



# IT'S Show Time

Show Packet is the last four pages of  
the newsletter

**September 2006**

## SAKA September Meeting Education

**Main Topic: (September topic)**

# How do I get my Koi to the show?

## ***KOI TRANSPORTATION***

**(HOW TO MOVE KOI FROM HERE TO  
THERE)**

*By Gene Ewy MD*

### **KOI ISOLATION AND HANDLING**

When a koi hobbyist wishes to closely inspect or move koi from a koi pond, the specific koi must be isolated and guided into a suitable container. A good quality koi net with knotless fine mesh and the circular frame totally covered is recommended to minimize the risk of damage to the koi. The bay depth should be shallow. The koi net should be as large as possible (depending on the size of the koi) though larger nets are more difficult to move through the pond water, particularly if the net has a telescopic handle and it is extended. Take it easy. Don't get the koi or yourself agitated. Don't agitate or stress the remaining koi. It's risky to approach the koi from its tail since the caudal fin may be damaged as the koi responds vigorously to the net touching its tail. Minimize net contact with the koi. Ideally approach the koi from the front getting the net under its head and gently guiding it into a floating tank or tub.

One advantage of the koi net is that a single person can guide the koi into a floating tank. The rim of a large koi net (guiding a koi to the floating tank) is used to submerge an end of the floating tank. The koi is then guided into the floating tank. This maneuver is easier if a second person appropriately



# SAKA News



submerges the tub or floating tank. A single individual can also bring the koi in the net adjacent to a floating tank or tub. The net is controlled with one hand which has been advanced on the pole to a position near the net. The floating tank or tub is submerged with the other hand and the koi is gently guided into the container. Don't lift koi from the water with the koi net, particularly.

Koi can be collected from a smaller pond readily in the manner described with a koi net. A telescopic pole will allow the net to isolate koi in a larger pond. If this is not practical consider PTTN - patience, time and two nets. The second koi net handler gently guides the selected koi into the koi net of the primary handler who guides the koi into the tub or floating tank.

If your pond doesn't lend itself to any of the above methods, a seine may be used to partition the pond into areas from which the koi may be collected. The mesh of the seine should be knotless. The seine should be longer than the width of your pond. The width of the seine should be greater than the depth of the pond. The seine should have floats at or top and weights on the bottom. Koi are not lifted with the seine.

## KOI HANDLING - SHORT DISTANCE MOVES

The koi that have been isolated and guided into a container are ready to be moved. This can be accomplished in a number of ways. If the koi is in a tub in the pond with enough water in the tub to cover the koi the tub containing the koi can be Ned from the pond. The tub or any other container in which a koi is being carried should be covered. A mesh cover, a solid cover or plastic begs on the surface of the water can be used. The container with koi can be carried by hand, placed on a cart and wheeled or the container itself may be on wheels. The koi should be transferred promptly to the destination water (isolation tank, show tank, etc.).

Koi sock nets are open ended fine mesh nets attached to a circular covered frame with a relatively short handle. The net is much longer than the diameter of the opening (42 inch sock net with a 10 inch diameter opening as an example). The koi is brought through the opening of the net head first by carefully advancing the net over the head of the koi or by manipulating the head of the koi into the net with your free hand. The koi is positioned in the body of the net, the end of the net is closed by one hand of the holder, the other end of the net is folded over to retain the koi the hands are held tautly apart as the koi is lifted from the water and transferred hopefully for only a - short distance. A head first exit of the koi from the sock net is preferred to avoid unlikely but perhaps possible fin or scale damage. Some mucus may be lost from the skin. This a safe method to move koi short distances.

I prefer to use plastic bags for most short distance moves. Double plastic begs (one bag inside another) should be considered particularly for larger koi for safety. Three mil and four mil begs are quite strong. Bag size depends upon the size

of the koi. Fish should be carried horizontally. Small fish may be carried in the small end of the plastic bag with the bag held upright, large koi may need be carried with the bag horizontal and held tautly between both hands. The largest koi may need to be carried by two handlers.

The top edge of the plastic bags should be rolled over. This results in a large relatively fixed orifice which frees one hand that can be used to direct the koi head first into the bag. Some pond water should be in the bag when the koi is gently introduced. There should be enough water in the bag to cover the gills of the koi as the bag is carried to its destination. A head first exit from the bag is ideal but I think the smooth plastic surface allows a tail first exit with negligible risk if done carefully. If the opening into the bag is large enough the koi can be lifted out by hand. For a short move without adding transfer water to the destination tank consider transferring in a plastic bag with a corner cut out to drain the water.

I have noted from a UK publication (Koi Health Quarterly) an instance of a tom plastic bag from the dorsal fin of a koi. From both a UK publication (Koi Kichi) and a Japanese publication (Rinko) recommendations are made to remove a palpable 'hook' on anal fins of large koi which might tear a plastic bag. If this could happen it would be an added reason to double or triple bag large koi.

Moving koi by hand is best reserved to transfer koi from one container to an immediately adjacent container. Koi have a slick slime coat, they may be quite active and they can be dropped. Dropping koi is not recommended. The handlers hands should be thoroughly wet. No hand jewelry should be worn. The koi may resist movement in a direction it is not going and become agitated.

If it is difficult to place your hands under a larger koi in the proper position for support of the koi during transfer, consider taking advantage of temporary disorientation produced in the koi when rotated in a clockwise or counterclockwise direction for a few turns. If going clockwise the handler should place his right hand across the left head and shoulder area and support the under surface of the koi just back of the head with his right hand when the koi is facing at eleven or twelve o'clock. Continue the clockwise rotation with the right hand, place the left hand under the posterior aspect of the koi when the head is at four to six o'clock. Lift the koi from the water. Bring the head close to your body for control, move your hands with the koi if it moves as you deliberately and promptly transfer the koi to the immediately adjacent container.

## PREPARING KOI FOR TRANSPORTATION

Stress during koi transportation should be minimized as much as possible. Stress may lessen the effectiveness of the koi's immune system. The possibility of infection or other health problems which could be transmitted to other koi in your pond is enhanced .



Koi should not be fed for at least three days and possibly seven days before transport. The production of ammonia during transport is reduced and the transport water is not polluted to the extent that it would be had the koi been fed during this fasting period. Koi may be eating algae from the pond wall during the period when they are not fed. If an isolation tank with adequate water volume and an active biological filter is available the koi could be in this tank at least during the last part of the fasting period. Additives to the isolation tank water could be salt, mineral salt or various medications. Be accurate. Do not over medicate. There will be less stress when the koi is in a dark environment during transport. Transport water can be cooled to reduce metabolism. Mild sedation could be considered.

## LONG DISTANCE TRANSPORT

In general koi may be transported for long distances and many hours safely in plastic bags or in rigid containers, The development of the plastic bag had an immense impact allowing safe worldwide koi transportation.

## TRANSPORTING KOI IN PLASTIC BAGS

It's time to get physical again. We're going to put our koi in plastic bags for transport. There is a wide choice in bag size and thickness. The bag should be longer than the rectangular corrugated cardboard koi box or any other container into which the bag will be placed. This allows secure closure of the bag using most of the length of the box.

Double plastic bags should be used putting one bag inside the other. Large koi transported long distances by airplane within the USA or from overseas may be within the inner bag of 3 to 5 bags. It is helpful to roll the mouth of the bag down before placing koi in the plastic bag. This produces a relatively fixed opening and keeps water from going between the bags. Put some water from the pond or water prepared specifically for the transport into the bag.

The koi is put into the bag by hand transfer or by using your free hand to direct the koi into the bag. Usually only one koi 18 to 20 inches in length is placed in a bag, perhaps two 15 to 18 inch koi are placed in the saw size bag, etc. The gills should be covered with water, I prefer to add enough water so that the koi can float, not rest on the bottom of the box. Some hobbyists and dealers put additives in the transport water. This includes such things as salt, mineral salt, antiparasitic medication, antibacterial medication, etc. If you choose to do so, do not overdose. Prepare the transport water accurately and add it to the bag. Transfer the fish into the bag by hand, sock net, or bag with a corner cut out to drain the pond water from the bag so that minimal pond water will be added to the transport water. The transport water will not be significantly diluted. The bagged koi is placed in a corrugated rectangular koi box, styrofoam box, polystyrene box, ice chest, etc. The length of the box is usually about two times the

width or height. The width and height are normally similar. Newspapers are often placed in the bottom the koi box primarily for insulation. I won't say that Japanese newspapers are best but the koi I have received directly from Japan have been calm and happy.

Look closely at the bagged koi in the transportation box. If water needs to be added or removed, do so. Remove all air from the bag by carefully compressing the bag down to the water level. Pleat the plastic bag near the mouth of the bag so no air reenters the bag. Insert the hose from the regulator (attached to an oxygen cylinder) through the mouth of the bag. Slowly fill the bag with pure oxygen to about three fourths full and withdraw the hose. Twist the neck of the bag so no oxygen escapes. Fold the neck of the inner bag over and secure it with rubber bands tightly placed over the folded neck. Use two rubber bands for safety. Seal the outer bags in sequence in the same manner. Insulating material (usually newspapers) is placed over the bag in the box and the box is sealed.

If one wishes to gradually lower the water temperature in the bag during transit, place frozen reusable freeze packs on top of the bag before adding newspaper insulation. Support the bottom of the cardboard box when it is being carried. Place the transport box or other container holding the bagged koi in the transport vehicle sideways to the travel direction. Braking during transit would then move larger koi sideways and would not bang their nose against the end of the box. The risk of injury is reduced. The transport box must be secured so it does not move during transit.

## MOVING KOI IN TRANSPORT TANKS

The other method of moving koi long distances is in transport tanks. Many varieties of tanks are used: 1) flexible liners such as vinyl coated industrial fabric liners in a rigid frame made born PVC, tubular steel or other material, 2) polyurethane tanks, 3) fiberglass tanks, etc. The tank must have a secure cover to retain water and koi. The zippered covers with vinyl tanks allow easy closure and easy access. The size of the tank is determined by the type of vehicle and the amount of weight that can be carried safely in the vehicle. Water weighs over eight pounds per gallon. There are seven and a half gallons in a cubic square foot of water. My transport tank for a station wagon measures 3 foot by 4 foot and is just over 19 inches high. Usually we carry 10 inches of water which is 75 gallons weighing 625 pounds. Obviously transport tanks in trucks can be much larger, carrying more water and fish. All tanks must be stabilized so they will not shift during transport. The transport tank water should be oxygenated before koi are added and the dissolved oxygen in the water should be maintained at about 9 parts per million or over. Pure oxygen can be diffused into the water easily using an oxygen tank with a regulator through an air stone or a fine-pore diffuser for pure oxygen. The advantage of a fine-pore oxygen diffuser would be a smaller bubble size (approximately 0.5 to 2 nun



diameter) which would increase the total surface area per unit of oxygen. Oxygen saturation is maintained with a slow flow rate. This system is used world wide with great success. Air, which is 21% oxygen, can be introduced into the water through an air stone (approximately 1 to 3 mm diameter bubble size). The flow rate would have to be significantly higher than the flow rate of pure oxygen to maintain the same oxygen level in the water. The source of the air could be from a 12 volt portable piston or diaphragm compressor operating from the car or truck battery during transit. An adapter from the cigarette lighter socket is used. If the tank is to be aerated for some time when the power source is not from the vehicle's 12 volt battery, a 12 volt marine or deep cycle battery (larger capacity) could be used as the power source.

Members of the Louisville koi club have developed and used a nice transport tank system utilizing a 12 volt submersible bilge pump which pumps about 500 gallons of tank water per hour through a spray bar for aeration. They have kindly shared this system with a number of koi hobbyists.

## OXYGENATION TRANSPORT TANK VERSUS CLOSED BAG

Multiple methods of aeration or oxygenation provide excellent levels of dissolved oxygen in the transport tank water. Overall, pure oxygen from an oxygen tank with a regulator for fine control of the flow rate is favored. One advantage of this system of oxygenation is that the flow is quite gentle and minimal carbon dioxide (from the koi's respiration) is blown off so the pH does not rise. pH is a measure of the hydrogen ion concentration in the water. The higher the hydrogen ion concentration the lower the pH the more acidic the water. A change in pH from 8 to 7 reflects a 10 fold increase in the hydrogen ion concentration. A change in pH from 8 to 6 reflects a 100 fold increase in the hydrogen ion concentration. The pH can increase with vigorous aeration as carbon dioxide is blown off. With the more alkaline water more of the ammonia would exist as unionized ammonia which is toxic. In a closed bag system with pure oxygen in the bag, dissolved oxygen levels in the transport water remain high. I have measured dissolved oxygen levels in this closed bag system after fifteen hours in transit. The oxygen saturation was 16 to 18 ppm, much above the 8 ppm needed for good aeration.

## ASPECTS OF AMMONIA

Let's consider some aspects of ammonia as it impacts koi. It is a normal product of protein metabolism in koi. It is excreted primarily through the gill - about 75%. It is potentially toxic and may cause death. Unionized ammonia (NH<sub>3</sub>) at 0.1 parts per million can be lethal.

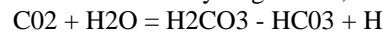
Now, here's the good news. Unionized ammonia reacts with water to produce ionized ammonia (ammonium) and hydroxyl ions.

$\text{NH}_3 + \text{H}_2\text{O} = \text{NH}_4 + \text{OH}$  ionized ammonia (NH<sub>4</sub>) is nontoxic.

Ammonia toxicity is strongly dependent upon pH. Decreasing the pH (solution more acidic) has by far the greatest effect on decreasing the proportion of unionized ammonia in solution. The above reaction is driven to the right by decreasing the pH. A greater proportion of the total ammonia exists as ionized ammonia (NH<sub>4</sub>) which is nontoxic. At 50 degrees Fahrenheit and a pH of 7 only 0.2% (1 part out of 500) of the total ammonia exists as toxic unionized ammonia. Ammonia toxicity is also decreased by lowering the temperature, by increasing the salinity and by increasing dissolved oxygen. The major factor however is the pH of the water.

## CLOSED BAG: IMPACT OF AMMONIA

Fortunately, in a closed bag system the carbon dioxide (released from the koi's gill as a product of respiration) dissolves in the water to form carbonic acid which forms bicarbonate and hydrogen ions, increasing the acidity.



More carbon dioxide yields more hydrogen ions. The bag water progressively becomes more acidic.

In a previous article concerning water chemistries during koi transport (Koi USA, March/April 1977) water parameters were determined when the koi were removed from their bags after being in die closed bags 13 hours. A single 20 inch koi was in each of two bags. Each bag contained 3.5 to 4 gallons of water. The pH of the bag water when the koi were placed in the bags was 7.4. The bags were filled with 100% oxygen and sealed. At the end of the 13 hour journey in our koimobile the pH of the bag water was 6.4 and 6.5. The carbon dioxide level was greater than 45 mg./liter in each bag and the total ammonia was 4-5 ppm and 4 ppm

Water pH and total ammonia levels were measured more recently when I received koi from Japan. The koi were in the closed bags just over 24 hours. The koi were slightly larger and each bag contained 4.5 to 5 gallons of water. The pH was 6.5 and 6.4, total ammonia was 6 to 7 ppm in each bag. In a closed bag inflated with oxygen the carbon dioxide released by the koi will progressively increase the acidity of the water to a level at which the ammonia will exist in its nontoxic form ionized ammonia. It is not harmful to the koi.

The maximum level of total ammonia acceptable with a pH of 6.5 and a temperature of 70 degrees Fahrenheit is approximately 14 ppm (extrapolated from Diagnostic Ammonia Chart in Summer 94 Koi Health Quarterly by John Redgrove). At 50 degrees F with a pH of 6.5, a maximum of 34 ppm total ammonia could be tolerated by the koi. The total ammonia in the transport water in the previous illustrations is well below the levels tolerated because of the acidification of the bag water by the retained carbon dioxide.

## TRANSPORT TANK: IMPACT OF AMMONIA

The pH of the water in a transport tank should remain stable. If anything, over aeration may reduce the carbon dioxide level in the water. This would slightly increase the pH of the water which would slightly increase the proportion of total ammonia



existing as toxic non-ionized ammonia. At a temperature of 69 degrees F and a pH of 7.5 only 2 ppm total ammonia would be tolerated by the koi. Ammonia production by the koi will continue during transit. Dependent upon transit time, ammonia production and water volume, a potential toxic ammonia problem must be addressed.

One option could be water changes. This could be difficult out in the wilderness with no idea about the make-up of the local water (chlorine, chloramine, heavy metals, etc.).

I prefer to use pond water to prepare the transport water prior to transport so it corresponds to the pond water the koi are accustomed to. Our tap water has low alkalinity and hardness plus chlorine and chloramines Sodium bicarbonate is added to bring the alkalinity level up and increase the buffering capacity. Calcium chloride may be added to increase hardness. NovAqua is added to dechlorinate the water. AmQuel is added to neutralize chloramine plus the anticipated ammonia production during transit. This is estimated from fish load and anticipated transit time.

### TRANSPORT TANK WITH BIOLOGIC FILTER

A small active biologic filter associated with a transport tank is an interesting possibility. Certainly the potential ammonia problem could be eliminated. Since the transport systems discussed previously work well, I'll wait to see how this evolves.

### BEST CHOICE

The transport tank systems and the closed plastic bag system work well for long distance transport of koi.

How far? How many? How often? The koi hobbyist should use the system that is easiest for him or her. Understand that system.



## KOI CLASSIFICATION & JUDGING CRITERIA

By Douglas Dahl

### *KOHAKU*

It is said "appreciation of koi starts and ends with Kohaku". What that means is Kohaku was the first class to be bred consistently or stabilized in about 1890. It also means that after a person has studied all of the classes of koi and has become experienced, they will come back to appreciate Kohaku for its simplicity and beauty. I will keep the

amount of Japanese terminology to a minimum in this lecture. A Japanese term dictionary will be available soon in KOIUSA magazine and on the AKCA website.

Before I continue on Kohaku, I want to take a minute to discuss judging points common to all classes. Koi are judged as a whole or holistically and are not judged on a positive or negative point system. Negative points can come into play in close contests. Koi are judged side by side based on what we see today and not what may be there next week or next year.

Japanese Judges have a disadvantage in often being able to recognize bloodlines, which can cloud their "judge for today" decisions because they know which koi cost more and has more potential. A Japanese Judge once answered a question on why a koi won an award replying, "because it was the most expensive fish". Koi may lose today only to come back to win tomorrow based on the competition tomorrow.

1. First, the koi cannot be missing anything like a fin or have any abnormalities like a pushed in mouth all of which will disqualify the koi from judging. The exception is the second set of barbels.
2. Second the koi must be healthy and not show signs of disease or parasites, which could disqualify the koi from judging. An exception is made for split fins or bruises judged to be caused during transportation.
3. Third, is the importance of body conformation. Broad, thick body shape of female koi is preferred giving an imposing appearance when compared to the thin trout shaped body of a male koi. Shape and size of the fins are important to be in proportion to the body. The head shape is important that it not be too short or too long or turn to one side. The koi when viewed from above should be symmetrical on both sides and not have one side flatter than the other. Even the way a koi swims is taken into account on conformation. Not all female koi hold their eggs well, which could affect conformation.
4. Fourth, in my opinion is quality of skin and deep, vibrant colors, which makes koi "living jewels". This also includes how well the koi is "finished", are all of the colors up, and is there a good sheen on the skin. It is conformation and quality that will catch a Judges eye from a distance.
5. Fifth is pattern that is artistically balanced and not front, tail or side heavy. Pattern must also be proportional to the size of the koi and not have a small pattern on a huge body or a huge pattern on a small body.
6. Last is uniqueness or character usually of the pattern on the head that makes this koi special.

Now for Kohaku. We have a snow white (shiro) base color with a red (hi) pattern. The pattern may be stepped or continuous. The white must be without blemish or yellow tint. The hi may be any one of the many hues from deep persimmon orange to Ferrari red but the red must be thick without any thin spots and the pattern must be the same color



from head to tail. Some Judges prefer the persimmon orange hi to the Ferrari red because the orange appears soft and the purple red appears hard and gaudy. Kohaku must have red pattern on the head. The pattern on the body must be artistically balanced and the kiwa or rear edges of each spot must be sharp like cut with a razor. A new bias in Japan has started to favor bloodlines that have the kiwa stop at the edge of each scale forming a scalloped edge rather than a straight edge across the center of a scale. The front edge of each spot (not on the head) may have blurred red color that is called “sashi” or insertion. Sashi indicates the koi is still improving in quality and is not finished yet. It is elegant if a Kohaku has a white nose and a white area with no red pattern just in front of the tail called a “tail stop” and several other names. Some subtleties of pattern not liked are a totally red head or red down the face to the nose that are heavy in appearance. Red pattern wrapping below the lateral line suggests a future koi when the red and white are better balanced. Red spots below the lateral line are disliked. The lateral line is a raised sensory organ running the full length of a koi half way up the side of a koi. A red head pattern with an additional red lip mark is called “kuchibeni” and can be cute if it balances the overall pattern. Red pattern at the base of the pectoral fin was considered unfavorable but is being accepted now if it adds to the overall balance of the pattern. Red into the tail or into the dorsal fin is still disliked. Kohaku tend to get black specks “shimis” in hard water with high pH.

## **SANKE**

Sanke or “Taisho Sanshoku” is a Kohaku with an added black spotted pattern overlaid onto the body. Sanke were first stabilized round 1917(the Taisho Emperor era). All of the criteria for Kohaku also apply to Sanke. In addition, the black spots must add to the overall balance of the pattern. The black or “sumi” spots must all be the same color, must be thick with good kiwa, may have sashi, must be shiny, lacquered black and are preferred on top of the white instead of on top of the red. Sanke sumi spots are usually above the lateral line on the back. Sanke may or may not have black stripes in their fins but too many stripes can make the fins appear heavy. Sanke have a tendency to get too much sumi on the back half of the koi making it appear tail heavy. It is difficult to finish the quality of the hi and the sumi on a Sanke at the same time because the hi peaks early in age and the sumi peaks later. Many Sanke have lost to Kohaku because the sumi on the Sanke was not finished which detracted from the appreciation of the Sanke even if the white and hi of both koi were equal. It seems unfair but on the other hand a Sanke with all colors finished has the advantage of difficulty and rarity over Kohaku. This advantage is not often discussed but definitely an advantage in judging. A Sanke with a circle red Tancho pattern on the head in addition to a red and black pattern on the body is a Maurten Sanke. A Sanke with a red pattern running the full length of the body almost covering the complete top is Aka Sanke. Aka is another term for red.

## **SHOWA**

Showa or “Showa Sanshoku” is a Kohaku with an added black, spreading pattern overlaid onto the body that wraps from the back down below the lateral line. The black is not spots like in Sanke. Showa were first stabilized round 1920(the Showa Emperor era). The earlier Showa bloodlines were a checkerboard of black and red with very little white showing making people call it a black koi with white markings. In fact, breeders kept only all black babies. Modern “Kindai” bloodlines have a more balanced amount of white, red and black showing. Not until the creation of the modern Kindai Showa did Showa compete on an equal basis with Sanke and Kohaku. All of the criteria for Kohaku also apply to Showa. In addition, the black wrapping pattern must add to the overall balance of the pattern. The black or “sumi” pattern must all be the same color, must be thick with good kiwa, may have sashi and must be shiny black. Early bloodlines had dull or matte finished sumi and were not as popular as the modern Showa. Showa **MUST** have all three colors on their face. Often there is a lightning pattern across the head down to the nose called “Menware” or a V pattern on the shoulder. Showa usually have black in their fins including black base of the pectoral fins called “motogoro”. Showa have a tendency to get too much sumi on the pectoral fins or on the back half of the koi making it appear tail heavy. It is difficult to finish the quality of the hi and the sumi on a Showa at the same time because the hi peaks early in age and the sumi peaks later. Many Showa have lost to Kohaku because the sumi on the Showa was not finished which detracted from the appreciation of the Showa even if the white and hi of both koi were equal. It seems unfair but on the other hand a Showa with all colors finished has the advantage of difficulty and rarity over Kohaku. Again, this is not often discussed but definitely an advantage in judging. Some Showa have light gray sumi under the surface of the scale called “boke” but many judges call it unfinished if some of the sumi is up and black but not all of it. Local, unfinished sumi marks on Showa are currently being evaluated whether they should be judged a beauty mark if the quality of the koi is high. Should a Showa with some unfinished sumi be less appreciated than another koi variety that is finished? It is not a simple answer because you have to see both koi to make that holistic judgment. However, these judgments have been questioned in the past. Showas with underlying sumi that forms a reticulated pattern like Goromo are called Kage Showa and are put into Kawarimono class. Go figure.

## **GOSANKE** (a collection of Kohaku, Sanke and Showa classes)

The first three classes I discussed (Kohaku, Sanke, Showa) are the oldest koi classes to be stabilized and as a group are called Gosanke. Breeders have had 8 decades to perfect the many bloodlines of Gosanke and also 8 decades to perfect the judging criteria for these big 3. Gosanke are highly valued because they have to breed 100,000 babies to get 10 koi with high quality patterns acceptable to the All Japan Koi Show.



Again, with rarity and cost comes appreciation and rewards with Gosanke winning almost all of the Major Awards at koi shows. Most of the other koi classes have been stabilized since World War II. Breeders of these koi classes usually get 90 percent or more high quality show koi from each breeding making the koi less expensive and much less rare than Gosanke. One exception is the new Shiro Utsuri (white with black wrapping pattern) and I will discuss this class next. I believe Gosanke, in addition to tradition and cost; also have the advantage of good contrast of color with white as the base that shows of the red and black pattern very well.

## ***UTSURI***

Utsuri are white (Shiro), yellow (Ki) or red (Hi) base color koi with wrapping black pattern forming a checkerboard pattern that starts on the back and wraps below the lateral line.

Utsuri were originally stabilized around 1925. Just as the early Showas evolved from the dark, heavy patterns to the modern Showa, so has the new Shiro Utsuri very recently (1990s) evolved to the balance of white and black and from dull sumi to jet-black sumi. The Ki and Hi Utsuri bloodlines have generally not evolved to this balance or to this jet-black sumi. As a result Ki and Hi Utsuri are not as highly valued and their sumi tends to fade away when moved from a dark pond to a blue show tank. They also have a tendency to get scattered sumi specks on their base color making it look dirty. Utsuri also may have the motogoro at the base of their pectoral fins and sumi in the other fins. Utsuri need to have black on the face sometimes in the form of a lightening pattern down the head. Like the modern Showa, only the new Shiro Utsuri can compete with Gosanke on an almost equal footing. Shiro Utsuri do not have the difficulty Showa have of finishing two colors which gives the new Shiro Utsuri an advantage over Showa in finish but Showa have the advantage in difficulty, rarity and high cost. Many of the comments I made earlier about Showa and also about Gosanke can also be said of the new Shiro Utsuri. I expect to see more Major Awards going to the new Shiro Utsuri in the future.

## ***BEKKO***

Bekko are white (Shiro), yellow (Ki) or red (Aka) base color koi with lacquered sumi spots on the back, like Sanke. Yes, the Japanese have several terms meaning red. Shiro Bekko often result from Sanke breeding but are koi that never developed a red pattern or lost their red pattern. The most difficult and important thing with Bekko is to get a clear, unblemished head with no sumi pattern. The fins are the same as Sanke. Ki and Hi Bekko have the same problem as Utsuri in the tendency to get many small black spots but the sumi does not fade at shows like Ki and Hi Utsuri tend to do. Hi Bekko with this condition are referred to as pumpkin fish (not meant as a compliment). I believe Bekko are not valued because they are culls from Sanke breeding making them second-class. Their appreciation also suffers from not having a head pattern that Shiro Utsuri does have.

## ***TANCHO***

In Kohaku, Sanke and Showa breeding, many koi turn out to have only a single red spot which is on the head. We call these koi Tancho, Tancho Sanke and Tancho Showa respectively and they are shown in Tancho class. The Tancho spot must be between the eyes and preferable perfectly round. It must not go back onto the shoulder of the koi or down to the nose of the koi. Red may not appear anywhere else on the koi to be shown in Tancho class. A sumi pattern may cross the Tancho mark on a Tancho Showa. No other variety with a spot on the head may be shown in Tancho class. This includes Goshiki with red spot on the head, Bekko with black spot on the head and Ogon with orange spot on the head to name a few.

## ***DOITSU*** (in all classes of koi)

Doitsu are Japanese koi crossbred to display the characteristics of the German "leather" carp with no scales at all or with the German "mirror" carp having large scales only along both sides of the dorsal fin or with large scales along the dorsal fin and also along the lateral line on both sides of the koi. Doitsu koi have been crossbred in Japan for most all of the classes and typically compete against scaled Japanese koi in the same class unless there is a special Doitsu class. Doitsu koi can easily have sharp kiwa due to not having scales so scaled koi are given the difficulty advantage in judging. All judging points being equal, scaled koi will beat Doitsu koi.

## ***ASAGI / SHUSUI***

Asagi koi have red below the lateral line to the under side, often some red on all fins and the red can come up from the belly to cover the gill covers and to the base of the mouth. Blue color is above the lateral line. The blue color can vary from dark almost gray to a very light blue depending on the bloodlines. The lighter shade of blue of the Narumi bloodline is preferred. The blue color of each scale is surrounded by a lighter ring around the edge of the scale giving a netting appearance which is very pretty when all of the scales line up in straight rows. This last point is very important in judging Asagi. Also, it is difficult to have a clear head with no blemishes so this also is a strong judging point. Asagi were documented over 160 years ago and have evolved to the beautiful specimens we find today. The Asagi is fully scaled.

Shusui is the Doitsu version of the Asagi. All criteria and characteristics of Asagi also apply to Shusui except there is no netting pattern but a sky blue top half of the koi. It is very important there is no break in the line of mirror scales from the back of the head along the dorsal fin and the scales line up in straight rows. Again, a clear head is very important. It is difficult to keep black spots from appearing on Shusui in hard, high pH water. A Shusui with red almost covering the back above the lateral line is called Hi Shusui. A Hi Shusui with the addition of blue mirror scales on both lateral lines separating the red top and bottom is called "Hana Shusui".



## **KOROMO**

**Koromo meaning “robed” is a cross between Kohaku and Asagi. The result is a white base koi with a red Kohaku pattern that has blue edged scales forming a reticulated pattern only on top of the red pattern. Ai Goromo has beautiful blue netting. Sumi Goromo adds sumi spots. Budo Goromo has what appears to be clusters of grapes on the red pattern. There are also crosses of Sanke and Showa with Asagi to create Koromo Sanke and Koromo Showa.**

## **KIN GIN RIN**

Literally means Gold and Silver scales. A chemical deposit creates a sparkle effect on each scale. Many of the koi classes have been crossbred to have Kin Gin Rin scales but if a koi has two rows of Gin Rin scales, it is shown in Kin Gin Rin class. Koi with less Gin Rin scales are usually shown in their normal class and the scales may or may not affect the judging. There are four types Kin Gin Rin scales. Pearl Gin Rin has a sparkle deposit in the center of each scale like a pearl. Diamond Gin Rin or Hiroshima Gin Rin looks like brushed aluminum sparkle. Beta-Gin is where the whole scale sparkles and is the most valued type. Kado-Gin has only the aft edge of each scale covered with this sparkling deposit. Gin Rin shows up best on white and red and does not show very well on black. It needs sunlight to be appreciated.

## **HIKARI MUJI** (also called Hikarimono)

Hikari means metallic. These are koi with one metallic color. Koi in this class include Platinum Ogon, Kinbo (shiny gold), Ginbo (shiny silver), Orenji (orange) Ogon, Yamabuki (yellow) Ogon and Nezu (silver gray) Ogon. All of those koi are solid color koi with metallic sheen. With no pattern to judge, all you have is a strict requirement for a clear head with no blemishes and a requirement for the color to be consistent from head to tail. The sheen on the fins, especially the pectoral fins, is important when judging ALL metallic koi. Hikari koi seem to have more problems with deformities of the mouth, fins and back than the other classes so look closely when you buy them. Also in Hikari Muji is the Kin Matsuba and the Gin Matsuba that have black reticulation in the center of each scale to form a pinecone pattern.

## **HIKARI UTSURI** (also Hikari-Utsurimono)

Metallic versions of Showa and Utsuri. Koi in this class include Kin Showa (metallic Showa with golden luster), Gin Showa (metallic Showa with silver luster), Gin Shiro (metallic Shiro Utsuri), Kin Ki Utsuri (metallic Ki Utsuri), Kin Hi Utsuri (metallic Hi Utsuri) and Kage Gin Shiro (metallic Showa with kage sumi). All of these tend to fade out when removed from a dark pond and placed into a blue show tank so they don't show well but will return to their splendor when returned to the pond. All of these also tend to have a dirty sumi look caused by the metallic. Again the clear head and sheen is very important especially in the pectoral fins.

## **HIKARI MOYO** (also Hikarimoyo Mono)

Koi with two metallic colors like Platinum and red. Koi in this class include Platinum Kohaku, Gin Bekko, Yamabuki Hariwake (yellow and Platinum), Kikisui (literally Water chrysanthemum Platinum Kohaku with wavy red lines on both sides) and Orenji Hariwake (orange and Platinum). Also included with two metallic colors plus black are Kujaku (Platinum Hariwake with black pine cone pattern), Doitsu Kujaku, Yamatonsihiki (metallic Sanke), Tora Ogon (Tiger koi actually a gold metallic Ki Bekko), Hariwake Matsuba (Platinum Hariwake with black reticulation). Metallic Shusui are called Kinsui and Ginsui with the former having more red markings. Shochikubai are metallic Ai Goromo.

## **KAWAIRMONO (ALL OTHERS)**(no metallic koi allowed)

We finally get to the end and it is a catch all class for all of the other koi that do not fit into one of the other classes. The list is huge but here are some of the favorites.

Included are all of the Karasugoi or crow carp family that are black with various white markings on the body and fins. Depending on how much white you have Hajiro (black with white only on the tail and pectoral fin tips), Hageshiro (black with white on tail and pectoral fin tips and on the head), Yotsushiro (Hageshiro with all white head), Kumonryu (Doitsu koi with killer whale pattern) and Matsukawabake (koi that changes from black to gray depending on water temperature forming a net black pattern).

There is a very new koi that has been put into Kawarimono due to lack of a better place because it is metallic and does not belong in Kawarimono. This is the Bene(red) Kumonryu called Kikokuryu. It is a metallic Kumonryu with a red pattern. It probably should be moved to Hikarimoyo because the black looks metallic so it has black, white and red metallic colors.

Next in favor is Goshiki meaning 5 colors that are white with a red Kohaku pattern and two shades of blue and black netting not only on the red but also on the white. Cool water makes the colors darken. It is important for Goshiki to have a clean red and white head with no sumi markings.

The next favorite is the Chagoi or brown/green tea colored carp. These koi grow fast and very large and become the favorite in the pond by their gluttony. Also in solid colors are the Kigo (yellow koi), Soragoi (gray blue koi), Midorigoi (green koi), Benigo (red koi), Aka Hijiro (red koi with white fin tips) and Shiro Muji (white koi).

Next is a very recent cross between Chagoi and Kohaku or Asagi called Ochiba Shigure. This koi reminds people of autumn leaves because the hi shows up as a bright mustard pattern on a gray body with black netting over the whole body. The Doitsu version of Ochiba Shigure has been called “antique” due to the colors.



The next group is the Kanoko group. Kanoko means “fawn” describing a dappled Kohaku red pattern that looks like cherry blossoms. This group includes Kanoko Kohaku, Kanoko Sanke and Kanoko Showa.

The next group are the Kage (robed)group. They include Kage Shiro Utsuri, Kage Hi Utsuri, and Kage Showa.

The last group are the non-metallic Matsuba koi. They are Aka (red) Matsuba, Ki Matsuba and Shiro Matsuba. There are also Doitsu versions of all of the above.



## Show Etiquette

(or A Koi Show is not a Little League game. You cannot yell at the Judges.)

<http://www.nfkc.info/Koi%20Show%20Etiquette.htm>

Remember a Koi Show is about appreciation of koi, their color and uniqueness. The pride and feeling you have for your fish are matched by every other koi keeper at the show. By following a few simple courtesies everyone can have a fulfilling show.

- 1) Do not go into the area inside the tanks. This area is for the judges and show officials. All fish can be viewed easily outside the ring of tanks.
- 2) Do not disturb, question, or distract the judges while they are working. They have a lot to do and the less distractions they have the better for all participants. You may watch the judging by silently and with respect. Judges often give instructions on how and why they picked certain fish after the judging is completed.
- 3) Do not point out which fish are your or identify any fish as belonging to anyone. To have fair competition anonymity of the koi keepers must be maintained.
- 4) Do not speak ill of anyone’s fish. One person’s eye for beauty is another person’s eye sore.
- 5) Have your own net (if possible) and have it located by your tank.
- 6) Do not bring food, drink or anything else over the tanks. A lot of effort is directed towards water quality and fouling the water in any way is unhealthy for the fish.

- 7) Keep an eye on your fish to assure they are doing well and not in trouble. If you see a problem notify a show official

## REVEALING the MAGIC OF MONTMORILLONITE CLAY

By Ray Kong

It is a heartfelt question I frequently hear from Koi hobbyist; “How can I enhance the overall quality and health of my fish?” A more sobering question sometimes follows, “I’ve spared no expense in building the best Koi pond environment, yet I recently lost several fish. What am I doing wrong?”

While I don’t profess to know all the answers when it comes to Koi health I have spent a number of years investigating natural clays. And in a slightly round about way. I believe I may have discovered something important that just may apply to your Koi’s environment that I would like to share with you.

We all agree that the environment (water) our Koi live in is very important. However there is a tendency for all of us to look at our ponds primarily from an aesthetic prospective. While appearances are justifiably important to us, the pond water is the actual world in which our Koi live. They have a different perspective. To get in touch with our fish’s view of their world, we need to go back to their homeland.

In Japan, Koi are raised in controlled ponds and natural lakes for the first year of their development. The breeders hold back the premium Tossai (1-year-old Koi) for a second and third year of growth in the ponds, in order to give the Koi the very best possible environment to reach its ultimate potential. Many of the top award-winning Koi in Japan have been grown for a number of years in the breeders’ mud ponds, where all the elements are there for them. When these Koi are removed from the ponds, they exhibit excellent body conformation, a strong luster with deep color, and sharp pattern separation. These prize-winning fish have also developed a strong immune system, producing a Koi who should live a strong, healthy life for many years to come. The number of prize-winning Koi that come from those ponds over the years of competition is compelling. I began asking, “Is there something special in the pond or lake water that helps these fish to be champions?”

### The Secret of Asian Ponds Revealed

The natural “mud” in many of these ponds is, in reality, a form of clay containing Montmorillonite. When Calcium-based Montmorillonite clay is present, it provides nutrients and detoxifies the water. These ideal conditions, combined with the lush natural micro-organisms that flourish in the mud, I believe, result in beautiful, healthy Koi. The nutrients from the clay in the water transfer into the internal systems of the fish, subsequently improving their overall health and appearance.

Today, newer Koi hobbyists and some with more than a little experience may not be aware of the importance of Calcium Montmorillonite in the pond environment. We create beautiful ponds and install the best, modern filtration systems, yet our Koi sometimes go through some pretty awful times. We are upset to see sick fish,



less vibrant colors, and poor overall health. Unhealthy fish can be frustrating for anyone who truly loves this hobby.

## Natural Foods

By Todo

Many of us feed our fish interesting stuff. Here is a thread I found on rec.ponds the other day:

Someone on this forum mentioned oranges, peas, grapefruit, etc. for koi. I got my boys and girls an orange, tossed some sections in and they grabbed them and took off like dogs with bones. It was too funny. How often can they, or should they, have this kind of treat? Or is a necessity and not a treat. Can they have peas, oranges, etc., all in one day? I appreciate any info you can give me on keeping these guys happy and healthy!

Hi, I also feed my fish banana, lettuce, spinach, and am going to try swiss chard tomorrow, I usually do this only twice a week as I am not sure either as to how often, a good question. I will keep posted to find out as well. (Ed. I like iceberg lettuce, just toss out the whole head and they have a fine time tearing it apart.)

Slice a watermelon in half lengthwise and throw it in. Pretty soon you will see the melon scooting around the pond. (Ed. This is my personal favorite special food. They not only eat the soft inner flesh. Over a few days they eat the rind and the thin shell left over. In short, they eat the whole thing.)

Overripe cantalope (finely diced) or banana are favorite treats.

My Goldfish are in the middle of their annual Mulberry feast. Ones that fall in the pond from the overhanging branch are eaten immediately. Ones that are swept into pond from walk get eaten too. I don't know where they put them all since fish don't seem to have hollow legs

## Fish Math

by Todo

A few days ago I was teaching a lesson on volume and what happens to objects when they grow. I used an example of a koi in a pond. Perhaps you'd like to hear some of it.

You get a new fish and introduce it to your pond. For argument and to make the math simple, let the fish be 5 inches long, 2 inches deep and 1/2 inch wide. (5x2x1/2). This fish takes up 5 cubic inches. It eats, breathes, evacuates waste and generally does fish stuff. Its impact on your pond's system is rather small.

Fast forward a year and after good care our koi is now twice its size (10x4x1). It now takes up 40 cubic inches. The ratio of its volume from one year to the next is 5 to 40, or 1:8. It is still doing fish stuff, but at 8 times the rate.

Another year and it is 15 inches long (15x6x1 1/2). The volume is now 135 cubic inches, a ratio of 1:27 from when it was introduced to the pond.

If you have five or six of these fish growing and living in your pond, it doesn't take a mathematician to see how these fish can quickly overcome a pond or its filter system's ability to support a quality

environment. So, when stocking a new pond or adding fish to an existing pond remember that fish don't just grow in length, but in all directions.

## Fish Math II

by Todo

Last month I did a little about how fish growth effects the biomass of your pond. Here is a related article I found on rec.pond

The USDA Watergardening publication [http://ag.ansc.purdue.edu/aquanic/publicat/usda\\_rac/efs/srac/435fs.pdf](http://ag.ansc.purdue.edu/aquanic/publicat/usda_rac/efs/srac/435fs.pdf) offers this "consensus" fish stocking guideline: Un-aerated pond: up to one 12" fish per 10 square feet of surface area. Aerated: up to one 12" fish per 2 to 3 square feet. and says conservative hobbyists stay well below these guidelines. To apply this to smaller fish, note that while their weight goes up almost with length cubed, their metabolic rate goes down with length. So feeding rate, oxygen demand, and stocking rate go with length squared, as a rough guide. So stocking four times as many fish, of half the length, is roughly equivalent. Until they grow! Pushing these guidelines requires good aeration and biofiltration, keeping the temperature from getting too high, not overfeeding, and increases the risk of losses during spring cycling. So there isn't a fixed stocking formula, but a range of difficulty. The rates the USDA gives elsewhere for professional aquaculture are much higher, acknowledging they can't be competitive without pushing the limits. That's in ponds designed with optimal aeration and filtration, not for appearance. It also demands full-time husbandry and accepts some losses.

## A Quick Course on Koi Quality

By Bill Ridgeway & Brian Baid, Aquatic Creations, LTD.

One of the greatest mysteries to new koi keepers is the issue of koi quality. "What makes one koi more valuable than another?" "Why are higher quality koi more expensive?" These are common questions asked by novices when they see the price tag on the higher-end fish. The 'mystery' isn't nearly as mysterious as you might think.

Koi quality isn't difficult to understand once you understand the criteria on which it is based. Just like show dogs, cats, and horses, koi must meet certain characteristics for general quality. Koi quality is typically split into three categories: conformation, color, and pattern.

**Conformation** High quality begins with the overall shape and condition of the koi, or its conformation. High quality koi should have no defects in body shape. The body must be balanced, symmetrical and torpedo-shaped. The fins should be in proportion to the body and even. Doitsu (partially scaled) koi should have balanced, even rows of scales.

Conformation can make or break a fish. All other features of a koi are worthless if it is missing an eye or a fin. Tumors, old wounds and stray scales can all detract from a normally spectacular koi and lower its overall quality. In shows, it is not uncommon to see a spectacularly colored and patterned fish lose because of its shape. While conformation is important in shows, it doesn't make a bit of difference in the backyard. Perfect conformation will not always matter to your typical koi hobbyist who has no desire to show their fish. So while one fish might not be perfect for show, the fish may be sufficient quality for the home pond.



# SAKA News



**Color** The skin tone of koi is also very important to the quality of a koi. The saturation of color, its consistency and how well the colors are separated determine the quality of the color. Without good color, the pattern of the fish is not as appealing and the value of the fish is lessened.

Quality koi should have striking colors. Reds should be opaque without too much orange present. White areas should be silky and free from speckles. Black markings should be dark and defined, as if they were painted with a fine brush. Metallic fish should have good luster (shine). All of the colors should be of consistent saturation throughout the fish.

The edges of the colors should be crisp and not show fading. Colors that bleed together are not desired in most koi. On certain varieties of koi, such as Kohaku, the edges of the red coloration come under high scrutiny by show judges.

**Pattern** Koi patterns can vary from simple to complex, multi-layered designs. Whatever the case may be, the pattern should be appealing to the eye and fit within the constraints of the koi variety. Simple is often elegant, so don't ignore a fish after one look. Study each fish carefully and choose patterns that compliment each other.

The importance of pattern is often over-emphasized. Pattern makes a difference in the quality of the fish only if the color and conformation are of equal quality. Pattern is nothing without proper shape and vivid colors.

But why do quality koi cost more? The answer isn't always based on market value. Many things influence the cost of koi, but the number one cost still remains in production.

The cost of koi isn't so much based on the quality, but on the effort and manpower required producing quality koi. Koi don't roll off an assembly line, koi are notorious for not breeding true. It is for this reason koi must constantly be culled by hand as they grow.

Culling removes the defective or lower quality fish as they grow. Smaller fish are destroyed, while larger fish are typically sold at a lower grad (and cost). Culling sometimes can be drastic, with only 1-2% of the spawn on the average making to sellable quality. When you consider spawns can be 100,000 or more eggs, the manpower required to grow, sort and cull each production cycle is enormous.

Once you understand the basics, you'll have a good foundation to go on. Always keep your eyes and mind open when you select fish and you'll never go wrong.



## Kawarigo Komor

## UP COMING EVENTS

**September 24, 2006**

The Young's

**October 6-8, 2006**

1<sup>st</sup> Las Vegas Koi Show

**October 22, 2006**

Constance Richardson

**November 2006**

27<sup>th</sup> SAKA Koi Show & Auction

**December 2006**

The Panter's



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