Effects of Plant Invasions on Fire Regimes

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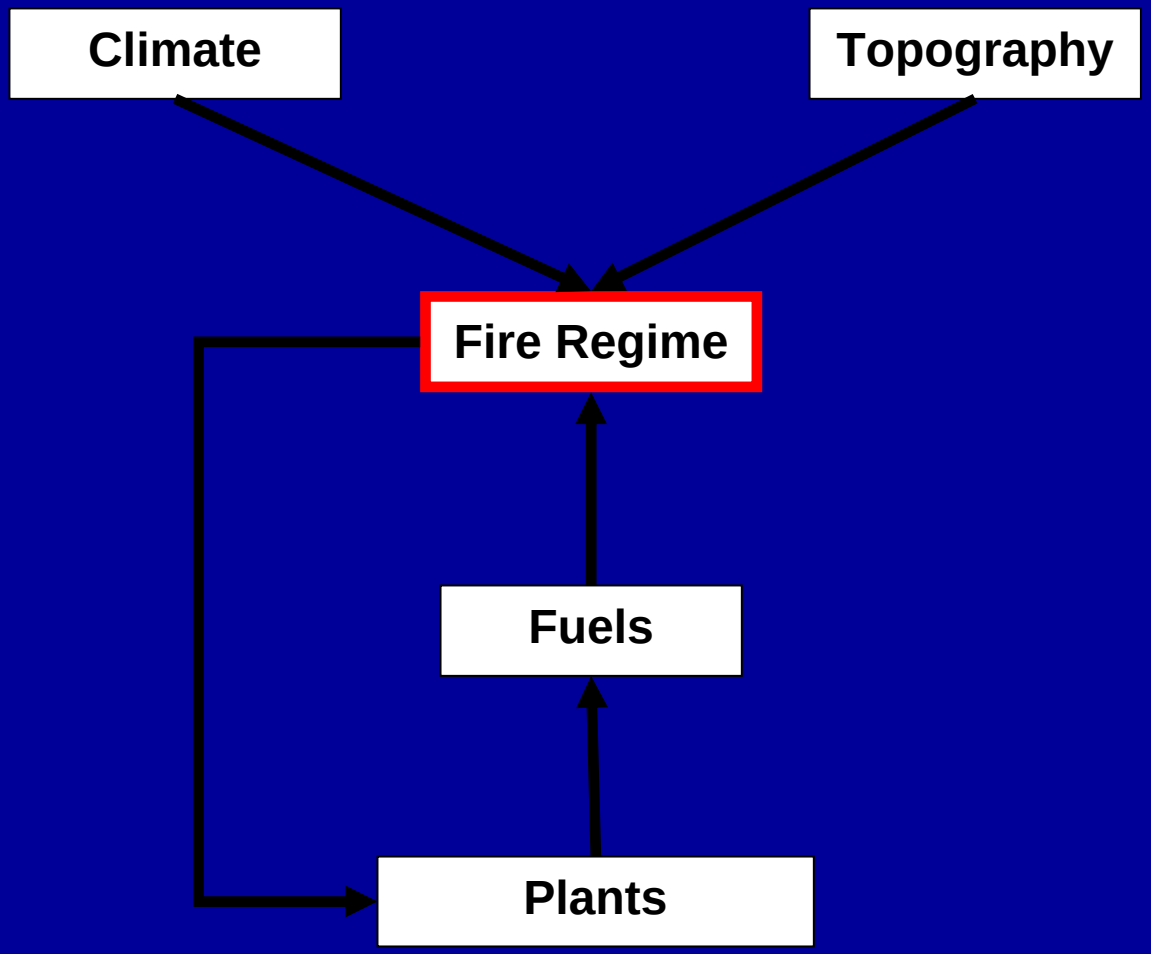
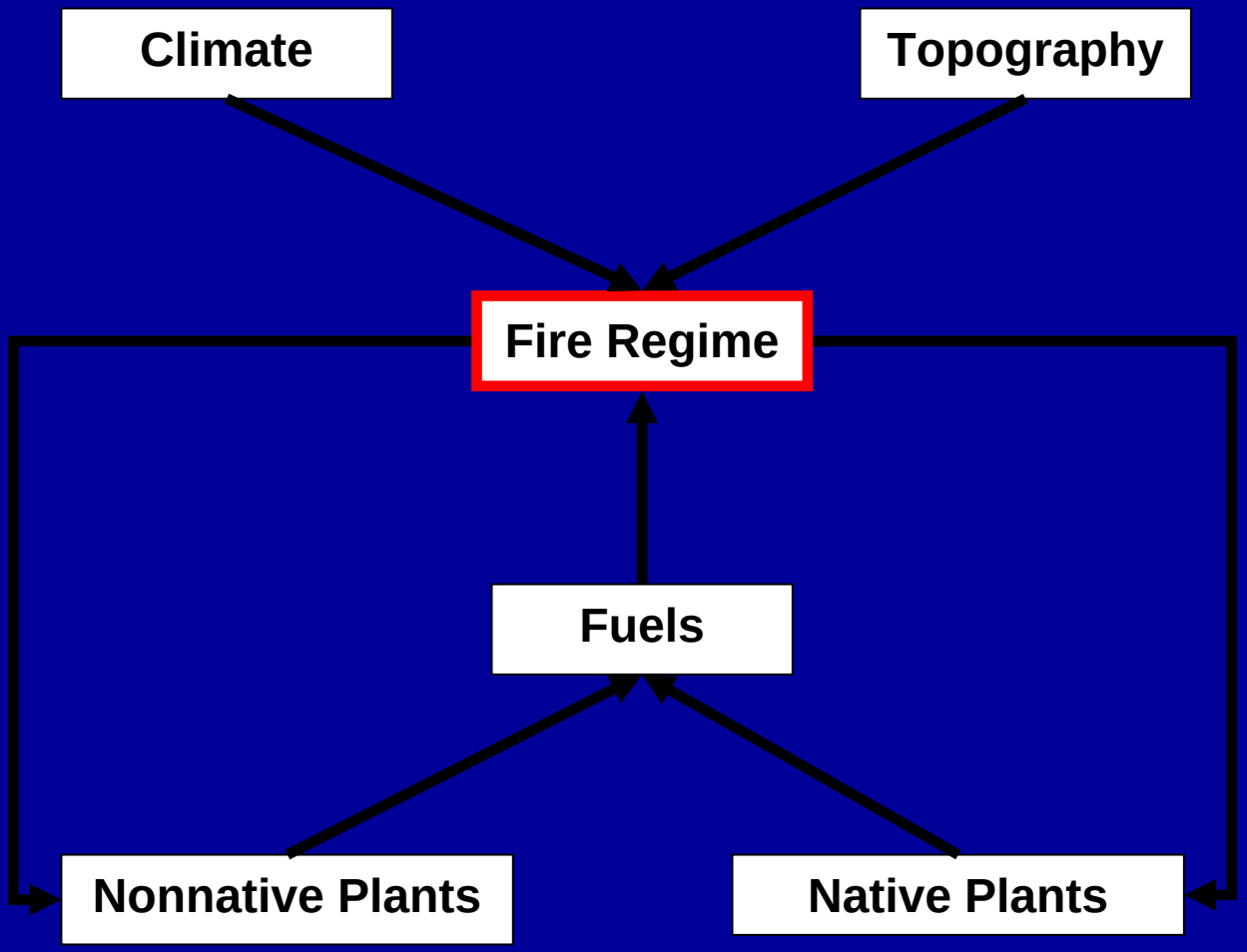
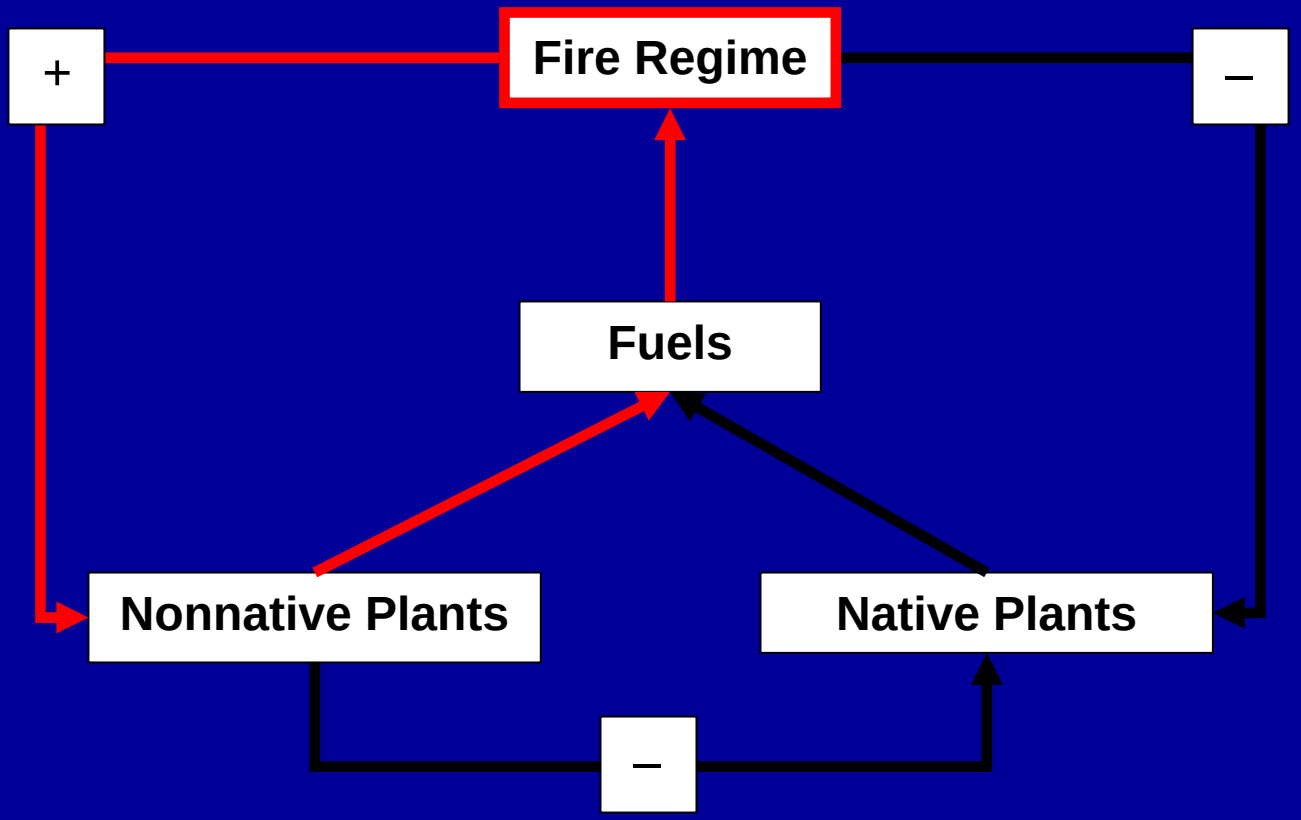

Climate
Topography
Fire Regime
Fuels
Plants


Climate
Topography
Fire Regime
Fuels
Nonnative Plants
Native Plants

Invasive Plant / Fire Regime Cycle



Ways by Which Plant Invasions Can Change Fuel and Fire Regime Attributes

Extrinsic fuel attributes

Fuel attribute changed	Fire regime attribute changed
Increased fuel load	Increased fire intensity and size
Decreased fuel load	Decreased fire intensity and size
Change in fuel particle size	Change in fire frequency and size, decreased patchiness, change in annual window of fire activity

Ways by Which Plant Invasions Can Change Fuel and Fire Regime Attributes

Extrinsic fuel attributes

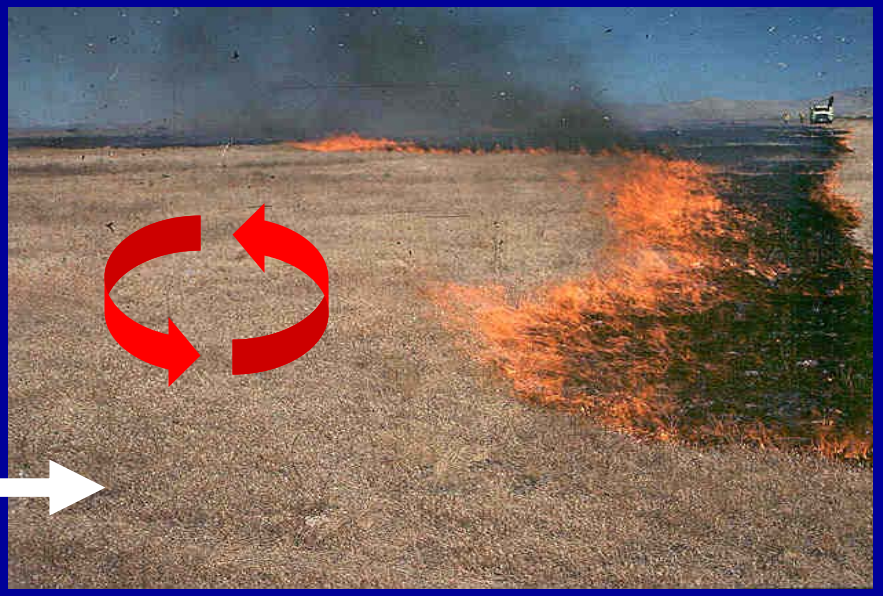
Fuel attribute changed	Fire regime attribute changed
Increased horizontal continuity	Increased fire frequency and size, decreased fire patchiness, fires earlier in the year
Decreased horizontal continuity	Decreased fire frequency and size, increased fire patchiness, fires earlier in the year
Increased vertical continuity	Surface to crown fires
Decreased vertical continuity	Crown to surface fires

Ways by Which Plant Invasions Can Change Fuel and Fire Regime Attributes

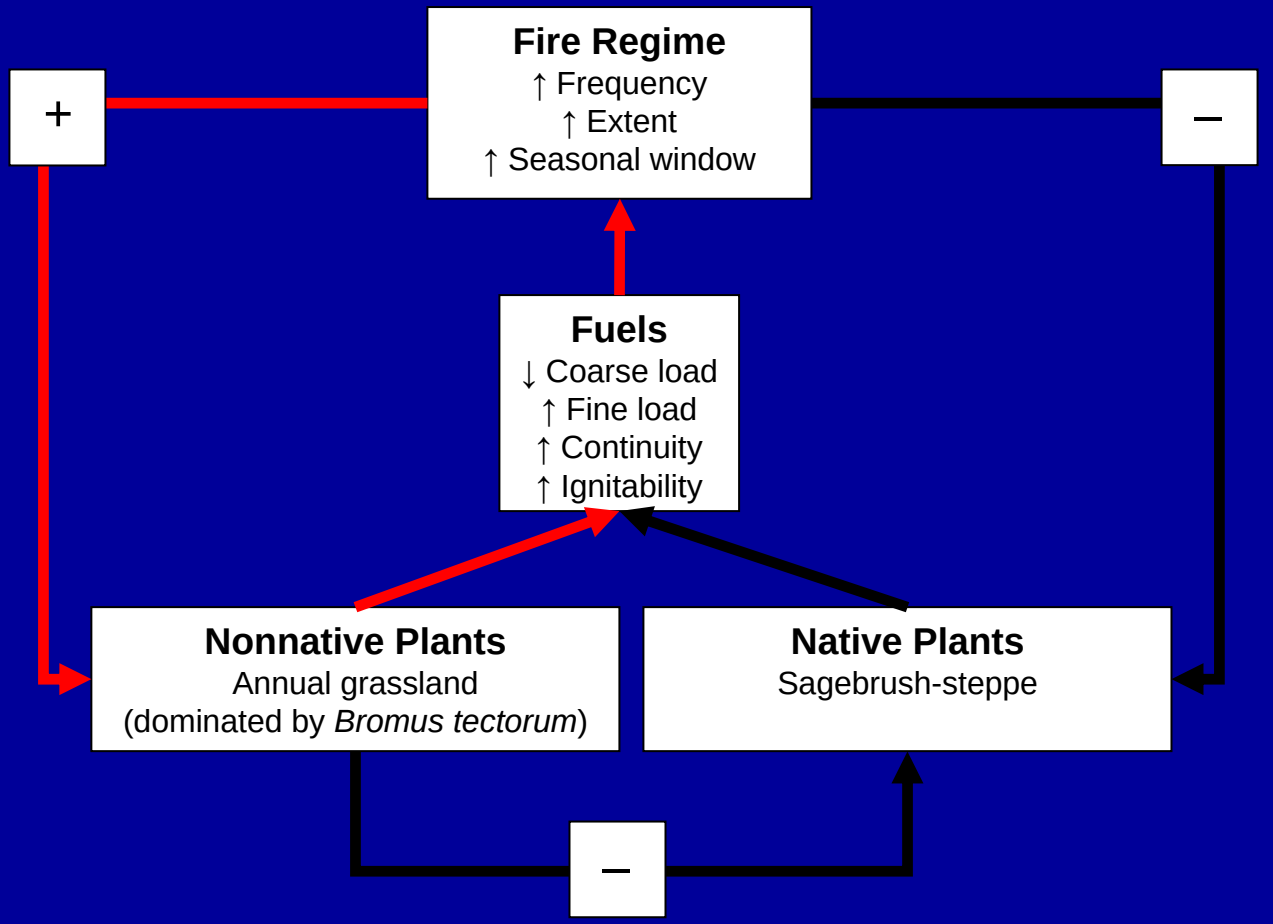
Intrinsic fuel attributes

Fuel attribute changed	Fire regime attribute changed
Increased plant tissue flammability	Increased fire frequency and intensity, and increased annual window of fire activity.
Decreased plant tissue flammability	Decreased fire frequency and intensity, and decreased annual window of fire activity.

Non-native Grass / Fire Cycle

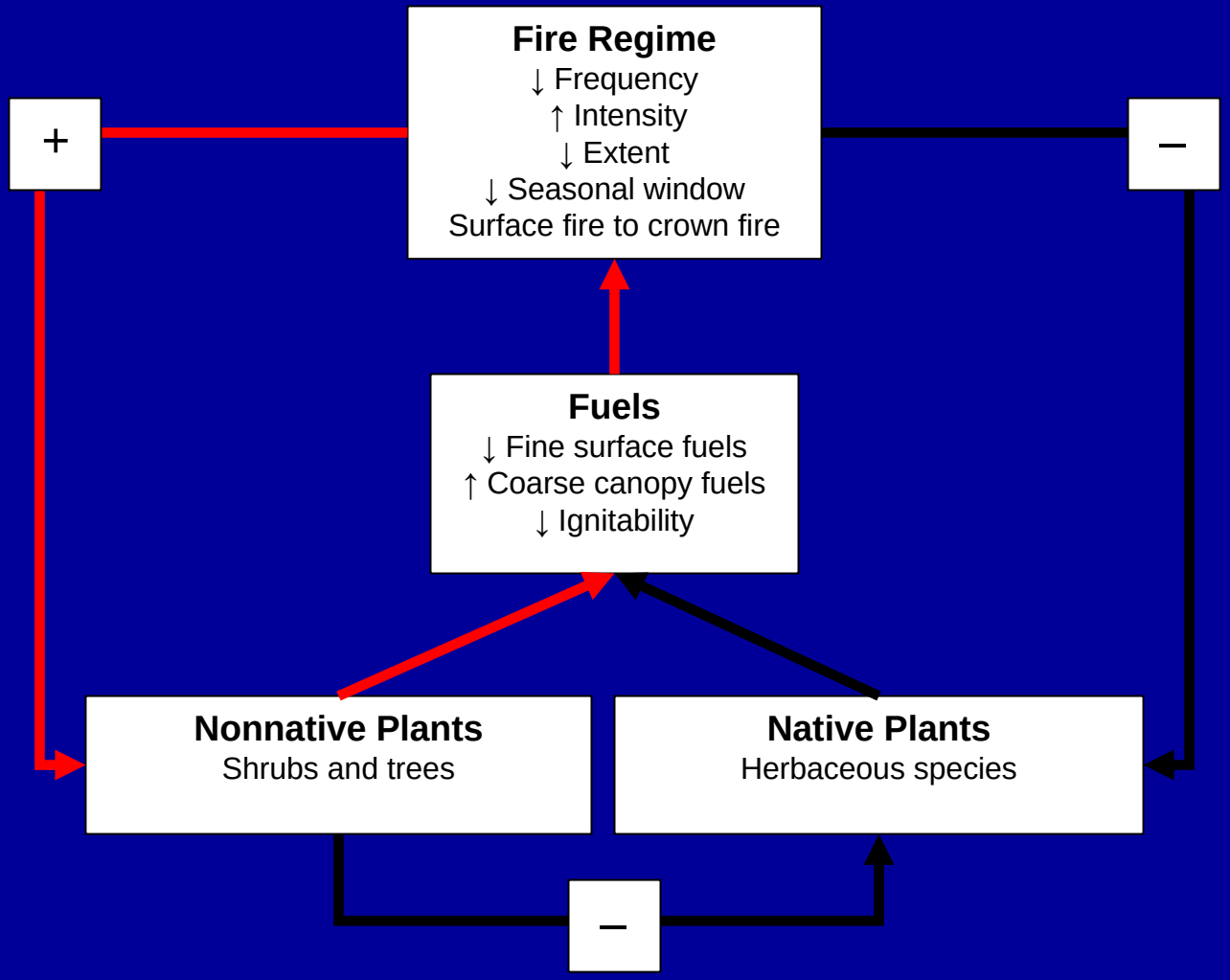


The Non-native Grass / Fire Cycle in the Intermountain West of North America

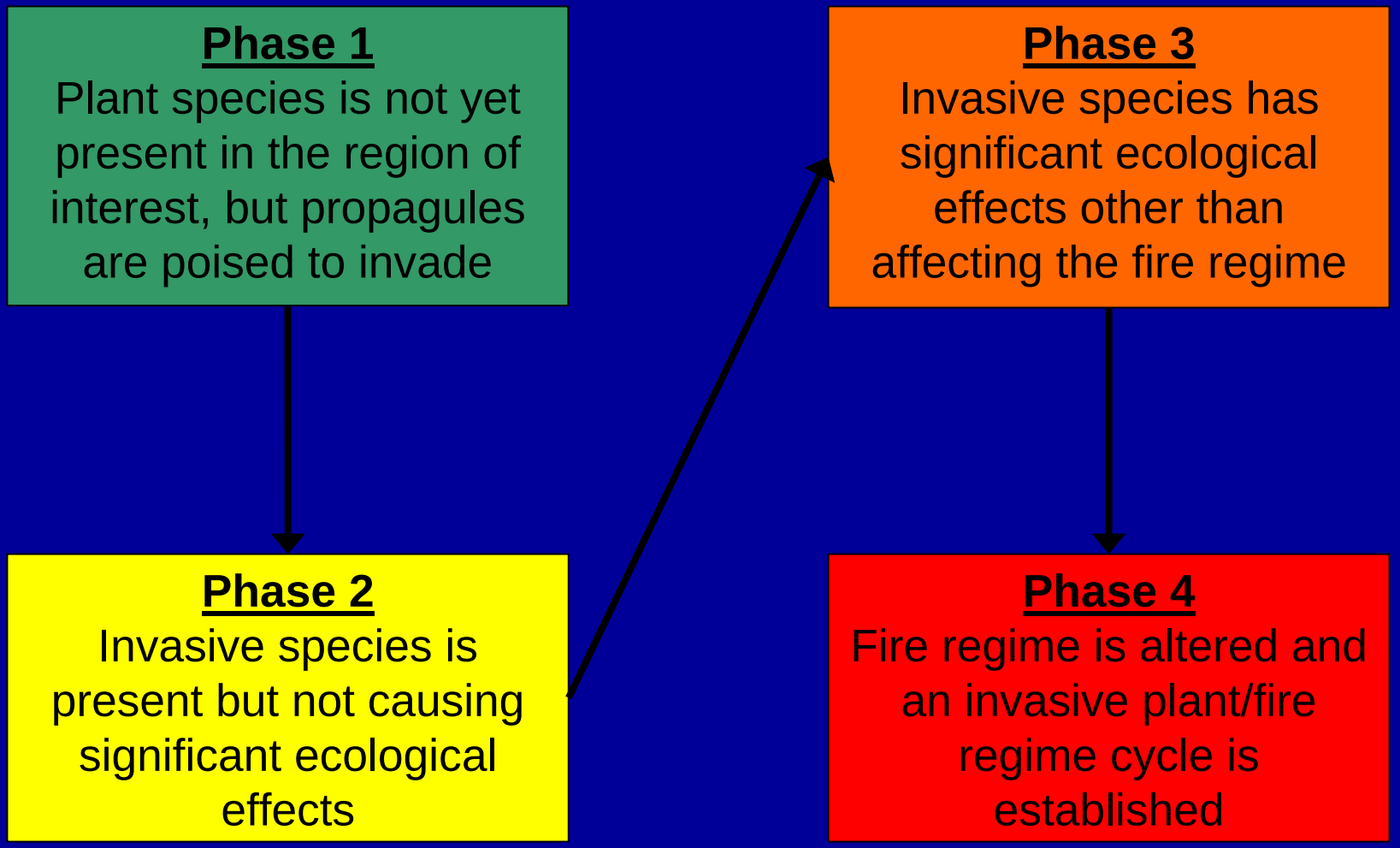


Woody Plants Invading Herbaceous Communities

Non-native Woody Plants Altering Fire Regimes in Native Herbaceous Plant Communities

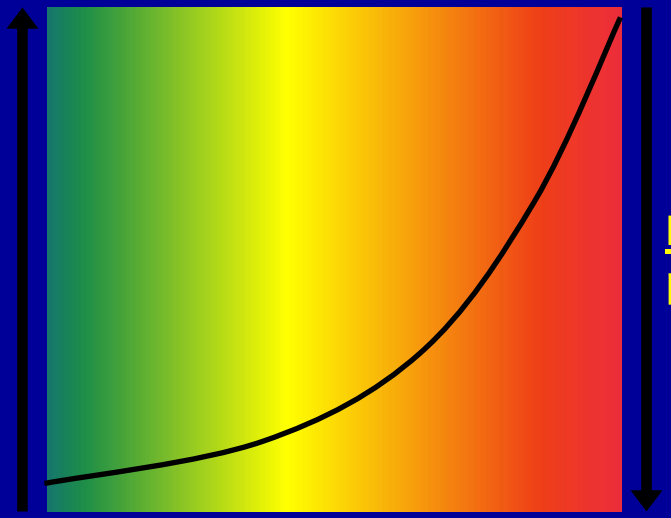


Invasive Plant/Fire Regime Cycle



Phases of the invasive plant / fire regime cycle

1 → 2 → 3 → 4



Cost of successful prevention or mitigation

Probability of successful prevention or mitigation

Management approaches

Species exclusion

Species control

Revegetation

Fire regime restoration

Establishing the Presence of an Invasive Plant / Fire Regime Cycle

Steps of Inference	Difficulty
1) document that a plant invasion has altered fuelbed characteristics	LOW
2) demonstrate that these fuelbed changes affect fire behavior and alter the spatial and/or temporal distribution of fire on the landscape	
3) show that the new fire regime promotes the dominance of the fuels that drive it	HIGH