

# Menu of Adaptation Strategies and Approaches

## *Developed for Urban Forests*

### **Strategy 1. Sustain or restore fundamental ecological functions.**

- 1.1. Maintain or restore soils and nutrient cycling in urban areas.
- 1.2. Maintain or restore hydrology.
- 1.3. Maintain or restore riparian areas.
- 1.4. Reduce competition for moisture, nutrients, and light.
- 1.5. Restore or maintain fire in fire-adapted ecosystems.

### **Strategy 2. Reduce the impact of biological stressors.**

- 2.1. Maintain or improve the ability of forests to resist pests and pathogens.
- 2.2. Prevent the introduction and establishment of invasive plants and remove existing invasive species.
- 2.3. Manage herbivory to promote regeneration, growth, and form of desired species.

### **Strategy 3. Reduce the risk and long-term impacts of severe disturbances.**

- 3.1. Alter forest structure or composition to reduce risk or severity of wildfire.
- 3.2. Maintain trees and remove hazards to reduce severity or extent of wind and ice damage.

### **Strategy 4. Maintain or create refugia.**

- 4.1. Prioritize, maintain, and restore unique sites.
- 4.2. Prioritize and maintain sensitive or at-risk species or communities.
- 4.3. Establish artificial reserves for at-risk and displaced species.

### **Strategy 5. Maintain and enhance species and structural diversity.**

- 5.1. Promote diverse age structure.
- 5.2. Maintain and restore diversity of native species.
- 5.3. Retain biological legacies.
- 5.4. Establish reserves to maintain ecosystem diversity.

### **Strategy 6. Increase ecosystem redundancy across the landscape.**

- 6.1. Manage habitats over a range of sites and conditions.
- 6.2. Expand or buffer the boundaries of reserves to increase diversity.

### **Strategy 7. Promote landscape connectivity.**

- 7.1. Reduce landscape fragmentation.
- 7.2. Maintain and create habitat corridors through reforestation or restoration.

### **Strategy 8. Maintain and enhance genetic diversity.**

- 8.1. Use seeds, germplasm, and other genetic material from across a greater geographic range.
- 8.2. Favor existing genotypes that are better adapted to future conditions.
- 8.3. Use new genotypes that are better adapted to future threats and conditions.

### **Strategy 9. Facilitate composition adjustments through species transitions.**

- 9.1. Favor or restore native species that are expected to be adapted to future conditions.
- 9.2. Establish or encourage new mixes of native species.
- 9.3. Select tree species to match current and future site conditions.
- 9.4. Protect future-adapted seedlings and saplings.
- 9.5. Disfavor species that are distinctly maladapted.
- 9.6. Manage for species or genotypes with wide moisture and temperature tolerances.
- 9.7. Introduce species that are expected to be adapted to future conditions.
- 9.8. Move at-risk species to locations that are expected to provide habitat.

### **Strategy 10. Realign urban ecosystems after disturbance.**

- 10.1. Promptly revegetate sites after disturbance.
- 10.2. Prioritize remediation of remaining trees following disturbance.
- 10.3. Realign significantly disrupted ecosystems to meet expected future conditions.

