UNIT - II

Deforestation:

Deforestation in simple term means the felling and clearing of forest cover or tree plantations in order to accomodate agricultural, industrial or urban use. It involves permanent end of forest cover to make the land available for residential, commercial or industrial purpose.

Over the last century the forest cover around the globe has been greately compromised.

Deforestation can also be seen as removal of forests leading to several imbalance ecologically & environmentally.

Deforestation or clearance occurs due to several reasons, which include need of money, family in most scenarios, along with lack of no forest laws.

Causes of Deforestation:-

1. Agricultural Activities:

Agricultural activities are one of the major factors affecting deforestation. Due to overgrowing demand for food products, huge amount of trees are fell down to grow crops & cattle gazing.

2- Logging:

Apart from this, wood based industries like paper, match-sticks, furniture etc also need a substantial amount of wood supply. wood is used as fuel both directly & indirectly, therefore trees are chopped for supplies.

3. Urbanization:-

The construction of roads are undertaken, here again trees are chopped to create roads. Overpopulation too directly affects forest covers, as with the expansion of cities more land is needed to Establish housing & settlements.

4. Desertification of land:-

Factors that lead to deforestation are also part natural and part anthropogenic like desertification of land. It occurs due to land abuse making it unfit for growth of trees. Many industries in petro-chemicals release their waste into rivers which result as soil erosion.

5. Mining:-

Oil and coal mining requires considerable amount of forest land. Apart from this, roads and highways have to be built to make way for trucks & other Equipment.

6. Forest Fires:-

Another Example would be forest blazes, hundreds of trees are lost Each year due to forest fires in various portions of the world. This happens due to Extreme warm Summer & milder winter. Fires, whether caused by man or nature results in huge loss of forest cover.

Effects of Deforestation.

(1) climate Imbalance:-

Deforestation also affects the climate in more than one ways. Trees release water vapor in the air. which is compromised on with the lack of trees. Trees also provide the required shade that keeps the soil moist. This leads to the imbalance in the atmosphere temperature further making conditions for the Ecology difficult. Flora & fauna across the world are accustomed to their habitat.

2. Increase in Global Warming:-

Trees play a major role in controlling global warming. The trees utilize the green house gases, restoring the balance in the atmosphere. With constant deforestation the ration of green house gases in the atmosphere has increased adding to our global warming.

3. Soil Erosion:-

Also due to the shade of trees the soil remains moist. With the clearance of tree cover, the soil is directly exposed to the sun, making it dry.

4. Floods:-

When it rains, trees absorb and store large amount of water with the help of their roots. When they are cut down, the flow of water is disrupted and leads to floods in some areas & droughts in other.

(5) Wild life Extinction:-

Due to massive felling down of trees, various species of animals are lost. They lose their habitat & forced to move to new location. Some of them are even pushed to extinction.

Solutions to Defolestation:-

1. The best solution to defolestation is to curb the felling of trees, by employing a series of rules & laws to govern it. Defolestation in the current scenario may have reduced however it would be too early to assume.

2. Clear cutting of forest must be banned. This will curb total depletion of the folest cover. It is a practical solution & is very feasible.

Vegetation:-

Why Study Vegetation.

- Plants form basic foundation of food webs and support other life forms.
- Native plants have unique adaptions for living in desert environments.
- Non-native plants have different requirements (Soil, water, nutrients) the native plants.
- The vegetation can influence the kinds of animals that are attracted to the area.
- Vegetation can be sensitive indicator of change in local or regional Environments.

- Vegetation can have an impact on local climate and water use.

What vegetation should we Study?

The items most commonly found in a schoolyard include grass, trees, shrubs, earth and ground ~~water~~ cover.

What does vegetation tell us about the Urban Environment?

Vegetation tells us about other environmental factors such as nutrient or water availability. Differences between residential areas & desert remnants tells us about human behaviors & decisions to alter the landscape.

Identifying non-native vegetation contributes to understanding similarities and difference between animal population in desert remnants & residential areas.

What materials are Required?

- Map of your School
- pencil
- Data Sheet
- protractor
- Ruler
- Metric Tape measure
- Meter Measuring wheel (optional)

Vegetation protocol:-

a) Size of yard:

Measure perimeta, use geometry to calculate Area

b) Estimate the percentage of land cover in your study area. Record your findings on the habitat description data sheet. You will need to do this before Entering data into the CAPLTER database. you only need to do this once per Area of Study:-

c. Record the number, identity, location and size of trees.

1. Count trees, give ID numbers to the trees you will be measuring.

2. Identify Species (mesquite) of category (palm)

3. Measure Circumference at breast height (CBH)

4. Estimate height

5. Estimate Size of canopy.

d. Record the number, Identity, location & Size of Cacti

1. Count cacti, give ID number to the cacti you will be measuring.

2. Identify Species

3. measure circumference CBH for all cacti and area covered for Smaller cacti

4. Measure Height: for Small cactus use a tape measure, for large cactus Estimate following procedure for trees-

d. Record the number, location & type of shrubs.

1. Count shrubs, give ID number to shrubs you will be measuring.
2- Identify species.
3. use tape measure to measure height & canopy type.

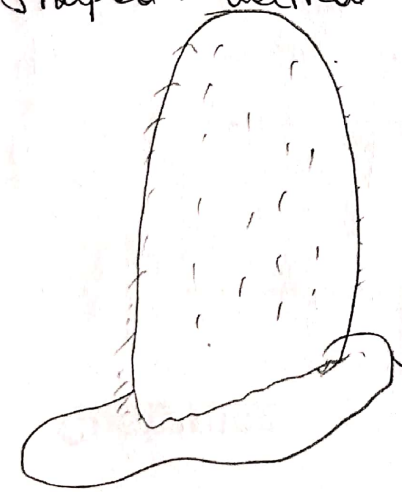
Vegetation Identification key:-

Included here is a key to common desert plants that are found in the Sonoran Desert and may be used in "desert landscaping" and a list with description of common ornamental plants.

You may wish to make you own key for plants around your schoolyard as they may be a combination of ornamental & desert plants.

Cactus :-

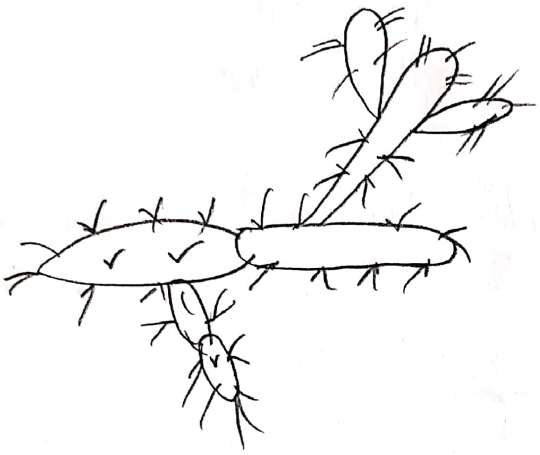
Barrel cactus large plant (0.5-3m high) Barrel shaped. vertical ribs.



Ferocactus acanthodes (Compass barrel cactus) None of the spines are hooked.

Ferocactus wislizeni (Fishhook barrel cactus) Some of the spine are hooked.

Cholla cactus cylindrical stems, many branches.



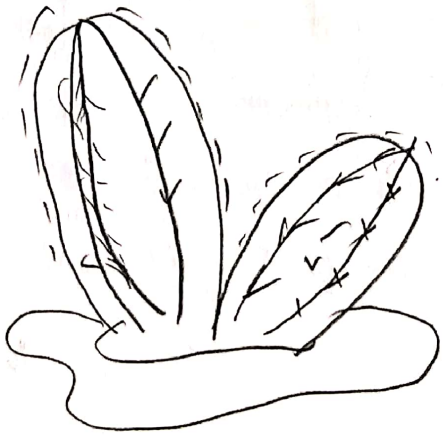
Cylindropuntia acanthocarpa (buckhorn cholla). End joints 2 cm or more in diameter. Joints do not fall off and there are no joints scattered under plants.

Cylindropuntia arbuscula (pencil cholla) End joints 7-10mm in diameter.

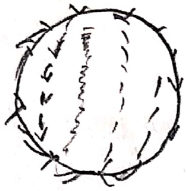
Cylindropuntia bigelovii (teddy bear cholla) Fruits do not grow in chains. End joints short and very easily dislodged. May be joints scattered around underneath plant. can be up to 6 feet tall (~1.8m).

Hedgehog cactus:

Echinocereus engelmannii (Engelmann's hedgehog cactus) Vertical ribs. plant small- usually less than 0.5m high. Stems single jointed. Grows vertically. plant looks very spiny.

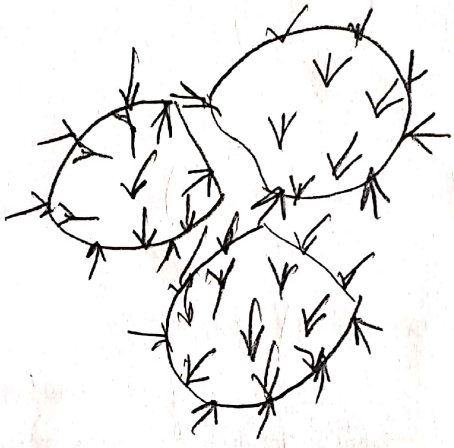


Pincushion Cactus :-



Mammillaria grahamii (Arizona fishhook cactus)
Neutral obs- Small round cactus- Spins are hooked (like a fishhook).

Strictly pear Cactus Stems flat & board :-



Opuntia basilaris (beavertail cactus) plants without Spines
opuntia chlorotica - All of the long ~~Spines~~ Spines on the flat Surface of the Stems point downward - most Stems are more around than oblong Spines 2-4 cm long
Opuntia Engelmannii - Joints can be more than 25 cm long - Joints more oblong than round - Spines 2-4 cm long usually does not grow close to ground -
Opuntia phaea cantha - Joints 15-25 cm long - Joints more oblong than round - Spines 5-6 cm long. most of longer Spines are on top half of joints - Grows close to ground.

Saguaro cactus

Carnegiea gigantea (Saguaro) - Vertical ribs. Stem is much taller than wide (at least 10 times). Very massive - One main trunk with the possibility of several branches high up on the trunk.

ocotillo (Not actually a cactus but may be confused as one. Actually a Shrub.)

fouquieria splendens (ocotillo) up to 6m tall, vertical branches joining at ground. many spines along branches. leaves green, oval, up to 5cm long most of the year canes are leafless.

Trees Species	Description
Acacia greggii (Catclaw acacia)	spines very curved, like a cats Claw
parkinsonia florida (blue palo verde)	Basal branches blue-green, leaves 4-8 cm long usually 3 or less pairs of leaflets per stem.

Trees	Description
parkinsonia microphylla (foothills palo verde)	Bark/branches yellow-green leaflets very tiny (3mm long or less) usually 4 to 8 pairs of leaflets per stem
olneya tesota (ironwood)	Medium size tree, up to 9m tall. Trunk up to 45 cm in diameter. Leaflets and bark grayish. Bark may be strongly. Spines not yellow and may be slightly curved.
prosopis velutina (velvet mesquite)	Small tree, up to 3m tall. leaflets and bark not gray, Spines yellowish, not curved. Bark not strongly. Branches grow in a zig-zag pattern.

Shrubs

I

Characteristics

Leaves absent or obscure	Go to II
Leaves linear, sides parallel (like grass)	Go to III
Leave triangular (deltoid)	Go to IV
Everything Else	Go to V

II	
Species	Description.
Ephreda sp.	1 m tall - Scale like leaves, when present Stems are yellow green - Stem jointed
Fouquieria Splendens (ocotillo)	leaves green, oval, upto 5 cm long - leafless most of the year - many Spines on Stems.
Krameria grayi (white ratany)	up to 0.5 m tall - leaves gray, finely hairy, narrow, upto 12mm long.

III

Characteristics

Leaves hairy	Go to A
Leaves not hairy	Go to B.

A

Species	Description
Hymenoclea Salsola (burro brush, Cheesewood)	leaves, dark green, very Slender, lower leaves have 3 or more threadlike divisions, up to 7-6 cm long. Foliage has a cheesy odor when crushed.

B Species	Description
Atriplex consescens (Four wing Salt bush)	up to 2-5m but mostly 1-2m leaves grey green, narrow up to 5cm long.
Bachars Salcifolia (Seep willow)	up to 3-5m high. leaves dark green, shiny, waxy, sticky, lance-shaped, toothed, up to 15cm long and 12mm wide.