

# FRUTUROS

TEMPOS AMAZÔNICOS

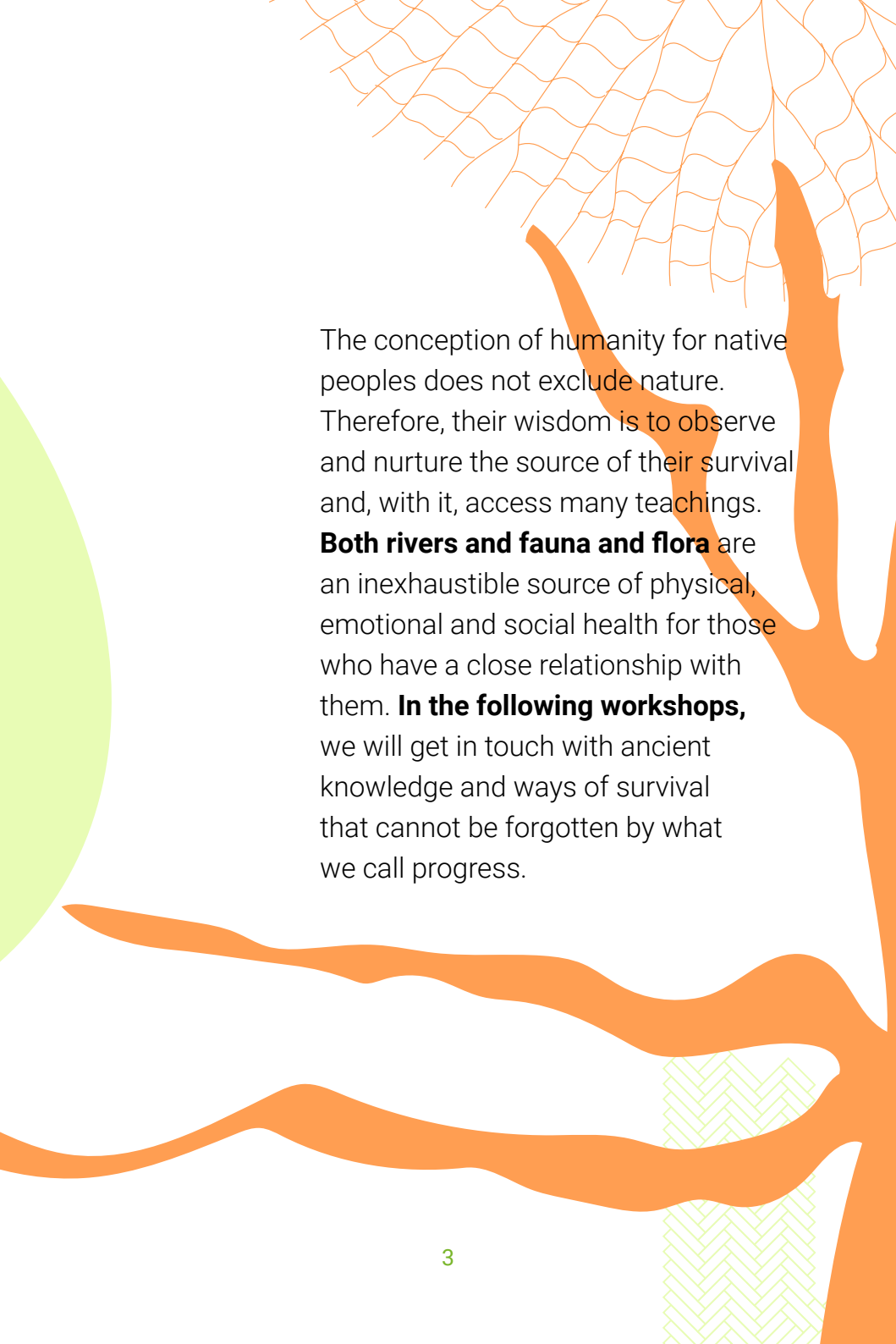
## EDUCATIONAL MATERIAL

11 TO 14 YEARS OLD



**In the mythology of the various native peoples of Brazil,**

it is common to have a kinship relationship that they establish with other beings of nature, including plants, animals, rivers and stones. In the Tupi-Guarani creation myth, for example, the Sun that warms us is the great-great-grandfather's heart. The Krenak have the habit of talking to the mountains to see if it will be a good day. If the river is part of what I consider a community and offers me its resources, I cannot explore it until I exhaust it.

The page features a stylized orange tree with a dense canopy of thin, wavy lines at the top. A large, solid orange shape on the right side represents the trunk and main branches. A light green circle is partially visible on the left edge. At the bottom right, there is a vertical rectangular area with a green herringbone or chevron pattern. The text is centered in the white space between the tree's canopy and the bottom of the page.


The conception of humanity for native peoples does not exclude nature. Therefore, their wisdom is to observe and nurture the source of their survival and, with it, access many teachings. **Both rivers and fauna and flora** are an inexhaustible source of physical, emotional and social health for those who have a close relationship with them. **In the following workshops,** we will get in touch with ancient knowledge and ways of survival that cannot be forgotten by what we call progress.

WORKSHOP 1

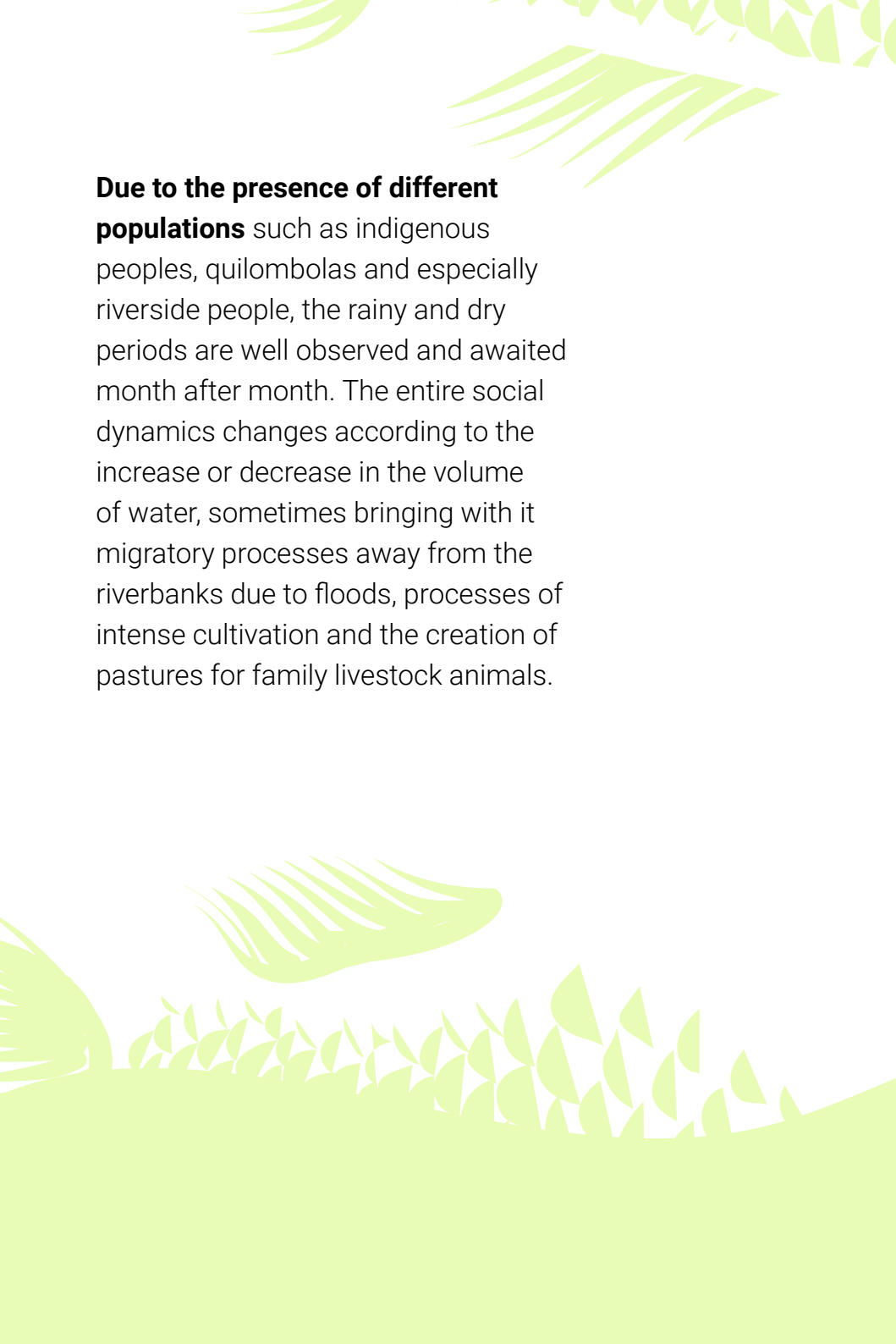
# IN THE FLOW OF HISTORY

In History, there are countless examples of civilizations that were constituted and developed around large rivers. As a means of transport, resources and nutrients for the soil, vegetation and all other kingdoms of living beings, water is a condition and creation for life.

One of the most extraordinary characteristics of the Amazon region is its hydromineral wealth, which comes not only from rainwater but also from river resources.

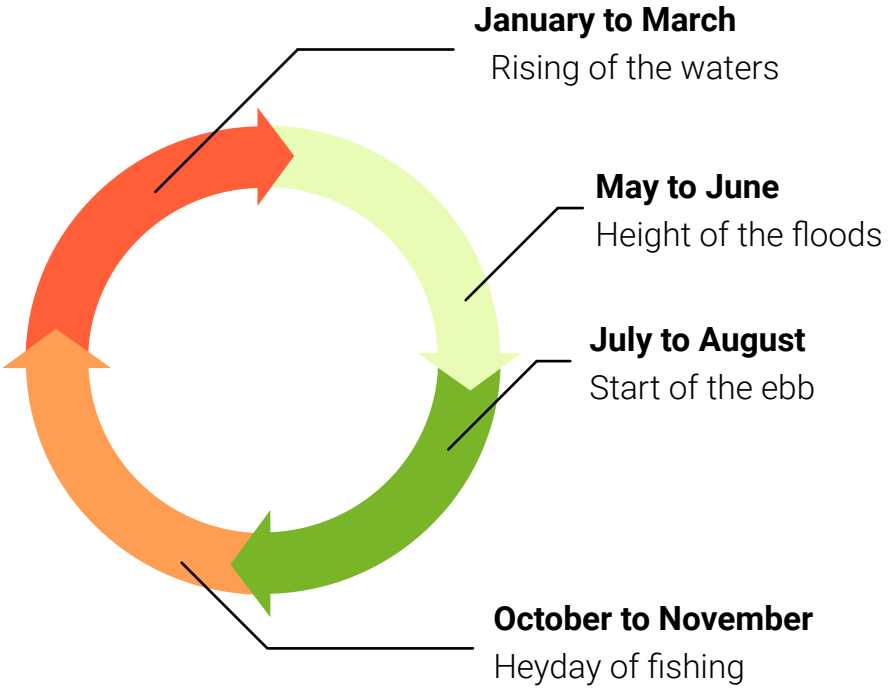



There are several rivers and tributaries that, together, form **the Amazon basin** and generate countless resources essential to life on the planet, such as energy potential, soil fertility due to nutrients that are carried by the river currents, which contribute to agricultural production and family farming, generation of food sources for the riverside populations, growing ecological tourism. Rivers are, in essence, fundamental allies to rethink new economic models that are less exploratory and harmful to a sustainable economic model. In the Amazonian floodplain regions, time and calendar are not divided solely and exclusively by the months or the four seasons of the year.



**Due to the presence of different populations** such as indigenous peoples, quilombolas and especially riverside people, the rainy and dry periods are well observed and awaited month after month. The entire social dynamics changes according to the increase or decrease in the volume of water, sometimes bringing with it migratory processes away from the riverbanks due to floods, processes of intense cultivation and the creation of pastures for family livestock animals.


## Riverside Life Annual Calendar:





Unfortunately, due to a development model that we have been adopting over the last few decades, making choices that do not place the preservation of land, rivers and seas as a priority, it is essential to identify the constant threats to which the two main hydrographic basins located in the Amazon region are subject: **Amazon Basin**, with its main rivers and tributaries and the **Tocantins Basin**, with the Tapajós and Araguaia rivers.

Illegal mining, the dumping of industrial waste or even the lack of basic sanitation in the surrounding communities, causing the sewage spill in the rivers, brings a series of damages to health and millions of lives that depend on such rivers, from riverside populations to the extensive universe of living beings that make up the ground ecosystems.

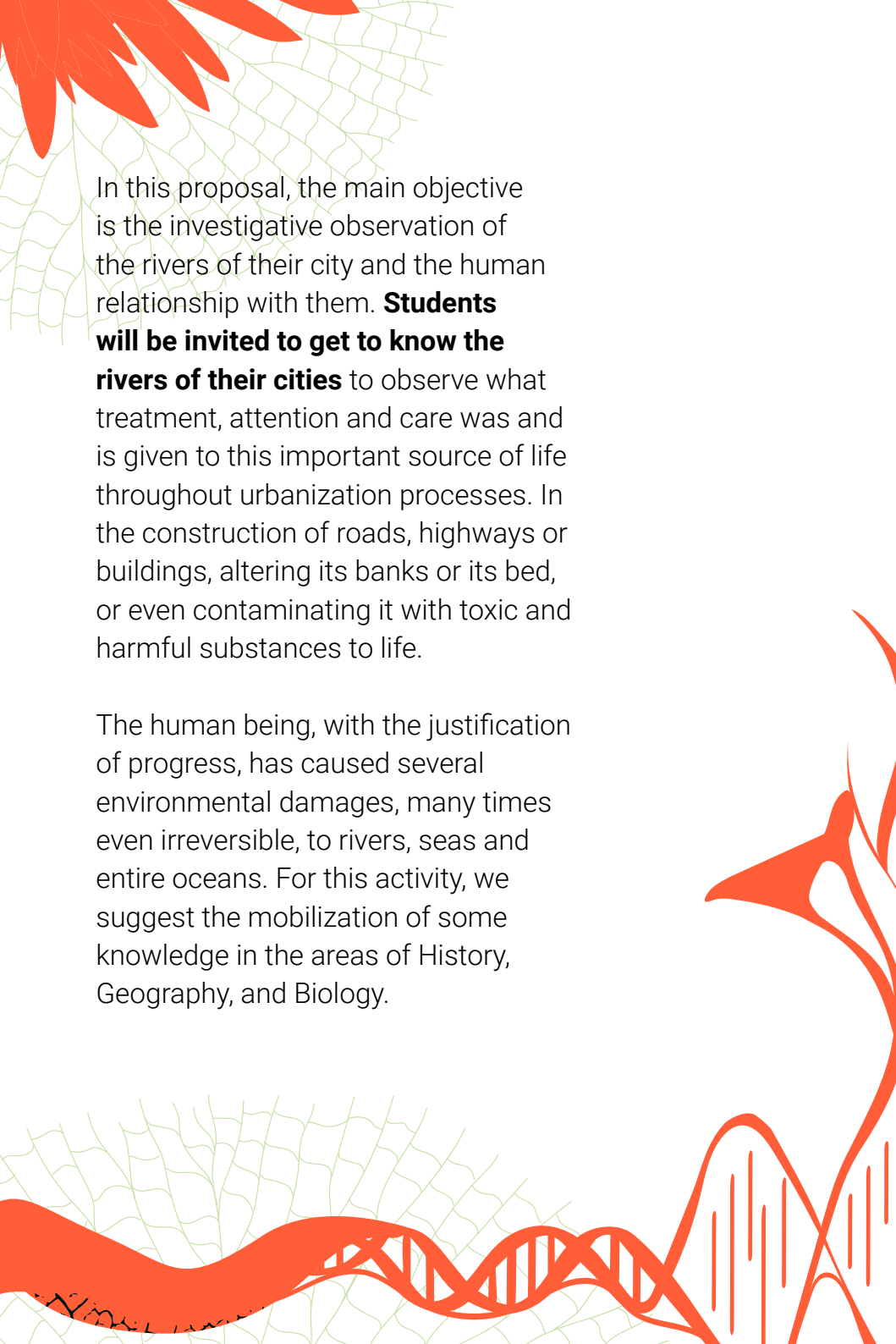




With the decrease of their nutrients, the contamination of fish and water, and the degeneration of rivers are a huge challenge and cause damage throughout its extension, from its spring to its mouth.

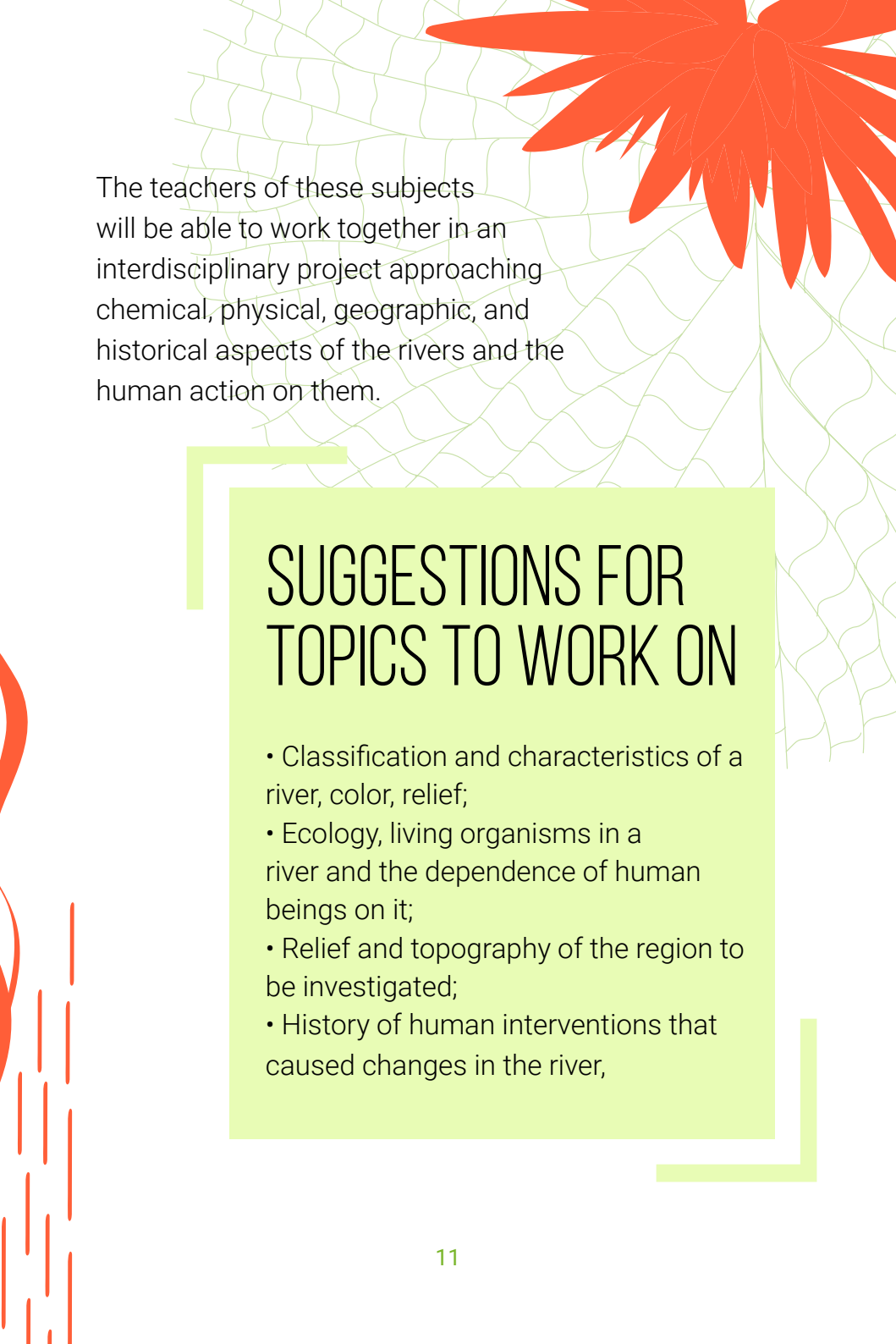
**In this activity,** we propose reflections and exercises of observation of the rivers of their city in order to show how we human beings, based on the example of the Amazon biome, can think of new individual and collective practices that protect and care for the hydromineral resources we need so much.





In this proposal, the main objective is the investigative observation of the rivers of their city and the human relationship with them. **Students will be invited to get to know the rivers of their cities** to observe what treatment, attention and care was and is given to this important source of life throughout urbanization processes. In the construction of roads, highways or buildings, altering its banks or its bed, or even contaminating it with toxic and harmful substances to life.

The human being, with the justification of progress, has caused several environmental damages, many times even irreversible, to rivers, seas and entire oceans. For this activity, we suggest the mobilization of some knowledge in the areas of History, Geography, and Biology.



The teachers of these subjects will be able to work together in an interdisciplinary project approaching chemical, physical, geographic, and historical aspects of the rivers and the human action on them.

## SUGGESTIONS FOR TOPICS TO WORK ON

- Classification and characteristics of a river, color, relief;
- Ecology, living organisms in a river and the dependence of human beings on it;
- Relief and topography of the region to be investigated;
- History of human interventions that caused changes in the river,

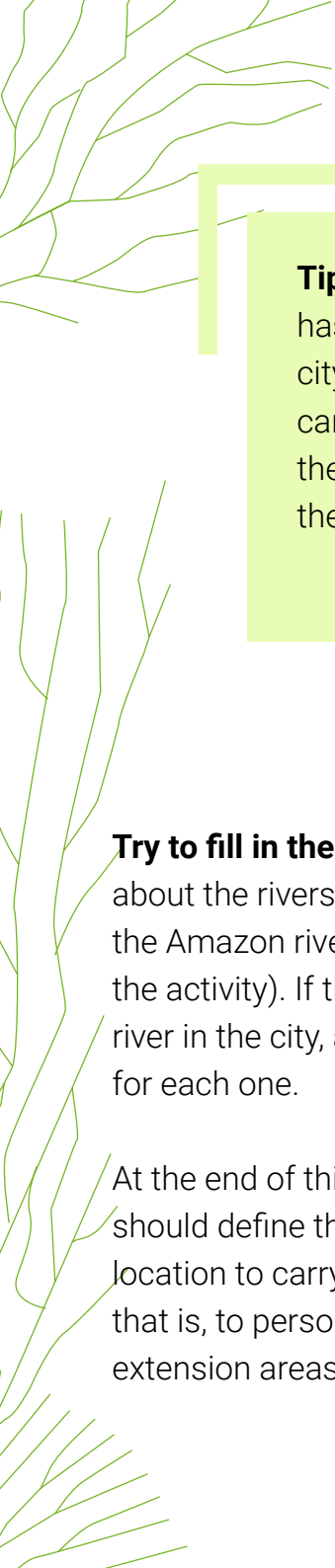
The proposal is to develop a cartography of the rivers of the focal city of the class through three meetings. The first is to develop a survey in the classroom on the subject, based on the example of the Amazon River in the Amazon region.



# IN THE FLOWS OF HISTORY PROJECT WALKTHROUGH

**1st Meeting:** Mapping of the city's rivers based on knowledge built in the classroom and by the school community.

For this meeting, the class will be able to start the construction of collective cartography, which can be prepared in a large panel to be exposed at the end of the project containing photos, maps, historical records such as documents or testimonies of old residents of the city, in addition to newspapers with reports or historical facts related to the rivers. It is also worth recalling the importance of talking about and researching data on the rivers that cross cities under the ground - the underground rivers under the asphalt.



**Tip:** If your school's or city's library has maps and photographs of the city's rivers, you can make copies that can serve to sensitize the group to the topic and later be attached to the large panel.

**Try to fill in the information sheet**

about the rivers following the model of the Amazon river (sheet at the end of the activity). If there is more than one river in the city, a token can be made for each one.

At the end of this meeting, the group should define the best day and location to carry out fieldwork on-site, that is, to personally visit one of the extension areas of the river.

# RIVER CATALOGING SHEET

(Use as many tokens as necessary  
according to the number of rivers  
in your city)



**Name of the river:** Amazon

**Extension:** 6.992,06 km

**Spring:** Apurimac River, on the slopes of the Nevado Mismi, in the Andes, Peru, at 5,600 meters above sea level

**Main affluents:** Purus, Madeira, Tapajós, Xingu, Negro, Juruá, Javari, Trombetas, Iça, Japurá, Trombetas

**Cities and/or States through which it passes:** Amazonas, Pará, Amapá, Rondônia, Acre, Roraima, Rondônia, Mato Grosso

**Mouth:** the Atlantic Ocean, in the Amazon Delta, between the states of Pará and Amapá

**Main species found:** The main species are the Pirarucu, Tambaqui, Arowana, Amazonian Manatee (endangered), Giant Otter, Piranha, Bull Shark and Candiru.



**Width:** Widest point, 11 km

**Depth:** 100 m

**Floods:** during floods, it can rise about nine meters and reach 50 km in width.

**Top threats today:** Illegal Mining

**Modifications over the years:**

Perennial ( **X** )      Ephemeral ( )

Intermittent ( )

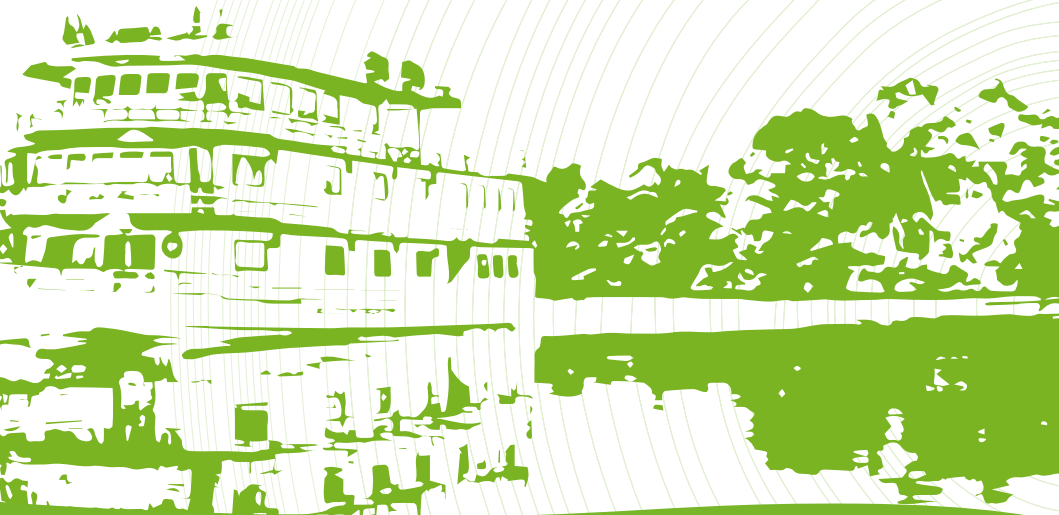
**Relief:**

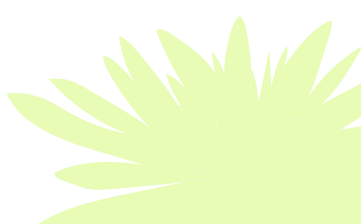

Upland River ( )    Plain River ( **X** )

**Coloring:**

Clear Water ( )

Dark Water or muddy ( **X** )





**2nd Meeting:** Great day! In this meeting, we will recognize characteristics that we have listed in the river cataloging sheets, such as coloring, presence of organic life, domestic waste and so on. If there are residents living around the rivers, ask some questions about their relationship with the river. You can also ask questions about other times, if you are old residents, about the changes that the river has gone through. Activities such as fishing, swimming and canoeing are common to be reported. There may be photographic records or personal memories of this space that can be taken to cartography, as another possible name given to the river by the people who live with it daily. Here, curiosity can make us know more about our city and about the habits of its inhabitants.

**And you? Do you have any memory of this river?** Something to write or describe to the group about your relationship with it?

**3rd Meeting:** This meeting will be dedicated to recording and compiling all the information collected during the previous meetings. One by one, you will be able to share your impressions about the project, what it was like to observe the river, investigate it and research about it, collect information, stories, memories, and even know about the current threats that put it at risk. Here, it is also worth thinking about and raising actions and strategies for the protection and recovery, if applicable, of the rivers in our cities. By researching old newspapers of the city or in Municipal and/or State files of your Municipality, it is possible that you find current and past revitalization projects.


WORKSHOP 2

# POLLINATING KNOWLEDGE

The resources that the plant kingdom offers us are numerous and range from food, cosmetics, and medicinal use to the supply of raw material for the production of industrial products. In fact, the human being has not yet been able to know and record all the species, functions and benefits that a single tree can offer.

**Let's think about the impact** that discovery in this area can have. Let's look at the story of the rubber tree, whose sap found in the tree's bark produces latex.







Its extraction and trade were responsible for major social, economic and environmental impacts in Brazil in the 19th century. The finding aroused national and international interest in the raw material and was responsible for major urban and, consequently, cultural transformations in the states of Amazonas and Pará.

**Find out more at:** <https://www.museu-goeldi.br/noticias/seringueira-a-planta-que-sustentou-uma-regiao-1>.

As with the discovery of latex in the Amazon Forest by the traditional peoples who lived there, even today, there are hundreds of families who live from the relationship with the forest and build their knowledge and experiences from this relationship. In this sense, they are also great guardians of the forest, caring for and protecting it, as they understand that it is the source of life and survival.




**It is important to demonstrate here** that the forest itself comes from this relationship, which demystifies the idea of a virgin, untouched forest which has not received interference or modifications caused by human action. On the contrary, the Amazon forest as it is today is a process of numerous factors, among them, the insertion, handling and secular domestication of different plant species by the human hand. These transformations are caused by the intense observation, investigation and management of low plants, roots and trees, with their fruits, flowers and bark, which results in extensive knowledge acquired over centuries by the traditional peoples who inhabit this region.

The page features a decorative background with a large, light green abstract shape on the left side, resembling a stylized plant or leaf. The top right corner has a pattern of small, diagonal green dashes. At the bottom, there are two large, concentric green circles that look like stylized ripples or seeds.

# HARVESTING KNOWLEDGE

Have you ever made boldo tea to relieve an upset stomach? Or have you ever used an Aloe Vera recipe to moisturize your skin or hair?

**For this activity,** we propose the use of knowledge from people and traditional knowledge from different regions of the country to systematize knowledge and share and verify it through the investigative process. The teacher will be able to encourage the class in the collection of practices of consuming and cultivating medicinal herbs in the students' families. The idea is for students to survey the medicinal herbs consumed in their homes and/or by family members.




After this collection, in the classroom, the teacher and students will share the practices, and knowledge found, as well as identify the sources consulted for their research. **In the second stage of the research process**, they will consult books and websites in order to find information such as: scientific names, places where they are found; names given in other regions; plant variations, among other peculiarities.

**Here we suggest a research site where we can find more than 490 species (but it is also worth looking for others):**

<https://www.ppmac.org/>



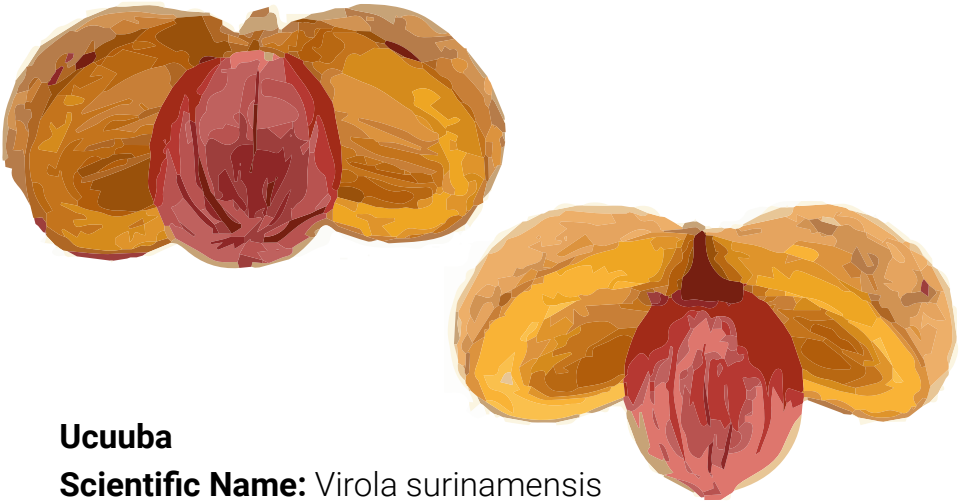


**On this site,** the search can be made from the common or scientific name given to the plant and through the name of the disease associated with it. After surveying and researching the plants, their forms of use, cultivation, and the like, we suggest that they produce a document recording the plants used in their city. This is a way of valuing local knowledge, highlighting the plants and customs found in your region, as well as a way of sharing the result of this research with the entire community.

For this activity, some skills will be mobilized, among them the pleasure of research, the appreciation of local and traditional knowledge and botanical medicine.

# PLANTS OF THE AMAZON REGION

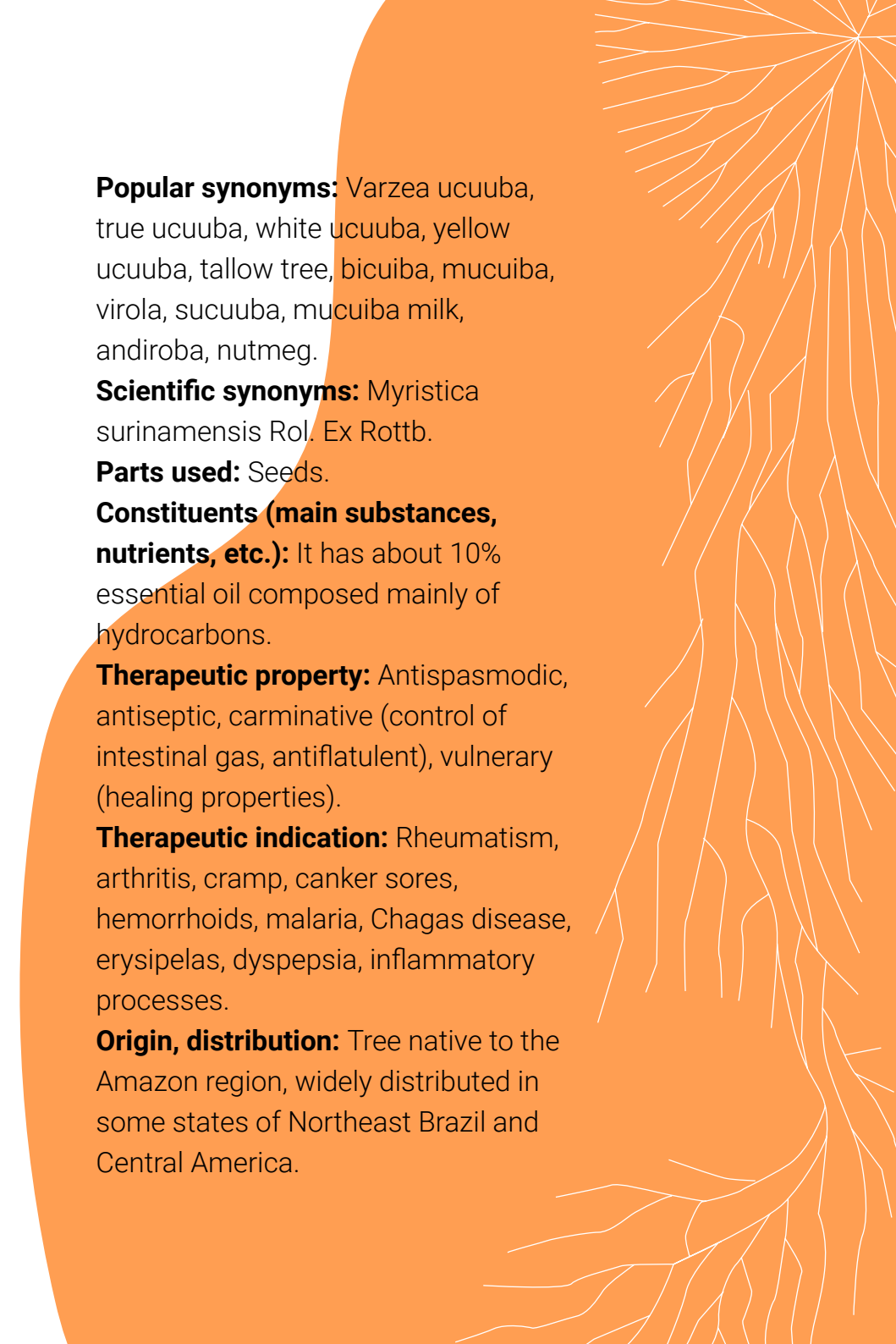
We separate here two plants found in the Amazon region that can be presented to students: the Ucuuba and the Jambu.



## **Ucuuba**

**Scientific Name:** *Virola surinamensis*  
(Rol. Ex Rottb.) Warb.

**Family:** Myristicaceae.



**Popular synonyms:** Varzea ucuuba, true ucuuba, white ucuuba, yellow ucuuba, tallow tree, bicuiba, mucuiba, virola, sucuuba, mucuiba milk, andiroba, nutmeg.

**Scientific synonyms:** *Myristica surinamensis* Rol. Ex Rottb.

**Parts used:** Seeds.

**Constituents (main substances, nutrients, etc.):** It has about 10% essential oil composed mainly of hydrocarbons.

**Therapeutic property:** Antispasmodic, antiseptic, carminative (control of intestinal gas, antifatulent), vulnerary (healing properties).

**Therapeutic indication:** Rheumatism, arthritis, cramp, canker sores, hemorrhoids, malaria, Chagas disease, erysipelas, dyspepsia, inflammatory processes.

**Origin, distribution:** Tree native to the Amazon region, widely distributed in some states of Northeast Brazil and Central America.

### **Some Uses:**

The bark resin is used to treat erysipelas, and the tea from its leaves is indicated for cramps, dyspepsia and inflammatory processes and the leaves are used, by inhalation, for the treatment of malaria. Gastroprotective activity from the presence of flavonoids was detected in the sap. In the State of Roraima, this species is used by the local population to fight cancer and infections and to help women get pregnant. Latex is widely sold in bottles or ready-made bottles. The oil extracted from the seeds (ucuuba tallow), rich in trimyristin and with a pleasant odor, can be used in the manufacture of candles, soaps, cosmetics and perfume.



## **Jambu**

### **Scientific Name:**

*Spilanthus acmella* (L.) L.

**Family:** Compositae.

**Popular synonyms:** Brazil cress, Pará cress, water pepper, buttercup, jambu-açu, mastruçu, watercress.

**Scientific synonyms:** According to the APG III classification, there is no synonym for this species.

**Parts used:** Leaves, inflorescence.

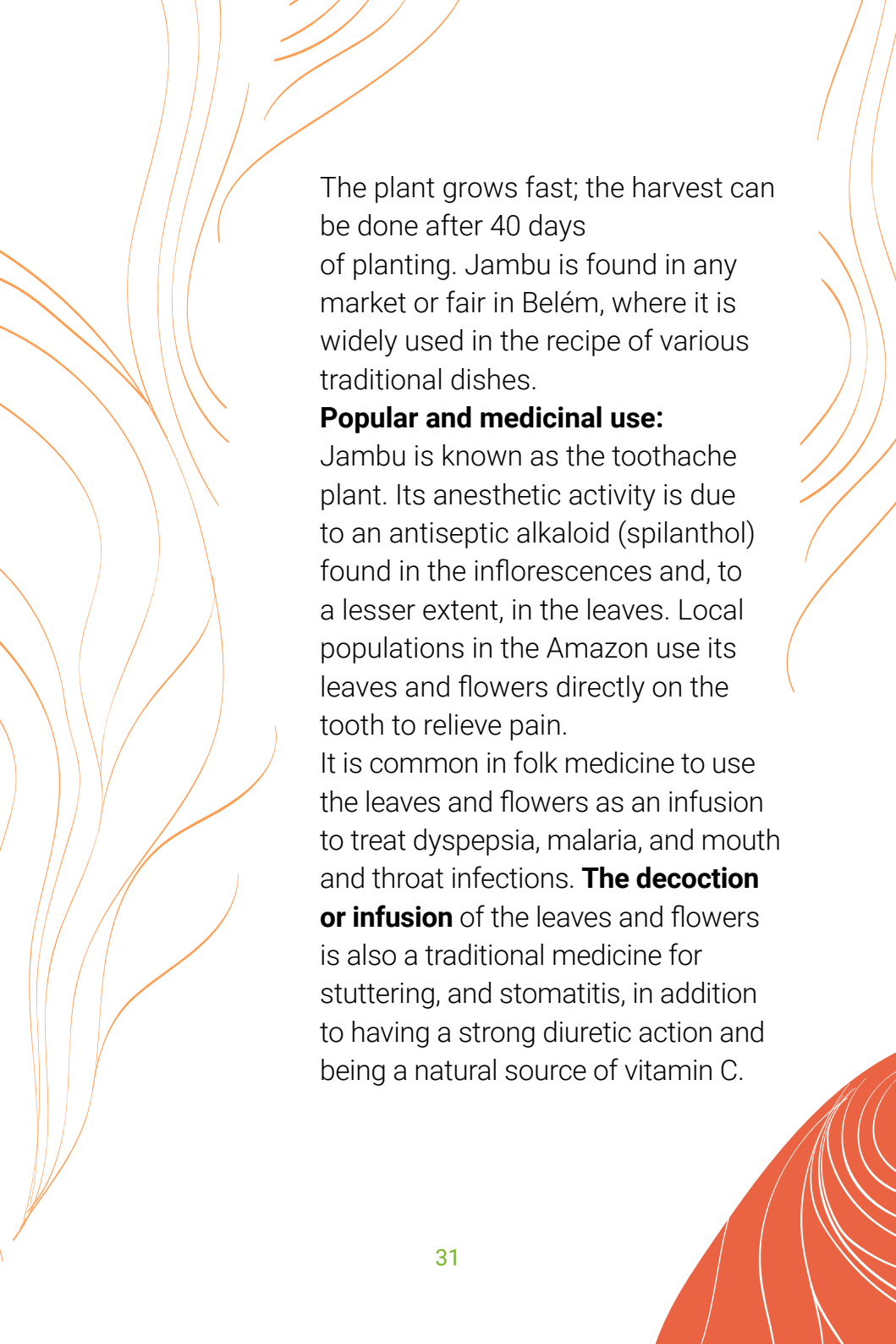
**Constituents (main substances, nutrients, etc.):** Plant rich in vitamin C, phenols, flavonoids and spilanthol alkaloid.

**Therapeutic property:** Anesthetic, antiseptic, digestive, antioxidant, sialagogue (it is capable of causing salivation).

**Therapeutic indication:** Toothache, canker sore, gum strengthening, stuttering, stomatitis.

**Origin, Distribution:** Plant native to South America, Brazil, States of Amazonas, Acre, Rondônia and Pará. It has adapted in several other regions of the world. Used as a spice in Chinese cuisine.

**Description:** It is a vegetable with many leaves, reaching up to 30 cm in height, with a low and branchy stem, opposite leaves, petiolate, oval, sinuous and serrated. The flowers in capitula are initially yellowish and, with time, become brownish. The fruit consists of the achene.



The plant grows fast; the harvest can be done after 40 days of planting. Jambu is found in any market or fair in Belém, where it is widely used in the recipe of various traditional dishes.

**Popular and medicinal use:**


Jambu is known as the toothache plant. Its anesthetic activity is due to an antiseptic alkaloid (spilanthol) found in the inflorescences and, to a lesser extent, in the leaves. Local populations in the Amazon use its leaves and flowers directly on the tooth to relieve pain.

It is common in folk medicine to use the leaves and flowers as an infusion to treat dyspepsia, malaria, and mouth and throat infections. **The decoction or infusion** of the leaves and flowers is also a traditional medicine for stuttering, and stomatitis, in addition to having a strong diuretic action and being a natural source of vitamin C.

A tincture is extracted to heal mucosal canker sores and strengthen the gums. Spilanthol is an effective sialagogue (an agent that promotes salivation) **and causes mild numbness in the tongue.**

The vegetable is rich in cellulose, a substance that regulates our digestion and evacuation process. Due to its strong flavor, it is used as a condiment, stimulating gastric secretion and aiding in the digestion of other foods.

**The substance spilanthol** is described in the several US and European patents as suitable for anesthetic, antiseptic and gynecological use. Several products on the market are sold as medicines and cosmetics. It was discovered that this substance produces myorelaxation of the muscles of the face, a process that reduces the deepening of expression lines and smoothes the wrinkles of the face, which is why it started to integrate lines of facial rejuvenators.





### **Other uses:**

Jambu is widely used in Amazonian, Rondônia, Acriana and Pará cuisines in delicacies such as tacacá, duck in tucupi and in pizza combined with mozzarella. Prepare the jambu in the same way as the cabbage, sautéing in olive oil with garlic, salt and diced bacon.

The finely sliced tender leaves are used as a condiment in Madagascar's national dish, a stew known as romazava. The broth is made with green jambu leaves.

In Bahia, it is used as an herb of religious value with the names oripepé, water pepper and pingo-de-ouro.

Concentrated Jambu extract is used as a flavoring agent in many countries.



### **\*Text extracted from the website:**

<https://www.ppmac.org/content/jambu>

## **Bibliographic References:**

### **Portal de Plantas Medicinais, Aromáticas e Condimentares.**

**Available at:** <https://www.ppmac.org/>

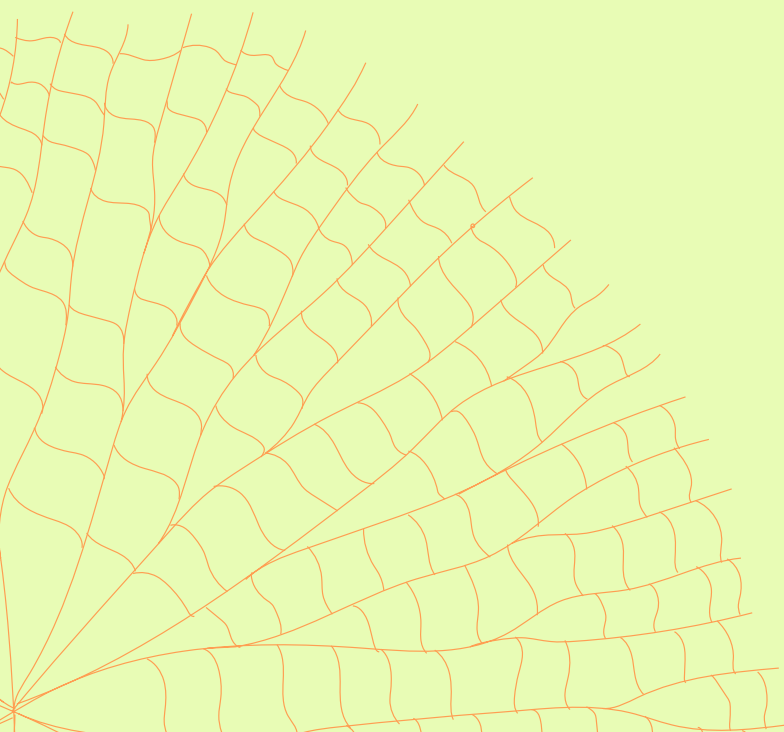
Accessed on 24/04/2022.

### **Laboratory of Medicinal and Aromatic Plants - ESALQ/ USP. Available**

**at:** [http://www.lcb.esalq.usp.br/](http://www.lcb.esalq.usp.br/lab/laborat%C3%B3rio-de-plantas-medicinais-e-arom%C3%A1ticas)

[lab/laborat%C3%B3rio-de-plantas-medicinais-e-arom%C3%A1ticas.](http://www.lcb.esalq.usp.br/lab/laborat%C3%B3rio-de-plantas-medicinais-e-arom%C3%A1ticas)

Accessed on 24/04/2022.



**List of Medicinal Plants of Interest to the Unified Health System. Available**

**at:** [https://bvsms.saude.gov.br/bvs/sus/pdf/marco/ms\\_relacao\\_plantas\\_medicinais\\_sus\\_0603.pdf](https://bvsms.saude.gov.br/bvs/sus/pdf/marco/ms_relacao_plantas_medicinais_sus_0603.pdf).

Accessed on 24/04/2022.

**National Policy and Program on Medicinal Plants and**

**Phytotherapeutics. Available at:** [https://bvsms.saude.gov.br/bvs/publicacoes/politica\\_programa\\_nacional\\_plantas\\_medicinais\\_fitoterapicos.pdf](https://bvsms.saude.gov.br/bvs/publicacoes/politica_programa_nacional_plantas_medicinais_fitoterapicos.pdf)

Accessed on: 24/04/2022.



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