

# HOT SPOT

英國錦鯉愛好會東南俱樂部

The E-Mag of the South East



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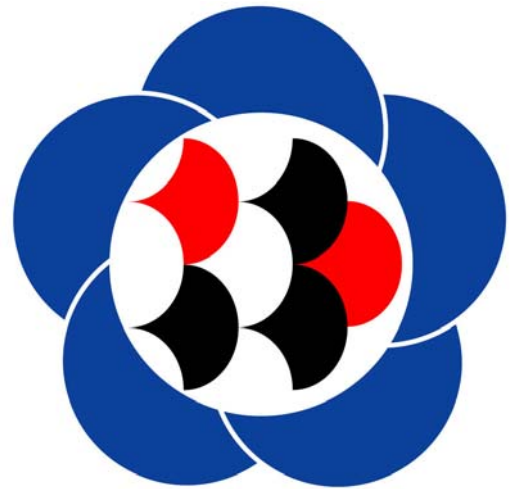
## A change of style for a new era.

Welcome to the new format Hotspot, a new design to take us into the new year and a new path for the club formerly known as the South East Section.

Along with the new layout is our new logo designed by our Chairman David Brown. The logo was inspired by the early Samurai family-crest motifs. Dave's design incorporates contemporary Go-sanke coloured scales to give it a koi feel and show our allegiance to the hobby and the international cause, or as the Potomac ZNA say "Friendship through scales".

Tradition, continuity and progress became the bywords of our Koi club when we came of age several years ago and they will continue to be our mantra in our new era. Our dedication to the cause of 'promoting the hobby via exposure through our koi show' will remain very much part of our club's tradition. Continuity is guaranteed by the full support of the grass-roots club members whose past labours made the club the success it is and freedom from the shackles of the past will allow us to channel all our efforts into making progress.

Finally we'd like to take this opportunity to wish everybody a Merry Christmas and a very prosperous New Year.



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## About HOT SPOT

Hot Spot is the on-line version of the South East Section BKKS' newsletter called "Spotlight", suitably sanitised and denuded of in-house content to make it interesting for other Koi Clubs. However, it will also contain some occasional South East publicity. Hot Spot will be a periodic publication i.e. it will get published when we have enough

articles to fill it's 8 pages. Copies of it will reside on the South East's website and will be distributed to other Koi Clubs who indulge us with an exchange of magazines or newsletters. Articles taken from "Spotlight" are the copyright of the South East Section but may be used by clubs who participate in this exchange.

The original text and photos can be obtained via the editors whose details can be found on the back page.



The South African Koi Keepers Society (SAKKS) is a chapter of the Zen Nippon Airinkai (ZNA) which is a friendship society for amateur koi keepers. The ZNA is based in Japan but is an international society, having affiliate chapters world wide. Every year the ZNA announce the name of a type of koi that they wish to highlight and promote.

This year, however, they have not done so, but SAKKS has decided to announce its own special variety. The SAKKS special variety is Asagi. At all SAKKS shows in 2010 there will be a special prize for the best Asagi.

Asagi were one of the first types of koi to be bred from wild carp. Records suggest they have been around for about 150 years. Asagi have blue scales and red markings. Their blue colour can vary from very pale (narumi) to dark (konjo). Each scale should be visible due

to a vignette or reticulated pattern which is usually due to the centre of the scale being darker than its edge. The red pattern occurs along the sides of the body and ideally should be symmetrical.

When choosing a young Asagi there are a few general guidelines. A clean light head is essential as there is a tendency for the head to darken or develop dark spots with age. The blue scales should not be too dark in a young Asagi as the central area of the scale can become darker as the koi grows. An unusual feature of Asagi is that its red, known as fiery hi, increases with age, so just a small amount of red is fine on a young koi.

At shows, Asagi are usually judged alongside their doitsu counterparts—Shusui. Shusui have a single zip-like line of dark blue scales running along their backs.

When judging Asagi, like all koi, a good body shape is important. A clean head is appreciated along with neat even scales that are reticulated. Each individual scale should be clearly defined and not blurred. Although the shade of blue varies within the variety, on an individual koi the hue should be even throughout. The red pattern should be symmetrical and present on the sides of the body. Red may be present on the cheeks and in the pectoral fins. When present in the base of the



Young Asagi with varying amounts of red and development of the vignette. Courtesy of Koiphen, which is sponsored by the Worldwide Koi Club.

pectoral fins the red is referred to as motoaka. Ideally, the red should not be overwhelming and rise up on to the back or the head.

Asagi are the most direct descendants of wild carp and in the early days of koi development were used to help create other varieties. Possibly, due to this close relationship to wild carp they can be difficult to tame and tend to be your most difficult customers when it comes to catching them with a net. On the plus side, they are thought to be hardier and longer lived than other modern varieties.



An older Asagi with the red beginning to increase over the back of the koi



A good example of an Asagi courtesy of Mike Harvey.



### Special Variety South East 2010.

Having adopted this idea from the ZNA back in 2003 but doing our own thing with regard to the choosing of the variety we were planning to synchronize with the ZNA in 2010. However, after reading Jim's article and having already featured Asagi (2004) we feel it is too soon to repeat it so we are opting for the

**Shiro Utsuri.**

# Opportunity of a lifetime!

## Fully operational Koi farm in Bloemfontein for sale

- Koi sales section with offices
- New isolated breeding facility
- 4 500m<sup>2</sup> ground ponds fully stocked with breeding and grow-on stock with own ground water
- All koi varieties, but primarily Kohaku specialists (75% Sensuke / 25% Danichi bloodline).
- Expert staff to maintain and run the facility
- Guaranteed disease free
- Crime-free area (we have an alarm for show!)

Cape Dutch homestead included

Fruit and nut trees, geese, ample outbuildings and workers' accommodation for further expansion. Another 3,5 hectares for whatever you fancy

### Start your second life here!

For references and more detail e-mail Pierre: [pjjoordan@sahcp.com](mailto:pjjoordan@sahcp.com)

## Hanna HI-83203 Multi-parameter tester

Syd Mitchell

**Syd Mitchell** has the task of monitoring the water quality at the South East Show. Show vats are unfiltered and the only way to maintain optimum conditions is via water changes. To ensure optimum conditions accurate water testing is essential and that meant going digital with Hanna equipment.

Syd relates the reasons why and how he manages 50 show vats in this article which first appeared in an edited form in issue 142 (January) of KOI magazine.

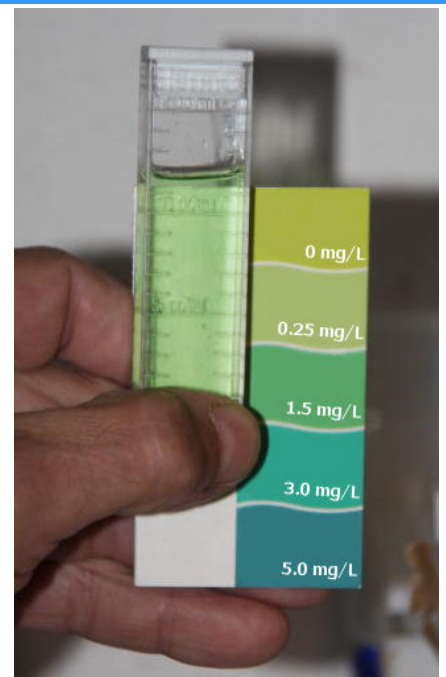
"We don't keep fish, we keep water". There are many different versions of this phrase but they all mean the same – it is not possible to keep healthy fish in poor quality water.

It is also not possible to look at a sample of pond water and decide whether important parameters such as dissolved oxygen, ammonia, nitrite and pH are within acceptable limits. We have to add to the sample, one or more different chemicals, called reagents, that change colour according to the value of a particular parameter. The colour change is then compared to a colour chart and the

appropriate value can be read. There are many manual test kits that measure water parameters, but they all suffer from one disadvantage – accuracy.

For example, the ammonia test kit in figure 1 is made by a reputable manufacturer, but it only has five separate colours on its chart: 0, 0.25, 1.5, 3.0 and 5.0 mg/L. The pH in my area is 8.4, and in my quarantine tank, when I am "ramping" the temperature, it reaches 28°C. At this pH and temperature, the maximum safe value of (total) ammonia is 0.13 mg/L, so if I used that particular kit to check ammonia levels, the first colour change I could detect would already be almost twice the safe limit. Another ammonia kit shows its first colour change at 0.4 mg/L – three times the limit in my quarantine tank and almost twice the safe limit in my pond when the temperature is only 20°C. These kits are not extreme examples; one nitrite kit has its lowest reading at 5.0 mg/L – 25 times the safe limit!

The sample colour also has to be judged by eye to see which chart colour it matches. This is not as simple as might be imagined. Look at the kit in figure 1. What colour does the sample match? Zero? 0.25 mg/L? 1.5 mg/L? The colour of the



sample doesn't seem to match any of the colours on the chart. Clearly, to provide the best possible water for our Koi, we need more accuracy, especially at lower levels, and the answer is to use a photometer such as the Hanna multiparameter tester.



Hanna Instruments make a range of photometers and the most suitable model for Koi keepers is the HI-83203 which is the newer version of the famous C203. To those who have seen Hanna testers but never used one, they may look complicated but they are not. The way photometers analyse water is similar to that of a manual test kit but it is far more accurate.

With manual kits, reagents are added to a water sample and the colour change is compared to a colour chart. The human eye is poor at judging small colour changes. This is especially noticeable when the sample colour is not an exact match with one of colours on the chart and the nearest match must be chosen.

Photometers avoid this problem by adopting the principle of shining a light through the sample and electronically measuring how much comes out the other side. Since the intensity of the light going into the sample is constant and the light coming out can be accurately measured by a photo-cell, it is possible for the built-in computer circuitry to calculate how much light didn't get through. Obviously, if there was no colour change at all, then 100% of the light would pass through the sample. The circuitry would decide that, in this case, no loss of light through the sample meant there had been no colour change and therefore the display would show a zero reading for this test.

If the sample changes colour due to a particular pollutant being present, then as the colour change became greater, it would become darker and more light would fail to get through. The circuitry measures how much light was lost, calculates what this means in terms of mg/L of the pollutant, then shows an appropriate reading on the display.

Figure 2 shows a simplified diagram of the optical arrangements and electronic circuitry of a photometer. In practice, it is much more sophisticated than this, but the diagram illustrates the principle involved. A light shines through the sample before the reagents are added. If the sample is clear and colourless, all

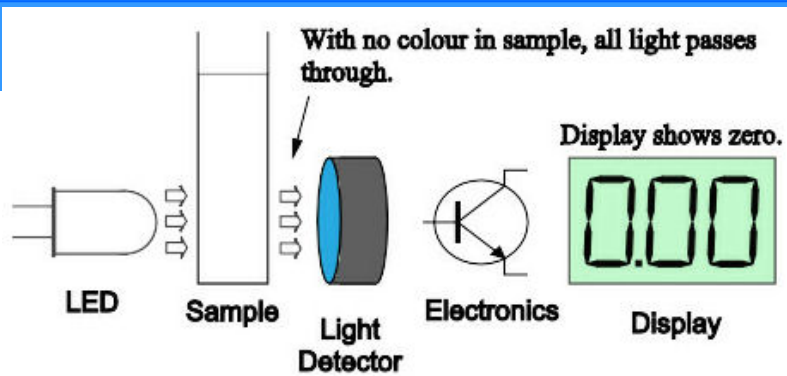


Figure 2 - Zeroing the tester.

light passes through. If there is a faint colouration in the water, a small proportion of the light will be stopped. The light falls on a sensitive light detector which converts it into an electrical signal. This is processed by the electronic circuitry and a zero value is displayed. The electronics also remembers how much light passed through the unreacted sample.

After adding the reagents and waiting for the reaction to take place, the sample will change colour. In the case of an ammonia test, for example, the sample turns yellow if ammonia is present. The greater the concentration of ammonia, the deeper will be the yellow colour. See figure 3. When the sample is re-tested, the same intensity of light goes into the sample but less passes through according to how deep the yellow colour has become. The photo-cell measures the reduced amount of light and the electronics calculates how much was stopped by the reacted sample. The appropriate value of ammonia is displayed.

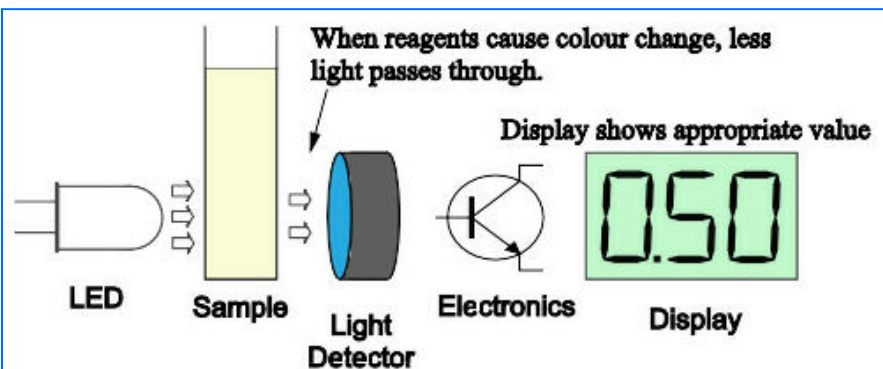


Figure 3 - reading the degree of colour change.

When testing other water parameters, different reagents are used and these cause different colours to develop, but the principle is the same - the greater the concentration in the sample, the deeper the colour and this allows less light to pass through. The reduction in light is measured and the appropriate value for the parameter is displayed.

#### Accuracy

How does the accuracy of the Hanna compare with the accuracy of manual test kits? Taking a typical example of a pond with a pH of 8.0 and a temperature of 20°C, the maximum safe ammonia level in that pond is 0.52 mg/L. Referring back to the example in figure 1, the three colours to choose between are 0, 0.25 or 1.5 mg/L. A decision has to be made: Is the level zero? Is it half the safe level? Is it three times the safe level? Those are the three choices. **With a Hanna, the level is displayed in steps of 0.01 which means that it is able to show 52 separate values (53 counting zero) of ammonia concentration up to the safe level of 0.52 mg/L. There is no comparison where accuracy is concerned.**

Obviously, ammonia levels should be as near zero as possible, but since it is impossible,

in practice, to achieve true zero values, the next best thing is to know what the value actually is. A value that was rising by 0.01 each time it was measured would indicate that something was wrong in the biological filter allowing plenty of time to take corrective action. Whereas the first indication with a manual kit might be when it showed that the level had reached three times the safe value. The same argument applies where nitrite is concerned. It is far better to be able to notice the value rising by small but significant amounts each time it is tested, allowing time to investigate the cause, rather than be suddenly informed by a manual kit that the level has exceeded the safe value.

#### Other features

The Hanna has a built-in timer which allows time for the reagents to develop before the sample is measured. Before adding reagents, place the cuvette (special test tube) containing the sample into the tester and press "zero". The machine measures how much light passes through the sample. Remove the cuvette, add the reagents, then replace it in the tester and press "timer". The computer circuitry sets the timer according to which test is being made and the countdown begins. When the time has elapsed, the sample is automatically re-tested and, according to how much the colour of the sample has changed, the value for that parameter is displayed.

#### Speeding things up

It is sometimes said that a disadvantage with the Hanna is that it is slow compared to manual test kits because it can only be used for one test at a time. The argument goes that it is necessary to wait while the developing time for one test completes, and for the result to be displayed, before beginning the next. With manual kits, there is also a waiting time while the reagents develop, but with a separate kit for each parameter, they can all be started at the same time, so they develop simultaneously, and the results will all appear at roughly the same time.

The Hanna can also make more than one test at a time. To understand how, a short recap may help. The sample is placed in the machine and it is tested to establish a "zero" value. The sample is removed, reagents are added, then it is put back and the timer is started. When the time has elapsed, the sample is again tested and the result is displayed. What

goes on while the timer is counting down? The answer is nothing; the tester is just waiting for the sample to develop. Samples could just as easily be developing outside the machine. With this in mind, by following the time-table in figure 4, it is possible to dramatically speed up the testing process. Four cuvettes are needed, one each for the nitrite, ammonia and nitrate samples, plus a fourth for "zeroing" before each test. The fourth is also used to measure pH.

If the time-table looks complicated, it's not – try it. You may need to slightly adjust the times to suit your own speed, but the whole process takes me less than nine minutes. Measuring these four parameters this way actually takes less than half the time required for a typical manual ammonia test kit!

#### Advanced testing

Where a single parameter, such as ammonia, has to be repeatedly checked, as would be the case with the many ponds of a Koi dealer or where a pond keeper has more than one pond, it is possible that the machine can be zeroed on a sample of plain water and then all pond samples checked against it. Clear unpolluted water is the optimum condition and this is what we should be trying to achieve. This method is particularly effective because it evaluates each sample against the sample of optimum water and so I use it as part of the water test regime at South East's Koi shows, but the implications must be clearly understood before attempting it.

Time elapsed	Action
0 min	Add reagent to nitrite sample.
1 min	Add reagents to ammonia sample.
min	Add reagent to nitrate sample.
5 min	"Zero" ammonia test using blank cuvette. "Read Direct" ammonia sample
6 min	"Zero" nitrate test using blank cuvette. "Read Direct" nitrate sample.
7 min	"Zero" nitrite test using blank cuvette. "Read Direct" nitrite sample.
8 min	"Zero" pH test using blank cuvette. Add reagent to it and "Read Direct".

Figure 4 - A suggested table to speed up testing of Ammonia, Nitrite Nitrate and pH

**Ammonia levels may have to be maintained much lower than 0.13 mg/L.  
Nitrite levels should be well below 0.2mg/L.  
Only a photometer will accurately measure levels as low as these.**

In the new HI-83203 handbook it states: - "It is possible to take multiple readings in a row". This is qualified by a warning about using the same cuvette when zeroing and also following measurement procedures carefully "for the most precise results". Remember that, during the "zeroing" process, the cuvette and the sample within it are assessed to determine how much light is lost before reagents are added. If the tester is "zeroed" on plain water in one cuvette and any of the other measuring cuvettes is dirty or the actual samples have a faint colouration, the displayed parameter reading for that sample would be slightly higher than it should be. If samples show turbidity, this method should not be used, they should be checked separately. However, if all cuvettes are identically clean and there is no visible difference in turbidity between the plain water and the samples taken, then any error will be insignificant and this method can safely be used.



Figure 5 - Cleaning the cuvettes.  
Maintaining the cuvettes in pristine condition is vital for accurate water testing.

Which is the best test kit?

I am frequently asked this question and I always answer that manual kits cannot give an accurate indication of water parameters, especially at low levels. This is particularly important with nitrite where levels should be well below 0.2 mg/L or ammonia where levels may have to be lower than 0.13mg/L. The Hanna will give the level of accuracy that is required to ensure optimum pond water conditions. Remember: "We don't keep fish, we keep water".

Cuvettes are special optical measuring test tubes made of quartz glass.

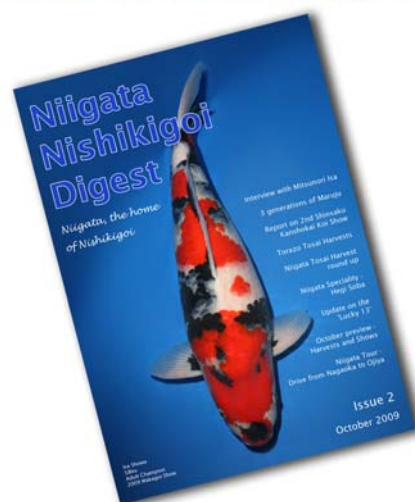
- Take care when handling cuvettes to avoid scratching them.
- Empty and rinse cuvettes after testing to avoid staining.
- Keep cuvettes clean and avoid fingerprints.
- Scratched, stained or dirty cuvettes reduce accuracy.

## Hanna HI-83203K

Prior to the 2009 South East Show, Syd got involved in discussions with the technical department of Hanna Instruments and as a result they loaned the Section a meter for Syd to test alongside his own at the show. As a result of Syd's technical report to them and the article that subsequently went into Koi magazine, they created a water testing kit especially designed for the Koi keeper - the HI-83203K. This kit contains :- The 8320 meter, 100 ammonia tests, 100 dissolved oxygen kits, 100 pH tests, 50 nitrite tests, 50 nitrate tests and 6 cuvettes.

FYI - It must be said that although we have never experienced any problems with Hanna meters it would be remiss of us not to have a back-up at the show. That back-up has always been the Tetra range of test kits which for the past 3 years have always been supplied FOC by Tetra.

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Temp pH	10	12	14	16	18	20	22	24	26	28	30
7.0	10.5	9.52	8.00	6.90	5.88	5.00	4.44	3.85	3.45	2.94	2.50
7.1	8.70	7.40	6.25	5.41	4.76	4.00	3.51	3.03	2.70	2.38	2.00
7.2	6.90	5.88	5.00	4.35	3.77	3.17	2.82	2.41	2.17	1.89	1.59
7.3	5.41	4.65	3.92	3.45	2.99	2.53	2.22	1.92	1.72	1.49	1.27
7.4	4.26	3.70	3.13	2.74	2.38	2.02	1.77	1.54	1.37	1.19	1.01
7.5	3.39	2.94	2.50	2.17	1.89	1.61	1.41	1.23	1.09	0.94	0.81
7.6	2.70	2.35	2.00	1.72	1.50	1.28	1.12	0.98	0.86	0.75	0.64
7.7	2.17	1.87	1.59	1.38	1.20	1.02	0.90	0.78	0.69	0.60	0.51
7.8	1.72	1.48	1.27	1.10	0.96	0.82	0.72	0.59	0.55	0.48	0.41
7.9	1.37	1.18	1.01	0.87	0.76	0.65	0.57	0.50	0.44	0.38	0.33
8.0	1.09	0.94	0.81	0.70	0.61	0.52	0.46	0.40	0.35	0.30	0.26
8.1	0.87	0.75	0.64	0.56	0.49	0.42	0.37	0.32	0.28	0.24	0.21
8.2	0.70	0.60	0.52	0.45	0.39	0.34	0.30	0.26	0.22	0.20	0.17
8.3	0.56	0.48	0.41	0.36	0.32	0.27	0.24	0.21	0.18	0.16	0.14
8.4	0.45	0.39	0.33	0.29	0.26	0.22	0.20	0.17	0.15	0.13	0.11
8.5	0.36	0.31	0.27	0.23	0.20	0.18	0.16	0.14	0.12	0.10	0.09

Figure 6 - Syd's expanded version of Spotte's original Ammonia Tolerance Table.

East Midlands Koi Club  
2010 winter show

The UK's **ONLY** WINTER KOI SHOW



## Congratulations all around.....



### Raj Lalloo

Recently appointed as Vice Chairman of the SAKKS National Executive Committee.

Raj is also a SAKKS Grade A judge, occasional author for the SAKKS magazine KOISA as well as a key worker for the Gauteng Chapter's koi shows, Yes - that's plural. Gauteng have more than one.



### Allan Tait & John Anderson

Promoted to Probationary Judge at this years BKKS Judges Standards Committee AGM. The guys now have two years to prove to their peers that they can teach and therefore propagate the BKKS Judging programme.

By way of a follow up to the earlier articles about our different judges training programmes it should be noted that to get this far these guys passed three annual exams, survived three annual reviews, slaved at three BKKS Nationals and trained at 21 official BKKS Shows in addition to working at their own club's shows (North East and Scottish respectively) as well as a few independent shows at home and abroad.



### Norman Call

For being elected President of our sister club - the Oregon Koi & Watergarden Society OKWS. Seen here being handed the gavel from outgoing President Tracy Flurry. Norm was the first President of this club when it formed 12 years ago and during the interim has been their newsletter editor.

### ZNA Vietnam Chapter.

To the Viet Nam Koi Club aka ZNA Viet Nam (ZNA VN) who became the latest international Chapter of the Zen Nippon Airinkai (ZNA) on the 20th December 2009. More details can be found on page 12.

There first elected Executive Officers are:-

President: Mr. Cuong Trong Hoang  
Vice President: Mr. Duong Hoang Pham  
Treasurer: Mr. Brian Phi Nguyen  
Secretary: Mr. Trung Kim Nguyen

### Mark Gardner

Congratulations but more a vote of thanks for Niigata-Nishikigoi Digest a valuable insight into the lives, efforts and methods of the Niigata breeders as well as the daily life of Niigata.

### Syd Mitchell

For being chosen by Hanna Instruments to be the author of their test principles and test procedure literature for the Koi market.



Nitrogen (N) plays an important part in the lives of our koi; as an important component of body proteins, as well as in ammonia, nitrite, and nitrate. Because of this it is useful to have an understanding of how nitrogen moves through the pond, starting with the food we feed and ending with its removal through water extraction and plant / algae growth.

#### Nitrogen in food

Nitrogen is a component of protein, which is one of the most important nutrients for fish. Approximately 16% of the protein is nitrogen, so a typical 35% protein diet will contain about 5.6g per 100g fed. The amount of nitrogen added to the pond during feeding will therefore depend on the total quantity of food fed and its protein content.

#### Protein digestion

During digestion proteins are broken down into their constituent amino acids. This is achieved with the aid of special enzymes called proteases. Enzymes accelerate the rate of protein breakdown, and are essential for the digestive process. The amino acids can then be absorbed into the body and used by the fish. However, a percentage of the protein in the diet will not be fully digested and absorbed, and instead will be excreted in the faeces. The amount excreted in this way depends on the digestibility of the protein sources used, so careful ingredient selection and processing is important when manufacturing koi foods. Highly digestible protein sources include wheatgerm (93% digestible) and fish meal (86% digestible). Unless removed, the protein in faeces will be broken down by micro-organisms in the pond, resulting in ammonia production.

#### Amino acid metabolism

Once absorbed into the body, dietary amino acids are then available for building new proteins (protein synthesis) or for energy production. Added to this are significant quantities of amino acids liberated from body proteins, via protein degradation. In fact, there is an on-going process of protein synthesis and breakdown, as body proteins are turned over and renewed. This is because fish cannot hold on to large amounts of 'free' amino acids, and instead require a constant supply from dietary protein or the breakdown of body proteins. The consumption of dietary protein stimulates protein turnover, and following a meal

both synthesis and breakdown will increase. This leads to increases in both oxygen consumption and ammonia production in the hours following a meal. The duration and magnitude of these increases depends on the diet and species - in one experiment involving common carp, ammonia excretion peaked at 450% above 'normal' values around 3hrs after a meal, and oxygen consumption peaked at just under 200% at about 2hrs (Carter et al, 2002).

Because feeding increases oxygen demand and ammonia excretion, it is wise to avoid feeding koi for 1-2 days before a stressful event such as cleaning out the pond or transportation

Ultimately, only a portion of the proteins synthesised from amino acids are retained by the fish as growth (usually less than 55%). The exact amount depends on diet formulation, and manufacturers of good quality foods take measures to maximise this amount. The rest are degraded into their constituent amino acids and metabolised to produce energy. This is important, as this is the main source of ammonia in a pond.

#### Ammonia production

Amino acids are efficient sources of energy for fish, as the process of forming and excreting the resultant ammonia is relatively easy. This is unlike mammals, where ammonia has to be converted to urea and then excreted via urine. Fish are therefore adapted for using protein as an energy source.

Around 50 – 70% of ammonia production originates from the liver (Smutna et al, 2002), as this is a major organ for amino acid metabolism. The process begins with the removal of the amino group (NH<sub>2</sub>) from the amino acid, and its transferral to a-ketoglutarate to form another amino acid - glutamic acid. This is then transported into structures called mitochondria within the cells, where the amino group is removed leaving behind a carbon 'skeleton'. It is the carbon skeleton that can then be used for energy production. The amino group meanwhile picks up hydrogen ions and forms ammonium (NH<sub>4</sub><sup>+</sup>). The process of transferring and

then removing the amino group is known as transdeamination. The ammonium ion may be further processed within the cells to form ammonia (NH<sub>3</sub>) before being carried to the gills and excreted (Halver & Hardy, 2002).

#### Ammonia excretion

In common carp (and therefore koi), around 92% of waste nitrogen is excreted as ammonia, with a smaller amount (8%) being lost in urea (Wood, 1993). The majority of this ammonia is excreted across the gills, principally through the diffusion of NH<sub>3</sub> from the blood into the water. The excretion of carbon dioxide aids this process by acidifying the water immediately next to the gills. As the pH falls, more ammonia is present as non-toxic NH<sub>4</sub><sup>+</sup>. This means that some of the excreted NH<sub>3</sub> is converted to NH<sub>4</sub><sup>+</sup>, thus maintaining a concentration gradient down which NH<sub>3</sub> can diffuse.

The amount of ammonia excreted depends on total protein intake, the balance of protein to energy in the diet, species, and physiological condition. For example, at 20°C unfed common carp produce around 87mg NH<sub>3</sub> per kg bodyweight per day (Chakraborty, 1998). Nutrient-dense diets (i.e. high protein and energy), such as growth foods, will therefore produce more ammonia per gram. However, they also deliver better performance, and so ammonia production may be very similar per gram of new fish growth (i.e. the efficiency of protein use may be similar or even better in some cases). Whether a diet is high or low protein, what's important is the quality of the protein source, and how well it is balanced with other dietary energy sources (oil & carbohydrate). This way excess ammonia production can be minimised, and so it is a subject of great interest to food manufacturers.

#### Nitrification

In a healthy koi pond, most of the ammonia excreted by fish and produced from the breakdown of organic matter will be oxidised by the biological filter. A variety of nitrifying bacteria cycle nitrogen through a number of forms (including nitrite) to form nitrate (NO<sub>3</sub><sup>-</sup>). For every 1g of ammonia-nitrogen (NH<sub>4</sub><sup>+-N</sup>) fed into the biological filter, 4.4g of nitrate-nitrogen (NO<sub>3</sub><sup>-N</sup>) will be produced.

Nitrification is essential to a healthy pond, as both ammonia and nitrite are toxic to koi. For long term health, ammonia should be below 0.02mg/l, and nitrite below 0.3mg/l. Nitrate is far less toxic, and is unlikely to cause problems unless in very high concentrations. However, high levels can indicate poor pond hygiene, and it is a key algae nutrient. For these reasons, some management of nitrate is usually recommended.

Rather than measuring the concentration of total ammonia ( $\text{NH}_3 / \text{NH}_4^+$ ), nitrite ( $\text{NO}_2^-$ ), or nitrate ( $\text{NO}_3^-$ ) ions, it is common to measure just the nitrogen (N) they contain. This is why test kits sometimes talk about levels of nitrate-nitrogen ( $\text{NO}_3^-$ -N) for example. The two should not be confused, as 1g  $\text{NO}_3^-$ -N is equivalent to 4.4g  $\text{NO}_3^-$ . Always check what the kit is actually measuring, especially when comparing results from different brands of test kit.

#### Nitrate

Having been converted into a nitrate ion, nitrogen may then have a variety of fates. A certain amount will be taken up by plants and algae, and converted into new tissue. The extent to which this happens of course depends on the amount of planting and algae control. However, the use of a vegetable filter is an excellent means of trapping nitrate. Plant growth is then continuously removed, to encourage new growth and to finally remove nitrogen from the pond. Plants removed in this way should be composted, and never discarded into natural waterways.

A small amount of denitrification may also occur in pond sediments. In the absence of free oxygen, certain bacteria use nitrate as a source of oxygen, thereby converting it into nitrogen gas ( $\text{N}_2$ ). This then diffuses into the atmosphere. However, in most well managed koi ponds the amount of denitrification is likely to be comparatively small.

More nitrate will be removed through the removal of water from the pond, during routine maintenance. The effectiveness of this depends of course on how much is removed, and any benefits can be cancelled out if replacement water is rich in nitrate. If tap water is espe-

cially high in nitrate, it may be worth investigating the use of special nitrate-removing media in the filter. Alternatively, new tap water can be treated with special filters to reduce its nitrate content. Bear in mind that regular recharging or replacement of nitrate-removing media is usually needed, and that their effectiveness may vary due to factors such as water hardness and pH.

End

By understanding how nitrogen passes through our ponds in its various forms, we can identify areas where it can be managed and controlled for our benefit. This might mean anything from improving the quality of the food we feed, through to the installation of a vegetable filter.



#### Tips for managing nitrogen

Stick to recommended stocking levels, as this determines how much food (and therefore protein) has to be added to the pond.

Use a good quality food to ensure your koi receive sufficient protein for health and growth, whilst limiting the excretion of nitrogen in faeces and ammonia. Remove organic waste from the pond and filter system routinely, to prevent it breaking down and releasing nitrogen into the water as ammonia.

When stocking a new pond with an immature filter, or following maintenance work on the filter, restrict feeding to once a day to minimise ammonia production. Resume normal feeding once the filter is efficiently removing all ammonia and nitrite.

Do not feed fish for 1-2 days before major maintenance, transportation, or other stressful events.

Make sure you have a plan for removing nitrate from the pond – e.g. vegetable filters, water changes, or the use of special media.

Have an ammonia, nitrite, and nitrate test kit, to enable you to track changes in the most important nitrogen-containing substances.

#### Water changes at the push of a button.

For the hobbyist that wants to stay in touch with all things fishy even when convening in the lav/bog/ bathroom/dunny/ khazi (delete what's not applicable) there is now the "Aqua-cistern" a hybrid between an aquarium and a lavatory cistern that provides the inmates with regular water changes at the push of a button.

Whether this will improve the "putting the seat down" scenario is still a matter for debate.





Chris belongs to a local photographic society and recently they staged an in-house competition where they had to present 3 to 5 photographs with a theme. The photos have to be displayed side by side in an order with a suitable title.

Chris chose to combine her two hobbies and her display comprised of 5 koi photos under the title of "The Koi Show".

If you can imagine the five photos side by side it's easy to see the aesthetic impact of the koi as both outer photos face inward while the central photo is almost vertical.



To capture the attention and interest of the non-believers Chris selected koi with highly detailed scale patterns to begin the sequence, ending with two planer varieties that together demonstrate the array of colours, skin types (metallic etc) and patterns that comprise the koi varieties found at koi shows.

Chris remarked that she received more questions regarding the depicted subject matter than about the photographic techniques involved in taking them.

So as well as indulging in her other hobby she did her bit for promoting the koi hobby too.

Finally, when the results arrived she found she had taken a highly commended second place out of the 22 entries.

Not bad I thought. But I knew I could do better. The photo on the left is my attempt at catching the "essence of Woolger". There she is 'au naturel' in a koi shop in the process of answering back and having the last word or gesture (check the tongue). I think I'll give myself a first place.

**ZNA Viet Nam – Opening Letter  
December 20, 2009**

It is a great privilege and pleasure to announce that, Viet Nam Koi Club, a ZNA Viet Nam (ZNA VN) has been officially formed today, December 20, 2009 in Viet Nam. All requirements for a ZNA International Chapter have been fulfilled and satisfied.

Special thanks to Ms. Yuko Shirako of ZNA International Division, Secretary General of ZNA Head Office and Mr. Nobuo Takigawa, ZNA Chairman in Beppu, Japan for supporting and helping to form the ZNA VN chapter.

Our heartfelt appreciation to all the members for sharing their passions and love for Nishikigoi and more than willing to make this happen. Without you all, it's impossible to success. Thanks to many folks around the globe for voicing and supporting during forming ZNA VN. Your spirits and soul support mean a great deal to our new club and members.

Many thanks to the first Executive Board for more than willing to lead and serve. Here are the first elected Executive Officers:

President: Mr. Cuong Trong Hoang  
Vice President: Mr. Duong Hoang Pham  
Treasurer: Mr. Brian Phi Nguyen  
Secretary: Mr. Trung Kim Nguyen

Finally, a big congratulation to ZNA VN club and founding members. You all have made history in the Koi World today for forming the first Koi Club and the very first ZNA International Chapter in Viet Nam. It was a dream for having a ZNA Chapter in motherland Viet Nam. I am deeply honored for being part of the team that making the dream comes true. My deepest thanks to all for carry on the same ZNA Spirit of "Friendship Thru Koi", the love, the joy, and the appreciation of Nishikigoi as a "Living Art" that we are now together in forging and building friendship through the hobby all over the World....

**Dihn Nguyen**  
**ZNA VN**

新潟県中越地震復興祈念

国魚の祭典



新 朱鷺メッセ 展示ホール 新潟

2010 第41回全日本総合錦鯉品評会  
 主催：全日本錦鯉振興会 後援：農林水産省・新潟県・東京都・新潟日報社・NHK新潟放送局・BSN新潟放送  
 NST新潟総合テレビ・TeNYテレビ新潟・UX新潟テレビ21  
 会場：朱鷺メッセ 展示ホール 期日：2月6日(土)午前9時～午後5時、7日(日)午前9時～午後5時 入場料：無料



2010 NISHIKIGOI  
 of THE WORLD  
 The 41st Combined  
 Nishikigoi Show

**NIIGATA**  
**TOKI MESSE** International  
 Exhibition Hall  
 6sat 7sun Feb. 2010

第40回  
 大会総合優勝 DOB/昭和三色  
 藤木 文雄 (埼玉)

錦鯉飼料 生菌剤配合 - ひかり菌 -  
 PROBIOTICS ADDED  
**咲ひかり**  
 Saki-Hikari  
 Breeder Preferred

品評会  
 で実績  
 そくそく



■生菌剤 - ひかり菌 (バチルス菌の一種) - を豊富に配合。

ひかり菌が生きているから……

- 腸内で消化・吸収を促進
- 悪玉菌を排除
- 糞を分解して水質悪化を抑制



浮上：15kg入  
 沈下：20kg入  
**27アイテム**

業務用  
 好評発売中!

**Hikari**



2kg入パック  
 育成用 浮上 (S)  
 育成用 浮上 (M)  
 色揚げ用 浮上 (S)  
 色揚げ用 浮上 (M)  
 増体用 浮上 (LM)  
 観水用 浮上 (M)

トータルシステムで考える **キヨリン** 池田 礼子 池田 啓子 池田 啓子  
 tel.079-269-3171 (代) fax.079-262-8294  
 http://www.kyorin-mt.co.jp/

## Japan On-line reports on the ZNA Show.

The ZNA All Japan Show in Izumu was the subject of a report by Japan Times Online.

Amongst the many people interviewed were Tony Prew (Oregon Koi Gardens) a local dealer to our sister club the Oregon Koi & Water Garden Society, Danny Deschrijver (Danny's Koi Café) a regular dealer at the NVN and BKS shows as well as supplier of many GC's in Belgium Holland & Germany, Steve Gibbins (Koi Media) and Simon Austin of Nippon Nishikigoi long time supporters of the South East Koi Club, it's show, and occasional Hotspot reporter.


These folks along with many representatives of the ZNA clearly gave the author enough information for him to write the most factual and informative article I have ever seen written in the mainstream press by an outsider of the hobby.

It can be found via :-

<http://search.japantimes.co.jp/cgi-bin/f120091213x1.html>

Unfortunately for Simon, the author's description of him "With his closely cropped hair and stylish jacket, Austin would have looked at home in ritzy Tokyo districts like Omotesando or Roppongi" has led to some ribald mickey-taking back home. Still as one of his 'friends' has pointed out. "If you were wearing a linen jacket and a cravat, no wonder they thought Roppongi was your ideal location". Who knows? In this time of recession he might have just been investigating a new profession?

Whatever? It was a great article and it was nice of him to bring it to our attention. Have a read.



*UK aquatic plant society*  
**ukaps.org**

### Do you dream of having a stunning planted tank?

The UK Aquatic Plant Society (UKAPS) was conceived by a group of enthusiasts brought together by a shared passion of planted aquariums. Our experience and specific interest levels span a broad spectrum but we all share a common passion for aquarium plants.

From aquascaping and photography, to the more scientific aspects such as fertilisation techniques. Our knowledge base is far and wide and of course, is increasing all the time with every new member.

All levels of hobbyist are welcome to join UKAPS, from the complete newbie to the guru. Through our own forum you can ask questions or share your experiences and knowledge, as appropriate. We are all here to help one another and make the hobby as enjoyable and rewarding as possible.

Membership is **FREE**, so come and join us @ **ukaps.org**

In the Festival of Fishkeeping report in the October issue of Hotspot we mentioned UKAPS and their displays of planted aquariums. Since then there have been several requests for more info about this organization and it turns out that it couldn't be easier to find.

If anybody else is interested they have a free forum (URL above). Just log on to find out more.



**January**

**Nishikigoi Exhibition and Auction, 15-17th January, at the Tokyo Ryutsu Centre, Ota-ku, Tokyo. Japan.**

**25th ZNA Hong Kong Chapter Show, 16-17th January** contact [hk\\_koiclub@hotmail.com](mailto:hk_koiclub@hotmail.com)

## Show Dates

### February

**41st AJNPA Combined Show, 5-7th February, at Toki Messe, Niigata City, Japan.**

**Koi Club of San Diego Show, 12-14th February, at the Del Mar Fairgrounds, San Diego, USA.**

**1st East Midlands Koi Club Open Show, 20 - 21st February, at the Bretby Conference Centre, Burton on Trent. UK**

# A FESTIVE MESSAGE FROM THE SOUTH EAST SHOW CHAIR

With the festive season fast approaching I thought it would be a good time to say a word or two so I would like to say a big **THANK YOU** to everyone who supported the show in whatever way you do helping judging dealing showing visiting or just by being you I hope you have a good Christmas and a merry new year too I look forward to seeing all of you in 2010 woo hoo

*Alan.*

## About the South East Section.

The South East Section was founded in 1981 by a break away group from the London Section. It obtained Section status from the BKKS in 1982 and was expelled in 2009. It serves the counties of Kent, East Sussex, Surrey and Berkshire and the southern boroughs of London. It's neighbouring Koi Clubs are the South Kent to the south, Essex to the North, Worthing to the west and the MSB (Middlesex & Surrey Borders) to the northwest. The South East has a pretty stable membership generally numbering about 85 families. Almost since it's founding the SouthEast has participated in information exchange with overseas Koi clubs and continues to do so today.

Our 'Open' show is both an attraction to the UK Koi scene as well as Koi keepers from abroad. Every year the show attracts an increasing number of overseas visitors and through them a number of useful connections have been made which enhances our appreciation and understanding of the hobby. The show is always held on the August Public Holiday which generally falls on the last weekend of that month. Details can always be found on our web-site -

[www.koi-clubs.com/SouthEast](http://www.koi-clubs.com/SouthEast)

The South East meets on every 4th Sunday of the month with the exception of December. Our meetings start at 2pm and we endeavour to have a speaker for 2 out of every 3 meetings. Those speakers generally cover Koi related subjects but occasionally we have one that diversifies a little e.g. Bonsai. Our current membership fees are £15 per family and details as well as a schedule of speakers can be found on our web-site.

South East contacts in regard to this E-Magazine are :-

Bernie Woollands - [bernie@koipin.com](mailto:bernie@koipin.com)  
and  
Brian Edwards - [brianedw@hotmail.com](mailto:brianedw@hotmail.com)

Koi Clubs participating in this exchange scheme are:-

- Nishikigoi Vereniging Nederland.
- Oregon Koi & Watergarden Soc.
- South African Koi Keepers Soc.
- NorCal Chapter ZNA (USA)
- Australian Koi Association AKA
- Mid Atlantic Koi Club
- Cambridge Koi Club
- ZNA Potomac Chapter
- Essex Section UK
- Texas Koi & Fancy Goldfish Soc.
- Cayman Island Koi Keepers
- Belgian Koi Society
- Banana Bar Koi Society.
- East Midlands Koi Club.
- North East Koi Club UK
- ZNA Guangdong Chapter.
- Southern Colorado Koi Club.
- KLAN (Germany)
- Koi Galen Sweden
- ZNA Viet Nam

