

## UPSC Daily Current Affairs | Prelim Bits 22-10-2024

### Z-Morh tunnel

*Seven workers from APCO Infratech were killed in the militant attack on the strategic Z-Morh tunnel on the Srinagar-Sonamarg highway in Jammu and Kashmir recently.*

- The Z-Morh tunnel is an ***all-weather connectivity tunnel*** connecting the Sonamarg health resort with Kangan town in central Kashmir's Ganderbal district.
- The tunnel has acquired its name for the Z-shaped road stretch at the place where the tunnel is being constructed.
- **Altitude** - The stretch where the tunnel is under construction is situated at an altitude of over 8,500 feet, and is prone to snow avalanches in the winter.
- **Constructed by** - The tunnel project was originally conceived by the Border Roads Organisation in 2012.
- However, the project was later taken over by the National Highways & Infrastructure Development Corporation Limited (NHIDCL).
- The NHIDCL retendered the tunnel project to APCO Infratech, which executed the project through a special purpose vehicle, APCO-Shri Amarnathji Tunnel Private Limited.
- The tunnel project is almost complete, its inauguration was delayed by the Model Code of Conduct (MCC) in place because of the Jammu and Kashmir Assembly elections.
- **Significance** - The Z-Morh tunnel is ***part of the Zojila tunnel project***, which will connect Sonamarg in Kashmir with Drass in Ladakh, is ongoing and expected to finish by December 2026.
- Thus providing all-weather access to Sonamarg, the tunnel is vital for ensuring year-round connectivity to Ladakh.
- This is particularly important for the movement of military personnel to border areas.
- The Z-Morh tunnel is also important for the success of the Zojila tunnel project, which is situated at an altitude of approximately 12,000 ft.

### References

1. [The Indian Express | Z-Morh project](#)
2. [Business Standard | Z-Morh tunnel project](#)

### Moonlight program

*The European Space Agency (ESA) at the International Astronautical Congress, launched its Moonlight Lunar Communications and Navigation Services (LCNS) program recently.*

- Moonlight program is the ***Europe's first-ever dedicated satellite constellation*** for

telecommunication and navigation services for the Moon.

- **Aim** - To offer coverage at the Moon's South Pole, an area suitable for future operations due to its advantageous terrain.
- **Agency** - Moonlight Lunar Communications and Navigation Services (LCNS) program is a partnership project between
  - ESA and an industry consortium led by space systems developer Telespazio, with support from the UK and Italian Space Agencies.
- **Features** - The program will have a constellation of about 5 lunar satellites (1 for high data rate communications and 4 for navigation) that allow accurate autonomous landings, high-speed communication, and surface mobility.
- These satellites will reportedly enable data transfer over 2,50,000 miles or 4,00,000 kilometres between the Earth and the Moon.
- **Duration** - The first step will be the launch of Lunar Pathfinder, a communications relay satellite built by Surrey Satellite Technology LTD, in 2026.
- The initial services of the programme will reportedly begin by the end of 2028, and the system is said to be fully operational by 2030.
- Moonlight will comply with LunaNet's standards and undergo the first-ever lunar navigation interoperability tests, scheduled for 2029.

*The ESA is working with NASA and the Japanese space Agency JAXA on **LunaNet**, which is essentially a framework to standardise communication and navigation for the Moon.*

## References

1. [The Indian Express | Moonlight programme](#)
2. [ESA | Moonlight programme](#)

## Chug Valley

*Chug valley, once blanketed by Cosmos flowers, has begun to shrink, and the meadows are no longer as dense as they used to be due to excessive human interference.*

- The Chug Valley is in the Dirang region of **Arunachal Pradesh**, with sprawling green grasslands.
- **Vegetation** - It encompasses green hills, vast meadows, and towering pine trees amidst majestic Himalayan peaks.
- **Community** - Duhumbi Monpa community is a community in the Chug village.
- **River** - The Dihing River, flowing through the region.
- **Cosmos flowers** - The valley showcases an enchanting beauty with a sea of pink and white Cosmos flowers during September and October months.
- Cosmos flowers act as pests repellent. They repel the corn earworm (*Helicoverpa zea*), which is a threat to food crops.
- Cosmos are native to Southern and Central America with Asteraceae family.
- These flowers attract butterflies, bees and other pollinators that are essential for a

- healthy environment besides offering food to birds, freshwater fish and other wildlife.
- They are grown easily from seeds and will even survive in poor soil conditions.
  - Cosmos are also tolerant of most soil pH levels but grow best in neutral to alkaline soils (pH of 7.0-7.5).
  - **Awards** - In 2024, Chung Valley was awarded
    - The 2<sup>nd</sup> Best Tourism Village Award and
    - Dammu's Heritage Dine of Chug Village was awarded the Responsible Tourism Award by the Government of Arunachal Pradesh.

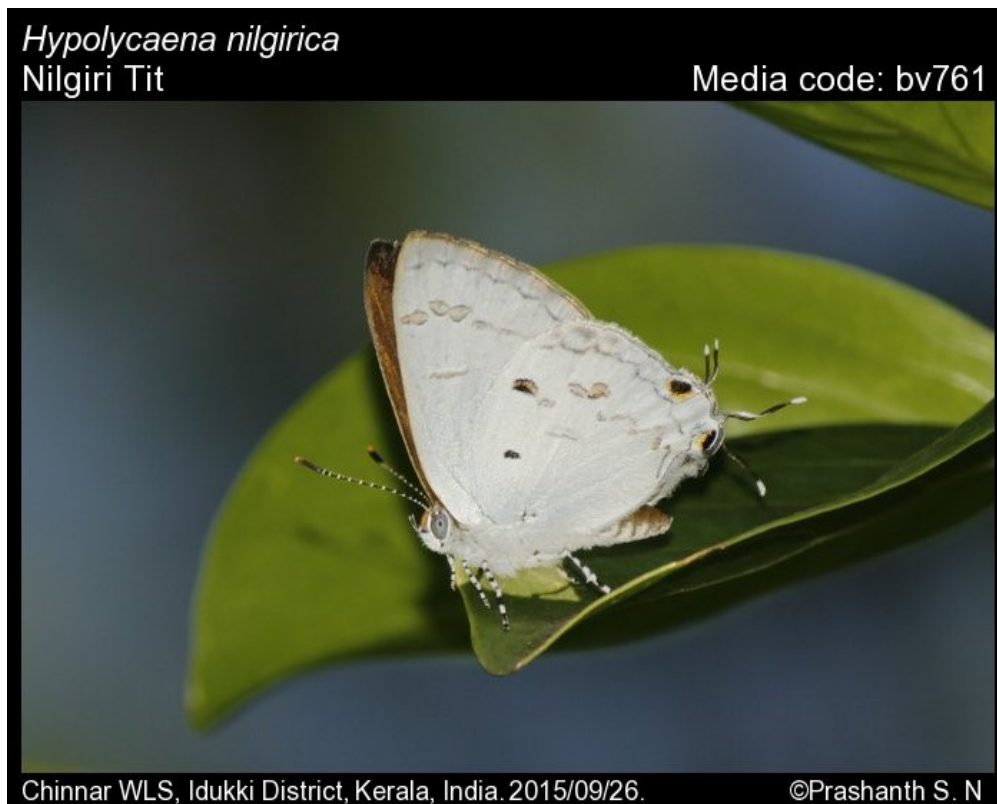
## Reference

[Arunachal observer | Chug Valley](#)

## Nilgiri tit butterfly

*Butterfly enthusiasts from the Nilgiris have recorded for the first time in India, the Nilgiri tit (Hypolycaena nilgirica) utilising a large terrestrial orchid plant as a host.*

- It is a rare, endemic butterfly an uncommon species of lycaenid or blue butterfly.
- **Scientific Name** - Hypolycaena nilgirica.
- **Appearance** - The male has a dark reddish purple-brown upper side with characteristic black spots capped in orange near its tails, while the female is pale brown.
- It has tapering patches of white dustings above the black spots and in the adjacent interspaces.



- **Behavior** - Males engage in mud sipping. Their flight is moderately fast and they visit

flowers in hedges. They bask in the morning, but do not open their wings otherwise.

- **Habitat** - They inhabit forests and lush home gardens, especially those with orchids.
- **Distribution** - It is found in Western Ghats and Sri Lanka.
- **In India** -
  - **Tamil Nadu** - Geddai slopes of Nilgiris district,
  - Aiyannar Falls of Virudhunagar district,
  - Anamalais of Coimbatore district
  - Kalakkad Mundanthurai Tiger Reserve of Tirunelveli district
  - **Kerala**- Chinnar Wildlife Sanctuary of Idukki district, and
  - Silent Valley National Park of Palakkad district
- The Nilgiri tit was noted to lay its eggs on the inflorescence (complete flower head) of the larval host plant, ***Eulophia epidendreae***, a terrestrial orchid species.
  - This terrestrial orchid was found on rocky slopes in humid areas.
  - Eulophia epidendreae was mainly associated with grasses such as Cymbopogon flexuosus, Chrysopogon nodulibarbis, Melinis repens, among other floral species.
- **Conservation status** - Schedule II of the Wildlife Protection Act. It is not listed on the IUCN Red List of Threatened Species.

## Reference

[The Hindu | Nilgiri tit \(Hypolycaena nilgirica\)](#)

## Clostridioides difficile bacteria

*Researchers are developing the 1<sup>st</sup> successful vaccine against Clostridioides difficile bacteria, using the technology behind the revolutionary mRNA vaccines that tackled COVID-19.*

- It is a bacterium highly contagious and difficult-to-treat and can cause severe diarrhea and even deadly colon damage.
- **Symptoms**
  - **Common** - Watery diarrhea, fever, nausea, abdominal pain
  - **Severe** - Severe cramping, loss of appetite, weight loss, dehydration, rapid heart rate
  - **Life-threatening** - Pseudomembranous colitis, toxic megacolon with septic shock

*C. diff is the leading cause of antibiotic-associated diarrhea worldwide.*

- **Vulnerables** - It can affect anyone, but most cases occur after taking antibiotics or shortly after finishing them.
- **Transmission** - C. diff can also spread from patient to patient, or through contaminated hands or the environment.
- C. diff can live in the intestines of humans and animals, and in the environment, especially where infected people and animals live.

- It can enter the body through the mouth, and reproduce in the small intestine.
- In the colon, the bacteria can release toxins that damage tissues and cause diarrhea.
- Roughly one-third of infected individuals will have recurrent infections.
- **Treatment** - *C. diff* can usually be treated with another course of antibiotics.
- **Recent advancement in treatment** - Like the COVID vaccines, the ***C. difficile mRNA vaccine*** uses genetic material from the bacteria to train the immune system to recognize and respond in the event of future infections.
- Immune cell responses increased with vaccine dose and were significantly higher than with more traditional vaccines.
- Mice vaccinated with traditional-style vaccines all died within a day after being infected with the bacteria.
- Adding a booster to the old-style vaccines improved survival by 20%, but immunization with the mRNA vaccine improved survival to 100%.

## Reference

[DD News | C. difficile](#)

