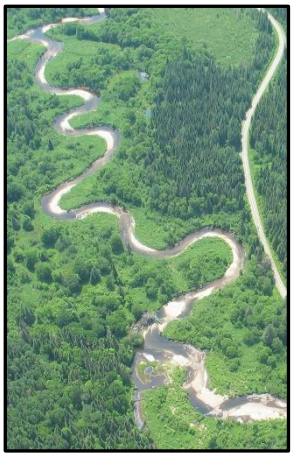
Surface Waters and Riparian Areas



Vermont's network of lakes, ponds, rivers and streams, and their associated riparian zones, valley bottoms, and river corridors are the second foundational unit of Vermont Conservation Design.

Ecological Functions

Aquatic systems provide vital habitat for a rich assemblage of aquatic species, including fish, amphibians, reptiles, invertebrates (e.g., insects, mussels, snails, worms, freshwater sponges), and plants. Naturally vegetated riparian areas provide many functions, including stabilizing shorelines, storage of flood waters, filtration of sediments and nutrients, shading of adjacent surface waters to help moderate water temperatures, and direct contribution of organic matter to the surface water as food and habitat structure. Riparian areas are also very essential habitat for many species of wildlife, including mink, otter, beaver, kingfisher, spotted sandpiper, and wood turtle. The shorelines and riparian areas of rivers and lakes support floodplain forests, several other rare and uncommon natural communities, and many species of rare plants and animals.

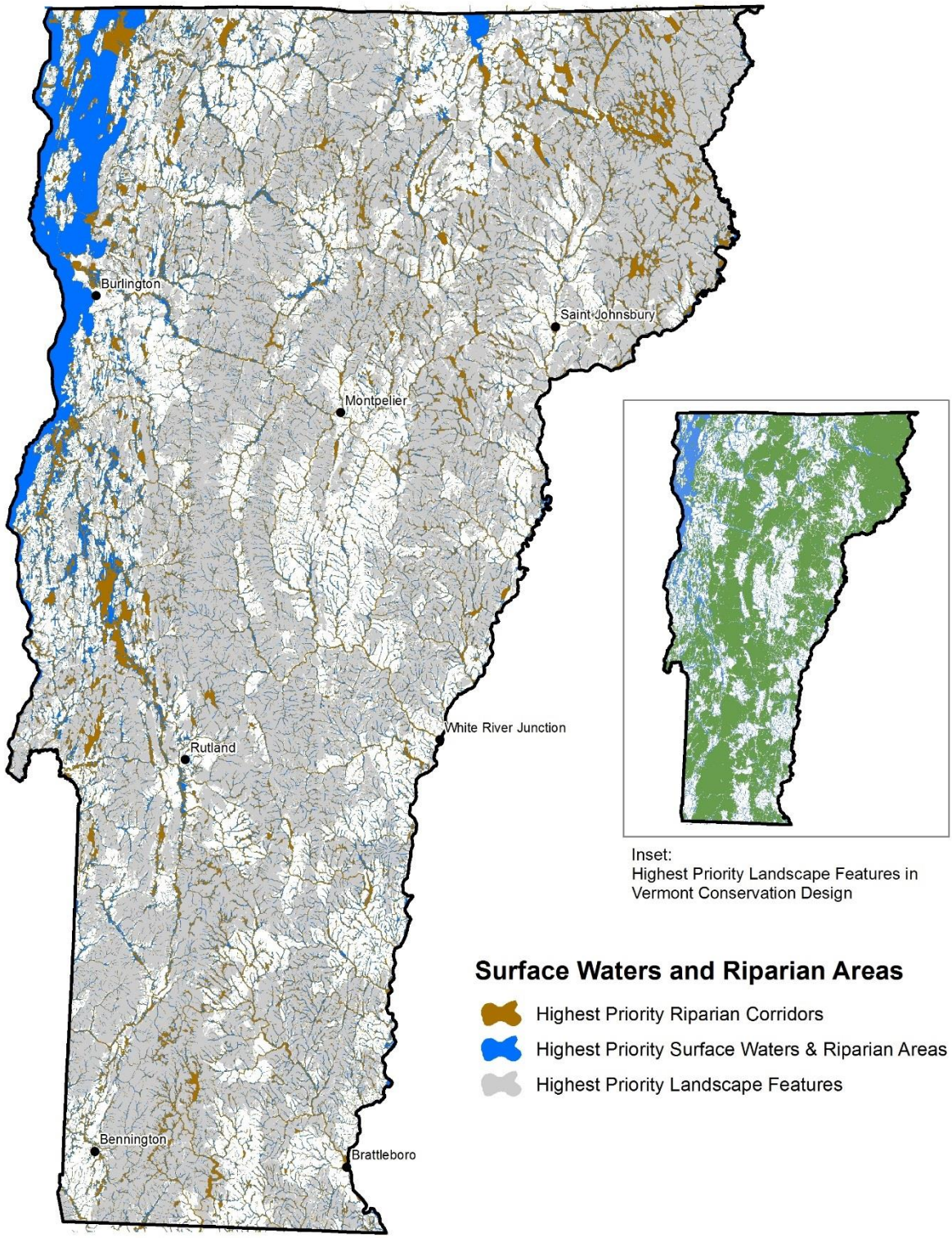
The linear network of riparian areas provides a crucial element of landscape connectivity. Many wildlife species use riparian corridors for travel to find suitable habitat to meet their life requisites, but certain species are almost entirely restricted to riparian areas, including mink, otter, beaver, and wood turtle. The combination of Riparian Areas for Connectivity, and Connectivity Blocks, provide the best available paths across the landscape, especially in highly fragmented regions like the Champlain Valley. Riparian connections also allow for long-term plant and animal movement in response to climate change (Beier 2012). Although many riparian areas and river corridors are highly altered by agriculture, roads, and urbanization, the risk of flooding serves as a natural deterrent for future development. Riparian areas also respond rapidly to restoration efforts (Beier 2012).

Highest Priority Features and Guidelines for Maintaining Ecological Function

Vermont Conservation Design identifies the entire undeveloped network of surface waters and riparian areas as highest priority for maintaining an ecologically functional landscape. The ecological integrity of an aquatic system is critically tied to the condition of the riparian area adjacent to the stream or pond. Rivers and streams must have access to their floodplains and freedom to meander. Maintaining or restoring river channel equilibriums, the unimpeded movement of aquatic organisms, and natural riparian vegetation is essential to protecting water quality and providing high-quality habitat for terrestrial and aquatic species. The width of naturally vegetated riparian areas needed to provide terrestrial riparian connectivity varies from 100 feet or less on some small streams (50 feet each side) to 600 feet or more (300 feet on each side) for larger rivers or riparian areas that span long distances of otherwise unsuitable habitat.

For more information on surface waters and riparian areas, see the following sections in the Part 1 Vermont Conservation Design Technical Report:

- Surface Waters and Riparian Areas
- Riparian Areas for Connectivity (Riparian Corridors)



Map 3. Highest Priority Surface Waters and Riparian Areas (blue). Highest Priority Riparian Corridors (brown) are the naturally vegetated portions of the network that facilitate wildlife travel.