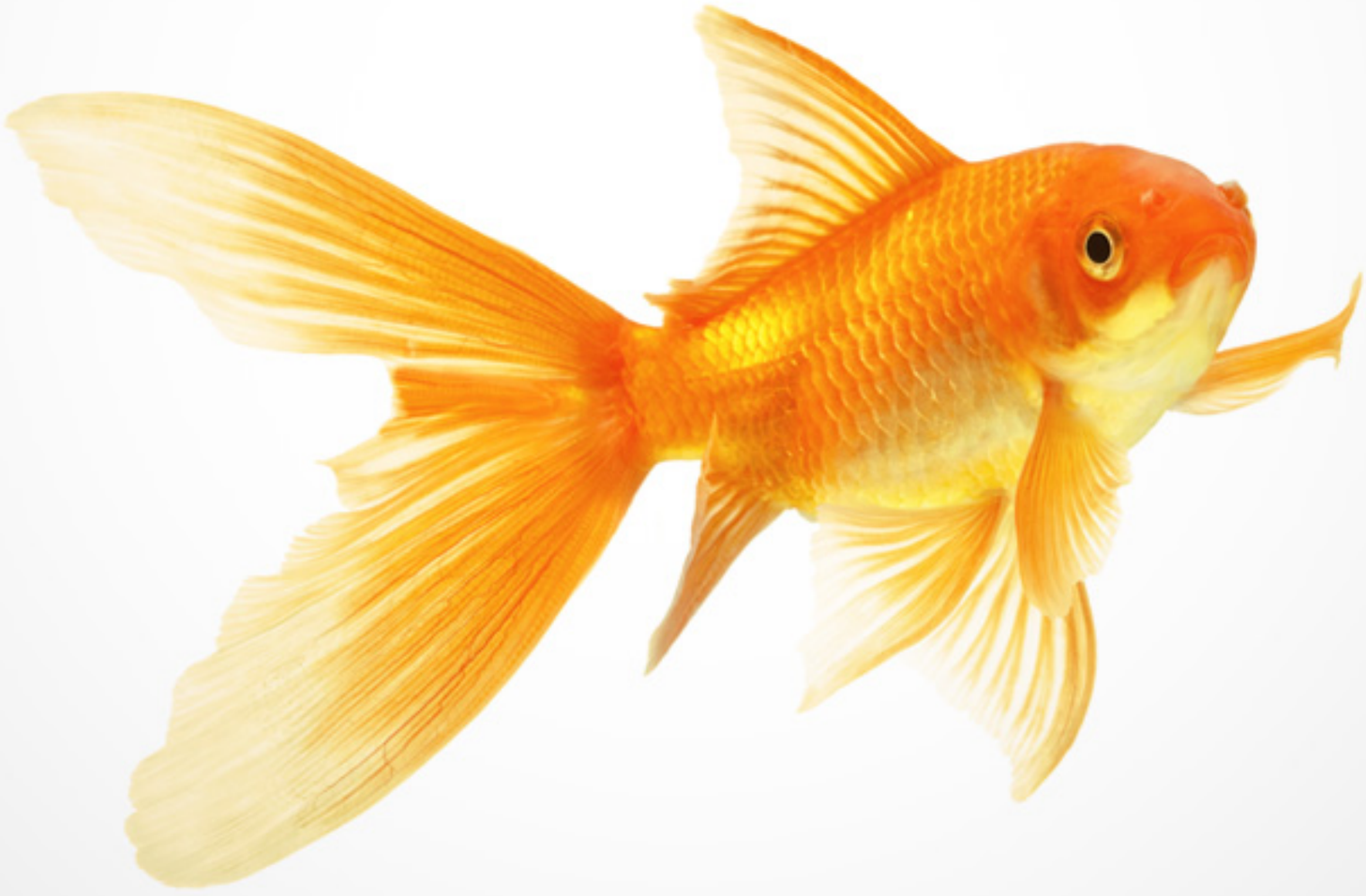
HOW TO CARE FOR GOLDFISH

A COMPLETE GUIDE



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HOW TO CARE FOR GOLDFISH

A complete guide

- types of goldfish, diseases, symptoms, treatments, breeding, diet, aquarium and pond maintenance and much more.

Table of Contents

CHAPTER ONE

INTRODUCTION

Goldfish make excellent pets and are *the most popular domesticated aquatic life in the world*. There are over 125 varieties of goldfish; more varieties than any other fish species!

One thing that makes goldfish popular is that they are not noisy or demanding pets. They can be kept in places where other bigger, louder pets might not be appreciated or would be more of a problem to maintain. This can be the case when it comes to housing pets in high-rise apartments.

Science has proven the fact that having to care for another life form is important in a stable psychological makeup. Certainly where children are concerned it helps them to develop a real sense of responsibility. This quality will definitely benefit and serve them well on into adulthood.

Goldfish are attractive as pets because they can be kept with relatively little maintenance. Unlike other pets, goldfish do not need to be housebroken, won't beg at the table for food and you will never have to cover up the sofa when you are not going to be home. The wonderful thing about goldfish is that they are a quite hardy species and are fairly adaptable. Goldfish are excellent candidates for outdoor pools or ponds, in almost any climate.

As goldfish are available in such a wide variety of body shapes, colors and general disposition, there are goldfish to suit everyone and every situation. Whether it be fish for an aquarium or an outdoor pond.

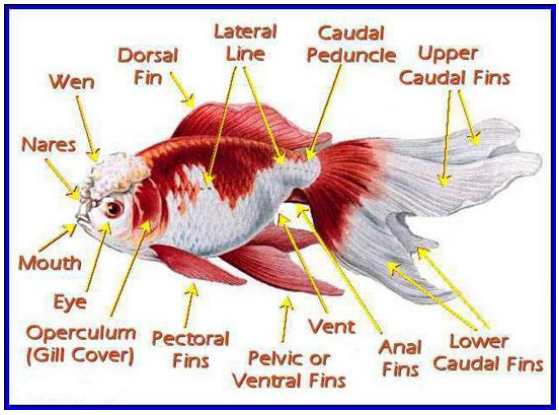
Welcome to the great world of goldfish ownership. With the help of this book you are on your way to experiencing the joys of caring for goldfish.

ALL ABOUT GOLDFISH

Carassius Auratus, also known as goldfish come from the Cyprinidae family, a classification of Carp.

How can you tell the difference between a carp and a goldfish? The best and easiest way to distinguish between a goldfish and a carp is to look at the dorsal fin. The carp's dorsal is generally convex (curved out) while the goldfish's dorsal is usually straight up or is concave (curved in).

The anatomy of the goldfish consists of fins *(caudal, anal, dorsal, pelvic or ventral, pectoral)*, scales, gill cover, mouth, nostril and eyes. Looking at a goldfish from the top, the view shows the middle as somewhat thicker than the head or tail section. If looking at a goldfish from the side the view would indicate that the middle is somewhat deeper, whereas the body tapers toward the head and the section where the body meets the tail. This narrow section of the body is also known as the caudal peduncle.



An important part of a fish is their fins. Fins have three main functions: braking, stabilization and propulsion. The fins come in two types, paired and median, and they're located at five places on the fish's body.

Goldfish who are members of the family of single tailed goldfish are very closely related to the common goldfish, or wild goldfish. If you prefer to house the single tailed variety keep in mind they are a direct descendant of the carp family and much hardier than the twin tailed variety. If you are a first-time goldfish buyer choosing a fish from this group would make perfect sense.

Twin tailed goldfish are closely related to the common goldfish or wild goldfish if you prefer. However twin tailed goldfish will need more attention than their single tailed brothers and sisters.

TYPES OF GOLDFISH

Goldfish are considered one of the prettiest fish in the world. They range in size from just a couple inches long to over a foot long. There are a wide variety of goldfish that can be classified many different ways. Some ichthyologists *(people who study fish)* classify them according to:

- Their head and body shapes
- Their markings or their origins
- Others classify them according to their tail structure

Overall, as stated by many experts and resources, there are over 100 varieties of goldfish. However, realistically, there are basically between 20 and 25 original types of goldfish with the balance of them being hybrids.

Many breeders have cross-bred their goldfish and created derivatives of the original. An example of a cross-bred goldfish is the Lionchu, which is described below. The **Lionchu** is a hybrid of the Ranchu and Lionhead goldfish.

Another example of a hybrid goldfish is the **Common Globe-eyed Goldfish**, which is a cross between the Common and Telescope varieties.

In order to better understand the differences between the varieties of goldfish, it is helpful to first understand the external anatomy of a goldfish. The different types of fins, tails, etc., are the key identifiers that set them apart.

To get started, lets first take a look at:

Single Tailed Goldfish

Common Goldfish

Size: up to 12 – 14 inches long
Body Shape: slender
Coloring: orange/red, yellow

The Common goldfish has a single, short tail or caudal fin. It is very distinct with a deep fork. When they are first hatched, the baby fish are very dark. Most will get lighter as they age. The anal and caudal fins of the Common goldfish are not divided like many others.

This particular goldfish will grow into its environment and would best be suited in a pond or fish tank. The tank should be between 25 – 40 gallons in size. The Common goldfish is a community fish and can pretty much live with others.

If you have a Common goldfish, you will not need any other scavengers in the environment. It will eat almost anything.

Its diet consists of:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Comet Goldfish

Size: up to 12 – 14 inches long
Body Shape: slender
Coloring: red, orange, red/white

Comet goldfish are one of very few that has only one caudal fin, which is deeply forked. Most goldfish have two and are seen as flawed if they only have one. The caudal fin should, ideally, be as long as or longer than the body of the fish. The Comet also has paired pectoral and pelvic fins which are long and end in a point.

The best environment for the Comet goldfish to live in is a pond or fish tank that holds at least 30 gallons of water.

The Comet goldfish eats anything that fits into its mouth. It is not recommended that Comets live with other fish, especially those that are smaller. This is because it will eat anything and everything without regard to others.

Food for Comets can include:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Bristol Shubinkin

Shubunkin Goldfish

Size: up to 10 inches long
Body Shape: slender
Coloring: calico – black, white, red, orange, and brown on a silvery-blue / lavender background

Shubunkin goldfish are one of the few that has a single tail and is built much like the Common goldfish. There are two types of Shubunkins.

The London Shubunkin has long fins similar to those found on Commons. The Bristol Shubunkin, on the other hand, has rounded, lobe-like fins, especially the caudal fins. This fish was bred from the Telescope and Demekin goldfish.

The Shubunkin goldfish, due to its potential size, likes to live in ponds or fish tanks that have a capacity of at least 30 gallons.

The Shubunkin is not a picky eater. Due to its speed and willingness to eat anything and everything, it is not a good idea to house the Shubunkin with slower fish.

The Shubunkin will eat:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Now let's review:

DOUBLE TAILED GOLDFISH

Wakin Goldfish

Size: over 10 inches long
Body Shape: slender
Coloring: red/white

The Wakin is starting to gain more popularity. It has a body built similarly to the Common goldfish except that it has fan-shaped caudal fins. Its fins come in pairs throughout its body.

Wakins have very unique markings and are easily identifiable as no two are alike. Some are almost entirely red or white while most have patches of each color.

Because the Wakin is such a proficient swimmer, being fast and agile, it can live with the Common or Comet goldfish pretty easily in ponds and large aquariums that hold at least 30 gallons of water.

It is not a good idea to house Wakins with other, slower goldfish. The slower fish will die due to the lack of food. When it comes to the Wakin's diet, it is an omnivore.

It will happily eat:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas

Fantail Goldfish

Size: about 6 inches long
Body Shape: egg-shaped
Coloring: red, orange, and anything in between

The Fantail goldfish is one of the oldest varieties around. The origin of the fantail goldfish dates back to over a thousand years.

It has a double caudal fin, giving it four lobes. The dorsal fin is high, prominent and most desirably about a third to half of the body depth.

Its Japanese relative is the Ryukin. The fantail goldfish is a western form of the Japanese version of the fantail, which has a high dorsal fin, a shoulder without the hump, an egg-shaped body, and a quadruple caudal fin. The fantail goldfish finnage is less developed than that of the Ryukin. The dorsal fin on the fantail is enlarged and comprises approximately thirty three percent of the fish's body length.

This goldfish variety is available in many colors ranging from orange to red and many colors in between.

The Fantail can live in both ponds and tanks, although it is sensitive to the temperature of the water. It is best if the water is 65 – 78 degrees Fahrenheit. If you keep Fantails in ponds, make sure they are deep enough so that there is a layer of warmth at the bottom where it can lie dormant during the colder months.

Considered an omnivorous fish, the Fantail can be fed:

- Pellets and flakes

Jikin Goldfish

Size: up to 9 inches long
Body Shape: slender
Coloring: white body with red or orange points (fins)

The Jikins Goldfish is rarely found even in specialized aquarium stores.

It's anatomy is much like a Common, however, it has a very unique double-caudal fin. From behind, it looks like the letter "x" with four distinct parts, and fans out beautifully. It is developed from a Wakin and is similar in features but not body shape.

Jikin Goldfish displays calico coloration, which in other words can be said as that they display red and white colors on their body. They can, just like all other variants of fancy goldfish possess different qualities. The most valued specimen of Jikin Goldfish has an all-white body bright red fins, lips and gill plates. High quality Jikin Goldfish will not display any other color than white on their body and red to orange coloration on the mentioned fins, lips and gill plates. The brighter red the color of the fin, lips and gill plates, the higher quality of the Jikin Goldfish.

Jikins are rather hardy and can live in both ponds and tanks, although it thrives outside under the sunlight, which brings out its reds and oranges. It also responds well to algae. In my opinion, the Jikin Goldfish is best if you are looking for a beautiful pond fish.

The Jikin goldish is omnivorous and prefers to eat:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas

Pearlscale Goldfish

Size: up to 8 inches long
Body Shape: egg-shaped, some with head growth
Coloring: calico – brown, violet, yellow, orange, red

The Pearlscale goldfish is egg-shaped like many of its relatives; however, its mid-section is significantly larger and bulkier, making it almost round.

The Pearlscale got its name from the pearl-like bumps on its body. Their scales are actually humped or domed, giving them their unique appearance. They have double anal and caudal fins. There is also a variety of Pearlscales that have bumps on their heads known as Crown Pearlscales. The Japanese call this fish the "chinshurin."

Pearlscale goldfish like to live in both ponds and tanks. They are, however, sensitive to large fluctuations in water temperature so if they are in the pond, it needs to be in temperate climate. If in a tank, the smallest capacity should be a 10 gallon one, however, the bigger the space, the better.

The Pearlscales are not picky eaters. Much like their relatives, they will eat anything. They do, however, require a little more attention when it comes to feeding time.

Since their internal organs are extremely cramped in their round bodies, their pellets and flakes need to be soaked in water before being fed to the Pearlscales. This allows the pellets and flakes to absorb water and expand before entering the fish's body. The food is better off expanding outside the fish rather than inside.

Its diet can include:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Oranda Goldfish

Size: up to 12 inches long
Body Shape: egg-shaped with wen (head growth)
Coloring: red, red/black, red/white, blue, bronze, black, calico

The Oranda goldfish is one of few that have a head growth, or wen, on the top of its head. The wen is bumpy, resembling the texture of a raspberry. The more developed the wen, the more prized the goldfish.

The wen takes up to two years to develop. The Oranda has a high dorsal fin that begins right behind the wen. It is a cross between Veiltails and Lionheads. Since Orandas' wens are prone to bacterial infections, it is recommended that they are cared for by experienced fish keepers.

Due to its size, it is best to keep the Oranda outside in a pond. It adapts well to a variety of temperatures, allowing it to be a hardy outdoor fish. If in a tank, be sure the Oranda has at least 20 gallons of water to swim around in regularly. It is not a good idea to put the slow-moving Oranda in a pond with the faster goldfish as it will likely die of starvation.

The Oranda is not a picky eater. It will need, however, the pellets and flakes soaked before eating them so they don't expand in their bodies.

They like to have a variety of foods, including:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia
- Cocktail shrimp (from the grocery store)

Ryukin Goldfish

Size: up to 6 inches long
Body Shape: egg-shaped with a hump behind its head
Coloring: red, white, red/white, blue, chocolate, calico

The Ryukin is named for the Ryukyu Islands that lie between Taiwan and Japan. The Ryukin arrived in Japan sometime between 1770 and the early 1800s. It has become one of the most popular goldfish in Japan.

Ryukins are one of the most beautiful; however, they also are one of the most aggressive! Ryukins are the "bad boys" of the goldfish kingdom.

The Ryukin is built very similarly to the Fantail, except for its very distinct hump. Its tail can come in many forms, including long-finned, short-tailed, ribboned, or like a butterfly.

Ryukins live best in tanks that are over 20 gallons. Due to its deep body, it is prone to creating a great amount of waste and ammonia, requiring the tank to be cleaned regularly.

When it comes to feeding a Ryukin, it is best to stay away from all pellets and flakes. This goldfish is prone to swim bladder issues and needs to be carefully selected.

It prefers to eat:

- Frozen krill, bloodworm, daphnia
- Algae and live plants
- Zucchini, lettuce, peas

Moor Goldfish

Size: up to 10 inches long
Body Shape: egg-shaped with telescope eyes
Coloring: black

Moor goldfish are black in color. They look almost velvety as their scales have a golden tinge to them. They have single, high dorsal fins. The caudal fins are rounded or lobed. Their eyes protrude from their heads, but rather than seeing up like the Celestials, they see off to the side like the Telescopes.

Moor goldfish do not live well in ponds and prefer to be in aquariums with other fish with bad eyesight. It is not a good idea to place Moors with faster, bigger fish.

This variety of goldfish is also very social with other fish, swimming near and around other fish without any form of hostility. Black Moor Goldfish have been known to dig up gravel and plants.They need plenty of room to swim as it is a relatively wide fish. Sharp edges on décor are discouraged due to their somewhat fragile eyes.

Like most other goldfish, Moors are not picky when it comes to their diets. They do, however, take a little longer to feed as they have very poor eyesight and take a while to identify their food.

They will eat:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Telescope Goldfish

Size: up to 8 inches long
Body Shape: egg-shaped with telescope eyes
Coloring: red/white, white, orange, calico

The Telescope goldfish is basically the orange version of the Moor. Their eyes protrude and look off to the side. They have tall dorsal fins and lobed caudal fins.

The Red Telescope Goldfish may have traditional metallic red/orange coloration but thanks to its distinct telescope eyes, it makes an eye-catching addition for the goldfish enthusiast.

The Red Telescope Goldfish is also known as the Dragon Eye Goldfish and Celestial Eye Goldfish. The most stunning feature of the Red Telescope Goldfish is the large protruding eyes that is said to resemble those of a dragon. The Telescope variety of fancy goldfish has long been considered the most representative goldfish of China.

Telescope goldfish do best in aquariums with other poor-sighted fish. It does not do well with bigger, faster fish. Because the fish has sensitive eyes, it is best to avoid putting plastic plants in the tanks with them. They may get scratched.

When it comes to their diet, Telescope goldfish will eat:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Panda Moor Goldfish

Size: up to 10 inches long
Body Shape: egg-shaped with telescope eyes
Coloring: white with black points (fins) and oval patches

The Panda Moor is shaped just like the Moors and Telescopes. The only difference is their coloring, which mimics that of Pandas.

Panda moors have delicate projecting eyes, deep bodies, and long flowing fins. Like any other moor goldfish, pandas can grow very fat. They are metallic-scaled. Young moors resemble bronze fantails and their protruding eyes gradually develop with age. They sport a velvety appearance in maturity. However, they may lose this velvet-like appearance with increasing age.

Panda Moors, just like their relatives, are best kept in fish tanks with other fish with poor eyesight. This is a relatively new breed of goldfish, but can be found easily. It's very social and will play well with other goldfish.

This goldfish species is a hardy fish, but it doesn't like cold water temperatures.

Panda Moor goldfish are fun, friendly fish. They are a welcomed addition to any aquarium, as they add something very different to the look of your fish water world.

Panda Moors will eat just about anything, including:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Pompom Goldfish

Size: up to 5 inches long
Body Shape: egg-shaped with over-developed nasal septa
Coloring: black, red, orange, white, blue

Pompom goldfish are named as such because of the fleshy pompoms sticking out of their noses. These Pompoms are, in fact, over-developed septa. Some are more prominent than others. Some Pompoms lack a dorsal fin.

The Pompom can trace its origins back to China. However, some fish experts also state that the Pompom goldfish also originated in Japan. The appearance of the Pompom goldfish is slightly similar to that of the Lionhead goldfish, at least in the shape of its body, as well as the placement of the fins. However, the most distinguishing feature of the Pompom goldfish is the two fleshy knobs that extend out the front of its head. These growths are fairly spherical in shape, and are said to look like the pompoms of a cheerleader. The size of these pompoms is said to vary, and may not be proportionately even in all fish.

Since Pompoms are relatively small, they are very happy in aquariums, preferably heated. They don't have a hard time competing with other fish despite the size of their noses. They are prolific swimmers who prefer larger spaces.

Pompom goldfish enjoy live plants the most when it comes to their diets.

They will also eat:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Veiltail Goldfish

Size: up to 8 inches long
Body Shape: egg-shaped with long veil-like fins
Coloring: orange/white

Of all the goldfish variety, the Veiltail has the highest dorsal fin. Its caudal fin flows delicately like a bride's veil, thus its name. Their anal fins are also very long and veil-like. Most preferably, the Veiltail would have a square-edged tail rather than a round, lobed one.

The Veiltail Goldfish is a very gracious and beautiful fish, and it comes as no surprise that it is very popular among Goldfish keepers and breeders. A Veiltail Goldfish should have a short and rounded body with a smooth outline.

The Veiltail Goldfish standard requires the trailing edge of the caudal fin to be free from forking or pointed lobes. A perfect Veiltail Goldfish must have a single dorsal fin and all other fins paired. A Veiltail Goldfish of high quality sports a strong color intensity that extends all the way to the fins.

Due to its sensitive and delicate fins, Veiltails are best kept in aquariums with no plastic plants in them. They also prefer warmer waters no colder than 60 degrees Fahrenheit.

Veiltail goldfish will eat most foods, however, much like their egg-shaped counterparts, their organs are very sensitive. This requires them to eat presoaked pellets and flakes.

Their omnivorous diets include:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Eggfish

Size: up to 6 inches long
Body Shape: egg-shaped, dorsal-less
Coloring: orange, white, orange/white

The “Egg-fish” or "dan yu", goes back about 800 years in the history of goldfish breeding in China. It is believed to be the ancestral link of today’s Celestials, Ranchus and Lionheads.

The Eggfish is similar to many other types of goldfish in that they are Lionheads without wens (head bumps), Celestials with normal eyes, or Pompoms without enlarged nasal septa. They have long, veil-like caudal fins which are mildly forked. The rest of their fins are disproportionately smaller.

The Egg-fish is not a very well-known fish. Breeders have had a hard time maintaining an adequate blood line, and with the ever-changing tastes of goldfish fanciers, they have become extremely rare in China.

Eggfish prefer to live in 30 gallon aquariums although there is no reason they couldn’t live in a pond. They are not particularly great swimmers due to their size, but can still survive with Commons and Comets.

Eggfish will eat pretty much anything but prefer:

- Pellets and flakes
- Frozen krill, bloodworm, daphnia

Lionhead Goldfish

Size: up to 10 inches long
Body Shape: egg-shaped with wen (head growth)
Coloring: orange, black, red, red/white, red/black, calico

The Lionhead Goldfish is by far the most popular and well known of the dorsal less goldfish. Rather than having the long slender body of the Common Goldfish or the Shubunkins, the Lionhead Goldfish is one of the more rounded or egg-shaped fancy gold fish.

This fish was bred in China to develop a "hood" that depicts the image of the mythical Chinese lion-dog. The distinctive raspberry or lion's mane appearance of the Chinese Lionhead Goldfish have led to its common name 'Lionhead' Goldfish.

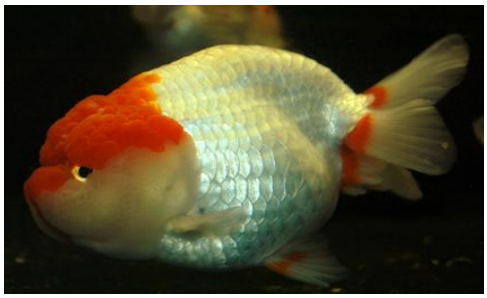
The amount of head growth differs for each fish. For some the broad head, except for its eyes, mouth and nostrils, can become completely covered with fleshy growth (sometimes impeding their vision) while others will develop hardly any head growth at all.

The dorsal-less Lionhead is a close relative of the Eggfish. They do, however, have the raspberry-like growths, or wens, on their heads. Sometimes, the wen becomes bothersome for the fish, especially when it gets so big it interferes with its gills.

The Lionhead can thrive in both fish tanks and ponds. They prefer larger fish tanks and can survive well with other fish their size. If in a pond, try not to house Lionheads with Comets or Shubunkins. These goldfish are more aggressive.

Lionhead prefer to eat:

- Pellets and flakes
- Frozen krill, bloodworm, daphnia



Ranchu Goldfish

Size: up to 14 inches long
Body Shape: egg-shaped with wen (head growth)
Coloring: orange, black, white, red, orange/white

The Ranchu goldfish known as the "King" of the goldfish. Ranchu goldfish are very similar to Lionheads, except their backs are arched and they have shorter tails. They, too, lack a dorsal fin. The ideal Ranchu closes up its tail as it swims and opens it up like a fan, splaying sideways, when it comes to a standstill.

The Ranchu was created in China during the Meiji Period but it was the Japanese who created the Ranchu's we know today. Ranchu's known to be very friendly species and some fish keepers are able to pet their Ranchu and even to train them to do some tricks.

The Ranchu Goldfish is suitable for ponds more than to fish tanks but if you provide him enough space (30 gallons or more) it can be kept in an aquarium.

The Ranchu is best kept with other goldfish or large coldwater species due to the fact that it is coldwater fish so do not mix it with tropical fish as it requires a lower temperature than tropical fish. Ranchu Goldfish are notoriously filthy, producing much waste, frequent water changes and good filtration system is essential.

It is important to feed Ranchus a variety of fresh and frozen or dried foods.

They enjoy eating such things as:

- Pellets and flakes
- Frozen krill, bloodworm, daphnia
- Lettuce, zucchini, cucumber

Celestial Goldfish

Size: up to 8 inches long
Body Shape: egg-shaped with telescope eyes
Coloring: red, orange, yellow, brown, black, calico

The Celestial goldfish has telescoping eyes like the Moors and Telescopes, however, rather than looking out, they look up. This dorsal-less fish is born with normal-looking eyes but as it grows up, they start to stick out and turn up. They have curved backs.

When you first see this goldfish you might think it looks sad, but it is just living up to its nickname 'Stargazer', and its eyes really do gaze up at the heavens.

Because this species of goldfish is looking upwards, its vision is limited. It should be kept with other types of goldfish that also have limited eyesight. This way everyone has a fair chance of finding food.

Its eyes are very delicate so there shouldn't be anything in the aquarium that could damage them. There should be sand on the bottom of the fish tank, and aquatic plants rather than silk ones, as they can sometimes be scratchy. This type of fish shouldn't have a filter in the aquarium as this too could hurt their eyes.

Celestial goldfish, like Moors and Telescopes, prefer to live in aquariums of 20 gallons or more. They do not survive well with faster, stronger fish. They do well with fish that have poor eyesight just like them.

Like many other goldfish, Celestials are not picky eaters. *Their diets include:*

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Bubble Eye Goldfish

Size: up to 5 inches long
Body Shape: egg-shaped with telescope eyes
Coloring: red, red/white, red/black, black, chocolate, calico

Some people absolutely love the Bubble Eye goldfish; others cannot stand its sight. This goldfish is built much like the Celestial, with eyes turning upward, except for the two liquid-filled sacks under each eye.

The Bubble Eye goldfish's liquid sacks prevent it from doing well in ponds. Due to its small size, it is fine in a fish tank. Avoid placing plastic plants in the tank with this delicate fish. It would do best with other poor-sighted fish like itself.

Bubble eye goldfish are thought to originate in China a long, long time ago as the result of a mutation being bred into other forms of large-eyed goldfish. One possible reason for such a mutation being encouraged is that in ancient China, goldfish were kept in jars (aquariums hadn't been invented). Therefore the only way to view the goldfish was from above. This could also explain why, in common with other "fantail" goldfish, there is no dorsal fin, and a split tail fin.

As with all fancy goldfish, the bubble eye can be susceptible to swim bladder problems because of their more rounded body shape.

It is difficult for the Bubble Eye goldfish to find food, therefore it is wise to feed it food that sinks slowly, such as:

- Flakes
- Lettuce, spinach
- Brine shrimp, bloodworms, tubifex worms

Tosakin Goldfish

Size: up to 8 inches long
Body Shape: egg-shaped
Coloring: orange/white, red, white, calico, yellow

The Tosakin goldfish thrives in the pond. It has a beautiful fan-tail that is best viewed from above. It is the only goldfish with an undivided, double caudal fin. It makes a complete circle when it is opened up.

Mottled orange and white seems to be the dominant color of most Tosakins, but they can also be found in red, white, calico, black, and yellow. As with other goldfish, color that saturates the fins is desirable, but transparent fins seem to be common in this breed.

Even though the Tosakin prefers to live in ponds, it is important to make sure its pond-mates are not aggressive. Tosakins are very weak swimmers. The fragile tails need to be taken into consideration when placing Tosakins in ponds. They also do better in temperate climates without much fluctuation.

It was bred originally from Ryukin ancestors by Japanese Samurai in the mid-1800s in the Kochi Prefecture of Japan. It almost went extinct after an Earthquake, but was revived in the mid-20th century. Even so, it is very rare within Japan and almost unheard of within the US. Naturally, this also makes it expensive.

Tosakin are the caviar of goldfish when it comes to Pond fish. The price tag reflects this...top quality Tosakins go for as much as Ranchus. Hundreds of dollars.

The Tosakin's diet includes:

- Pellets and flakes
- Spinach, cucumbers, lettuce, peas
- Frozen krill, bloodworm, daphnia

Less Common or Hybrid Goldfish

Butterfly Tail Goldfish

Size: up to 9 inches long
Body Shape: egg-shaped
Coloring: black, orange, white with orange points (fins)

This is the same fish as the Japanese Jikin. In the United States and other countries outside Japan, this particular fish is bred in other colors, unlike the Jikins is white with orange points.

See Jikin goldfish description for more information.

Lionchu Goldfish

Size: up to 6 inches long
Body Shape: egg-shaped with wen (head growth)
Coloring: orange, orange/white, yellow

The Lionchu goldfish is a cross-breed between a Ranchu and a Lionhead. It has a broad, curved back and does not have a dorsal fin. It became classified as its own type of fish rather than a "mongrel" in 2006.

Seibun Goldfish

Size: up to 12 inches long
Body Shape: egg-shaped
Coloring: black with blue markings

Very little is known about the Seibun goldfish except that it is related to the Oranda.

Sakuranishiki Goldfish

The Sakuanishiki goldfish is simply a Ranchu that includes the pearl-like color on it somewhere. Some of them are fully pearl-colored. Others, like the one on the left, only have particular markings in pearl.

Shukin Goldfish

The Shukin is a hybrid between the Ranchu and the Oranda goldfish. It is dorsal-less with a slightly curved back. It has a long body-shape like the Ranchu and long caudal fins like the Oranda. They are red, blue, silver, or white.

The Shukin is a rare goldfish, even in Japan where it was developed in in 1892. It has already been wiped out once, during World War II, and revived by the Japanese.

Izumo Nankin Goldfish

The Izumo Nankin is simply a red and white version of the Ranchu. The purest of all Izumo Nankins would be predominantly white with no red markings on its head at all. Compared to most Ranchu, however, the Izumo Nankin has little to no wen or head growth. Some people mistake the Izumo Nankin as a variety of Eggfish.

Demekin Goldfish

The Demekin is a cross between the Ryukin and Telescope varieties. They have the large telescoping eyes from the Telescope and a humped back from the Ryukin. Most Demekin goldfish are black or have some kind of black marking on them.

There are many more goldfish varieties that are all hybrids or color variations like the ones listed in this last section. Depending on where the goldfish are found, they are bred with certain colorations and features. Almost any combination is possible, making the varieties endless.

HOW TO SELECT A GOLDFISH?

There are many different things to consider when looking for a goldfish to keep as a pet. Goldfish have been found to compete well against dogs and cats when people are considering what kind of pet to buy.

The following steps should be considered:

1. Determine how big the habitat of the goldfish is going to be. Are the goldfish going to live in a pond or in a tank? This is important to consider as it may help determine which type of goldfish is the most appropriate for the given space. A rule of thumb: provide two gallons of water for each inch of goldfish. A simple way to figure this out would be to add up the length of all the goldfish intended to live in the space and double that number to determine the amount of water to provide. **Warning: Try to avoid raising goldfish in bowls. Bowls require frequent cleaning and are not spacious enough for the goldfish.**

2. Choose between common or fancy goldfish. It is not necessarily the best idea to keep the two varieties in the same habitat.

3. Find an aquarium store in the local area that carries goldfish. Try to avoid pet stores as they often have cramped quarters for fish.

4. Look at the goldfish in the aquariums and observe them swimming around with each other. Avoid fish that are either extremely lethargic, tilted, or those that are frantically swimming around. These are indications that the fish are stressed out. In addition, avoid fish that are sitting on the bottom of the tank or those that might be scratching themselves against objects.

5. Look at the scales of the goldfish to make sure they are clear and all there.

6. Look at the fins of the goldfish to make sure they are clear. The dorsal fin should stand straight up and be clear of all growths and bumps. The pectoral fins should be the same size, as should the anal fins.

7. Notice any lesions, growths, or patches on the goldfish. Avoid purchasing fish with tumors or cuts.

8. Look at the water the goldfish are living in at the aquarium store. Is it cloudy? Does it have a blue tint, indicating medication was deposited in the tank? Is there an odor? Only purchase goldfish from clear, odorless tanks.

Before leaving the aquarium store, make sure the goldfish is bagged appropriately. There should be space on the top for oxygen and the water level should cover the fish and give it a small amount of space to move around.

CHAPTER TWO

WHAT IS AN AQUARIST?

The word 'aquarist' first appeared in the English language in 1900. What exactly is an aquarist? Should such a title be used freely? The Merriam-Webster dictionary (which is an Encyclopedia Britannica company) says that the term aquarist refers to, "a person who keeps or maintains an aquarium."

Therefore, what constitutes an aquarium? Referring to aquariums the same dictionary states, "a container (as a glass tank) or an artificial pond in which living aquatic animals or plants are kept." A second definition reads "an establishment where aquatic organisms are kept and exhibited."

So then, if you have such an aquarium in your home or yard you are an aquarist!

It is a popular hobby concerned with keeping fish in a home aquarium or garden pond. The hobby can be broadly divided into three specific disciplines according to the type of water the fish tolerate: freshwater, brackish, and marine (also called saltwater) fishkeeping. Freshwater fishkeeping is by far the most popular branch of the hobby, with even small pet stores often selling a variety of freshwater fish, such as goldfish.

SELECTING AN AQUARIUM

When selecting an aquarium there are a number of shapes from which you can choose. Options include triangular, tall, round and even hexagonal tanks. However, the well-known rectangular shape remains the most popular as well as practical.

Rectangular shaped aquariums afford an excellent frontal viewing area. Additionally it has a first class surface area in relation to water volume (a most important aspect as far as stocking levels go). When it comes to round aquariums they give outsiders a distorted view of the fish while triangular shaped aquariums will not house the number of fish that the frontal area might suggest.

Nonetheless, tall aquariums have a poor surface-to-volume ratio and maintaining good aeration can be a nightmare because it can only be achieved with ancillary equipment. Moreover, tall aquariums are just very impractical units, especially for coldwater species.

Numerous synthetic materials have been used to make inexpensive aquariums. However, *glass still remains the best material to have for your tank* because it cleans easily, has good clarity and will last for several years.

If you want an aquarium that will arguably last a lifetime the all-glass aquarium that is well sealed when manufactured is recommended.

In many locations you can still purchase metal framed tanks, but they should be avoided. In the past, people have bought framed tanks because they protect corners from being chipped accidentally.

However, framed tanks have been associated with leaking as they rusted. This has all changed thanks to the manufacturing of modern silicone bondings and frameless tanks. Nevertheless, you can still purchase various framed tanks, but in most cases the frame is ornamental.

Most tanks that are sold today are made of glass and sealed with a silicon rubber cement that is water resistant and very strong. Never buy or accept a tank that has any spots that are not caulked with the silicone rubber cement or has scratches. Tanks having such issues will have a tendency to either burst or leak.

Shape plays an important role when selecting tank. This is because the better aerated the water the more fish you can comfortably house. A longer tank will provide more surface area, offering the option of supporting more fish.

HOW TO SETUP YOUR AQUARIUM?

Setting up an aquarium is not an activity that has to be stressful. In reality, a child has the ability to make goldfish feel at home. With adult supervision, children can successfully set up a tank for keeping goldfish.

One thing a lot of people seem to forget when placing their tank on a surface is that it will be filled with water. Water is heavy! To break it down always keep in mind that water weighs approximately 8 pounds per gallon.

At that rate a 10-gallon tank would weigh approximately 80 pounds and a 20 gallon tank would be approximately 160 pounds. Therefore, it is very important that you use the strongest piece of furniture possible. An option is to buy a specially constructed aquarium stand.

When you have your aquarium and stand you will need to find the best place to situate them. Some think that the best place for an aquarium is in front of a window. While light is very necessary setting an aquarium in front of a window will result in algae and lots of it. This will then lead to cleaning chores of the worst kind and who has time for that?

The best place to setup a tank is *near* a window, but not in front of it.

Buy an aquarium that will offer the greatest amount of surface area. (Surface area is where the water meets the air.) When it comes to fish tanks you don't necessarily want to go deep. When it comes to deep tanks it generally means that the water won't be well aerated and it will be more difficult to make adjustments in the tank and clean the tank because many things on the bottom will be harder to reach. Plus, the fish are not interested in going too deep. Goldfish would rather swim farther (width-wise) than deeper (length-wise).

CIRCULATION

About one-fifth of our atmosphere contains oxygen. Therefore we humans have our respiratory needs met. In water things are very different because as little as one percent by volume of water may contain oxygen. This is in well-aerated water. When it comes to goldfish oxygen is obtained by extraction from the water they inhabit.

It is the aim of a good aquarist to arrange the aquarium in such a way that the water is never deficient of precious oxygen. A by-product of respiration is carbon dioxide and an excessive amount of this gas in an aquarium is dangerous to goldfish. When water is circulated, the harmful carbon dioxide is carried to the surface and it is released into the atmosphere.

The most popular means of providing aeration to an aquarium is by an airstone attached to an airline. The airstone is placed at the rear of the tank so that it may be discreetly hidden and it generates a stream of bubbles which draws water to the surface with them as they rise.

When it comes to the bubbles produced you don't want too fine a mist, tiny bubbles are best. Keep in mind you don't want big bubbles racing to the surface. Just a steady stream of medium-sized bubbles that takes its time going upward, giving them a chance to add oxygen to the water.

Airstones are usually made of porous rock attached at the end of an air hose. There are other air releasers on the market that are generally made of plastic and are weighted at the bottom. You can also purchase some that resemble sunken treasure chests, old-fashioned divers, fallen barrels, etc. Air releasers and airstones are very important features of any aquarium setup and it is recommended to have at least one in a 10 or 20 gallon tank, plus at least two in a 30-gallon tank or larger.

FILTRATION

What is the purpose of a filter?

The filter actually has 2 or 3 purposes, depending on what kind you use. The filter is responsible for cleansing and purifying the water, circulating the water and in most cases it aerates the water.

There are three basic types of filters: power filters, which go outside the tank; box filters, which go inside the tank; and under gravel filters which are placed in the tank before anything else and covers the bottom of the tank (this filter uses the gravel as a filtering medium).

For most beginner aquariums it is recommended to use a power filter. Power filters are easy to clean and change, and they clean more water faster than any of the other filters. Being able to clean water fast is important because goldfish are not the neatest of fish. A very strong filter is needed in order to take care of them.

If you possess a tank that is on the scale of 10 gallons or larger, you need to consider using a power filter. Goldfish are too messy and active for a box filter, which will not provide enough air.

An undergravel filter is not ideal because it will not be strong enough to sift out all the debris, which goldfish seem to create in an endless supply.

How does filtration work with fishbowls?

When it comes to housing goldfish - fishbowls are not recommended because of their small surface area. However, if you must use a bowl, make sure that you select a very small goldfish and choose the largest possible bowl.

One beneficial item that you will want to look for is an under gravel/bottom filter. The bases of these filters are round in shape and because of the air used to operate them the water will be better aerated.

Remember, in the case of fishbowls it's very important to buy the biggest bowl on sale and to make sure it offers as larger surface area as possible.

LIGHTING

Lighting should not be neglected because it is necessary both for illumination and to promote plant growth if you choose to include these in your goldfish's home.

A fish tank light is normally enclosed in a housing unit that sits on top of your cover.

One of the best lights to be used for your tank is fluorescent. Fluorescent lights are cool so they do not unnecessarily heat the water. These lights also tend to spread light more evenly and run on lower wattage than incandescent lights with tungsten filaments.

When it comes to incandescent lights they will offer good lighting and give any plants in your tank the amount of light they need to thrive.

Whether you choose to use incandescent or fluorescent lights, be sure to choose a natural or white or daylight-grade color light.

PLANTS – ARTIFICIAL VS. LIVING

Aquascaping refers to the setting up of the inside of a tank so that it is pleasing to the fish and the human eye. This includes the placement of plants, rocks, air releases and any wood pieces you have decided to include. Don't place too many objects in the tank (over aquascape), you want to leave your goldfish with plenty of room to swim.

An area open for swimming is generally called the swimming space. Goldfish do like to hide especially in the plants you have supplied, but it's important that they have a place to swim and exert themselves. It is usually best if the swimming space is left open up front, so that onlookers can view the fish when they are most active.

Goldfish are not especially kind to live plants they like to munch on them. In order to keep live plants in an aquarium with goldfish it requires ultimately more care for the plants than for the fish themselves. It can be accomplished, but it requires work and constant attention. You must consider how much time you want to devote to your tank before you decide on buying live or artificial plants.

There are a great number of artificial plants to choose from and many of the better-made ones look like the real thing. The cheaper the artificial plants you purchase, the more plastic they look.

Why buy live plants?

Live plants are an excellent source of oxygen, provide shade and hiding, egg-laying sites and, if handled properly, they provide food for your goldfish. If you are a beginner when it comes to goldfish, you should use artificial plants.

If you choose live plants there are three major types of plants: rooted, bunches and floaters.

1. **Bunches** are plants that quickly reproduce and can quickly envelop a tank.
2. **Rooted** plants normally grow in numbers then separate from one another.
3. **Floaters** are plants that float and whose root system dangles in the water.

Place plants towards the back and sides of the tank so that if they grow large they won't obscure your vision should you plant them up front. Arrowhead and pondweed plants are best because both are hardy and difficult to kill.

When choosing live plants pick no more than 2 or 3 types of plants—2 is preferable.

Here is a list of live plants that may be purchased:

- Rooted Plants-Sagittaria(Arrowhead)
- Vallisneria spiralis
- Echinodorus brevipedicellatus(Amazon Sword Plant)
- Bunched Plants-Anacharis Canadensis(Pondweed)
- Myriophyllum spicatum(Foxtail)
- Floating Plants-Eichhornia crassipes(Water Hyacinth)
- Lemma minor(Duckweed)
- Riccia

Note: Floating plants are highly recommended for goldfish, but for outdoor ponds only because they require a lot of sunlight and grow much too large for aquarium use.

MAINTAINING YOUR AQUARIUM

Ideal aquarium ecology reproduces the balance found in nature in the closed system of an aquarium. In practice it is virtually impossible to maintain a perfect balance. As an example, a balanced predator-prey relationship is nearly impossible to maintain in even the largest aquaria. Typically, an aquarium keeper must actively maintain balance in the small ecosystems that aquaria provide.

Balance is facilitated by larger volumes of water which dilute the effects of a systemic shock. For example, the death of the only fish in a 10 litre (2.2 imp gal; 2.6 US gal) tank causes dramatic changes in the system, while the death of that same fish in a 400 litre (88 imp gal; 110 US gal) tank that holds many fish creates only a minor imbalance. For this reason, hobbyists often favor larger tanks when possible, as they require less intensive attention.

A variety of nutrient cycles are important in the aquarium. Dissolved oxygen enters at the surface water-air interface or through the actions of an air pump. Carbon dioxide escapes into the air. The phosphate cycle is an important, although often overlooked, nutrient cycle. Sulfur, iron, and micronutrients enter the system as food and exit as waste.

Appropriate handling of the nitrogen cycle, along with a balanced food supply and consideration of biological loading, is usually enough to keep these nutrient cycles in adequate equilibrium.

The solute content of water is perhaps the most important aspect of water conditions, as total dissolved solids and other constituents can dramatically impact basic water chemistry, and therefore how organisms interact with their environment. Salt content, or salinity, is the most basic classification of water conditions.

An aquarium may have freshwater, simulating a lake or river environment; brackish water, simulating environments lying between fresh and salt, such as estuaries; and salt water or seawater, simulating an ocean or sea environment. Even higher salt concentrations are maintained in specialized tanks for raising brine organisms.

Several other water characteristics result from dissolved materials in the water, and are important to the proper simulation of natural environments. Saltwater is typically alkaline, while the pH of fresh water varies. "Hardness" measures overall dissolved mineral content; hard or soft water may be preferred. Hard water is usually alkaline, while soft water is usually neutral to acidic. Dissolved organic content and dissolved gases content are also important factors.

Home aquarists typically use modified tap water supplied through their local water supply network. Because of the chlorine used to disinfect drinking water supplies for human consumption, tap water cannot be immediately used.

In the past, it was possible to "condition" the water by simply letting the water stand for a day or two, which allows the chlorine to dissipate. However, chloramine became popular in water treatment because it stays longer in the water. Additives are available to remove chlorine or chloramine and suffice to make the water ready. Brackish or saltwater aquaria require the addition of a mixture of salts and other minerals.

More sophisticated aquarists may modify the water's alkalinity, hardness, or dissolved content of organics and gases. This can be accomplished by additives such as sodium bicarbonate to raise pH. Some aquarists filter or purify their water using one of two processes: deionization or reverse osmosis.

In contrast, public aquaria with large water needs often locate themselves near a natural water source (such as a river, lake, or ocean) in order to have easy access to water that requires only minimal treatment.

Water temperature forms the basis of one of the two most basic aquarium classifications: tropical vs. cold water. Most fish and plant species tolerate only a limited range of water temperatures: Tropical or warm water aquaria maintain an average temperature of about 25 °C (77 °F) are much more common, and tropical fish are among the most popular aquarium denizens.

Cold water aquaria maintain temperatures below the room temperature. More important than the range is temperature consistency; most organisms are not accustomed to sudden changes in temperatures, which can cause shock and lead to disease. Water temperature can be regulated with a combined thermometer and heating or cooling unit.

Water movement can also be important in accurately simulating a natural ecosystem. Fish may prefer anything from still water up to swift, simulated currents. Water movement can be controlled through the use of aeration from air pumps, powerheads, and careful design of water flow (such as location of filtration system points of inflow and outflow).

The nitrogen cycle in an aquarium - Fish are animals and generate waste as they metabolize food, which aquarists must manage. Fish, invertebrates, fungi, and some bacteria excrete nitrogen in the form of ammonia (which converts to ammonium in acidic water) and must then pass through the nitrogen cycle.

Ammonia is also produced through the decomposition of plant and animal matter, including fecal matter and other detritus. Nitrogen waste products become toxic to fish and other aquarium inhabitants above a certain concentration.

A well-balanced tank contains organisms that metabolize the waste products of other inhabitants. Nitrogen waste is metabolized in aquaria by a type of bacteria known as nitrifiers (genus Nitrosomonas). Nitrifying bacteria metabolize ammonia into nitrite. Nitrite is also highly toxic to fish in high concentrations.

Another type of bacteria, genus Nitrospira, on–converts nitrite into less–toxic nitrate. Nitrobacter bacteria were previously believed to fill this role, and appear in "jump start" kits. While biologically they could theoretically fill the same niche as Nitrospira, it has recently been found that Nitrobacter are not present in detectable levels in established aquaria, while Nitrospira are plentiful. This process is known in the aquarium hobby as the nitrogen cycle.

Aquatic plants also metabolize ammonia and nitrate, using it to build biomass. However, this is only temporary, as the plants release nitrogen back into the water when older leaves die off and decompose.

Although called the nitrogen "cycle" by hobbyists, in aquaria the cycle is not complete: nitrogen must be added (usually indirectly through food) and nitrates must be removed at the end. Nitrogen bound up in plant matter is removed when the plant grows too large.

Hobbyist aquaria typically do not have the requisite bacteria needed to detoxify nitrogen waste. This problem is most often addressed through filtration. Activated carbon filters absorb nitrogen compounds and other toxins from the water.

Biological filters provide a medium specially designed for colonization by the desired nitrifying bacteria. Activated carbon and other substances, such as ammonia absorbing resins, stop working when their pores fill, so these components have to be replaced with fresh stocks periodically.

New aquaria often have problems associated with the nitrogen cycle due to insufficient beneficial bacteria, which is known as "New Tank Syndrome". Therefore, new tanks have to mature before stocking them with fish. There are three basic approaches to this: the fishless cycle, the silent cycle, and slow growth.

Tanks undergoing a "fishless cycle" have no fish. Instead, the keeper adds ammonia to feed the bacteria. During this process, ammonia, nitrite, and nitrate levels measure progress.

The "silent cycle" involves adding fast-growing plants and relying on them to consume the nitrogen, filling in for the bacteria work until their number increases. Anecdotal reports indicate that such plants can consume nitrogenous waste so efficiently that the ammonia and nitrite spikes that occur in more traditional cycling methods are greatly reduced or undetectable.

"Slow growth" entails slowly increasing the fish population over 6 to 8 weeks, giving bacteria time to grow and reach a balance with the increasing waste production.

The largest bacterial populations inhabit the filter; efficient filtration is vital. Sometimes, simply cleaning the filter is enough to seriously disturb the aquarium's balance. Best practice is to flush mechanical filters using compatible water to dislodge organic materials, while preserving bacteria populations.

Another safe practice involves cleaning only one half of the filter media every time the filter or filters are serviced to allow the remaining bacteria to repopulate the cleaned half.

There are numerous accessories on the market that are available for aquariums. Below is a list of accessories that outrank all the others.

AQUARIUM ACCESSORIES

Fishnet

The fishnet is an important piece of equipment and you will use this more than you think. You will use a fishnet when you need to take out all the fish to clean the aquarium or when it becomes necessary to remove an ailing, dead or aggressive fish. So then, you should make sure that the fishnet is neither too small nor too big.

Fishnets that are too small will leave you too small an area with which to catch your fish and fishnets that are too big will make it more difficult to maneuver inside your tank and around various objects such as rocks and plants.

Aquarium Screens or Backgrounds

These little jewels will help your little fish feel more at home. Aquarium backgrounds or screens are placed on the outside of the tank, facing the front of the tank. Screens allow you to hide the tubing, pumps, filters, etc., that are usually kept at the back of the aquarium.

When it comes to screens the idea is to prevent you from seeing paint or wallpaper on the wall behind the tank, because these wall colorings are not especially a part of the natural habitat of goldfish.

Air Hoses

Air hoses are plastic tubing that will allow you to attach your air pump to aeration devices and/or to the filter. Hoses should fit all joints snugly and no air should escape anywhere. But, if there is leakage many times it will cause the filter not to live up to its potential or even cause your air pump to burn out faster.

Air Valves

Normally, a single pump should be able to supply an aeration device and a filter. The beauty of air valves is that they enable you to run additional filter or aeration devices off a single pump. Doing so will allow you to send pumped air to different parts and devices in the tank. You will also be able to control the air flow to these different places. All of this is possible because air valves take the feed from the air pump then distributes it to two or more valves which can be used or shut off in case of non-use.

Aquarium Cleaner or Algae Sponge

What does a sponge or aquarium cleaner look like? The sponge is usually attached to a long handle and is strong enough to scrape off algae but will not scratch the glass. The cleaner is used for scraping down the inside of the tank while the fish are still in the tank and without having to empty the water out.

Vacuums

Believe it or not there are such things as aquarium vacuums. These small hand-pump siphons are quite handy because they extract larger debris from the aquarium. Because goldfish are very messy by nature, vacuums perform a very necessary task in helping to clean your tank and maintain a debris-free environment.

WATER QUALITY

One of the most important aspects of raising healthy goldfish in both ponds and tanks is good water quality. Just because the water is clear does not mean it is perfect for the inhabitants. Many different factors have to be taken into consideration when making sure goldfish are living in healthy environments.

Regularly testing the water's quality is essential and a routine maintenance schedule should be established. It is best to perform weekly checks when changing out the water.

1. Check for high levels of ammonia, nitrites, and nitrates. Especially in a new tank or pond, ammonia, nitrite, and nitrate levels can be elevated, providing a very toxic environment for goldfish. The level of ammonia increases over time from goldfish feces and decaying plants. When bacteria feed on ammonia, nitrite is formed. Nitrite eventually turns into nitrate. Both ammonia and nitrite are extremely dangerous for goldfish. Although nitrates are not as toxic, they are still unhealthy for the fish. Over the first few weeks of utilizing a new tank or pond, make sure chemicals are used to neutralize the water and remove the ammonia, nitrites, and nitrates.

2. Check the pH levels. Acidity and alkalinity of the water is measured using pH levels. The water's pH level can be tested using commercial strips that, when exposed to the water being tested, turns a certain color. The color of the paper is compared on a scale running from 0 (most acidic) to 14 (most alkaline) with 7 being the neutral mark. Ideally, goldfish are happiest living in water between 6 and 8. If they have to, they can live in water that is slightly alkaline. Goldfish that live in highly acidic tanks or ponds can end up with excess slime on them, anorexic tendencies, and blood streaking in the fins. Water that is too alkaline can cause goldfish to gasp at the water's surface and produce excess slime on their scales.

3. Check the hardness of the water. There are two different ways to check for the hardness of water. One way is to measure the general or total hardness, expressed in dH, GH, or dGH. Ideally, goldfish live in water between 4 dH and 20 dH. Carbonate harness is another way to measure the water, expressed in mg/L. In an ideal tank, the water should be between 70 mg/L and 400 mg/L. These tests are readily available.

4. Check the chlorine levels. High levels of chlorine are not good for goldfish. Chemical treatments are available that can be applied to the tanks and ponds to remove chlorine from the water.

5. For ponds, check the algae levels. Although some algae are healthy for fish to live with, a large amount is not. Algae are formed when there is an immense amount of sunlight coming into the pond. In addition, algae feed on ammonia and nitrites. As a result, the more ammonia and nitrites there are in the water then the more the level of algae will increase. If the over-abundance of algae is not dealt with, the goldfish will end up suffocating.

The key to healthy water in a fish tank or pond lies in how often the water is changed out. If attention is paid and a routine is established, chances are good the water quality will stay at a healthy level. Healthy goldfish can be found in regularly maintained tanks and ponds.

When water quality is not regularly monitored in a tank or pond, bacteria will invade, affecting every living thing in the ecosystem rather than just the goldfish. There are good and bad bacteria that live in fish tanks and ponds.

Good bacteria make up the biological filter. They break down ammonia and nitrites so they can be removed from the water.

Bad bacteria also exists in the tank or pond, but most of the time, they don't affect the goldfish until they are sick. With weaker immune systems, the goldfish are not able to fight the bad bacteria, which in turn make the fish even sicker. Care needs to be taken when introducing new goldfish, plants, or water to the environment. The new additions can carry outside bacteria into the already established tank or pond.

High bacteria levels in the goldfish's environment will eventually result in skin infections, fin or mouth rot, or ultimately, death. To prevent this from happening, it is important to keep the water clean. An effective filter system will also help clean the water, providing goldfish with a healthier place to live. The filter can also act as an aeration agent, helping to keep the oxygen levels in the water healthy for goldfish. It is very important to keep the water moving to prevent it from going stale.

In order to make sure goldfish live long, healthy lives, it is critical to provide them with quality water to live in that is free of all the toxins that will shorten their lives. When healthy, goldfish can be one of the prettiest, graceful creatures to watch and can bring people much joy and tranquility.

FISHBOWLS AND TANKS

There are many reasons why people keep pet fish in fishbowls rather than fish tanks. Although it is logical to think that a fish tank would be better for the health of fish, some have been very successful raising fish in bowls. Depending on the situation, it might be beneficial to keep fish in bowls. Similarly, it might also be beneficial, based on the circumstances, for pet owners to use fish tanks.

Consider the following advantages and disadvantages:

Fishbowls	Fish Tanks
Advantages: • Save on space – people who live in small apartments are usually short on space. Fishbowls are very compact and are suitable for cramped spaces. • Money-saver – typically speaking, fishbowls are affordable for those who are short on cash. • Mobile – fishbowls are relatively easy to move around and transport. They are lighter than fish tanks. • Simplicity – children can take care of fishbowls easily. Great for beginning pet owners and children.	**Advantages:** • Healthy lifestyle – filters can be used in fish tanks to help keep the water clean for a healthier environment. • Spacious – fish would have more space to swim around and explore. More real or artificial plants and other items can be placed in the tank. • Community – rather than having just one or two fish, pet owners can raise a variety of fish at the same time.
Disadvantages: • Limited space – as they age, many fish outgrow their fishbowls. In addition, fish may experience stunted growths as a result of the limited space provided in the bowl. • Constant water changes – most fishbowls are too small for a filtration system. Fishbowls have to be cleaned often for the fish to stay healthy.	**Disadvantages:** • High maintenance – fish tanks require more maintenance with all the different parts there are, including filters. • Immobile – due to the size and weight of fish tanks, they are generally not moved around very often. • More expensive – fish tanks and all the accessories that come along with them.

When determining whether to keep fish in a bowl or in a tank, one of the most important things pet owners need to keep in mind is how big the fish is expected to get when it becomes a full-grown adult. It is important that the container used to house the fish is as appropriate for the fish down the road.

Fish owners also need to determine which type of container suits their tastes or fits their lifestyle. Both fishbowls and fish tanks can be plain or extremely fancy.

Fishbowls

Drum – This is the classic style of fishbowl that is wider than it is deep. Great beginner or child's bowl.

Round – A fishbowl that is completely round. For the same size, the round fishbowl has a higher capacity than the classic drum style.

Bio-Orb – This newer style of fishbowl can include filtration systems and lights. They are generally larger than the traditional drum or round ones.

Fancy – Over the years, people have been creative about the types of bowl they use for their pet fish. The contemporary designs are not limited at all in style.



Fish Tanks

Tanks provide more space for multiple fish to swim around, tending to be less fancy and are designed as rectangular boxes. Traditionally, fish tanks are rectangular. Although there are some very creative options available.




CHAPTER THREE

IS A POND RIGHT FOR YOU?

Most fish, especially those that are larger in size, prefer to live in ponds. Ponds can range in size from just a few gallons in a half-barrel to hundreds or thousands of gallons in a backyard or on commercial property. There are, however, many things to ponder before deciding to install a pond to raise fish.

Some questions that need to be answered include:

- How much space is available for the pond?
- Is the space for the pond close to a water source?
- How much time is available to maintain the pond once it's set up? Fish ponds are extremely high-maintenance and need quite a bit of attention to stay healthy.
- What potential pond pests live in the surrounding area? For instance, will birds of prey be tempted to feed off your goldfish that are swimming around in your pond?

TYPES OF PONDS

Plastic
Plastic ponds are sometimes referred to as preformed ponds. There are three basic types of plastic, preformed ponds. One kind is a glass-reinforced plastic pond. These are the most expensive. A second type of plastic pond is made of a rigid material. Flexible plastic ponds are also available, which are the least expensive, but also the least sturdy. If a medium or large pond is desired, flexible plastic is not recommended.

Today, there are also ponds made out of fiberglass, which are the most durable, but as a result, also the most expensive.

Concrete
Concrete ponds are just that, made out of concrete. Although they may seem like they would be the most durable, there are issues that may arise if a concrete pool is built.

- Hairline fractures – When fractures occur in the concrete from the earth settling, the entire pond has to be drained so the crack can be fixed. This can become a hassle. Some people put a liner on the concrete to make the job easier.
- Lime and toxic chemicals – Concrete contains toxic chemicals. In order to prevent this, owners have to fill up the pond, let the water sit for a while to draw the chemicals out, and then the water needs to be drained. This needs to be done two to three times before fish can be placed in it.

Barrel
If space is limited, half a barrel can be used as a pond. The only real disadvantage to this is the limited number of fish that can live in a more restricted space. Similarly, some people will create a pond environment in a tub as well.

MAINTAINING YOUR POND

One of the most important things to keep in mind when maintaining a healthy pond is the amount of oxygen in it for the fish to breathe. The best way to determine this is to test the water. There are water-testing kits readily available.

One of the best ways to ensure fish have enough oxygen to breathe is to regularly aerate the pond. The more fish there are in the pond, the more oxygen is needed to keep them healthy.

Several clues can alert pond owners to increase oxygen levels in the pond:

1. If there isn't enough oxygen in the pond, fish will actually gasp for air near the surface.

2. Foul odors will also emerge if there isn't enough oxygen in the pond. Decaying vegetation and other decomposing organic matter can cause the odors. Removing waste regularly from the pond will help with this issue. Over-feeding fish can also lead to an increase of waste floating around in the pond, adding to the foul odors.

3. Increased algae in the pond can also require additional oxygen in the pond. Increased algae could mean elevated carbon dioxide in the pond, throwing off the balance of oxygen available for the fish.

In addition to checking on oxygen levels in the pond, water level also needs to be monitored daily. If the pond is situated directly under the sun or the climate is dry and hot, water from the pond will evaporate rather quickly. If the pond level decreases, it could lead to overcrowding of the fish in the pond.

Another factor that should be built into the regular maintenance of a pond is checking and changing the filter. The water quality in a pond is usually what makes or breaks the experience, making clean, filtered water important for the inhabitants. Filters can be mechanical, chemical/ biological. Mechanical filters are best used to remove larger debris. Chemical or biological filters are best used to remove ammonia and other nitrites.

As part of the maintenance routine, checking the temperature of the water is also important. The temperature of the water depends on the type of fish in the pond. Some fish are susceptible to the extremes whereas others are more sensitive to fluctuations.

If there are a variety of fish in the pond with different comfort zones, the best thing to do is make sure the pond is at least four feet deep. This will allow fish to swim around in different "layers" of water with warmer water near the top (due to the sunshine) and cooler water near the bottom.

It is also important to make sure the algae level in the pond is in check. Too much algae due to waste products or intense sunlight can create an unhealthy environment for the fish. In order to maintain healthy algae levels in the pond, debris needs to be removed and water temperature needs to be checked regularly. The lack of a filter to keep the water moving will also increase algae levels.

Finally, maintaining a healthy pond results in constant checking along the edge of the pond for potentially dangerous obstacles. Fish scales are sensitive. If there are sharp edges in the pond, fish can become injured. If they are cut, they are prone to infections and diseases. If a fish in the pond gets an infection, it can easily spread across the pond and start to affect others as well.

POND SUPPLIES

There are many accessories and supplies that are necessary to maintain healthy ponds. Some supplies are for one-time use and others are consumable and need to be replaced regularly.

One-Time Supplies

- Pond Liner
- Water Pump – The best pumps can circulate all the pond's water within an hour.
- Decorations matching personal style
    - Rocks
    - Ornaments
    - Fountains
- Net – Nets are used to both keep out leaves as well as unwanted predators.
- Pond Vacuum – Helps make pond maintenance easier for people. It keeps the bottom of the pond clean.
- Pond Aerator – Ensures fish have enough oxygen to breathe.

Consumable Supplies

- Filters
- Water Conditioner and Other Liquid Treatments
    - Ammonia Removal – It is important to remove ammonia from pond water
    - Metal Neutralizer – Neutralizes chlorine, copper, lead, and zinc in pond water making it healthier for fish
    - pH Up or Down Liquid – Helps make pond water either more acidic or more alkali – the water is best between 6.8 and 7.8
    - Stress Coat – Used to replace natural mucus slime coating on fish
    - Foam Removal – Helps remove foam from pond
- Chemicals to minimize algae and bacteria

CONDITIONING AND TREATING WATER IN A POND

In order to be healthy for fish, pond water needs to be changed out twice a week. Approximately 20% of the pond water should be exchanged each time. Pond water can be replaced with what comes out of a tap.

In addition, the pond water that is removed is great for watering surrounding plants. If a pump is used to remove the water, make sure it has a screen on it so that the fish don't accidentally get sucked out.

If more than 20% of the water is exchanged, then it needs to be conditioned. Water conditioner for pond fish is readily available online.

When conditioning pond water, it is important to be patient. It is wise to wait a few days after conditioner is put into the water before placing fish in there. The conditioner neutralizes the chemicals placed in tap water so it needs time to "do its magic" before fish are safe.

CHAPTER FOUR

WHAT DO GOLDFISH EAT?

Coming home from the pet store you're sure to be excited about your new goldfish and want to feed them as soon as you can, so that you can watch them eat. It's better to wait and allow the goldfish time to get settled into their new home before you feed them. When you do feed them for the first time do not over feed them.

There are several varieties of fish foods available. Fish food normally comes in the form of flakes and contains all the nutrients your fish need. Be sure to get a food that is specifically for goldfish.

A good goldfish food in flake form is all you ever need to feed your goldfish. There are some fish owners that like to feed their fish fresh food from time to time, which although it sounds like a nice thing to do, may easily introduce disease or pollute the tank.

If you want your fish to live long, happy lives you must feed them properly. **Did you know that over-feeding is the most common problem of pet fish dying?** If you over-feed the fish, the leftover food will remain in the tank and pollute the water, thus causing your fish to develop diseases.

Only feed the goldfish as much food as they can completely consume in five to six minutes.

How often should you feed your fish? Goldfish should be fed twice a day.

A great invention that will aid in the feeding of your goldfish is the floating feed ring. The floating feed ring will keep all the food in one place. This way the fish know exactly where to find the food.

Goldfish enjoy a variety of foods. In fact, goldfish are known to pretty much eat anything you put in their bowls and tanks. Some common goldfish food includes:

Pellets

Store bought goldfish food can come in the form of small pellets for fish to eat. Pellets are a healthy choice to feed fish because they contain proteins and nutrients the fish need. The nutrients will also help your goldfish keep its coloring brilliant. Some more common goldfish, such as Lionheads and Orandas, have species-specific pellets made for them with just the right balance of nutrients.

Some pellets are also light enough to float, allowing goldfish with telescoping eyes to better find their food. Because it is difficult for them to see properly, the floating pellets help them tremendously.

Flakes

Store bought goldfish food can also be found in the form of flakes. Flakes are easily digestible and easy for fish to find. Much like their pellet counterparts, flakes contain protein and other nutrients fish need to maintain their color and promote healthy growth.

Nutrients in fish flakes diminish rather rapidly and, therefore, it is important to keep the batches fresh. Feeding fish old, stale flakes will not provide them with what they need.

Brine Shrimp

Most goldfish are omnivores and will eat both meat and non-meat foods. A common part of their diet consists of brine shrimp, a small, aquatic crustacean. They are known, commercially, as Sea Monkeys.

Brine shrimp can be sold packaged in frozen servings so that only a small portion needs to be fed to the fish at a time. Many of the pellets and flakes contain dried brine shrimp in them. They can also be eaten live, which is preferred by most goldfish.

Daphnia

Daphnia can be classified similarly as brine shrimp are…aquatic crustaceans, although some refer to them as water fleas. Daphnia can be found in different forms including frozen, freeze-dried and live. Frozen daphnia are usually presented in slab-form and small chunks can be broken off and fed to the fish. Live daphnia can also be seen as a treat for goldfish.

Worms

Goldfish also love to eat worms as part of their healthy diet. There is a variety of worms that they will eat, including tubifex worms, mealworms, bloodworms, and wax worms. Worms can either be fed to the fish live, in a net, or fed to them in dried, pellet or cubed form.

Cubed Tubifex Worms

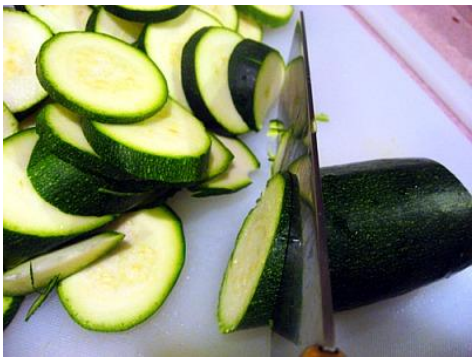
Freeze-dried mealworms

Live bloodworms

Fresh Vegetables

Goldfish need a wide range of foods in their diets to provide them with balanced health. The food goldfish most appreciate is fresh vegetables. In order for the goldfish to eat fresh vegetables properly, it is best to affixitsomehow so it doesn't just float around in the tank. Using a hook with a suction cup or some sort of net is best.

Some vegetables goldfish enjoy include lettuce, cucumber, peas, and zucchini.



CHAPTER FIVE

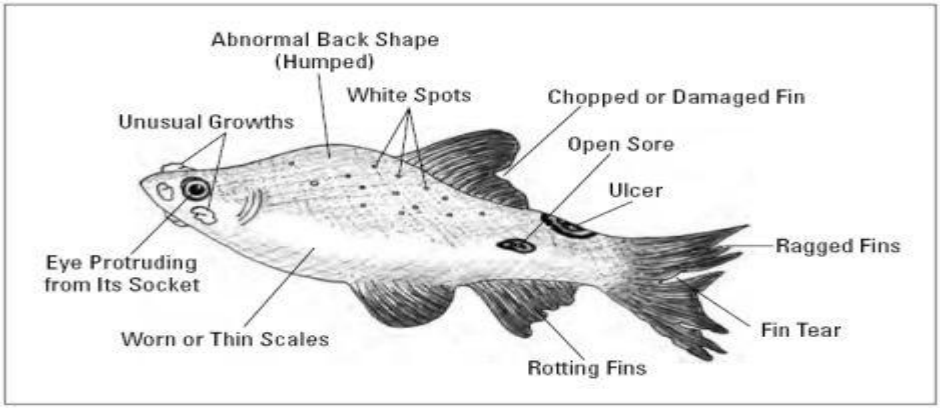
SICK GOLDFISH AND HOW TO CARE FOR THEIR ILLNESS

When goldfish are in distress, not feeling well, or dying, they can exhibit a variety of symptoms in various combinations. When goldfish are exhibiting these symptoms, try some home remedies and home care before seeking medications. The proper environment for goldfish is a complex ecosystem that must be perfectly balanced.

If your goldfish is showing signs of goldfish distress, of goldfish sickness, goldfish disease or goldfish parasite infection, try the least dangerous route first, making sure you've done everything possible for your goldfish before resorting to goldfish medications. Typically, the root of the goldfish's problem has to do with poor water quality, stemmed from goldfish overfeeding, improper goldfish water changes, filtering, or goldfish surface action. Learn everything you can about goldfish care, so that your fish will live a long and healthy life.

Follow the basic rules of good aquarium or pond management and your goldfish will rarely get sick. Provide your fish with an adequate oxygen supply, keep their environment clean, make partial water changes as necessary and feed your fish correctly. Unfortunately, goldfish diseases sometimes still occur and it is important that you identify diseases and treat your sick goldfish as soon as possible. The first sign to be aware of is a stressed fish. Just as a stressed human is prone to infection by bio-aggressors, so are fish, and stress is the principle cause of disease in fish.

There are three basic types of diseases in fish: parasitic, bacterial and fungal. These organisms are always present in the aquatic environment and a healthy fish can generally ward them off, however, if a fish is weakened by stress or damage the risk of infection is high.



COMMON DISEASES, SYMPTOMS AND TREATMENTS

Depending on the symptoms, there could be a number of things wrong with goldfish including disease, illness, or infection.

Symptoms	Remedy
• Tilts to one side • Too weak to swim • Unconscious and appears to be dying • Has little or no response • Upside down at the bottom of the tank ** It is unknown what might be wrong with the goldfish, but if the above symptoms are seen simultaneously, the goldfish is obviously in distress and needs some help.	1. Find three containers. 2. Fill container 1 with two gallons of the coldest tap water you can find. 3. Add water treatment to remove ammonia, chloramines, and chlorine from the water. 4. In container 2, dissolve one tablespoon of salt per gallon of water you will use. 5. Add ¼ teaspoon of baking soda into container 2. 6. Fill container 3 with one gallon of water from container 1 and all the contents of container 2 together. 7. With clean, cupped hands, scoop the sick goldfish into container 3 along with 1 gallon of water from the original tank. 8. Using the water in container 1, perform multiple water exchanges with container 2 until most of the water has been exchanged. 9. If the goldfish doesn't move around on its own, help it move in a forward movement, never backwards. 10. Gently massage the underside of the goldfish. 11. Raise its head out of the water and gently blow on its face. This might make the fish open up its mouth and gasp for air. This will help the fish breathe. 12. Pour water from container 1 into container 3 from a high distance, disrupting the surface of the water as much as possible. This, too, will help the fish breathe. 13. Repeat steps 9 – 12 until the fish moves on its own.

Symptoms	Remedy
• Sits at the bottom of the tank or pond • Has no appetite and not eating • Appears curled in a bent position, folded over, or crooked • Swimming in somersaults or in circles • Has spasms or is twitchy ** If goldfish appear to have this set of symptoms, a likely cause is a high level of nitrates in the water. Nitrates reduce oxygen supply to the goldfish's tissue and blood stream. This condition is called **Methemoglobinemia**.	1. Perform frequent, small water changes, adding new water in small batches to reduce further injury to the goldfish. 2. Continue to monitor the behavior of goldfish. If the fish do not change in behavior, administer the Green Tea Treatment to see if that will help. <u>Green Tea Treatment</u> If goldfish are suffering from nitrate poisoning, they may benefit from this treatment which includes the use of caffeine to give them a "jump start" by increasing their heart rates. 1. Boil 1 cup of water. 2. Pour water over six small or one large green teabag(s). *Make sure the tea is caffeinated*. Steep until water reaches room temperature. 3. Change out 5% of the cooled tea with fresh water and add it to the tank. 4. Continue to change out 5% of the water each day for the next three days. In order to avoid elevated nitrate levels in the future, it is important to change out water frequently or encourage algae/plant growth. Plants and algae feed on nitrates, providing a nice balance for the goldfish.

Symptoms	Remedy
• Gasping at surface • Bleeding from eye(s) • Bulging eye(s) – and it's not a type of telescope goldfish • Blowing bubbles from gills that are moving rapidly ** If goldfish appear to have this set of symptoms, chances are good they are suffering from **Oxygen Deprivation**.	1. Check to make sure pH levels in the water are between .7 and .8. 2. Find an empty container that is free of contaminants and fill it with fresh, tap water, at the capacity that will be switched out of the existing tank or pond. 3. Find a second empty container and pour the water back and forth several times. This will eliminate supersaturated gases in tap water. 4. If available, treat the fresh water with conditioners that will remove chlorine and chloramines. 5. Add baking soda to the conditioned water at the ratio of 1 teaspoon per 10 gallons. Do not do this if your pH level is over 7.5. 6. Add sea salt, kosher salt, aquarium salt, or Morton's pure rock salt to the conditioned water at the ratio of 1 teaspoon per 10 gallons. Do not do this if fish has raised scales or is bloated. 7. Optionally, add Epsom salt to the conditioned water at the ratio of 1 tablespoon per 10 gallons. 8. Change out 50% of the old water with the newly conditioned batch by adding 5% every 15 minutes. Do not change out all 50% at once. 9. Continue this method, changing out 20% of the water each day until the situation improves. Pouring water from a distance into the fish tank or pond will also increase oxygen levels. This can be done by pouring, from a distance, water into the tank or pond, creating ripples and surface activity. This process can be repeated every 15 minutes until oxygen levels are optimized.

Symptoms	Remedy
• Floating at or near the surface • Bobbing up and down • Floating upside down at the top of the tank or pond • Swimming at a 45 degree angle or can't swim at all • Sporadic or uncontrolled swimming ** If goldfish appear to have this set of symptoms, they are likely suffering from a **swim bladder issue**. This could be a result of infection, poisoning, or impacted eggs.	Although this is not a life-threatening condition, it is extremely uncomfortable for the goldfish. Swim bladder issues are generally prevalent in goldfish that live in tall, narrow tanks with limited surface area. The pressure of the water in a deep, narrow tank is the culprit. 1. Gradually decrease the level of the fish tank. 2. Check the goldfish in a few hours. It should improve by then. 3. Keep the depth of the tank low for a few months and gradually increase the depth one inch at a time. 4. If the goldfish doesn't improve, it may be suffering from a bacterial infection. If that's the case, provide goldfish with smaller meals to avoid constipation.
• Has raised scales • Pine coning (scales) • Has diminished appetite ** If goldfish appear to have this set of symptoms, they are likely living in **water that is too hot** for them. Goldfish have no core body temperature and are not able to regulate themselves and adjust for varying water temps. Their body temperatures can also increase due to **infections**. If these symptoms are not taken care of, the goldfish can end up with **organ failure**.	1. Change out water a little bit at a time until 60% of it has cycled through, reducing the temperature of the water to 55 or 60 degrees Fahrenheit. Colder water or ice cubes would help. 2. Get a ¼ cup of warm water. 3. Add Epsom salt to the warm water at a ratio of 1 tablespoon per 10 gallons. 4. Add baking soda to the warm water at a ratio of ¼ teaspoon per 10 gallons. 5. Dilute the solution in a larger container of water before putting it in the main tank. 6. Continue to change out the water over time.

HOW CAN YOU TELL IF YOUR GOLDFISH ARE PREGNANT

Goldfish don't get pregnant, as they lay eggs when they have babies. Goldfish are called egg layers meaning that when goldfish breed during the spawning process eggs are released and fertilized by the male and then the eggs hatch into young fry a few days later. Seeing goldfish breed is very neat and interesting to see the whole process in motion.

So goldfish don't become pregnant but you can tell the differences between males and female goldfish by viewing them from above. In order to tell when and if your goldfish will breed involves proper planning, recording temperatures, sexually mature goldfish and knowing when the eggs are ready and matured inside the female goldfish. The eggs need to be fully developed and ready in order for successful breeding to occur.

The only sign, really, that may give any indication that a goldfish is ready to lay eggs is its swollen belly.

A goldfish can get a swollen belly from an infection as well so the best way to tell is to watch the goldfish regularly. If it portrays symptoms that might indicate infection, then take care of the infection. If the goldfish is happily swimming around with a swollen belly, then it may be ready to lay eggs. In addition, knowing whether the goldfish is male or female will also help confirm whether the goldfish might be ready to lay eggs or not.

CARING FOR PREGNANT GOLDFISH

If a goldfish is ready to lay eggs, it needs some tender, loving care. A special tank should be prepared for the goldfish. It should be at least 20 gallons in capacity. Fill the tank with live foxtail and/or hornworts plants. This will give the goldfish a place to lay their eggs. The best thing for goldfish to eat is bloodworms.

Most importantly, make sure the water is kept at around 70 degrees Fahrenheit. The goldfish will likely lay eggs in a few weeks' time. In addition, if baby goldfish is the goal, there needs to be a male in the tank as well to fertilize the eggs once they are laid. **Keep a close eye on the tank, as goldfish parents tend to eat their eggs if unattended.**

It is best to remove the goldfish and her "significant other" very soon after she lays the eggs to avoid this phenomenon from happening. After the baby goldfish hatch, keep them in the tank for a while before transplanting them. Gradually lower the water temperature to accommodate the baby goldfish.

Note: The biggest difficulty in raising baby goldfish in a pond is keeping them from being eaten by grown fish. Goldfish babies, known as fry, are tiny --- about 1/8 inch --- and fragile. Adult fish will gobble up the fry if steps aren't taken to separate babies and adults. You can place fry in an aquarium until they grow large enough to survive in the pond, or create a floating mesh net that will protect them from predators until they're grown.

DYING GOLDFISH AND EUTHANASIA

If goldfish are so sick that they cannot be helped or cured, there are humane ways to help them end their misery. Simply flushing them down the toilet is not a good option. Goldfish do, in fact, feel pain. There are several ways to anesthetize the goldfish and allow it to die a less traumatic death.

Clove Oil

Clove oil, or eugonol, is a common anesthetic used by veterinarians to euthanize fish. The best way to use clove oil is to find a separation tank and fill it with around one gallon of water. Use the water from the original tank. Place the goldfish in the water. Fill a jar or lidded container with the same water from the original tank. Add a teaspoon of clove oil to the jar, close the lid, and shake it until the liquid turns white. Pour the mixture into the separation tank and wait for the goldfish to lose consciousness. Provide the goldfish with a proper burial if so desired.

Finquel

Using Finquel, or MS-222, to euthanize goldfish is another humane way to end its misery. If Finquel is used, it is extremely important to make sure there is an equal amount of baking soda mixed into the water before placing the goldfish in it. If baking soda is not used in combination with the Finquel, the goldfish will die a very painful death.

Since Finquel is highly acidic, adding baking soda will neutralize the water and provide the goldfish with a painless death. It is recommended that ½ teaspoon of Finquel and ½ teaspoon of baking soda be mixed with one gallon of water for the best solution. Again, once the goldfish loses consciousness, provide it with a proper burial if so desired.

Using clove oil and Finquel as anesthesia are the two most humane ways to help goldfish die peacefully. If the ingredients are not readily available, putting the goldfish in a tank that is a mixture of water and baking soda or Alka Seltzer will also help the fish. This is because both baking soda and Alka Seltzer increase the amount of carbon dioxide in the water, eventually suffocating the fish.

Although these are less human methods than utilizing anesthesia, they are still much better and more acceptable than flushing the fish or chopping its head off, which has been widely practiced until recently. Some people also think that either freezing or boiling the goldfish would be good ways to help them die peacefully. In fact, both freezing and boiling goldfish are extremely traumatic ways for them to die.

Proper burials can be given to goldfish. Some people will bury their goldfish in their backyards alongside other deceased pets. Others will take their goldfish out to sea and give them an at-sea burial. Yet others will just simply flush their goldfish down the toilet. If the latter method is utilized, make sure the goldfish has passed on before flushing.

CHAPTER SIX

GOLDFISH TRIVIA

- Goldfish have attention spans of three months and they recognize the people who feed them regularly.
- Goldfish are the only animals that can see infrared and ultraviolet light. They have a very wide spectrum of color.
- All goldfish are descendants of the Chinese carp.
- Goldfish lose their color if they live in dim light.
- The oldest goldfish was 43 years old, according to the Guinness Book of World Records. Other sources have recorded a goldfish that died after living for 49 years.
- The electric eel is actually not an eel and related to goldfish.
- Goldfish can suffer from motion sickness.
- The initiation act of swallowing live goldfish in college began in 1939.
- The most popular name for a goldfish in both the US and the UK is Jaws.
- Goldfish can recognize different voices.
- Goldfish do not have stomachs.
- Goldfish can't close their eyes.
- Goldfish don't urinate. (Only #2)
- Goldfish bully each other.
- The largest goldfish on record was 18.7 inches.
- All goldfish are born black.
- Goldfish can be trained to perform synchronized swimming routines!