

THE INTERACTION BETWEEN THREATS



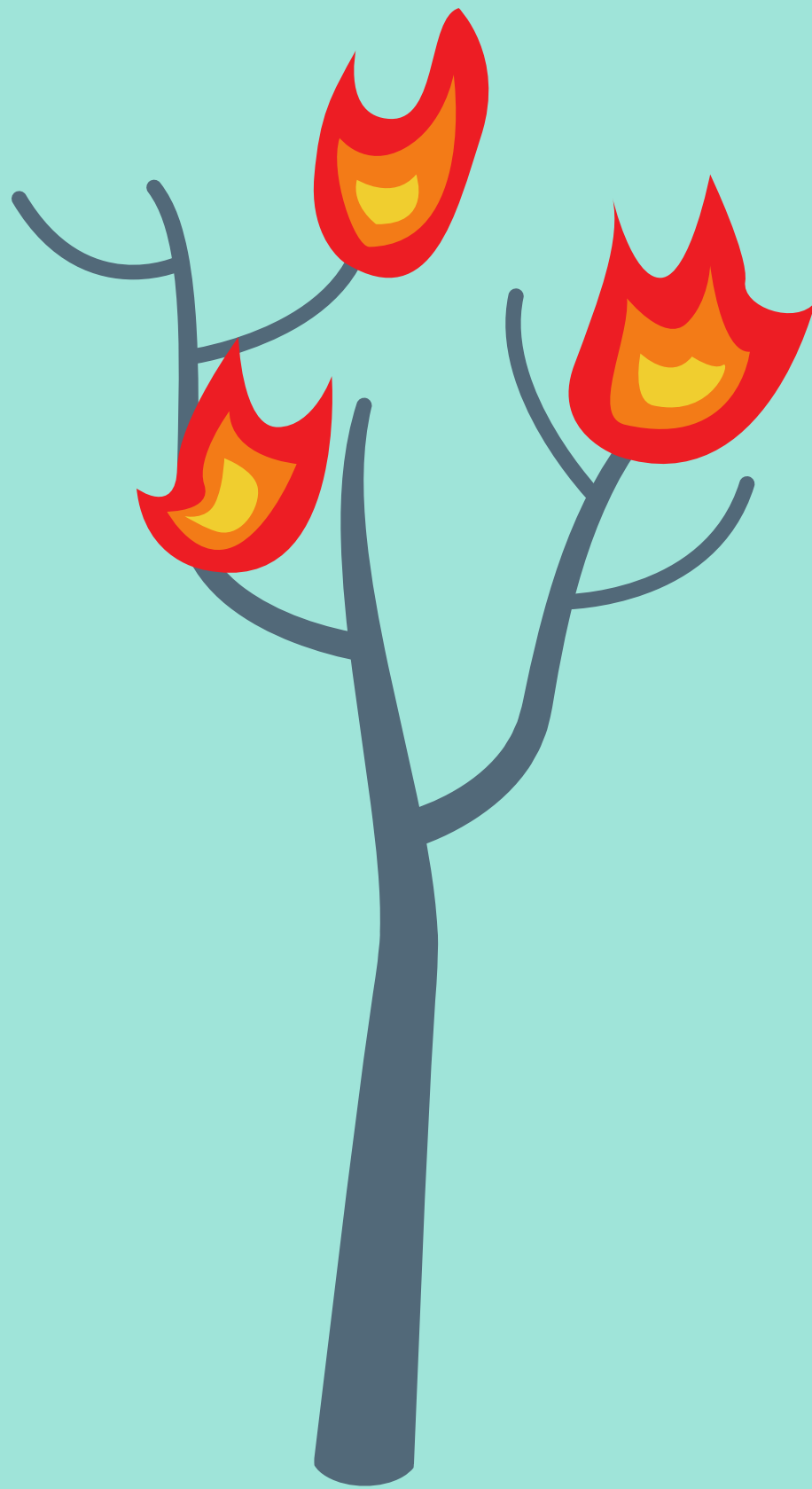
CITIZEN ENGAGEMENT

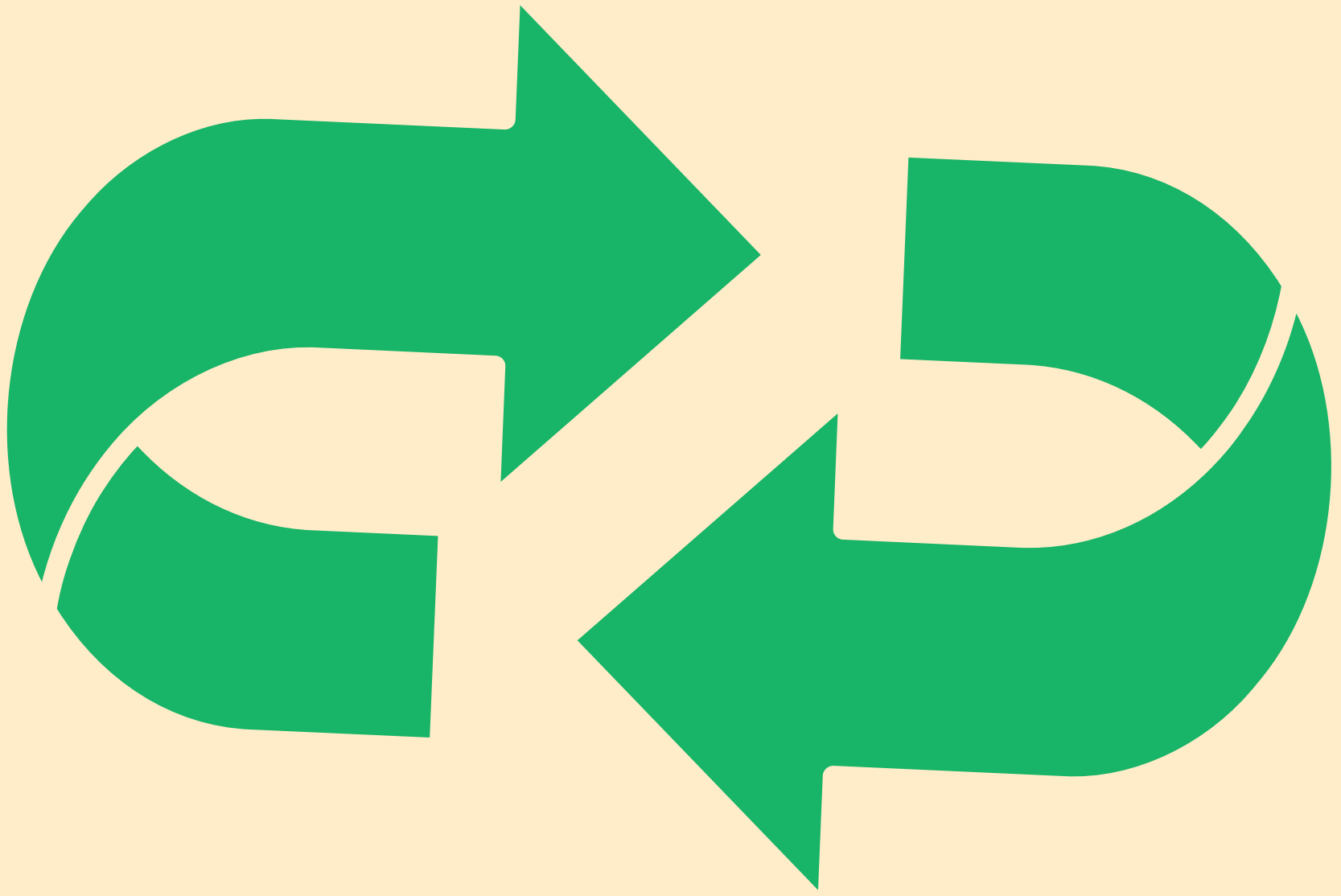


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The key threats to forests—deforestation, degradation and fragmentation, invasive species, fire, and climate change—do not operate in isolation. Instead, they interact with each other in complex ways, often exacerbating the impact of one another.





Understanding these interactions is crucial for developing effective conservation strategies. Here is a simplified explanation of how these drivers can interact:

DEFORESTATION AND CLIMATE CHANGE



Deforestation contributes to climate change by releasing stored carbon dioxide (CO₂) into the atmosphere when trees are cut down and burned or left to rot. Forests act as carbon sinks, absorbing CO₂, so their removal decreases this capacity, further accelerating climate change.

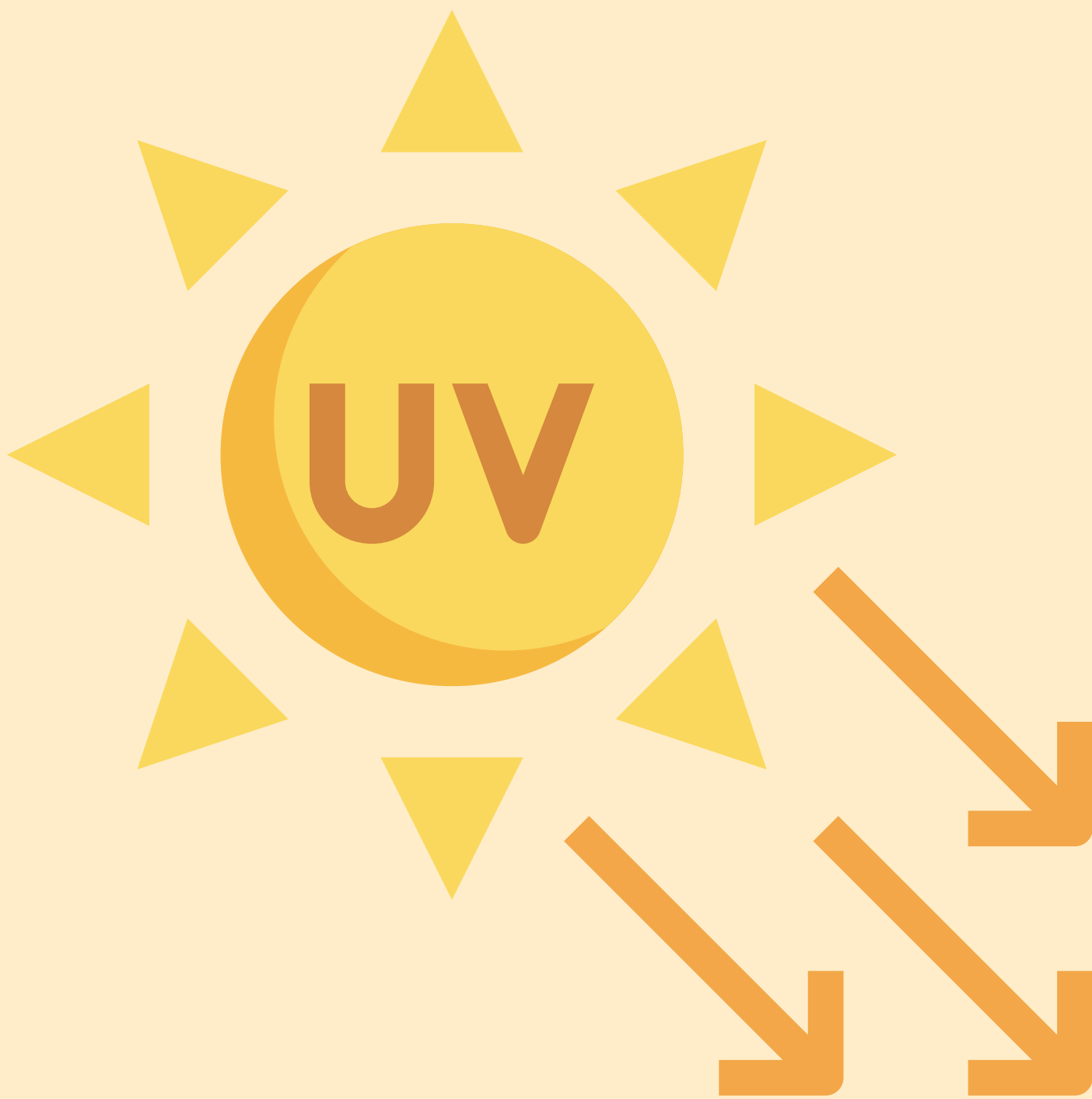
Climate change, in turn, can exacerbate deforestation, as changing weather patterns can make certain areas more suitable for agriculture or other land uses, leading to increased clearing of forests.



FRAGMENTATION AND INVASIVE SPECIES



Fragmentation creates smaller, isolated patches of forests that are more easily invaded by invasive species.

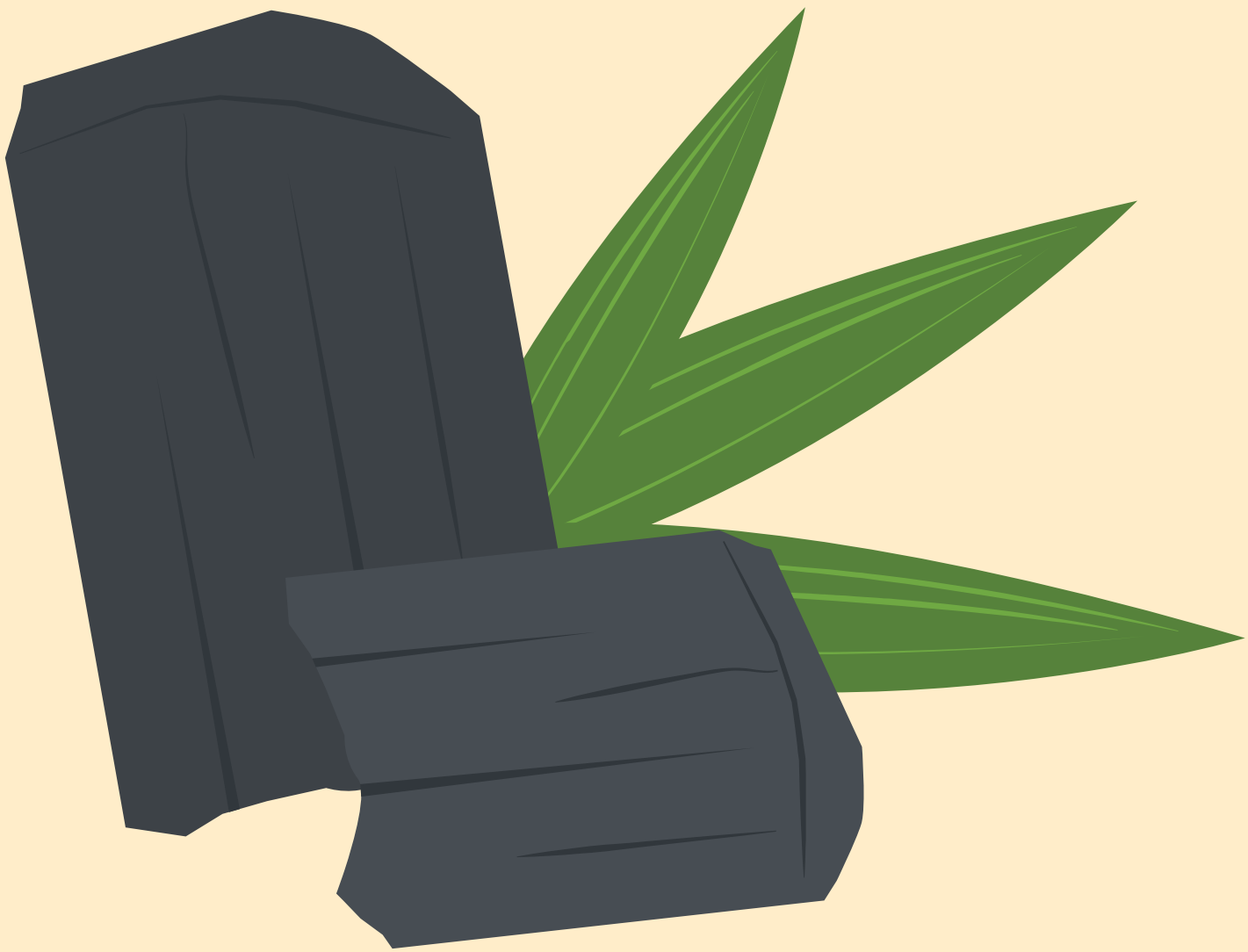


These species can spread more rapidly in fragmented landscapes because the edges of these patches are more accessible and often have conditions that favour invasives, such as more sunlight and disturbed soil.



Invasive species can further degrade habitat quality within these fragments, reducing the resilience of native species and leading to a loss of biodiversity.

FIRE, CLIMATE CHANGE, AND DEGRADATION

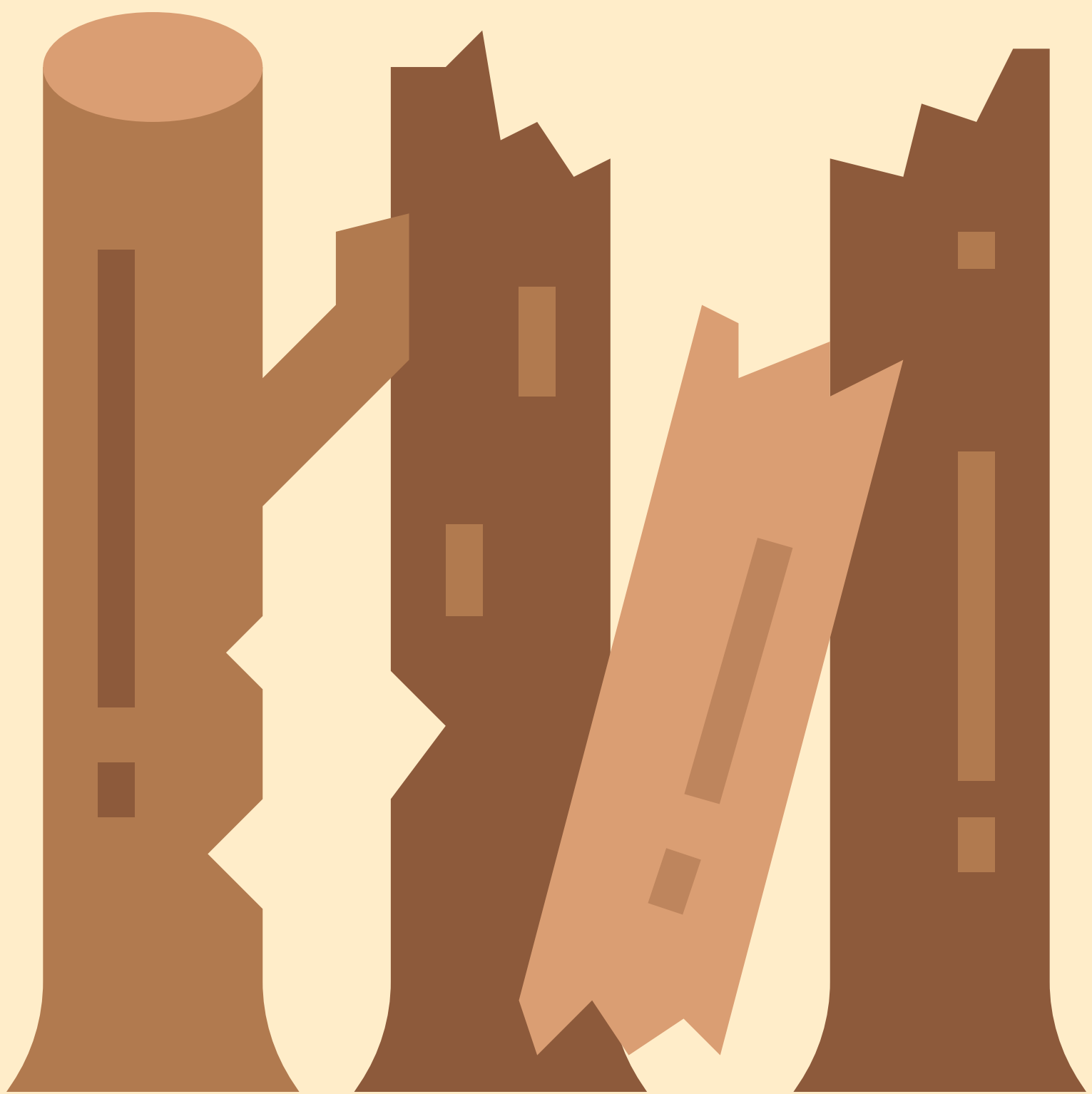


Climate change increases the risk and intensity of fires by creating hotter, drier conditions in many regions. This not only makes forests more susceptible to burning but can also turn them from carbon sinks into carbon sources, further contributing to greenhouse gas emissions.

Fires can lead to immediate and long-term degradation of forest ecosystems, affecting their ability to recover. Repeated fires can prevent the regeneration of certain tree species and alter the composition of the forest, and lead to loss of biodiversity.



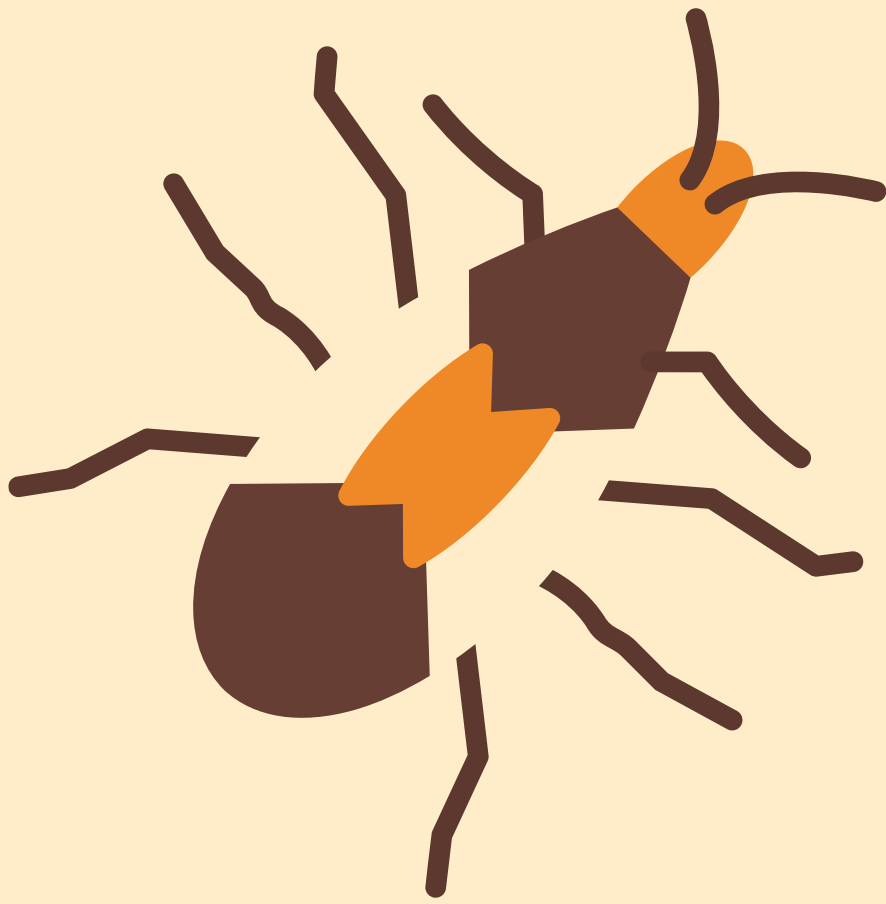
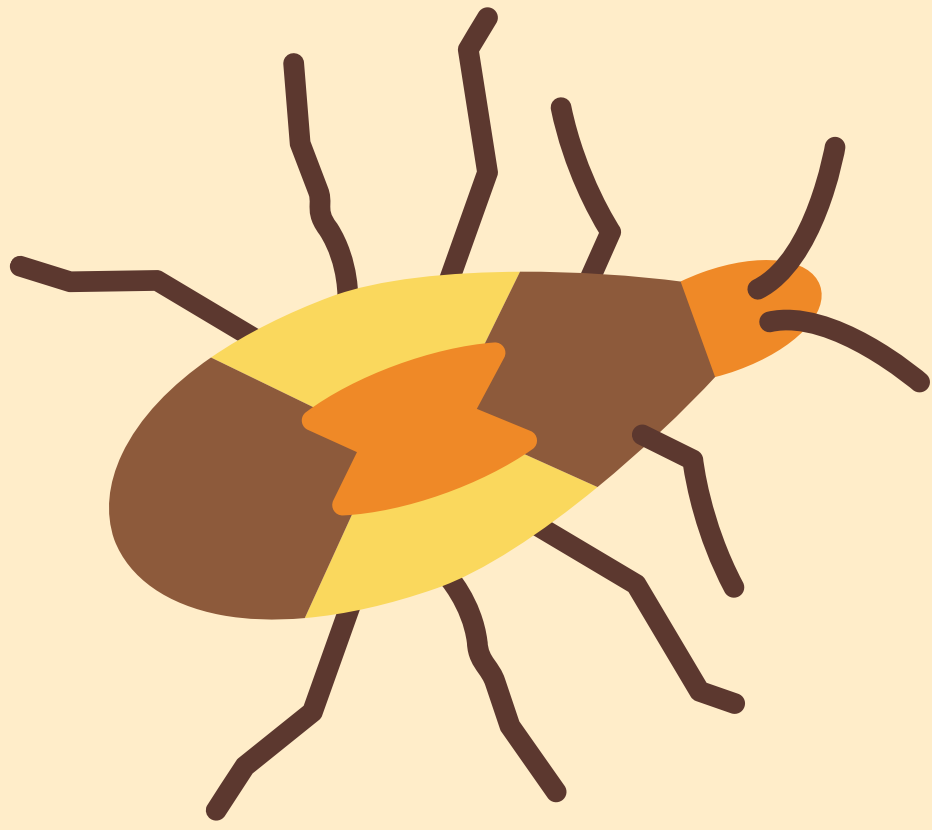
Degraded forests are less resilient to fire and other stresses, creating a feedback loop where degraded conditions increase fire hazard, which in turn leads to further degradation.



DEGRADATION, CLIMATE CHANGE, AND INVASIVE SPECIES



Degraded forests are more vulnerable to the impacts of climate change, such as changes in precipitation patterns and increased temperatures, as their reduced health makes them less resilient.



Climate change can facilitate the spread of invasive species by altering habitat conditions to favour these species over native ones. For example, warmer temperatures might allow invasive insects to expand their range into new forest areas, causing further degradation.

OVERALL INTERACTIONS



The interplay between these drivers creates a complex web of cause and effect that can lead to the acceleration of forest loss and degradation. For example, climate change can exacerbate the severity of invasive species outbreaks and increase the frequency and intensity of wildfires.

In turn, fires can make forests more susceptible to invasion by altering their structure and composition.

Meanwhile, deforestation and fragmentation can increase the vulnerability of forests to all these threats by reducing their size and connectivity, which diminishes their resilience and ability to recover from disturbances.





Understanding these interactions is vital for crafting holistic conservation and management strategies that address the multifaceted challenges facing global forest ecosystems.