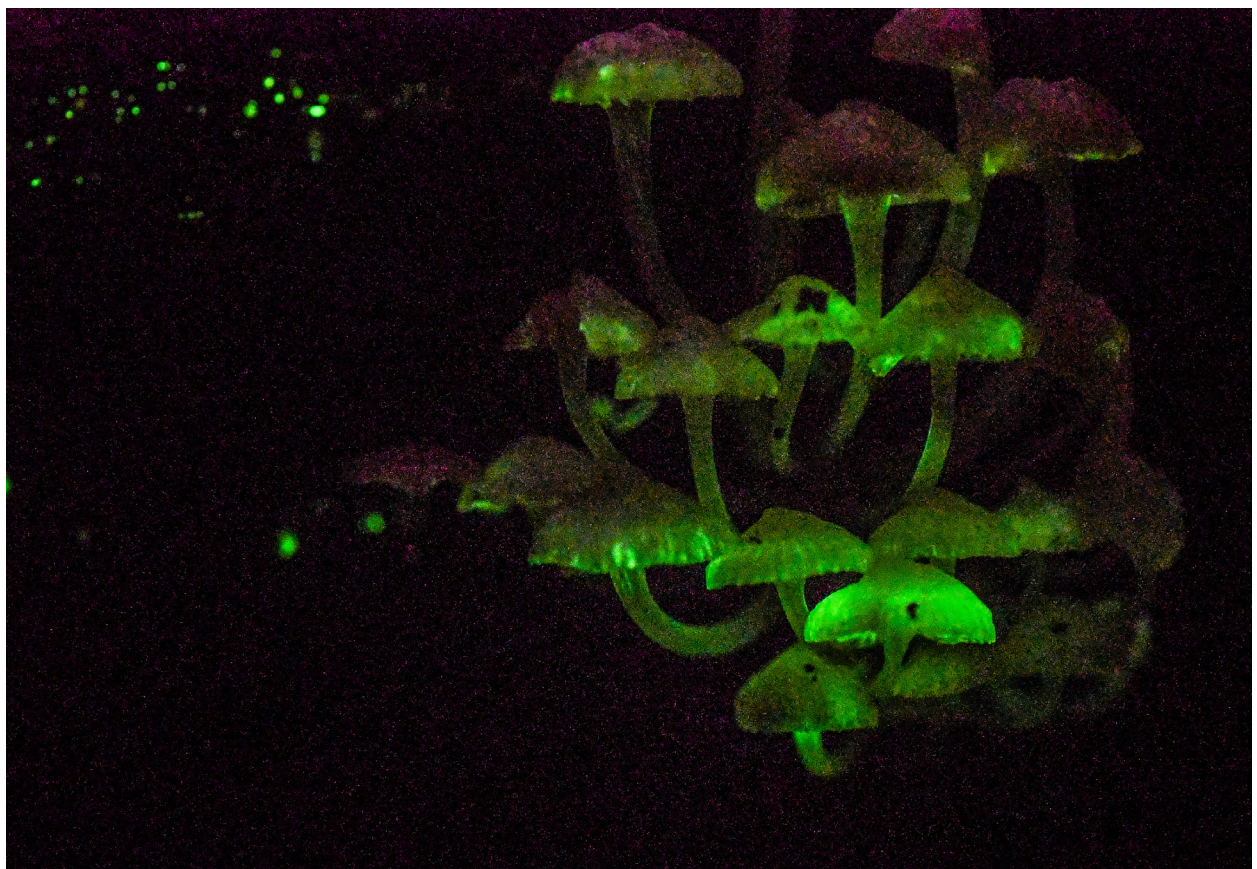


Image 3. Cluster of bioluminescent mushroom *Mycena chlorophos*. © Ramesh Zarmekar - Nature's Nest

observations were made.

- In the presence of an external light source (day light or torch) the mushrooms appear as brownish-white in color.

- The bioluminescence is present for up to four days from the time of first appearance of the fruiting bodies.

- In areas with denser canopy cover and high humidity, the intensity of the glow is higher.

- During the nocturnal surveys, it was observed that the mushrooms released spores in air and wind appears to the primary dispersal agent.

The mushroom appear in groups of - individuals. The fruiting body or cap is conical at early stages and as it gets matured flattens out. Hymenium has gills.

The bioluminescent fungus was observed growing on dead and decaying wooden logs, branches and even twigs. This is the first photographic record of the fruiting bodies of the species in the Bhagwan Mahavir Wildlife Sanctuary, Goa, India.

The frequency of occurrence of glowing mushrooms is about 1.97% within the study area. The functions of these bioluminescent mushrooms are still unknown. Further study needs to be conducted to identify the

microclimatic conditions essential for the growth of the species.

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