


Resilient Bay Landscapes

NBWA Conference

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Resilient Landscapes

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ASC

Landscape Resilience Framework

- Synthesizes resilience science into **conceptual framework**
- Draws on **theory + empirical** ecological studies
- Input from expert **advisory team**
- Goal = help **systematically apply resilience science** at a landscape scale
- **Seven fundamental principles**

Resilient Silicon Valley:
resilientsv.sfei.org


1
SETTING
Unique geophysical, biological, and cultural aspects of a landscape that determine potential constraints and opportunities for resilience
2
PROCESS
Physical, biological, and chemical drivers, events, and processes that create and sustain landscapes over time
3
CONNECTIVITY
Linkages between habitats, processes, and populations that enable movement of materials and organisms
4
DIVERSITY & COMPLEXITY
Richness in the variety, distribution, and spatial configuration of landscape features that provide a range of options for species
5
REDUNDANCY
Multiple similar or overlapping elements or functions within a landscape that promote diversity and provide insurance against loss
6
SCALE
The spatial extent and time frame at which landscapes operate that allows species, processes, and functions to persist
7
PEOPLE
The individuals, communities, and institutions that shape and steward landscapes

Setting

determines the constraints and opportunities within a landscape

- **Geophysical context:** underlying geology, soils, and topography
- **Ecological context:** characteristic species and habitats
- **Historical and cultural context:** how the landscape has changed over time
- **Critical resources:** Important but limiting factors

Processes

create and sustain landscapes in a dynamic way

- **System drivers:** large-scale forces like climate change and land use
- **Disturbance regimes:** expected but unpredictable events, like fires and floods
- **Habitat-sustaining processes:** dynamic, ongoing processes

Scale

provides space and time landscapes need to persist

- **Large spaces:** Areas large enough to accommodate key processes and large wildlife populations
- **Long time scales:** broad time horizons over which ecological functions must persist
- **Cross-scale interactions:** overlapping functions that occur across multiple spatial and temporal scales

Baylands

An ecologically resilient Bay landscape includes…

Connectivity

- **Connectivity between bayland and upland habitats** for wildlife movement around Bay perimeter

Process, Scale

- **Sufficient sediment** from local watersheds to support tidal marsh persistence

Complexity/Diversity

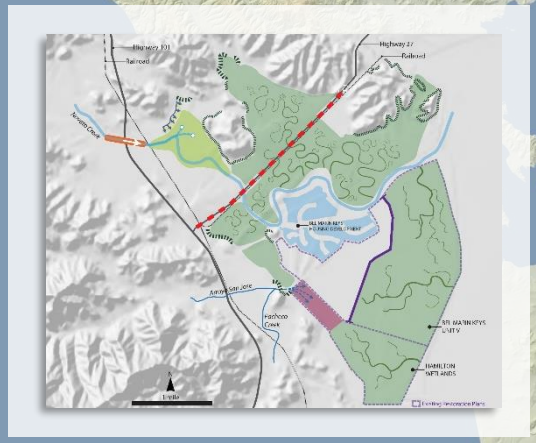
- **Channel and marsh plain complexity** to support diverse species

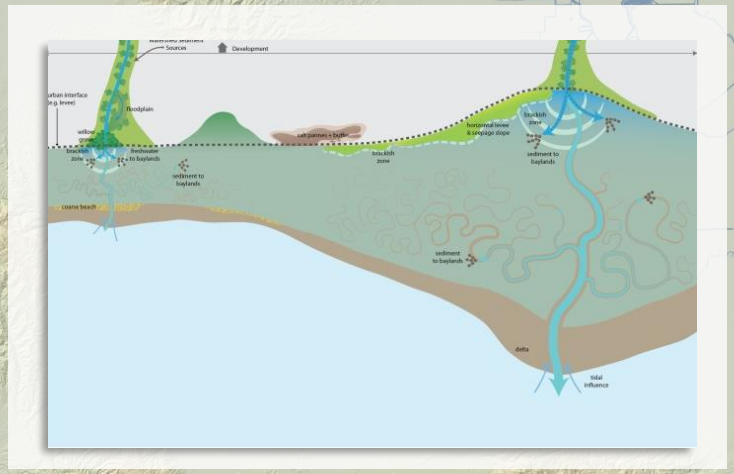
Streams

An ecologically resilient Bay landscape includes…

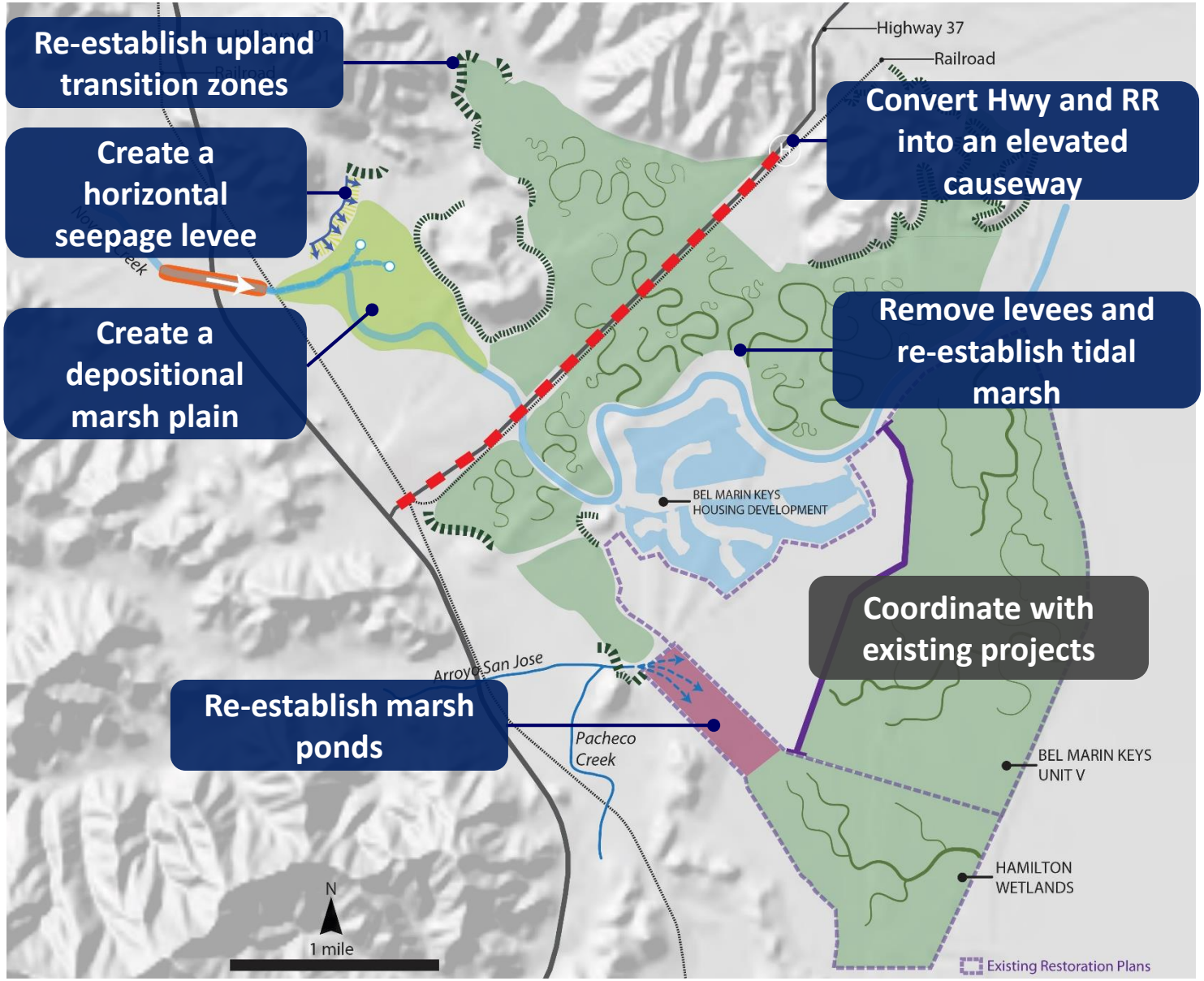
Connectivity, Complexity/Diversity	• **Surface flow heterogeneity** to support a range of species and as a barrier to spread of invasives
Process	• **Flows** that cue the germination of native trees and steelhead migration, spawning, and rearing
Process	• **Sediment delivery** from upper watersheds to channel, floodplain, and baylands
Connectivity	• **Continuous riparian corridors** for wildlife movement from hills to bay
Process, Scale	• **Levee setbacks** to support floodplain habitat hydrologically connected to channel

Resilient Landscape Visions

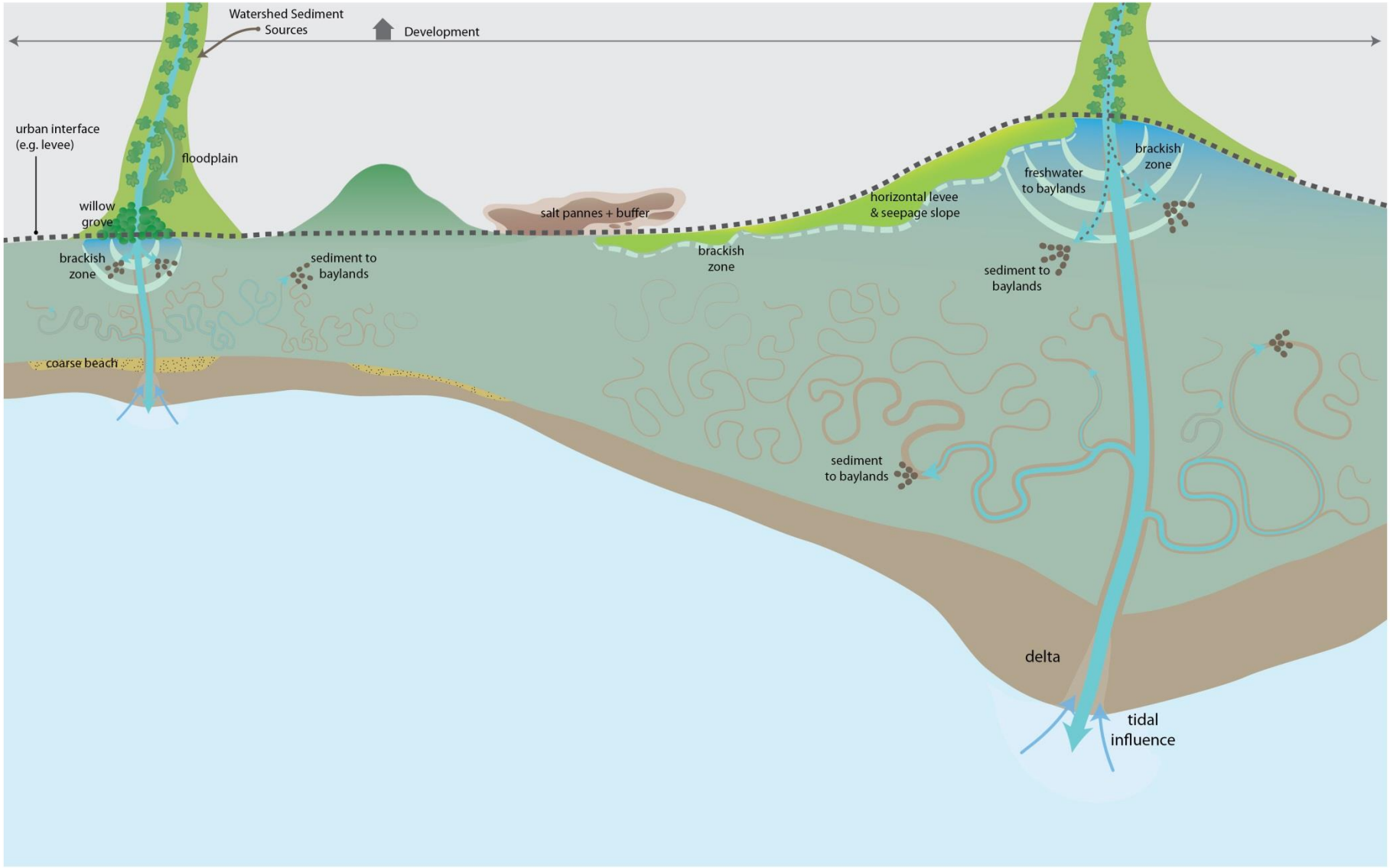




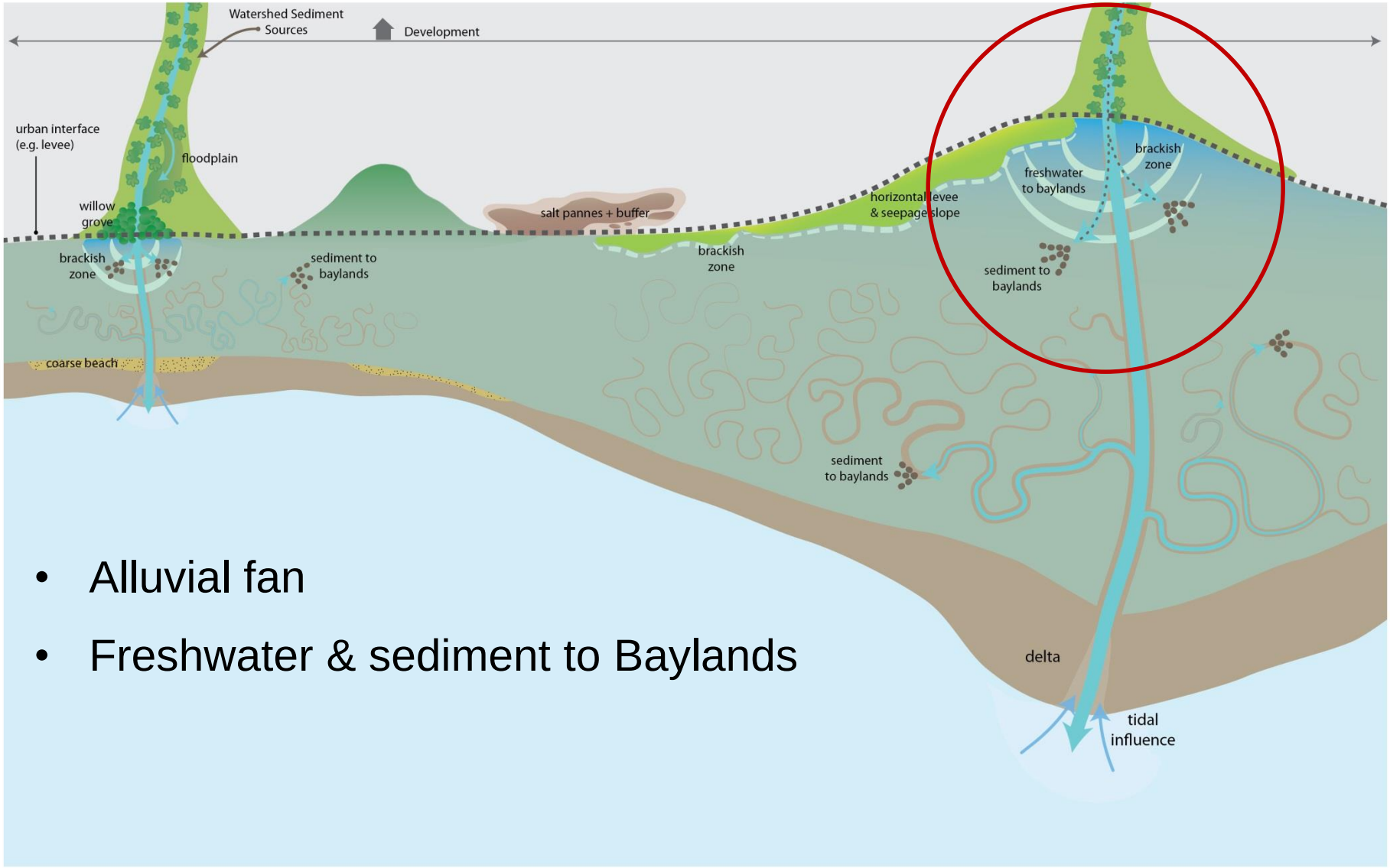
Novato Creek Baylands Long-term Vision



EBDA Landscape Vision

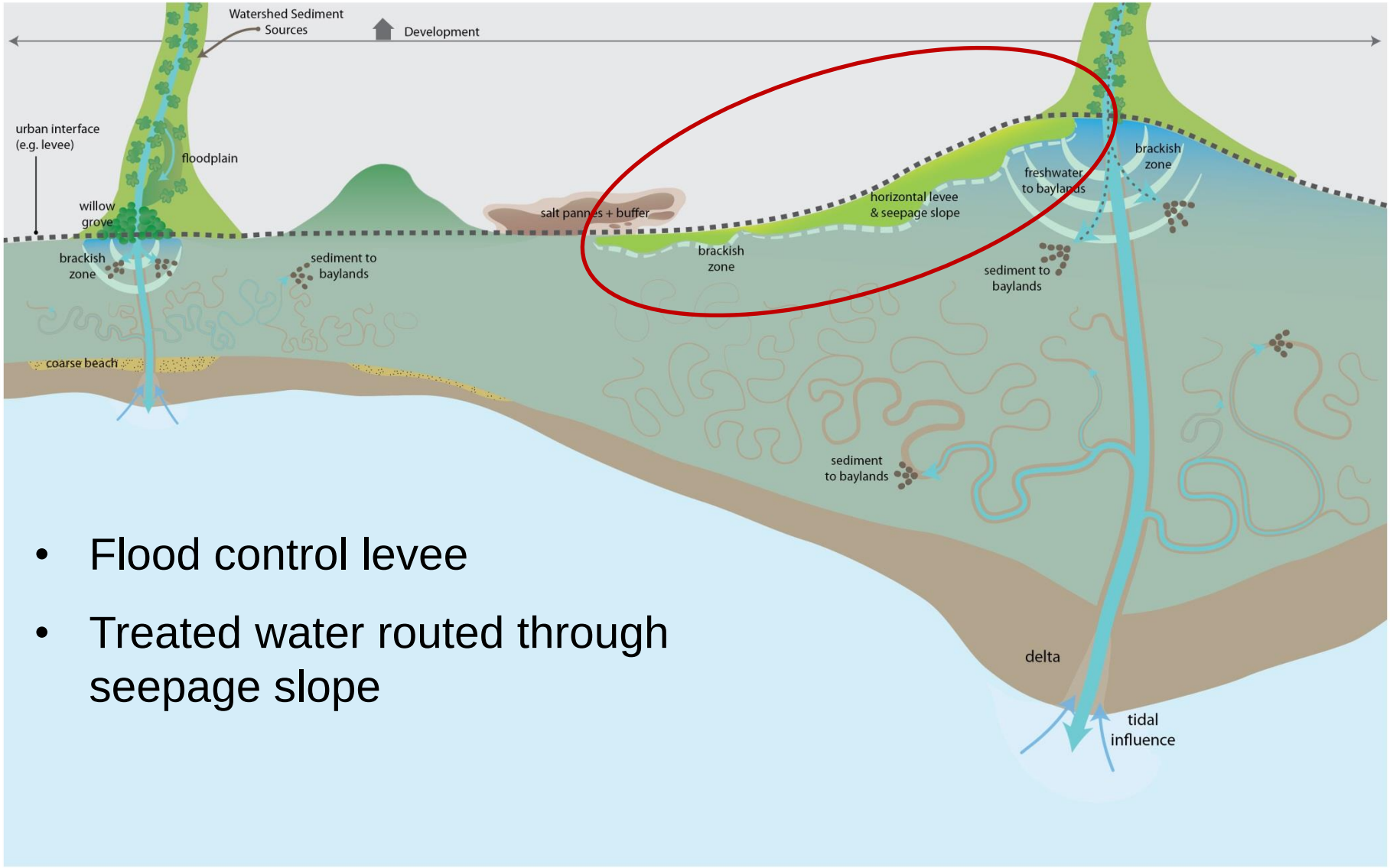


EBDA Landscape Vision - Processes



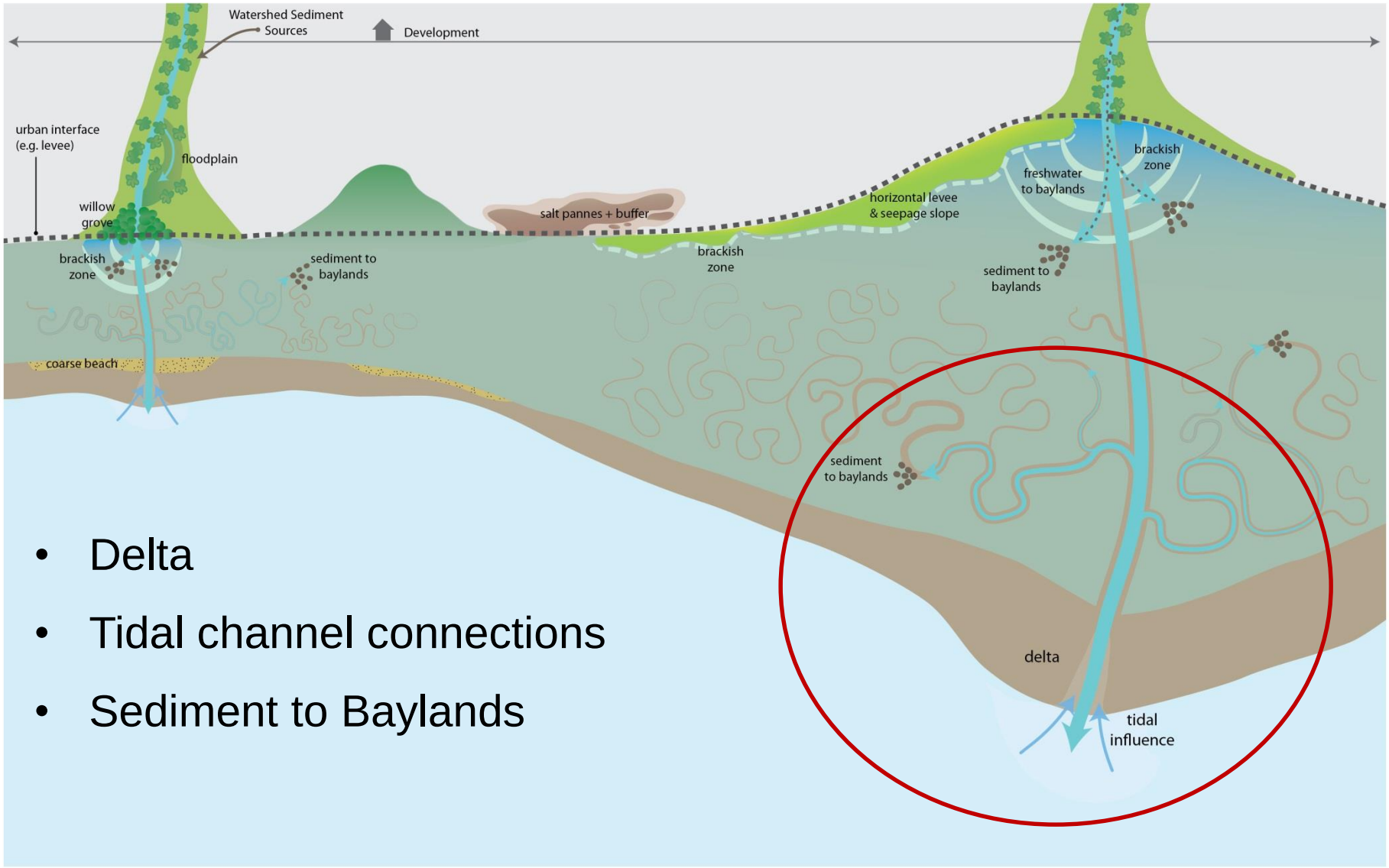
- Alluvial fan
- Freshwater & sediment to Baylands

EBDA Landscape Vision - Processes



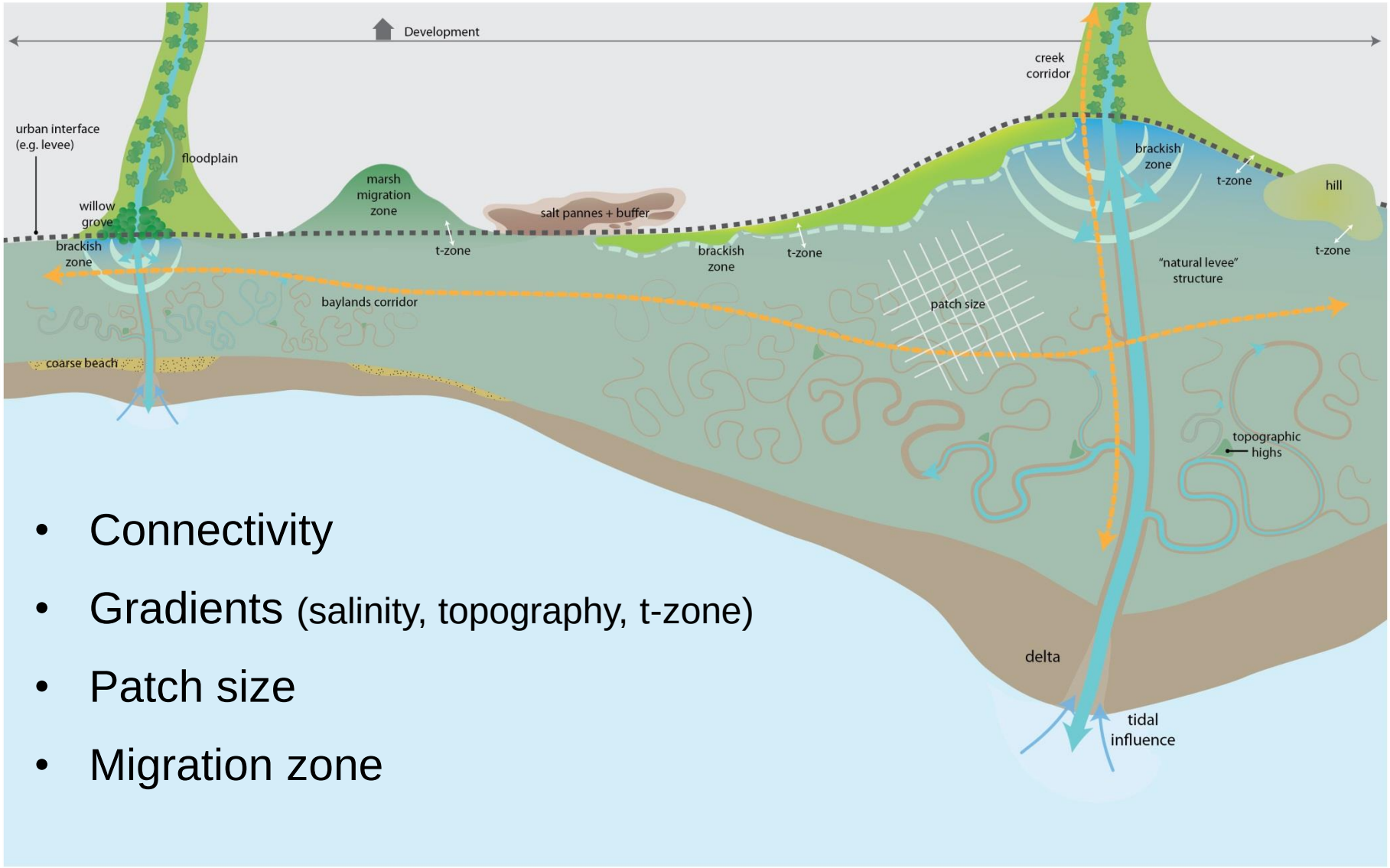
- Flood control levee
- Treated water routed through seepage slope

EBDA Landscape Vision - Processes



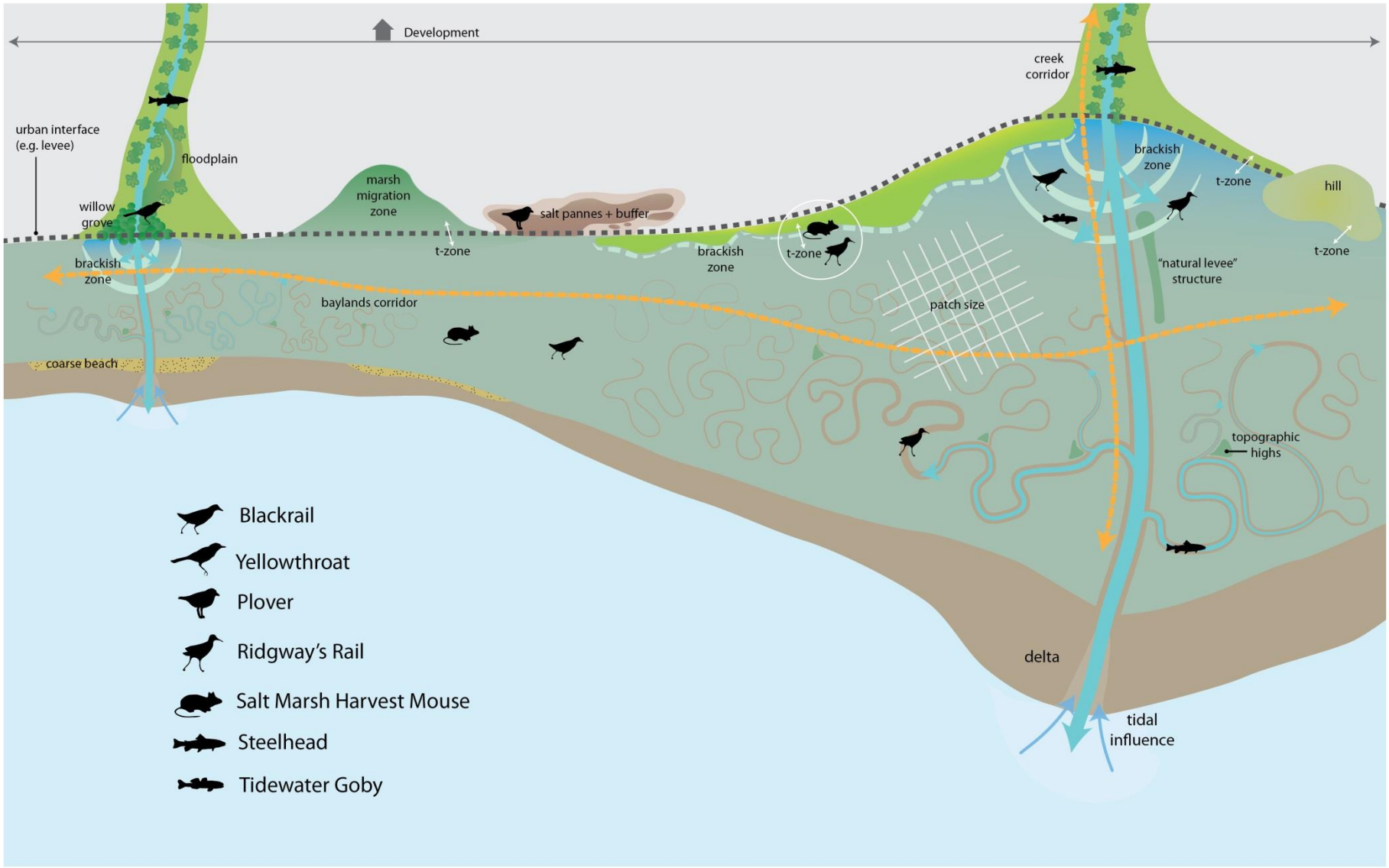
- Delta
- Tidal channel connections
- Sediment to Baylands

EBDA Landscape Vision - Coherence



- Connectivity
- Gradients (salinity, topography, t-zone)
- Patch size
- Migration zone

EBDA Landscape Vision - Species Use



Resilient Silicon Valley:
resilientsv.sfei.org

Novato Creek:
sfei.org/projects/flood-control-20

East Bay:
sfei.org/ebda-sea-level-plan

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