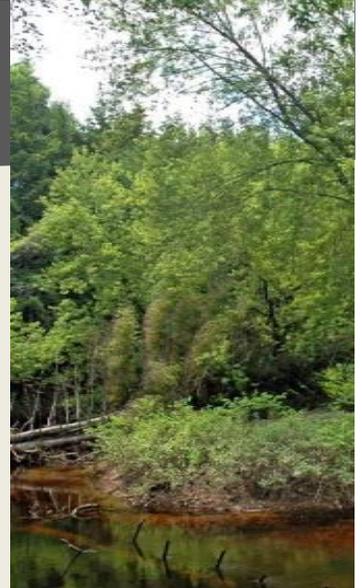


FLOODPLAIN HABITATS

CLIMATE ASSESSMENT

Floodplain habitats occur on river terraces subject to regular flooding, usually during spring run-off or during storms. They are typically dominated by trees, including silver and red maples, American elm, and balsam fir in northern New Hampshire. Embedded in these forests are several wetland types, and many have also been converted to agricultural use (e.g., hayfields). Many floodplain ecosystems no longer experience large storm flooding because of the influence of dams. However, annual flooding and two to three year recurrence interval floods do still occur in the lowest floodplain terraces (Nislow et al 2002).



POTENTIAL CHANGES TO HABITAT

- Changes in precipitation patterns, such as longer periods of drought, unpredictable large storms, higher flows, and run-off events which can erode areas and change species composition.
- Increases in invasive species.
- Slow migration of southern species north.

WHAT DOES THIS MEAN?

Almost all predicted changes in these habitats are associated with increasing unpredictability in the patterns of large storms, increased precipitation and runoff, and resulting changes in hydrology (Kingsford 2011, NOAA 2011, Opperman 2011, Palmer 2008). Associated changes in habitats may include longer duration and higher energy flooding, potential loss of species and habitat during extended droughts, and ice scour along rivershores.

Increased stress, new deposits of mineral soil, eroded surfaces and edge habitat may lead to increases in invasive species which specialize in disturbed edge habitats. Flooding events may also disperse invasive species into new areas. Invasives can not only reduce ecological integrity, but also potentially spread into agricultural and early successional habitats, particularly low terrace grasslands and hay fields.

Direct temperature effects may include slow migration of southern dominant tree species north along N-S trending river valleys such as the Connecticut and Merrimack Rivers. Maple dominated systems may shift to other southern species, and balsam fir floodplains may become more rare.

One possible human response to increased flooding is to build additional dams and other infrastructure designed to control and/or channel storm effects. If such structures significantly alter hydrology either up or down stream, there are likely to be impacts on floodplain habitats. Similarly, existing infrastructure designed to manage historic flows (e.g., old/ageing culverts, historic dams,

shoreland riprap), may in fact exacerbate runoff impacts and damage to human health and property. For example, ageing and failing dams and culverts present higher risks during flood events to downstream resources and human infrastructure.

HOW DOES THIS AFFECT WILDLIFE?

Floodplain wetlands are an important source of nutrients and provide multiple habitat niches. Species that use backwater sloughs and riparian vernal pools rely on regular recharge from high waters. Certain fish species also use floodplain areas for rearing. Wood turtles and other turtles use river cutbanks. All these habitats niches are vulnerable and sensitive to large changes in river hydrology.

General Strategies to Address these Vulnerabilities:

See the full [Climate Change Adaptation Plan](#) for strategy descriptions

- S1: Conserve Areas for Habitat Expansion and/or Connectivity
- S2: Habitat Restoration and Management
- S3: Restore Watershed Connectivity
- S4: Protect Riparian and Shoreland Buffers
- S5: Invasive Species Plan
- S6: Comprehensive Planning
- S7: Stormwater Policy and Flood Response
- S8: Revise Water Withdrawal Policies

Specific Strategies:

1. Develop a set of criteria to identify the best places on the landscape to restore floodplain forest habitat. Prioritize and map these.
2. Conduct floodplain forest restoration for multiple benefits, including habitat, surface stabilization, increased flood mitigation, wetland enhancement and water quality buffering. Maximize ecosystem health to better prepare for additional stressors from climate change. Use floodplain forest tree planting *and assisted migration of key floodplain tree species* as one restoration tool.
3. Monitor disturbance events for regeneration. Use adaptive management to respond to changes in flood frequency and intensity and the resulting spread of invasive species.
4. Preserve and protect areas of suitable slope adjacent to existing floodplains or lake shores to allow for habitat expansion.
5. Work with farmers to increase or restore floodplain forests through conservation easements and BMPs, while creating agricultural lands in other areas to mitigate loss of cropland acreage.
6. Develop incentive programs that compensate landowners for removing infrastructure in floodplains, including creating floodplain easements.