



Koi Ahoy

September
2012

PRESIDENT'S MESSAGE – Jerry Kyle



Another new pond to see. Life is good. The Haugland's have invited us to see the pond Bob built. There is no question he is handy, inventive, and has a critical eye. Bob proves that a well-positioned, beautifully landscaped pond does not have to be large to have eye appeal and present the tranquility we strive for adjacent to a covered patio.

Everyone will agree this is one of the most beautiful smaller ponds we have seen. To make the meeting more interesting he plans to also unveil his "Koi Grow out Contest" game. I watched and was amazed. This man who was smart enough to marry a teacher, handy enough to build a pond, and clever enough to invent a new game, is also a proud cook and will prepare for us his secret recipe Minestrone Soup. Now you better understand why I said life is good. We all hope you can make it to this meeting.

Have you looked at our website this month? Gus posted the special picture featured in the KoiUSA magazine on the home page. Go to www.camelliakoi.org and there we all are. For those of you who do not subscribe to KoiUSA, simply call toll free 1-888-660-2073. They will take a credit card or sign you up and send you a bill. It is that easy. For those who want a copy of the issue with our picture in it, Sac Koi in Rocklin ordered extra copies for us. Go see them.

The year is winding down fast and we are already looking to the next. Think about whom you would like to see as President, Secretary, and Director on the Board for next year. Perhaps you are interested. If so, let me know. We have an unusual system of two year terms with only voting for half of our elected officers each year so half already have a year's experience. Newly elected have the advantage of working with experienced helpers so our current Vice President, Treasurer, and other Directors will continue to be on board to offer their experience. In our club the President has the advantage of an experienced group of officers already in place that, as I discovered, made my job easier. The immediate past president is also automatically on the Board as a Director which means I will continue to be available to help or advise if needed.

Camellia Koi Club Report to AKCA, September 2012 by Jerold Kyle

The Camellia Koi Club had its Annual Koi Auction and as usual some used the moment to reduce their pond load. What is so nice is that it gives newer members, just starting out, an opportunity to get nice koi of size for a very reasonable cost. Everyone gains something. This month we are getting ready to meet at a new pond members have never seen before that, while not large, proves that well thought out design concerns can create a wow factor in smaller ponds when carefully researched. No wonder we got another couple of new members last month along with two returning past members showing up. Our club always welcomes guests at meetings to check us out.

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Photos from August meeting



Carlson's rose garden was a beautiful setting for the koi auction.



Duane re-bagged koi with adequate O₂.



Lots of koi being brought in.



Some "old" faces came for the auction too.



Always good to get together with koi friends.



Lots of good previewing and discussion



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Candidates for adoption individually isolated from potential contamination.

NEXT MEETING

Bring your favorite snack to share and a chair.

12:00 noon Board of Director's Meeting
1:00 General Club Meeting

At this meeting we are going to have a "grow out contest" to see who can get a koi to grow the fastest during the meeting. Bob showed me how to grow a koi before my eyes and I was amazed. We are going to eat Bobs secret recipe Minestrone Soup. The meeting topic while we are eating will be "Pond building or improving" issues to consider. It will be a question and answer session where I would love to get Why? questions to what we know we should do.

- Jerry

September 30
at
Bob & Michael's
4832 J Parkway
Sacramento 95823.

916-428-7640



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CKC BOARD OF DIRECTORS MINUTES

August 24, 2012

Attending: Jerry, Georgia, Marilee, Gus , Sharon, Gary and Duane
Treasurer Report: As reported in Koi Ahoy this month

Financial Report August 25, 2012

Beginning Balance \$8065.30

Expenses - 106.67

 \$10 DMV renewal Hallmark trailer,
 \$40 host fee,
 \$51.50 1/2 koi auction to sellers,
 \$4 change for cash paid
 \$1.17 PayPal fees

Income 223.00

 \$51.50 koi auction proceeds,
 4 memberships (paid thru 12/2013) 3 returning and 1 new. Yea!

Ending Balance \$8181.63

Old Business:

Discussion on positions available for Board of Directors in 2013. Our current board will actively seek candidates, and at the meeting today will ask for general membership to participate in Nominations. Nominations will then be officially made at the October meeting.

New Business:

Water Aspire Water Garden Products has contacted our club to give us discount products if we are interested in purchasing them. An internet investigation showed us that most of their products are ones we don't commonly use (nor endorse). On direct inquiry the Board asked Duane for his opinion, since he carries many of the commons products used by koi hobbyists. He said the volumes offered by Aspire were much larger than even he would carry because of limited shelf life. Further, we as a club don't store, distribute, or profit from any items like pond chemicals aside from those used in our shows or club activities. Georgia, moved that we not get involved with a vendor of this type. It was seconded and so moved.



Garry's Did You Know?

by Garry Chin

Dissolved Oxygen

Dissolved Oxygen Concentration (DOC) is the term given to describe the amount of oxygen that is dissolved in pond water. It is measured in terms of how much oxygen (by weight – mg) is dissolved in every liter of water. There are many factors that will affect DOC in a koi pond, some of which we can control, others we cannot, but can respond in a number of ways to guard against problems.

Of course, dissolved oxygen is important to all life in a koi pond, not simply the fish, and they all have a demand on the finite supply of oxygen dissolved in the pond water. The number of oxygen consumers in a pond will determine whether the dissolved oxygen concentrations in the pond are likely to be a problem or not, with a larger density putting a greater strain on the resource.

Oxygen Consumers in a Koi Pond

****1) Koi. ****

In relation to the activities of bacteria and other microscopic pond organisms, the oxygen demand by koi is not the greatest (but this will vary with stocking density). Compared to many other fish species, koi are relatively tolerant of low dissolved oxygen concentrations (which are understandable, being a fish from slower moving warm waters). The range of DOC in a pond will run from a minimum (0mg/l) to a maximum (about 15mg/l), where even the supply of additional aeration would not change the DOC. Koi are equipped with gills, which have a very fine and delicate structure. Gills are used to absorb the oxygen that passes through them with some oxygen being dissolved in the water. They are very efficient at removing oxygen, absorbing 80% of the oxygen that speeds by their gills in the water (compare that to about 20% efficiency of our lungs). Furthermore, koi are able to pack the oxygen from 100 ml of water into 4 ml of blood. Quite a feat of bioengineering!

2) Bacteria/Fungi

The majority of bacteria in a pond are aerobic (requiring oxygen) mostly found in abundance in the filter. The activity (and oxygen demand) of a bacterial population will vary, depending on the water temperature and the amount of food that is present for them to break down in the water.



The bacteria involved in breaking down ammonia into nitrites and then nitrates require oxygen. The greater the supply of ammonia and therefore nitrites, the greater the bacterial activity and demand for oxygen. A further group of bacteria, known as heterotrophic bacteria, feed on organic matter, (both soluble and solid), that is present in the pond. As solids gather in a settlement chamber or excess food is allowed to float uneaten, the oxygen demand of these heterotrophic bacteria will rise as they gorge themselves on a banquet of food and fish waste.

3) Invertebrates.

The more mature a filter becomes, the greater the diversity of the invertebrate life that will colonize. A range of hungry critters from the virtually microscopic to the easily visible will all demand oxygen as they break down organic matter. Again, the more food there is to break down, the greater the demand on the pond's oxygen reserves.

4) Vegetation.

Vegetation, both microscopic algae and larger plants, are oxygen consumers, day and night. Plants, like fish and all the other pond life, respire 24 hours a day, using up oxygen. Fortunately, the plants, during the day, also add oxygen to the pond's oxygen budget in excess of what they require in the day.

Oxygen Budget

However, koi ponds that have plants are actually sparsely planted, particularly with oxygenating plants, then there is likely to be little oxygen added courtesy of the plant life. Furthermore, as fish stocking and feeding rates is in excess of what Mother Nature would decree, there is likely to be insufficient oxygen entering the pond passively by diffusion from the atmosphere. This can soon lead to an oxygen debt, where the demand and consumption of oxygen is in excess of the rate at which it is being added.

Factors that can cause the DOC to drop:

1) Biological Factors.

The demands on the oxygen dissolved in the pond can be extreme. If feeding rates are high and koi are at their most active, then they will be consuming oxygen at a high rate, as will the populations of bacteria and invertebrates breaking down the ammonia and undigested organic matter excreted by the koi.

Plants in the daytime are natural oxygen producers, exceeding their own oxygen demand. At night, however, they still use oxygen but are no longer producers. This can lead to DOC dropping at night, especially if your pond is suffering from an algal problem. If algaecides are used, which can cause algae to die off this can also present a problem as it attracts considerable bacterial activity all of which consume DO.



2) Climatic Factors.

Temperature has a twofold effect on DOC. Firstly, as temperature increases the ability of water to hold dissolved oxygen decreases. Compounding this phenomenon is the effect that temperature has on the metabolism and oxygen demands of all life in a pond. As water temperatures increase, koi will consume more food; excrete more ammonia, which attracts more bacterial action in the filter. So just when a pond can ill afford too many demands on its oxygen, the oxygen requirements within a pond, including koi, reach their highest levels of the year. It is essential to step in and add more oxygen.

3) Chemical Factors

Pond treatments, both directly and indirectly, will cause oxygen to become limited in a pond. Any solute (dissolved substance added to a pond) will limit a pond's ability to hold as much oxygen as was possible prior to the addition of a solute. So when adding any treatments, additional aeration is always recommended.

Indirectly, many treatments can lead to an increase in organic matter that will be broken down. For example, algicides may lead to dead algae settling out in the filter, or other treatments can kill off bacteria, or lead to an increase in mucus production. All of these will eventually be broken down by oxygen-hungry bacteria.

Effects of low DOC on fish

Low DOC has very obvious effects on koi. If there is insufficient oxygen dissolved in the pond water, koi will respond in the short term, by becoming lethargic, swimming slower than normal, and perhaps hanging towards the surface.

If the condition persists or even deteriorates, koi will gather at water inlets or below a waterfall and even start gasping air from the surface. By this stage they will already have become stressed, making them very susceptible to disease. Whenever one takes a mucus scrape from a gasping fish, You will find an abnormally high density of protozoan parasites, busy capitalizing from the koi's momentary lapse of defense.

A low DOC is also likely to affect koi health indirectly, by adversely affecting the biological filter. The functioning of bacteria that are responsible for the breakdown of toxic waste is directly proportional to the dissolved oxygen concentration. Low DOC will lead to poor filter performance and a peak in ammonia/nitrite may well lag behind such an incident.

Detecting and Measuring More Precisely

A DOC deficit is only likely to occur at warmer temperatures, and a change in koi behavior will be the first sign of a problem. A more precise method of quantifying the problem (or the margin of safety on a hot day) is with a digital DO meter. In an instant, it will show the DOC and more advanced units will indicate the degree of saturation by simultaneously measuring the water temperature. Even more advanced is a permanent DO monitoring system which sound an alarm will should DOC levels drop dangerously low. Such



units are common place in intensive aquaculture and can also be used to detect either a pump or air pump failure due to the associated drop in DO.

Immediate Action

An acute low DO problem can occur through equipment failure, through unforeseen circumstances, or overlooking the likely effects of a pond treatment. In either case, once low DOC is detected, remedial action should be swift.

- 1) Agitate the water's surface short-term by pouring buckets of pond water back into the pond. This can alleviate a short-term problem while you think of a more permanent solution.
- 2) Spray a hose into and across the pond, simulating rain. This will cause DOC to rise as an emergency measure, and the cooler tap water will allow pond water to hold more oxygen.

Prevention

Preventing a low DOC is far better than responding to a problem, and there are many aeration strategies that will solve the problem:

1) Air Pump and Diffuser.

Air is the most effective when it is pumped to the bottom of a pond or filter chamber and dispersed into as fine bubbles as possible. The deeper a pond is, the greater the head of pressure an air pump has to displace before managing to deliver air to a diffuser. Hi-blow pumps are the koi keeper's standard, delivering good volumes of air under pressures capable of reaching depths of 8'. Recognizing that both fish and filters are oxygen consumers, aeration should be added to both the pond and biofilter chamber. Avoid aerating settlement chambers as the mixing action created by the air stones will interfere with the settlement action.

The golf ball type of air diffuser is very easy to install and cost effective. Smaller bubbles can be achieved using different diffusers, such as leaky pipe, micro-bubblers and air domes, the latter converting a bottom drain into a diffuser where the airline can be trailed, out of sight, up the water pipe and into the filter.

2) Injection.

Venturis inject air into a stream of water as it returns under pressure from the pump. This is useful at creating a mixing effect in the surface layers of the pond water, but not regarded as effective as an air pump and diffuser system.

3) Waterfalls

These mix air and water as it cascades down the waterfall and enters the surface. In similar fashion to the venturi, a waterfall's beneficial effects are limited to the upper layers of pond water.



Dos and Don'ts to Avoid a Low DOC

Do:

- 1) Try to aerate a pond as a matter of course, endeavoring to aerate down to the pond bottom.
- 2) Add additional aeration to the bio-filter chambers, it will enhance bacterial colonization.
- 3) Clean out settlement chambers regularly. Even when organic matter is removed from the pond, it still attracts oxygen demanding bacteria in the filter.
- 4) Add additional aeration during any pond treatment or medication.

Don't:

- 1) Assume that if your fish have survived the hot day without additional aeration, they will survive the night. Night time is when DOC can really begin to drop, so continue to aerate.
- 2) Continue to aerate below 12°C (~54°F). Allow fish to settle in warmer deeper water. Aerating will simply mix up all layers of the water, losing the benefit of having such a deep pond.
- 3) Over stock. This will lead to a doubling of demand on oxygen from the koi and the bacteria breaking down their waste.

Oxygen Levels in the koi pond

- * Warm water saturation is about 8 ppm
- * Continuous healthy minimum is about 6 ppm
- * Low level stress and poor feeding response 4-5 ppm
- * Acute stress, no feeding, inactivity 2-4 ppm
- * Death 1-2 ppm



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34th ANNUAL CENTRAL CALIFORNIA KOI SOCIETY KOI SHOW

Our annual koi show will be held at Fig Garden Village, 5082 N. Palm Ave, Fresno, CA 93704, corner of Palm and Shaw, on Friday September 28th (set-up 7am and koi check in beginning at 3pm). Saturday September 29th koi judging begins at 9:00 am and our show ends on Sunday September 30th at 3pm.

This show is open to any koi hobbyist interested in showing at our event and is cordially invited. Space is limited so please register early as show tanks will be reserved on first come first serve basis. There will be koi and pond vendors available selling pond equipment, koi food, and koi. We have added a Long Fin competition to our show this year.

Our show is always expanding and improving for both the koi hobbyist and public who come to enjoy viewing the beauties that come out to compete from as far as San Diego to as far north as San Jose, California.

To reserve a show tank or for more information please call

Show Chairman Rosimeri Tran at 559-970-8508

or email cencalkoi@gmail.com

or

Show Vice Chair, Tony Palazzo 559-409-9024

or email tonypalazz12@comcast.net

Check us out on the web at <http://www.cencalkoi.com>



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2012 Club Calendar (to date)

Date	Topic	Location
January 20	Winter update	Marilee & Jim's Auburn
February 26	Flora Tropicana	Elk Grove
March 25	High Hand Nursery	Rocklin
April 29	Bay Area Koi Vendor Tour	San Jose
May 20 (3rd Sunday)	Intraclub pond tour, progressive dinner, and poker run	Starts at Dennis' home
June 24	Golden Pond	Rocklin
July 29	Annual Potluck	Georgia's Home
August 26	Annual Club Koi Auction	Duane's home
September 30		Haugland home
October 28	Spaghetti cook-off Challenge	Kyle & Flockhart homes
November 18 (3 rd Sunday)	TBD	Do home
December 9	Christmas Party 1:00 p.m.	Umeko Buffer 8353 Folsom Blvd. Sacramento

If you would like to host your pond and house next year, please let Duane Carlson know. We will be delighted to schedule your convenient month.



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