

Rearrangement of ecological and economic landscapes to mitigate the impacts of sea level rise:

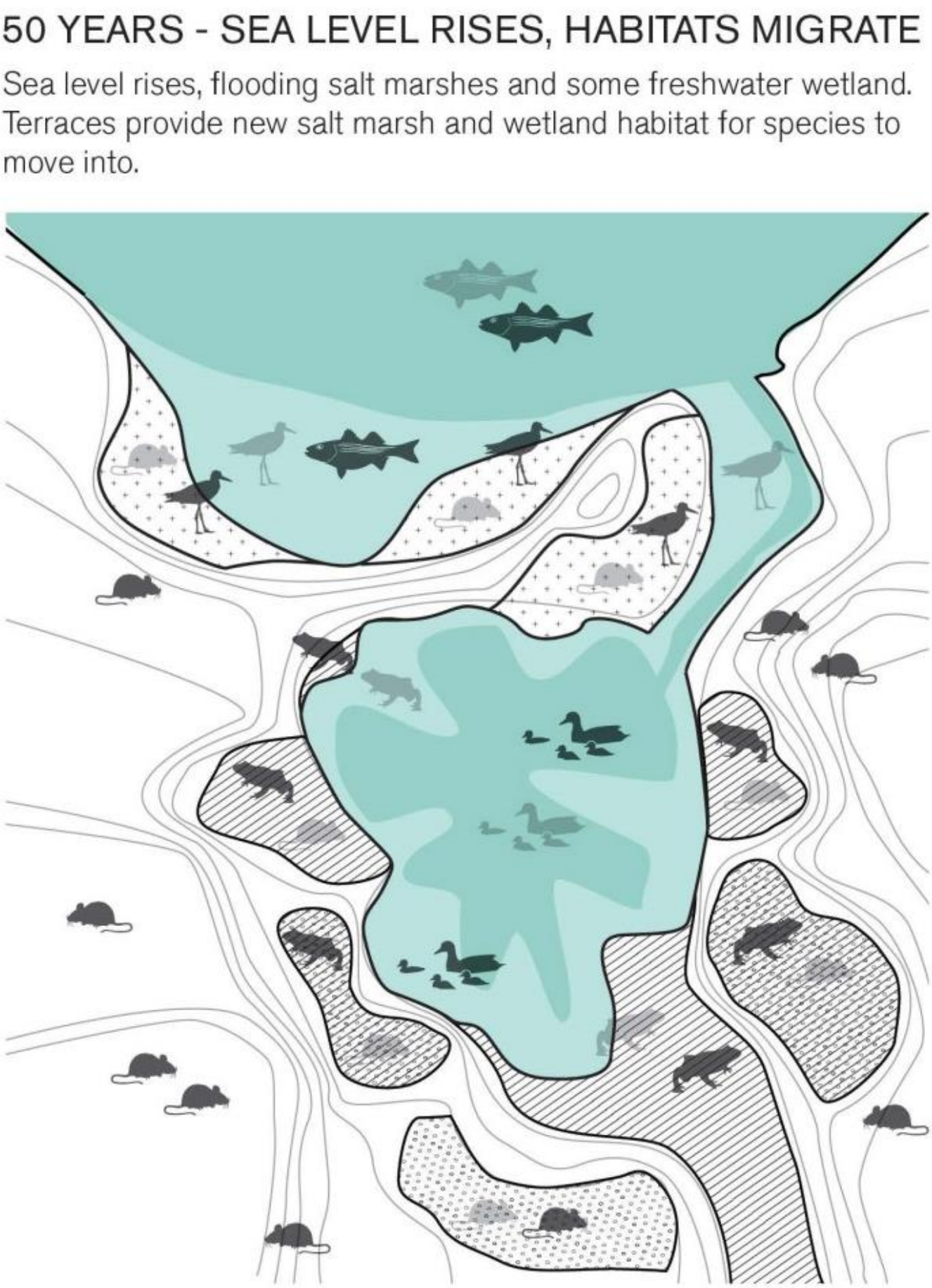
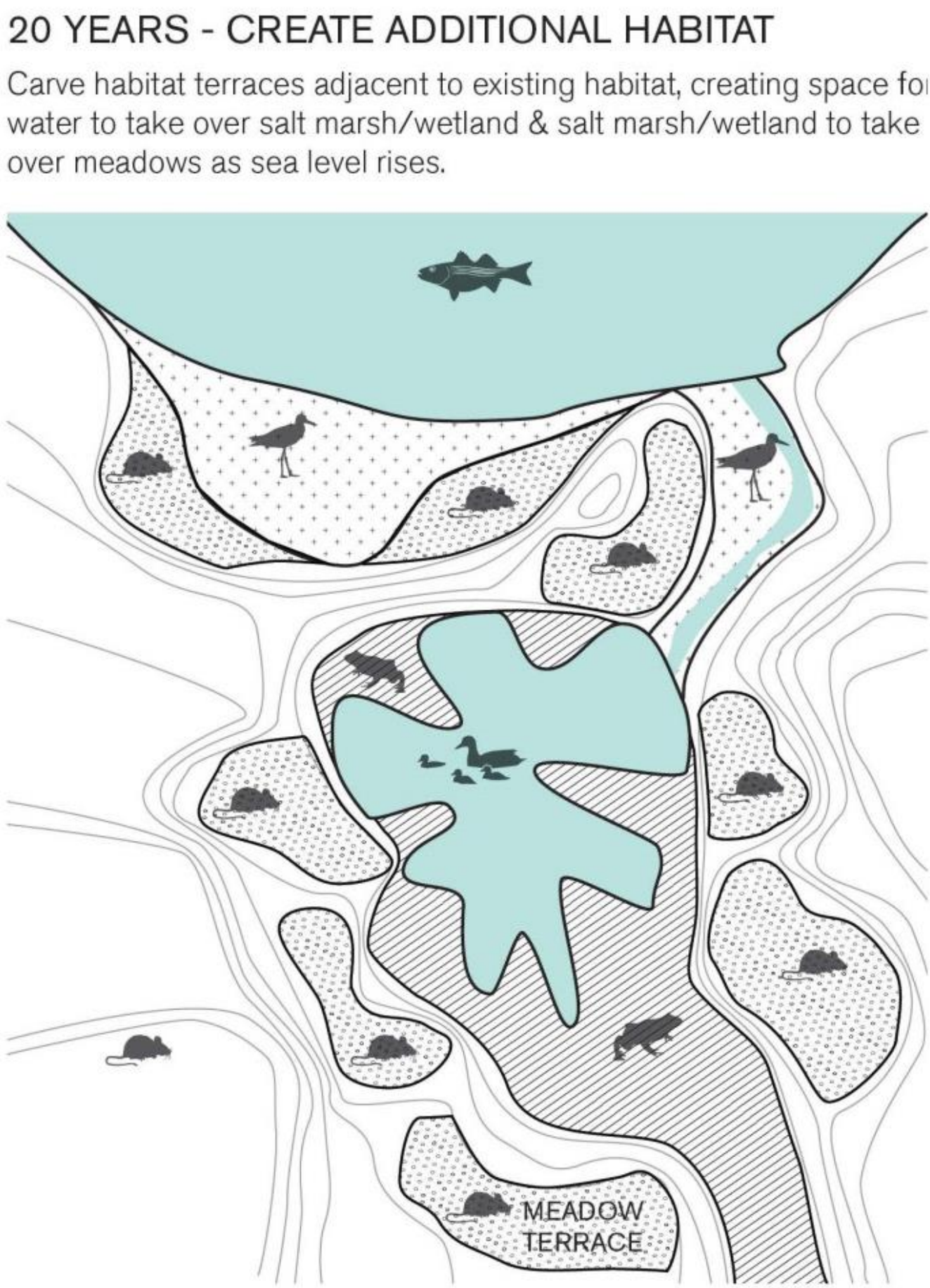
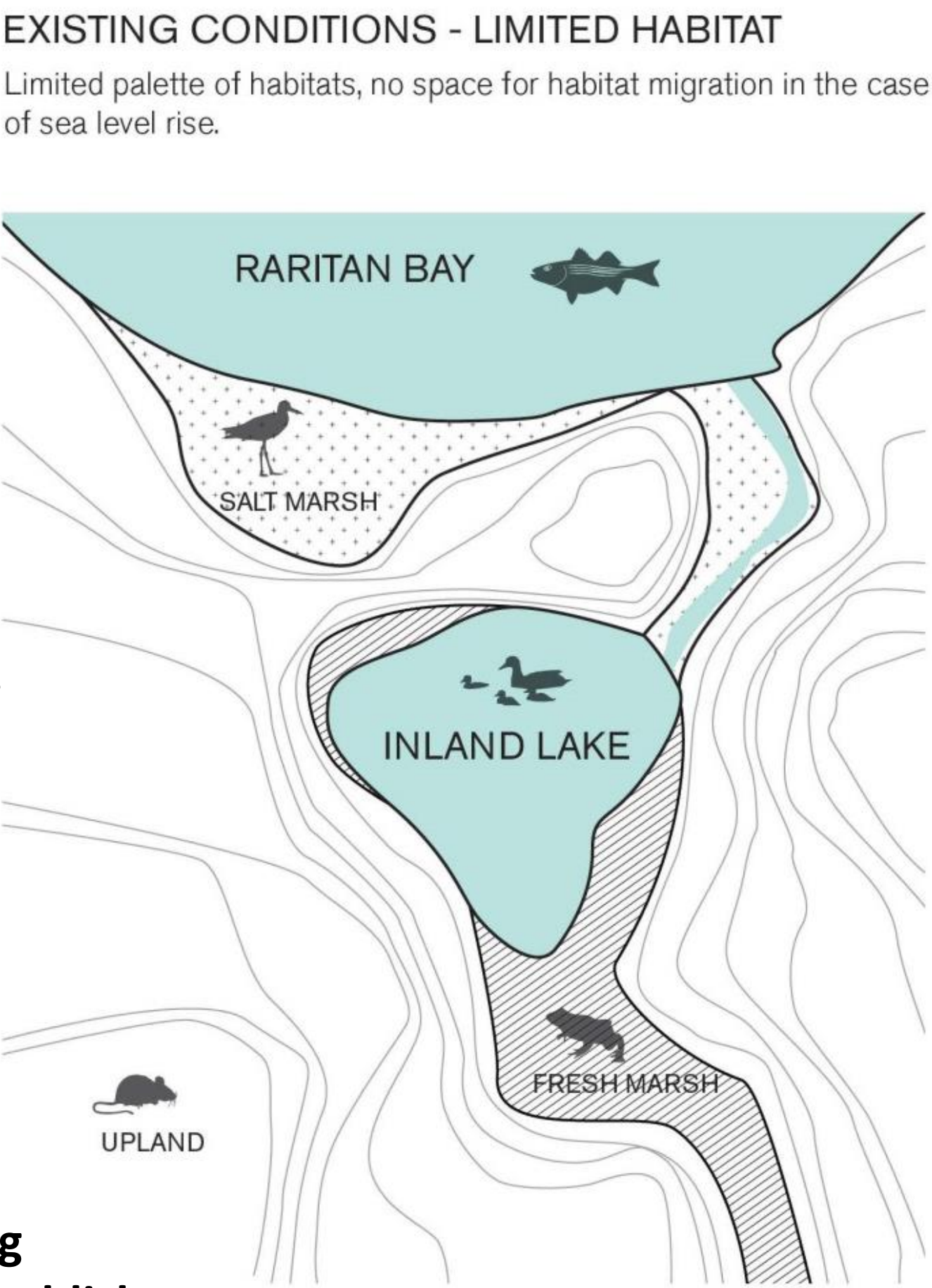
The Habitat Engine

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The Habitat Engine

With climate change, the eastern United States shoreline will move inland in response to a possible 2m sea level rise. If landform can be modified to accommodate the rising waters, the functions near the shoreline, *ecological, economic, and social*, can be retained, just rearranged to a different location. The Habitat Engine, similar to a train engine, pulls along these functions to safe areas as the sea level rises.

In the three diagrams at the right, existing conditions will be submerged, removing area for coastal biota and their value and for economic and social activities. If landforming can occur, lowering the inland grade can create land to replace habitats being submerged at the shore. Inhabited areas can be protected using the removed soil. Then, in 20 years there will be areas with the proper hydrology to supply niche space for colonizing marine biota. In 50 years, marine communities can reestablish at the new sites, securing the ecological services. Community life can persist, supported by the relocated coastal habitats.



There is a strong connection among ocean, shoreline, and the inland. The Habitat Engine approach recognizes and secures these connections.

Ecological opportunities where the many functions of the shoreline are moved to accommodate sea level rise include:

- Preserve coastal biodiversity
- Restoration of ecosystem functions
- Restoration of disturbed inland natural heritage
- Improved resiliency
- Improved regional biodiversity
- Advancement of environmental education

Case History: On Raritan Bay, NJ, a revised landform reduces threats from flooding of residential areas and secures coastal ecological functions.

Case history: On Barnegat Bay, NJ, sea level rise will inundate many areas. Changing a disused sand mine into a residential and tourist zone, connected to the bay by an enlarged channel, will migrate social and ecological functions, and allow continuation of the valuable economic and ecological drivers of the region.

