



# Colorful Critters



IT'S LIKE A PARTY IN HERE!

## What you need:

- CLEAR 2L BOTTLE
- FUNNEL WITH A WIDE SPOUT
- MUD FROM A POND, LAKE, ETC.
- BUCKET
- WATER
- SHREDDED PAPER (HANDFULL)
- ONE RAW EGG
- NAILS
- FOIL STRIP (1-2IN/2.5-5CM THICK)
- TAPE

## What to do:

- COLLECT YOUR MUD/DIRT IN THE BUCKET AND ADD ENOUGH WATER SO THAT IT CAN BE SQUISHED THROUGH THE FUNNEL.
- MIX IN A HANDFUL OF SHREDDED PAPER AND THE EGG INTO THE MUD.
- FILL THE CONTAINER HALFWAY WITH MUD, ADD A COUPLE OF NAILS, THEN FILL THE REST OF THE BOTTLE WITH MUD.
- TAPE THE FOIL STRIP AROUND THE MIDDLE OF THE BOTTLE.
- CAP THE BOTTLE LOOSELY SO THAT AIR CAN STILL ENTER IT!
- PLACE THE BOTTLE IN A SUNNY WINDOW FOR 24 HOURS.
- LOOK FOR A 0.5-1IN/1-2CM LAYER OF WATER ON THE TOP OF THE MUD. IF MORE WATER EXISTS, POUR SOME OFF. IF THERE IS LESS, ADD SOME TAP WATER TO THE BOTTLE.
- OBSERVE THE BOTTLE FOR THE NEXT SEVERAL DAYS (WEEKS, MONTHS, ETC.) FOR CHANGES IN COLORS OF THE MUD THAT FACES THE SUN FROM ITS SHADY SIDE AND UNDERNEATH THE FOIL AS WELL!

## What's going on?

AFTER SEVERAL DAYS, YOU SHOULD OBSERVE DIFFERENT PATCHES OF COLORS FORMING WITHIN THE MUD IN DIFFERENT AREAS OF THE BOTTLE. THESE ARE COLONIES OF DIFFERENT BACTERIA THAT LIVE NATURALLY IN THE SOIL. EACH COLOR REPRESENTS A UNIQUE SPECIES OF BACTERIA THAT THRIVES WITHIN SOME SMALL AREA OF THE BOTTLE ENVIRONMENT. THE GREEN BACTERIA ARE LIKELY ABLE TO PHOTOSYNTHESIZE THEIR OWN FOOD AND WILL LIKELY BE FOUND FACING THE SUN. RED/BROWN BACTERIA TEND TO FEED ON MOLECULES PRESENT IN EGGS AND IRON WITHIN THE NAILS YOU ADDED. OTHER BACTERIA SURVIVE BY OBTAINING THE NUTRIENTS THEY NEED FROM COMPOUNDS MADE BY OTHER ORGANISMS IN THE BOTTLE - MUCH LIKE THE WAY WE OBTAIN NUTRIENTS FROM THE FOOD WE EAT! IF YOU WANT TO LEARN MORE, LOOK UP "WINOGRADSKY COLUMN" ON THE INTERNET. THERE IS PLENTY OF HISTORY WITH THIS ACTIVITY!

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