Flight Book



Monarch



Choose a wing. Make it together. See where it lands.

Before you fly

1

Print at actual size

Match the printer paper to this book. Select Actual size or 100%, turn off Fit to page and print on one side. Print this page first and measure the line below with a ruler.

2

Pick a model and get ready

Print both Monarchs at 100% on the same uncoated 120 g/m² paper. Check both 50 mm lines. Use scissors for both. K1 needs one small rounded clip. K2 needs two 33 mm clips, a ruler and an empty ballpoint pen.

3

Predict, launch and compare

Use one launcher in still indoor air, with a clear path. From the same mark, give each model a gentle level push at shoulder height. Alternate K1 then K2 for five pairs of launches.

This line should measure 50 mm (1.97 in).



Your fleet

Find your model, gather its tools and turn to its numbered sheets.

Use page 7 whenever a folded-body butterfly (K1) asks for its illustrated steps. The guide works for all K1 species.

			Sheets
	**Monarch · K1** Folded body · Easy · 10–15 min · Paper, scissors, clip	●○○	6–7
	**Monarch · K2** Folded front edge · Easy · 10–15 min · Scissors, two 33 mm clips	●○○	8–9

Build times are estimates.

Flight atlas · 10

Monarch flight trial · K1 and K2

Use one launcher in still indoor air, with a clear path. From the same mark, give each model a gentle level push at shoulder height. Alternate K1 then K2 for five pairs of launches.

Paper brand and grain

Date

Where might it land?

Clips and balance point

Distance to first touchdown (cm) and flight outcome

Launch	K1	K2
1		
2		
3		
4		
5		

What did you notice?

For every attempt, write the distance in cm and whether it glided, dived, stalled or rolled. Keep failed launches. Which build gave the more consistent glide?

Keep this page for your next flight.



Pilot certificate

For building a paper flyer, testing a prediction and recording a landing.

Pilot

Date

Signature

Scan to reopen this edition

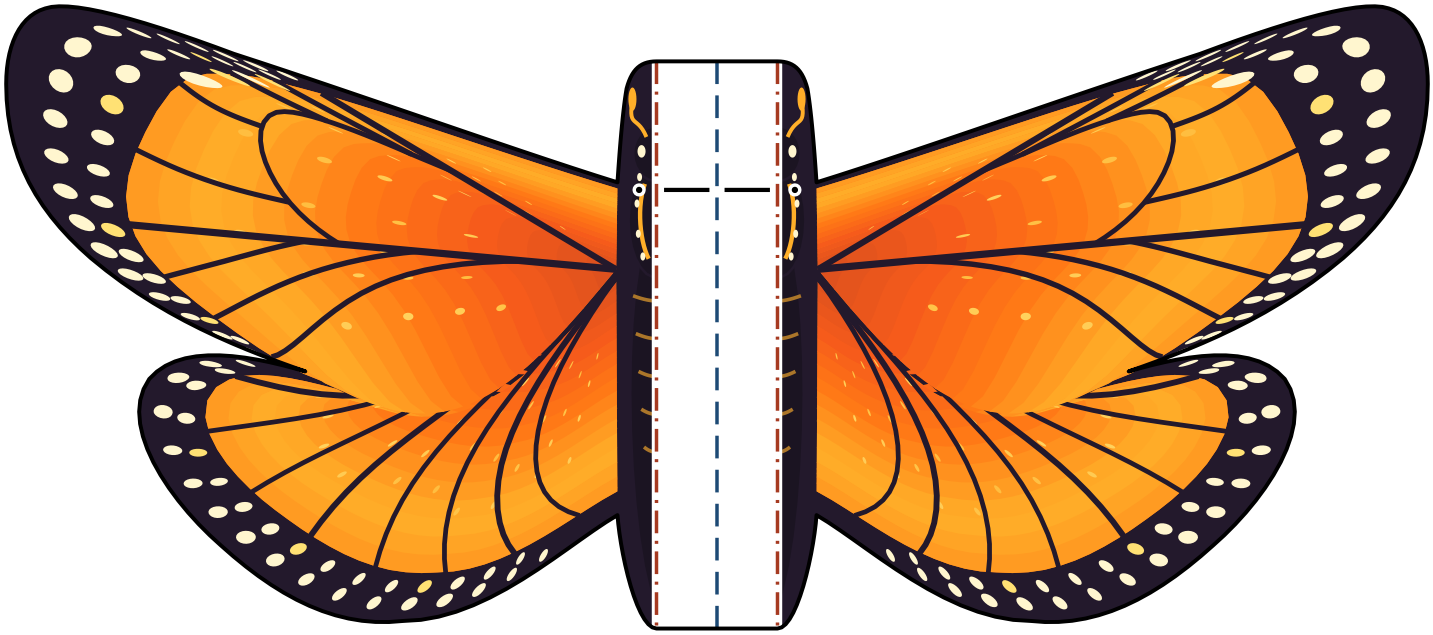
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Monarch

Experimental folded body · Physical build and flight trials pending

172 mm finished span · 188 mm flat span



Cut — Center valley — Wing mountains — Clip stop

50 mm Print at 100% / actual size. Measure this line before cutting.

Build with scissors and one small rounded paper clip

Follow the illustrated guide “How to build and launch”.

1. Cut out your butterfly
2. Bring the wingtips together
3. Fold each wing back
4. Set the wings flat
5. Turn over and add the clip
6. Let it glide

Full-size nose and clip gauge



Nose — Back of clip

17 mm

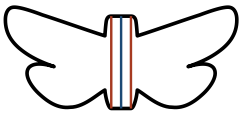
Place the folded body on its side. Match its nose to the left line.

The back end of the clip should meet the thick stop line.

Open Flight / CERN-OHL-W-2.0 / CC BY-SA 4.0

How to build and launch

View from tail toward nose (2–4, 6)



1. Cut out your butterfly

Start with the colors up and the nose pointing away. Cut only around the outside edge. Keep the paper between the wings whole. Ask a helper to cut around the tight corners.

The butterfly is one piece, with three fold lines down the middle.



2. Bring the wingtips together

Lift both wings until the tips meet and the colored faces touch. Pinch the dotted center crease from nose to tail.

The tips line up and the colors are inside.



3. Fold each wing back

Ask a helper to pinch the folded strip, or hold it with one hand. Fold one whole wing out along its dash-dot line, then the other.

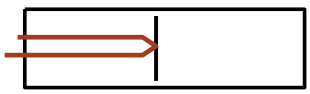
Each wing has its own crease, and the two layers of the strip still touch.



4. Set the wings flat

Place the butterfly color-side down on a flat table. Keep the folded strip standing straight up as you gently press both wings onto the table.

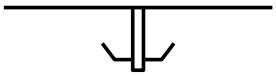
Both wings touch the table. The folded strip stands between them.



5. Turn over and add the clip

Turn it color-side up, with the folded strip underneath. Slide a small rounded paper clip (about 6–8 mm wide) onto the nose so it grips both layers. Look from the side and stop with the back of the clip directly under the dots by the folds.

The clip holds both layers. Both wings sit at the same height.



6. Let it glide

Hold the folded strip just behind the clip. Point the nose straight ahead with both wings level, then let go with a gentle forward push.

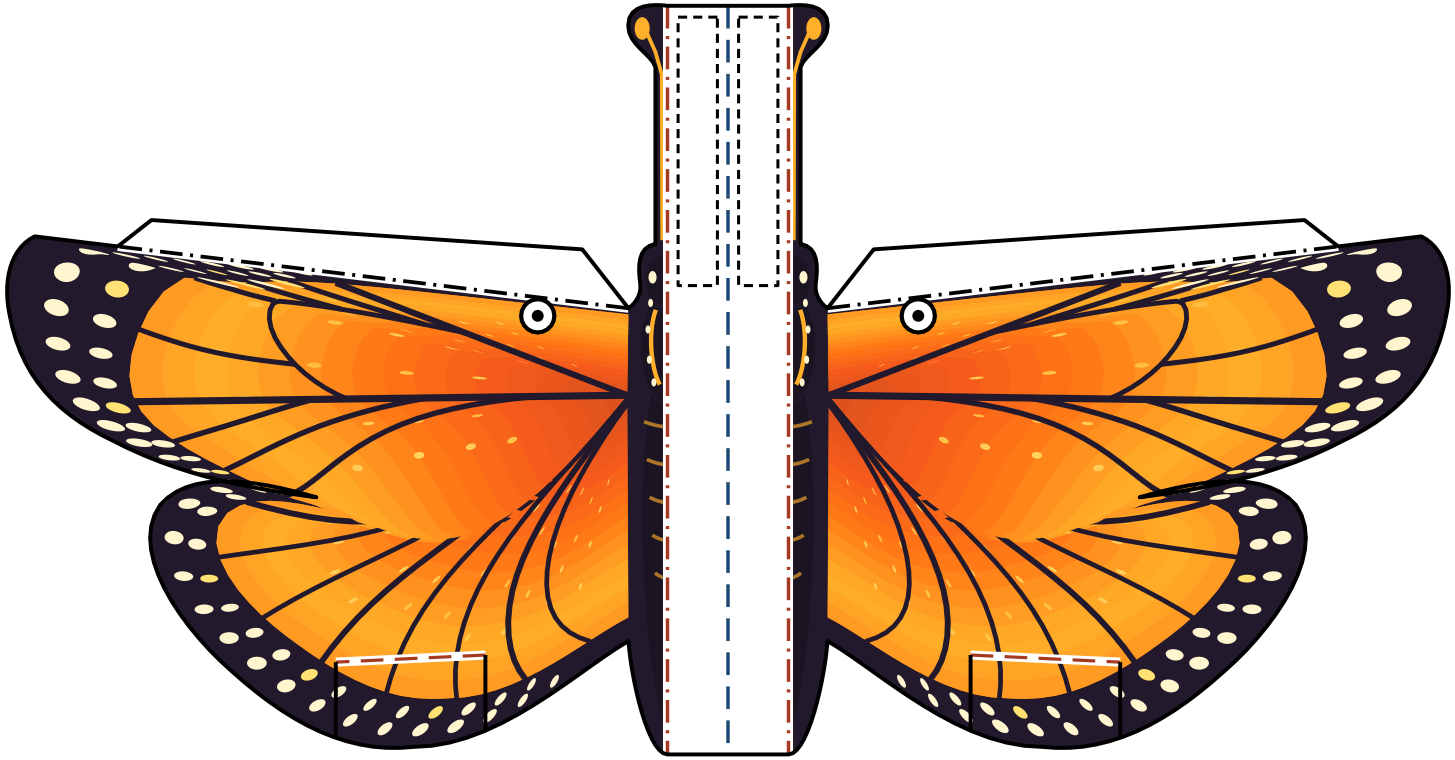
Watch where it touches down first. Point to that spot, or mark it and compare five launches.

Open Flight / CERN-OHL-W-2.0 / CC BY-SA 4.0

Monarch

172 mm finished span

K2 costa glider · Fold the leading edge under each wing



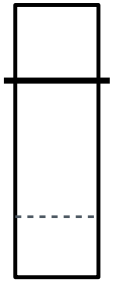
Cut — Center valley — Wing and costa mountains — Edge strip folds under — Clip zone — Balance dot

50 mm Print at 100% / actual size, landscape. Measure this line before cutting.

Paper and clips

120 g/m² uncoated printer paper or light card (100–140 works).
The wings run along the long side of the sheet. Most office paper is stiffer that way.
2 standard metal paper clips, 33 mm long.
Estimate for 172 mm on 120 g/m² with two clips: balance 41 mm behind the nose, glide about 2.7 m/s. Not yet measured.

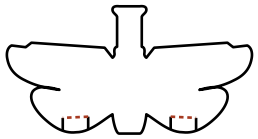
Tip-height strip



Cut out. Stand it on the table beside a wingtip. 18 mm above the body.

Open Flight / CERN-OHL-W-2.0 / CC BY-SA 4.0 / K2

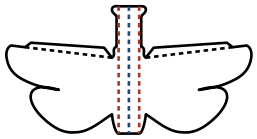
Build, balance and trim · Monarch



1. Cut

Cut the outside line, including the edge strips and the antenna clubs. Cut the four short slits at the back of the hindwings.

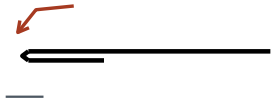
One piece. Each hindwing has a tab between two slits.



2. Score

Lay a ruler on each dashed line and press along it with an empty ballpoint pen.

Every fold line shows a groove. Thick paper now folds cleanly.



3. Fold the costa

Fold each edge strip under its wing along its dashed line. Press it flat.

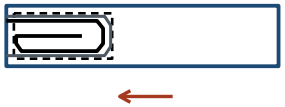
The front edge is straight and doubled, like the costa vein of a real wing.



4. Fold the body

Fold in half on the dashed centre line, colors inside. Then fold each wing back out on its dash-dot line.

The two body layers hang underneath and touch.



5. Clip the head

Slide both clips onto the head over the two body layers, one on top of the other, all the way to the nose.

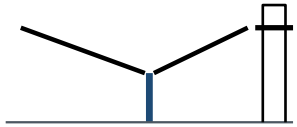
The clips stay inside the dashed clip box.



6. Balance

Rest the wings on two fingertips under the ringed dots. Tail drops: add a clip. Nose drops: slide a clip back, or remove one.

It stays level on your fingers.



7. Set the V

Lift both wings into a shallow V. Look from the tail and compare each wingtip with the strip.

Both tips are the same height.



8. Launch and trim

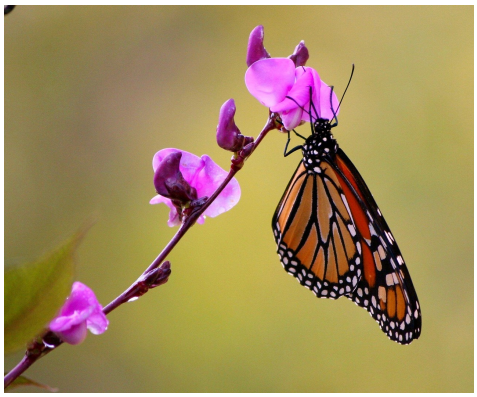
Push it smoothly forward, nose level, about as fast as a jog.
Dives: bend both tabs up 1–2 mm.
Swoops up and stalls: flatten them.

Turns left: bend the right tab up a little. Turns right: the left tab.

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Butterfly field notes

Monarch



Danaus plexippus · JamesDeMers · CC0



Natural Earth

Where to find it

Wintering site · Sierra Chincua, Michoacán, Mexico · Autumn migration and winter

In autumn, many monarchs from eastern North America fly south to spend the winter in fir forests in central Mexico.

Look closely

Milkweed feeds the caterpillars. The adults also need flowers for nectar and forest shelter in winter.

The workshop photograph shows one adult. The map marks a wintering site for the eastern population.

Explore the sources

U.S. Fish & Wildlife Service · fws.gov

CONABIO · Monarch migration · biomx.biodiversidad.gob.mx