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A ROCHA
Christians in conservation

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A Rocha's small wetland

A Rocha is an international conservation organization showing God's love for all creation and our human responsibility.

Located on A Rocha's land is a small wetland of about half acre. Why have we created it? Retention of water is a frequent topic of our conversations. The site of our current wetland was devastated by a great flood in July 1998 when the Dědina river (here called the Golden Stream) and its tributary, joining the stream by our center, destroyed the valleys through which they flow, stripping them to the subsoil and creating pits six feet deep. The land was afterwards levelled by bulldozers and excavators but the meadows with their rich biodiversity were lost. In the following years the site was overgrown with wind-pollinated plants. Pioneer species, such as nettles, Himalayan balsam, goutweed, spotted dead-nettle, knotweed and various grasses flourished on the nitrogen rich silt. Spruces were planted in one part of the site by a previous owner but could not root properly in the sand and rocks. And it was at that time that the idea emerged, among all of us, to transform the disturbed lands into a full-grown wetland with one bigger pond and several smaller ponds for animals. The old waterworks of our center would help. For hundreds of years water powered the wheel of the barley mill and after 1925 a home made water turbine powered (together with diesel generators) several looms. The weir, the sluice gate and the mill race helped us bring water to the wetland. The big pond needed a plastic liner, the small ponds were lined with clay. Since then we have witnessed a miracle. Water which we retain here works like a magnet, attracting and increasing biodiversity without further need for human intervention. In the following paragraphs we will introduce at least some species which had probably lived here before but we noticed them as newcomers. Some of them were quite a surprise. We will also take notice of their mutual relationships. It must be added that just next to the wetland is our large bird feeder which we use all year round, following the method of the German ornithologist Prof. Peter Berthold. Some animal species, especially birds (like the middle spotted woodpecker and the wryneck), which we have noticed as newcomers, might have come in response to the stable source of food, as well as water.

Pavel Svetlik






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Winged visitors: common and rare species

Most of our bird species were known to be present in the valley before but the wetland makes their presence stronger. The stagnant water with its calm surface and water plants invites foraging. This is typical for the grey wagtail and its cousin the white wagtail. The former hunts for insects along the stream but also likes to wag to and fro by the lagoons. The white wagtail, which nests by our building, is a daily visitor at the pond and teaches the chicks to hunt there. The splendid kingfisher is another frequent visitor, perched on the sluice gate early in the morning and starting off to chase dragon flies, especially when the river gets muddy after heavy rains and the kingfisher cannot hunt for fish. The magnificent black stork comes regularly to feed on invertebrates and frogs early in the morning or late in the afternoon. The cautious grey heron is a rare visitor and at times we are also surprised to see a small wader, the common sandpiper, running on the banks and between the plants. Thanks to our feeder at the edge of the wetland we could band two truly rare visitors, the middle spotted woodpecker and its relative, the wryneck. One of the first species which we noticed in our wet meadow was the little grebe, moving characteristically on the water surface and quickly disappearing. In winter the wren moves swiftly like a little mouse through dry vegetation by the pond. In a hot summer afternoon the swallows and martins come flying to the pond, taking a bath. The common buzzard is sometimes seen by the wetland, probably hunting for amphibians and rodents. The sparrowhawk comes like a jet, attacking songbirds on the feeder. The marsh warbler is sometimes heard from the nettles. For two years the mallard nested by the river and settled in our wetlands with the chicks. We were not very happy about it but could not chase them away. One year the mother duck had thirteen chicks and when someone approached her she would quickly attack the invader's head. The sad story of the duck family follows below. *-ps-*

Night meetings with mammals

Sometimes I sleep in our hide by the wetland. Early morning around 4am is a great opportunity for unexpected experience. One such morning I observed a large male fox, treading cautiously between the ponds, lifting up its tail and looking for something to eat. It was most likely him who was behind the disappearence of several baby ducks. Mother duck ended up raising only four chicks. Another time I was awakened by the "shout" of the otter, I ran out and I could see it face to face. It was only about

twelve feet away from me, then it slipped into water and stuck out its face with long whiskers before it disappeared in the stream. One night in March my wife and I heard something whistle sharply by the ponds. First we thought of two little owls. But because it was close to the river we realized it would be otters and soon we saw two large male otters, fighting for territory.
Our presence and flashlights quickly chased them away. *-ps-*

Theater of relationships

The wetland is a stage of mutual relationships, dependencies and predation. I don't particularly like the last word but this is what the colorful, vibrant life here is also like. It is like a grand, sometimes even dramatic theater. The bright kingfisher hunts for beautiful shiny dragonflies, the fox stalks by the ponds for its prey. Grass snakes, large and small, are seen daily as they devour tadpoles. The sparrowhawk's sharp claws snatch a bright tit or robin from the feeder. We find remnants of fish or frogs, the otter's feast. Sometimes we don't quite like it, we would like to change it somehow, to make the struggle for life less cruel. But there is nothing we can do about it, this is the law of nature. The miracle of creation has its dark sides, or so it seems to our human eyes. The psalmist writes in Psalm 104: "The Lord made the moon to mark the seasons, and the sun knows when to go down. You bring darkness, it becomes night, and all the beasts of the forest prowl. The lions roar for their prey and seek their food from God. The sun rises, and they steal away; they return and lie down in their dens.

How many are your works, Lord! In wisdom you made them all."
It is rare to observe such dramatic moments. Most of the time life in our wetland is calm and peaceful, like the bubbly Golden Stream.
May we all have wise responsibility and creativity in handling the precious matter, water - Sister Water, as St Francis would say. We look forward to visitors and guests who will come to us to share ideas, to get inspiration for bringing Sister Water to their backyards, orchards and gardens. We are eager to hear about nature's response! May you find many surprising adventures on this road! *-ps-*

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Vibrant life under water

The stagnant waters of the ponds are always full of action. This is often concealed from the sight of the visitor and yet there is much to look at. If we stand by the water quietly and look we will soon notice movements under water, on the shallow banks, among water plants or above water surface. We will see water mollusks slowly making their way. This will be the great pond snail with its sharply pointed shell or the great ramshorn with a thick target like shell. Both gastropods like overgrown stagnant waters where they can feed on algae and plants. They lay their gel like eggs on stones and water plants. Spawn of the great pond snail forms a gelatinous cylinder, that of the great ramshorn is loaf-shaped. A mature gastropod will lay up to 300 eggs in one spawn. Sometimes we can see an usual thing: these water snails can use water surface to breathe air and to move, in other words they move upside down on the water surface, using surface tension. Water striders also take advantage of surface tension. Their keen sense of water movement tells them where to find prey. Water surface is like elastic fabric for them. Whirligig beetles remind us bumper cars as they circle rapidly on the surface. Their group behavior is a survival strategy: when they move so fast they cannot be caught easily. They have remarkable divided eyes which enable them to see both above and below water. Backswimmers are another interesting species. Their hind legs remind of oars and they swim under water with their belly upward, on their backs so as not to be visible. Against the sky their light colored backs are not easily visible to their predators. Because they breathe atmosphere air they must come above the surface. Their relative, the water scorpion, really looks like a scorpion, and that's what I thought when I first saw it as a child. It has a brown, flat, oval body and a small head, the first pair of legs is used for hunting prey, the hind pairs are used for movement. Adult water scorpions have two long tubes on the abdomen which allow them to breathe without coming above the surface. I have seen several times how the water scorpion caught a decent sized tadpole. Our ponds are also home to the great diving beetle. Larvae, as well as adult beetles who have strong jaws, are skilled predators of amphibian larvae and fish, sometimes they will also feed on carcasses. Their bodies are covered with a protective layer to keep them dry and safe from algae and fungi. It also makes swimming easier. The great diving beetle seems to breath with its abdomen: it collects air in wing cases. Having "breathed in" like that it can stay under water for about ten minutes. We got the diving beetle here by "air mail" – adults are able fliers, especially at night, and fly to find new habitat. To take off they climb on plants or elevated surfaces and they land on water.

Taking off the beetle empties itself to be lighter, after landing it fills with water to dive again. Sometimes the diving beetles mistake a wet road or a steel roof for a shiny water surface. When we cleaned the pond we found perhaps the largest water beetle of the world, the water scavenger (Hydrophilus piceus). It can be nearly 2 inches long. Larvae are carnivorous, adults feed mainly on algae. We have no idea where this giant came from.

In spring and in summer the air above the ponds is full of little “helicopters.” Yes, dragonflies, the amazing fliers of the insect world. Most have a bright, long, slim body and transparent glass-like wings. They move characteristically by rapid flight and hovering, just like a helicopter. Larvae live in water, adults on dry land; both are predators. There are ten to fifteen different nymphal stages, depending on the species. The azure damselflies, for example, form a tandem while mating. It is amazing to observe them when they mate and lay eggs together into water plants or to observe a freshly emerged adult and its exuvia, its old “skin.” Since the creation of the wetland we have observed 11 different species of dragonflies and damselflies.

Spring is also the mating season for frogs. Common frogs lay eggs in large clusters while common toads lay eggs in long strings. Tadpoles hatch after three or four weeks and two or three months later the small frogs, about one inch long, move out of water. Every year hundreds of tadpoles turn into frogs but only a small percentage of them lives to adulthood.

A newt is another of our water animals, sometimes incorrectly called water lizzard. Most commonly we see the alpine newt but sometimes also the smooth newt or northern crested newt. It feeds on insects, worms and other invertebrates. Eggs are layed individually on water plants. Metamorphosis occurs after about three months and juvenile newts move to land. They reach reproductive maturity in their third year. Other special inhabitants were discovered in the mill race which brings water to the wetland: the brook lamprey, a snake like animal which lives in sand and mud sediments, and the bullhead, which is a poor swimmer and moves by short jumps on the river floor. The presence of these protected species shows that water is clean and the stream floor rich.

We are thrilled to see how our ponds help retain water which provides habitat to many water insects, invertebrates, amphibians, reptiles, birds and mammals all year round. Come and watch nature’s wonderful performance. We will be happy to inspire other people to create similar wetlands and make home for many threatened animals. *- fl -*

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Snakes and lizzards

Our natural garden provides shelter to animals which many of us would not necessarily like for pets but whose place in the life cycle on the earth cannot be doubted. Our snake shelter and dry walls are places where we can – from a safe distance – meet these odd creatures which we don't normally get to see. These are animals who cannot keep their body temperature and depend for warmth on their surroundings. They are drawn to warm piles of rocks, sand or compost which produces warmth as it decomposes. We took an extra step in our natural garden and built a large snake shelter. It's a pile of stone, sticks, grass and leaves covered with black plastic to accumulate more warmth. Visitors are often excited to see several grass snakes and blindworms lying on the pile as the foil is removed. They disappear into the depths of their house in the blink of an eye. Other animals also like the snake shelter: ants, ground beetles, lizzards and even the bank vole, a small mouse which we observed among the grass snakes last year throughout the summer. All these creatures play an important, by people often misunderstood role in the life cycle on our planet. Besides they are useful helpers in the garden: blind worms and ground beetles hunt slugs and lizzards eat all kinds of insects. They have their place in our garden and there is no need to be afraid of them.

- jl -

Natural garden, or: mess is okay

The wetland by the A Rocha center, with its snake shelter, dry walls for lizzards, beetle shelter, fern corner, mounted bed with sand and dry soil, edible forest, insect hotels, piles of sticks and stones, nettles and other wild plants, is an official Natural Garden.

Many of us might wonder what people would say if they saw nettles or piles of sticks and stones in our backyard. But the traditional idea of a neat, trimmed garden will no longer stand in a time of loss of species. In an intensively used area plants and animals will often find shelter in those places which we have neglected. Realizing that wildlife habitats are getting smaller and smaller nature lovers have begun to create gardens which are intentionally wild and seemingly neglected.

But what does it mean to have a natural garden and what does a garden need to have to become one?
The project of Natural Gardens originated in Austria and started spreading to other countries. A natural garden is a safe place for life where the gardener works closely with nature. There are three main criteria for a natural garden: no peat, no industrial fertilizers and no pesticides.
Using **peat** or gardening soil containing peat contributes to the destruction of peat bogs which are becoming more and more rare. It takes hundreds of years for a destroyed peat bog to be renewed. From a human perspective it is an unrenewable source, just like soil. Bogs have an amazing capacity to retain water and release it slowly to the environment. Peat also acidifies soil while most plants prefer a neutral environment.
Pesticides are chemicals used in agriculture and forestry to destroy various organisms (herbicides, rodenticides, fungicides, insecticides). But chemicals threaten or kill all organisms without exception. They kill rodents but together with them also hares and storks, they kill the Colorado potato beetle and also the ladybird, the earwig and other useful insects. Pesticides are also harmful for people. We already know about some long term effects on organisms higher up in the food chain like predators, scavengers and omnivores, including man. The effects are mainly on hormonal balance, cancer and reproduction. And we still don't know enough about the effects of "chemical cocktails," the combination of all the different chemicals used on a plant during its vegetative season. Pesticides don't stay in soil and in the plants grown on it but wind erosion takes them far away and rains drain them to surface water and ground water. Refusing pesticides helps both nature and us.

But how then do we protect our crops in a natural garden? For example by planting mixed cultures, a mixture of different kinds of vegetables, herbs and flowers in one bed. In such variety insects will not so easily find all the plants which they eat. Some plant species even support one another or repel unwelcome consumers.
Let us plant resilient species which are appropriate to our climactic conditions. It is not necessary to grow vulnerable plants which will not thrive if we don't protect them with chemicals.
If we create a convenient environment we will attract little helpers, like insect-eating and seed-eating birds, predatory insects, vertebrates and organisms which live in soil. What they need is shelter, like bushes, stone walls, piles of wood and a quiet corner with wild flowers. A greater diversity creates more complex relationships between species and stabilizes the garden's ecosystem.

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Industrial fertilizers

These chemicals serve nutrients to plants in a fast food manner. Plants will absorb them by their roots all too easily and soil becomes nothing more than a container of roots. In a natural environment without industrial fertilizers plants and soil organisms form complex interspecies relationships. Minerals which a plant needs for its growth are often found in compounds from which the plant cannot extract them. But the plant has helpers like bacteria, fungi and protozoa which the plant attracts to itself by sweet secretions emitted through the cells of roots. The root area literally swarms with soil organisms. They live and die, releasing nutrients in exactly such form as the plant can easily absorb. Soil organisms also make soil stick together by their mucus and filaments, creating soil aggregates, clumps, which hold water and nutrients and protect soil from erosion caused by wind and water.

Pesticides and industrial fertilizers threaten not just the viability of organisms but also our health. Try to change these well worn paths of gardening. Let wildlife have some space in your yard. Visit us and find inspiration. *- jl -*

PŘÍRODNÍ ZAHRADA

Spolupracujme s přírodou - ona bude spolupracovat s námi

UKÁZKOVÁ ZAHRADA

Natural garden certificate

Voluteers week on Krupárna

We will be very happy if you contact us at work for nature. The ecocentre area is slowly growing, new elements for life are emerging and we need help with the maintenance of draws, flower meadows and ponds as well as with the cleaning of bark wood and also with the installation of new information boards. For illustrative teaching of children, we want to build observation piers above the pools. But far more activities await us than just inspiring and fulfilling work in a natural garden. We will go on a trip to the nearby Orlické Mountains and visit the ČSO Josefovské louky Bird Sanctuary. Consider the biblical texts about nature and God's creation. The evenings are dedicated to some of Marek Orko Vácha's books, talking and singing (we will be happy for a guitarist or other musician).

We will take a closer look at the life of birds, mushrooms and aquatic animals and we will be amazed at the unpretentious beauty of the god's garden in our Krupárna.

Looking forward to meet You!

Team A Rocha Pavel Světlík (-ps-), Filip Laštovic (-fl-) a Jana Ledečová (-jl-).

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