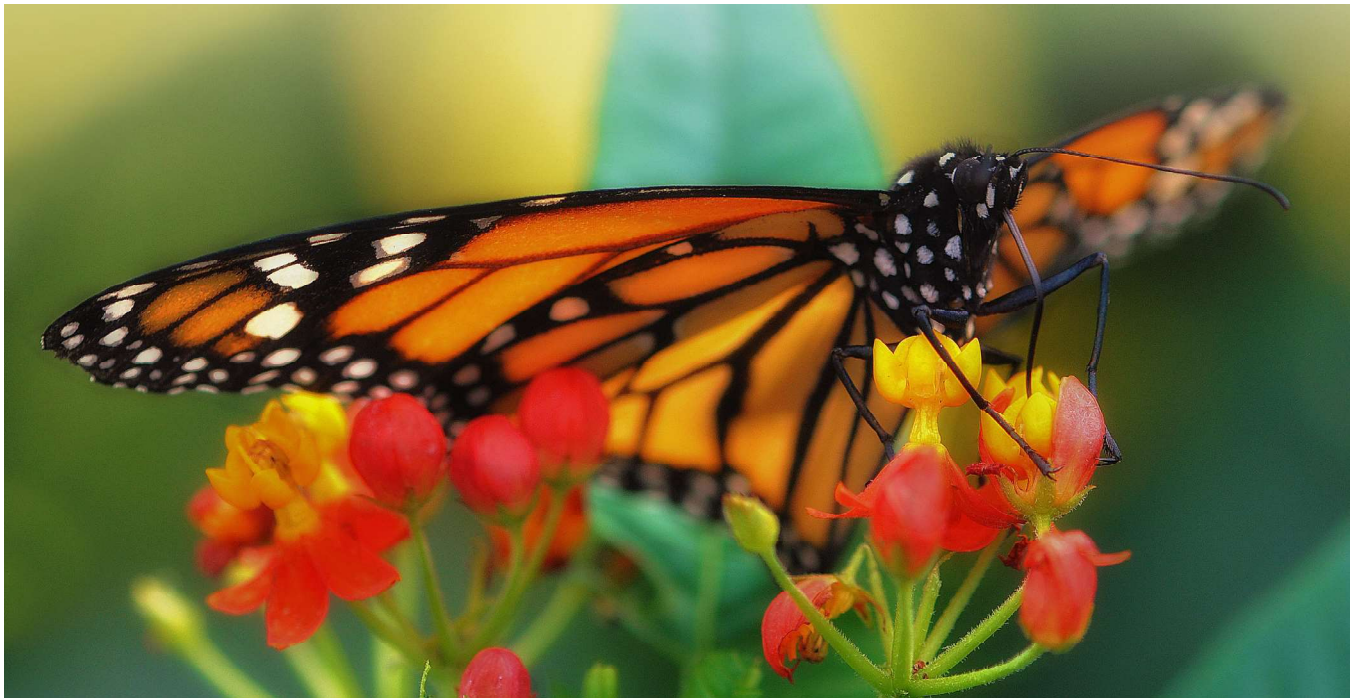


On a Mission for the Monarch

Elementary school cycles 2 and 3



Science and technology learning situation
involving monarch butterfly conservation

TEACHER'S GUIDE

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General objectives

1. Learn more about a player in biodiversity and its habitat.
2. Be able to identify common milkweed (*Asclepias syriaca*).
3. Recognize the various development stages of the monarch (egg, caterpillar, chrysalis* and adult).
4. Take concrete action to protect an endangered species.
5. Apply an observation protocol.
6. Participate in a citizen science project.

Essential knowledge

LIVING THINGS

MATTER

- › Characteristics of living things
 - metabolism of plants and animals
 - reproduction of plants and animals
- › Organization of living things
 - anatomy of animals and plants
- › Transformations of living things
 - growth of plants and animals

ENERGY

- › Nutrition for animals

SYSTEMS AND INTERACTION

- › Interaction between living organisms and their environment
 - living things and their habitats
- › Interaction between humans and their environment

STRATEGIES

STRATEGIES FOR RECORDING, USING AND INTERPRETING INFORMATION

- › Using different tools for recording information

COMMUNICATION STRATEGIES

- › Exchanging information



** The terms "pupa" and "chrysalis" are synonyms, but only the latter will be used hereafter. The term "cocoon", however, refers to the silky envelope some moths build to protect their chrysalis.*

Before you start

1. Choosing a location

To carry out your mission, you'll need a location where milkweed grows. Make sure it meets the following requirements:

1. Sufficient number of milkweed plants (at least 1 per student).
2. Authorized access (ask for authorization if it's on private land).
3. Safe location (*see Appendix 2*).

What should you do if you can't find a suitable location?

If you have no access to a milkweed patch in a garden or field, you can create your own **monarch oasis**. When the milkweed is mature (it takes one or two years), you'll be able to join *Mission Monarch*!

You can also consult the observation map on the *Mission Monarch* website to find locations with milkweed.



In the foreground, a common milkweed. In the background, swamp milkweeds.
Photo: peganum

2. Procedure

STEP 1 - LEAVING ON A MISSION

Context, initial ideas and hypotheses
15 to 20 minutes

- › Summarize prior knowledge about monarchs
- › Note the recent decline in monarch populations
- › Look at possible causes and consequences of this decline

STEP 2 - BECOMING AN EXPERT

Planning
30 minutes

- › Find out what you need to know for your mission: the monarch life cycle (egg, caterpillar, chrysalis, butterfly), the relationship between monarchs and milkweed, and the annual cycle (reproduction and migration)

STEP 3 - PREPARING FOR THE MISSION

Planning (continued)
15 minutes

- › Familiarize yourself with the protocol
- › Team up and look at the tasks and responsibilities

STEP 4 - TAKING ACTION!

Getting out in the field
45 minutes, excluding transportation

- › Field trip
- › Make observations
- › Collect data

STEP 5 - SHARING THE FINDINGS

Outcome
30 minutes

- › Share your data with peers
- › Share your data online
- › Share your thoughts on the meaning and relevance of the data
- › Make new hypotheses based on this data



3. Materials required



STEP	TEACHER'S MATERIALS	STUDENT'S MATERIALS
STEP 1 Leaving on a mission	PowerPoint presentation slides 1-2	Student's booklet (p. 2-3)
STEP 2 Becoming an expert	PowerPoint presentation Script (p. 12-16 of this file) slides 3-24	Student's booklet (p. 4-8) Pencil crayons (yellow, orange, red and blue)
STEP 3 Planning the mission	PowerPoint presentation slides 25-28	Student's booklet (p. 10)
STEP 4 Taking action!	Safety equipment (first aid kit, cellphone)	For each team: <ul style="list-style-type: none"> • Field observation form (p. 11 of the booklet) • Milkweed identification sheet • Monarch identification sheet • Pencil • Writing pad • <i>Commonly confused</i> identification sheet Optional <ul style="list-style-type: none"> • <i>Milkweed community</i> identification sheet • Camera • Magnifying glass
STEP 5 Outcome	Présentation PowerPoint diapositives 29-34	Student's booklet (p. 12) Completed field observation forms

4. Safety and imponderables

RECOMMENDATIONS FOR STUDENTS' COMFORT AND SAFETY

- › Wear closed shoes, long pants, and a hat.
- › Always stay in teams and keep your teacher in sight.
- › Avoid touching monarch eggs and caterpillars in order not to harm them.
- › Don't go outside the boundaries set by the teacher.
- › Choose a secure site (*see Appendix 2*).

IS MILKWEED POISONOUS?

Milkweed produces a white and sticky latex that contains cardenolides: bad tasting, toxic molecules that contribute to the plant's defense. Monarchs are not affected by these molecules; to the contrary, they store them up and use them for their own defense.

For a human to get poisoned, he or she would have to eat a lot of milkweed. Because of the plant's bitter taste, this is highly unlikely.

As for dermatitis, it is generally individuals who are in repeated and extensive contact with milkweed, such as horticulturists and entomologists, who suffer skin irritation.

WHAT IF IT RAINS?

The mission can be postponed, or you can go out anyway. Rain doesn't affect milkweed or caterpillars. If you do go out in the rain, the following materials are recommended for the students' comfort and to protect the data sheets:

- › Rain coat, rain pants and rubber boots
- › Plastics bags to protect data sheets (a writing pad fits in a large transparent Ziploc-style bag)
- › Towels



Activity steps

STEP 1 LEAVING ON A MISSION

Context,
initial ideas and
hypotheses

Length: 15-20 minutes

Slides: 1-2

Student's booklet: 2-3



SPECIFIC OBJECTIVES

- › Come up with hypotheses to explain the monarch's fragile ecological situation.
- › Be willing and able to help monarchs.

MATERIALS

- › PowerPoint presentation
- › Student's booklet
- › The monarch identification sheet also contains more pictures and information.

PROCEDURE

- › Show a picture of a monarch and ask students what they know about the butterfly. Some may have participated in the *Monarchs Without Borders* program,¹ at school or at home, and will have lots to say about it!

Note: All the subjects tackled in this section will be reviewed in detail in step 2. The text under the questions is there to serve as a starting point for the teacher during the group discussion.

OVERVIEW: THE MONARCHS NEED YOUR HELP!

Here are suggested questions to start a discussion with the students, followed by possible hypotheses by students.

[SLIDE 1]

1. **Do you know this insect? What is it?**
How can you tell it's an insect?

It's a monarch! It's an insect because it has wings and antennae (insects also have six legs and a three-part body, with a head, a thorax, and an abdomen, but the front legs abdomen can't be seen here).

2. **Is it a "youngster" or an adult?**
What do "baby" monarchs look like?

The picture shows an adult. Before becoming adults, monarchs go through several steps, including the caterpillar. The monarch caterpillar is striped with white, black and yellow. It has a pair of black tentacles at each end of its body, which look like antennae.

¹ Monarchs Without Borders was a program offered by the Insectarium between 1994 and 2016. Participants received a rearing kit comprising caterpillars and chrysalises, and they could observe their development until monarchs became adults. Butterflies were tagged and released in time for migration.

STEP 1 LEAVING ON A MISSION

(continued)

3. **Have you ever seen a monarch? If so, do you remember the place where you saw it? Did you notice if there were plants around?**

Adults are often seen around flowering plants, as they feed on nectar. Caterpillars are generally found on a plant called “milkweed,” which grows in open spaces such as fields and roadsides.

4. **Monarchs are known as great travellers. Do you know why?**

Monarchs emerging at the end of summer undertake a 4000 km-plus migration to Mexico, where they spend the winter in sacred fir forests. The sites where they spend the winter are called overwintering sites.

[SLIDE 2]

5. **How are monarchs doing?**

Not too well. There are two monarch populations in North America: the western and the eastern populations. Butterflies we see in Canada (with the exception of British Columbia) are part of the eastern population. Some time ago, there were many more monarchs than there are now. Scientists think that there are 10 times fewer monarchs now than 20 years ago. In Canada, the monarch is a species at risk.

6. **Why are monarchs at risk?**

There are several causes. The fall in the number of milkweed plants is one. People long considered it a weed we had to get rid of. Moreover, large expanses of vacant land, well suited to milkweed, are rarer. The result is that monarchs have a hard time finding places to lay their eggs.



STEP 1 LEAVING ON A MISSION

(continued)

After discussing the challenges the monarchs face, invite the students to take action.

The good news is we can do something about it. We can help by protecting the locations where monarchs reproduce. But first, we need to know what those locations are! Scientists are working on it, and they've invited all friends of monarchs to help.

The mission is to locate milkweed plants, check whether they host monarch caterpillars, and share those findings with researchers. The mission is simple, but it can be a great help for scientists... and for monarchs! But before leaving on a mission, let's become monarch experts.

Possible questions

Here are some questions students could ask themselves, to use the scientific method. The questions are oriented toward expected results and toward the link between monarchs and milkweed.

- › What am I going to find in the field?
- › Am I going to find monarchs?

Based on their questions, students can think of hypotheses they will test using observations made in the field.

- › I think I will find monarch caterpillars on milkweed leaves, since the caterpillar feeds on this plant.
- › I think I won't find any monarchs, since it is a species at risk.
- › I think I won't find any monarchs, because they have already gone to Mexico for the winter.



Activity steps

STEP 2 BECOMING AN EXPERT: PLANNING

Length: 30 minutes
Slides: 3-25
Student's booklet: 4-8

SPECIFIC OBJECTIVES

- › Identify the four stages in the monarch's life cycle.
- › Identify common milkweed (*Asclepias syriaca*).
- › Describe the relationship between monarchs and milkweed.
- › Explain the monarch's migration and the reason for their presence in Canada (reproduction).

MATERIALS

- › PowerPoint presentation
- › Student's booklet
- › Pencil crayons (yellow, orange, red and blue)

PROCEDURE

(following the slides and the student's booklet)

- › Introduction to monarch biology
- › Vocabulary (link words to their definition in the student's booklet; the words appear in **bold** on the next page)
- › Colouring the monarch's life cycle
- › Quiz



STEP 2 BECOMING AN EXPERT: PLANNING

(continued)



LIFE CYCLE

Slides 3-4; Booklet p. 4

[SLIDE 3]

Let's learn more about this butterfly. During its life, a monarch goes through four major steps: egg, caterpillar, chrysalis and adult (butterfly).

[SLIDE 4]

The egg is small and yellowish, and has longitudinal stripes. It takes 3 to 5 days for the egg to **hatch**.

Leave time for students to colour the egg pale yellow in their booklets.

From the egg emerges a **caterpillar**. At first it is really small, only a few millimetres long, but it grows quickly since it does nothing but eat. The monarch caterpillars are easily recognizable with their yellow, white and black stripes, as well as their pairs of black **tentacles**. Even though they can feel their surroundings with them, these tentacles are not antennae.

Leave time for students to draw the two pairs of tentacles.

The caterpillar **molts** four times, meaning it changes its "skin," or exoskeleton. After 7 to 17 days, the caterpillar is ready for the next step: it finds somewhere sheltered and becomes a chrysalis. During this step, the monarch can't move to escape predators. However, the green chrysalis blends into its surroundings, and its golden spots reflect the light, making it almost invisible! A chrysalis can be found in different places: under a branch, under a leaf, even in a door frame.

Leave time for students to draw the chrysalis's stalk.

During the chrysalis stage, the insect undergoes some major transformations. This step lasts from 8 to 15 days, and then the butterfly **emerges** from its chrysalis. After a few hours spreading and drying its black-veined orange wings, it can take off looking for nectar and a mate.

Monarchs live as adults for about a month. During that time, it mates and feeds on **nectar**-producing flowers. After mating, the female starts looking for milkweed to lay her eggs... and the cycle starts over!

Leave time for students to draw the veins on the monarch wings.

STEP 2 BECOMING AN EXPERT: PLANNING

(continued)

MILKWEED

Slides 5-10; booklet p. 6

[SLIDE 5]

Milkweed is the monarch's **host plant**, meaning eggs are laid only on this plant, since caterpillars eat nothing else. Thus, milkweed is necessary for monarchs to reproduce.

There are several species of milkweed, but the most common is... common milkweed!

[SLIDE 6]

The leaves of common milkweed are wide and opposite (facing one another) and may be a bit hairy on the underside.

[SLIDE 7]

Its flowers are pink and form an umbel – an umbrella shape.

[SLIDE 8]

Its fruit form at the end of summer. They have a rough green skin and seeds with long strands of silk.

[SLIDE 9]

Milkweed contains **latex**, a white and sticky liquid which looks like milk and is toxic to herbivores. The monarch caterpillar has the ability to accumulate the toxins in its own body. They give it a bad taste and make sick its predators, such as birds, which learn quickly to avoid monarchs!

[SLIDE 10]

Milkweed loves sun! It grows readily in open spaces such as vacant fields, roadsides and some gardens.



STEP 2 BECOMING AN EXPERT: PLANNING (continued)



ANNUAL CYCLE

Slides 11-18; booklet p. 7

Explain the colouring exercise (slide 12)

[SLIDE 11]

Monarchs can be seen in Canada all summer long, from May until October, but their number varies throughout the season.

[SLIDE 12]

When is the number of monarchs highest in Canada?

Looking at the next slides, colour:

In **yellow**, the months when there are only a few monarchs;

In **orange**, the months when there are a lot of monarchs;

In **red**, the months when the number of monarchs is highest;

In **blue**, the months when there are no monarchs around.

[SLIDE 13]

May and June

Some monarchs make their way to Canada, but not that many. They are mainly adults born in the United States. If they come all the way up to us, it's because they're looking for milkweed where they can lay their eggs.

So a few monarchs can be seen in May and June. What colour are we going to use for the corresponding triangles? Does everyone agree?

If the students don't agree, they can raise their hands to vote.

The right answer is yellow.

[SLIDE 14]

July

Monarchs have arrived for real! They lay eggs and multiply. More and more caterpillars can be seen on milkweed.

There are lots of monarchs in July, but not as many as in August. What colour is right for July?

(orange)

[SLIDE 15]

August

Monarchs have multiplied! Lots of adults can be seen, as well as eggs, caterpillars and chrysalises.

It's peak monarch abundance! So what colour is it going to be?

(red)

[SLIDE 16]

September

There are still plenty of monarchs around, but some of them are starting their southward migration. Adults emerging at the end of summer don't lay eggs, so there are fewer and fewer caterpillars.

Even though monarchs are abundant at the beginning of September, caterpillar and butterfly numbers go down throughout the month. So this month should be coloured... orange.

STEP 2

BECOMING AN EXPERT: PLANNING

(continued)



[SLIDE 17]

October

Monarchs are much rarer. They have almost all left for the south. There are no more caterpillars, and only some rare adults.

Since there are just a few remaining butterflies, the colour will be yellow.

[SLIDE 18]

November to May

There are no monarchs in Canada during this period. Where are they?

[SLIDE 19]

By the end of October, monarchs reach their **overwintering sites**, in Mexico. They spend the winter there and, the following spring, they come out of their **diapause**. Then they're ready for mating and another migration!

After mating, females head north looking for milkweed to lay their eggs on in the southern United States. The resulting new generation, once it reaches the adult stage, will pursue their northward migration, mating and laying eggs, and so on until they reach Canada again, in May!

[SLIDE 20]

Here is the **Quiz** to test your students' knowledge:

QUIZ

Booklet p. 8

[SLIDE 21]

1. Which step in the life cycle comes after the caterpillar?

The chrysalis

[SLIDE 21]

2. True or false? There are monarchs on every milkweed plant.

False!

In fact, on most plants, there are no eggs or caterpillars. You often have to examine several plants before finding a monarch. Also, there is generally only one egg per plant.

[SLIDE 21]

3. What do monarch caterpillars eat?

a. milkweed b. nectar c. eggs

[SLIDE 21]

4. True or false? Monarchs come to Canada to reproduce.

True!

Milkweed is abundant in southern Canada during the summer, and monarch caterpillars eat nothing else.

[SLIDE 21]

5. Where does milkweed grow?

a. On roadsides b. In forests
c. Alongside streams d. In fields

Activity steps

STEP 3 PREPARING THE MISSION: PLANNING (CONTINUED)

Length: 15 minutes
Slides: 26-29
Student's booklet: p. 10



SPECIFIC OBJECTIVES

- › Be able to carry out the *Mission Monarch* protocol.

MATERIALS

- › PowerPoint presentation
- › Student's booklet

PROCEDURE

- › Present the mission and the tasks students will be carrying out in the field (identifying milkweed, counting monarchs, taking notes, checking).
- › Make teams of three.
- › Create an account on the *Mission Monarch* website.

[SLIDE 26]

Here is the students' mission:

INVITING STUDENTS

[SLIDE 27]

ATTENTION! MONARCHS ARE ENDANGERED!

We are working to protect them, but we need YOUR HELP to succeed!

We know milkweed grows in your region. Your mission is to find it and see if there are monarchs around. In teams of three, you'll be responsible for exploring a site your group will visit.

[SLIDE 28]

YOUR MISSION:

- › Find milkweed.
- › Examine **every** leaf, above and below.
- › Note the number of eggs, chrysalises and caterpillars.
- › Change roles for the next plant.
- › Send your findings to the *Mission Monarch* scientists!

So, are you ready to go on a mission?

The *Mission Monarch* scientists' team

Activity steps

STEP 4 TAKING ACTION: IN THE FIELD

*Length: 45 minutes
(not including travel time)*

SPECIFIC OBJECTIVES

- › Work in teams
- › Use scientific tools (*tables, identification guides*)
- › Take concrete action for the environment

MATERIALS

- › Monarch and milkweed identification sheets
- › *Commonly confused* and *Milkweed community* identification sheets
- › Field observation forms (*available online and in the student's booklet, p. 11*)
- › Writing pads, pencils
- › Camera, magnifying glass (*optional*)
- › Hat
- › Sun screen
- › Closed shoes
- › Long pants

PROCEDURE

- › Form teams
- › Give out materials
- › Spread teams out in the field, in order to avoid having everybody looking at the same spot
- › Observe!

Note: It's possible that students may see no monarchs. If so, it could be useful to observe the other milkweed-associated species, which are listed on the Milkweed community identification sheet.



Activity steps

STEP 5 SHARING THE FINDINGS: OUTCOME

Length: 30 minutes

Slides: 30-35

Student's booklet: p. 12

SPECIFIC OBJECTIVES

- › Share information with peers
- › Make hypotheses based on the new observations

MATERIALS

- › Completed field observation forms
- › Computer and internet access (to access the *Mission Monarch* website: espacepurlavie.ca/en/mission-monarch)
- › PowerPoint presentation

PROCEDURE

- › Sum up the findings of all teams.
- › Share your findings on the *Mission Monarch* website.
- › Think about the results and your initial hypotheses.
- › Encourage the students to go on more missions, outside the school.

Note:

- › *Use an up-to-date Internet browser for an optimal experience with the Mission Monarch online platform.*
- › *You will have to open a free account to share your findings.*

[SLIDE 30]

Make a summary of the observations made by students.

[SLIDE 31]

Click on the link to get to the *Mission Monarch* website. Click on “Sign up” to create an account. An account can be created for the whole group, or for each team.

[SLIDE 32]

Fill in the registration form.

[SLIDE 33]

Once the account is created, click on “Submit your mission” to reach the data sharing platform. Observations can be combined and shared as one mission, or each team can submit a mission. Once the field are filled, click on “Submit your mission”. And that's it!



STEP 5

SHARING THE FINDINGS: OUTCOME

(continued)



AVENUES FOR DISCUSSION

[SLIDE 34]

- › **Based on our results, what conclusions will researchers be able to draw?**

They can tell whether there is milkweed at this location, meaning that it is a potential habitat for the monarch. This is important and valuable information!

They can tell that there were ____ monarchs at that location, at that time of the year.

- › **If we found no monarchs, what does that tell us? Does it mean that there are never any monarchs here and that this place is not suitable?**

It's just as important to document the absence of monarchs as their presence. When we do science, we want to know everything!

The "zero" you wrote on your sheet just means that, at that time, there were no monarchs. It doesn't mean that there will never be monarchs there. Maybe there were some that have already turned into adults and flown away, or maybe a female will lay eggs later. That's why it's a good idea to do several missions at the same place but at different times.

- › **When would we have the highest chance of seeing monarch caterpillars?**

- In spring?

Unlikely. Monarchs are starting to arrive in Canada, and haven't had much time to lay eggs yet.

- In early summer?

Monarchs have started to lay eggs and some of them have hatched. You'll likely see some caterpillars, even though they are not yet abundant.

- In late summer?

Monarchs that were born in Canada are now mature and reproduce, laying eggs from which caterpillars emerge. It's the best time of the year to see caterpillars!

- In early fall?

Monarchs that emerge in late summer don't lay eggs. Adults can be seen flying around but caterpillars are unlikely to be found.

[SLIDE 35]

After the mission

Complementary activities

WHAT CAN YOU DO WHEN THE MISSION IS OVER?

1. GO ON MORE MISSIONS!

You can repeat the mission as many times as you wish. The more often a place is visited, the more precise the data get, and higher your chances of making interesting finds – and not only monarchs! Many other fascinating insects can be observed where milkweed grows.

Students can also carry out missions at home. Milkweed grows in many locations, and scientists are always glad to add sites to their database.

2. SHARE YOUR DISCOVERIES!

Be proud of your findings! Show your results to other students, in the school newsletter, for example. You can also write to the local newspaper to report on what your school group is doing to help monarchs.

3. LET MONARCHS INSPIRE YOU!

Art, poetry, scientific research, physical activity... monarchs can inspire all sorts of creations! Why not organize an exhibition and invite the young scientists' families?



Vocabulary

ANNUAL CYCLE

The cycle through which a population goes in one year. This cycle includes overwintering, northward migration, reproduction and southward migration. It generally involves four generations of butterflies.

DIAPAUSE

In insects, a period when their metabolism slows down, generally occurring under harsh environmental conditions such as winter.

EMERGENCE

The moment when the adult monarch comes out of its chrysalis.

HOST PLANT

Plant on which the caterpillar feeds. It is necessary for insect development.

LATEX

White and toxic liquid in milkweed stems and leaves.

LIFE CYCLE

The cycle through which each monarch goes in its life. This cycle includes four steps: egg, caterpillar, chrysalis and adult (butterfly).

MOLTING

In insects, replacement of the exoskeleton (external skeleton, "carapace" or "skin") to allow them to grow.

NECTAR

Sugar-rich liquid produced in flowers, on which adult monarchs feed.

OVERWINTERING SITE

Place where monarchs gather for the winter. The eastern monarchs overwinter in sacred fir forests, in the mountains of central Mexico.

TENTACLES

Sensory organs. The monarch caterpillar has two pairs, one at each end of its body.

TO HATCH

The moment when the caterpillar comes out of its egg.



Appendix 1

Presentation slides

SLIDE	STEP	CONTENT
1	1	Introduction (monarch picture)
2	1	Monarch decline
3	2	Life cycle: intro
4	2	Life cycle: overview
5	2	Milkweed: intro
6	2	Milkweed: leaves
7	2	Milkweed: flowers
8	2	Milkweed: fruit
9	2	Milkweed: latex
10	2	Milkweed: habitat
11	2	Annual cycle: intro
12	2	Annual cycle: instructions
13	2	Annual cycle: May & June
14	2	Annual cycle: July
15	2	Annual cycle: August
16	2	Annual cycle: September
17	2	Annual cycle: October
18	2	Annual cycle: November to April
19	2	Photo: overwintering area
20	2	Quiz: intro

SLIDE	STEP	CONTENT
21	2	Quiz: question 1 (ans.: chrysalis)
22	2	Quiz: question 2 (ans.: false)
23	2	Quiz: question 3 (ans.: milkweed)
24	2	Quiz: question 4 (ans.: true)
25	2	Quiz: question 5 (ans.: roads, streams and fields)
26	3	Preparation: instructions intro
27	3	Preparation: instructions 1
28	3	Preparation: instructions 2
29	3	Preparation: instructions 3
30	5	Outcomes
31	5	Sign up 1
32	5	Sign up 2
33	5	Online data sharing
34	5	Thoughts on taking action for the environment
35	5	Conclusion



Appendix 2

To consider for student security

IDENTIFICATION OF POISON IVY (*Toxicodendron radicans*)

Poison ivy (*Toxicodendron radicans*) is a toxic plant native to North America. It was found in every Canadian province. Contact of skin with this plant causes dermatitis in most people. Poison ivy grows in a wide range of habitats and varies greatly in size and form (shrub, vine). The following traits allow confident identification.



- Leaf made of three leaflets (circled in red)
- Asymmetrical leaflets, with irregular and sometimes toothed edges
- Central petiole (circled in white) longer than the two others

For more information:
espacepurlavie.ca/en/learn-recognize-poison-ivy

Poison ivy leaf
Photo: Jardin botanique de Montréal (Lise Servant)

LYME DISEASE PREVENTION

During the last years, Lyme disease has become a health issue in eastern Canada. This disease is transmitted to humans by black-footed ticks (*Ixodes scapularis*) infected by bacteria of the genus *Borrelia*. It is the infection by those bacteria that causes Lyme disease in humans.



Blacklegged (deer) tick
Photo: USDA

To avoid ticks, wear long pants and closed shoes when going in the field. Ticks hang out in tall grasses. It is thus preferable to avoid this type of vegetation.

To get information on Lyme disease specific to your province, visit:
www.canada.ca/en/public-health/services/diseases/lyme-disease/provincial-territorial-resources.html



Mission Monarch, being run by the Space for Life Insectarium,
is a community science program documenting
the monarch's reproductive success.

The program is part of an international research
and education effort aimed at saving the migratory populations
of this endangered species.

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