

Plant Adaptations

- Waxy covering
- Spines for leaves
- Long roots
- Roots near surface
- Die back during drought
- Fast growing seeds
- Can store water

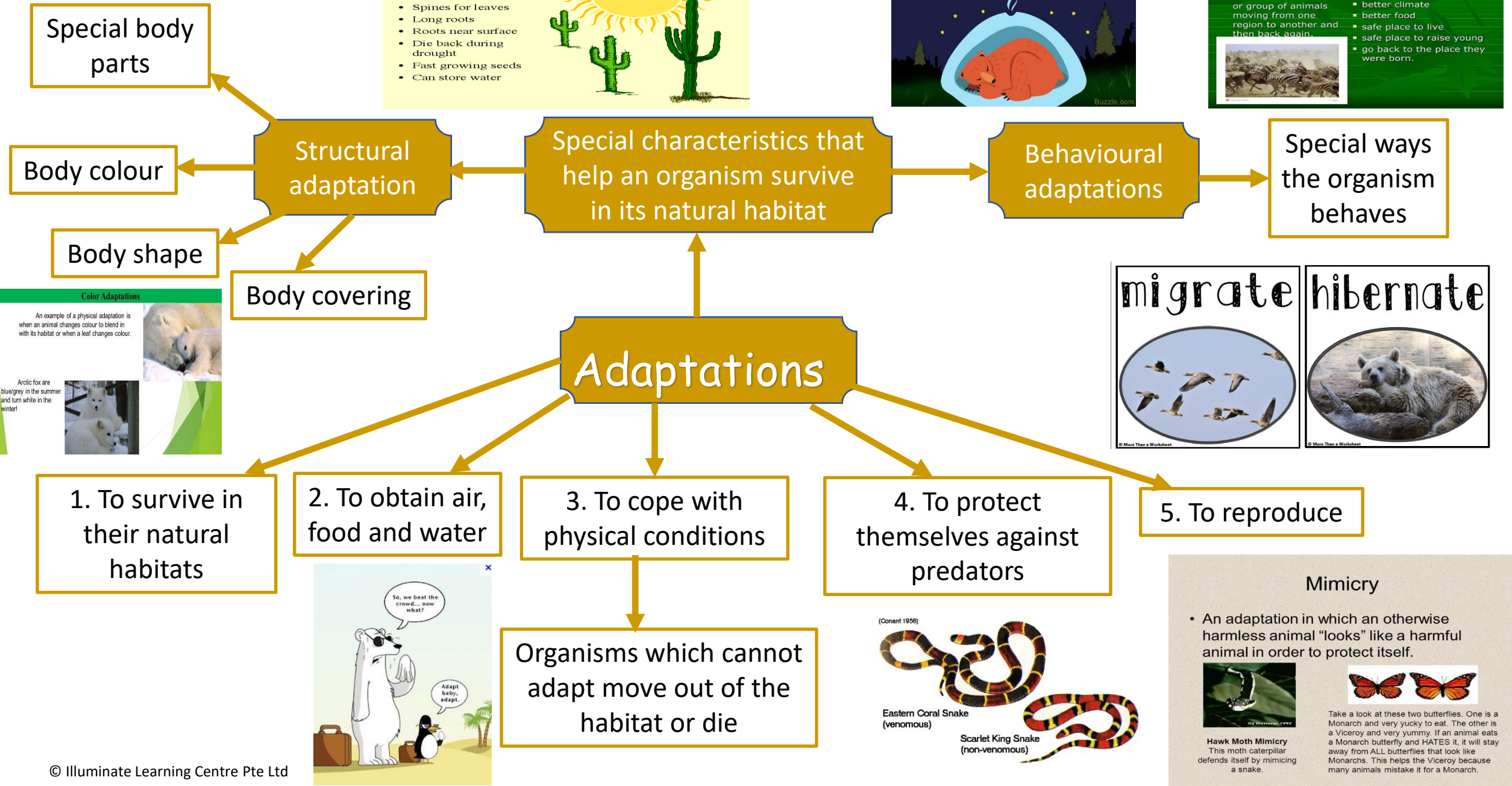


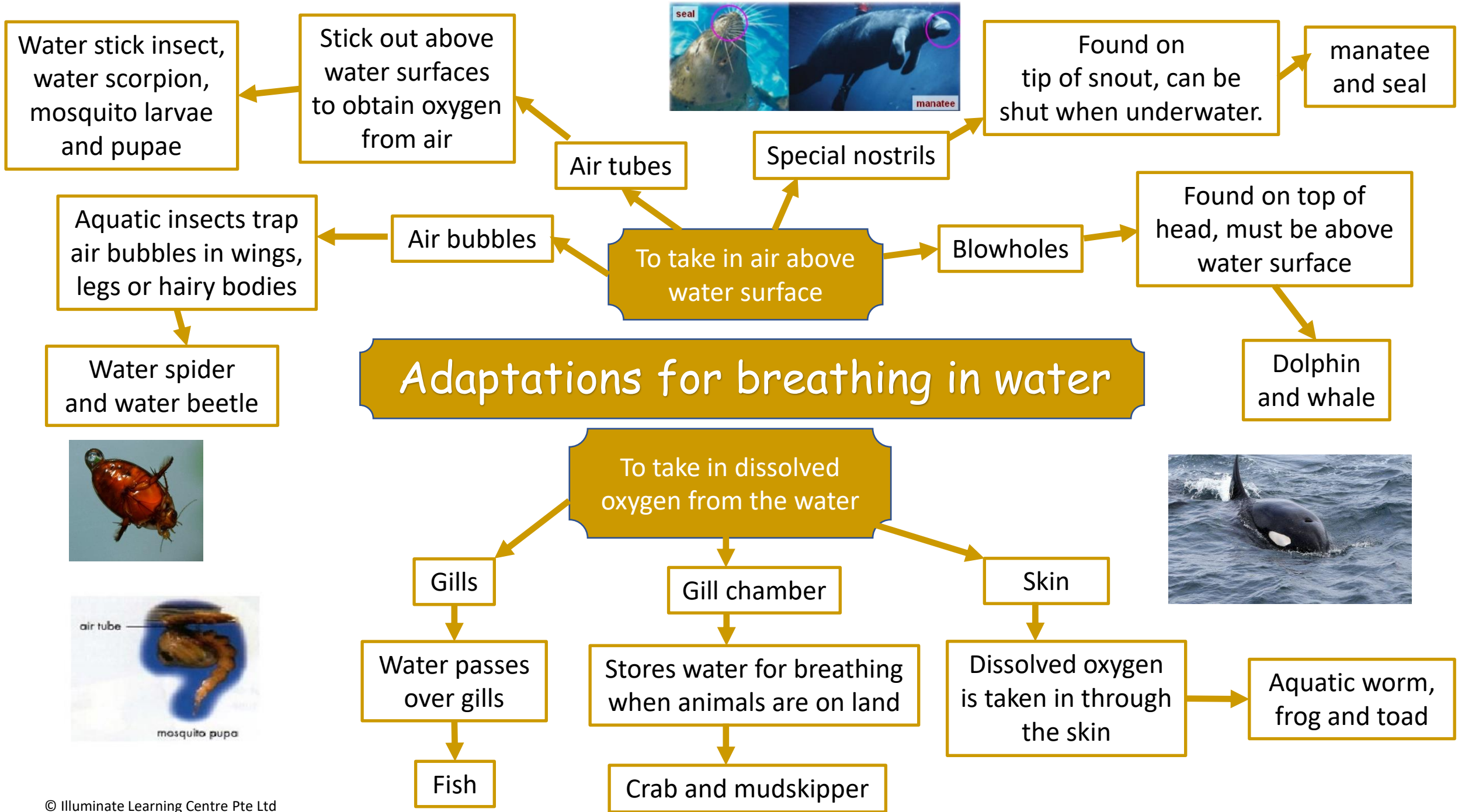
During hibernation, bears can go without food and water for more than 240 days.

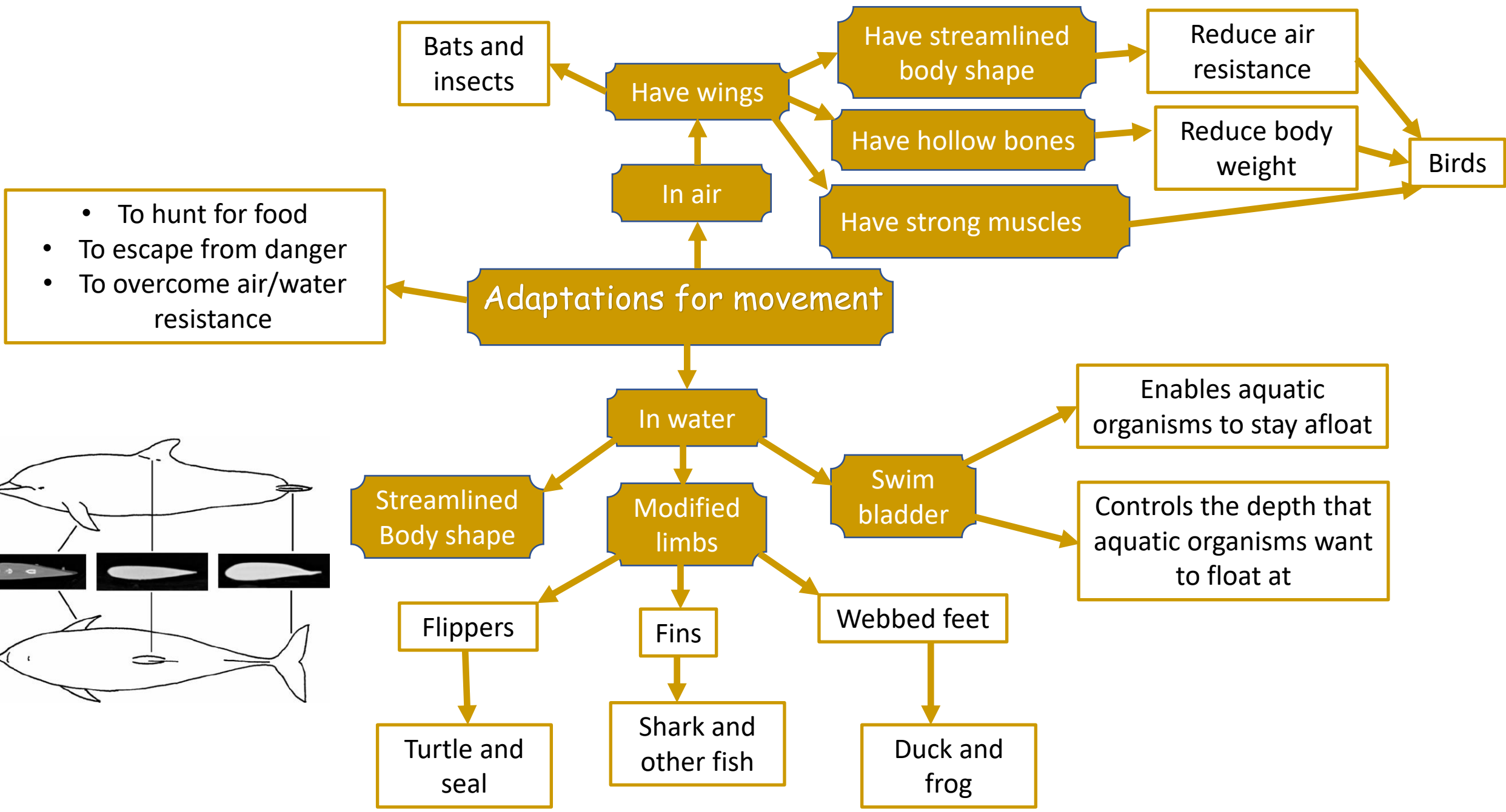


Migration

- This is when behavioral adaptation that involves an animal or group of animals moving from one region to another and then back again.
- Animals migrate for different reasons.
 - better climate
 - better food
 - safe place to live
 - safe place to raise young
 - go back to the place they were born.





Leaves are spread out so that the tops ones will not block light for the leaves below



Large broad leaves

Hold up branches and leaves to obtain sunlight

Strong, woody stems



Soft non-woody stems

Cannot grow upright

By twining

By tendrils

By clasp roots

To absorb sunlight for photosynthesis

For land plants

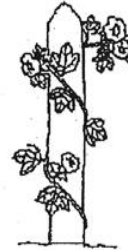
Adaptations of plants for obtaining sunlight

For aquatic plants

Sunlight cannot reach deep into the water



Money plant



Morning Glory



Bean plant

Waxy leaves

Prevent water from collecting on leaves

Lotus and water lily

Hair on leaves

Trap air

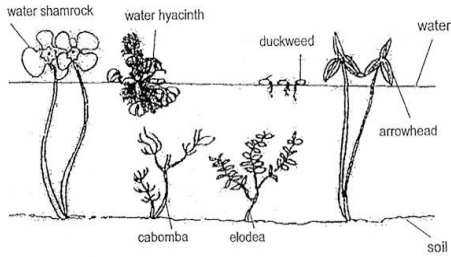
Water moss and fern

Air spaces in leaves and stems

Keep plants afloat

Water hyacinth

Aquatic plants need to float or keep their leaves close to the water surface



If population of floating plants increase significantly, they will block light from reaching the submerged plants. The submerged plants cannot make food and will die. The animals in the pond will die due to lack of food too.

Adaptation for survival in hot environment



• Kangaroo Rat (*Dipodomys deserti*)



- They have large hind feet that keep them from sinking into the sand.
- Kangaroo rats dig burrows to protect themselves from predators and heat.
- Kangaroo Rats are nocturnal (avoiding the heat during the day.) Large ears help dissipate heat.
- Kangaroo rats may obtain their water from the food they eat.

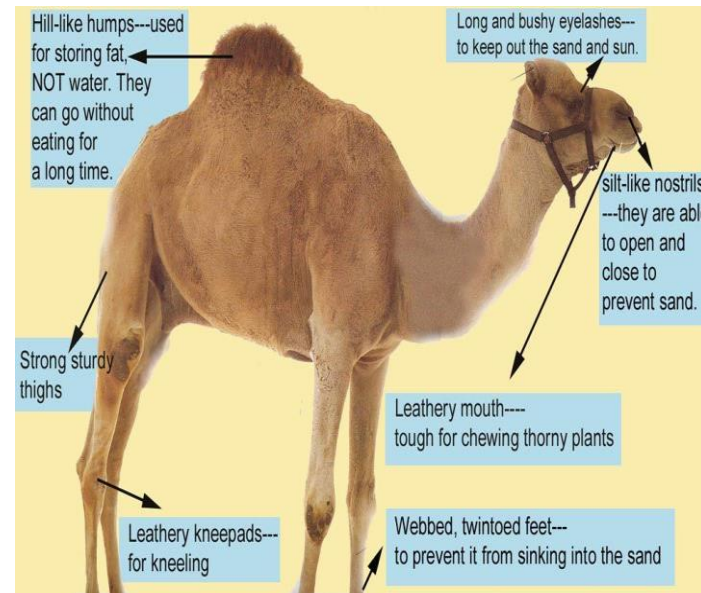
• Fennec Fox (*Vulpes zerda*)



- Their large ears, which are usually 4 to 6 inches long, help dissipate excess body heat on hot days in the desert.
- Their burrowing and nocturnal lifestyle helps restrict water loss.
- Their thick fur helps insulate them from the cold desert nights.
- Their sandy coloration helps to reflect heat, and also provides excellent camouflage.

The fennec fox lives in the desert and is adapted to cope with temperatures in excess of 45 °C. Relative to its body size, this creature has long legs, long muzzle and very large ears.

The enormous ears have a very large surface area to maximise the radiation of body heat and thus keep the animal cool.



In sharp contrast, the arctic fox has adapted to withstand temperatures of -40 °C and below. Again, relative to its size this fox has short legs, short muzzle and very small ears.

All of these adaptations give low surface area relative to body size and so minimise radiated heat loss.

Adaptation for survival in cold environment



- i) They have white fur so that they are not easily visible in the snow and helps in catching their prey.
- ii) They have two layers of fur to protect them extreme cold.
- iii) They have a layer of fat under the skin which also protect them from cold.
- iv) Their paws are wide and large which help them to walk on snow and to swim in water.
- v) They have a strong sense of smell which helps them to catch their prey.



- i) They have white coloured body so that they are not easily visible in the snow.
- ii) They have thick skin and a lot of fat to protect them from cold.
- iii) They huddle together to keep them warm.
- iv) They have streamlined body and webbed feet which help them to swim in water.



Saxifrage



Arctic Willow

Cold climate plants



Bearberry



Arctic flower

- Small plants grow close to the ground for warmth.
- Dark colored flowers absorb heat from the sun.
- Fuzzy stems provide protection from wind.



Arctic Willow:

- Grows close to the ground, to get out of the way of the Arctic wind. It also has fuzz to retain heat for the plant. It has little hairs on it's leaves to help with insulation.

Bearberry:

- A low growing plant that uses an adaptation to stay out of the way of the ripping Arctic wind. It also favors places like behind rocks to stay out of the wind. The leathery leaves keeps moisture and heat inside the plant.

Adaptations of Organisms in the Tundra

PLANT ADAPTATIONS

Functional:

- Small shrubs and mosses that grow low to the ground to keep from freezing
- Grow in clumps to protect one another from the wind and cold

Structural:

- Dark in color to absorb solar heat
- Shallow roots to not have to penetrate ice



ANIMAL ADAPTATIONS

Structural:

- Layer of fat— blubber
- Two layers of fur
- Bigger body

Behavioral:

- Migration to warmer areas in the winter
- Hibernations—deep sleep to save energy



Walrus skin is thick which keeps them warm while they swim, they also have a 6 cm thick layer of blubber under this skin. The blubber will keep the body warm while they swim in the cold water.

Walruses have tusks to attract possible mates by fighting and just how long & thick they are. They also have these tusks to maintain holes in the ice and help them get from the water onto ice.



Needle-like leaves with waxy covering help reduce water loss during freezing weather.

They do not drop leaves (needles) all at once in fall. They are kept throughout the year to make food whenever sunshine and water are available (short summers).



Animals are less likely to be eaten by predators

Helps animals to catch their prey

Change colour in different seasons

Arctic fox 's fur is whit in winter and brown in summer



Colour change

Camouflage

Body shape

Leaf insect and stone fish

Patterns

Make the animal appear larger/ frighten predators off like using eye spots

Moth and butterfly fish



Adaptations for protection

Protects against extreme temperatures of the environment

Protects against predators

Reptiles and fish

Protect from attacks

Scales



- Hard and does not break easily
- Useful for animals that move slowly

Hedgehog and porcupine

Spines /Quills

Types of body covering

Shells

Protect from attacks and use as camouflage

Turtle, snail and crab



Feathers

Fur

Traps air

Keep animals warm

Artic fox, snowshoe rabbit and wolverine

Keep birds warm

Waterproof for birds that live in water

Help birds fly

