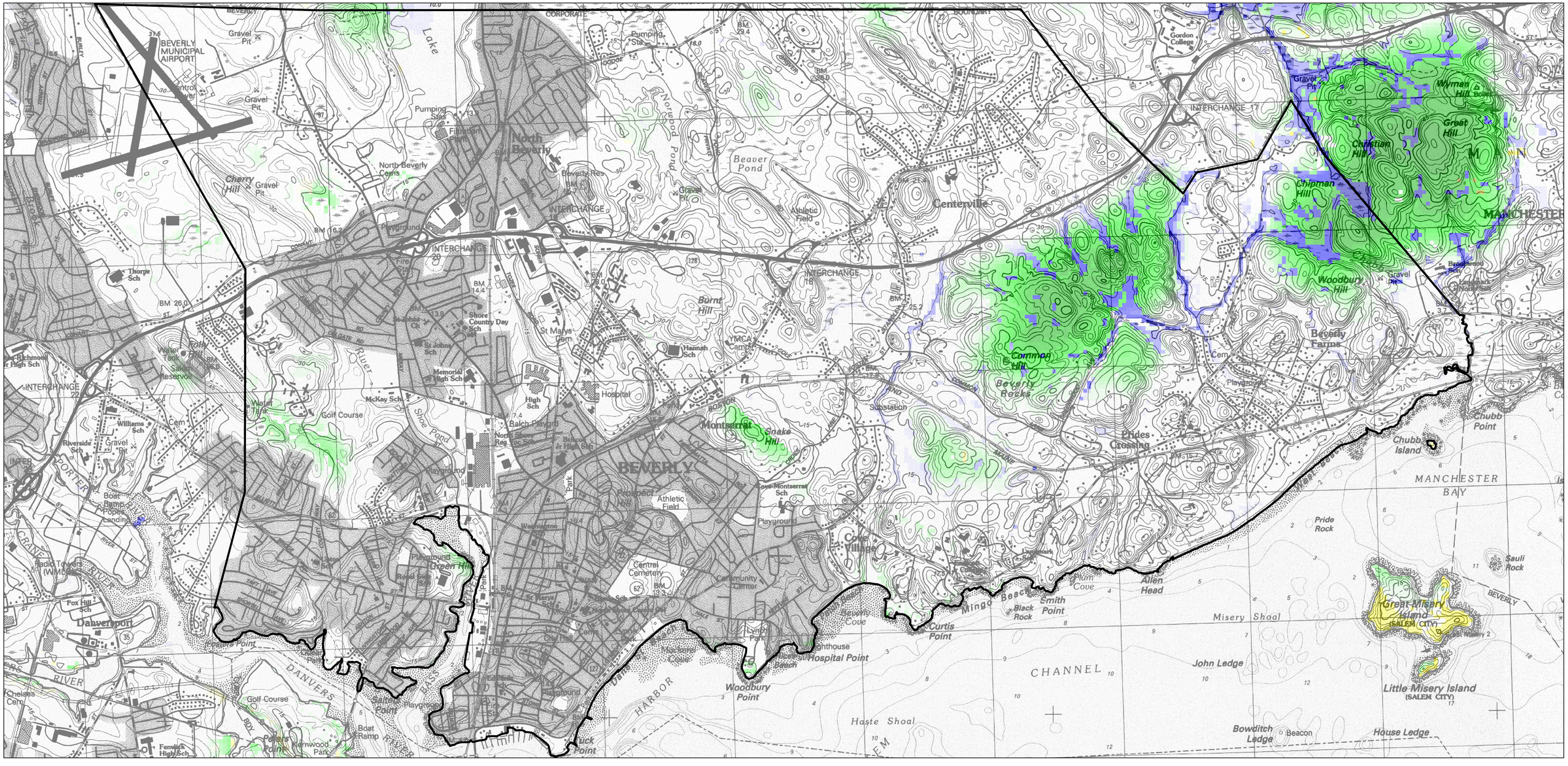
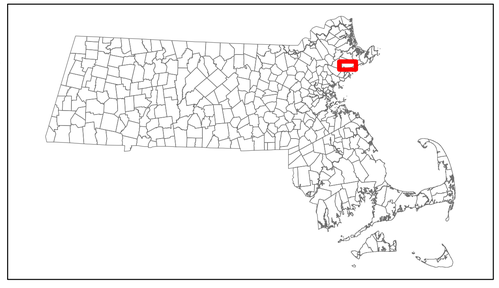
CAPS Index of Ecological Integrity (IEI)
Town of BEVERLY, MA



Updated January 9, 2024



IEI, Index of Ecological Integrity
Top 50% of the Landscape

- Forests
- Shrublands
- Coastal Upland
- Freshwater Wetland & Aquatic
- Coastal Wetland & Aquatic

50-60 60-70 70-80 80-90 90-100%

CAPS is an approach to prioritizing land for conservation based on the assessment of ecological integrity for various ecological communities (e.g. forest, shrub swamp, headwater stream) within an area. The Index of Ecological Integrity (IEI) delineates the relative wildlife habitat and biodiversity value of any point on the landscape based on principles of landscape ecology and expert opinion.

With a computer base map depicting various classes of developed and undeveloped land, we evaluate a variety of landscape-based variables ("metrics") for every point in the landscape. A metric may take into account the microclimatic alterations associated with "edge effects," intensity of road traffic in the vicinity, nutrient loading in aquatic ecosystems, or the effects of human development on landscape connectivity. Various metrics are applied to the landscape and then integrated in weighted linear combinations as models for assessing ecological integrity. This process results in a final Index of Ecological Integrity (IEI) for each point in the landscape based on models constructed separately for each ecological community.

Depicted on this map are those areas representing 50% of the undeveloped landscape with the highest IEI values; the darker the color the higher the ecological integrity value. Coastal beaches and mudflats are included as Coastal Wetland and Aquatic. For more information see: http://www.umasscaps.org.

These maps were prepared by the University of Massachusetts Amherst, with funding from the Massachusetts Department of Environmental Protection and the Renewable Resources Extension Act (RREA).

UMass Amherst
UMass Extension
CENTER FOR AGRICULTURE