NORTHERN GOLDFISH
& PONDKEEPERS
SOCIETY
A Nationwide Society
NEWSLETTER

Online Version March 2015

Black Gold!

The latest imports from Hong Kong and Singapore include Black Goldfish…the first varieties were Carp-like but the latest ones are based on a Comet shape and are proving very popular. This is more than a novelty effect; they do enhance, by contrast, the beauty of the Gold or Calico Goldfish, in the display aquarium.

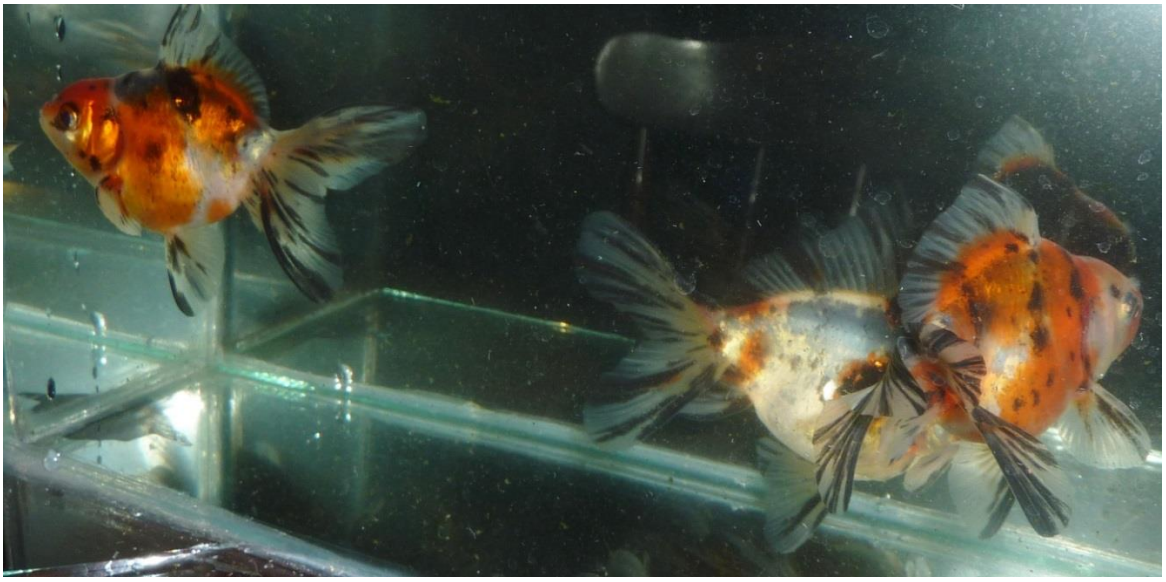
Perhaps we need a new Nationwide Standard Class….

Minutes of the March Meeting

It was a busy night with 10 members and two visitors attending – the visitors were Alex Li and Peter Alexander…who are welcome if they want to join us.

Alan Ratcliffe brought some examples of Fantails discovered at Gordon Riggs Aquatic Centre, Todmorden. Only £3.25 each. Really good colours, split anals, other finnage good too. It is hoped to use them in his new breeding program.

The shop assistant would not say where they originated and a discussion followed on the possible breeders in England who could produce such fish.



Alan also pointed out that his Bristol Shubunkin, shown in the February issue Newsletter, is actually a London Shubunkin (apologies - I bow to his greater knowledge – Ed).

A Metallic Oranda bred last year by Chairman Sherridan was shown.

This has a good Wen and will be crossed with the Calico Orandas shown in last month's Newsletter, to produce a new good colour strain of Orandas.

The strange loss of only one strain of metallic Goldfish in Alan's pond was also discussed. All of just one group of Goldfish that had survived several winters died over the last few days, with no obvious symptoms and from clear running waters, where all the other fish are healthy.

Possibly 'genetic' was the only consensus. A detailed post-mortem examination is really needed, with histological studies too. Veterinarian offers of this service in past years are no longer advertised.

This led on to how diseases and treatments have changed too. 'White Spot' seems to have disappeared (from Goldfish, still plagues Tropicals). Chemical treatments like Mercurochrome, Potassium permanganate, Tetracycline, are no longer sold. As

President Bill said "Most of the so-called diseases were nothing more than poor water quality stresses, made worse by adding these chemicals".

The meeting ended with room prizes – a 3 Kilowatt Space Heater, won by President Bill, and a large tub of Aquarian® Goldfish Flake won by Membership Secretary David Padfield.

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Diary Dates 2015

AMGK – Saturday 20th June at West Orchard Church Hall, Bagington Rd., Stivitchall, Coventry CV3 6FP

Yorkshire OS (Fish of Fishes) – Sunday 5th July at Stockton on the Forest Village Hall, YO32 9UJ

NEGS – Sunday 19th July at Redby Community Centre, Sunderland SR6 9QP

Bristol AS – Sunday 6th September at The Manor Hall, Henfield Road, Coalpit Heath, Bristol BS36 2TG

Our OS – Saturday 12th September at St. Matthews Church Hall, Chester Road, Stretford, Manchester M32 8HF

Festival of Fishkeeping Weekend – 19th & 20th September at Hounslow Urban Farm, Faggs Road, TW14 0LZ

Nationwide OS – Saturday 26th September at Weston Favell Parish Hall, Booth Lane South, Northampton NN3 3EP

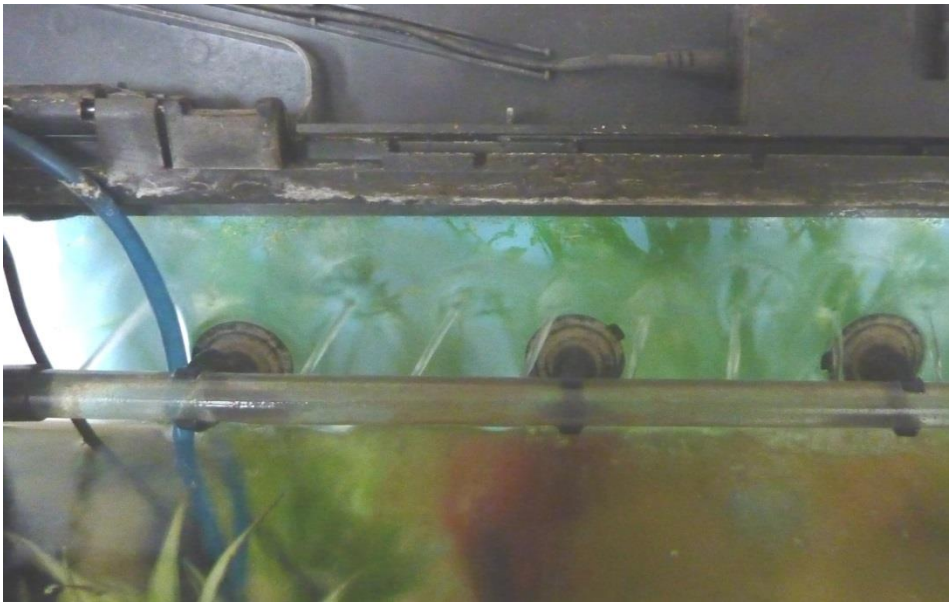
GSGB OS & Auction – Saturday 26th September at St. Paul's Church Hall, Chigwell Road, Woodford Bridge, Essex, Woodford Bridge, IG8 8BT

FNAS (with BAF Champions) – yet to be decided.

Tip of the Month (a new feature for our Newsletters)

Do you have an aquatic tip to help members – if so, email it to me at drdmford@outlook.com for fame (not fortune). Here is mine this month…

Always turn a spray bar return from the power filter so the water jets hit the back glass…this still aerates the water but dissipates their power.



Goldfish, especially Fancies, prefer a quiet life.

…and now, continuing our science in fishkeeping promotion this year

Lithium and Goldfish

One of the lightest of all the metals – in fact number 3 in the Periodic Table (only Hydrogen and Helium are before it). It is very rare in the Universe (unlike Hydrogen and Helium) for reasons all to do with the Big Bang and exploding stars, but that's not relevant to Goldfish.

Despite that rarity, its salts are found in trace quantities in all living things. It is recommended that 1 mg/day is needed in our diet. It is also used in medicine for treating mental disorders. The Daily Mail online medical news had the following report this month….

Should Lithium be added to the water supply?

Tap water in the UK is anything but pure H_2O.

Depending on where you live, many substances are added to make it cleaner, clearer and supposedly better for you.

With Scottish researchers investigating whether Lithium should be added to the water to boost mood, we look at what's being put in your water before it reaches your glass (Ed – or your aquarium) – and its impact on your health.

Scientists in Scotland are looking into whether adding Lithium to water supplies could help mental health. Lithium is prescribed as a mood-stabilising drug (a typical daily dose is 300 mg), mainly for bipolar disorder, and it is thought to work by modifying certain chemicals in the brain.

But it occurs naturally in many water sources in Scotland, leaching out from volcanic rock at very low concentration (providing a daily dose of about 2 mg per two litres of water).

Now researchers at the University of Glasgow School of Medicine are investigating where there is a link between Lithium in water and lower suicide rates – previous research in Austria and Japan

suggest that people whose water supply naturally contains Lithium are less likely to take their own lives.

'We want to improve the methodology by looking at smaller postcode areas', explains Daniel Smith, a professor of psychiatry, who is heading the research.

Results are expected next year and could spark discussions about adding Lithium to the water supply. But, despite the fact that doses would be extremely low, it's a controversial step. One scientist has reportedly received death threats over his involvement in the research.

Chris Exley, Professor of Bioinorganic Chemistry at Keele University, thinks it 'unlikely' that Lithium will be added to the water supplies soon. But he says that such low amounts are unlikely to cause harm or make a difference to mood anyway.

Goldfish Effects

There is nothing published on possible effects of the Element or its compounds on Goldfish, but there has been research on Tropical fishes. The traditional laboratory fish is the Medaka in Japan, but Zebra Fish in the UK. Our member, Dr Peter Burgess, has looked at this research and noted the differences between the species where results of exposure to increasing levels of Lithium chloride have been published.

Comparing 'proper formation of anterior structures' in developing embryos of the fry, he found that Lithium chloride had no effect on Medakas, but significantly adversely affected development of the Zebra Fishes.

….then, just one day later the Daily Mail reported:-

Fluoride in water is 'linked to thyroid problem which causes weight gain, depression and tiredness', study claims:

- **Study found high levels of fluoride in water is linked to hypothyroidism**
- **Condition is where thyroid gland fails to produce key hormones**
- **A sufferer is therefore likely to gain weight, suffer depression and tiredness**
- **Scientists urge change in public health policy, which promotes water fluoridation to boost the nation's tooth health**
- **Public Health England dismissed findings and said 'decades of research... shows no association with reduced thyroid function' and fluoride in drinking water**

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NGPS will monitor developments too….on behalf of our Goldfish.

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Meanwhile, continuing our NGPS technical year, here is information on making pure water via Reverse Osmosis.

REVERSE OSMOSIS – what it is and what it isn't

Water from Reverse Osmosis equipment is just too pure for Goldfish! It is, however, an ideal source of purified water for preparing water that is suitable for fishkeeping, especially marines and breeding specialist fish such as Discus…or diluting drinking water judged unsuitable for our Goldfish!

That purity makes it unsuitable for fish to live in — they need the mineral salts that RO takes out, even the softwater species. On the other hand, all but the very expensive commercial models let through some solutes, such as nitrates, that are a problem for some fish and all invertebrates. The smaller, less expensive models designed for the fishkeeper may be as much as 95 per cent efficient (however this will depend on the quality of the model you buy), so the water is not distilled quality, but still excellent for reducing hardness and eliminating toxic levels of chemicals.

What is RO?

Imagine a 'semi-permeable membrane', i.e., a bag of liquid that allows some liquid to seep through. In fact, where that liquid is water, that 'membrane' is what you are! So too are your fish, indeed all living creatures on Earth. Nature exploits the fact that if a liquid one side of the membrane has more dissolved solids than liquid on the other side, there is a difference in pressure too (called osmotic pressure, because the process is called osmosis). Nature always tries to equalize pressures, so water from the less dilute side flows (seeps) through to the concentrated side, until both are equal solutions and the pressure difference becomes zero.

Freshwater fish have a higher osmotic pressure than their surrounding water (blood is thicker than water) so they are taking on board water all the while. They have to excrete this copiously and continuously, as fishy urine. Anything that interferes with this (e.g., heart failure, kidney problems, even general infections) causes the osmotic inflow to exceed the urinary outflow and the fish swells — which we aquarists call "bloat" or "dropsy".

Marine fish have the opposite osmotic problem: their blood is less salty than the surrounding sea (their blood salt copies the primordial oceans where they developed many aeons ago). So water is drawn out of the fish by osmosis. Hence the marine fish drink the seawater and extract the salt biologically to send pure water back to their bodies. This is why an ammonia crisis will stress the freshwater Goldfish (who do not drink) but will kill Marines – within the hour.

Over to Space Technology

The Space Programme required water for their astronauts, so a simple, mechanical, recycling system was needed. Their scientists decided a process developed by a commercial company in the late 1960s, called "reverse osmosis" might meet their needs. This worked by increasing the pressure on "dirty" water so it was greater than the osmotic pressure, pushing clean water in the opposite direction through a membrane.

The principle was simple; the difficulty was finding an artificial membrane that would let water through and nothing else. Two compounds were successful, cellulose tri-acetate (CTA) and the more complex (and expensive) mixture named TFC (Thin Film Composite). The area of membrane required for a meaningful flow of water was huge and space is at a premium for Apollo projects, so the sheet of CTA or TFC is wound like a roll of wallpaper and the tube inserted into a sealed container. Impure water pumped into this unit, sealed so a pressure can be applied, and the pure water is collected from a central pipe as it seeps through the membrane.

Commercial spin-offs meant cheap CTA-based units were developed for domestic use to give purified water for the general public worried about pollution of drinking waters. CTA is less effective than TFC (allows "leakage" rates of 90 per cent against up to 98 per cent for TFC) so when manufacturers built units for fishkeepers, the more expensive TFC was chosen (one reason the units are dear to buy, but this is offset by low running costs).

Dozens of models were developed and sold to the American aquarists and when they arrived in the UK the terminology and data were all in American-English. The flow rates are based on 24 hours of US gallons (17 per cent smaller than ours) and quoted at 77°F (no UK tapwater reaches this temperature).

Designs for Fishkeeping

The mains pressure of most UK tapwater supplies (of 30 to 40 psi) is just adequate to "push" pure water through the membrane in reverse osmosis. Do check with your local water authorities — if the mains pressure is lower than this, there is no point in purchasing a standard RO Unit, you will need to get a model that has an extra pump to increase water delivery pressure.

The size of the unit determines throughput; a fish-house will need more pure water than a single tank owner. A single, but large, aquarium need only use five gallons per week for top-up or part water changes, so there is no need for a unit that boasts 35 gallons a day (even if US gallons) .

RO Units work best if run continuously. If shut down, the membranes can clog or become damaged by chlorine in the tapwater. Another factor is that continuous flow costs money where a water meter is fitted to the household supply. However, the rejection ratio is about five to one, i.e., to get five gallons a week means 2.5 gallons flows through the Unit, giving an annual usage of just over 1,500 gallons or about £5 per year metered cost.

The rejected water need not be lost: it is high in mineral content and can be used for watering house or garden plants providing they are not acid soil lovers.

What do they Cost?

Prices start around £100 for a basic unit, with a large unit (50 gallons a day) at £250, but add-ons can bring the total bill to many hundreds of pounds. However, running costs are pence per week. Replacement RO cartridges (containing new membranes) are around £20 and are only needed once every two, sometimes even three, years.

Note that pre- and post-filter units will need more frequent changes than the RO one. Especially the Carbon filter - this is used to remove chlorine before TFC membranes. This needs changing every six months. Check if your local water suppliers have started using chloramines, rather than chlorine. This can exhaust standard Carbon filters in a matter of days, so extra de-ionising filters will be needed. These are standard supply in the USA where chloramine is widely used. The American aquarists call them DI units and refer to the systems as RO-DI.
Many units have additional de-ionising "Pods" to overcome the nitrate problem and Prefilters to remove floating matter down to a micron in size. Mineral mixes are also sold to add-back the essential solutes to make the very pure water produced suitable for freshwater fishes.
In fact most manufacturers produce a host of add-on units for the technophile such as metering gauges, pumps, Carbon Filters (a useful addition because it removes chlorine, which can damage the membrane), Float Valves and collection containers, plus kits for connecting to the mains supply.

Conclusions
In today's increasingly polluted waters the only method of guaranteeing pure water is by distillation, which is very expensive to set-up and to run. De-ionising (note: not ion-exchange. That just swops pollutants, not replace them) water is less expensive but complicated and needs constant attention and replacement.

The simple and cost effective method is Reverse Osmosis, but the drawbacks listed above need to be considered. The answer is for Aquatic Retailers to install commercial units and sell the pure water and certainly every Aquarium Club should have a unit for members to call on. They are an essential system for marinists, especially living reef systems, and those wishing to breed Discus.

Despite the Press reports, we Goldfish keepers can rely on good old British tapwater and leave the RO systems to the technophiles. But, when we can no longer rely on its quality, perhaps we will all need RO Units….

For the fish house needing a large water volume a multi-unit is needed but this will cost several hundred Pounds. This delivers about 100 gallons per day.

The two cartridge units deliver clean water at about the ratio of 1 part clean to 4 or 5 parts dirty (the residue left behind by osmosis).
One cartridge is the Carbon filter, the other the Osmosis Filter.

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Member News

Richard reports that his new pond (see page 8 (Social Activities) of the full NGPS website) has been completed, filled, and… it leaked.

Repairs underway!

More news later.

Next Meeting is April 14th at The Church Inn – don't forget it is subscription time.
Please bring it with you: Single £15 Family £18-50p Junior £5 (under 21)
If you cannot attend please send to Sherridan asap.