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Equipment Manager: Marlon Tiller stuff@atlantakoiclub.org
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Auction Chairs: Alan Puch stuff@atlantakoiclub.org
Diane Giangrande koishow@atlantakoiclub.org
Koi Show Chairs: Diane Giangrande koishow@atlantakoiclub.org
Chad Bishop
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Public Relations Chair: Cheryl Jacobs pr@atlantakoiclub.org
AKCA Director: (vacant)
Volunteer Coordinator: (vacant)
Newsletter Editor: Bob Chaffer editor@atlantakoiclub.org
Webmaster: Cynthia Landon wizard@atlantakoiclub.org
Koi Rescue: Chase Tomkosky rescue@atlantakoiclub.org

January, 2021

By the Pond

Happy New Year to all!
For those of you who missed any of the previous videos, they are now visible on the AKC YouTube page - Search YouTube for: Atlanta Koi Club Organization

The AKC really needs your volunteer help in 2021. If you have a koi/pond topic that you believe that the AKC members could benefit from, please let me know. We need volunteer speakers who can help teach koi topics (on our Zoom meetings and in person...whenever that may be): Pond construction, koi diseases, filtration...what's worked for you...what hasn't? We need your volunteer efforts to keep the AKC fresh. If you can teach a topic and have some ideas, please let me know: vp@atlantakoiclub.org

Our first AKC Zoom meeting is tentatively scheduled for the last weekend in January. More details to follow in the next few weeks.

Watch out! Herons are always around!
And FINALLY...the election commercials have ended... Wahoooo!
Stay safe and healthy,
Kevin

Wahoooooo!! *Here we go!!*
The First AKC Member meeting of 2021 - Please put this on your calendar and Join Us!
When: SUNDAY, January 24th at 3PM

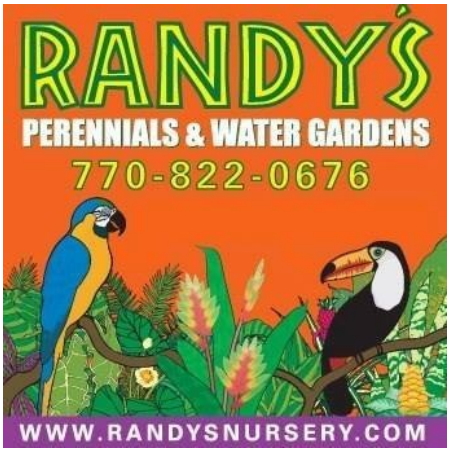
Discussion: **SENEYE UNIT - Pond Water Testing Device (The Good, the Bad and the Ugly)**
We'll see a video discussing this popular pond water testing device - we'll also discuss what's worked, and what hasn't - what's been good and what's been less-than-adequate as it relates to the overall performance of the unit: including the manufacturer's customer service support.

Atlanta Koi Club is inviting you to a scheduled Zoom meeting.
Topic: Seneye Unit - Pond Water Testing Device
Time: Jan 24, 2021 03:00 PM Eastern Time (US and Canada)

****TO JOIN THE AKC ZOOM MEETING - click the below link at 3:00pm on Sunday, January 24th****
Join Zoom Meeting
https://us02web.zoom.us/j/83385037244?pwd=eDRFR0xSQUpTR1hIWlN0ZDJTdEk2Zz09

Please remember our Sponsors:

Randy's Perennials, Splendor Koi and Pond, Koi Koi Pondscapes, Coastal Pond Supply, Atlanta Water Gardens, T&T Uniforms, The Koi Store, Neptune Aquascapes, and Mosquito Curtains



MEMBERSHIP

Invoices have gone out to those people who owe for the year 2021. If you did not receive an invoice, you are paid through this year. Those who owe for 2021, please make sure you pay by 1/31/21 in order to receive the maximum percent at the auction. You can pay online through atlantakoiclub.org

CHARITY PROJECT

The AKC was approached by a registered non-profit called, "I Talk to Strangers." They build community gardens in different areas around Atlanta. They bring the community and other organizations together to work on the projects. Our club has agreed to help them with a project in the Summerhill neighborhood where they will be building a small koi pond in the garden. I've been working on accumulating everything for the pond. If you have anything to donate, please contact melanie_o@comcast.net. I expect everyone will be able to donate an hour or so of help when the time comes.

Calendar for 2021

- January 24
- February 21
- March 14
- April 24 – Auction (volunteers needed!)
- May 1 – Auction day in case of rain on April 24
- May 16
- June 13
- July 10 – Summer Social (evening)
- August 14 (evening)
- September 12
- October 10
- October 15-17 – Koi and Goldfish Show (volunteers needed!)
- November 13 – Winter Social (evening)
- December – No meeting. Happy Holidays to all!

Water Temperature and Koi

Submitted by Chris Neaves on Mon, 01/29/2018 - 16:04

Temperature is one of the critical factors directly influencing every aspect of our Koi and pond life. Temperature has a direct bearing on metabolic rates of living organisms in the pond. It has a direct bearing on the health and growth of Koi, oxygen levels in the water as well as the oxygen consumption.

There are however, upper and lower limits to what can be considered good or ideal water temperatures. As temperatures rise so does the rate of growth of our Koi. Up to a certain point this is true, but beyond a certain point as temperatures rise, the oxygen saturation levels of water declines. At about 50°F there is no further point in trying to achieve higher water temperature as the amount of oxygen that can be dissolved in the water becomes the limiting factor in conversion of food to growth.

On the other end of the scale below 18°F metabolism is reduced to the point where the body is hardly functioning. Below 41°F Koi go into hibernation. And at around 3°F for any length of time the fish are close to death.

Two graphs demonstrating the effects of temperature on Koi are provided. If we examine the graph - ***Water Temperature - UK ponds compared to South African Ponds*** we discover the dramatic effect water temperature has on our Koi. The second graph - ***the effect of water temperature on oxygen consumption*** also demonstrates the dramatic effect temperature has on the daily lives of our fish.

The first point of interest on our comparison graph is the fact that northern and southern hemisphere summer and winter temperatures have been reversed so that the seasons coincide at the same time for comparison purposes.

The area marked between 27°F and 45°F is the optimal temperature for Koi keeping. At this temperature there is maximum growth for a given amount of food ratio. Above 50°F there is a fall in the conversion of food to energy and growth because of the relative decline in available oxygen levels.

Unfortunately, oxygen levels in the water and temperature are not synonymous with each other. High temperatures affect the fish because the D.O. (dissolved oxygen) is LOWERED. At the same time the B.O.D. (biological oxygen demand) of the whole system and fish is RAISED. Higher temperatures increase the toxicity of certain substances in the water as well as the invasiveness, and virulence of bacteria and parasitic pathogens. At higher temperatures the rate of decomposition of organics is much faster than at lower temperatures.

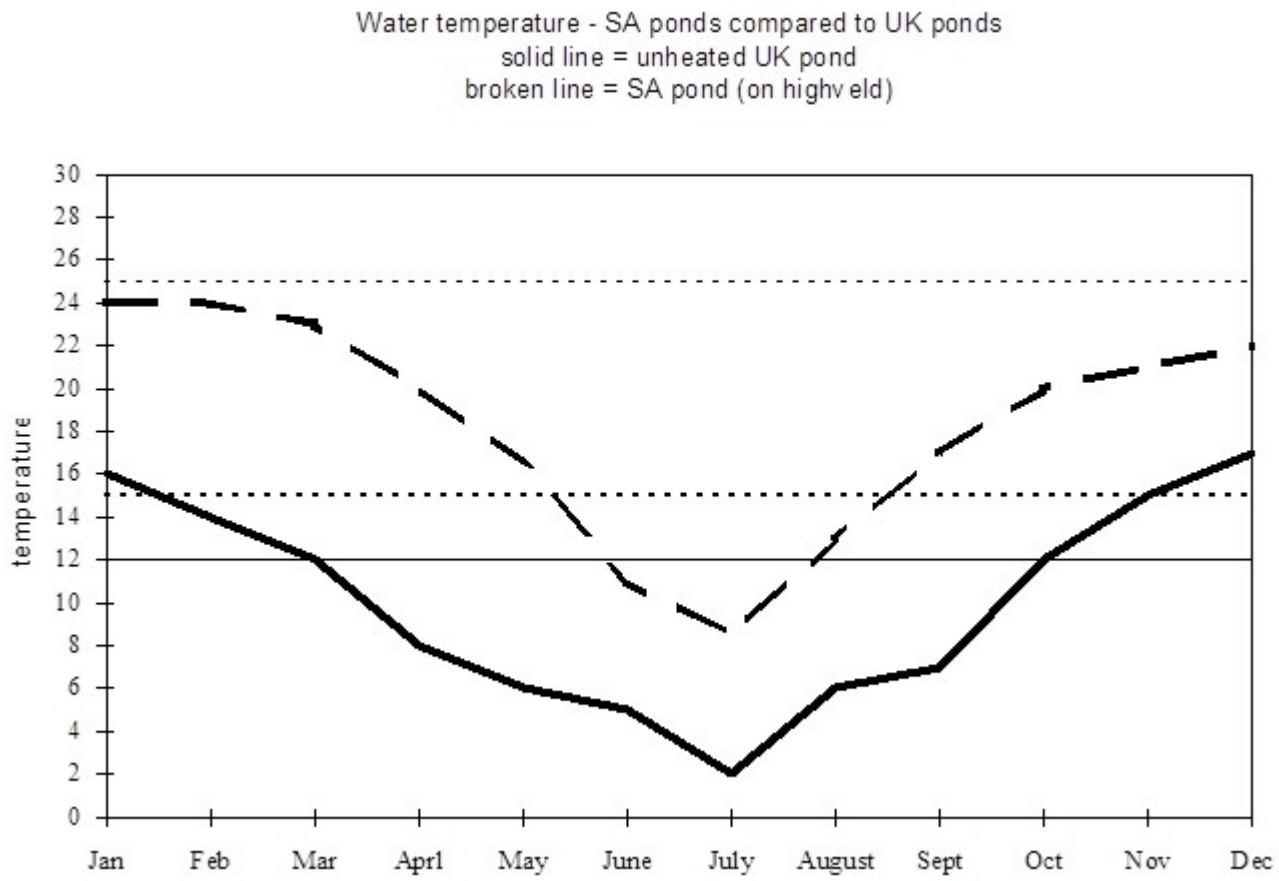
While temperature is critical to Koi growth and health there is a tradeoff between warm water and very warm water. Up to a certain point higher temperatures produce faster growth but often with fading colors.

In the graph the line marked at 22°F is worth detailed comment. Koi are poikilothermic. Their body temperature is the same as its surroundings. At higher temperatures body activity is greatly increased. For example energy requirements double between 18°F and 36°F.

As water temperatures decline body activity decreases. At or around 22°F the Koi's metabolism is reduced to the point where the immune system has virtually shut down. Oxygen and food

requirements are greatly reduced. Food should be withdrawn at or around 18°F. The blood supply moves slowly around the body. This shut-down is not a switch on or off at a certain temperature, it is a gradual change. Different Koi have different tolerances. Some will be more affected by temperatures than others.

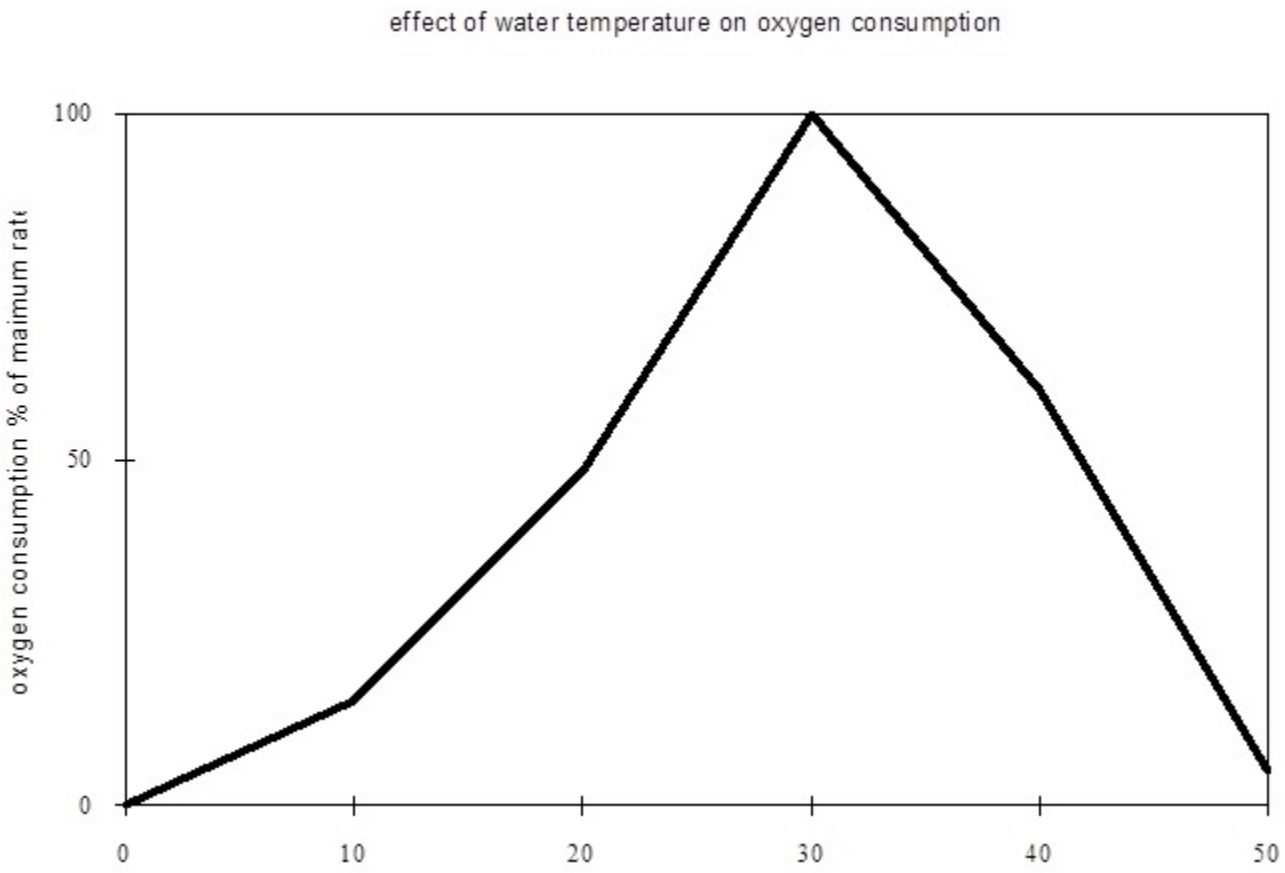
Although pathogenic organisms are also slower in their infection rates at lower temperatures, when introduced into the system, they can be still be deadly as Koi are almost incapable of fighting infection at low temperatures. An advantage of low temperatures is that not only the Koi have decreased activity so does everything else (such as pathogens).



Please note that this chart is in Centigrade (F=1.8xC+32)

KEY:
(1) solid line = unheated pond temperatures in the UK: note the long period of time where the water temperature falls below 12°C and the five months of the year where temperatures are below 10°C.
(2) broken line = pond temperatures in SA (on High veldt): note the few weeks of the year where temperatures are below 12°C. The high levels of sunlight can cause excess algae growth.
(3) line at 12°C = approximate temperature when metabolism slows to the point that the immune system is virtually not functioning
(4) dotted lines at 15°C and 25°C = temperature range for growth of Koi.
Note: Hobbyists should also take note of the rapid climb in pond temperature immediately after winter. The few weeks between the beginning of August and the middle of September can be dangerous times. Through winter the whole system has slowed down or in some cases biological activity has shut down (not died back). The Koi may have not been fed for some time which indicates the biofilter has not received food and has become dormant.

The sudden increase in temperature brings about a sudden increase in activity of the fish. Give the biofilter time to re-establish itself by gradually increasing the feeding rate between August and September and continue with water changes.
Suddenly feeding large volumes of food immediately after winter can bring about deterioration in water quality and associated gill problems.



Notes: (1) oxygen consumption increases with temperature. (2) metabolic and growth rates closely follow the temperature graph (3) the peak oxygen rate is maintained over a very small temperature range (4) beyond a certain temperature oxygen consumption decreases rapidly as temperatures continue to rise (5) a lethal temperature is reached.
In pond circumstances there is a natural few degree temperature change over a 24 hour period. However, moving Koi between ponds with a temperature variance of more than 5°F or 7°F may cause thermal shock and even death. Temperatures should be gradually adjusted between bags and ponds before the introduction of Koi. A temperature change of 0.4°F/min can usually be tolerated.
Chris Neaves

Calculating Pond Heater Size in BTU/hr Submitted by Michael Anderson AKC

Option A for Heat loss calculation for uncovered pond:
Heat loss (Btu/hr) = 12 X pond surface area X desired pond temperature - coldest ambient temp. Example: Pond is 9 feet wide and fifteen feet long, uncovered surface. I want the pond around 70F and it gets down to 28F at night. Sometimes colder, sometimes warmer. Here's the math: 12 X (9ft x 15ft) X [70F minus 28F at night]. Works out to: 12 X 135 sq. ft. X 42F margins. = 68,040 BTU/hr.

Option B for Heat loss calculation for almost completely covered pond:
Heat loss (Btu/hr) = pond surface area X desired pond temp. - coldest ambient temp. Make sure an airspace is maintained between the surface of the pond and the cover. Do not float the cover directly on the pond. Example: Pond is 9 feet wide and fifteen feet long, with a covered surface. I want the pond around 70F and it gets down to 28F at night. Sometimes colder, sometimes warmer. Here's the math: (9ft X 15ft) X [70F minus 28F at night]. Works out to: 135 sq. ft. X 42F margins. = 5,670 BTU/hr.

Calculating Pond Heater Size in Kilowatts:
First do the calculations to determine the BTU/hr needed for your uncovered or covered pond. Divide the BTU/hr calculation result by 3,412. This will tell you the size of electric heater needed in kilowatts (KW).
The example uncovered pond in Option A above needs a heat exchanger capable of 68,040 BTU/hr. The properly sized electric heater would be 20KW. That will be a very expensive system to install, and operate given the price of large electric heaters and the electricity to power them! So it you are planning to heat the pond, plan on some type of cover!

Cold Water Koi Feeding and Nutrition

At K.O.I., we base our recommendations on science, rather than just doing things the same way they have been done for years. This article contains some science about Koi food and feeding in winter that you may not be aware of. Let's start with basics from Chris Neaves (S. Africa), who wrote the K.O.I. course on Nutrition. Chris is widely recognized as a world-expert on Koi nutrition.

• Koi food should have a strong fishy smell. If it smells "off" like turpentine, or has no smell, it should be thrown out.

• Floating and sinking food may have the same ingredients and nutrition; it's how ingredients are handled during production which changes whether the food floats or sinks. Floating food is cooked, which improves digestion, but requires that vitamins be added after cooking.

• There is no advantage to color in Koi foods – if they are colored, it is to entice the buyer, not the Koi.

• Some Koi food has insufficient fat (lipid) content, because fats go rancid quickly. Dealers prefer foods with longer shelf lives so they can sell the entire batch.

• Koi food is the single largest source of profit for many shops and dealers.

• Koi require 23 amino acids (the building blocks of protein), 10 of which they must get out of their food. • If food is left floating long enough to become soggy, essential ingredients and vitamins are dissolved out of the food and food can start to spoil. Remove any feed that remains in the water for more than 15 minutes.

• Koi food must be stored air-tight, cool, dark and dry. Once opened, feed quickly picks up moisture, and can develop deadly mycotoxins.

• Ideally, Koi keepers should purchase food often, and in small quantities so that opened bags are not exposed to air longer than a month. Koi food bags should be vacuum sealed and have a production date on each bag. The bag should be tightly closed and stored correctly in between feedings.

• In general, it is advised to throw out any food more than 6 months old, as too much of the nutritional benefit has been lost. Old Koi food can be raked into flower beds – it seems to grow amazing plants.

• In cold water, Koi metabolism slows down (we used to say that they were coldblooded, but the correct term is poikilotermic). Koi will eat only what they need, and they will never die from undigested food in their gut.

• Generally, we stop offering Koi food when the water temperature falls below 10ºC = 50ºF, because the Koi's metabolism is so slow that they do not require and will not eat Koi food. Now, let's talk about the nutritional requirements of food. A diet for Koi carp should include the following:

• Protein: >35% protein crude protein (30.5% digestible)1

• Fats: 1% linoleic acid (omega-6), 1% linolenic acid 2 (omega-3) • Carbohydrates: (quoted from the NAS manual2) The nutritional value of carbohydrates varies among fish. Warm-water fish can use much greater amounts of dietary carbohydrate that cold-water and marine fish. No dietary requirement for carbohydrates has been demonstrated in fish; however, if carbohydrates are not provided in the diet, other compounds such as protein and lipids, are catabolized for energy and for the synthesis of various biologically important compounds usually derived from carbohydrates. Thus it is important to provide the appropriate concentration of carbohydrates in the diet of the fish specified being cultured.

Fats and carbohydrates have been shown to have what is termed "protein sparing" qualities. This is only true up to a point and there are balances which, if exceeded, can cause detrimental health effects, e.g., fatty or glycogen impacted liver. Thus, diets need to be formulated with consideration for the effects one component has on others within the diet. Carp and Koi can live and grow on a wide range of carbohydrate from 20-50% of the diet2 . In low carbohydrate diets, necessary calories are provided by protein and fat. In production aquaculture, carbohydrates are used to spare more expensive ingredients. The Koi hobbyist is less constrained by feed costs and may select the diet that provides the best overall health. At higher water temperatures such as are typical of summer (~25ºC = 77ºF), carp preferred high-protein diets to either high-fat or high-carbohydrate diets. At moderate water temperature (~17ºC = 62.6ºF), carp show equal preference for high-protein and high-fat diets but never preferred high-carbohydrate diets at either temperature3 . 1 Nutrient Requirements of Fish, 1993, National Academy of Sciences 2 Takeuchi, T. et al (1979), Optimum Ratio of Dietary Energy to Protein for Carp, Bulletin of the Japanese Society of Fisheries, 45(8) 983-987 3 Yamato, T. et al, (2001)

Cold Water Koi Feeding and Nutrition Continued

Influence of decreasing water temperature and shortening of the light phase on macronutrient self-selection by rainbow trout Oncorhynchus mykiss and common carp Cyprinus carpio. Fisheries Science, 2001, p. 420-429. There is no scientific rationale for changing the carbohydrate composition of a Koi diet with seasons or temperature. This applies to the popular trend to feed food with increased carbohydrate (and lower protein) content when the water is cooler. While the myth says that "wheat-germ" food is more 'digestible', there is no scientific evidence for this. The idea is probably based on an extrapolation from feeding mammals, which does not apply to fish. When reading an ingredients label, the carbohydrates can safely be assumed to be the unidentified portion of the formulation after subtracting the crude protein, crude fat, crude fiber, moisture and crude ash. If unspecified, fiber, moisture and ash can be approximated as equal to those in other similar foods.

There is another myth that needs to be abandoned, and it is that the food bag label specifies guaranteed ingredients and percentages. Ingredients and nutritional analysis of Koi food is not guaranteed. Koi food is not regulated by any government agency. (Note: There is one USA company that is subjected to government oversight because it also produces zoo feeds.) It is common practice to create a feed, get a nutritional analysis and print it on a bag label, even though all the ingredients may vary considerably based on availability in different seasons and on changing prices. Many feed labels are more of a 'wish list' of ingredients and analysis, because manufacturers are not responsible to any oversight, and thus they do not change the label based on what ingredients were available for that batch. Combined with the incredibly high profit margins (typically 300 – 500%), there is a seductive opportunity for manufacturers to be 'inaccurate' about what is printed on the label.

If you not confident of doing your own research and analyzing each ingredient to determine what is best for your Koi, then stick with one of the two top Koi foods. Worldwide, Saki Hikari (growth) is the number one Koi food. In Japan, JPD Shori is favored. Both have optimal nutrition and do not produce high waste which will tax the filtration. Expensive – yes! But not as expensive as replacing Koi, and it is important that our wet pets have correct nutrition for their long term health. Remember that our Koi have the genetic potential to live longer than people.

Excellent nutrition is important for Koi growth and to keep them healthy every day of their lives. K.O.I's recommendation is to feed the same, high-quality, high protein Koi food YEAR-ROUND, but vary the amount being fed based on water temperature. Feeding should be discontinued when the water temperature is below 50ºF. Always remove any food that remains in the water 15 minutes after feeding.

For more detailed information and further references about Koi nutrition, along with a better understanding of Koi growth, consider taking the Koi Nutrition #204 course available on the Koi Organisation International web site: https://koiorganisationinternational.org/courses.

Atlanta Koi Club
Financial Statement
As of October 30, 2020

BEGINNING CHECKING ACCOUNT BAL- **$9,631.02**

INCOME STATEMENT

Income			
	2300 Koi Show		
		2310 Banquet Tick-	$80.00
		2350 Tank Rental	$70.00
	2500 Misc Income		
		2510 Club Donation	$100.00
	2700 Membership		
		Membership 2730 Dues	$216.00
		Club Sponsor- 2745 ship	$200.00
Total Income			**$666.00**
Expenses			
	1100 Rent		
		1101 Monthly Rent Oct. and Nov. ($185 p/month)	$370.00
	1400 **Bank Charges**		
		1466 PayPal Ex-	$21.11
Total Expenses			**$391.11**
Month Net Income/(Loss)			**$274.89**

ENDING CHECKING ACCOUNT BALANCE: 10/30/2020 **$9,905.91**

Outstanding Checks:

09/07/16	EFT	$65.00	09/27/19	EFT	$175.00
10/08/16	1311	$16.85	5/7/2020	1532	299.88
10/24/16	EFT	$216.00	06/09/20	1534	$49.99
10/03/17	EFT	$107.17			
06/15/18	EFT	$150.00			
10/03/18	EFT	$33.63			

PETTY CASH:

Beginning Balance:			10/01/20	$136.00
Income:				
2500 Miscellaneous Income				
	2545	Raffle - Monthly Meeting		
Total Income:				$0.00
Expenses:			$0.00	
Total Expenses:				$0.00

Ending Balance: $136.00

Atlanta Koi Club
Financial Statement
As of November 30, 2020

BEGINNING CHECKING ACCOUNT BALANCE: **$9,905.91**

INCOME STATEMENT
Income

Total Income **$0.00**

Expenses

Total Expenses **$0.00**

Month Net Income/(Loss) **$0.00**

ENDING CHECKING ACCOUNT BALANCE: 11/30/2020 **$9,905.91**

Outstanding Checks: $1,113.52

09/07/16	EFT	$65.00	09/27/19	EFT	$175.00
10/08/16	1311	$16.85	5/7/2020	1532	299.88
10/24/16	EFT	$216.00	06/09/20	1534	$49.99
10/03/17	EFT	$107.17			
06/15/18	EFT	$150.00			
10/03/18	EFT	$33.63			

PETTY CASH:
Beginning Balance: 11/01/20 $136.00

Income:

2500 Miscellaneous Income

2545 Raffle - Monthly Meeting

Total Income: $0.00

Expenses: $0.00

Total Expenses: $0.00

Ending Balance: $136.00