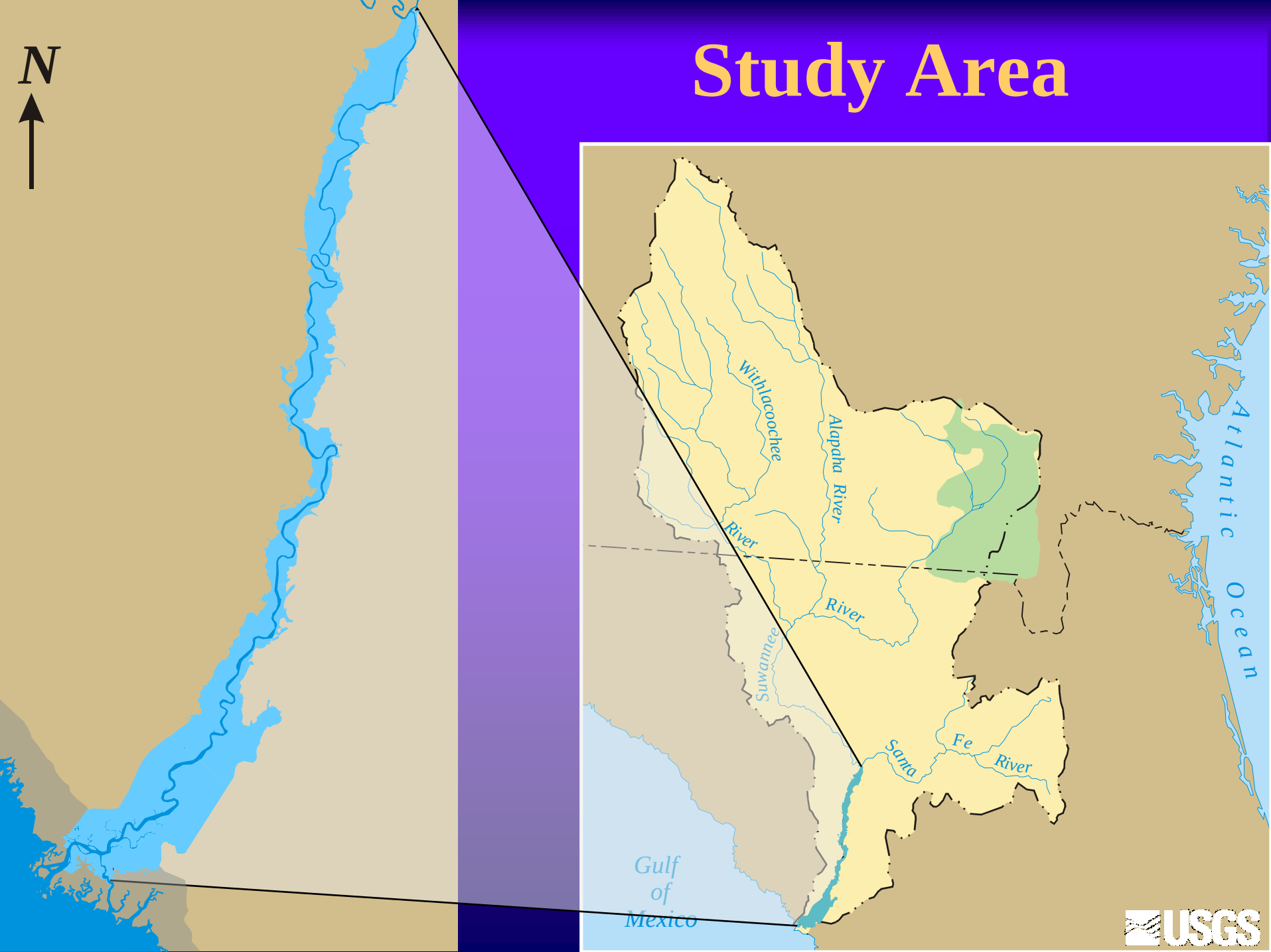
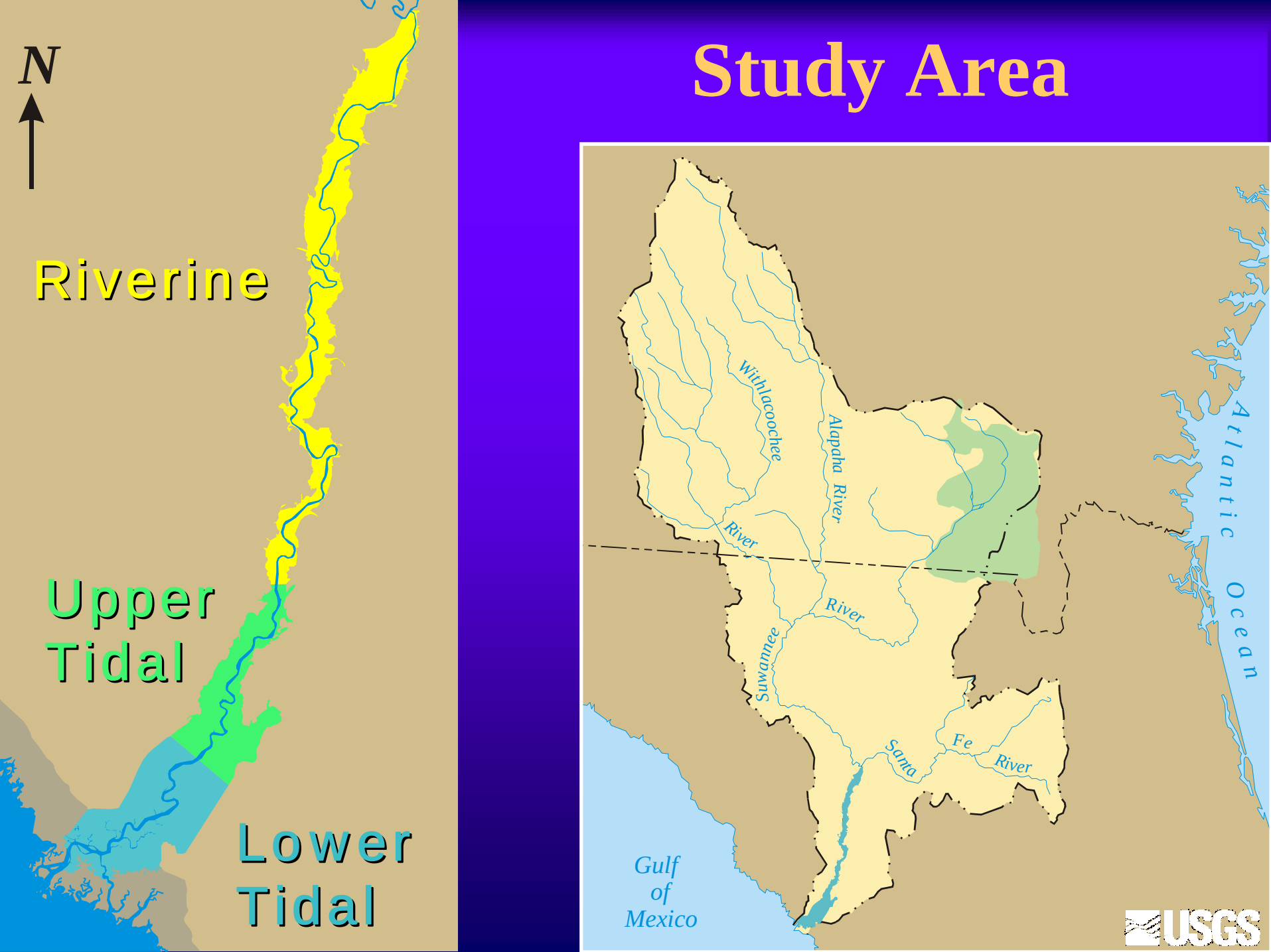
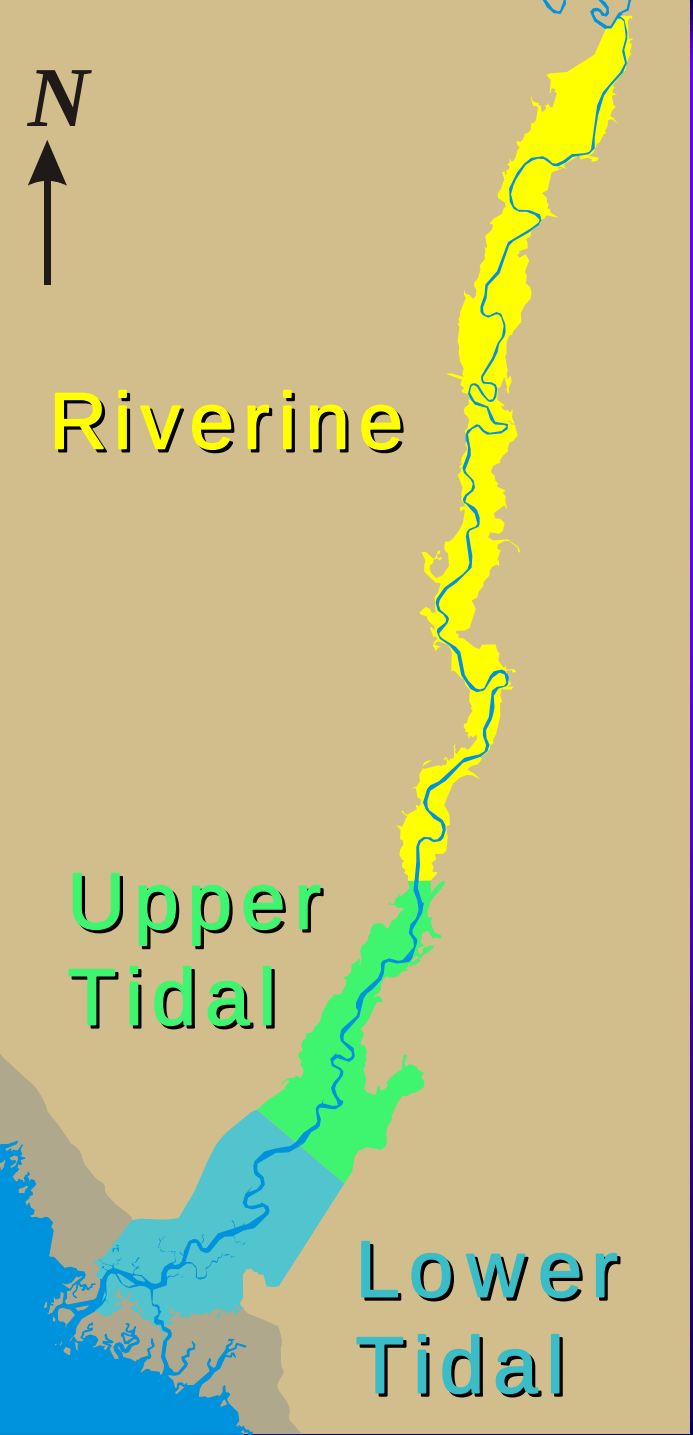
Hydrology, Topography, and Soils of Lower Suwannee River Floodplain Forests and Ecological Consequences of Potential Flow Reductions

Helen Light

U.S. Geological Survey

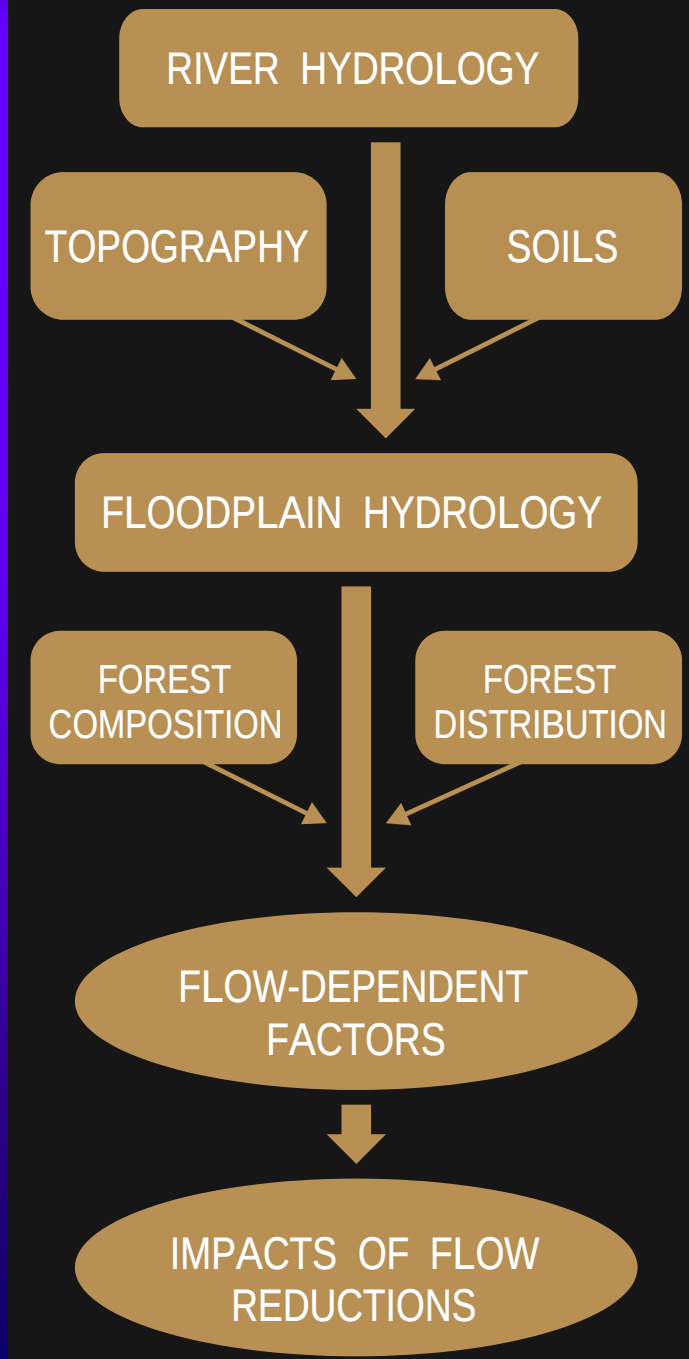

Study Area
N
Withlacoochee
Alapaha River
River
River
Suwannee
Sama
Fe
River
Atlantic Ocean
Gulf of Mexico
USGS

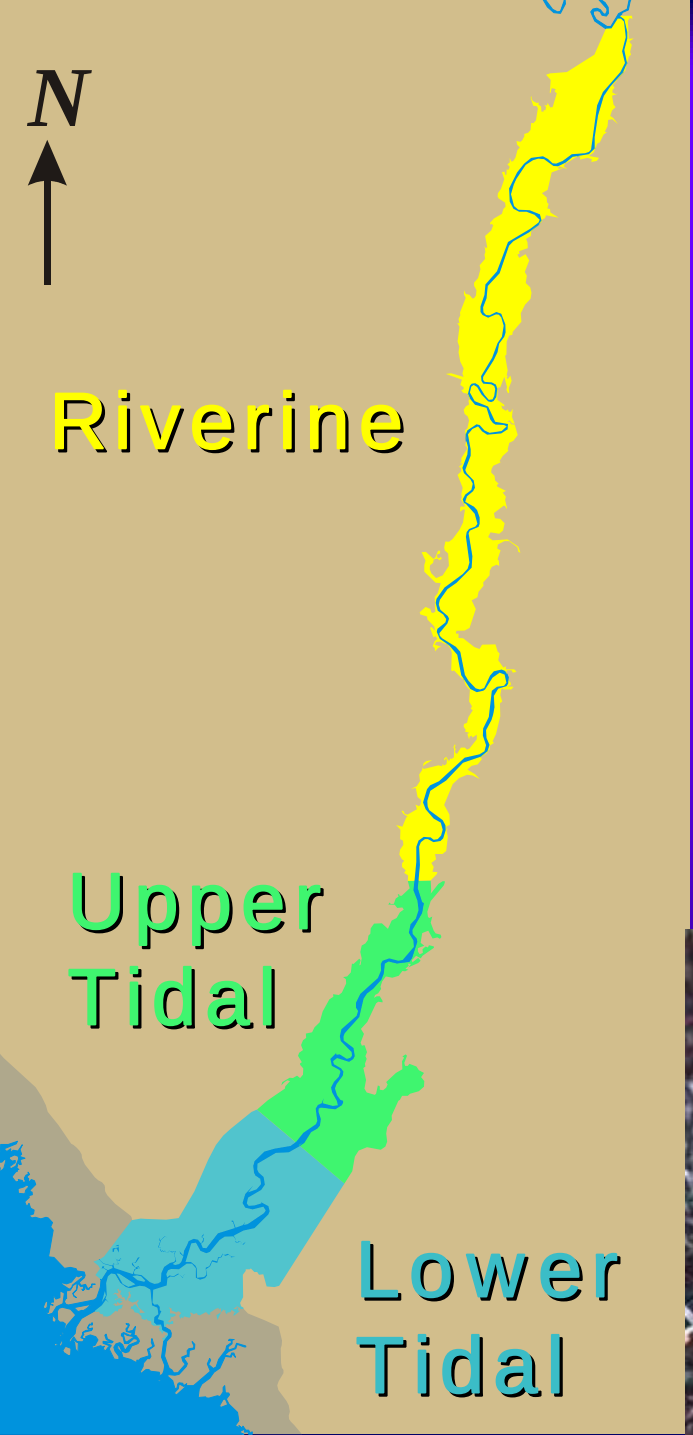

N
Riverine
Upper Tidal
Lower Tidal
Study Area
Withlacoochee River
Alapaha River
Suwannee River
Santa Fe River
Atlantic Ocean
Gulf of Mexico
USGS


N
Riverine
Upper Tidal
Lower Tidal

Goals

USGS


RIVER HYDROLOGY
TOPOGRAPHY
SOILS
FLOODPLAIN HYDROLOGY
FOREST COMPOSITION
FOREST DISTRIBUTION
FLOW-DEPENDENT FACTORS
IMPACTS OF FLOW REDUCTIONS



Hydrology

Topography

Soils

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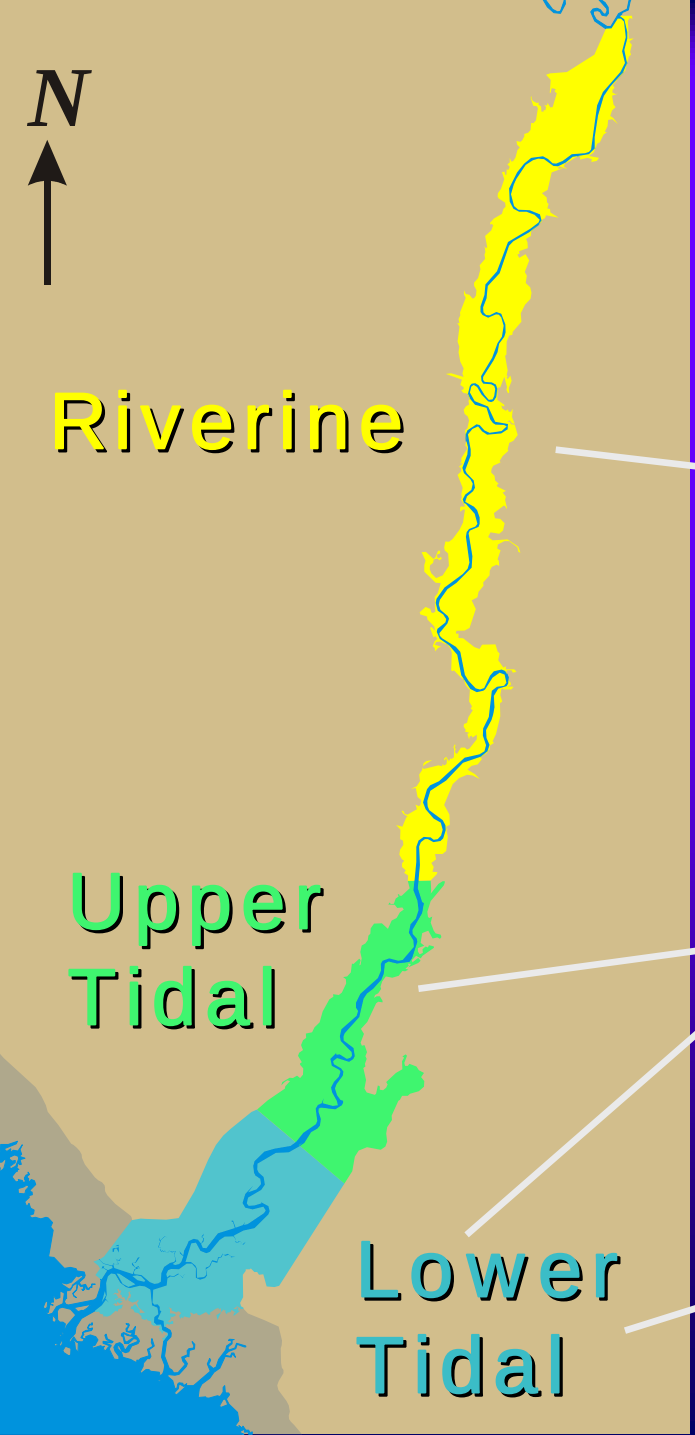


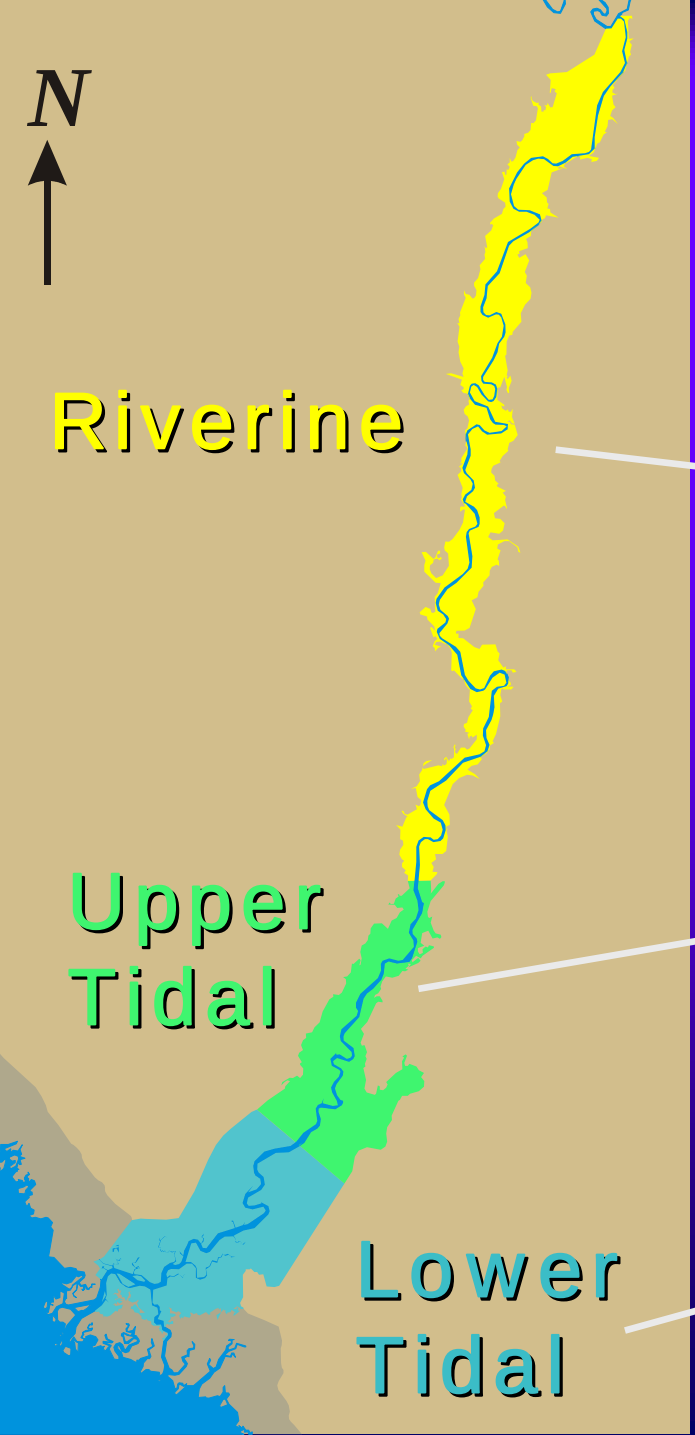
Topography

Riverine
- Range 11 feet
- Levees & ridges prominent

Upper Tidal
- Range 3 feet
- Levees minor or absent

Lower Tidal
- Hummocks common
- Tidal creeks common

USGS



Soils

Riverine — Mineral soils

Upper Tidal — Saturated muck

Lower Tidal — Saturated muck, Saline

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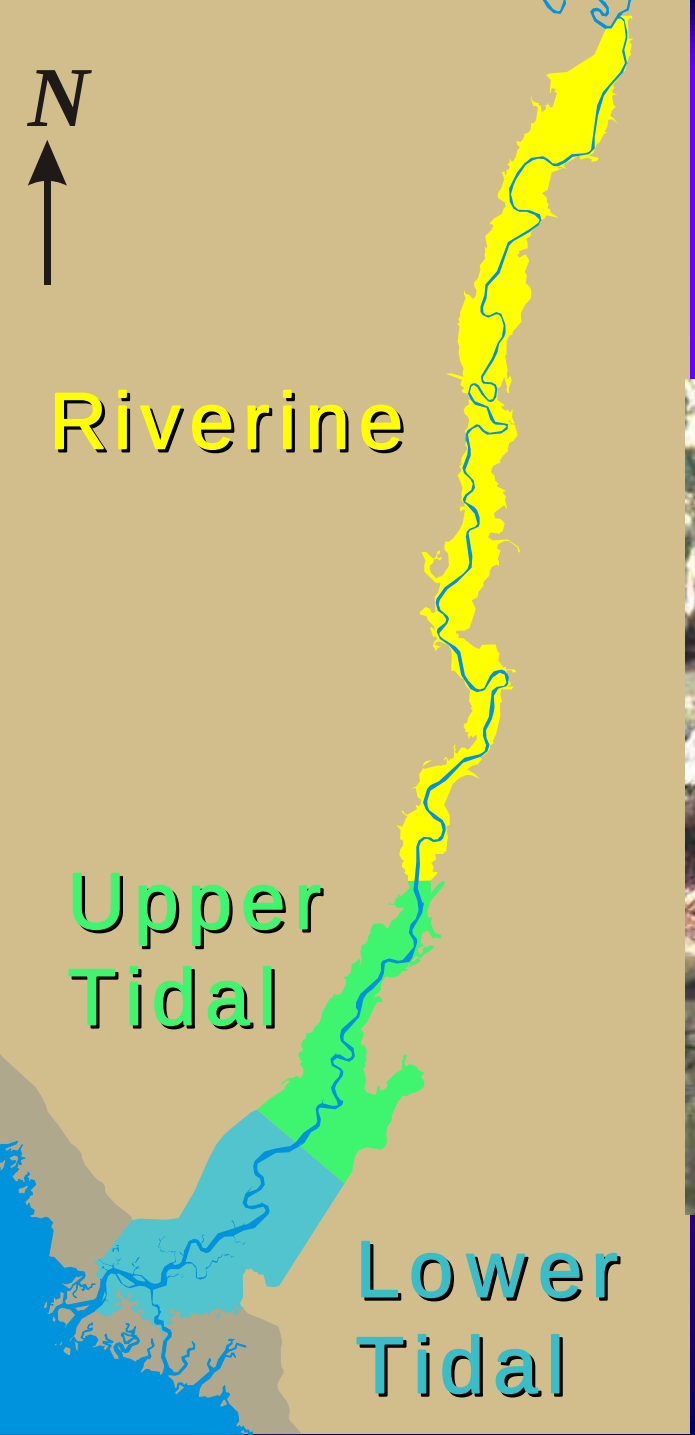
Floodplain Inundation



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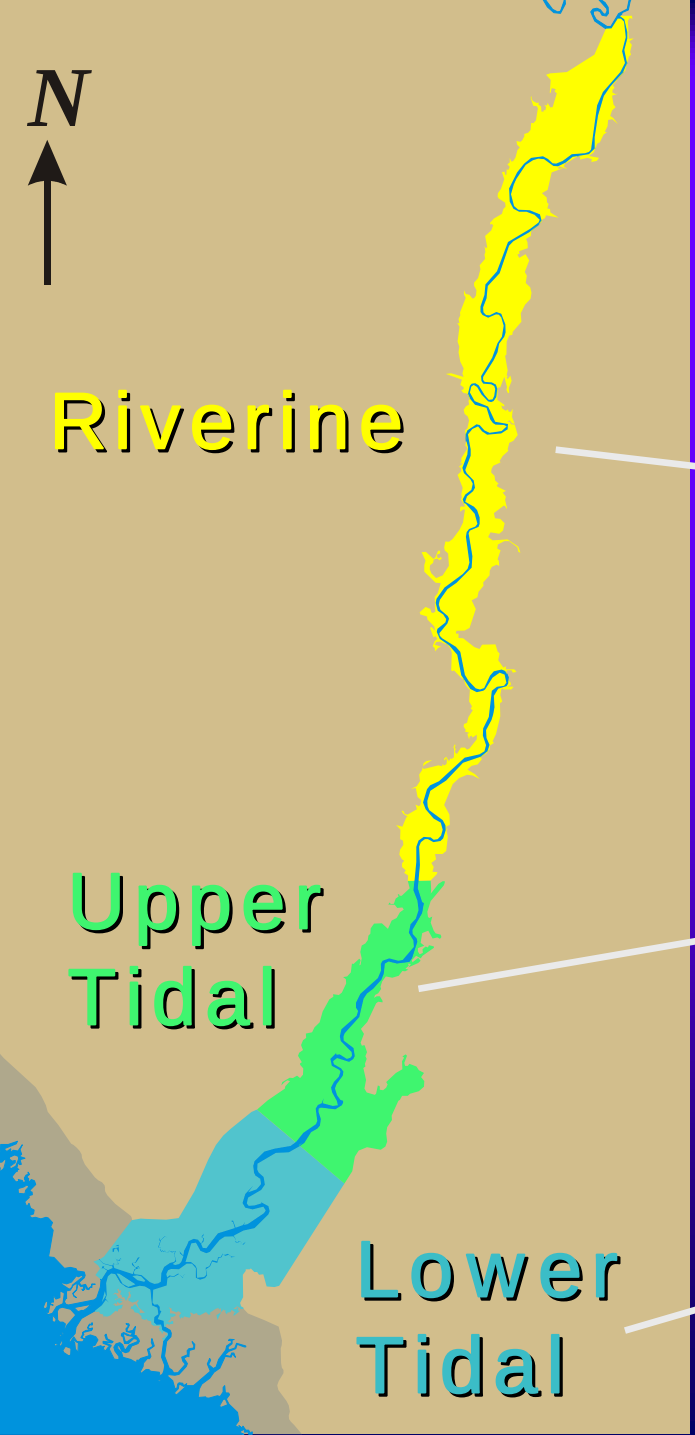

Floodplain Inundation

Riverine — Flow dependent at all flows

Upper Tidal — Flow dependent at high flows

Lower Tidal — Little or no relation to flow

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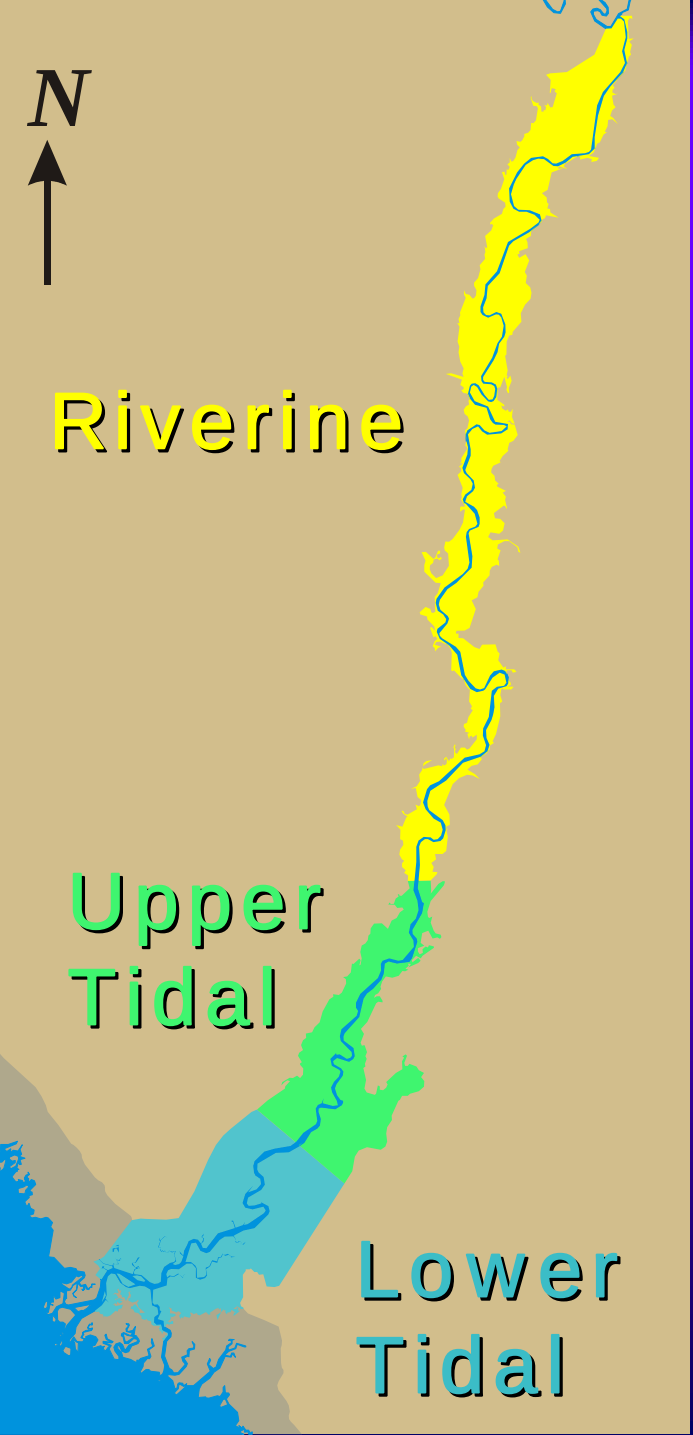

Goals

USGS

RIVER HYDROLOGY

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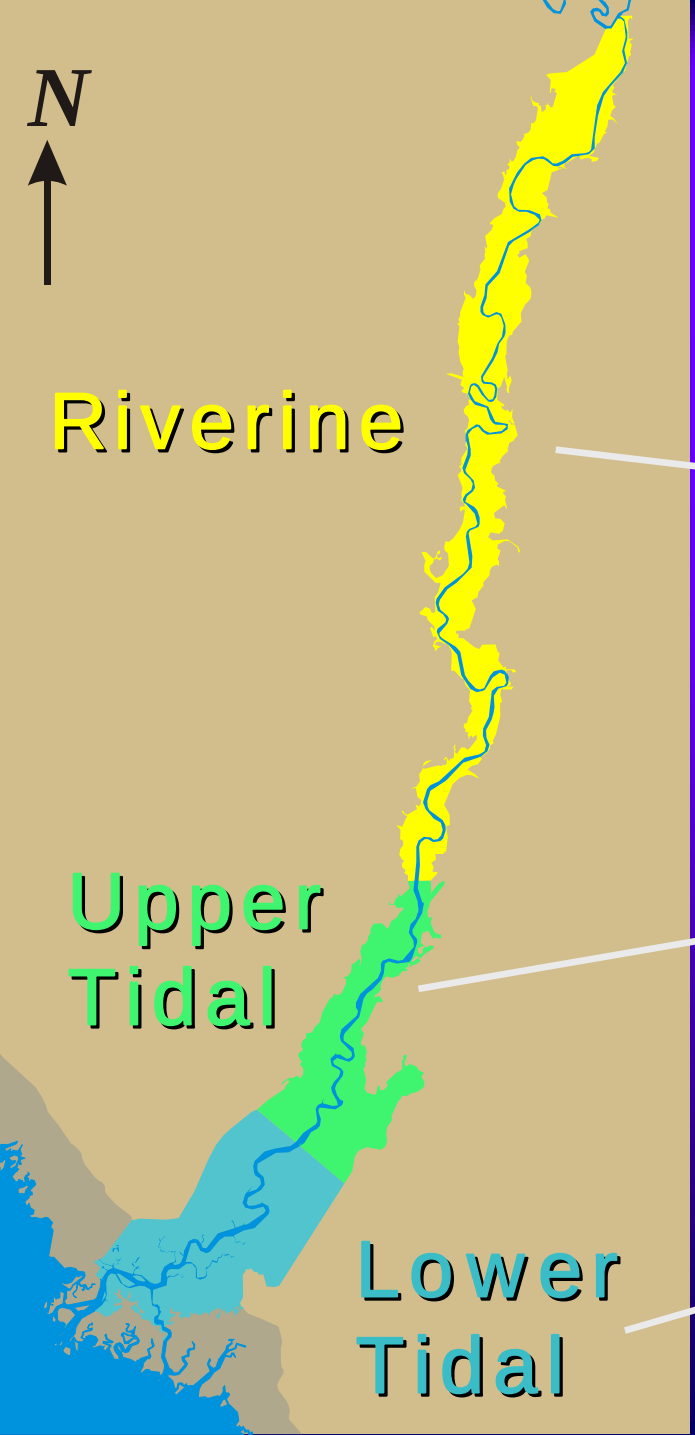

Flow Dependent Factors

Riverine
- Flood depths
- Inundation
- Saturation

Upper Tidal
- Flood depths
- Inundation

Lower Tidal
- Salinity

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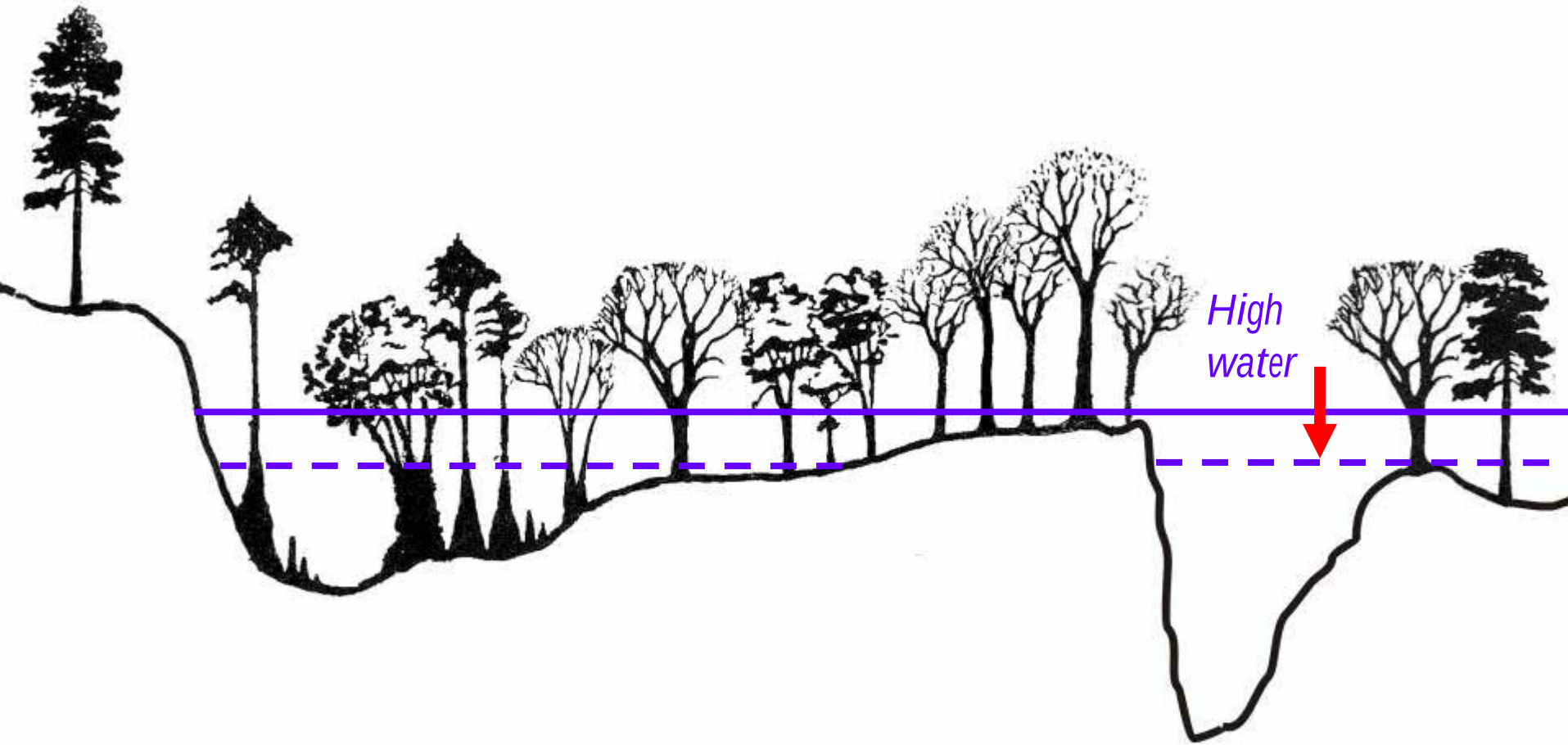
Flood depths affects composition by limiting seedling survival

Floodplain Cross Section



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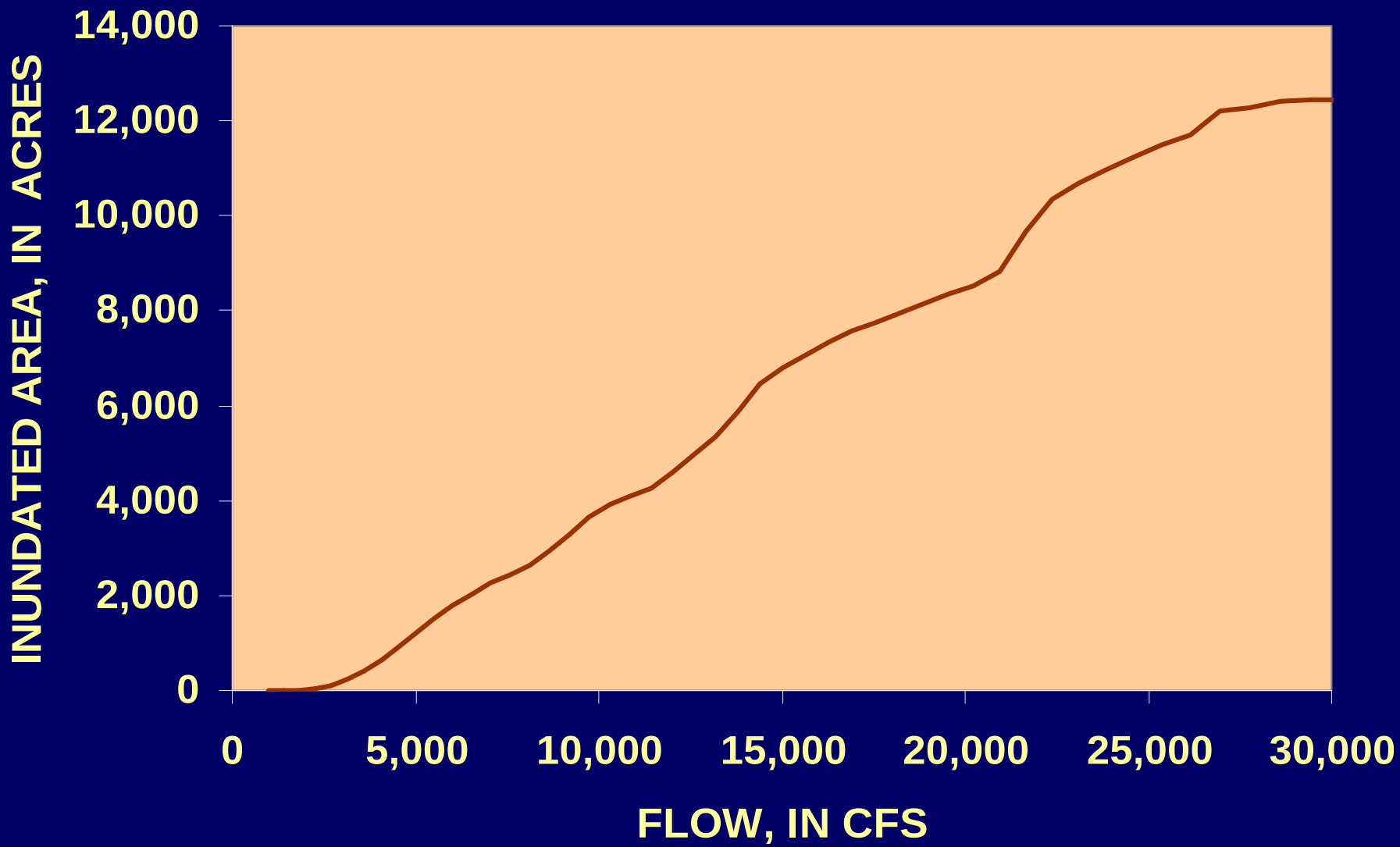
Aquatic habitat in floodplain is flow dependent

Inundated Area in Relation to Flow
(Riverine)



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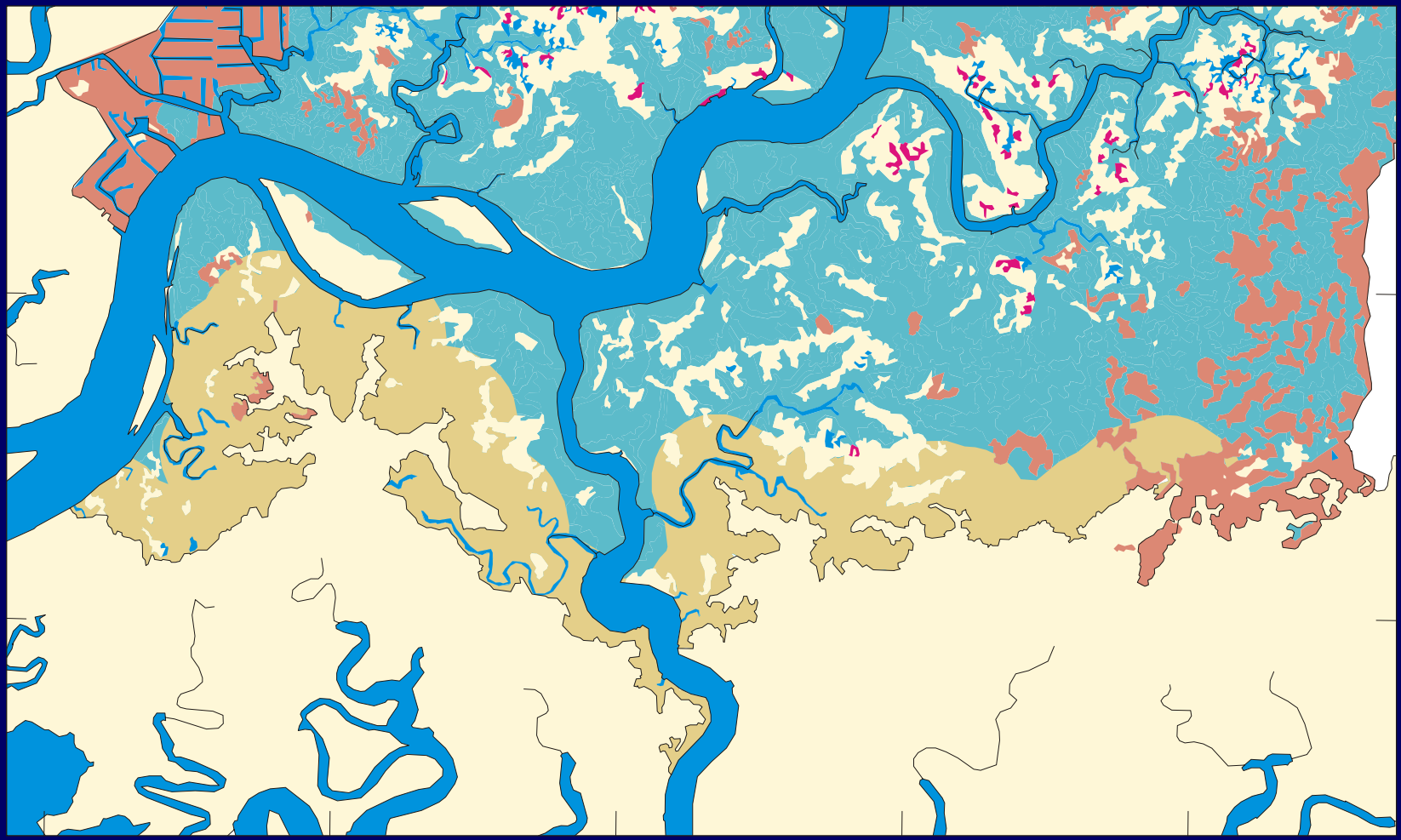
Loss of Forests at Tree Line



OPEN WATER
MARSHES
SWAMP
HAMMOCK
AQUATIC BEDS
SWAMPS REPLACED BY MARSH

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Ecological Consequences of Flow Reductions

Forest composition changes:

- Exotic species
- Opportunistic species
- Human disturbance
- Lower quality of BLH
- Fewer wet swamps
- Forest mortality at tree line

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Ecological Consequences of Flow Reductions

Decreased inundation and saturation:

- Aquatic habitat for fishes & invertebrates
- Nutrient and detritus transport
- Nitrate removal
- Water retention during droughts
- Vulnerability to fire

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