

March 2013

Dear BioNova® Partners & Customers,



“Anticipation is the greatest joy” - this is a common phrase in Germany. With spring just around the corner, all dedicated gardeners are eager to begin working outside. They're thinking about where to plant flowers and which ones to plant, but not only flower beds will embellish spring gardens with their bright colors soon - BioNova® Natural Swimming Pools (NSPs) will also come into bloom with their symphony of vibrant colors and diverse aquatic plants.

You can imagine how beautiful such a heavily vegetated NSP can be. In this month's Newsletter, we will feature a beautiful NSP in Switzerland as our Project of the Month. Not only the amazing Swiss landscape, but also the gorgeous vegetation of the NSP will take your breath away.

Before your NSP comes into full bloom this spring, you will have to do some maintenance, so we want to give you some advice on “spring cleaning” for your NSP and water garden. Spring is also the right time to replant aquatic plants if needed. Since there are so many different kinds of plants available, we want to present to you our BioNova® Top-Ten of aquatic plants to make your choice easier. In addition we will also inform you about “Wood in the NSP”, as this material is a very popular choice.

Finally, we will present a BioNova® NSP project built nearly 15 years ago in order to demonstrate how a Natural Swimming Pool continues to function successfully in the long run.

Enjoy reading!

Your Global Head Office Team,

*Rainer Grafinger, Christine Schoeck,
Andrea Enseleit, Stephanie & Jusuf Rifatov*



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Project of the Month



It doesn't matter at all that these pictures were taken on a cloudy, rainy day. Au contraire - the NSP in Wilderswill (Bern, Switzerland) at the foot of the Swiss Alps looks almost mystical.

The walls of the NSP are covered with vertical stone slabs (Quartzite Grigia). The area above is then faced with hard sandstone. Also, the coping is made of hard sandstone.

The 430 sq. ft. swimming area is finished with stone slabs, too. These slabs will make cleaning the NSP easier and the natural stone finish also looks

very beautiful! The water is cleaned in a fully biological way in the 325 sq. ft. sized regeneration zone. The water from the swimming area is pumped into the regeneration area where it flows through the gravel filter. The gravel filter is vegetated with carefully selected aquatic plants. Their roots absorb nutrients in the water, outcompeting algae and helping to keep the water crystal clear.

The garden where this NSP was built was designed to adhere to the principles of Feng Shui. Natural water plays an important role in the teachings of Feng Shui, so a BioNova® NSP was the perfect solution to fulfil the customer's desire for a tranquil, all-natural swimming facility!



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Dates

March

Eigenheimmesse, March 7 - 10, 2013, Bern / Switzerland

This year our Swiss partner Hans Graf will exhibit at the "Eigenheimmesse" at Bern, Switzerland.

Find more information here www.eigenheim-messen.ch or email Hans Graf (hansgraf@bluewin.ch).

Blumen und Bauernmarkt, March 2013, Mettingen / Germany

BioNova® Partner Peter Stokreiter will exhibit at a regional flowers and farmers market called "Blumen und Bauernmarkt" in March. There's no exact date for it yet but you can email info@stockreiter.de to get more detailed information.

Exhibition at Rheinberg, March 15 - 17, 2013, Rheinberg / Germany

BioNova® Partner Konrad Bitters will be at the exhibition at Rheinberg.

More information please email info@gartenpartner-bitters.de.

Pro Garden, March 21 - 24, 2013, Prague / Czech Republic

NSPs will be the main focus at the exhibition "Pro Garden" in Prague this March. That's why our Czech BioNova®

Partner Inet decided to join this event. For further information please contact inet@cmail.cz.

Spring Exhibition, March 22 - 24, 2013, Hamminkeln, Bitters Gardening Centre / Germany

BioNova® Partner Konrad Bitters once again invites all interested parties to the Spring Exhibition at his Garden Center in Hamminkeln. If you need more information please contact info@gartenpartner-bitters.de.

April

Information About NSPs, April 1, 2013, Binningen / Switzerland

As in past years, our Swiss BioNova® Partner Heinz Gutjahr (VIVA Gartenbau AG) invites you to this event on April 1, 2013. Anyone who has questions about maintenance or building NSPs is welcome to attend! If you need further information, please contact mail@viva-gartenbau.ch.

One Day Seminar, April 27, 2013, Atlanta, Georgia / USA

The date for the next BioNova® OneDaySeminar on Natural Swimming Pools has been confirmed!

It will be held in Atlanta, GA, on Saturday, April 27. You can find more information here

<http://www.bionovanaturalpools.com/>.

Please don't hesitate to contact info@bionovanaturalpools.com if you have any further questions.



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Maintenance of NSPs in Spring



Just like your house gets a thorough spring cleaning, your BioNova® NSP should be maintained every spring too. The following section provides some advice for NSP spring cleaning.

As soon as it gets warm enough you should cut back all of the old stems and stalks. This work should be completed before the plants begin to sprout again in spring. At the same time you can clean the pond edges and remove debris from the gravel surfaces. Sometimes the gravel slips off the liner - this can't be avoided. It may be necessary to cover any exposed liner with

gravel again. Leaves or sediments on the bottom of the pool should be removed with the help of a special pool cleaning device - but please never drain too much water out of your NSP! The BioNova® NSP expert in your area will help you with special machines and maintenance advice if needed. All of this maintenance should be completed no later than the middle of May. Please keep in mind that your local BioNova® NSP expert may have to visit you several times to finish this work.

Only the coarse sediment will be removed by the cleaning machine. Some fine sediment may still remain. Also, the water may be cloudy at the beginning of the spring season, but that's nothing to worry about. The cloudy water only lasts until the microbiology is working properly. Often the water becomes clear overnight. It may help to add microorganisms or a specially developed fertilizer. Please also remember to replace the adsorption substrate which is installed around the BioNova® fine filter (green, oblong bags). This material should be replaced every 1 or 2 seasons. The used materials in these bags can be reused as fertilizer for the bushes, flowers, or shrubs in your garden.

After finishing this work (cutting back the aquatic plants, cleaning the bottom of the NSP) please activate the pumps to begin removing fine particles (dust, leaves, etc.) from the water surface. At the same time, activate the gravel filter. The water should circulate at a minimum of 6 hours per day until the beginning of the bathing season (for example: 24 x 15 minutes with pump turned on). Now your NSP is ready for the 2013 swimming season. We hope you will enjoy many precious moments in your BioNova® Natural Swimming Pool this year!



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BioNova® Top-Ten Most Popular Aquatic Plants

10th place



The pickerelweed (*Pontederia cordata*) will give you pleasure for many years. It's a perennial plant and can grow up to 70 cm. It should be planted in shallow water (30 - 50 cm deep). *Pontederia* plants produce a large quantity of purple flowers throughout the summer from June until August.

9th place



The parrot feather water milfoil (*Myriophyllum aquaticum*) as well as the Eurasian water milfoil (*Myriophyllum spicatum*) are very popular plants for NSPs. The botanical name "*Myriophyllum*" comes from the Greek language and means "a vast number of leaves". Both plants grow in water that is 30 - 80 cm deep. They don't tower above the water surface, but grow underwater. These plants are perennial and herbaceous.

8th place



The common mare's-tail, (*Hippuris vulgaris*) comes in at number 8 on our Top-Ten. It looks pretty much like a small fir tree. The common mare's-tail loves to be planted in shallow water (0 - 50 cm). It's a creeping, perennial forb/herb. It roots underwater, but most of its leaves are above the water surface. The flowers are inconspicuous, and not all plants produce them. In herbal medicine, mare's-tail has a number of uses.

7th place



The flowering rush (*Butomus umbellatus*), also called grass rush, embellishes the regeneration area from June to August with its pink blossoms. It grows the best in shallow water (10 - 40 cm). This is a plant that we love to use here in Europe, but it is not very popular in other parts of the world. In Minnesota, USA for example, it is illegal to buy or sell the plant because it is listed as an invasive species.

6th place



Umbrella grass (*Cyperus longus*) is perfect for water that is 30 - 40 cm deep. It grows up to 100 cm in height and with its fresh, green leaves it's very decorative. Umbrella grass is a dual-purpose perennial. It belongs to the papyrus family. It will come right back early each spring.



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5th place



The lanceleaf water plantain (*Alisma lanceolatum*) has very beautiful, small flowers. It's a species of aquatic plants in the water plantain family. It is also known as narrow-leaved water plantain. It's a perennial herb that grows in 5 - 20 cm of water. It can grow up to 70 cm high.

4th place



The arrowhead (*Sagittaria sagittifolia*) is a flowering aquatic plant. It blooms from June until August. The small, white flowers of the arrowhead are very nice to look at. It also grows in the shallow water zone, from 10 - 40 cm. It can grow up to a height of 50 cm. The arrowhead is an herbaceous perennial plant.

3rd place



In third place we have selected a typical underwater plant. The Canadian waterweed or pondweed (*Elodea canadensis*) is a perennial plant. It's very popular because it produces much more oxygen than other submerged aquatic plants. It is planted in water that is 20 - 200 cm deep and grows only under the water level.

2nd place



The common hornwort (*Ceratophyllum demersum*) is very easy to handle. If you have an aquarium with fish at home you may already know it. It's a good oxygenator. The common hornwort is a typical aquatic plant and may be found everywhere in the world in damp or humid places. It's an entirely submerged perennial herb and grows best in 40 - 60 cm of water.

1st place



The calamus (*Acorus calamus*) takes first place in our BioNova® Top-Ten. It's also commonly referred to as sweet flag. The calamus is a perennial plant and is very similar to reeds in appearance. It is often planted in the shallow part of the regeneration zone in 0 - 30 cm of water. It grows up to a height of 70 - 100 cm. The leaves are sword-shaped and the spadix (spikes) are about 5 - 7 cm long. *Acorus calamus* is indigenous to East Asia. This plant is very popular because it's easy to handle and very decorative.



Wood in the NSP - Tips and Tricks for Appropriate Application

Timber is a very popular building material and can also be used in NSPs. You can use it to build a dock, a bridge, an entrance ladder, or as a terrace.

But using wood as a building material has also its downfalls. If you don't pay attention to the quality of the wood or if the wood is not handled professionally, the joy about your new NSP may be short-lived. That's why we decided to give you some helpful information about using wood as a building material in this month's newsletter.

Classifications



First of all, you should know that there are different classifications for the use of different types of timber. These classifications tell the consumer much about the wood's suitability for specific application sites. The different kinds of timber can also be divided into different classes of durability. This will tell you more about the appropriate use of the wood. 1 stands for very durable, 2 for durable, 3 for moderately durable, 4 for little durability, and 5 for not durable. These classes refer only to the center heartwood of the tree. The surrounding sapwood is not durable at all.

Classifications for use

- 0** - dry living area, no static workload
- 1** - components inside, static supporting components
- 2** - interior space with high air humidity
- 3** - outdoor area with weathering, but without contact with water
- 4** - in contact to earth and water, always wet

Resistance Class

Robinia	1
Western Red Cedar	1
Boubaril / Jatobá	1 - 2
Bangkirai	2
Oak	2
Siberian larch	3 - 4
European larch	3 - 4
Douglas fir	3 - 4
Fir	4
Spruce	4



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The Western Red Cedar is one of the most durable conifers. In comparison to similar kinds of timber, it is very lightweight. The BioNova® experts have had lots of good experiences with it.



The most durable European species is Robinia. It is indigenous to the southeast of North America but it was also propagated extensively in Europe. The only con to using Robinia is that because of the branchless length of only 4 - 6 meters and the often irregular vegetation, there are only relatively small and short timber boards available for purchase. The timber of the European oak is also very durable. Both species are resistance class 2.

Bangkirai is also very popular. This tropical timber is often used in outdoor applications. But not everybody likes the small pinholes (boreholes of small insects) which are typical for this type of timber. Bangkirai is liable to "bleed out", which means that the contents of the timber may be washed out by precipitation.

One more problem with Bangkirai is the quality of available timber: the more the demand goes up, the more the quality drops.

As the table above shows, timber of the European spruce, fir, pine, and larch is only moderately durable. Despite its durability, the European larch is used very often because it is less expensive than comparable hardwoods from overseas. Larch timber should be used outside only for components that are not directly in contact with water or earth all the time. For example, you can use it for roofed terraces without a problem. The same applies to the timber of the Siberian larch.

Thermally modified timber - an alternative?

You have likely already heard about thermally modified timber if you were looking for an appropriate kind of to use outdoors. The timber is modified by exposing it to conditions where there is reduced oxygen and the temperature reaches above 160° C (320° F).



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The consequential effects are:

- The degree of shrinkage/swelling can be reduced up to 70% - the timber is dimensionally very stable.
- The timber is more resistant against funguses and insects.
- Thermally modified timber is darker than natural wood and is evenly colored throughout - most in hazel or chocolate-brown. Therefore the cut edges have the same color as the interior of the timber. The color is not light resistant, however, it can turn grey and fade like natural timber too.

But be careful when using thermally modified timber. Because of the thermal modification, the strength is lower than the strength of unmodified timber. You should not use thermally modified timber for structural supporting components.

There are different forms of thermal modification. Every provider has its own technology. To summarize, you can say that thermally modified timber is a good alternative to exotic tropical hardwoods. The types of timber used in thermal modification are all native and not chemically treated at all.

Wood-Plastic-Composites - a product still in its infancy

Wood-Plastic-Composites (WPC) are composite materials made out of thermoplastic synthetics and wood fiber or wood splints. They are produced by a thermoplastic shaping process (for example extrusion, injection molding, or compression molding).

At the moment, the USA is both the main producer and the biggest market for WPC products. The material has not been thoroughly field tested yet. Decking boards made out of WPC can be handled like natural timber. They are very light, solid, and have a high durability, but since WPC still consists of 70% natural timber it is susceptible to fungus and rot. It also turns grey if you don't add special additives.

Since WPC is still a very "young" product, you can't compare it to any other product classes. Many well-known institutes are working on testing it's suitability for outdoor use.



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Protection of timber

It may seem counterintuitive, but when you use timber in the NSP you should take care to keep the water away from the wood or to drain it away as fast as possible. No matter how good the quality of the timber is or how well it has been installed, moisture is always bad for timber. The joints and seams, for example, are typical water traps and will hold moisture. If the joints are too small they tend to swell up and close when they come into contact with water. Also, the wrong execution of the splice at the substructure can lead to dirt and water deposits. When dirt and moisture collects on contact surfaces, this inevitably leads to damages. For this reason, the joints should not be smaller than 7 mm. The same is true when using tongue and groove planks.



Non-slip safety - are textured floorboards really better?

Textured floorboards are increasing in popularity and availability. The suppliers claim that the rippled or textured floorboards are non-slippery, but are they right? This question can't be answered decisively at the moment. Generally speaking, it can be said that it is very important to clean up all kinds of surfaces to avoid the accumulation of dirt and algae - no matter if the surfaces are smooth or textured. The water on all surfaces should drain off as quickly as possible so that the material can dry faster, and it is for this reason that textured surfaces may not always be appropriate - dirt, dust, and water can accumulate easily. On the other hand, smooth surfaces are very easy to clean but show imperfections and small damages more than textured timber surfaces. Both have advantages and disadvantages. In our opinion, non-slip safety has little to do with whether the surface materials are textured or not.

Cleaning - a brush and a hose are enough

All surfaces have to be cleaned. A brush and a water hose is all that you really need. You can also use a high-pressure cleaner if you prefer, although you will likely have to work with a special attachment, otherwise the water jet could damage the timber surface.



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Quality seals - an important suggestion for consumers

A quality seal and/or third-party certification can help you choose the right product, so we want to introduce you to a few of the most important ones in a short overview:



PEFC is the world's largest forest certification system. Their aim is to provide documentation, improvement, and support of sustainable forest management practices under economical, ecological, and social standards. For more information please visit: www.pefc.org.



FSC (Forest Stewardship Council) facilitates the development of standards, ensures monitoring of certified operations, and protects the FSC trademark so consumers can choose products that come from well managed forests. For more information please visit: www.fsc.org.



Qualitätsgemeinschaft Holzwerkstoffe e.V. (Community for Quality Wood-Based Materials) places a quality seal for wood-based materials on all products that meet their strict quality standards. All products with this seal can be characterized as safe and non-hazardous to health.

For more information please visit: www.qg-holzwerkstoffe.de.



www.bionova.de

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BioNova® History



This BioNova® NSP looks like a serene forest lake. Upon first sight of this NSP, you might not realize that it is man-made at all!

Since 1998, the owners of this NSP have enjoyed the benefits of their own, private man-made forest lake. The NSP is located directly in front of the house, so the homeowners can experience its natural beauty every day when they step outside.

The regeneration zone is designed like the littoral zone (shallow area near shore) of a natural lake. It's vegetated with reeds and umbrella palms. Many beautiful water lilies grow in the deep water section of

the regeneration zone. Despite its overall naturalistic appearance, the swimming area in front of the sunny terrace is not planted, so the swimmers and the aquatic plants don't cross paths. The kids can have fun without disturbing the plants, and their parents can watch them from their sun loungers on the terrace. Who wouldn't love that?

