Forest Fire in Maui Island

Why in news?

Recently there has been a deadly wildfire in Hawaii's Maui Island due to strong winds from Hurricane Dora.

What is a Forest Fire?

- A wildfire is an uncontrolled fire in an *area of combustible vegetation* that occurs in the countryside or rural area.
- Wildfires can burn in vegetation located both in and above the soil.
- **Ground fires-** It ignite in soil, thick with organic matter that can feed the flames, like plant roots.
- **Surface fires**- It typically burn in dead or dry vegetation that is lying or growing just above the ground. Parched grass or fallen leaves often fuel surface fires.
- **Crown fires** – It burn in the leaves and ***canopies*** of trees and shrubs.



What is the cause of the fire in Hawaii?

> *As per US Forest service data from 2000-2017, 85 % of wildfires in the US are caused by humans.*

- **Drought**- Maui was experiencing severe drought. The dry land, with dry non-native grasses and vegetation triggered wildfire. These fed the fires and helped them spread.
- **Hurricane Dora-** The fire started in the wild and was carried by the wind at almost 100 kmph due to Hurricane Dora, an unusually strong storm in the Pacific Ocean.
- Hurricane did not hit Hawaii. Instead, the islands were caught between high and low pressure zones due to the hurricane, which resulted in the winds fanning the flames and making these difficult to control.
- **Climate change**- Maui had suffered fires in 2018 and 2021 which caused massive destruction. Climate change and forest loss are working together to make Hawaii drier and hotter.
- **Invasive species**- The change in land use pattern where the farm and forest lands are being replaced by flammable non-native species of grasses like Guinea grass, are a likely cause for the easy spread of the fire.

What are the benefits of Wildfire?

- Wildfires have been a part of life on Earth, usually following a seasonal pattern during the June-August period.

- Be it natural or human-made, the phenomenon is a critical part of the ecosystem.
- **Benefits-** It is essential to the **continued survival** of some plant species.
- Some tree cones need to be heated before they open and release their seeds. Example- Chaparral plants
- **Healthy ecosystem-** They can kill insects and diseases that harm trees.
- By clearing scrub and underbrush, fires can make way for new grasses, herbs, and shrubs that provide food and habitat for animals and birds.
- **Low intensity flames-** It can clean up debris and underbrush on the forest floor, add nutrients to the soil, and open up space to let sunlight through to the ground.

How climate change fuels wildfire?

- Intense nature of wildfire is caused due to
  - Warming weather
  - Dry conditions
  - Change in rain cycle
- Hot, dry weather pulls moisture from plants and soil, leaving dry fuel that can easily burn.

- **High temperature**-July 2023, saw the highest temperatures on record across the planet and evidence suggests that the record will be broken sooner than later.
- On a windy day, a spark from a power line, campfire or lightning can start a wildfire that quickly spreads.
- **Frequent forest fire**- The Northern Hemisphere has seen significant wildfire activity since the beginning of May this year, with widespread record-breaking fires in Canada and large fires across eastern Russia.

Copernicus program
• It is the program of European Union. • **Motto-** Europe's eye on earth • Copernicus is the Earth observation component to benefit all European citizens. • It offers information services that draw from satellite Earth Observation and in-situ (non-space) data.

What are the consequences of wildfire?

- **Release of C02** - This makes the greenhouse gas effect stronger and it speeds up the climate change.
- The Canadian wildfires alone have emitted 290 megatonnes of carbon in 2023, representing over 25% of the global total.
- **Air pollution-** It causes long-term and short-term respiratory issues, heart disease and lung cancer.
- **Ecosystem destruction**-Swathes of forest and peatland are destroyed.
- Countless animals caught up in the flames and smoke perish.
- **Impact on economy-** The forest fire would cause huge damage as it affects the human lives, property, and infrastructure.
- **Harmful chemicals**- Fire departments are forced to use harmful chemicals in order to put wildfires under control.

- The soil absorbs these flame retardants and their traces stay within it for years.
- It further reduces the soil's fertility and affect the composition of future vegetation.
- **Soil erosion**-Forest fires leave ashes behind. They erode the soil and destroy the balance in its nutrients.
- As a result, there's an increased risk of landslides and flooding.

What are the available approaches in addressing forest fires?

- **Controlled burning -**The British introduced a system of controlled burning of undergrowth in safe seasons (winter), so that by summer there would be nothing left to burn.
- This is an extremely destructive practice, since it wipes out insects, small reptiles, seeds, herbs and bushes.
- **Fire Line-** This method contain the fire in compartments bordered by natural barriers such as streams, roads, ridges, and fire lines along hillsides or across plains.

A fire line is a line through a forest which has been cleared of all vegetation, the width depends on the type of forest being protected.

- Once the blaze has burnt out all combustibles in the affected compartment, it fizzles out and the neighbouring compartments are saved.
- **Counter fire approach -** The counter fire rushes towards the wildfire, leaving a stretch of burnt ground, as soon as the two fires meet, the blaze is extinguished.
- **Combination method -**This is practised in combination with fire lines and counter fire.
- This is the most practical and most widely used method.
- **Technological approach -** In this, Helicopters or ground-based personnel, spray fire retardant chemicals, or pump water to fight the blaze.
- These are expensive methods and are usually not practised in India.

What lies ahead?

- While tackling the climate crisis is of the utmost importance, there are measures that communities need to take to mitigate the loss of lives.
    - Developing community-level wildfire response plans
    - Reducing human ignitions of wildfires
    - Improving zoning and building codes

Hawaii Island

• It is the largest island in the United States, located in the state of Hawaii.
• **Location-** It is the southernmost U.S. state. It is also the only U.S. state that is not geographically located in North America.
• It is a chain of volcanic islands in the North Pacific Ocean. Hawaii is the only U.S. state completely made up of islands.
• **Mountain-** Mauna Kea is Hawaii's tallest mountain. If the height of this mountain is considered from its base, which lies in the Pacific Ocean, it is taller than Mount Everest.
• **Pineapple Island-**Lanai is home of the world's largest plantation of pineapples.
• **Maui-** It is an island in the Central Pacific, part of the Hawaiian archipelago.
• **National Park-** Hawaii volcanoes national park (Hawaii), Haleakala National Park (Maui)

References

1. Down to Earth- Deadly wildfire in Maui island
2. Indian Express- Climate change link to fire
3. Indian Express- Global warming and Hawaii wildfire

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