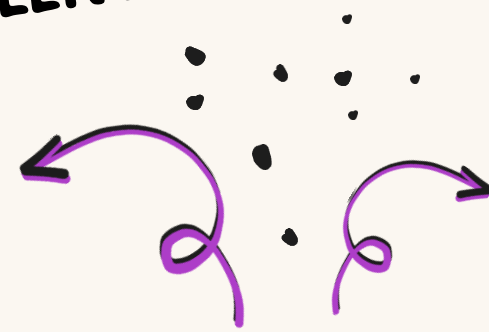


T-SHIRT LAUNCHER

FLINGING DESIGN CHALLENGE

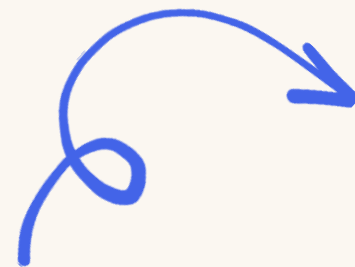


Springtail



Seed Pods

Photo via iNaturalist © mkenedy

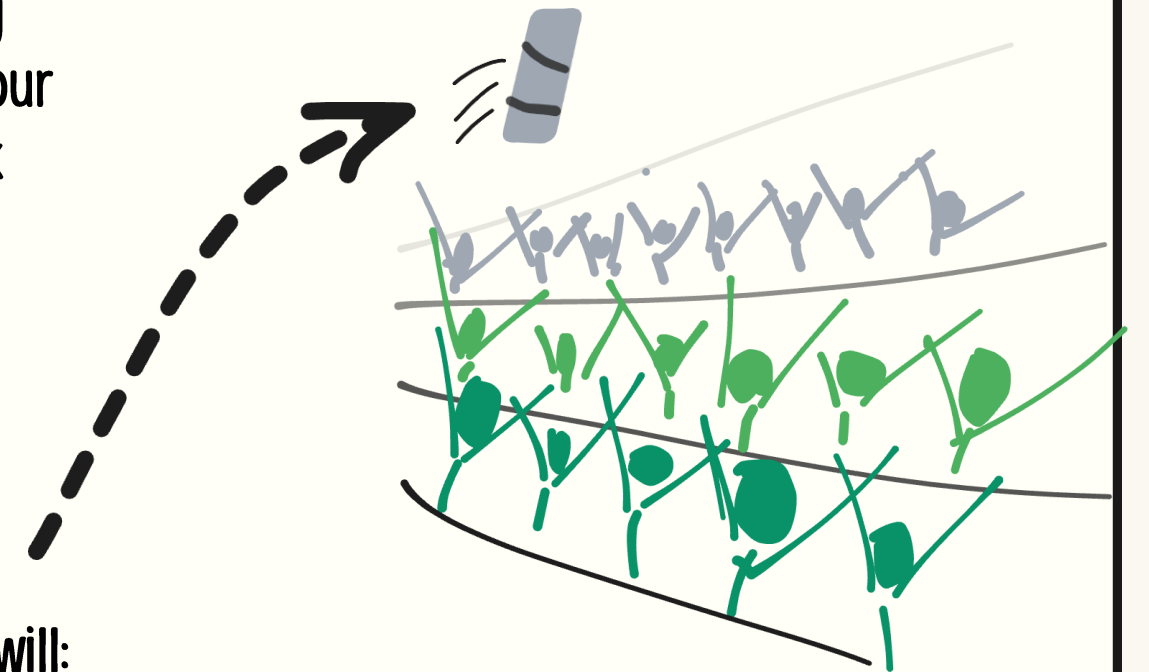


Click Beetle

Photo via iNaturalist © Gerry Salmon

BACKGROUND

Welcome to XYZ T-shirt company! We may be last in the alphabet but we are first in our customers' hearts. We are about to embark on a new phase for the company, the ATD Service (Advanced T-Shirt Delivery).



OBJECTIVE

Use Tinkercad to design a mechanism that will:

- Safely distribute t-shirts over a safety barrier

Focus on one of three modes:

- Distance from a distribution site
- Precision-targeted delivery
- Broad area distribution

LINK TO RESOURCES

- [SEED PODS](#)
- [CLICK BEETLES](#)
- [SPRINGTAILS](#)

BE BIOMIMETIC! Your device's design must be inspired by at least one organism

Use the process of biomimicry to design a Tinkercad model of a mechanism capable of safely distributing t-shirts from a ground location over a safety barrier in a concert or sporting event. Your device must use biomimicry as inspiration from at least one organism.



AIRBORNE TRANSPORT DESIGN CHALLENGE



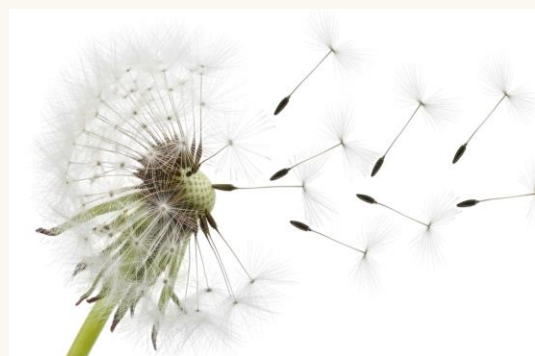
Anisoptera Tree Seeds



Pine Tree Pollen



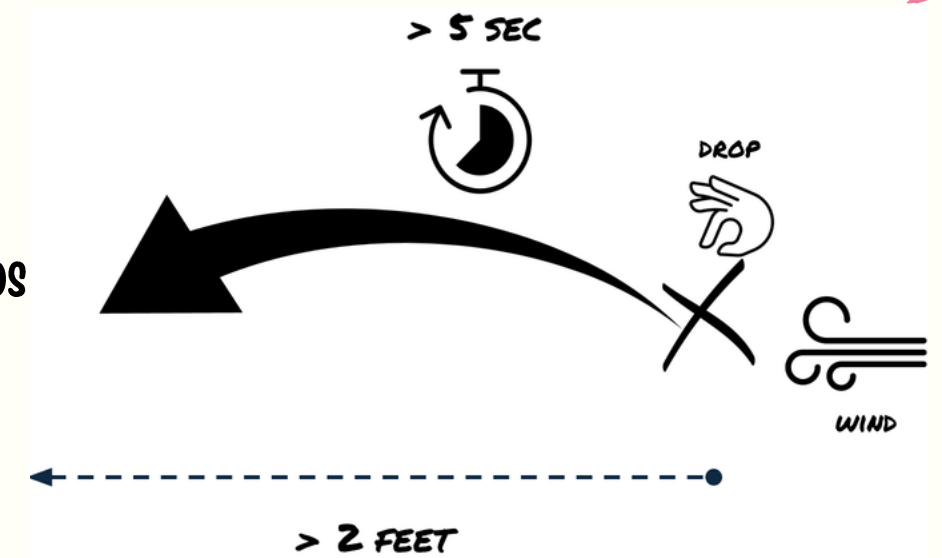
Maple Tree Seeds



Dandelion Seeds

BACKGROUND

In a certain region in the world, scientists are studying a remote population of endangered birds that are having trouble finding sources for food. They have proposed a small experiment to research the pros and cons of providing food for the birds. Design a mechanism that drops small capsules full of insects to areas where the birds live.



OBJECTIVE

Design and build a device that will carry a plastic bead in the air:

- For at least 5 seconds
- At least 2 feet away from the drop location

BE BIOMIMETIC! Your device's design must be inspired by at least one organism

Use the process of biomimicry to design a mechanism capable of dispersing a seed in the air to a distant location. Your device must use biomimicry as inspiration from at least one organism.

TREASURE EXPLORATION

DIGGING DESIGN CHALLENGE



Gopher



Mole Rat



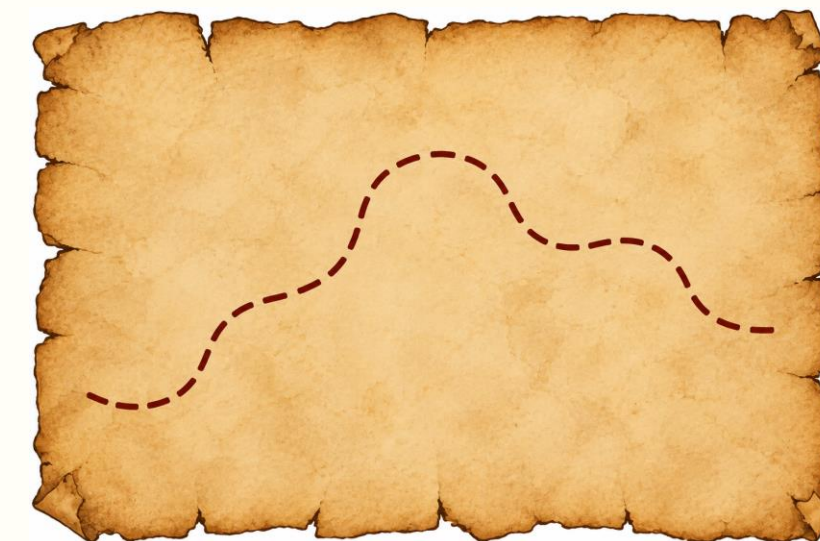
Mole



Pangolin

BACKGROUND

There are some treasures hidden under the sand on the beach that you need to dig for. It's tough and slow if you don't have the correct tools. To solve this problem, please design a biomimetic device that can efficiently dig on the beach to find the treasure.



OBJECTIVE

Design and build a tool that:

- Can dig through shredded paper (to represent sand)
- Can stay contained as one device during and after the dig
- Is able to dig for treasure multiple times

LINK TO RESOURCES

- [POCKET GOPHER](#) (Scratch digging)
- [EASTERN MOLE](#) (Humeral rotation digging)
- [MOLE RAT](#) (Chisel-tooth digging)
- [PANGOLIN](#) (Hook-and-pull digging)

BE BIOMIMETIC! Your device's design must be inspired by at least one organism

Use the process of biomimicry to design a mechanism that can efficiently dig multiple times and stay connected as one device. Your device must use biomimicry as inspiration from at least one organism.

FRUIT HARVESTER

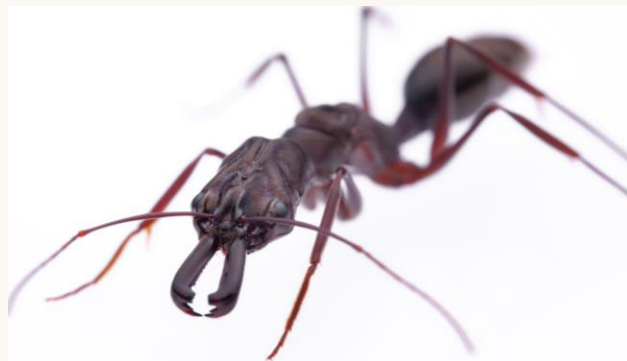
GRASPING DESIGN CHALLENGE



Bird Talon



Venus Fly Trap



Trap-jaw Ant

BACKGROUND

Harvesting fruit from tall trees can be slow, unsafe, and tricky to do by hand. To solve this problem, design a biomimetic device that can safely and efficiently harvest fruit. Test out your device by grasping a ball attached to the wall or ceiling.

OBJECTIVE

Design and build a mechanism that:

- Is hand-operated
- Can grasp a ball attached to the wall or ceiling
- Does not damage the ball when grasping it
- Stays connected as one device during and after the grasping

LINK TO RESOURCES

- [BIRD TALON](#)
- [VENUS FLY TRAP](#)
- [TRAP-JAW ANT](#)



BE BIOMIMETIC! Your device's design must be inspired by at least one organism

Use the process of biomimicry to design a mechanism capable of grasping fruit. Your device must use biomimicry as inspiration from at least one organism.