

EDITORIAL

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California Wildfires and Forest Fires in India: A Comparative Analysis

UPSC Syllabus Mapping

- **GS Paper I:** Geography – Natural disasters and their geographical distribution.
- **GS Paper III:** Environment – Conservation, environmental pollution and degradation, and disaster management.
- **Essay:** Challenges in managing natural disasters.

Introduction

The **California wildfires** have once again highlighted the devastating impact of forest fires globally. These wildfires, fueled by **climatic anomalies** and **human factors**, have scorched over 62 square miles of land, displacing thousands and causing immense loss of life and property. In India, forest fires have become a recurrent phenomenon, with significant socio-economic and ecological consequences. This article explores the causes, impacts, and management strategies of forest fires in **California and India**, offering insights into addressing these challenges.



California Wildfires: Causes and Impacts

Key Causes of California Wildfires

1. **Climatic Conditions:**
 - **Wet weather followed by dry conditions:** Unusually wet winters in 2022-2023 led to excessive vegetation growth, which dried up due to **exceptionally dry winters** in 2024-2025, creating highly flammable conditions.
 - **Record dryness:** Southern California experienced the **driest winter on record**, with only 0.03 inches of rain since October.
2. **Santa Ana Winds:**
 - **Dry, warm winds** originating from the **Great Basin** intensified the wildfires, reaching speeds of up to **50 mph**.
3. **Climate Change:**
 - **Lengthened wildfire seasons:** Rising global temperatures have shifted the **peak wildfire season** from August to July.
 - **Increased fire frequency and intensity** due to higher temperatures and prolonged dry spells.

Forest Fires in India: Causes and Status

What is a Forest Fire?

- A **forest fire** is an **uncontrolled fire** that destroys large parts of forest ecosystems.
- **Season:** In India, forest fires typically occur between **November and June**, peaking from **February to April**.

Forest Fire-Prone Regions in India

- **Forest cover:** According to the **India State Forest Report (ISFR) 2019**, 21.67% of India's geographical area is forested.
- **High-risk regions:**
 - Forests in **Assam, Mizoram, and Tripura** are classified as **extremely fire-prone**.
 - **Dry deciduous forests** are particularly vulnerable.

Causes of Forest Fires in India

Natural Causes

1. **Lightning Strikes:**
 - A natural trigger, causing ignition in **dry vegetation**.
2. **Volcanic Activity:**
 - **Lava flows** from volcanic eruptions can ignite nearby forests.
3. **Increased Heat and Dryness:**
 - **Global warming** has raised atmospheric temperatures, reducing **soil moisture** and increasing fire susceptibility.
4. **Combustible Material:**
 - **Dead leaves, dry wood, and grass** in forests act as natural fuel.

Anthropogenic Causes

1. **Slash-and-Burn Agriculture:**
 - Widely practiced in **northeastern India**, this technique is a significant cause of fires.
2. **Smoking and Campfires:**
 - Carelessly discarded **cigarette butts** and **unattended campfires** ignite fires.
3. **Burning of Debris:**
 - **Intentional burning** of agricultural waste can spread into adjacent forests.

Peak Forest Fires During Spring in India

1. **Reduced Rainfall in Winter:**
 - Low precipitation during winters depletes **soil moisture**, making forests vulnerable.
2. **Availability of Combustible Material:**
 - Accumulation of **dry vegetation** during spring acts as fuel for fires.
3. **Strong Winds:**
 - Windy conditions spread fires rapidly, increasing their intensity.

Impacts of Forest Fires

1. **Loss of Ecosystems and Biodiversity:**
 - Destruction of **wildlife habitats** and extinction of **species**, disrupting the ecological balance.
2. **Forest Degradation:**
 - Fires reduce **soil fertility** and disrupt **forest ecosystems**.
3. **Livelihood Impacts:**
 - Forests provide **livelihoods** to millions; fires jeopardize resources like **fuelwood, fodder, and bamboo**.
4. **Air Pollution:**
 - Fires release **carbon dioxide** and other pollutants, contributing to **global warming** and **health hazards**.
5. **Soil Degradation:**
 - Loss of **microorganisms** essential for maintaining soil health leads to **erosion**.
6. **Destruction of Watersheds:**
 - Forest wetlands are critical for water resources; fires damage these ecosystems.

Government Initiatives in India

1. **Forest Fire Alert System (FFAS):**
 - Developed by the **Forest Survey of India (FSI)** for **real-time monitoring**.
2. **MODIS Sensors:**
 - Collect data on forest fires, with alerts sent to **state and district authorities**.
3. **National Master Plan for Forest Fire Control:**
 - Aims to create a **coordinated and integrated fire management strategy**.

Way Forward

1. **Capacity Building:**
 - Train **forest officials** in fire management at all levels.
2. **Policy Formulation:**
 - Develop a **comprehensive forest fire policy** that integrates **climate change considerations**.
3. **Use of Indigenous Knowledge:**
 - Involve **local communities** and use their traditional practices for fire prevention.

4. **Technological Advancements:**
 - Deploy **Doppler radars, radio-acoustic systems**, and develop a **National Fire Danger Rating System (NFDRS)**.
5. **Infrastructure Development:**
 - Build **watchtowers**, hire **seasonal fire watchers**, and improve **firefighting capacity**.
6. **Public Awareness:**
 - Conduct campaigns to educate the public on **preventing accidental fires**.

Conclusion

Forest fires are a significant challenge in both **California and India**, driven by **natural and human factors**. Mitigating these requires a **multi-pronged approach** involving **advanced technologies, local knowledge**, and **policy reforms**. Strengthening fire management capabilities is essential for **preserving ecosystems, protecting livelihoods**, and achieving **sustainable development goals**.

MAINS QUESTION

Discuss the geographical and climatic factors contributing to the frequent occurrence of wildfires in California. How do similar factors affect the occurrence of forest fires in India?



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