

SUPERANIMALS

PEREGRINE FALCON EDITION



DIVES 220 MPH
- FASTEST
ANIMAL IN THE
WORLD!

SUPER
AERODYNAMIC
SHAPE THAT
INSPIRED JET
ENGINE DESIGN!

STRONG
HOLLOW
BONES THAT
GET OXYGEN
TO MUSCLES
FAST!

VERSATILE - LIVES ON
ALMOST EVERY
CONTINENT OF THE
WORLD

EXTRA STIFF
FEATHERS THAT MOVE
TO REDUCE AIR
RESISTANCE DURING
FLIGHT DIVE!

Discover the Peregrine Falcon...



INCREDIBLE
VISION - 8X
BETTER THAN
HUMANS!

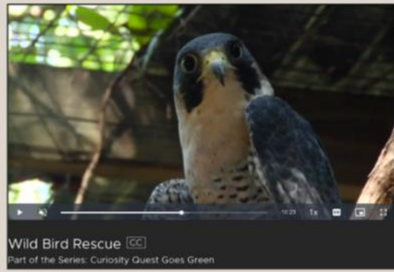
...and explore
their
superpowers!



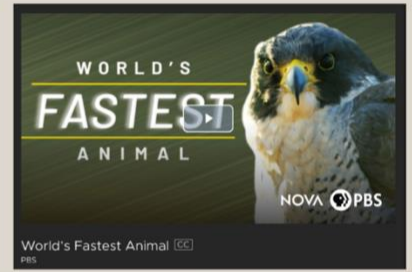
Click to access the following EPL Resources.



Check out these books from Hoopla Digital!



Visit a wild bird rescue facility with the Curiosity Quest series. Available through Kanopy Kids.



A very in-depth video that explores and celebrates the Peregrine Falcon! Available through Kanopy.



Want to see what it might be like to take a ride on a falcon? Click here, then scroll down to see video footage filmed by a falcon during flight! From National Geographic.

VISIT OUR FRIENDS IN CALIFORNIA! THEY HATCHED ABOUT 3 WEEKS AGO. CLICK HERE TO ACCESS THEIR WEBCAM FOR A PREVIEW OF WHAT'S TO COME FOR OUR EVANSTON CHICKS!



NEED FOR SPEED

Peregrines hunt & eat birds while the birds are in the air flying.

WILL I EVER
BE ABLE TO
GO THAT
FAST?

One of the peregrine's ultimate superpowers is their crazy fast hunting dive - which can be up to 224 miles per hour!

Under "normal" circumstances, human skydivers in free fall can only get up to about 120 miles per hour.

HOW DOES THE PEREGRINE GO THAT FAST?

When falling, all objects have 2 forces on them. Gravity pulls the falling object (bird, skydiver, airplane) towards Earth, while air pushes up. That's known as air resistance, or drag..

To get the most speed during its dive, the peregrine has to get rid of as much drag, or air resistance, as possible.

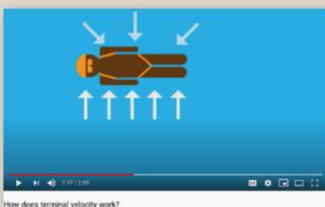
GOING VERY FAST
HELPS ME FIGURE
OUT WHERE MY
PREY WILL BE IN
THE SKY SO I CATCH
MY DINNER ON THE
FIRST TRY!

IF YOU WANT TO
MAKE A PROJECT
WHERE YOU SLOW
DOWN GRAVITY, TRY
OUR PARACHUTE
PARTY!

WANT TO LEARN MORE?

This National Geographic video shows scientists measuring the speed of the peregrine falcon. You'll also see how skydivers designed a new, faster suit based on the peregrine's shape to achieve faster free falls.

This video will help you understand how gravity & air resistance work to determine how fast an object falls.



TURN THE PAGE
TO FIND OUT HOW
THE PEREGRINE
GOES SO FAST!





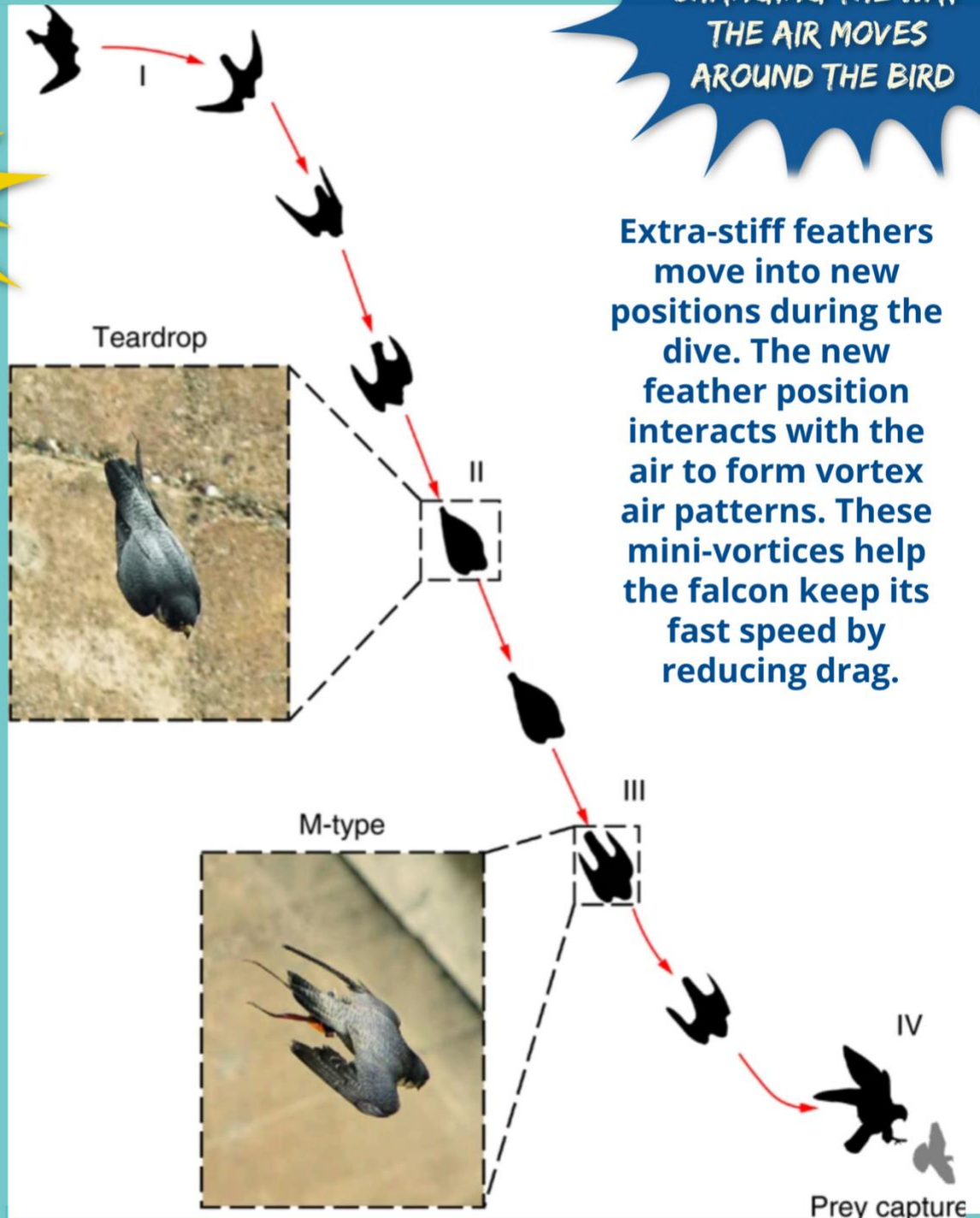
HOW DO THEY GO SO FAST?!

PATH OF THE PEREGRINE'S HUNTING DIVE "STOOP"

REDUCE AIR RESISTANCE BY CHANGING THE WAY THE AIR MOVES AROUND THE BIRD

REDUCE AIR RESISTANCE BY CHANGING SHAPE!

The falcon takes the "teardrop" shape during its dive. This aerodynamic shape reduces air resistance and helps the falcon dive faster!



Extra-stiff feathers move into new positions during the dive. The new feather position interacts with the air to form vortex air patterns. These mini-vortices help the falcon keep its fast speed by reducing drag.

Click on this diagram to link to the scientific paper where it appears:
"Vortices enable the complex aerobatics of peregrine falcons."
By Erwin R. Gowree, Chetan Jagadeesh, Edward Talboys, Christian Lagemann & Christoph Brücker

During a dive, the falcon's feathers form mini-vortices that help the falcon go fast!

EXPLORE VORTICES!

WHAT IS A VORTEX?



Next time your grown-ups have coffee and add milk, watch a vortex form!

A vortex might sound complicated, but it's just air or liquid that moves in a swirly shape.

The air or liquid doesn't cross the invisible line running through the middle of it.

Look at all these different kinds of vortices!



This is a vortex created in a water bottle. Click on the picture for instructions.



Tornadoes are an example of a type of vortex.



Colored smoke reveals the vortices created by air movement on airplane wings.

CLICK HERE FOR MORE DETAILED INSTRUCTIONS!

MAKE A VORTEX CANNON!

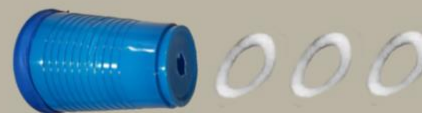
This toy makes toroidal, donut-shaped vortices!

You will need: A grown-up to help you cut the hole; plastic cup or empty box; scissors; balloon or plastic wrap

- 1** Ask a grown up to cut a small hole in the solid bottom of the cup or box. Then flip the cup over so the hole you made is on the bottom.
- 2** Blow up the balloon 2x to stretch it out. Then cut off the neck and stretch it to cover the open end of the cup. Or use plastic wrap and tape it down as tightly as possible.
- 3** Point the hole of the cannon towards a lightweight object or even the flame of a candle (be careful). Pinch the balloon out gently and let it snap back. Or try even just tapping on the balloon.



PUSH HERE



When you tap on the balloon, donut-shaped vortices of air form and move quickly. This is what it looks like if you use a smoke machine!

DESIGN 1 -
TEARDROP
SHAPE
FALCON

Explore the teardrop stoop shape with a paper airplane!

1



Place an 8.5" x 11" sheet of paper on a flat, hard surface.

2



Fold the paper in half lengthwise, then unfold.

3



Fold the corners down to the center crease like this.

4

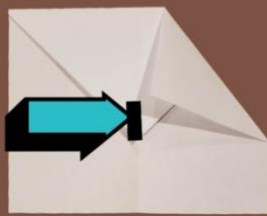


Fold the top triangle shape down.

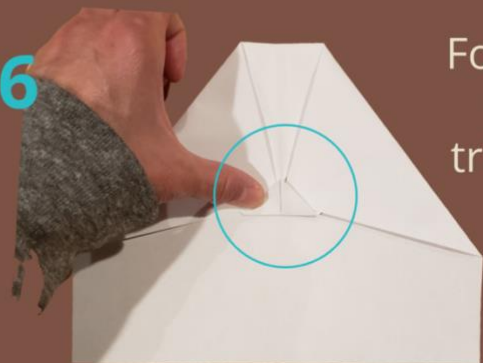
5



1"



6



Fold the tiny triangle up.

7

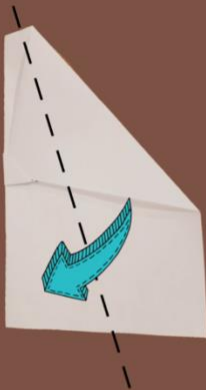
Flip it.



Fold it in half.



8



Make a fold along the angle of the dotted line shown.



9

Flip it and fold the other side so it matches up with the fold in step 8.



The completed teardrop airplane!

YOU
WANNA
RACE?



DESIGN 2 -
M-SHAPE
AIRPLANE

Explore the peregrine's M-shape with a paper airplane!

1



Place an 8.5" x 11" sheet of paper on a flat, hard surface.

2



Fold the paper in half lengthwise, then unfold.

3



Make a fold on the bottom of the paper about 1" thick.

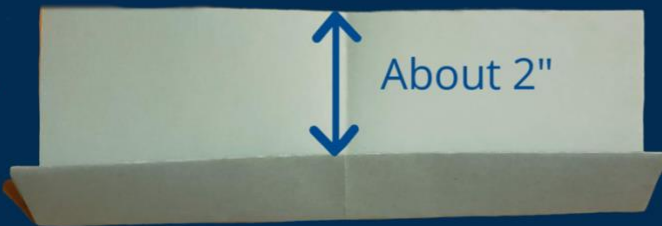


Make the same fold 6 more times for a total of 7 folds.

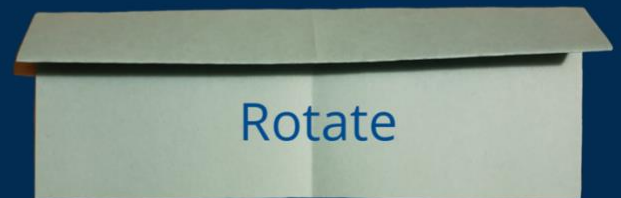
it will look like this



4



5



6



7



Fold



8



Fold back about 1" away from the crease.

9



Flip so it looks like this. Then fold the left side to match the size of the wing under it.



Flip it so it looks like this. Add thumb-width flaps.

**For the longest flight,
throw the plane with
the thick seam
farthest from you, up
and hard.**

EXPLORE AIRPLANE SHAPE

Now that you have made both kinds of airplanes, what do you notice about how each of them flies?

TEARDROP SHAPE



M-SHAPE



Are they the same, or are they different?

Maybe the answer to that question depends on what the purpose of the flight is...?

WHICH ONE
FLIES
"BETTER?"



Think about what you want your airplane to do best. Fly farthest, fastest, highest, most stable or consistent...?

Try folding an airplane in your own way, or use these books for new ideas. Can you improve your design?

