

## **Theme of the project: Ecological trail 'In harmony with nature'**

### **The aim of the project:**

Create an ecological trail in the park and form the foundations of ecological culture among children and adults.

### **Tasks:**

- 1) To study the species composition of the plants
- 2) To study the species composition of plants and animals of the Klyazma River
- 3) To conduct a survey of the sanitary condition of the plants in the park
- 4) To create information booklets
- 5) To make a map as a scheme of the eco-trail.

I really like spending my free time with my family in nature. Sometimes it happens that I can't leave the city so I go out to our city park. Forest parks are the lungs of the city. The more of them, the cleaner the air is. In forest parks there are no thickets of shrubs, rotting fallen trees and fallen branches. A large number of people pass along the paved roads and paths every day. The more diverse the park is in terms of the number of tree species, the more diverse the animal world is [1]. It is important to preserve and create parks in cities and towns. The eco-trail is created so that children and adults, walking along it, will see the beauty of the surrounding nature and they will have a great desire to preserve it. Interesting excursions and independent walks on the eco-trail can become a prospective form of environmental education for children and adults. Outdoor recreation with the use of information materials makes it possible to broaden horizons and knowledge about nature. The eco-trail can become a natural laboratory for children's research work.

An ecological trail is a route that passes through various natural objects, where citizens can receive information (oral or written) about these objects. Our park is a community of different plants. The anthropogenic impact on the park is increasing every year. Vegetation loses its stability. It can no longer maintain its own existence as it was before. The condition of living objects varies throughout the year. Therefore, it is interesting to travel at any time of the year. Some objects

and natural phenomena are interesting to observe in spring and summer, while others are amazing in autumn and winter. During the tour, you can collect plants for the herbarium, material for crafts, watch birds and insects. An attentive person will open a wonderful world of plants and animals. [2]. People's observations, photographs, collections can be used for research. Observing the rules of behavior, a person shows love for nature and care for its safety. Following the trail, you must follow the rules of conduct in the park. (Appendix No.1)

The main objects of wildlife on the trail



Fig1.Ecological trail 'In harmony with nature'

- Object No. 1 – 'The beginning of the trail'
- Object No. 2 – 'The Klyazma River'
- Object No. 3 – 'Poplar'
- Object No. 4 – 'Maple'
- Object No. 5 – 'Birch'
- Object No. 6 – 'Wise Grandpa Stump'
- Object No. 7 – 'Linden'
- Object No. 8 – 'Herbs of the Park'
- Object No. 9 – 'Lilac'

· Object No. 10 – ‘Birds of the Park’

The beginning of trail No. 1

Ten objects are planned on the eco-trail. Each object can be used for a specific theme of the tour. You need to be a guardian of nature and observe plants and animals without interfering in their lives. You can start your journey from the schoolyard or at the entrance to the park.

The route starts from the porch of the school. Then we go through the school park and move to the embankment of the Klyazma River. This is our first object. Then we walk along the embankment to the park, to the main entrance and continue the tour.

Object ‘The Klyazma River’ (Appendix No. 4)

We often hear: ‘Water is an amazing wealth of nature and it must be protected. Water is necessary for humans, plants and animals. Water is the habitat for many animals and plants. All living things need only clean water.’

Plants of our river: duckweed, water lily, jug. hornwort, pond, reed, reed, reed, sedge, ditty, nettle. Willow grows along the banks.

Duckweed is a tiny plant that floats on the surface of the water. There are a lot of these plants and they tighten the entire surface of the reservoir. Hornwort has no roots, floats freely in the water column. There are a lot of sedges along the banks of the river. These are tall plants, often up to 1 meter. Their stems are triangular with narrow long leaves. The water lily is a real decoration of the reservoir. It is popularly called the water lily and it needs protection. [3]. (Appendix 2)

There are a lot of fish in the river: pike, perch, roach. ruff, burbot, ide, bream, gudgeon.

Mammals of the Klyazma River: otter, muskrat, beaver. (Appendix 3)

The beaver and muskrat live near the water, swim and dive well. It is fed by fish. [3].

Various pollutants lead to the death of fish, waterfowl and other animals, the plant world also suffers from human activity. This is the largest river in our area. The length is 647 km. The width in Shchelkovo is 40-50 meters. The depth along the entire length of the river is from 1m to 8m. The river has many tributaries.

From our city to the tributaries of Vladimir region, the water is not suitable for drinking and swimming.

Object 'Poplar' (Appendix No. 5) [5].

Poplar is a traditional ornamental plant that you can see in every locality. They have become simply indispensable in landscaping parks and streets. Poplars grow very quickly, creating beautiful green fences. The center of origin of poplars is located in China, in the subtropical climate zone.

In nature, they grow along rivers and on well-moistened slopes, some species can even be found in the sands.

Object 'Maple' (Appendix No. 6)

The height of the maple can be up to 40 meters, depending on the type and environmental conditions, but most often there are plantings up to 10-15 meters high. Maple has a thin trunk with brown, light brown or grey bark. If you read the description of the maple, it becomes clear that its root system is powerful. These trees live for about 200 years, but in favorable conditions they can become long-lived up to 500 years. [4].

Object 'Birch' (Appendix No. 7)

One of the symbols of Russia, which is associated with our homeland, is birch. It is one of the most common trees in our climate zone. Many poets dedicated their poems and songs to it, moreover, the image of a birch can be seen in the paintings of famous artists.

Object 'Wise Grandpa Stump' (Appendix No. 8)

An old stump is sure to be found in the park. An inquisitive person will pay attention to growth rings, moss, mushrooms and animals that have settled on it. Growth rings are a chronicle of time. The age of the tree is determined by the number of rings. The width of the rings is not the same. On the south side they are wider, and to the north they are narrower. So you can determine the sides of the horizon if you get lost in the forest. The stump is a unique ecosystem. The greater the height of the stump and its diameter, the more inhabitants there are. [7].

An old stump is a whole world with its population and its vegetation. Forest stumps are miniatures created by nature.

Object 'Linden' (Appendix No. 9)

Russian capers, nuts, similar to cedar, honey and a million more useful things! Can anything be compared with a lime flavor in tenderness and sweetness? If you were an aristocrat ... a baron, or a count, you would certainly have arranged a linden alley in your estate! So in the tsarist era it was a common thing for the rich. It turns out that linden is not such a simple tree. [4].

Object 'Herbs of the Park' (Appendix No. 10)

Herbaceous plants, also grasses, are the life form of higher plants with short-lived above-ground shoots. Grasses have leaves and stems that die off at the end of the growing season on the soil surface. They do not have a permanent tree trunk above the ground. Herbaceous plants are both annual, biennial and perennial. In Russia, there are over 16 thousand species of herbs that live in different communities. [5]. Plants on the ecological trail are diverse and among them there are many medicinal ones. Even in ancient times, many medicinal plants were known to people. Shepherd's purse is used for kidney diseases, and meadow clover for chronic gastritis and gastric ulcer. Celandine is widely used for skin diseases. More than 70 percent of medicines are made from herbs.

Object 'Lilac' (Appendix No. 11)

Lilac is a genus of shrubs belonging to the olive family. The same group includes jasmine, ash and olives. The genus includes several dozen of species, in the wild distributed in Southeastern Europe (Hungary, the Balkans) and in Asia, mainly in China. Lilacs began to grow relatively recently - only about 5 centuries ago. Since then 2300 varieties have been cultivated, each of them has its own shape, aroma and color. [4].

Object 'Birds are our friends'. (Appendix No. 12)

Birds are the first and most reliable human helpers in the extermination of harmful insects and their larvae. If we protect insectivorous birds, we will always have a huge army of tireless workers who will not allow pests to damage forests. To save winged helpers, you need not to destroy them and not touch the nests and eggs. Birds of prey are also useful for humans. They destroy small rodents - pests of field crops. Often birds do not have enough convenient places for nesting, so you need to hang artificial nesting sites in autumn or winter, as well as plant shrubs - shelters for nests. [8].

Winter is a difficult time for birds. In winter, it is very difficult for birds to find food. Birds very quickly notice the feeders made for them. We need to protect

our feathered friends and helpers. Birds with their beautiful appearance and cheerful behavior enliven our nature.

### **Research results and conclusions**

After passing through the stations of our ecological trail, research material was collected, summarized and presented in this project. Passing through the stations, students do not only assess the ecological state of the park, but also try to solve environmental problems. They learn to behave correctly in nature.

The layout of the park can be improved and free areas can be occupied by flower beds and shrubs. An interesting corner of our park could be 'An apothecary's garden'. People of different ages visit the park at all times of the year. They relax, play sports here and therefore the park is experiencing a great anthropogenic impact.

Working on the project, we determined the species composition of trees and shrubs in the park, calculated the total number of species, analyzed the general condition and well-groomed lawns. The results were as follows:

- 1) the selection of green spaces is generally correct, but the species composition is poor;
- 2) black poplar, birch, American maple, ash, lindens, elms, yellow acacia are dominating;
- 3) as a result of trampling, heavily trampled paths and areas of medium trampling appeared. The soil on these paths and areas is compacted, so it does not absorb water well, contains little air. In terms of mechanical composition, it deteriorates, which has a bad effect on the vegetation of the park;
- 4) many residents of our city do not follow the rules of behavior in nature. Litter can be seen in the park. Transport can be often seen on the banks of the river. As you know, car exhaust gases contain about 200 harmful components. Car exhaust gases undoubtedly have an impact on the vegetation of the fleet. There are trees in it that have ceased to look picturesque, since there are shrunken branches in their crown. The noise of transport frightens birds and other animals.

I would like to continue working on the following aspects:

- educational work with the local people and children in the park;
- organizing excursions for pupils of primary and secondary schools;

- research work of the trail;
- making a detailed species description of plants and animals on the trail;
- installing information banners and message boards in the park.

I believe that the implementation of the project is important for the visitors of the park and will help in the education of ecological culture and love for the native land.

We should be grateful for what we have been given and cherish this beauty for generations and centuries.

#### Sources of information

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