



**Plants**

**What are They?**  
 Plants are the primary producers of life on our planet, generating over 99.9% of the Earth's biomass. The growth and survival of plants depend on ecosystem characteristics including the amount of sunlight, soil moisture, soil pH, flood depth, and salt tolerance. Plants provide a variety of ecosystem services including:

**Drinking Water Purity**  
 Wetland plants, for instance, help remove heavy metals and excessive levels of nutrients.

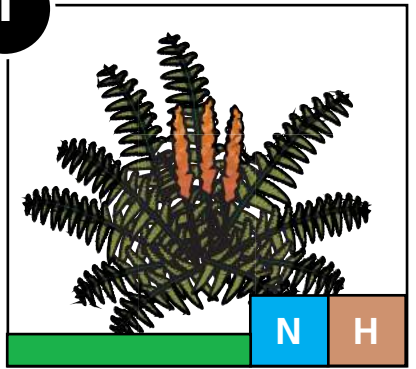
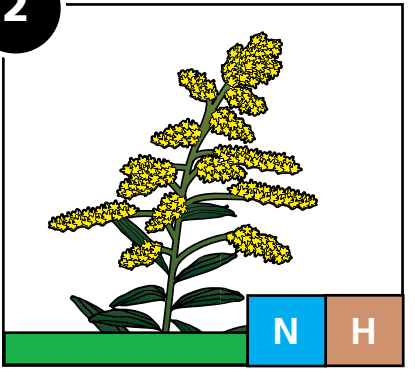
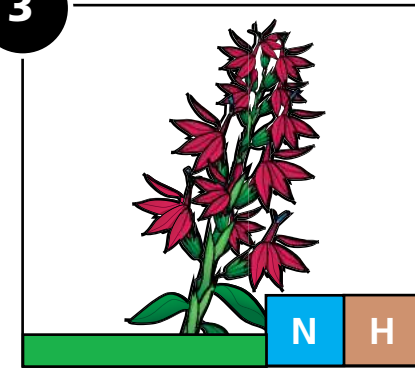
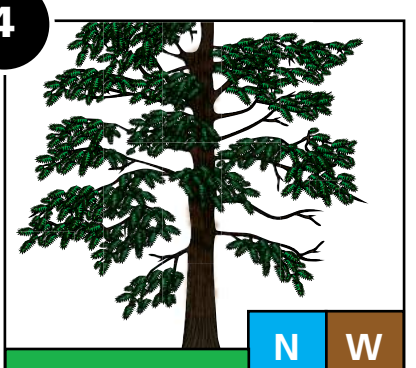
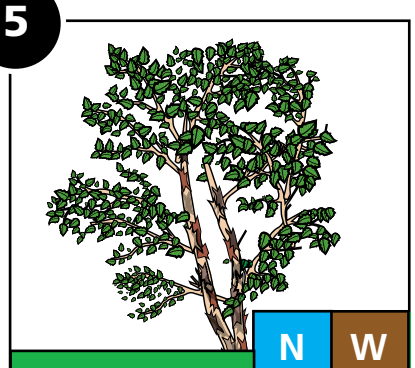
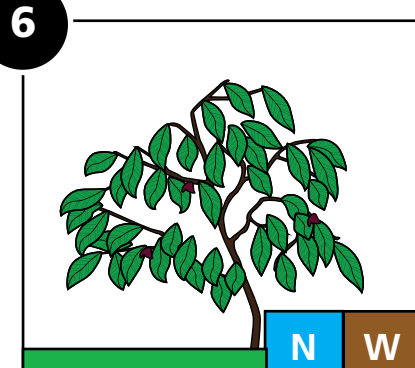
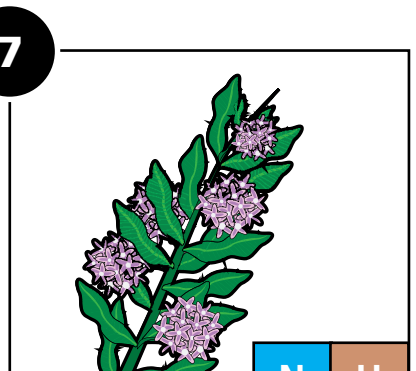
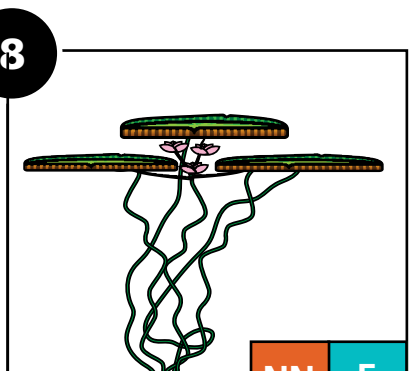
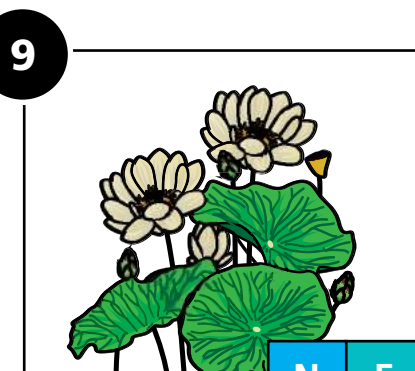
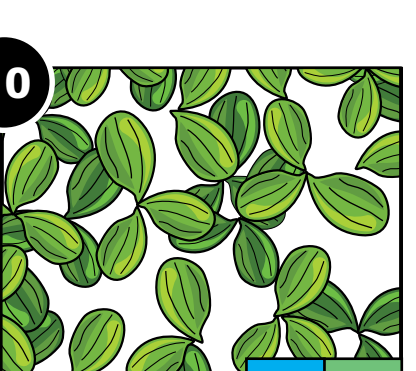
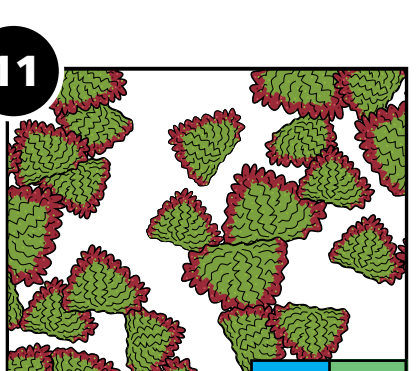
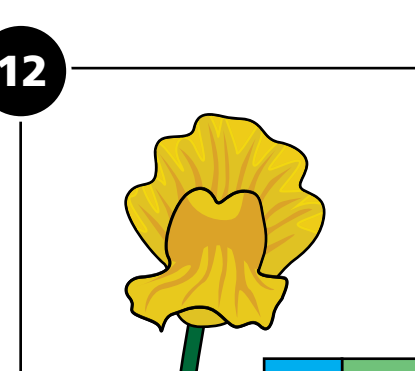
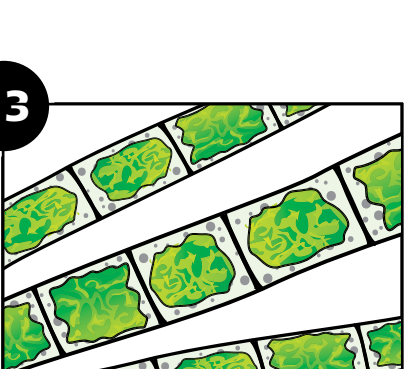
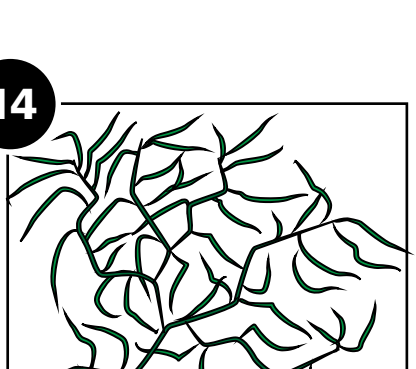
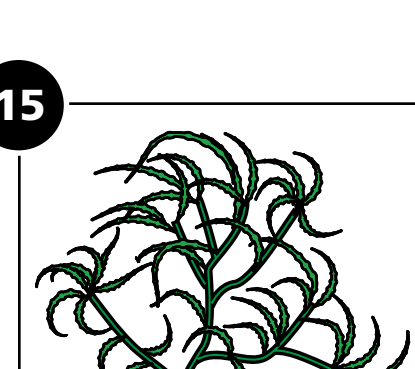
**Medicine**  
 Many medicines are derived or modelled upon compounds provided by the natural world.

**Recovery from Natural Disasters**  
 Plants help protect soil from erosion and release nutrients to keep soils fertile.

**Food**  
 Thousands of species of plants have been cultivated for consumption throughout human history.

**Oxygen**  
 Through photosynthesis, plants use carbon dioxide, sunlight and water to create energy and release oxygen.

**Iconic Plants of Kenilworth**

 <b>1</b> Cinnamon Fern <i>Osmundastrum cinnamomeum</i>	 <b>2</b> Tall Goldenrod <i>Solidago altissima</i>	 <b>3</b> Cardinal Flower <i>Lobelia cardinalis</i>
 <b>4</b> Bald Cypress <i>Taxodium distichum</i>	 <b>5</b> River Birch <i>Betula nigra</i>	 <b>6</b> Paw-Paw <i>Asimula triloba</i>
 <b>7</b> Milkweed <i>Asclepias syriaca</i>	 <b>8</b> Victoria Water Lily <i>Victoria amazonica</i>	 <b>9</b> American Lotus <i>Nelumbo lutea</i>
 <b>10</b> Small Duckweed <i>Lemna perpusilla</i>	 <b>11</b> Eastern Mosquito Fern <i>Azolla cristata</i>	 <b>12</b> Humped Bladderwort <i>Utricularia gibba</i>
 <b>13</b> Green Algae <i>Phylum Chlorophyta*</i>	 <b>14</b> Sago Pondweed <i>Stuckenia pectinata</i>	 <b>15</b> Brittle Waternymph <i>Najas minor</i>

**Types of Plants at Kenilworth**

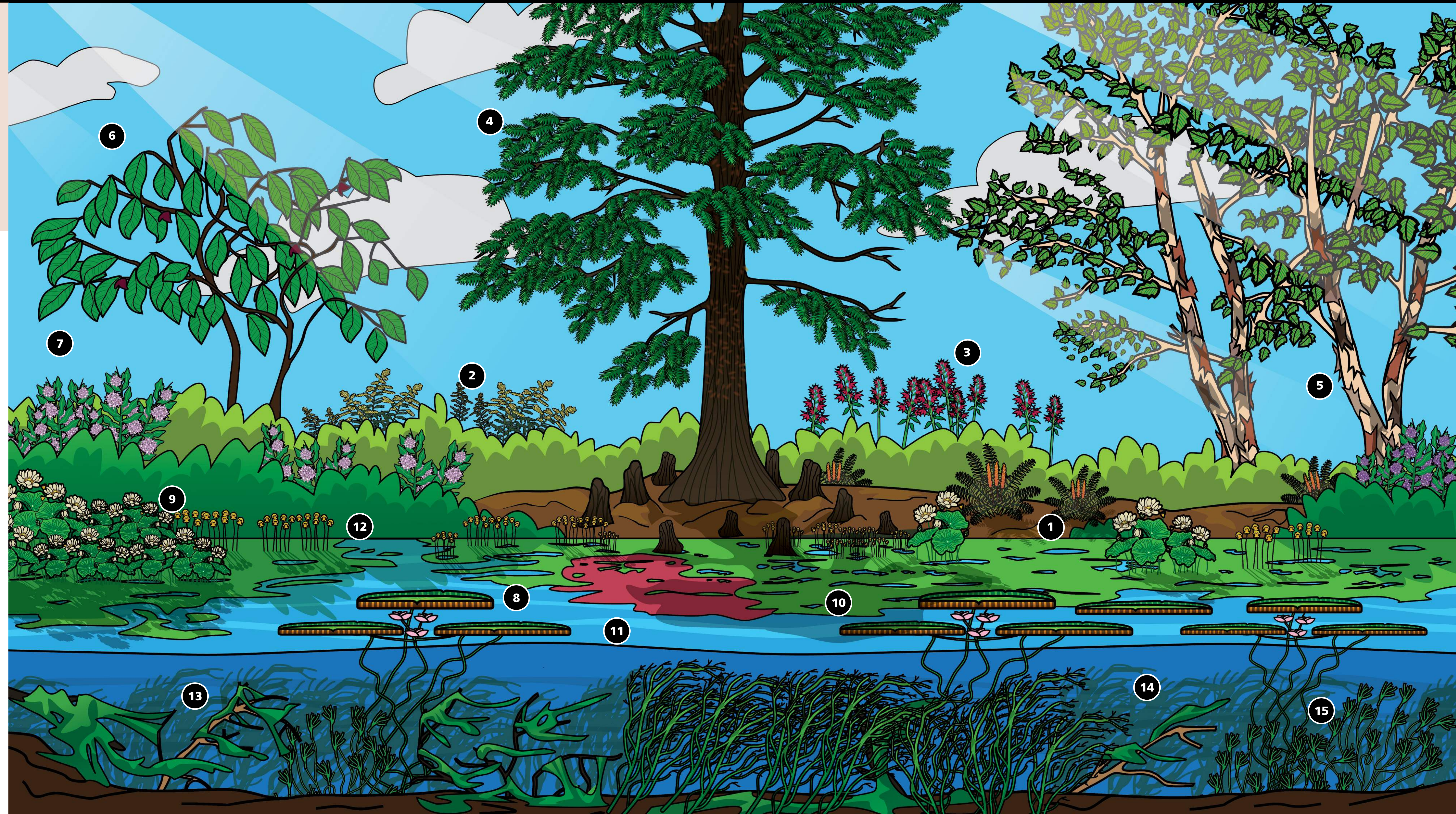
**Terrestrial**

- H** Herbaceous
- W** Woody

**Aquatic**

- S** Submerged
- F** Floating
- E** Emergent

**Native Species** (N)    **Non-Native Species** (NN)



**Plant Adaptations**

**Aquatic and Terrestrial Plants**  
 Aquatic and Terrestrial plants have their own ways to adapt to a changing climate. Annual plants can adapt much more quickly to a changing climate versus plants that have longer lifespans.

Some plants, including beech trees, are more tolerant to climate related stressors and are capable of keeping their stomata open to absorb more carbon dioxide than other tree species.

**Wetland Ecosystems**  
 The wetland ecosystem has storm surge and flood protection capabilities. Wetlands slow the flow of water, reducing flood damage in areas downstream and around them.

Additionally, wetlands have erosion control capabilities, allowing the wetlands to absorb energy and store water during storms and reducing downstream flood damage and the risk of flash floods.

While plants are not immune to the impacts of climate change, the wetland ecosystem of which they are a part of has natural defenses to combat some of its negative impacts.

**Climate Change Impacts on Plants**

**Chemical Balance**  
 Eutrophication (excessive runoff of nutrients from the land) is a huge problem for aquatic plants because there is a change to the overall chemical balance of the ecosystem. Too much of one chemical, such as nitrogen, can stimulate the growth of algae, which deplete oxygen from the water and block sunlight.

In terrestrial plants, nitrogen is lost from the soil during flooding events. This is detrimental to plant survival as plants need a highly specific amount of nitrogen to survive.

**Increasing Temperatures**  
 Aquatic plants, especially fully submerged plants, are highly vulnerable to temperature rises. Therefore, there may be changes in species compositions and decline in species richness. Changes in water temperature affects the plants physiological processes, growth rates, and reproductive patterns.

Increasing temperatures will lead to changes in the blooming season for terrestrial plants, and can also bring an increase in pathogens and invasive non-native species.

**Sea Level Rise**  
 As sea level rises, water from the surrounding areas will intrude into the aquatic and terrestrial ecosystems. This can bring in increased risk of salt-water intrusion, which can be harmful to plants and disrupt the overall wetland ecosystem.

**Flooding**  
 Flooding events can bring impurities into the water ecosystems. This leads to decreased water clarity, which can negatively affect photosynthesis rates. Increased flooding events can oversaturate the soil of land plants, which prevents air exchange and can lead to the death of plant roots.