APES Biomes Reference

Terrestrial Biomes

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| **Biome Name/ Latitude Found/**  **Example Location** | **Precipitation** | **Temperature** | **Vegetation** | **Soil Characteristics** |
| **Tundra**  Arctic: northernmost Russia, Canada, Scandinavia and Alaska  Antarctic: along edges of Antarctica and nearby islands  Alpine: high mountains | -Very little, but enough to support some plant growth  -About 3 mm/month | Cold (-10-5°C) | -Treeless  -Low growing  -Growing season very short  -No deep rooted plants  -small woody shrubs, mosses, heaths, lichens | -completely frozen in winter (permafrost)  -decomposition is cold due to cold temps.  -accumulation of organic material, but low levels of soil nutrients |
| **Boreal Forest (Taiga)**  Found between 50° and 60° N.  Europe, Russia, N. America | Low Precipitation | Cold winters | -primarily coniferous evergreen trees  -short growing season  -plant growth low limited more by T than precipitation | -decomposition is slow  -evergreen needles resistant to decomp.  -thick layer of organic, but low in soil nutrients |
| **Temperate Rainforest**  Mid-Latitudes  W. Coast of N.America, S. Chile, W. coast of New Zealand, Tasmania | High precip. | 5-20°C  -Moderate Temps.  -Mild summers and winters | -12-month growing season  -Very large trees (fir, spruce, cedar, hemlock, redwood) | -Slow decomp. Due to cool temps. and coniferous trees  (not as slow as boreal and tundra)  -Abundant rainfall leaches nutrients |
| **Temperate Seasonal Forest**  -Eastern U.S., Japan, China, Europe, Chile, e. Australia | Receive over 1m (39 in) of precip. annually | Much warmer summers and colder winters than temperate | Dominated by broadleaf deciduous trees (beech, maple, oak, hickory, some coniferous) | -rapid decomposition rates  -soils have more nutrients than boreal  -greater productivity than boreal  -much converted to agriculture due to high nutrient content |
| **Woodland/Shrubland**  Found of coast of southern CA (chaparral) and in so. South America, SW Australia, southern Africa and around Mediterranean Sea | Rainy winters | Hot, dry summers | 12-month growing season, but plants growth constrained by low precip. in summer and low winter temp.  -plants well adapted to both fire and drought | -favor natural occurrence of wildfires  -soils low in nutrients because of leaching by winter rains  -biggest use is grazing animals and drought-tolerant deep-rooted crops such as grapes |
| **Temperate Grassland/Cold Desert**  Great Plains of N. America (prairies)  S. America c. Asia and eastern Europe | Lowest avg. precip. of any temperate biome | Cold, harsh winders  Hot, dry summers | -plant growth constrained by insufficient precip. in summer and cold temps. In winter  -fires are common (dry and windy)  -grasses, non-woody flowering plants | -long growing season and rapid decomposition add large amount of nutrients to soil (so grasslands very productive)  -98% in U.S. converted to ag. |
| **Tropical Rainforest**  20°N and 20° S of the equator  Central and South America, Africa, SE Asia, and NE Australia, large tropical islands | Wet with seasonal pattern that depend on when ITCZ passes overhead | Average T exceeds 20°C with little seasonal T variation | Productivity is high  -nutrients are taken up quickly by vegetation  -more biodiversity per hectare than only other terrestrial biome  -large trees with layers of shorter trees (canopy, understory), woody vines | Decomp. Is extremely rapid  -not much nutrient is soil because is in vegetation  -much is cleared for agricultural (doesn’t keep nutrients long |
| **Tropical Seasonal Forest/Savanna**  Common in much of Central America and on Atlantic coast of S. America and S. Asia, NW Australia, sub-Saharan Africa | Distinct wet and dry seasons caused by seasonal movement of ITCZ  -drops precipitation only during summer | Warm T | -trees drop leaves during the dry season and produce new leaves during wet season (deciduous)  -form savannas | -warm T promote decomposition, but low precip. constrain plants from using the soil nutrients that are released  -fairly fertile, can be farmed |
| **Subtropical Desert**  30°N and 30°S | Extremely dry conditions | Hot T | Sparse vegetation  Special adaptations |  |

Aquatic Biomes

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| **Biome Name/ Example Location** | **Salinity** | **Depth** | **Water Flow** | **Common Characteristic** |
| **Streams and Rivers** | none | -streams relatively narrow and carry small amounts of water  -rivers typically wider and carry larger amounts | Flowing fresh water that may originate from underground springs or as runoff  -rivers can contain rapids  -faster moving/more oxygen | -few plants or algae to act as producers  -organic matter comes from fallen leaves, etc. |
| Lakes and Ponds | None | -lakes are larger than ponds | -Contain standing water, at least some of which is too deep to support emergent vegetation | Several distinct zones  -phytoplankton are only photosynthetic organisms  -bacteria decompose detritus that reaches the profundal zone (consume much oxygen) |
| **Freshwater Wetlands** | Aquatic biomes that are submerged or saturated by water for at least part of the year. |  | Submerged or saturated by water for at least part of each year, but shallow enough to support emergent vegetation | Swamps  Marshes  Boggs |
| **Salt Marshes** | Salt water mixed with fresh water  Found along the coast in temperate climates | Contain non-woody emergent vegetation | One of most productive biomes in the world  Many found is estuaries | Extremely productive because rivers carry large amounts of nutrient-rich organic material  Provide important habitat for spawning fish and shellfish |
| **Mangrove Swamps** | Occur along tropical and subtropical coasts | Contain trees whose roots are submerged in water | Salt tolerant vegetation | Provide habitat for fish and shellfish  Falling leaves and trapped organic material produce a nutrient-rich environment |
| **Intertidal Zone** | Narrow band of coastline that exists between the levels of high tide and low tide | Range from steep rocky areas to broad, sloping mudflats |  |  |
| **Coral Reefs** | Can only live in shallow waters where light penetrates |  | Warm, shallow waters beyond the shoreline | Live in water that is poor in nutrients and food |
| **Open Ocean** | yes |  | Deep water ocean |  |