

Few remarks regarding some unnatural aquarium fish breeds and improper fish maintenance

¹Valentin O. Eşanu, ²Claudiu Gavriloaie, ³Ioan G. Oroian, ^{1,4}Philippe Burny

¹ University of Liege, Agro-Bio Tech Gembloux, Belgium; ² SC Bioflux SRL, Cluj-Napoca, Romania; ³ University of Agricultural Sciences and Veterinary Medicine (USAMV), Faculty of Agriculture, Cluj-Napoca, Romania; ⁴ Walloon Center for Agricultural Research, Belgium. Corresponding author: V. O. Eşanu, esanuvalentin@gmail.com

Abstract. Ornamental fish were kept in captivity from ancient times. Gradually, the ornamental fish industry became a profitable enterprise. Color, size and shape are important traits when we describe a fish as a phenotypically uniform line, strain or breed. Numerous varieties of aquarium fish have been artificially modified regarding their body shape or coloration. Several varieties of fish are being artificially colored by painting and tattooing to improve their marketability. All these practices cause many health problems for fish. Education of the customers is a very important thing, because artificially modified fish continue to exist because of demand.

Key Words: long fins, skin excrescences, petshop, aquarium fish, painted fish.

Introduction. Humans were interested in keeping ornamental fish in their homes from ancient times (Kaszonny 1970). The history of keeping fish for either food or as pets goes back at least 4,000 years; the Chinese have a long history of keeping fish inside the home in containers (<http://www.ratemyfishtank.com>). In present times the aquarium (both fresh and saltwater) is a popular and educational activity for humans of all ages (Petrescu-Mag et al 2013a). Gradually, the aquarium industry became a profitable enterprise for many companies from all over the world (Ng & Tan 1997; Petrescu-Mag 2007; Pasarin & Petrescu 2011). There are many colors, sizes and shapes in ornamental fishes. But numerous breeds have been artificially modified regarding their body shape and color (Petrescu-Mag et al 2013b). Painted, dyed or tattooed fish are terms for a new variety of pet fish whose scales have been transformed from monochrome silver into vivid pigmentations using artificial colors or lasers (Broome 2013; Eşanu et al 2015). Other species have long or extremely long fins, while others have weird skin excrescences or unnatural body shapes (<http://animal-world.com>; <http://completegoldfishcare.com>).

In this paper we discuss about some common handicapped aquarium fish species. The term comprises the fish which are very different from their wild types or normal aquarium varieties. Their body shape or color have been extremely modified in order to increase their marketability.

Artificially coloration of aquarium fish. The most used varieties for coloration are the albino strains of various species (Eşanu et al 2015).

Many varieties of "colour-enhancing" foods for aquarium fishes are available on the market. Generally, these foods contain natural dyes, but the effect is temporary, because once they are no longer fed the treated food, fish eventually lose their color (Sharp 2006). Unfortunately, colored food may also contain unnatural dyes, which can negatively affect fish's health (Hirte-Runtsch 2008).

Aquarium fish genetically modified to fluoresce in different bright colours under white or ultraviolet light are now available commercially worldwide, under the trade name

GloFish (Mag & Petrescu 2006; Gavrioloaie 2007) (Figure 1). These fish are just as hardy and healthy as the regular varieties (Esanu et al 2015).



Figure 1. Some fluorescent fish strains
(source: http://www.aquamir63.ru/_pu/2/22139412.jpg).

The practice of dyeing live fish started in the late 1970s in Asian fish farms, with glassfish - *Parambassis ranga* (McMahon & Burgess 1998) (Figure 2). After the glassfish, other species followed. The dyeing process cause a high mortality in fish, and from the few surviving fish, most will die within the two months following the trauma (Sharp 2006).



Figure 2. Dyed individuals of *Parambassis ranga*
(source: <http://www.practicalfishkeeping.co.uk/custom/images/medium/51014f33c5605.jpg>).

Dipping involves the fish being dipped in a caustic solution which removes the fishes mucus coat, and then the fish is dipped in a solution with the dye and finally it is placed in a solution which contains an irritating substance which causes the fish to regenerate its mucus coat (<http://www.fishtanksandponds.co.uk>). This method is also very stressful to the fish, and has a high mortality rate (Sharp 2006).

There is a recent trend in the aquarium market for tattooed fish with intricate patterns like numbers, flags, hearts, flowers or Chinese characters like "luck", "happiness", or "May your business boom" (Daub 2009; Esanu et al 2015) (Figure 3). The fish are tattooed with dye using a special "low intensity laser" which leaves a permanent mark (Clarke 2006).



Figure 3. Tattooed giant gouramies (source: <http://www.vipnyc.org/wp-content/uploads/2006/06/TropicalFishMarket%20%282%29.JPG>).

Dyeing, dipping and laser tattooing cause a great pain to fish (Weis 2011). Then, there is a high mortality rate during these processes and also many health problems appear in the surviving individuals (Hirte-Runtsch 2008; MacMahon & Burgess 1998; Donston & Lass 2012; Wiegert 2012).

Keeping fish in bowls. It seems this practice was invented sometime in the mid-18th century (<http://www.ratemyfishtank.com>). Usually there are two species which are maintained in bowls: different strains of goldfish (*Carassius auratus*) and Siamese fighting fish (*Betta splendens*). There are also some other species, all of small dimensions. Keeping fish in a bowl has many disadvantages:

- small bowls have limited space for natural movement, thus fish cannot satisfy their genetic instincts to explore (<http://www.nspca.co.za>);
- due to the small space, fishes have no companionship;
- small bodies of water result in rapid fluctuations in water temperatures (a small bowl is not large enough for a heater), faster build-up of waste, rapid use of oxygen (since a small bowl does not allow to install filters or air pumps) (<http://thegoldfishtank.com>);
- it has round corners, which distorts what the fish sees and can make them really disoriented; try to imagine how would you feel looking through a fish bowl all day? (<http://www.myaquariumclub.com>).

In the case of goldfish, they need a lot of space (Masloski 2009). They also should not be kept alone for extended periods of time, as they are very social and need to interact with their fellow goldfish (<http://aquariadise.com>).

Actually, no fish should be kept in a bowl. It is like keeping a dog in a closet or a horse in a stall all his life (<https://answers.yahoo.com>).

The city of Monza, Italy, banned keeping goldfish in bowls because the containers do not meet the needs of the animals and because, as one sponsor of the law pointed out, bowls give fish “a distorted view of reality” (Hainer 2004; <http://www.peta.org>).

Fish with long fins. There are varieties with long or extremely long fins breeds in almost all aquarium species, from livebearers to tetras, from goldfish to cichlids, from

danios to catfish and bettas. These long fins make the fish to move much more slower than the ordinary varieties, which results in misfeeding and malnutrition; also the long fins are much more exposed to injuries and subsequent fungal and bacterial infections (<http://animal-world.com>; <http://completegoldfishcare.com>).

Fish with missing fins. There are some varieties of goldfish which have no dorsal fin. The swimming ability is negatively affected because of the rounded body which is further diminished by the lack of the stabilizing dorsal fin (<http://animal-world.com>; <http://completegoldfishcare.com>).

Fish with unnatural body shape. Here we have many breeds of goldfish as: lionhead, oranda (Figure 4), telescope eyes (Figure 5), celestial eyes (Figure 6), bubble eyes (Figure 7). Lionheads, orandas and ranchu strains develop a hood on the head. For some individuals the broad head, except for its eyes, mouth and nostrils, can become completely covered with fleshy growth, sometimes impeding their vision; the hood is also subject to infection from debris, bacteria, and fungi that settles in the tiny folds (<http://animal-world.com>).



Figure 4. Oranda goldfish (source: <http://s31.photobucket.com/user/cshprd/media/Indoor%20fish/Wen%20Surgery/361128191.jpg.html>).

In the case of the telescope eye and celestial eye, they have very large lateral extended eyes, normal oriented in telescope breed and oriented to above in celestial breed. Their eyes are subject to injury and infection; because of their limited vision, they are also poor competitors for food (<http://completegoldfishcare.com>).

One of the most fragile common goldfish types is bubble eye, which develop very delicate fluid-filled sacs beneath their eyes. Bubble eye goldfish are bad swimmers and can't handle even the slightest currents, spending most of their life resting on the aquarium bottom; this is also because they have no dorsal fin. Sharp rocks can easily burst the sacs beneath their eyes and attract goldfish diseases (<http://completegoldfishcare.com>).



Figure 5. Telescope eyes goldfish (source: https://ebutterfieldphotography.files.wordpress.com/2013/10/6824790411_7bbd71e499_b.jpg?w=460&h=328).



Figure 6. Celestial eyes goldfish (source: <http://www.wowmuseum.org/wp-content/uploads/2013/08/Celestial-Goggle-Eyed-Goldfish.png>).



Figure 7. Bubble eyes goldfish (source: <http://www.oocities.org/tokyo/4468/bubbleye.jpg>).

Another “species” is the parrotfish, which are hybrid fish with still unknown origin. They are unable to fully close their mouth, causing respiration and feeding problems; some of these fish are selected and they have their tails cut off with scissors at the point where the tail joins the body, in order to achieve a heart shape of their body (<http://www.fishtanksandponds.co.uk>) (Figure 8).



Figure 8. Heart shape parrot cichlid (source: http://media2.popsugar-assets.com/files/upl2/10/104166/07_2009/heartfish/i/One-Heart-Blood-Parrot-Fish.jpg).

Conclusions and Recommendations. Keeping aquarium fish is a wonderful and exciting hobby, but it shouldn't just be about your own enjoyment – you also have to think about what is best for your fish. Most of fish are naturally beautiful the way they are. Education of the customers is a very important thing, because artificially modified or colored fish exist because of demand. The consumers can stop the trade with these unnatural fish by stopping to buy such weird strains.

References

- Broome H., 2013 Pet shop owners dunk fish craze. Available at: <http://www.northernstar.com.au/news/pet-shop-owners-dunk-fish-craze/1935172/>. Accessed February 02, 2015.
- Clarke M., 2006 Company offers custom fish tattoos with laser. Available at: <http://www.practicalfishkeeping.co.uk/content.php?sid=829>. Accessed February 01, 2015.
- Daub E., 2009 Novelty vs. cruelty: the ethics of dyed or tattooed aquarium fish. Available at: <http://blogs.thatpetplace.com/thatfishblog/2009/08/14/novelty-vs-cruelty-the-ethics-of-dyed-or-tattooed-aquarium-fish/#.VOZN0yxiBmk>. Accessed December 27, 2014.
- Donston P., Lass D., 2012 Painted, tattooed and dyed fish: pros & cons. Available at: <http://www.petproductnews.com/ppn-editorial-blog/fish-absolutely/painted-tattooed-and-dyed-fish.aspx>. Accessed January 29, 2015.
- Esanu V. O., Gavriloaie C., Oroian I. G., Burny P., 2015 Some considerations concerning the artificially colored aquarium fish trade. *AAFL Bioflux* 8(1): 116-121.
- Gavriloaie I. C., 2007 [Fishes as bioindicators]. *Ecoterra* 14: 16-17 [in Romanian].
- Hainer M., 2004 Goldfish bowl do's and don'ts. *The Washington Post* 8 Aug. 2004.

- Hirte-Runtsch S., 2008 Dyed fish. Online Aquarium Fish Magazine. Available at: <http://www.fishlore.com/aquariummagazine/may08/dyedfish.htm>. Accessed November 30, 2014.
- Kászoni Z., 1970 [Acvaristica]. Scientific Publishing House, Bucharest, 282 pp. [in Romanian].
- MacMahon S., Burgess P., 1998 Why it's cruel to dye. Practical Fishkeeping. March 1998, pp. 114-115.
- Mag I. V., Petrescu R. M., 2006 [Fish as bioindicator of water quality]. Environment and Progress 8:215-218 [in Romanian].
- Masloski A. 2009 Goldfish: myths debunked. Available at: <http://www.tfhmagazine.com/details/articles/goldfish-myths-debunked.htm>. Accessed February 2015.
- Ng P. K. L., Tan H. H., 1997 Freshwater fishes of Southeast Asia: potential for the aquarium fish trade and conservation issues. Aquarium Science and Conservation 1(2): 79-90.
- Pășărin B., Petrescu-Mag I. V., 2011 What we expect from Poeciliids for the future in terms of evolution. Poec Res 1(1):24-26.
- Petrescu-Mag I. V., 2007 [Sex control in guppyculture]. Academicpres, Cluj-Napoca, ISBN-978-973-744-094-5 [in Romanian].
- Petrescu-Mag R. M., Pășărin B., Șonea C. G., Petrescu-Mag I. V., 2013a Customer preferences and trends for aquarium fish in Transylvania (Romania). North-Western Journal of Zoology 9(1):166-171.
- Petrescu-Mag R. M., Creanga S., Petrescu-Mag I. V., 2013b Mendelian laws in aquaculture and cuniculture: simple and efficient. AACL Bioflux 6(2):111-114.
- Sharp S., 2006 Artificially colored aquarium fish. Death by dyeing. Available at: <http://freshaquarium.about.com/cs/beginnerinfo/a/paintedfish.htm>. Accessed February 03, 2015.
- Weis J. S., 2011 Do fish sleep? Fascinating answers to questions about fish. Rutgers University Press, 217 pp.
- Wiegert J., 2012 Avoid dyed or painted fish. Available at: <http://www.fishchannel.com/fish-exclusives/fama/conservation-corner/avoid-dyed-or-painted-fish.aspx>. Accessed February 02, 2015.
- *** <http://www.fishtanksandponds.co.uk/ethics/fish-keepings-hall-of-shame.html>.
- *** <http://completegoldfishcare.com/goldfish-types/common-goldfish-types/>.
- *** <http://animal-world.com>.
- *** <http://www.ratemyfishtank.com/articles/56>.
- *** <http://www.nspca.co.za/page/fish-in-tanks>.
- *** <http://aquariadise.com/goldfish-bowl-banned/>.
- *** <http://thegoldfishtank.com/never-keep-goldfish-in-a-bowl/>.
- *** <http://www.myaquariumclub.com/an-argument-against-bettas-in-bowls-or-small-tanks-2055.html>.
- *** <http://www.peta.org/issues/companion-animal-issues/companion-animals-factsheets/fish-tanks-thanks/>.
- *** <https://answers.yahoo.com/question/index?qid=20090731162500AA9oaUL>.
- *** <http://completegoldfishcare.com/goldfish-types/common-goldfish-types/>.
- *** <http://animal-world.com/encyclo/fresh/goldfish/CelestialEyeGoldfish.php>.
- *** <http://animal-world.com/encyclo/fresh/goldfish/TelescopeGoldfish.php>.
- *** <http://animal-world.com/encyclo/fresh/goldfish/OrandaGoldfish.php>.
- *** <http://animal-world.com/encyclo/fresh/goldfish/RanchuGoldfish.php>.
- *** <http://animal-world.com/encyclo/fresh/goldfish/LionheadGoldfish.php>.
- *** http://www.aquamir63.ru/_pu/2/22139412.jpg.
- *** <http://www.practicalfishkeeping.co.uk/custom/images/medium/51014f33c5605.jpg>.
- *** <http://www.vipnyc.org/wp-content/uploads/2006/06/TropicalFishMarket%20%282%29.JPG>.
- *** <http://s31.photobucket.com/user/cshprd/media/Indoor%20fish/Wen%20Surgery/361128191.jpg.html>.
- *** https://ebutterfieldphotography.files.wordpress.com/2013/10/6824790411_7bbd71e499_b.jpg?w=460&h=328.

*** <http://www.oocities.org/tokyo/4468/bubbleye.jpg>
*** <http://www.wowmuseum.org/wp-content/uploads/2013/08/Celestial-Goggle-Eyed-Goldfish.png>.
*** http://media2.popsugar-assets.com/files/upl2/10/104166/07_2009/heartfish/i/One-Heart-Blood-Parrot-Fish.jpg.

Received: 28 March 2015. Accepted: 27 April 2015. Published online: 30 April 2015.

Authors:

Valentin O. Eşanu, University of Liege, Agro-Bio Tech Gembloux, Belgium, e-mail: esanuvalentin@gmail.com
Claudiu Gavriiloaie, SC Bioflux SRL, Cluj-Napoca, Romania, 54 Ceahlau Street, Cluj-Napoca 400488, Romania, e-mail: claudiugavriiloaie@gmail.com

Ioan Gheorghe Oroian, Department of Environment and Plant Protection, Faculty of Agriculture, University of Agricultural Sciences and Veterinary Medicine, 3-5 Calea Mănăştur Street, 400372 Cluj-Napoca, Romania, e-mail: neluoroian@yahoo.fr

Philippe Burny, Walloon Center for Agricultural Research, Belgium, e-mail: philippe.burny@ulg.ac.be

This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

How to cite this article:

Eşanu V. O., Gavriiloaie C., Oroian I. G., Burny P., 2015 Few remarks regarding some unnatural aquarium fish breeds and improper fish maintenance. *AAFL Bioflux* 8(2): 236-243.