

Mobile Acoustic Transect Bat Survey Route Design

Objectives:

- 1.) Contribute to knowledge of bat species that utilize habitat on or near Rachel Carson NWR (and relative activity levels)**
- 2.) Contribute to state and regional bat species population monitoring data (by surveying additional regions of the state/provide more thorough coverage)**

Two routes were developed to survey bats along the southern coast of Maine.

Routes were developed in a GIS. The DOT roads layer and the boundary of Rachel Carson NWR were overlaid on the land cover map. The routes were then constructed by delineating a path along the coast that abutted Rachel Carson NWR lands as much as possible without backtracking, while avoiding roads with speed limits of 50 mph or greater and minimizing the sections of the transect on roads with speed limits between 40 and 45 mph.

The Cape Elizabeth/Biddeford route is rather circuitous due to limited crossings over ocean inlets and numerous high-velocity roads in the area.

Habitat Composition Along the Transect

Bat detectors typically only have a range of 5 – 30 meters, depending on the frequency and intensity of the call and attenuation factors, therefore the transects should detect bats echolocating within a 30 meter radius. To ensure that the transects passed through a representative mix of habitats, land cover along the transect was summarized and compared to land cover in the area. Percent land cover along the transects was determined by buffering each transect by 30 meters and using that polygon to extract the underlying land cover (from the MELCD 2004 dataset). Percent land cover was then calculated based on the percent of cells categorized in each land cover type out of all land cover cells in the transect buffer, both for the original land cover classes and for a generalized set of land cover classes/habitat types (Developed, Open, Forest, Water).

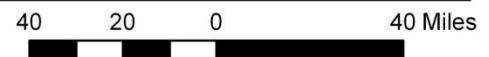
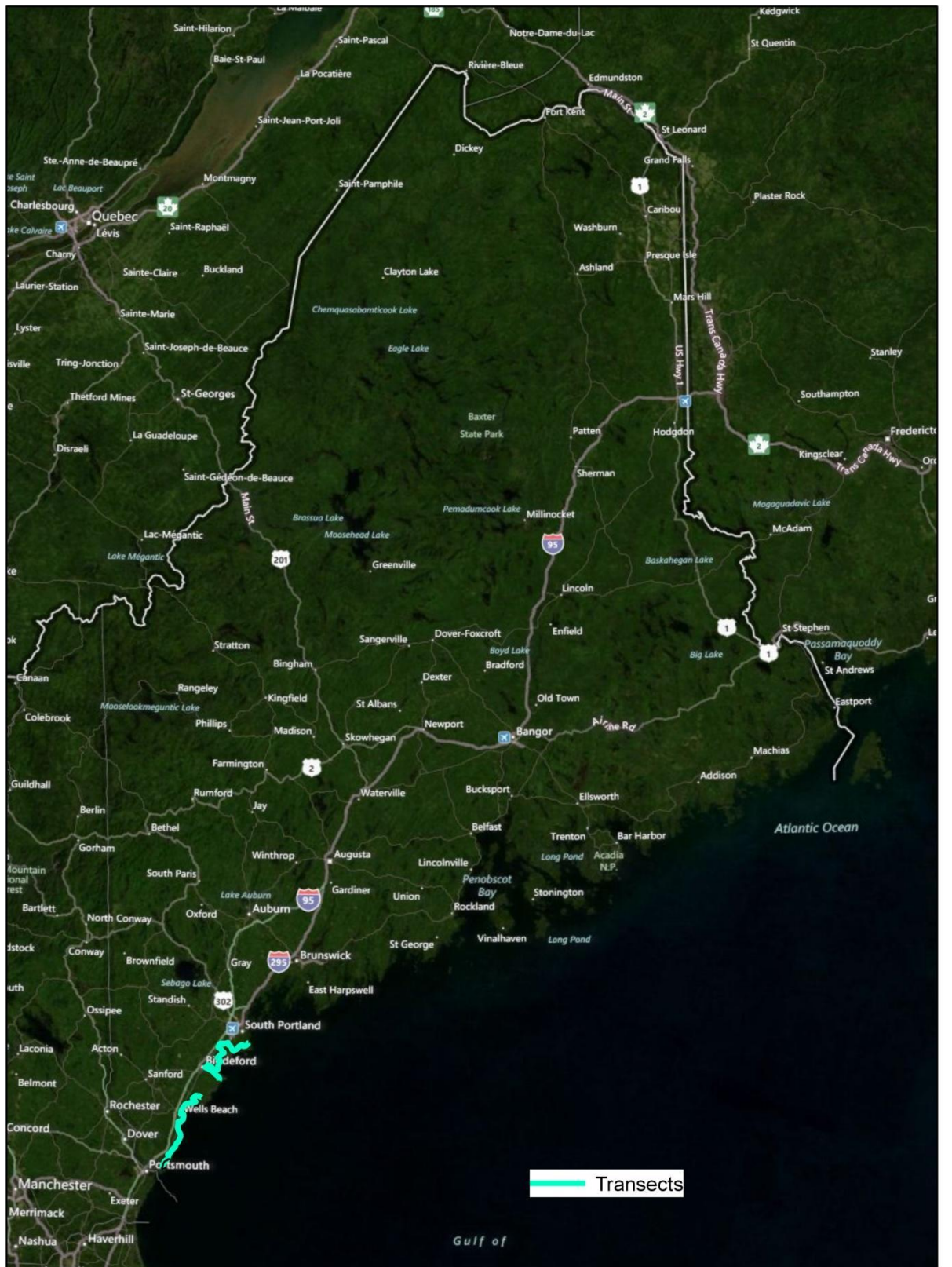
Due to the highly developed coast line in southern Maine, the habitat along the transects is not representative of land cover in the coastal towns of York and Cumberland Counties (Cape Elizabeth, Scarborough, Old Orchard Beach, Saco, Biddeford, Arundel, Kennebunk, Kennebunkport, Wells, Ogunquit, York and Kittery). The transects are marked by much higher development and much reduced forest land cover than in the rest of the towns. Since these are driving transects, land cover is obviously also biased toward roads and other development. Also, the percent covers on the transects may under represent open water, as some parts of the transect directly abutted the ocean and may not have been captured in the land cover raster. However, these transects pass through a good mix of available habitat in this area and are likely representative of coastal habitat in southern Maine as both transects had fairly similar percent covers for each land cover type (see table).

Rt. 1 (Cape Elizabeth/Biddeford): Length: 30.6 miles

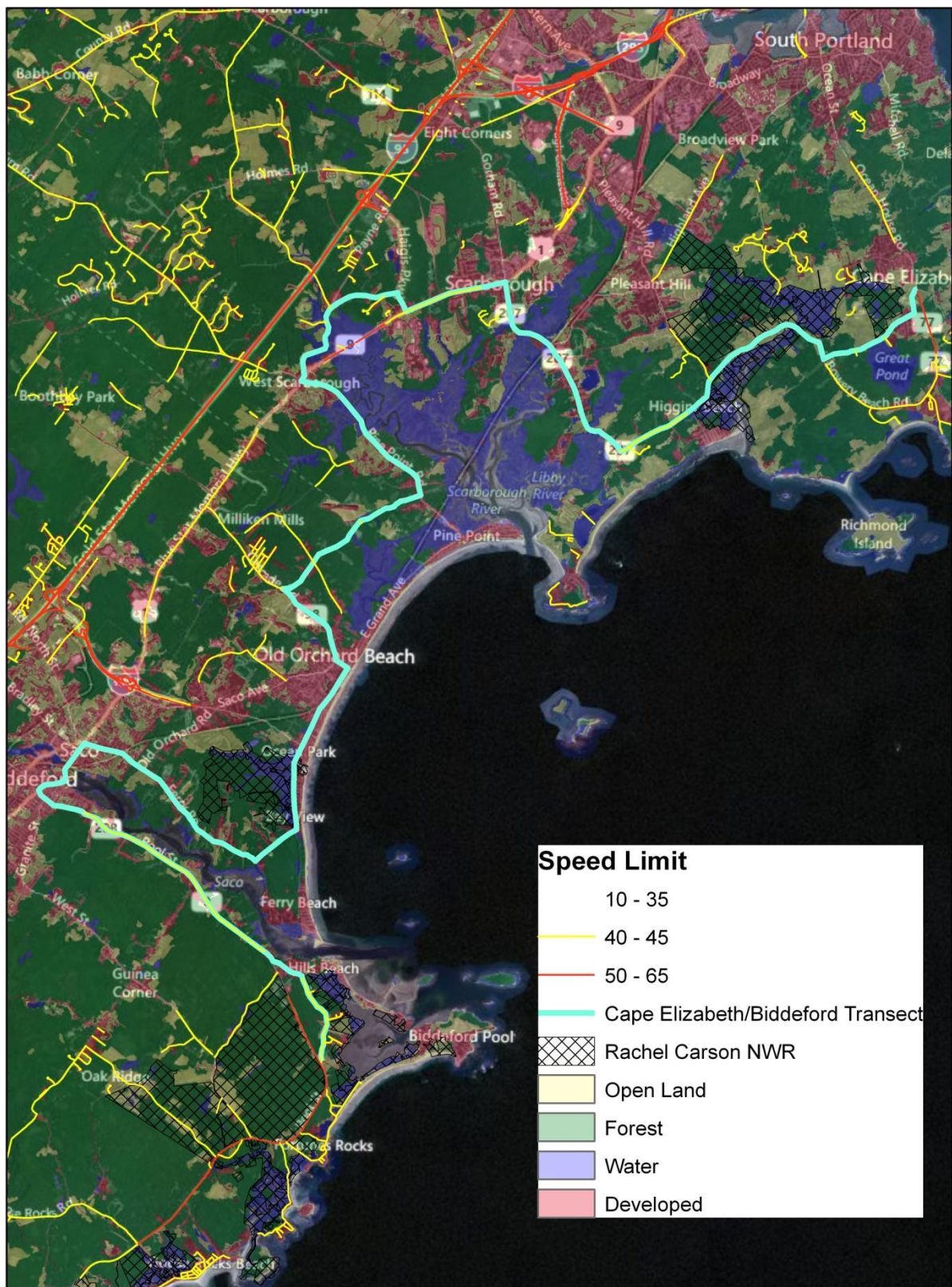
Rt. 2 (Kittery/Kennebunk): Length: 30.0 miles

MELCD Feature Class	Percent Cover in Coastal Towns	Route 1 Percent Cover	Route 2 Percent Cover	Summarized Feature Class	Percent Cover in Coastal Towns	Route 1 Percent Cover	Route 2 Percent Cover
Developed, High	2.4	12.8	19.1	Developed	11.2	62.9	55.8
Developed, Medium	2.1	12.7	11.3				
Developed, Low	4.7	29.1	14.4				
Road/Runway	1.9	8.3	11.0				
Developed, Open Space	6.0	5.7	12.1	Open Space	16.1	12.1	14.3
Cultivated Crops	1.2	0.4	0.2				
Pasture/Hay	6.5	1.4	0.9				
Grassland/ Herbaceous	1.6	4.3	0.7				
Unconsolidated Shore	0.5	0.0	0.4				
Bare Ground	0.4	0.2	0.1				
Blueberry Field	0.0	0.0	0.0	Forest	66.9	18.5	25.4
Deciduous Forest	9.8	2.5	5.3				
Coniferous Forest	14.1	3.1	5.6				
Mixed Forest	30.0	8.3	8.8				
Scrub Shrub	1.7	1.8	0.3				
Wetland Forest	7.9	0.4	3.4				
Recent Clearcut	0.1	0.0	0.0				
Light Partial Cut	2.2	0.5	1.4				
Heavy Partial Cut	0.9	2.1	0.4				
Forest Regeneration	0.2	0.0	0.2				
Wetlands	4.8	6.4	3.6	Water	5.8	6.5	4.5
Open Water	1.0	0.2	0.9				

RHCNWR Mobile Bat Survey Transects



Cape Elizabeth/Biddeford Mobile Bat Survey Transect



1 0.5 0 1 Miles



Kittery/Kennebunk Mobile Bat Survey Transect

