

Pokies and Pricklies

Plants Adapt to Heat and Draught

A cactus is a **xeric** plant—xeric means it does well in a dry hot climate.



The pad is the stem.

The spines are the leaves.

The fruit are called 'tunas' after the Spanish word for olive—aceituna.



The white is a scale insect called cochineal—we make natural red dye, as in Pom juice, from it. During the Revolutionary war, the Redcoats' coats were colored red with carmine or red dye from the cochineal.

The cactus has tiny spines called glochids that get stuck on your hands and clothes.

We can eat the tunas and pads.



The little bumps on the cactus are the areoles. The pads and flowers and fruits grow from the areoles.

Spines=leaves

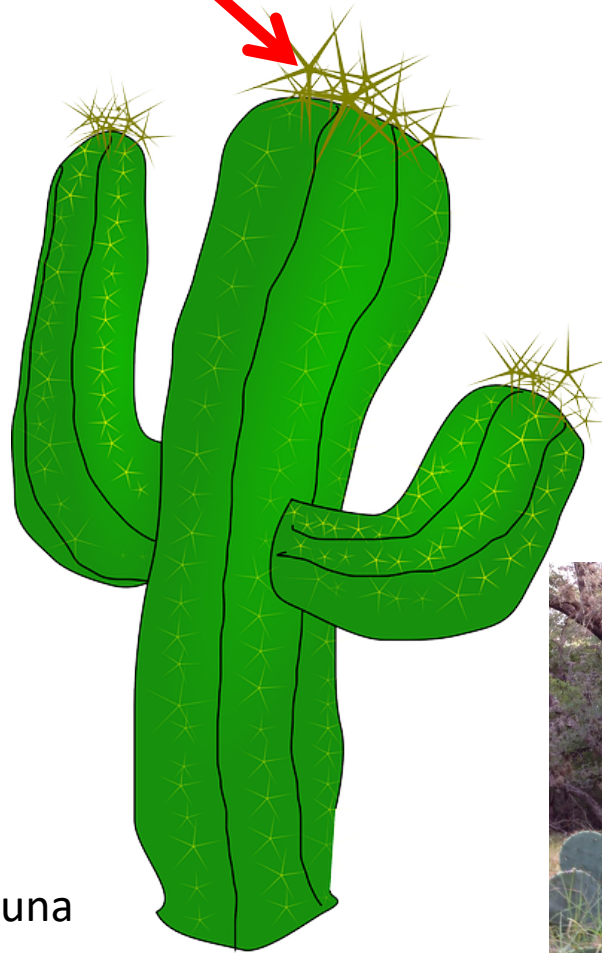
Flower



Pads=stem

Fruit=tuna

Areoles=bumps



Xeric adaptations—plants adapt to a dry environment and hot climate in many ways.

- Escape—annuals **begin to grow again (germinate) and bloom in the cool part of the year and re-seed strongly**—an example is the Texas bluebonnet.



- Evade—perennials have bulbs (parts of stems) like rain lilies, or tubers (parts of roots) like potatoes, to **store water** when it's wet and replace the water with the new rains. The underground part stays alive when water is scarce.



Xeric adaptation

- **Reduce leaf surface**—tiny leaves broken into little leaflets, or deeply toothed—an example is the acacia.
- **Dropping leaves** like the mesquite.
- Shading leaves with **hairs** like the Artemisia.



Other adaptations

- **Rosette spiral** structure to direct water to the root,



like agaves, yuccas, aloes.

- Leathery/stiff leaves with a waxy (**cuticle**) **layer** like



the live oak.

- **Delayed growth and bloom** like the penstemmons



Cactus, agave, yucca plants **endure**. They have ways to change their structure and how they function to minimize the heat and maximize the moisture.

- They make their energy (big word alert—**photosynthesis**) in their stems.
- **Compact, round stems** reduce the surface. **Ribs** direct water to the roots.
- **Waxy, hairy, spiny** surfaces trap air, shade the surface, and **downward leaves** direct water to the roots
- **Roots near the surface** absorb water quickly
- **They germinate**, or make new growth, in cool months.



More adaptations for heat and dry weather (draught).

- Succulence means they store water in sticky tissues.



- They reduce leaf area with thin small leaves or leaves with irregular edges.



- Stomata, or breathing holes are sunken.



- They make their energy and give off water at night when it's cool.





Xeric plant shapes



More shapes

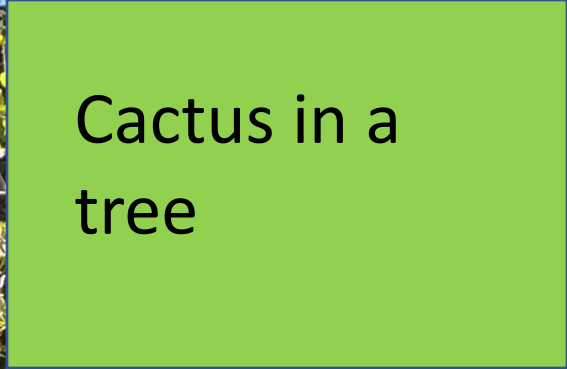




Fruits

Spines







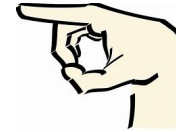
Spines, glochids and
areoles

- You can sing the song to *Clementine*.

- Oh the cactus, oh the cactus(two flat hands)



- Feel the sharp and pointy spine. (1 finger)



- The cactus fruit are called tunas (fist)



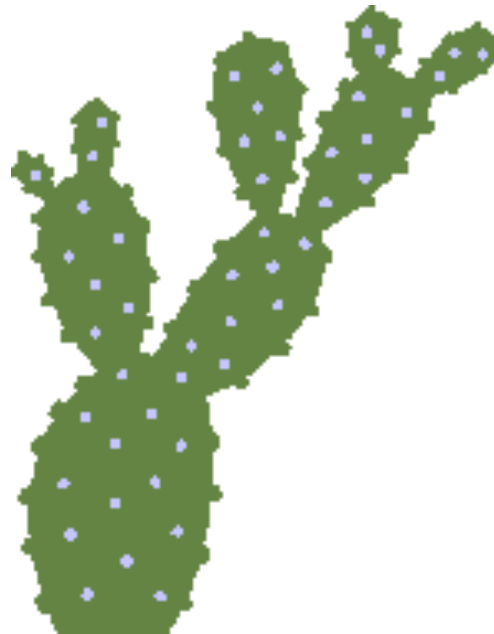
- And the green pads look just fine. (clap)



Casey Cactus

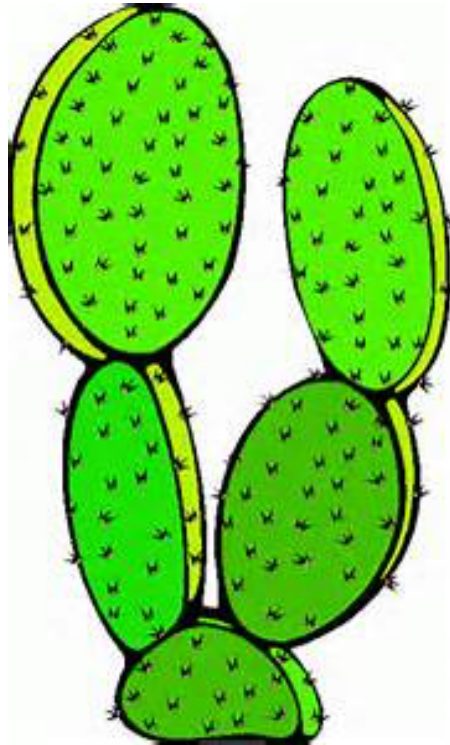


I'm a little cactus –pads green and flat.



You can sing (to the tune of *I'm a Little Teapot*) or read the story.

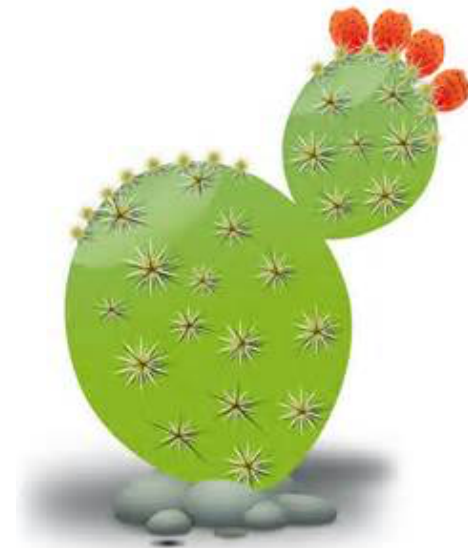
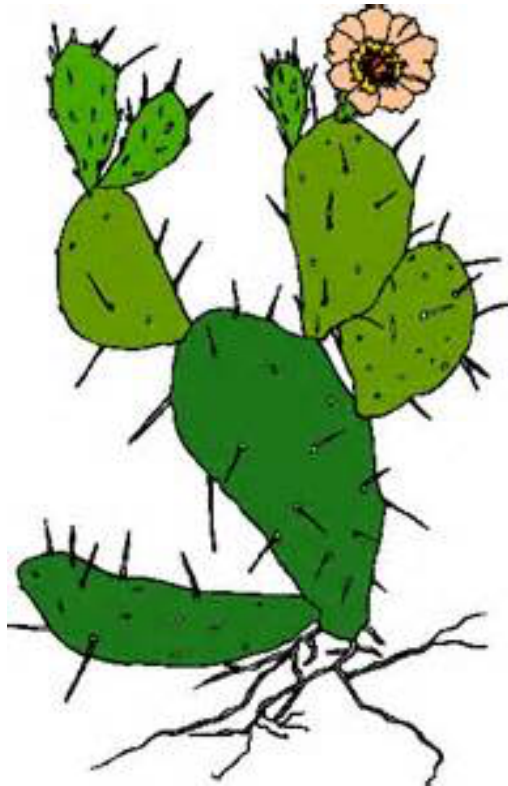
My pads are my stems, just think of that!



My spines are my leaves—I think they're cute.



My flowers are yellow, and my tunas are the fruit!



I spy plants hot and dry!

- Take a XERIC—that means plants adapting to dry hot conditions—walk around your house.
- Can you find:
 - Plants with spines for leaves?
 - Plants with waxy leaves of stems?
 - Leaves with broken up edges?
 - Leaves with tiny leaflets?
 - Plants with hairs?
 - Plants with rosettes?
 - Plants that come out when it rains?





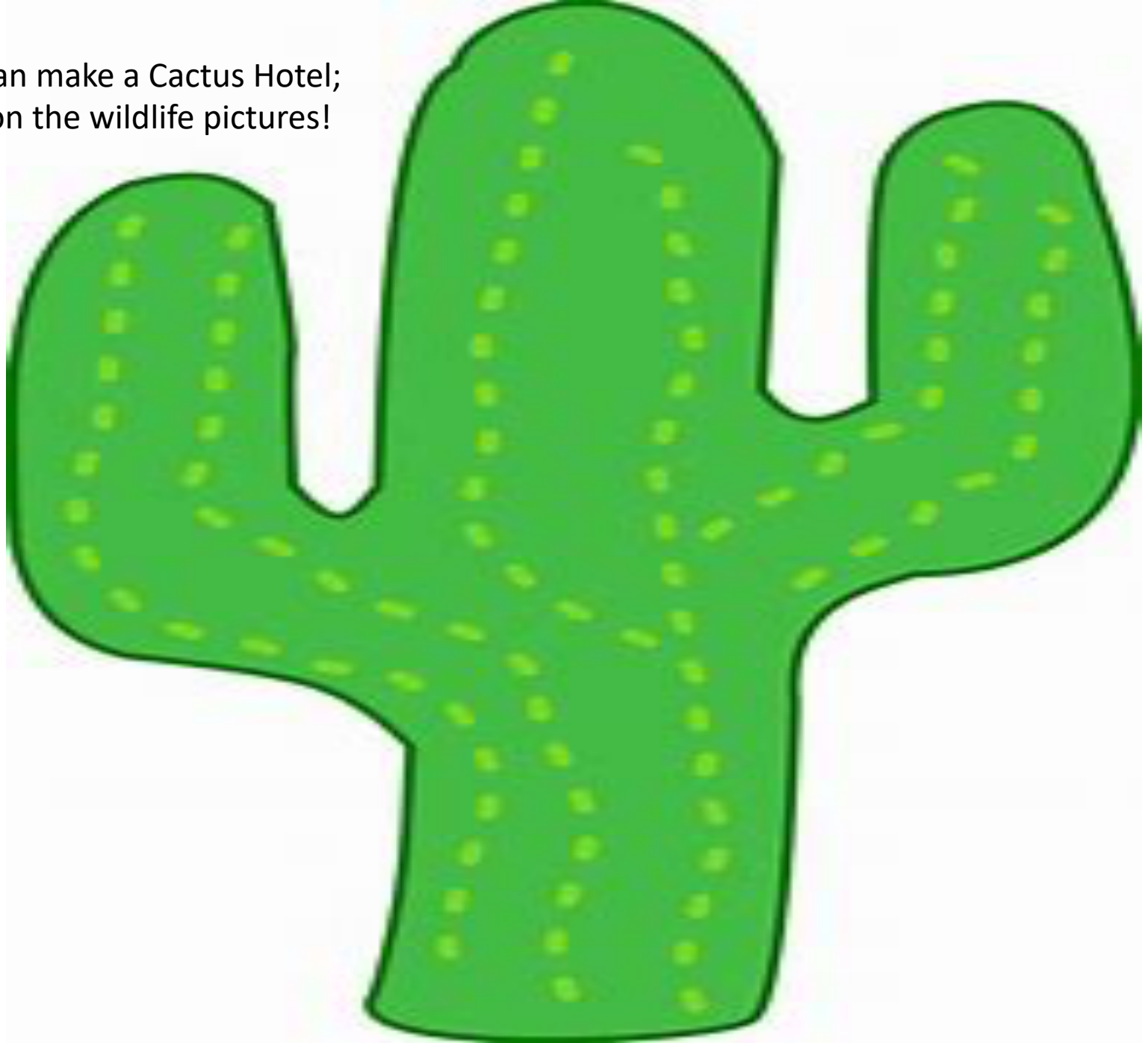
Big thinking—make an edible cactus!

- Let's make a cactus snack!
- What can you use for the pads?
- What can you use for the spines?
- What can you use for the fruits—tunas?
- What can you use for the flowers?

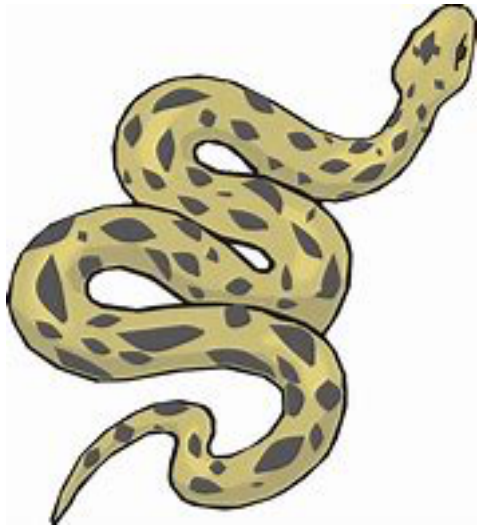
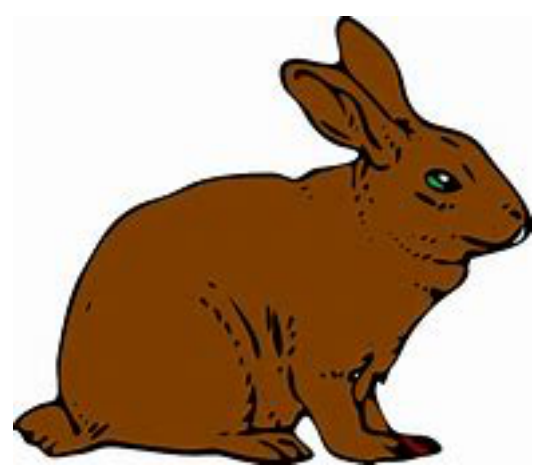
Be an engineer and design a cactus!
You can add flowers and tunas!



You can make a Cactus Hotel;
glue on the wildlife pictures!



Wildlife for Cactus Hotel



You can make a mini-book!

- Fold the paper in half
- Then in half again.

