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# GOLDFISH STANDARD

Newsletter of the **A**ssociation **M**idland **G**oldfish **K**eepers

Merry Christmas  
to all members  
*wishing you all a successful  
breeding season for 2024*





# The Chairman's Bit

## October Report



Hello and welcome to the October report, including the Society's A.G.M. The meeting began with the usual fire drill, welcoming one and all and the apologies for absence. We started with Mick Smith, now President, *Well done Mick*. Giving a very positive report on how he sees the future of the society. Our financial report from Grahame was also in the positive vein with the society doing well for the year with 82 members. A very good detailed report well presented. We decided to have £1,200 put aside for expendables, namely the fact that next year is the 50th Anniversary of the society and we will be presenting special award cards, rosettes and other bits and pieces for our main show in June. We will hopefully expand sponsors and our giveaways to exhibitors. Jackie has unfortunately stood down from being secretary, which is a big loss to me, Jackie was extremely efficient at her secretarial tasks. Hopefully Jackie will still help out where she can in the future. A big thank you goes to Jackie for all the good she has done for the society over the last few years, all present gave you a very big clap for her endeavours. *Thanks Again*.

There was a proposal for Mike Kirkham to be elected to the committee as a lay member and Josh decided to step forward to be the new secretary leaving a space for Mike and thanks go to Josh for stepping up to take over Jackie's role on the committee.

One of the recommendations from Grahame was that we renew the plastic bags on the show tanks as the old ones were well past the usefulness, this was agreed along with the need for a sack barrow and new hoses for the water vacuum.

Proposals to:

- cut down on the number of meetings at St Bartholemews, was rejected by those present. So all this year's meetings will be the same as in 2024.
- To only take £3.00 for each auction tank but this was rejected in favour of the existing 20% rule.

- To move the Society's show to a later date in the year to provide for this year's baby fish to be shown, was rejected with a provision for last year's baby fish to be shown in all classes in next year's show. Details have not yet been decided. ***The Annual Show will be on 29th June 2024 at the Wyken Community Centre.***

The meeting was called to a close at 15.50. Thank you to all those in attendance and if I have missed anything out I apologize.

I will now give an account of the Nationwide show, leaflets were given out provided by the financial officer of the Nationwide Board showing that the show made a profit of £113.00. All the adult classes had fish entered with the exception of Comets, Jikin and redcaps, although the Jikin were represented with an exhibition of five fish from Robert Nicol who had died in March this year, John McGarva bringing the fish down with him from Scotland.

Thank you John we should have had a photo of Robert. The show for me was a success I enjoyed it although it was not plain sailing as the auction men were unable to attend on the day due to ill health. Thankfully I talked Kerry Chilvers and John Fox to step up for us. A big thanks to Kerry and John for their work and the very good job that they did. Thanks also go to Jackie for the catering and judges lunches, and Josh and his girls for serving the teas and coffees.

Thanks also go to everyone for their hard work on the day to make the show a success. The major awards were Graham Edwards Best in Show with his Ranchu, Brian Parkin with Best Single Entry in Show with an excellent London Shubunkin, and last but not least Alex King with a wonderful Best Team of Four Ranchu.

***Thanks everyone***



***I would just like to wish all members a very Merry Christmas from all on the Committee***



# Editor's musings

I have decided that as I am now in my dotage it is time to re-assess my fish keeping:

I began by buying two 2 litre brine shrimp hatcheries from ZM at Winchester this means I no longer need to play about with silly milk bottle contraptions and it has the bonus of giving me a lot more brine shrimp to feed to the fry (I used to only have the time to feed them once a day but now its two or three times for young fish and I also feed it once a day to young adults, which seems to have amazing health benefits. they positively glow with health only problem is I have no idea why, they can only get tiny amounts of protein from the shrimp, perhaps its vitamins? Still so long as it works I'll happily live with the mystery;



I have then moved a bank of 3 tanks next to a window for two reasons firstly to catch the morning sun in the hope of encouraging adult fish to spawn and secondly to see if the resulting green water will benefit young fish as they develop into adults (my reasoning was it would be like having a lot more vegetable matter in their diet which is hopefully more natural for them and will help calico fish develop more intense colouration;

I have rather reluctantly decided to give up my efforts to produce a calico celestial this follows losing about 60 adults to some kind of parasitic infection in the spring and realizing that I should probably take the hint and give up (sorry Tommy);



As I do like to fill my day, instead of following my previous method of only keeping the best dozen fish from any spawning I am now keeping the best twenty (presuming can find twenty!) I have been quite surprised with fish that I would previously discarded developing surprisingly well.

On a totally different subject where have all the moors gone? There used to be such brilliant specimens to be seen but now I can't remember when I last saw a really good one. I have a soft spot with them because my good friend Brian Herbert used to breed them along with fantails and I used to love going round his house as a



teenager to look at his fish (sorry Brian I must have been a right bloody nuisance) I know Brian could be a grumpy old sod but he was kind, fiercely honest and easily the best goldfish keeper I have ever known. I guess it really means you are getting old when you realize just how many brilliant fishkeeper friends you miss when they have gone!

Probably best sign off now before I get too maudling

Ed.





# Breeding Broadtail Moors (a personal tale)

**Pat Davis**



After spawning raise the temperature to 70 F and wait. Hatching will be in approximately three or four days. Feed brine shrimp, a little to start with then two or three teaspoonfuls of eggs (hatched in accordance with instructions) two or three times a day. This is continued for two months, as access to sourced of daphnia is limited. The fish can then be fed high protein pellet food, pre-soaked and mashed. Mashed earthworm is introduced to the fish as often as they take it

Although moors will breed unhindered in a pond during the summer months, to obtain good quality fish it is far better to utilise a large aquarium in the fish house.

Firstly obtain the best breeding stock possible- at least one male and one female although I use more than one pair at a time.

I obtained my first stock fish from Tommy Sutton and have 'line bred' them ever since without introducing fish from other lines. This seems to work for me having won numerous awards at various specialist goldfish open shows for moors over the past 10 years. This could also be due to the lack of competition as hardly anyone else has bred moors as over this period. Preparing a five foot by two foot by 9 inch tank in autumn by thoroughly disinfecting it. I leave the water to mature until the spring. The introduction of a few daphnia is beneficial and before long a fine carpet of soft algae will establish on the aquarium base and sides.

Come the spring the adult fish are brought in from the wintering ponds (or sometimes from other aquariums in the fish house) and placed in a similarly prepared aquarium. The water that has been over-wintered is changed (saving the daphnia) and leaving the algae growth alone, except for the front pane. Gentle heat is gradually introduced over period of about week and light aeration provided from an airston in one corner. If a drip system is used (mine only works for 30 minutes only three times a day then it is a good idea to place the airstone beneath the incoming stream of watering in order to disperse chlorine and other such fish poisons.

Feeding the fish on Hikari wheatgerm, daphnia, earthworms etc over a two or three week period should bring the males into condition indicated by a display of white dots on the gill plates and pectoral fins. Females will become plumper and normally show a short 'nipple' at the vent. All fish should be disinfected before settling down for the winter and again prior to placing in the breeding aquarium.

Place fish in the breeding tank with plenty of Hornwort, elodea, or other spawning medium. Raise the temperature to 65 F, preferably when expecting a full moon and clear sunny skies the early morning. If they don't spawn the next day don't disturb them but let them stay for a week or to and as I find they feed well.

I never bother to separate the sexes prior to the spawning as I find that they won't breed unless there are males and females in the somebody of water!

a good

fed high protein pellet food, pre-soaked and mashed. Mashed earthworm is introduced to the fish as often as they take it

## Selection of adults

It goes without saying that only the very best fish obtainable should be used for breeding. Both male and female should be as close as possible to the Nationwide Standard. Fish that are brassy should be avoided also fish showing forked tails, as opposed to the desirable square tail. Personally I find the square tail more important than any other feature of the breed and the hardest to fix. Others however have concentrated on eye development and body shape.

The female should be strong in the body, full and round and capable of producing many eggs. With moors, small spawnings are of no use as the chances of obtaining good specimens is very slim the best of times, the more eggs produced therefore the better.

I prefer males to be somewhat slimmer than the females in order to more actively chase during the spawning process. My present males chase so vigorously they often tip the females head over heels in their enthusiasm. I always take greater care over fin development with the male than the female but whether the male or female passes on fin development more than the other I do not know, Its just a personal thing

Whilst I have often had both male and female moors breed the year after their birth (although very healthy and a rich amber colour) are obviously not as numerous as an adult female would produce One year old males are often used to drive a female to make over drop eggs, are obviously not so numerous as an adult female would produce. One year old males are often used to drive a female make her drop eggs, then more refined and heavier older males are brought in to improve the percentage of good progeny.

## Selection of Young

After hatching, the fish are fed newly hatched brine shrimp three or four times a day. After ten days old some fish will start to turn black. These are almost always 'nymph' type fish; that is fat bodied with single tails. About a third of the spawning will be this type and should be removed. The remaining fish should be allowed to grow on for another week or two and then square edged twin tails should be selected for growing on. Fish that show any sign



of 'forking' of the tail should be removed (normally of the spawning. 80-90% of the spawning). The last remaining few percent are then grown on to about two and a half months of age and selected for the finer show points. Water temperate should not be too high and feeding not too high in protein otherwise hump-backs develop (presumably the body growing faster than the head).

A three to four months of age the fish should look like miniatures of their parents (except all the fins will be shorter) and fully black. Any fish still olive coloured at the age should not be used for breeding later in case lateness to colour is passed down to the next generation, making showing more difficult i.e. points for colour out of 20- nil!

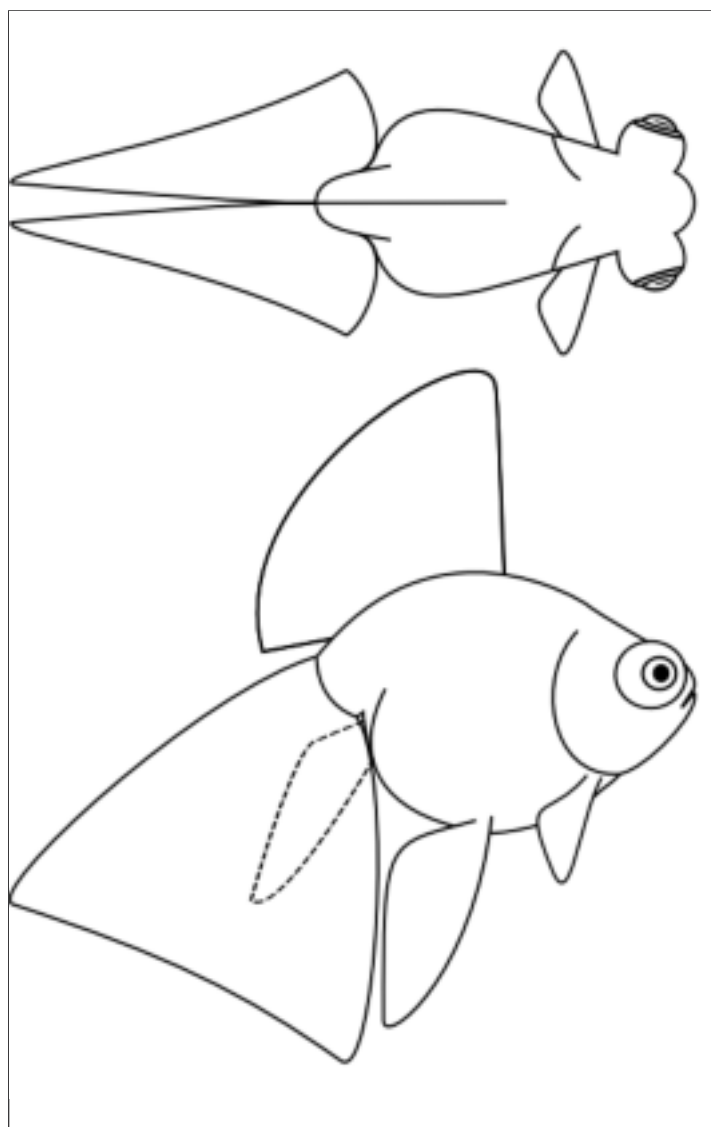
I keep the water temperature at 70F until they are three months of age then let nature takeouts course, only putting the heat back on during prolonged cold spells during the summer. Maintaining a minimum temperature of about 60F up until the time of the open shows is beneficial in order for the fish to maximise growth.

Eye development starts at about 2 1/2 - 3 months of age and will need to have been accomplished by the time of the open shows or points will again be lost. Eyes should be evenly matched and as near as possible to the Nationwide standard. In my own strain a certain percentage will have uneven eyes - and you can bet that they will be the fish with the perfect finale - such is the lot of a fish breeder. I have also noted fish that remain olive in colour will never turn black and are also near perfect infall other respects. - I've never understood why.

in order to improve the length of finnasge in one spawning i placed some well grown youngsters in a five foot by two foot indoor aquarium from lat October until the following March. When the fish went in they had perfectly square edged tails but b March the tails had forked badly. he outer rays of each lobe obviously grown faster than the rest. MNeedless to say all my moors are now kept in the ponds over winter in the fish house.



### ***Nationwide standard for broadtail moor***





# FANTAIL FUN

I realized with some alarm that I was down to my last 5 calico fantails. so I picked the most likely pair, put them together and hoped for the best (they were both at least 12 years old).



*Male very poor fish, far too dark, too many hard scales, tail too long with pointed ends. Still I was confident that there might be some decent genes lurking in there somewhere. (and I didn't have much choice).*



*Female good body, blue well spread, bright red, like the way the red bleeds into the finnage*

I put them in a tank which catches the morning sunshine and waited with fingers crossed. They spawned one afternoon producing about only about 200 eggs but they were pretty old! I was surprised, the spawning only had about half a dozen metallic fish and around 60 matts, dont ask me why, goldfish are never predictable, still I was reasonably pleased with the result. They have a good body /finnacle balance. You may wonder why I keep fantails with longer finnage than the standard requires, it is because I have found when I breed short tailed fish to short tailed fish the indent on the trailing edge of the tail tends to fill in and begins to create a straight edge. (see next page).

I dont worry about breeding long tailed fish together (it's not on this occasion that I had much choice) as I tend to get quite a lot



*First spawning*

short and medium tailed fish See diagram on next page. I find when I breed a short tailed fish to a long tailed fish I get a much better shape to the trailing edge of the tail and I find with my fish breeding long tail/to short tail tends to produce predominantly



*First spawning*



*First spawning*



*Flock spawning adults*

short darken as the fish age.(fingers crossed)

I dont worry about breeding long tailed fish together (it's not on this occasion that I had much choice) as I tend to get quite a lot short and medium tailed fish See diagram on next page. I find when I breed a short tailed fish to a long tailed fish I get a much better shape to the trailing edge of the tail and I find with my fish breeding long tail/to short tail tends to produce predominantly short to medium tailed fish. I shall now wait for the colours to darken as the fish age.

As I was so short of fantails I tried for another couple of spawnings but this time using flock spawnings with fantails I used hadn't used at first and some fans that I bought from the Bristol auction last year.

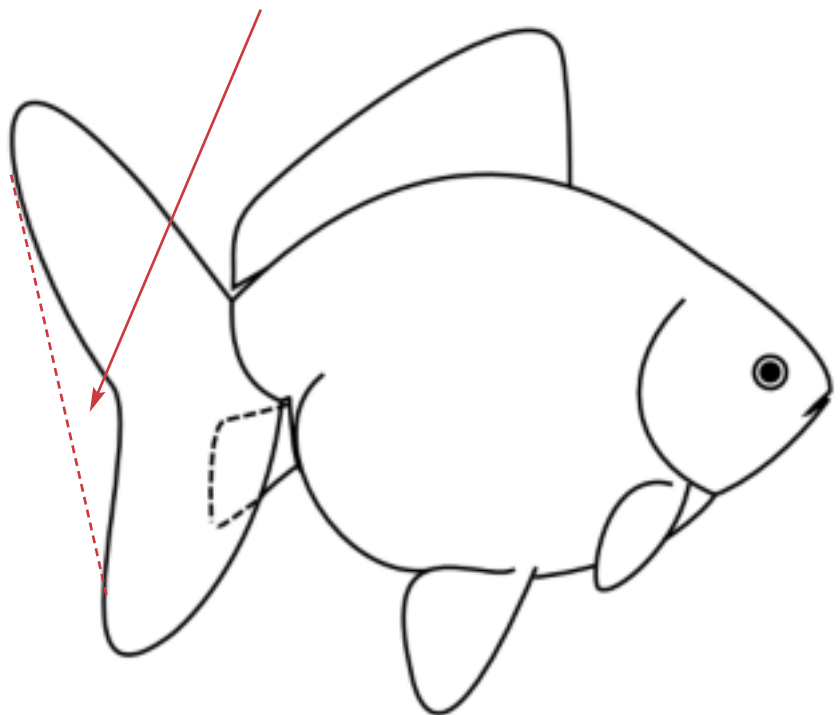


They had mixed results with the majority of the fish having brown where I wanted red, still there was a few good fish amongst them.

**Ray Rich**



This is the area of the tail that I find fills in with a short to short tail cross





# *Metallic Veiltails my way*



**Brian Young**



Calico veiltails have been my favourite fish for many years and I have had success with them at the National, AMGK, BAS and GSGB shows. It was while showing them that I noticed one or two metallic veils were benched and my eye was drawn to them because of their fantastic colour, a very intense hue as near to red as is possible. Surprisingly there were not many breeders specialising in these metallics. Those I am aware of are Bill Cook, Andy Barton and Ian Mildon. These metallics are covered under the "Self" portion in the National Standard for veiltails, so being curious I wondered if there were major differences between the two types. Obviously there are different requirements for each in terms of colour but all else is the same. With this in mind I decided to acquire some metallics to see if I could breed these successfully and to perhaps boost the interest in them in our hobby.

I had a good discussion with Bill Cook who then kindly supplied me with three adult metallics from his pond, two females and a male. It was January, not the best time to move fish in the cold weather, but I introduced them into my fish house with no heat after letting them equalise to the water temperature which was about 10 C. I decided I had time to condition them for a spring spawn so I gradually raised the temperature over a period of about two weeks to 20 C and started feeding them regally about three times a day on reasonably high protein food, pellets and flake just to vary their diet. Once the weather started to warm my compost bin came alive with tiger, or brandling, worms so I fed them at least once a day in addition to the dried food. I separated the sexes at the end of April and continued to feed them heavily, increasing the number of worms. At the same time I increased water temperature to about 24 C over two weeks. The

females had fattened and males had tubercles by then so I introduced them and placed mops in a breeding tank. I use 'Skin Scrubbers' as mops, they are made from soft nylon and when they are unravelled they make an ideal medium to catch eggs. Eggs were laid after a couple of days and hatched three days later at 24 C.

*3 month old metallics,  
note fish at back  
showing early signs of  
colour change*



The work then starts. Liquify No1 is used after the fry are free swimming and then brine shrimp is introduced at least three times a day for at least six weeks when it becomes possible to cull out single tails and distorted bodies. Tanks are kept at about 20C from now on. After another couple of weeks joined tails can be seen with a solid line on top of the caudal. Dried food is introduced gradually while continuing with a daily feed of brine shrimp. I use a pestle and mortar to grind pellets down to powder for a week or two before feeding with small pellets although powder food is available commercially. I would like to feed daphnia to help with growth but natural sources are impossible to find in my area and growing my own is limited because of restricted space. Without mentioning particular manufacturers I feed a varied diet of high protein pellets and flake both of which are insect based. I also





try to use food which does not result in large amounts of waste. I have successfully tried steamed egg and have blitzed some peeled prawns with a few peas thrown into the mixture as alternatives to the dried food. Throughout this initial period it is most important to keep water in good condition. I am fortunate to have individual taps to each of my tanks and a common drain system so changing water is easy and can be done as often as necessary, probably 25% three times a week. Filtration is also important and I use air lift sponge filters in each tank, cleaning them regularly.

Tank of 3 month old Metallics (note start of colour change on fish at the back)

Now comes the wait. Metallic fish turn black gradually before changing colour, the process can take several weeks. Not all fish in a brood change colour at the same time with most changing after a period of some months and some even up to a year. It has been said that the longer they take the deeper the colour. One thing effecting colour density is natural light and those kept in my small pond over the summer months have certainly had better colour than those kept in the fish house.



*Young metallic in early colour*

In my view the fish normally take about a year to obtain good colour, most of that time being in sun or bright daylight. Best colour usually takes two years. I have found the metallics are harder than calicos and although the last few winters have not been too severe my fish have survived throughout in my small pond. I do keep the water moving and also use acetate sheeting to cover it. Apart from having to satisfy the requirements of the National Standard there are two colour problems which a judge might consider apart from its depth: colour not extending fully into the fins and lightness, even white, under the ventral curve (under the head and extending to the vent). The latter could be considered to be part of the fishes natural camouflage and it is very hard to overcome. Perhaps the answer is to find fish without these two colour problems and to use them as breeding stock. There could be some in most broods.

Now that I have had a couple of years experience and some success in a couple of shows with these fish **I am convinced they are well worth breeding and hopefully they will be given the attention they deserve with more being bred and benched in future.**



*Showing intensity of colour that develops with natural daylight*



*Showing difference in size between 5 months and three years*



*Two goldfish in a bowl once met,  
Or was it three? I oft forget,  
Well, anyway, they sat and planned,  
A plan to get them on dry land.*

*They plotted out their great escape,  
With bits of rope and sticky tape,  
Until at last the time was reached,  
Its now or never the leader preached.*

*With tiny pick and grappling hook,  
A mighty leap of faith he took,  
He reached the apex of his arc,  
And plunged on down into the dark.*

*And of this fish the others heard,  
Not a written or a spoken word,  
Where he is now, he wont come back,  
For he ended up a feline snack.*







# TOO HOT TO HANDLE?

This year has seen the highest temperatures ever recorded on earth and there can't be many people now that won't agree that global warming or climate change is having an effect on the planet. In the grand scheme of things how this will impact on our hobby is pretty trivial but it made me think not only about how higher temperatures will influence our fishkeeping but also how temperature is one of the most important factors in rearing good quality goldfish.

Most of us who are actively breeding goldfish in the U.K. use green houses, polytunnels or modified sheds with clear roofs. Natural sunlight helps develop the colours in our fish and we can achieve higher temperatures and earlier spawning in these buildings than if we just used outdoor ponds. There is also the benefit of keeping pests and predators out and they provide shelter from the weather. The design and building of a fish shed is one of my main concerns at the moment as I recently moved house and I currently have no fish shed so I am considering all the good things from my old shed to help keep my new shed cost effective with rising global temperatures and high electricity costs.

For 2 or 3 months during the height of our summer there is often too much heat and sunlight that can overheat the tanks in our fish sheds, but how we organise our fish tanks can



help reduce this.

The air temperature in my old fish shed reached 37 C last year for several days but the highest water temperature in my tanks was 25.5 C and remained steady. The reason my tanks did not sky rocket to over 30 C like other fish breeders I know is because all the tanks in my shed are connected together as a recirculation system and have 1 large filter between them. This means that when the air temperature is high it is heating a combined volume of about 7,000 litres instead of a volume of about 2-300 litres in each tank in an average goldfish breeding tank. The tanks on the top shelf in my fish shed are at the same temperature as the tanks on the bottom.

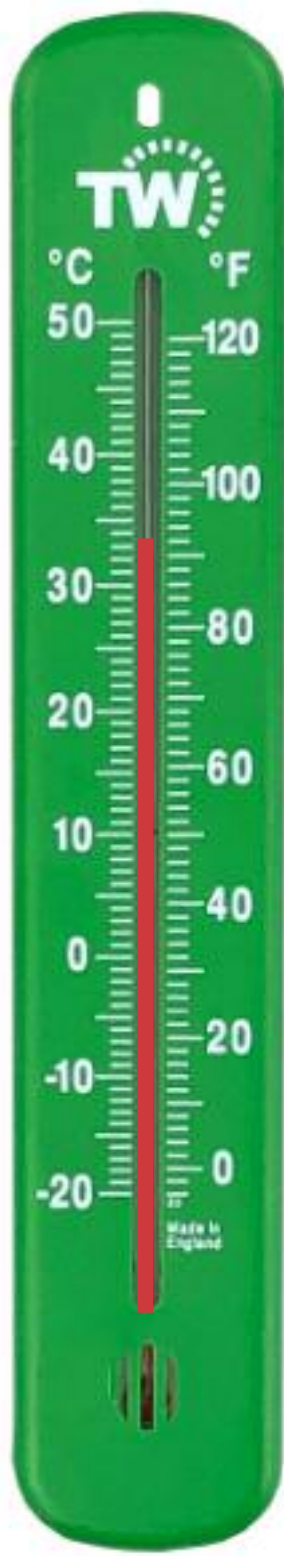
Water depth used in tanks for breeding goldfish are often shallow, from 4" deep for young ranchu to about 12" deep for adults and this increases the surface area of the tank which will increase the rate at which the tank water heats up. A smaller the water volume and higher surface area will cause the water to heat up faster.

Recirculation systems are not without their problems, they are more complicated than multiple individual tanks, there is a far greater risk of disease spreading between tanks if you get a problem and the fact that they heat up slowly in the summer can be a disadvantage at the start of the season when you need to warm the tanks to get fish spawning.

If you do need to keep your fish cool on the hottest



brightest days then shade netting can be used to screen tanks or polystyrene (e.g. a fish box lid) or hard plastic sheet can be placed above the tanks to reduce the direct sunlight and then removed when things calm down. Remember that heat rises and the tanks on the top shelves in a fish shed will get the warmest. Many greenhouses have automatic window openers that can be adjusted to different temperatures, my neighbour (who is a cactus enthusiast) even has shading controller that automatically adjusts the shade netting in his greenhouse depending on the temperature. More simple tricks are opening the door in the morning but if you are likely to have a problem with cats (or other animals) then a secondary mesh door to stop anything unwanted getting into the fish shed will allow you to leave the door open all day during really hot weather. If you have a concrete or slab floor pouring water on the floor and allowing it to evaporate will lower the temperature slightly by evaporative cooling, so will wetting a blanket or towel and placing it on the outside of the greenhouse or on top of glass tank covers. Placing a fan at one end of the fish house pointing towards the open door will help move excess heat out or even better installing an extractor fan in the shed wall is probably the most efficient way of getting the heat out especially if it is placed high up and these can be connected to a thermostat to switch on when the temperature is high or switched on manually.



My own shed had 2" thick insulated walls and a clear single skin fiberglass roof and during the winter I also used twin wall clear polycarbonate on the ceiling to help keep heat in but this could be removed during the summer. The join between the walls and roof were not perfectly sealed so this allowed some excess heat out.

### ***How hot is too hot?***

Goldfish can be very tolerant of water temperatures and the minimum temperature tolerated has been 0.3 C and the highest 43.6 C according to a scientific study published in the Journal of Thermal Biology in 2005. But it's not that simple, it all depends on what temperature the fish have previously been adapted to and the upper limit varied between 30.8 and 43.6 C, so if temperature increases are gradual from normal summer temperatures to over 30 C then they can probably handle heat spikes but increasing from 5 degrees to 35 degrees in a few days would certainly kill the fish. So, if the fish have gradually warmed up in the spring and reach high temperatures during a heat-wave they should be O.K.? If they are in a relatively small volume of water 2-300 litres that heats up during the day and drops at night and then spikes during a heat wave then we are probably right to be a bit concerned and shading our tanks or running cool dechlorinated water through the tanks is a sensible thing to do.

Goldfish are poikilothermic (their body temperature is the same or very close to the water temperature) so they are not able to actively control their body temperature. The water temperature will dictate their metabolism and growth rate and generally the warmer the water the faster they will grow until the optimum water



temperature for growth which seems to be between 22 and 24 C after this the growth rate slows down again. With faster metabolism and to achieve faster growth there is a greater demand for food but also dissolved oxygen. However, water at higher temperatures has less dissolved oxygen than at colder temperatures and on warmer days goldfish can sometimes be seen gasping at the surface for more oxygen. Hot water can't physically hold the same amount of dissolved gas (oxygen and nitrogen) as cold water and what happens when we boil a kettle is the gas that had dissolved into the water when it was cold bubbles out of the hot water when it boils.

It is very important that in warm weather we ensure that we have adequate aeration in our tanks and that they are not overstocked as dissolved oxygen levels will be naturally lower. At 10oC the maximum dissolved oxygen level would be 11.3 ppm, at 20oC it would be 9ppm and at 30oC it would be 7.5ppm, and these are maximum levels it will be less depending on water quality, air pressure and height above sea level. Also consider where your air pump is in the fish house, if it is up high it will be drawing in hot air and an air pump heats up the air as it pumps it so you will be pumping hot air into your tanks which will heat the water even more. Is it worth relocating your air pump outside the fish shed in hot weather to draw in cooler air but still protect it from the weather or will putting a fan near the air pump help? Some air pumps will cut out if they over heat so think how you can cool your air pump down in your fish house. Remember though your air pump should really be located above the water level of your tanks to reduce the chances of water siphoning into your air pump in the event of a power cut or the pump tripping out. If you can't do that then fit non return valves on your air lines. So far I have been explaining some of the problems with excess heat and our goldfish but there are some situations that high temperatures can be beneficial. It is fairly well known that increasing water temperature can be used to treat white spot (ich) but I will finish on my observations on how I managed to deal with a very persistent fluke infection using high temperatures a couple of years ago.

My fish house had been running for at least 12 years<sup>2</sup> at that time and for the first few years I managed to breed and rear quite a few fish, nothing astounding or show winning but I was fairly happy with what I bred. At some point my fish picked up a fluke infection

which I treated with one of the chemical treatments for flukes and it would appear to improve by late summer and the fish would seem fine in the autumn. During the spring the fish begin to warm up and then I would start having issues again and I would do a microscope scrape and check for flukes and there they were again. I would treat again, sometimes with a different brand and I would treat 3 or 4 times during the season and at the recommended time intervals to get the newly hatching young flukes but the same thing would happen. This was the pattern for 3 or 4 years and my biggest frustration would be that the flukes would kill one of the fish I was planning to breed or my last best fish of that variety. My fish breeding during this time was poor, with the odd exception I had fewer spawnings, lower hatch rates and slow growth. I tried different remedies and stronger chemicals like potassium permanganate and they all worked for a while but by the following spring the flukes would be back.

Over time I did more research into the species of flukes and the resistance of some species to the standard chemical treatments, some of them appear to be so resistant to chemical treatments that the concentrations that will kill them would kill or damage the fish first. I then found an article about guppies that seek out warmer water when they were sick to help boost their immune system or kill their parasite. At a similar time, I found another paper that stated an upper lethal temperature for some fluke species at about 30oC. So, I decided to increase the temperature of my entire 7000 litre recirculation system to 31oC and keep it there for a month. In a normal year my system would reach 24 to 25oC maximum, so it took a lot of heaters and I'm glad I did this before the electricity prices shot up! To cut a long story short it appears to have worked, I have not seen a fluke on any of my fish since then, my fish came through the winter in the best shape they had in years and I had multiple spawnings with good hatch rates and run out of tank space as a result. I believe that one of the benefits of having smaller tanks in a green house or fish house that gets very hot for a few weeks in the middle of the summer is that the high temperatures kill off persistent flukes that manage to hang on and never be fully eradicated in colder water. So, although we need to be careful in very hot weather, water temperature of about 30oC can be beneficial for a couple of weeks and possibly why some goldfish breeders never have any real issues



" I SHUDDER TO THINK  
WHAT YOU'LL SPEND WHEN  
THE DOG DIES "