

# Joay Atkinson's Pond

*February 27, 2011, 3:00.*



4905 N Via Entrada  
Tucson, AZ 85718  
Address Service Requested

Danetta Mecikalski  
7580 Calle Sin Desengano  
Phone: (520) 297-9301



**Joay Atkinson's Pond**  
**13198 N Como**  
*February 27, 2011, 3:00.*

North on Thornydale, East on Moore Rd., North on Como... or - Tangerine & La Cholla - West on Moore, North on Como Drive

Please contact Brent VanKoevering at 780-3980 or Bob Panter if you are interested in hosting a meeting. Membership dues are due by the end of February. Please send them to Martha Cover, if you have not already. Or you can pay at the meeting.

Martha Cover  
2841 W Puccini  
Tucson, AZ 85741

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Editor's Note: Articles published herein are intended for the enjoyment of all and come from a variety of sources. The articles are not intended to replace veterinary advice. Pond owners, and not the club, are responsible for the health of their koi, water changes, what to do, and how to treat their pond. Reasonable effort is made to review these articles for accuracy before including them in the newsletter.

### Presidents Corner

2-14-

11

Was it cold at your koi pond? It sure was at mine. Even with the waterfalls going full force there was ice on the edges. That was a first for me in the 38+ years here in Tucson. I do hope the cold did not present to much of a hardship on anyone. The best thing was our koi did not mind at all. They just took a rest and did not move for a long time. It was kind of interesting seeing them on the bottom of the pond just in one spot and not moving at all.

Now since the temp has warmed up a little everyone is swimming all over the place. You would have never known there was such a cold spell. Remember that this is still winter and we can still have cold weather. When you are out at the pond the next time please take a good look at your koi and pond. Take the time to make sure everything is A-OK.

Time to start thinking about the Pima County Fair. It runs from the 14<sup>th</sup> of April till the 24<sup>th</sup>. We will be set up in the same place as last year, right in the middle of Pima Hall. It is all inside for us. We will have one eight-foot

tank, two tables, with electrical overhead. We will also be with the Shark Exhibit and a new exhibit that makes you feel like you are under water. Please volunteer to man our exhibit for three to four hours. You will get free admission and parking. Once your time is up at our exhibit you are free to enjoy the rest of the fair, or come early enjoy the fair then volunteer at our exhibit.

This is one way we can get our name out to the general public, and talk to people about our association. There are thousands of people stopping to see our koi. The kids really love it. They bring Mom and Dad to the tank to see the koi and love it. Show your support and volunteer today.

Pond Tour 2011 is just around the corner. This will be one of our best ever. As always we need your help. Like anything else it take a lot of time and people to make it happen. Support SAKA by supporting Pond Tour 2011. Thanks for your continued help and support.

For the love of Koi,

**Bob Panter**, President SAKA, Inc.

**Important Notice:** Going forward the newsletter will be distributed via e-mail only, unless requested otherwise. If you do not presently get the newsletter electronically, or if you wish to continue receiving it via snail mail, you must contact Brent VanKoevering at 780-3980 or [bvankoevering@longrealty.com](mailto:bvankoevering@longrealty.com).

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### Club Meetings

**Hosting Meetings:** For those wishing to host an upcoming business/education meeting, the club will reimburse the host up to \$50 (with receipts) toward food/beverage for the meeting. **We would like to see your pond!** Please contact Bob Panter if you are interested in hosting a meeting.

### Club Announcements

#### January Business Meeting Minutes

January Minutes will be published in the next newsletter.

#### Koi Pond Construction – Do's and Don'ts

There are three basic types of ponds, Water Features, Garden Ponds, and Koi Ponds. The differences are quite obvious when discussed. A **water feature** is merely a fountain or a small pond that circulates water for beauty and provides the soothing sounds of a waterfall. Most water features do not have fish

because the water contains a high level of chlorine (which kills fish) to discourage plant and algae growth.

Most ponds are called **garden ponds**. They are generally constructed about 1.5' to 2.0' deep, use a liner for water containment, and are filled with rocks or gravel. Typically these ponds have shelves along the sides to support water plant vegetation. A waterfall and a skimmer at opposite ends of the pond provide the total water circulation in the pond. A submersible pump located inside the skimmer provides the pumping power.

Disadvantages of the garden pond for koi are numerous. A few are as follows:

- There are no bottom drains. Water at the bottom of the pond becomes stagnant, since all the water circulation consists of moving surface water into the skimmer and pumping it into the waterfall.
- Rocks and gravel in the bottom of the pond collect debris that decays and cannot be removed without removing the rocks and cleaning the pond.
- Shelves along the sides provide a platform for predators to damage or kill fish.
- These ponds have no filters or ultraviolet lights for providing good water quality. The fiber pads in the skimmer catch only the large debris. Without filtration, most of these ponds will receive algae blooms and green water very quickly in warm weather.

Now let's discuss **Koi Ponds**.

A true koi pond possesses most or all of the following attributes:

- Pond is shaped to eliminate dead spots. Eliminate little nooks and crannies that will have no flow and will become stagnant.
- Smooth bottoms with drains can pull excess settlement materials from the pond bottom. Eliminate stones and rocks. These impede water flow along the pond bottom to the drains, and provide traps for detritus and Mulm.
- Water depth should be a minimum of 3 feet to protect koi from cold in the winter, sunburn in the summer, and give them room to escape predators. Pond sides should be straight down, with no shelves along the edges. This protects koi from predators.
- Liner versus concrete construction. Both types of water containment are good, and each has their own shortcomings. Liners are less permanent and can be easily torn if not handled properly. They should have an underlayment for protection from damage when someone walks inside the pond. Liners generally have large folds when they are assembled. These folds sometimes are unsightly, and can trap decayed debris. Concrete ponds are more permanent but concrete sometimes cracks causing leaks. Some cracks could be easily repaired with pool epoxy putty, which can be applied under water. In severe cases, the pond may need to be drained, cleaned and then repaired. New concrete ponds are always a high pH problem unless they are sealed with a non alkaline sealer that is safe for fish. Without this sealer, the pH must be reduced with acid or some other method, which usually takes 3-4 weeks.
- Bottom drains, also known as bottom suction ports, are a must in koi ponds. Without them, the pond bottom water becomes stagnant and decayed matter in the bottom can cause hydrogen sulfide gas, which is poisonous to fish. Bottom drains are a necessity to help keep the pond bottom clean.
- A skimmer is desired to trap floating materials. Skimmers are not a necessity, if the pond owner chooses to skim the pond mechanically. Either way, the floating materials should be trapped and disposed of in order to reduce the amount of settlement inside the pond.
- A waterfall is desirable for sound effects, but mainly waterfalls are needed to aerate (supply oxygen) the water. Aeration can be accomplished by other means such as streams leading into or out of the pond, and by using a commercial aeration device.
- Filtration: Koi ponds should have good filtration. There are many types of filtration on the market, such as vortex, bead filters, and Ultra media filters. Some pond owners make their own filters from various materials. Sand filters are not recommended for koi ponds because residue from the fish cause sand filters to crust over and tends to solidify the sand, making it difficult to back wash. A biological convertor is needed in koi ponds. It converts ammonia (a by-product from fish respiration and fish waste) into nitrites and then into nitrates (less harmful to fish and very beneficial to plants). Both ammonia and

nitrites are harmful to fish. Most mechanical filters also become bio convertors after a short time in operation. Other types of bio conversion are numerous.

- U.V. Lights (Ultraviolet Lights) are used primarily to control green water algae. These lights, when properly installed, kill the algae, which clumps together and can be filtered out by mechanical filtration. U.V. bulbs must be changed yearly to remain effective in killing algae.
- Pumps and plumbing must be sized to accommodate the water flow needed for a pond. It is generally recommended that the gallons of water flow per hour is equal to or exceeds the total pond volume in gallons. Pumps can be submersible or external type pumps. Both work effectively; however the pond owner should be knowledgeable of the amount of power consumed by pumps. Pond pumps are low pressure/high volume pumps that pull considerably less amperage than pumps designed for swimming pools and sump pumps.
- An Auto Fill Valve is used to keep the pond to a constant water level while compensating for evaporation and small pond leaks. These are desirable, but not necessary if the pond owner wishes to fill the pond with a hose. When a considerable amount of city water is added, de-chlorinator should be added to eliminate chlorine added to the pond by refilling.
- Pond operation: Pumps in koi ponds should operate constantly except for minor maintenance performed. Clear water is not necessarily quality water; therefore pond water should be tested for ammonia and nitrites on a regular basis and corrective measures taken when these are detected. Constant aeration is vital in summer months, since warm water does not hold as much oxygen as cooler water. Koi can die rapidly when water flow and aeration ceases for just a couple hours during the warm water season of the year. It is advisable to consider alternate aeration methods when systems fail. In an emergency, hydrogen peroxide (available at Walgreens and other local stores) can be added to the pond water to supply oxygen. A dosage of ½ cup per 100 gallons of 3% hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) will provide oxygen for approximately 4 hours. For example, in a 2000 gallon pond, 10 cups of hydrogen peroxide every 4 hours will be needed until the emergency has ended.

FOR QUESTIONS REGARDING THE ABOVE INFORMATION, CONTACT SKAPA KOI HEALTH ADVISOR, DON HARRAWOOD (915) 833-9339.

## *Don Harrawood*

### Montmorillonite Part 1

The addition of montmorillonite clays to fish ponds have proven benefits. Many koi keepers used these clays with great success.

Montmorillonite clays are commercially available under various brand names depending on the country of origin.

Montmorillonite clays, vary in chemical composition and purity, enhance water quality, replenish and augment minerals and remove certain unwanted wastes. The uses and benefits go further than this. Montmorillonite improves the lustre and skin quality of koi as well as heightening the colour. Added to food it is claimed to aid digestion and increase the koi's ability to assimilate the vitamins and minerals required in their diet.

Some claims are made that organic waste such as DOC will be removed from the pond. The ionic exchange capacity is increased. Some koi keepers use very high dosages to remove suspended algae.

There are several forms of brand names of montmorillonite available on the market. Some products are a pure montmorillonite clay. Others are a less pure form and have to be processed to remove and eliminate impurities they are mined with. Some brands claim to have bacteria additives. Other may have additives to the clay such as extra minerals, above what is naturally found in the clay. Whilst others are a montmorillonite clay / zeolite powder formulation.

It is interesting to note that a 100% montmorillonite will form a gel when mixed with water and not dissolve into the system. So in this case a little "impurity" is actually required.

The montmorillonite minerals are composed of hydrous aluminium silicates in the form of extremely small particles. They take up water between their layers, causing swelling, and change the interlayer spacing according to the mineral variety. In addition to being involved in inorganic exchange reactions, they react with and absorb some organic liquids, such as amines, glycols, glycerols, and other polyhydric alcohols.

Montmorillonite was named after its discovery locality, Montmorillon, France in the 1800's. Bentonite (Montmorillonite) was discovered in Wyoming, in Fort Benton shale - hence the name bentonite.

One of the confusing aspects of commercially available montmorillonite clays is the use of two names for exactly the same mineral. Montmorillonite clays are bentonite clays and bentonite clays are montmorillonite clays. They are not two separate minerals as we think. They are one and the same thing. All types of bentonite clays are grouped together under the Montmorillonite or Smectite group of clays. To speak of one is to speak of the other. Marketing of various brand names using the different terminology for the same thing, in the same text, is often responsible for the confusion that arises.

The description of montmorillonite is :- one of a number of clay minerals within the Smectite Group. It forms by weathering or hydrothermal alteration of other aluminum-rich minerals, and is particularly common in altered volcanic ashes called bentonites.

The description of bentonite is :- a native, colloidal, hydrated, non-metallic mineral of the Smectite Group that is primarily composed of the mineral montmorillonite.

And further - Montmorillonite is a member of the general mineral group - the clays. It is the main constituent in a volcanic ash called bentonite.

Montmorillonite has the chemical formula  $(\text{NaCa})_{0.33}(\text{Al,Mg})_2\text{Si}_4\text{O}_{10}(\text{OH})_2.n\text{H}_2\text{O}$ . It has a relative density (specific gravity) of 2.0 to 2.7, and a hardness of 2. Many trace elements and minerals are contained in this clay such as - Silicon Dioxide, Aluminium Sulphate, Iron Oxide, Iron compound, Sulphur Dioxide, Calcium Oxide, Magnesium Oxide, Titanium Dioxide, Potassium, Sodium, Calcium carbonate, Phosphorous allotrope. It is typically white, grey, or buff in colour but may have tints of yellow, pink, or blue. Montmorillonite has a pearly or dull lustre and is translucent.

In some areas the clay is near the surface. In others, many meters of soil has to be removed to get to the clay vein which may be only a meter or two wide and a meter deep, but runs for many kilometres. Just across the border in Mozambique there is a large deposit of bentonite at the surface. It has the most incredible pale yellow colour and is very pure.

In some parts of the world montmorillonite clays were formed during the Jurassic period many millions of years ago. Others originate from later periods. Just like all minerals in the earth, the quality of the deposit will vary from area to area and country to country. Whilst some are of excellent quality others are not very pure.

Montmorillonite/bentonite clays are mined in various parts of the world. A very large deposit and a 90% pure form is mined in the U.S.A. in Wyoming. Other deposits are found in Italy, Cyprus the Philippines, Brazil, England, Japan and the Philippines - and a very high grade is mined in a certain part of South Africa.

Montmorillonite can be found in low grade deposits which will contain about 30% - 40% of its base elements. Whereas a high grade or pure form will contain over 90% montmorillonite in its natural form.

By treating Montmorillonite with soda ash, the meta-bentonite Sodium Bentonite, can absorb water to about 20 times their dry volume and give rise to permanent suspensions of gel like masses. The sub-bentonites, containing calcium become Calcium Bentonite, do not swell to this extent but are still capable of absorbing from their surrounding at a phenomenal rate and contain as many minerals as Sodium bentonite. Calcium bentonites are nonswelling and break down to a finely granular aggregate that is widely used as an absorbent clay. I would recommend that you use a calcium bentonite for the pond for these reasons. The Sodium bentonite also works well but is less easily dissolved into the pond water.

Montmorillonite contains a balance of minerals in their natural colloidal form, making it easily assimilated. The minerals present in montmorillonite enhance the production of enzymes in all living organisms.

The deposits containing only 30% - 40% of its base elements (montmorillonite) are considered a low grade in the mining industry. In order to improve the grading (purity) some products have to be refined or processed. The other 60% - 70% of unwanted material has to be removed. Only after refinement does it achieve a 80 or 90% purity as claimed. Montmorillonite are naturally mineral rich clays, formed many millions of years ago under certain geological conditions - therefore, it appears that some products have a small percentage of minerals added to bring the quality up to an acceptable level.

Montmorillonite absorbs water and fluids readily, swelling to a gel-like mass. This property makes it useful

economically. Many industries, including textiles and chemicals, use it as an absorbent to refine out impurities. Montmorillonite is also used in drilling lubricants and as a plasticizer in moulding sands used in foundries.

Because montmorillonite clay is used as a human health food as well as in the fish industry, claims by health experts make interesting reading. An average mineral analysis of Montmorillonite by health experts demonstrate it contains no less than 67 minerals, including vital trace minerals. Recently it has been recognized and utilized by the cosmetic industry and by soil experts, who value it as an exceptionally good agricultural enhancement: crops grow faster, taste better, and are more resistant to disease.

Bentonite/Montmorillonite is used to seal dams, in bonding foundry sands, asbestos, and mineral wool, as drilling muds, in portland cements and concrete, ceramics, emulsions, insecticides, soaps, pharmaceuticals, and paints, in the manufacture of paper, for clarifying water, juices, and liquors, and as a water softener to remove calcium from hard water, removing colour from mineral and vegetable oils, also used as catalyst supports and absorbents in petroleum refining. Bentonite is also used as a binder in the animal feed industry.

If you every decide to buld a plastic lined pond use bentonite as a backing. By mixing bentonite into the soil and making it damp you get a wonderfully smooth, flexible protective backing to the liner when you fit it.

The idea that Montmorillonite clays could be used in the remineralisation of ponds originate in Japan. Natural mud ponds are lined with bentonite to seal them. It was also discovered that feeding small quantities to koi and occasionally bathing then in it or adding regulated dosages to the pond resulted in wonderful and significant effects on their colour and lustre. Montmorillonite can be easily added to your daily ration of food in small quantities. This is an excellent idea as it will replicate the koi feeding continuously off minute mineral rich particles on the floor of mud dams. Use calcium bentoinite for koi food.

Montmorillonite is used directly in the pond water each week in a recommended dosage. Use a calcium bentonite in the pond. Some products disperse more easily than others. Some have to be mixed with water before application whilst others can be sprinkled directly onto the pond surface. The pond will clear in about 6 - 10 hours, depending on the amount of organic material in the pond. Do not be worried in a new pond if the water does not clear in a day or two.

New ponds will take a long time to clear as the montmorillonite is trapped into the organic material in an established pond.

The difference between sodium bentonite and calcium bentonite can easily be seen. Sodium bentonite clumps more strongly and has a very alkaline pH. Therefore it is a good idea to rather use Calcium Bentonite in koi ponds. However it must be said that sodium bentonite works very well if it is used.

Although bentonite is found in many clumping cat litters and koi keepers are often tempted to use them in ponds these are best avoided. Manufactures of clumping cat litters often add chemicals to introduce a fragrance to the cat litters. Some cat litters are sprayed with a plastic compound to reduce the dust associated with the clay. Other cat litter have colorants added for commercial appeal. Unless you are absolutely sure – avoid clay cat litters in koi ponds.

## Kawarigoi Korner



If you have suggestions for the newsletter or items to be included in Karawagoi Corner or the Calendar, Please contact Brent VanKoevering at 520.780.3980 or [bvankoevering@longrealty.com](mailto:bvankoevering@longrealty.com).

Dennis and Kathy Leonard would like to thank everyone who came out to provide loving homes for their fish.

## Upcoming SAKA Education and Business Meetings

| <b>Date</b>               | <b>Location</b>                         |
|---------------------------|---|
| <b>February 27, 2011</b>  |   |
| <b>March 27, 2011</b>     | Joay Atkinson                           |
| <b>April 17, 2011</b>     | Casey Case                              |
| <b>May 22, 2011</b>       | Dan and Martha Cover                    |
| <b>June 26, 2011</b>      | Noel and Debbie Shaw                    |
| <b>July 24, 2011</b>      | Sandy and Joe Shiflet                   |
| <b>August 28, 2011</b>    |   |
| <b>September 25, 2011</b> | Curt and Lisa Ogren. Mountain View Koi. |
| <b>October 23, 2011</b>   |   |
| <b>November</b>           |   |
|                           | No Meeting. See you at the Show.        |

## Shows, Pond Tours and Seminars

| <b>Event</b> | <b>Dates/Location/Links</b> |
|--------------|-----------------------------|
|              |                             |
|              |                             |



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Today's Date: \_\_\_\_\_

# of Koi \_\_\_\_\_

Years Keeping Koi: \_\_\_\_\_

Pond size: \_\_\_\_\_

Would you like to host a meeting?  
 \_\_\_\_\_

Would you like to serve on a committee?

\_\_\_\_\_ If yes which one?  
 \_\_\_\_\_

**Make Checks payable to: SAKA, Inc.**

Mail to: Martha and Dan Cover  
 2841 W. Puccini Place  
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