

# **Natural and Working Lands Climate Smart Strategy**

## **Appendix B:** Natural and Working Landscapes – Classification and Definitions

**April 22, 2022**

Drawing from [CARB's Natural and Working Lands Inventory](#) and the [2006 Intergovernmental Panel on Climate Change \(IPCC\) guidelines](#) for national greenhouse gas inventories, this land classification is based on land cover, meaning what is physically on the land. Land use (what happens on the land) and land ownership should be treated as separate data layers, but in some cases are interrelated.

**Forests:** land exhibiting greater than or equal to 10% canopy cover comprised of live trees. LANDFIRE v2.0.0 includes more than sixty classes with a broad coverage of forest and woodland ecological types ranging from coastal to montane, desert, riparian, and other across California's forested landscapes both coniferous and deciduous. Examples of common dominant species across the range of forest types include:

- Conifer or Evergreen:
  - Douglas-Fir
  - Englemann Spruce
  - Foothill Pine
  - Giant Sequoia
  - California Incense-Cedar
  - Jeffrey Pine
  - Juniper
  - Knobcone Pine
  - Lodgepole Pine
  - Monterey Cypress
  - Mountain Hemlock
  - Pinyon Pine
  - Ponderosa Pine
  - Red Fir
  - Redwood
  - Sargent Cypress
  - Sugar Pine
  - White Fir
  - Whitebark Pine
- Hardwood
  - Aspen
  - Black Cottonwood
  - Blue Oak
  - California Black Oak
  - Coast Live Oak
  - Cottonwood
  - Eucalyptus (Introduced)
  - Interior Live Oak
  - Tanoak
  - Valley Oak
  - Western Sycamore

The Forest classification also includes riparian forests, which are forest or woodland areas exhibiting greater than or equal to 10% canopy cover comprised of live trees adjacent to a body of water such as a river, stream, lake, or pond. The species mix and vegetation structure are generally dependent on the increased availability of water. The vegetation structure includes woody vegetation as a significant component. Species mixes are likely to closely resemble the other categories, but with differing proportions, growth rates, and understory characteristics. Riparian forests may be subdivided into:

- Riparian woodland
- Cottonwood-willow forest
- Upland riparian forest
- Mixed riparian forest

**Shrublands and Chaparral:** land exhibiting greater than or equal to 10% canopy cover comprised of shrubs or chaparral. These lands are dominated by woody plants but lack tree cover. Common species include:

- Manzanita
- Ceanothus
- Shrub oak
- Huckleberry oak
- Sage brush
- Coyote brush
- Chamise
- Creosote bush
- White bursage
- Brittlebush

Riparian willow scrub, woodlands, upland riparian areas, and mixed riparian areas exhibiting greater than or equal to 10% canopy cover comprised of shrubs that do not meet the requirements for a forest are also included in this land cover type.

**Wetlands:** land that is covered or saturated by water for all or portions of a year, and do not fall within other categories.

- Coastal wetlands
  - Brackish
  - Saline
  - Non-tidal freshwater coastal wetlands
- Peatlands (Delta drained wetlands)
- Freshwater wetlands
- Floodplains
- Mountain meadows
- Vernal pool complexes
- Alkali sinks and meadows

**Seagrasses and Seaweeds:** seagrasses and seaweeds are found in shallow coastal habitats. Despite similar and often overlapping ranges, seagrasses and seaweeds are different vegetation types. Seagrasses are a group of marine flowering plants, while

seaweeds are algae, which do not flower and vary a great deal in their size and shape, compared to seagrasses where plant shape and size is much less variable.

- Seagrasses
  - Eelgrass
  - Surfgrass
- Seaweeds
  - Kelp
  - Fucoids

**Croplands:** areas planted in annual or perennial crops and fallow land. The following crops account for greater than 80% of the irrigated agricultural land in California. These crops have adequate scientific data to estimate biomass and carbon levels. While we have sufficient background data to estimate biomass and carbon for all of the listed crops, depending on the use, that level of specificity may not be necessary. There may be other regionally significant crops without sufficient data for estimating biomass and carbon. These crops are currently lumped into categories such as "Other perennials" or the more general "Other." These categories also identify areas where additional research may be useful.

- Perennial
  - Orchards
    - Almond
    - Walnut
    - Citrus
    - Pistachio
    - Peaches and nectarines
    - Plums, prunes, and apricots
    - Avocado
    - Alfalfa and alfalfa mixtures
    - Young perennials
    - Other perennials
  - Vineyards
    - Grapes
- Annual
  - Irrigated crops
    - Corn, sorghum, and sudan
    - Wheat
    - Miscellaneous grain and hay
    - Tomatoes
    - Cotton
    - Miscellaneous truck crops
    - Lettuce and leafy greens
    - Cole crops
    - Melons, squash, and cucumbers
    - Onions and garlic
    - Safflower
    - Rice
    - Other

- Pasture (irrigated)

**Grasslands:** areas dominated by grasses or herbaceous vegetation and exhibiting tree or shrub canopy cover below 10%. This encompasses all types of grasslands, including wild lands, recreational areas, and agricultural or livestock related grasslands, such as rangeland or pastureland, that are not classified as croplands.

**Developed Lands:** all developed land such as urban area, human developments in non-urban areas, and transportation infrastructure (e.g., roadways) that traverses either urban or non-urban areas.

- Urban Forests: native or introduced trees and related vegetation in the urban and near-urban areas, including, but not limited to, urban watersheds, soils and related habitats, street trees, park trees, residential trees, natural riparian habitats, and trees on other private and public properties

**Sparsely Vegetated Lands:** areas characterized primarily by low levels of vegetation, typically resulting from harsh growing conditions.

- Deserts, including arid, semi-arid, coastal, and cold deserts with less than 10% vegetation cover
- Barren areas with limited vegetation, likely caused by hostile growing conditions including a lack of soil or disturbance
- Beaches and dunes
- Bare rock
- Ice/snow

**Water:** fresh, brackish, and sea water bodies lacking vegetation. This includes both surface (including ephemeral and intermittent) and groundwater, including:

- Rivers
- Streams (including ephemeral and intermittent streams)
- Lakes
- Estuaries
- Bays
- Coastal waters