



LIFE GRECABAT
(LIFE17 NAT/GR/000522)



«Greek Caves and Bats:
Management Actions and Change of Attitude»

Educational Activities for School Students



STUDENT'S BOOK



ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
UNIVERSITY OF CRETE



Μουσείο
Φυσικής
Ιστορίας
Κρήτης
ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
Natural History
Museum of Crete



Ινστιτούτο Σπηλαιολογικών
Ερευνών Ελλάδας
Hellenic Institute of
Speleological Research



ΑΤΕΠΕ
ΔΙΑΧΕΙΡΙΣΗ ΟΙΚΟΣΥΣΤΗΜΑΤΩΝ
atepe - ECOSYSTEM MANAGEMENT



ΥΠΟΥΡΓΕΙΟ
ΠΕΡΙΒΑΛΛΟΝΤΟΣ
& ΕΝΕΡΓΕΙΑΣ
MINISTRY OF ENVIRONMENT AND ENERGY



ΠΡΑΣΙΝΟ ΤΑΜΕΙΟ
GREEN FUND

Cofunded by the **European Commission**. With the contribution of the **Green Fund**.
Supported by the **A.G. Leventis Foundation** and the **Stavros Niarchos Foundation**.



ΙΔΡΥΜΑ ΣΤΑΥΡΟΣ ΝΙΑΡΧΟΣ
STAVROS NIARCHOS
FOUNDATION



Α.Γ. ΛΕΒΕΝΤΙΣ
THE A.G. LEVENTIS FOUNDATION



Research, text and illustrations: Vasilis Hatzirvasanis

Graphic design: Aris Vidalis

Special thanks to Panagiotis Ageorgakakis (PG), Artemis Kafkaletou-Diez (AD), Giannis Nikoloudakis (GN), Giorgos Papamichael (GP) and Kaloust Paragamian (KP) for providing images and information, and to P. Georgakakis and K. Paragamia for the scientific editing.

Co-funded by the European Commission

With the contribution of the Green Fund

With the support of A.G. Leventis Foundation and the Stavros S. Niarchos Foundation.

Website of the LIFE GRECABAT project:

<https://www.lifegrecabat.eu>



ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
UNIVERSITY OF CRETE



Μουσείο
Φυσικής
Ιστορίας
Κρήτης



Ινστιτούτο Σπηλαιολογικών
Ερευνών Ελλάδας



ατεπε
ΔΙΑΧΕΙΡΙΣΗ ΟΙΚΟΣΥΣΤΗΜΑΤΩΝ



ΥΠΟΥΡΓΕΙΟ
ΠΕΡΙΒΑΛΛΟΝΤΟΣ
& ΕΝΕΡΓΕΙΑΣ



ΠΡΑΣΙΝΟ ΤΑΜΕΙΟ



ΙΣΝ / SNF
ΙΔΡΥΜΑ ΣΤΑΥΡΟΣ ΝΙΑΡΧΟΣ
STAVROS NIARCHOS
FOUNDATION



Ι Δ Ρ Υ Μ Α
Α.Γ. ΛΕΒΕΝΤΗ

Table of Contents

How was the bag designed?.....	4
Activities' Worksheets for children aged 5-9 (Grades 1-3).	5
A02. Stories with finger puppets	6
A03. Make a paper bat	7
A04. Do bats and humans have anything in common?.....	8
A05. Drive the bat inside its cave.....	9
Activities' Worksheets for children aged 9-12 (Grades 4-6).	10
B02. Become a bat.....	11
B10. Cave board game.....	15
Activities' Worksheets for children aged 12-15 (Grades 1-3)	17
C04. How will you manage a cave?.....	18
How can we learn more?	19



Life
GRECABAT

LIFE GRECABAT
(LIFE17 NAT/GR/000522)



How was the bag designed?

This bag contains learning activities for Primary and Secondary Education students.

The bag is part of the **LIFE17 NAT/GR/000522 - GRECABAT** ("Greek Caves and Bats: Management Actions and Change of Attitude", "Ελληνικά Σπήλαια και Χειρόπτερα: Διαχειριστικές Δράσεις και Αλλαγή Συμπεριφοράς") Program and its themes have been adjusted to the actions of the program. It deals with the relationship of bats and cave-dwelling invertebrates with their environment, the impact of human activity on them and the need to conserve our natural ecosystems.

To this purpose, it contains the following activities:

1. simpler and more complex activities (for children of different ages)
2. paper activities (ideally indoors, outdoors too)
3. single and group learning activities (encouraging cooperation and team work)
4. nature-based activities
5. activities to familiarize students with scientific methodology (observation, formulating hypotheses, outdoor samplings, drawing conclusions)
6. creative activities (to enhance artistic expression, creative writing)



Activities' Worksheets for children aged 5-9 (Grades 1-3)

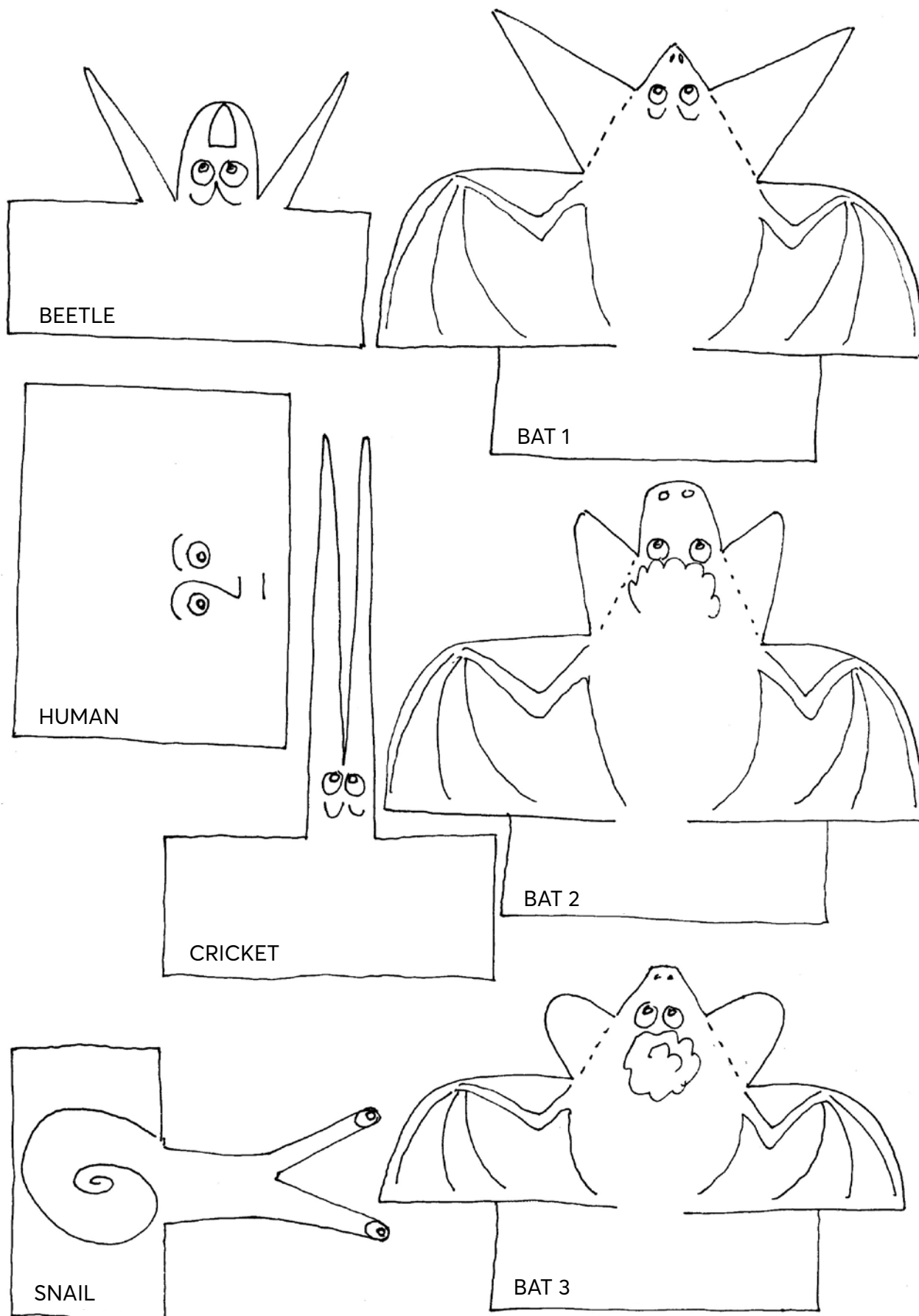


Life
GRECABAT

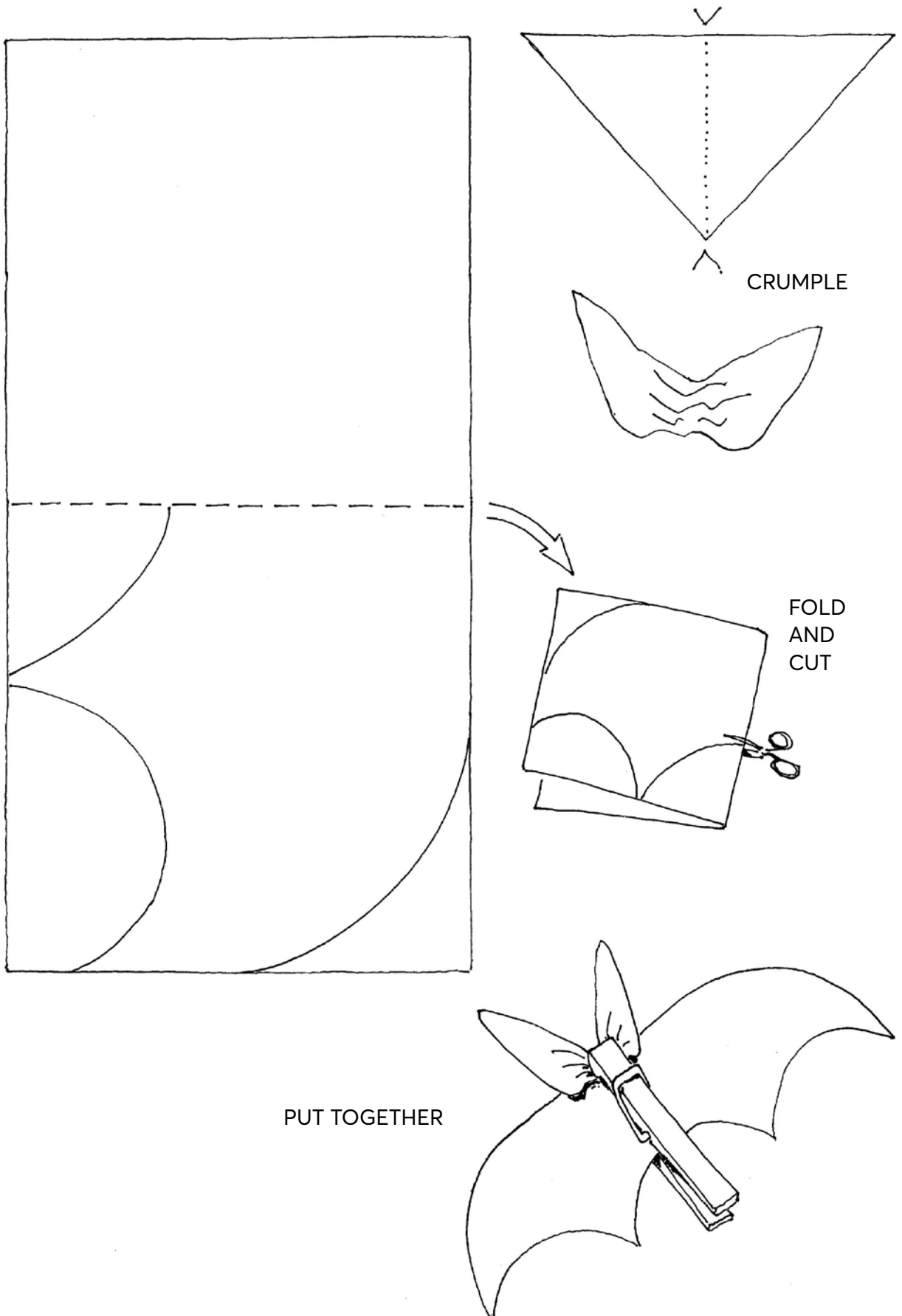
LIFE GRECABAT
(LIFE17 NAT/GR/000522)



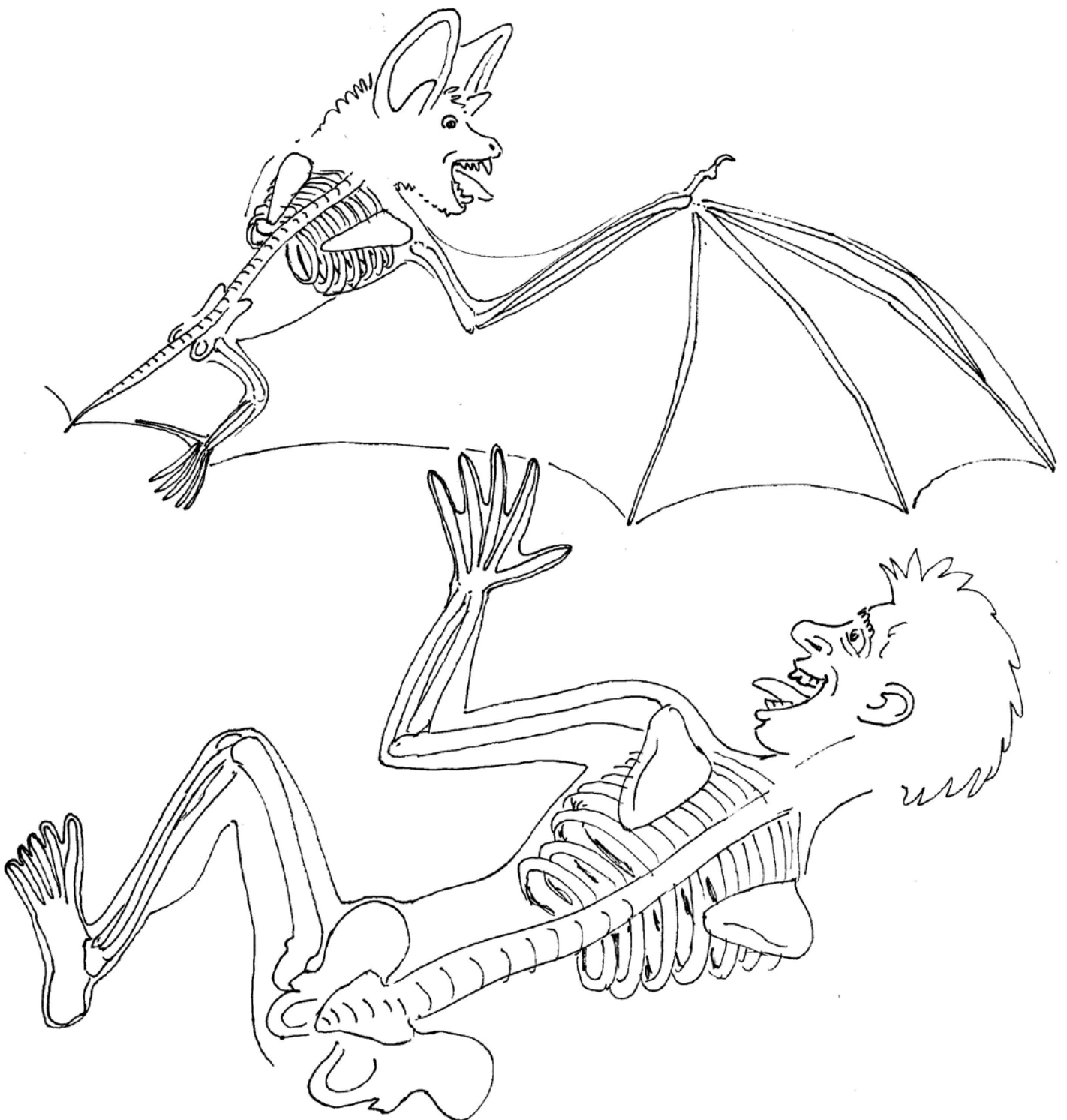
A02. Stories with finger puppets



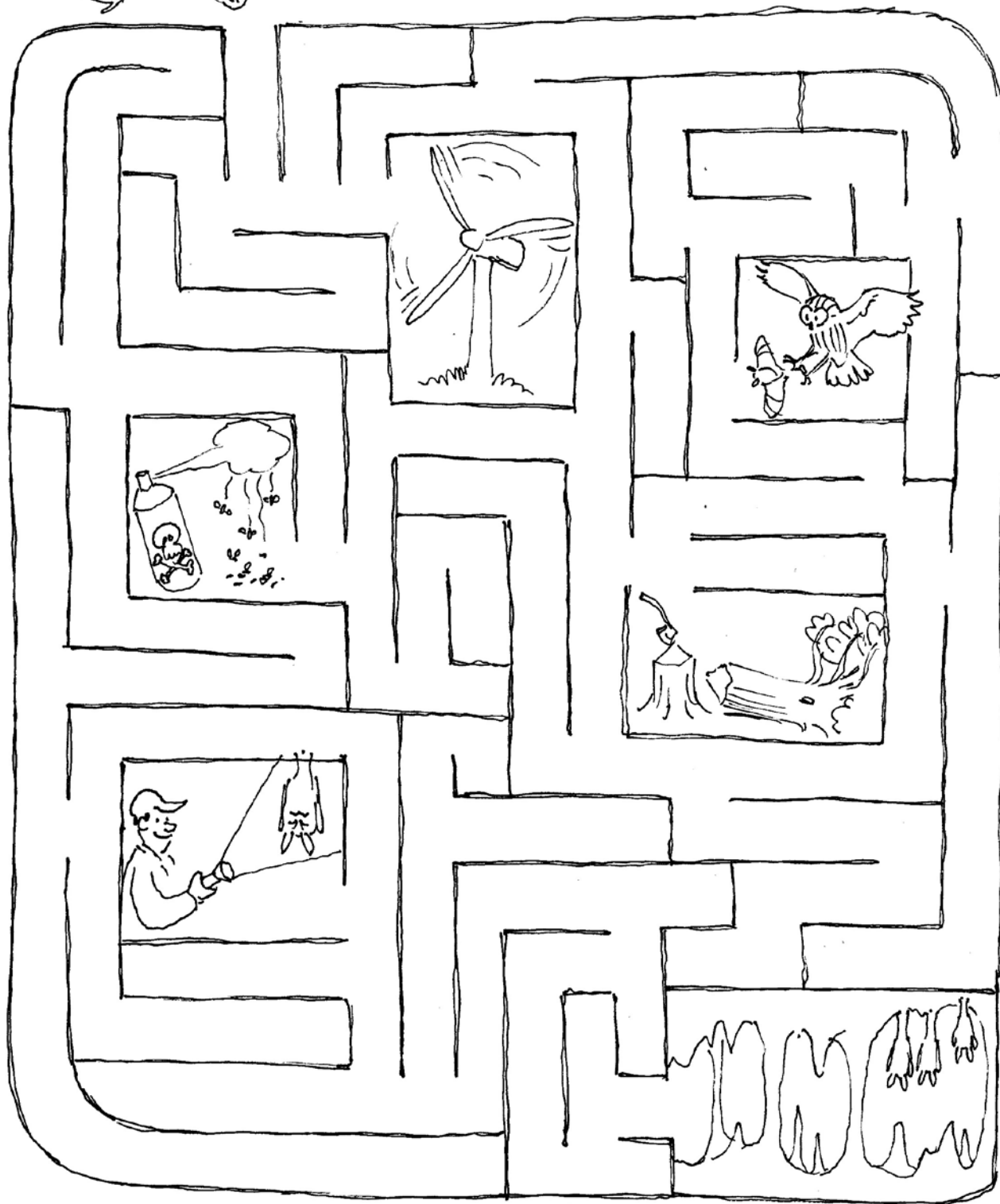
A03. Make a paper bat



A04. Do bats and humans have anything in common?



A05. Drive the bat inside its cave



Activities' Worksheets for children aged 9-12 (Grades 4-6)

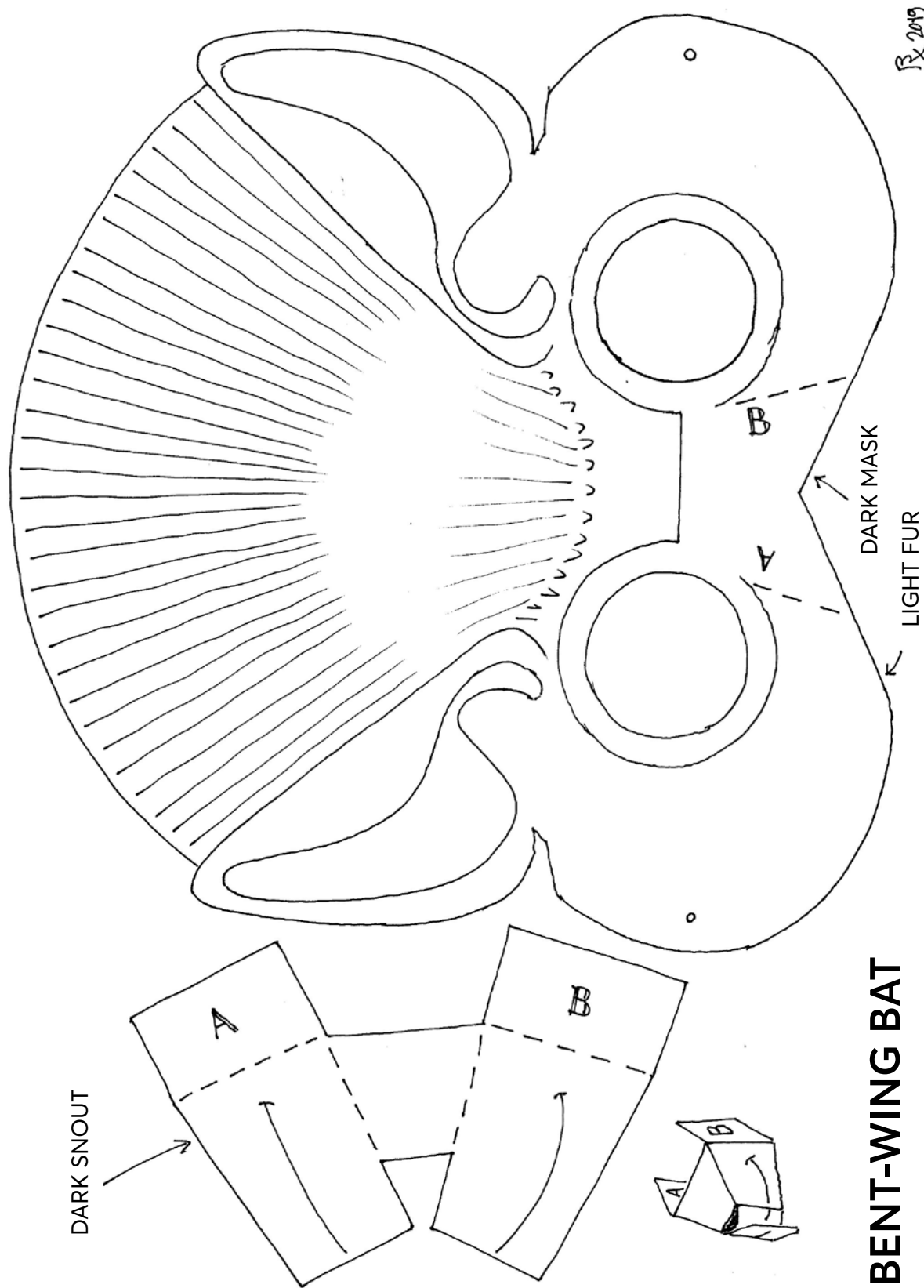


Life
GRECABAT

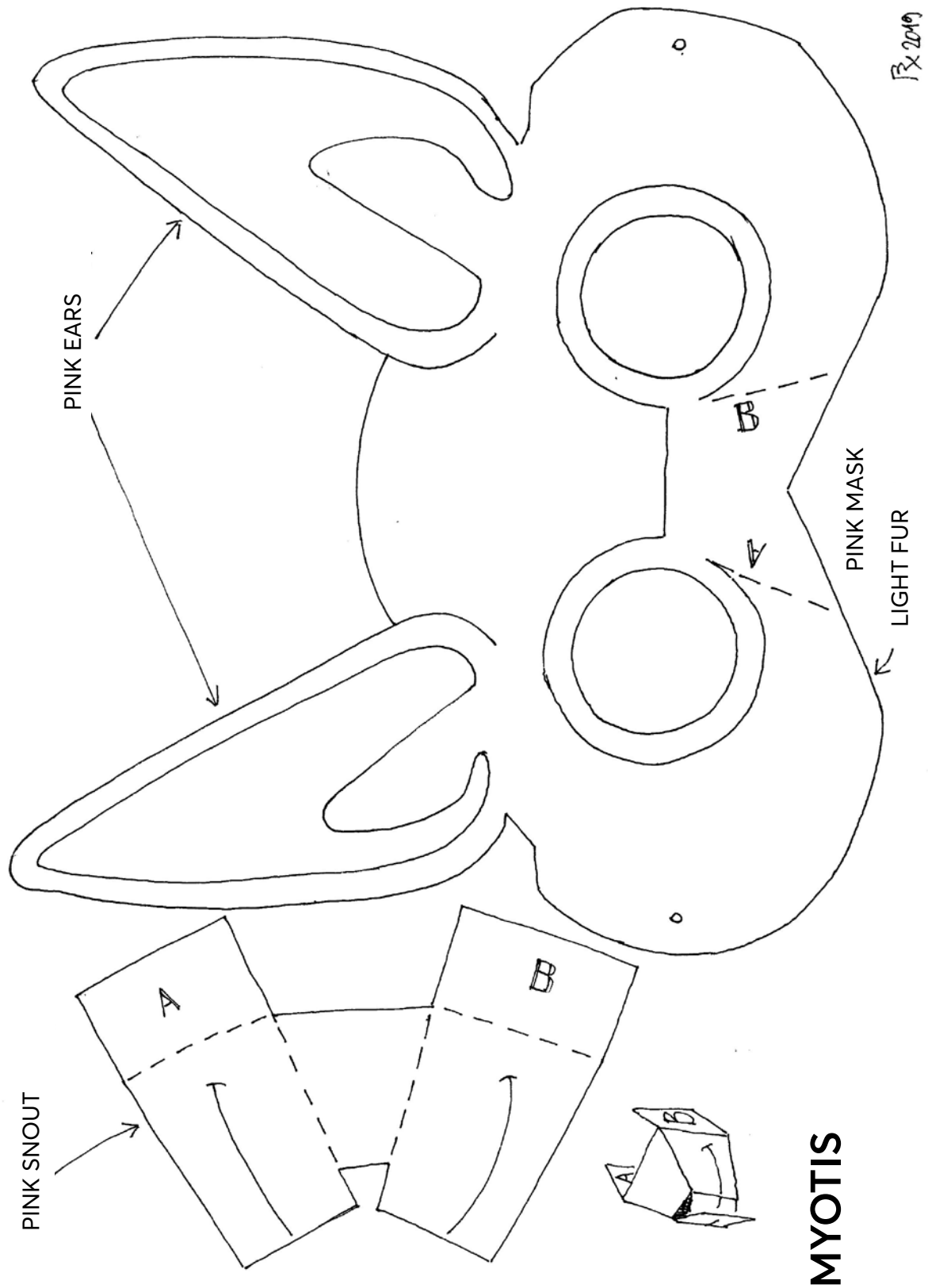
LIFE GRECABAT
(LIFE17 NAT/GR/000522)



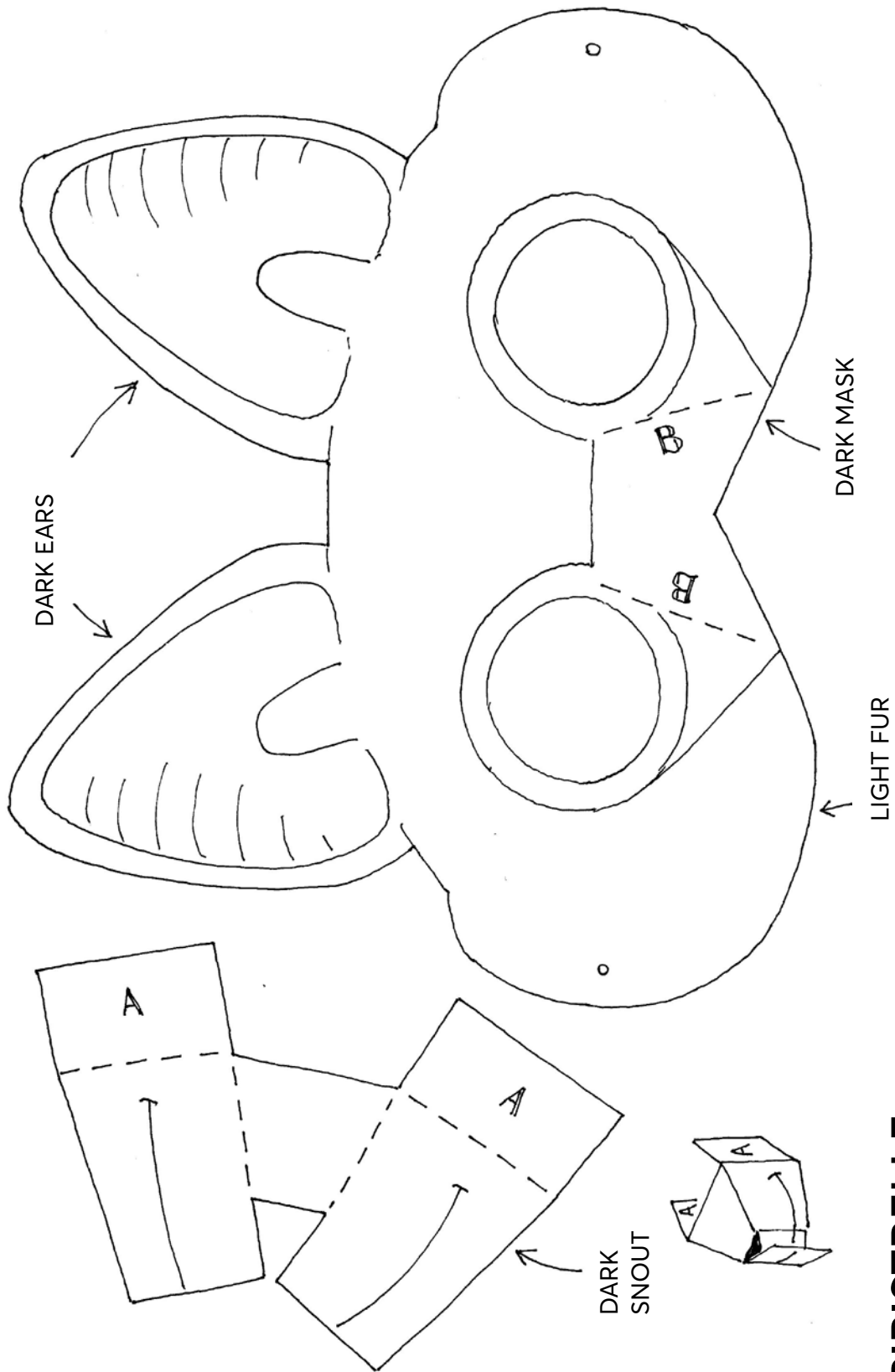
B02. Become a bat (A)



B02. Become a bat (B)

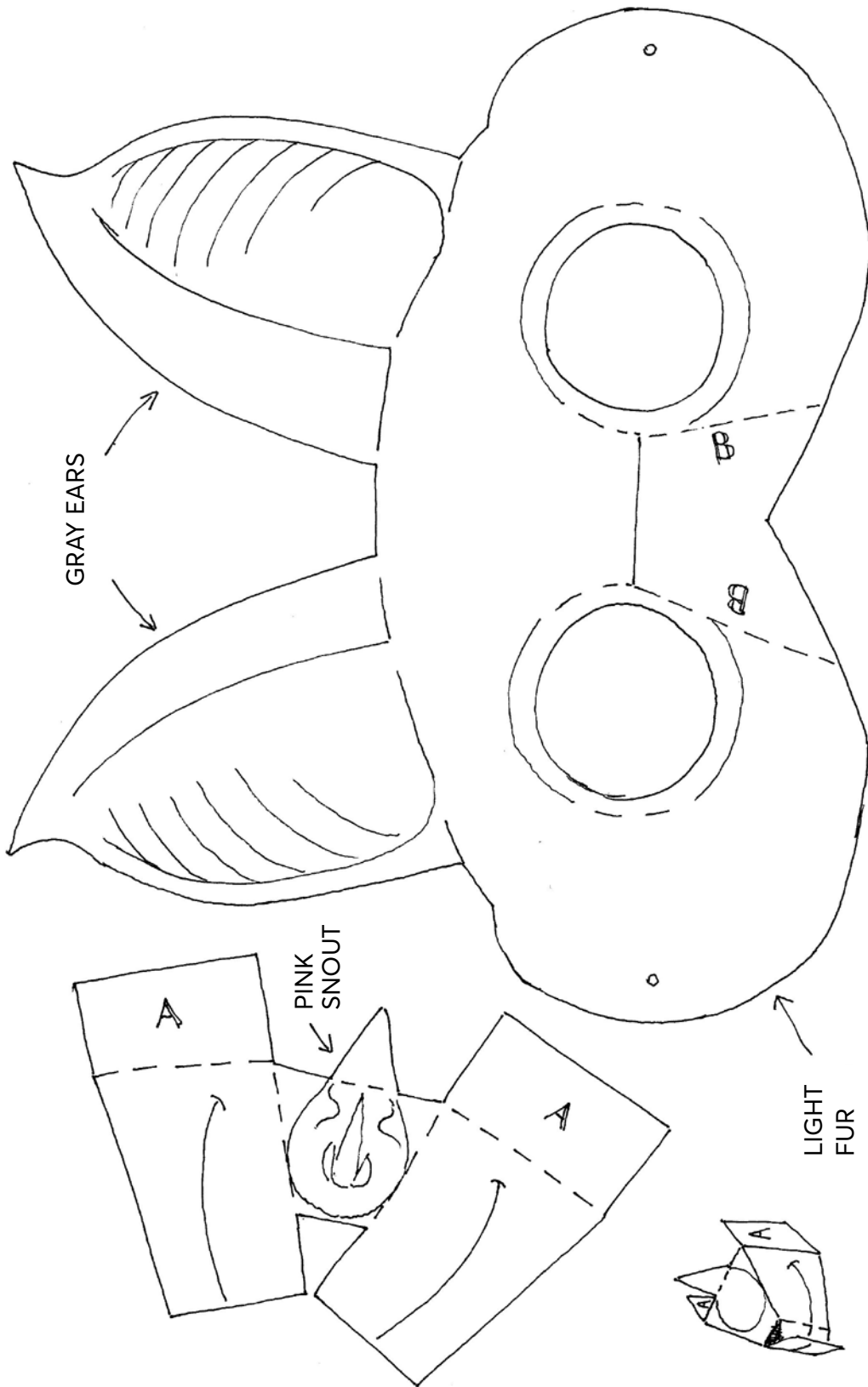


B02. Become a bat (C)



13-2019

B02. Become a bat (D)



HORSESHOE BAT

B10. Cave board game (A)

Caves are used as shelters for many bat species because they can sleep there safely during the day and spend the winter without getting noticed by hawks and ferrets.

Caves are permanently inhabited by cave-dwelling crickets (we call them dolycopods because they have very tiny legs) and other cave-dwelling invertebrates (beetles, snails, spiders, isopods, millipedes etc.) that can't live outside the caves.

Caves are also visited by humans, so that they can enjoy them or throw their garbage in them.

Can all these live together? Play the game and find out.

You will need:

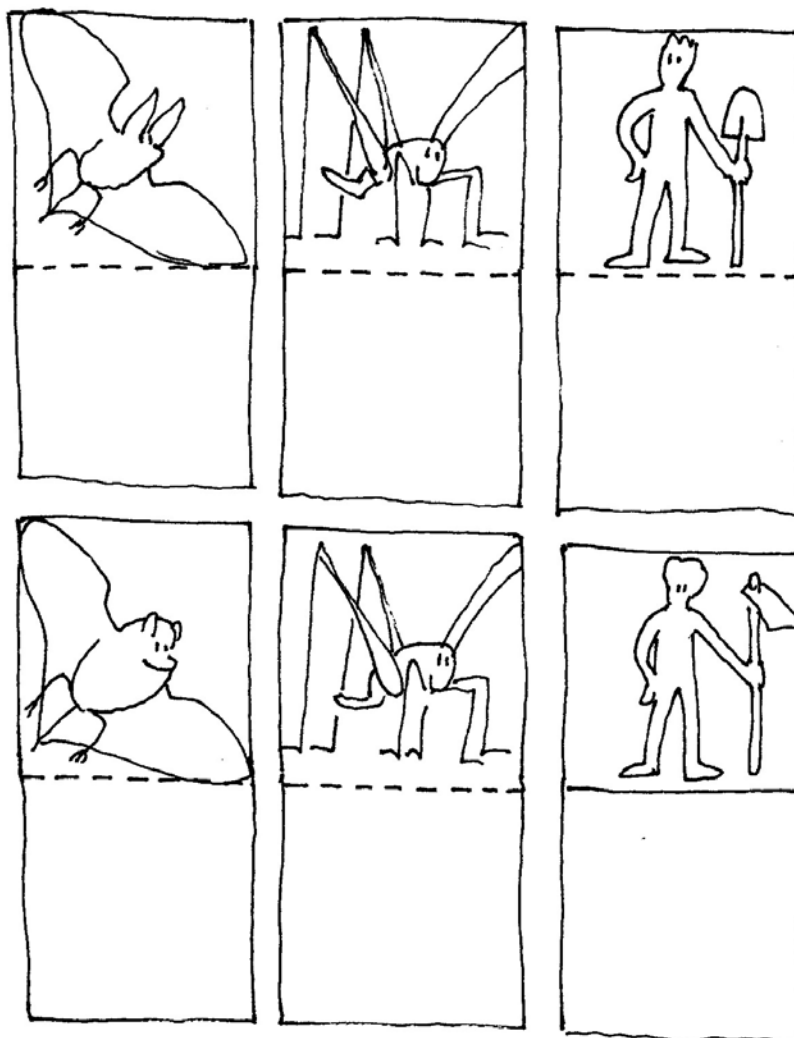
- One die
- Pawns (you can cut out the ones shown here)

How to play...

Each of you must pick a character: a bat who hunts moths and sleeps by hanging from the roof of the cave, a dolycopod (cave-dwelling cricket) who munches on guano (bat manure) or a human who wants to change the cave and adjust it to their needs? Along the way, each of you will sometimes get and sometimes lose something (often as a result of someone else's actions).

Roll the die in turns and move the same number of squares. Each square explains the player what they are going to be facing when they get there and how many squares forwards or backwards they must move.

The winner is the person who reaches the end first.



B10. Cave board game (B)

32 END

31

30

29 For you, the cave is just rocks and you ignore its unique wild life (Move 3 BACK)

28 Visitors keep walking on the guano and the cave-dwelling invertebrates (Move 3 BACK)

27 You are constantly disturbed by a large number of visitors and lights (Move 3 BACK)

26

25 You are properly informed and you can enjoy wild life (Move 3 FWD)

24 They fixed the roofs of the old mines you used as shelters (Move 3 FWD)

23 They properly repaired the old houses you are using to spend the winter (Move 3 FWD)

22

21 You caused damages at the hedgerows and the field crops are suffering from illnesses (Move 3 BACK)

20 Toxic waste has reached the cave and you can't live on the floor (Move 3 BACK)

19 You can't find any old buildings with a roof to sleep into (Move 3 BACK)

18

17 With the right lights and signs, you can enjoy the cave and its wild life (Move 3 FWD)

16 The visitors can only walk on the designated path (Move 3 FWD)

15 Special lighting and fences make sure that it's quiet and dark for the bats (Move 3 FWD)

14

13 You managed the cave badly and now it is useless for everyone (Go back to the start)

12 They blocked the entrance for bats and without guano, you will starve to death (Go back to the start)

11 You ate insects that had eaten pesticides and you were poisoned (Go back to the start)

10

9 You must pay your country's fine because you caused the extinction of a unique species (Move 3 BACK)

8 Without bats you can't find guano to feed on (Move 3 BACK)

7 They blocked the entrance into the cave and you lost your children and your shelter (Move 3 BACK)

6

5 By keeping the hedgerows, you are helping the hunters of harmful insects (Move 3 FWD)

4 The cave is full of bats and plenty of guano for the invertebrates (Move 3 FWD)

3 The fields with hedgerows are a good hunting ground for bats (Move 3 FWD)

2

1 START

Activities' Worksheets for children aged 12-15 (Grades 1-3)



Life
GRECABAT

LIFE GRECABAT
(LIFE17 NAT/GR/000522)



C04. How will you manage a cave?

Near your school, there is a small cave inhabited by 5 protected bat species and 5 cave-dwelling invertebrates. One of these invertebrate species is endemic and lives exclusively in this cave.

The City Council has decided to open the cave to visitors by enlarging the entrance, by building a concrete path inside the cave and by installing lighting and an entrance door. Even though the decision to go ahead with this project is made by the City Council, they must first take into consideration the opinions of the residents.

The project will bring visitors and more income for the local businesses (e.g. restaurants, taxis).

The project is important for the people who will work for it (construction company, workers, engineers) because it will bring more income in a period of crisis with very few projects like this.

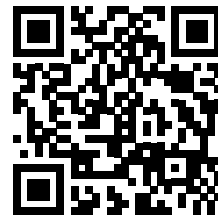
These constructions and the frequent visits of people in the cave will cause disturbance to the bats (which prey on mosquitoes and other insects in the area), it will reduce the population of the cave-dwelling invertebrates, and the endemic invertebrate will be threatened with extinction if the cave changes.

Environmental legislation imposes the preservation of protected species (such as bats) and restrictions on projects that have been planned to be carried out in the habitats of these species (for example, the law requires Environmental Impact Studies which are assessing the impact of each project and include proposals for corrective measures).

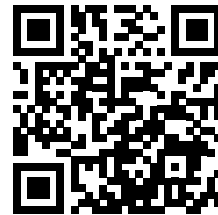
Cave construction projects require licensing by the Archaeological Authority (due to staff shortages this can take months or even years), because many caves contain archaeological and paleoanthropological findings.

How can we learn more?

For the LIFE GRECABAT project and the bats,
you can visit the project's website:
<https://www.lifegrecabat.eu/>



the project's facebook page:
<https://www.facebook.com/LIFEGRECABAT/>



For cave-dwelling animals in each cave in Greece,
visit the free-access database
(<https://database.inspee.gr/>), which has been
developed by the Hellenic Institute
of Speleological Research.

