



GUADARRAMA RÍO DE ARENA RÍO DE ARENA

Programa de Educación Ambiental
en el Parque Regional del Curso Medio
del Río Guadarrama y su entorno

PROGRAMA FINANCIADO POR



Dirección General de Biodiversidad
y Gestión Forestal
CONSEJERÍA DE MEDIO AMBIENTE,
AGRICULTURA E INTERIOR



DESARROLLADO EN



Taking care of our rivers: Quickstart Guide

1° - 2° ESO

Hi! I'm **Guadarrama River**, one of the main rivers in the Region of Madrid. I spring in the Fuenfría Valley, in the Guadarrama mountains. I go down 132,8 km among rocks, sand and riverbank forests, until my waters flow into the Tajo River, that great river that runs into the Atlantic Ocean.

Unfortunately, during the last decades, my cousins –the rest of the rivers of the planet– and I are having a lot of health problems due to people's irresponsibility. Before telling you about this, let's start by learning all the benefits that rivers have on the planet and all its living beings, including you.



TAKING CARE OF OUR RIVERS: QUICKSTART GUIDE

Now that you know all that my cousins
and I do for the planet and for you, do
you want to commit to take care of us?
Let's go!

INVASIVE NEIGHBOURS. ALIENS AT HOME

In recent times, living beings from faraway places have arrived to my riverbank. Despite what you might think, they have not arrived on their own: they have been brought by humans. We call these creatures "**invasive alien species**". They are not to blame, but they are causing many problems to the plants and animals that already lived in my water. Will you be able to discover their names while you learn curiosities about me?



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SL _ 4 D _ 6 3

Guadarrama River rises in the Fuenfría Valley and flows into the _ 1 _ 2 _ river. It is home to many species of fish such as the barbel, amphibians such as the _ _ _ 3, _ _ _ 4 _ 5 such as the kingfisher, and even mammals such as the otter. Its riverbanks are covered with _ _ _ 6 such as willows and poplars, and bushes such as brambles. It's a river full of life.

Answer: 1-T, 2-A, 3-R, 4-I, 5-D, 6-E

Why do you think we humans have brought in these alien species for? What would you do to prevent their entry? And to reduce their impact? **Research and respond:**

CHALLENGES TO AVOID THE DAMAGE OF OUR INVASIVE NEIGHBOURS:

Distracted tadpole

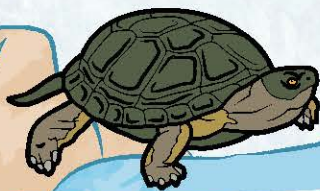
1



Find out which plants and animals are the native inhabitants of Guadarrama River. Make a presentation to raise awareness among your classmates about the river's great value.

Smart terrapin

2



Find out which invasive alien species have reached the Guadarrama River. Investigate how they have arrived and what native species they affect. Publish this information in your school's social networks.

Powerful otter

3



Create a "Biodiversity Commission" in your school and design a campaign to raise awareness about the problem of invasive species. You can make a big mural on one of the playground's walls.



Aquaman

4

Organise a trip by the river in Spring to try to find any of the invasive species you have studied. Plants are easier to find! Research the InvaPlant initiative and join it.

TAKING CARE OF OUR RIVERS: QUICKSTART GUIDE

BE CAREFUL WITH THE DRAINPIPE

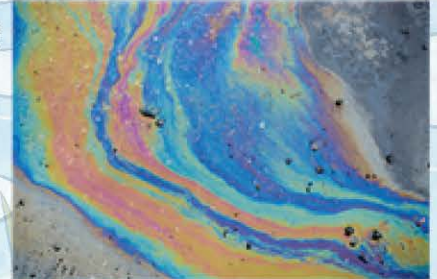
Every day, humans flush many products down the drain that end up in waste-water treatment plants. However, did you know that waste-water treatment plants are not fully efficient and that many of these products end up in the rivers? Solve the crossword and discover some of the pollutants Guadarrama river carries:

DOWN

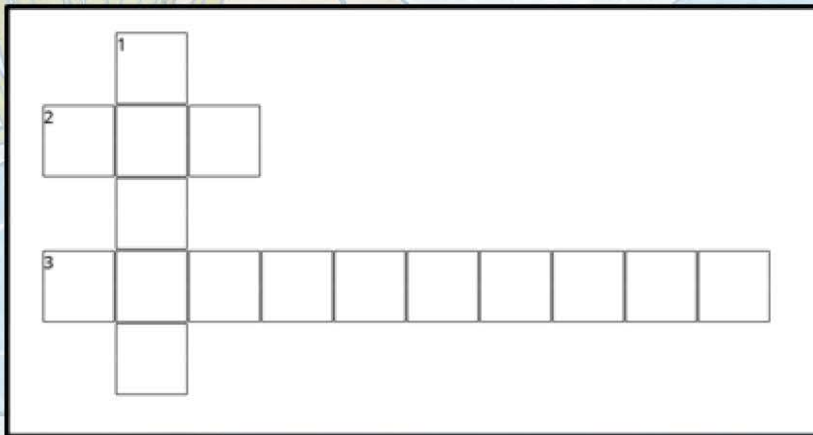


ACROSS

2



3



Answer: 1) wipes, 2) oil, 3) detergents.

And that is without counting invisible pollutants, such as microplastics, pesticides, dissolved medicines, heavy metals... All of them are toxic and harm the organisms that live in the river.

At home, do you throw these products down the drain? Do you know how to prevent this from happening? **Find out and write it down:**

Detergents:

Wipes:

Oil:

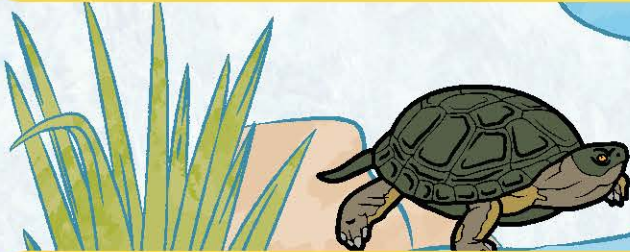
CHALLENGES TO STUDY IN MORE DETAIL THE PROBLEM OF WASTE DUMPING INTO THE RIVERS:

Distracted tadpole

1



River pollutants do not only come from households. Investigate what other types of activities pollute rivers, and study the case of the pesticide contamination of La Almendra reservoir in July 2023, and the consequences it had for the surrounding villages.



Smart terrapin

2

Do you know what microplastics are? Find out what they are and where they come from. Investigate how synthetic fibres in clothing contribute to microplastic pollution, and make a presentation in class about existing solutions to prevent it.

Powerful otter

3



Make a trip with the school to Guadarrama River and test the quality of its waters with a water quality test kit. Send us your results to reservas@guadarramariodearena.org and tell us about your experience.



Aquaman

4

In class, contact an environmental group in your city to tell them about your research on the water quality of Guadarrama River. If there is room for improvement, make a joint action plan to raise awareness about this problem.

TAKING CARE OF OUR RIVERS: QUICKSTART GUIDE

TELL ME YOUR WATER FOOTPRINT AND I'LL TELL YOU WHO YOU ARE

Virtual water represents the total amount of water required to produce an item. It includes the water used during the farming, growing, processing, manufacturing, transport and sale. Some of this water comes from the rivers. With this in mind, answer the following questions:

1. How many times a week do you eat beef? The virtual water footprint to produce a 300g beefsteak is around 4.500 litres.

- a) I don't eat meat.
- b) Between one and three times a week.
- c) More than three times a week.

2. How many cotton T-shirts do you have in your wardrobe? It takes about 2.500 litres of water to make a cotton T-shirt.

- a) I use organic cotton or linen clothes.
- b) I have between 5 and 15 cotton T-shirts.
- c) I have more than 15 cotton T-shirts.

3. What kinds of fruits do you eat on a daily basis?

- a) Seasonal and local fruit, such as Valencian oranges (362 litres of water/kg).
- b) Out of season fruit coming from distant countries, such as African oranges (560 litres of water/kg).
- c) Tropical fruit coming from distant countries, such as bananas (790 litres of water/kg).

4. What do you usually drink for breakfast?

- a) A cup of tea (27 litres of water per 250 ml cup).
- b) A glass of milk (255 litres of water per 250 ml cup).
- c) A cup of coffee (264 litres of water per 250 ml cup).

5. What do you usually eat for breakfast?

- a) 8 biscuits (350 litres of water).
- b) A piece of sliced bread (64,32 litres of water) with butter (166,59 litres of water).
- c) A piece of sliced bread (64,32 litres of water) with olive oil (288 litres of water).

Which Simpsons character are you according to your virtual water consumption ?

A) If more than 60% of your answers were "a", you are **Lisa Simpson**. She would be a great defender of the natural values of Guadarrama River.



© 2000 FOX BROADCASTING

A

B) If more than 60% of your answers were "b", you are **Homer Simpson**. He doesn't care much about the environment and he would use Guadarrama River's water to brew beer.



© AMINO APPS

B

C) If more than 60% of your answers were "c", you are **Montgomery Burns**. He would build a nuclear plant next to Guadarrama River, destroying habitats.



© CANAL ABIERTO

C

D) If you do not fit into any of the previous options, you are **Ned Flanders**. Ned is honest and sincere, but sometimes he shows antipathy and even mockery towards those who don't think like him.



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D

CHALLENGES TO ANALISE IN MORE DETAIL THE PROBLEM OF VIRTUAL WATER CONSUMPTION:

Distracted tadpole

1



Calculate your lunch's virtual water using the following calculator: <https://www.waterfootprint.org/resources/interactive-tools/product-gallery/>
Think about the impact of water extraction on the ecosystems around you.



Smart terrapin

2

In groups, research the environmental impacts of importing foods such as sugar, cocoa, coffee, soy and tomato from countries in the southern hemisphere. Use this resource: <https://ongawa.org/wp-content/uploads/2021/12/El-agua-que-no-vemos-OK-1.pdf>

Powerful otter

3



Identify which SDG (Sustainable Development Goals) are related to virtual water, and make murals to display on the school's corridors (<https://www.un.org/sustainabledevelopment/es/objetivos-de-desarrollo-sostenible/>).



Aquaman

4

Organize the Virtual Water Day to raise awareness about this problem among the school community. Send the results to reservas@guadarramariodearena.org telling us about the experience.