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Billo Heinzpeter Studer, FishEthoBase*

How does FishEthoBase define fish welfare?

The fish ethology[1] database FishEtho-Base is designed to collect, systematise and make available (open access) all ethological knowledge to be found on fish in the wild and in captivity, with a focus on farmed species in order to help improve fish welfare in aquaculture and avoid practices that harm fish.

In the understanding of FishEthoBase, fish welfare is guaranteed if a fish can live up to the potential of the species and develop its individuality. Or, in the words of the Swiss Animal Welfare Law: if the dignity of the animal, i.e. its intrinsic value is respected.

[1] ethology = behaviour research

Aiming at supporting fish farmers with best advice, FishEthoBase will refrain from recommendations that might derogate fish welfare.

What about pain, suffering and stress?
Are they not of first concern for animal welfare? The prevailing ethical theory on the treatment of animals by humans, the pathocentrism, stems from the attitude of many scientists and ethicists who emphasise pain sensitivity. In other words they claim that the more pain an animal is shown to feel, the more respect it deserves. This theory, however, is unable to explain, if not in an anthropogenic way, why we should care for the welfare of animals of some species while refusing such duty for the larger remainder of the animal kingdom – let alone the whole plant[2] kingdom.

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[2] Floriane Koechlin, 2008, PflanzenPalaver, Belauschte Geheimnisse der botanischen Welt.– id., 2008, Zellgeflüster, Streifzüge durch wissenschaftliches Neuland.– id., 2014 (Hsg.), Jenseits der Blattränder, Eine Annäherung an Pflanzen. All: Lenos-Verlag, Basel.

Imagine yourself being free of pain, free of suffering and free of stress – would you then assert having a good life? You certainly won't without experiencing moments of joy, without feeling at least from time to time to live up to your potential and without perceiving yourself as a distinct person. Why then should a fish feel well just because of the absence of pain, suffering and stress?

In doing his best to let his fishes live up to their species' potential and to develop their individuality, allowing space also for positive experiences including supposedly "useless" playing, a farmer is automatically minimising pain, suffering and stress.

If on the other hand a farmer concentrates his efforts on reducing pain, suffering and stress of his fishes, they will not necessarily live up to their potential.

Fish welfare definition: Rationale

One of the basic problems in the debate on animal welfare in general and fish welfare in particular is the mutual accusation between the ones who exploit animals in one sense or another vs. the ones who choose not to use animals. To complicate things, there are more than just two fractions trying to make the others proselyte of the own belief.

Therefore, the debate on animal welfare is blocked by the interference of two decisions to be taken:
a) an individual moral decision (using vs. not using animals)
b) the ethical decision on how to interact with animals, independently of whether and how the latter are used.

Consequently the debate takes the shape of a moral war between parties which are unlikely to meet in a common statement.

We might instead try to succeed in clearly distinguishing the moral from the ethical question. We could start from the point that any animal, including humans, depends on the consumption of other beings[3]. We could, second, consider that humans have been the top predators for the last 70,000 years, exploiting all other beings despite our rather weak physical predisposition. We could, third, be so intelligent as to understand that our extraordinary position in the cosmos of nature is due to our singular ability of collective narration which made us invent once unbelievable things[4].

This should lead us, finally, to the conclusion that the specific constitution of the humanity's predator status has an implicit binding: If we are able to collectively invent our survival at the top of nature, we are *nolens volens* in an endless and inescapable collective self-reflection on what we may or may not do.
We cannot make use of our collective intelligence for predation and switch it off for the rest, so the narration goes on and on. We have lost the innocence of predators who simply exploit the ecological niche nature assigned them to.

The only way to reconcile with the never ending mental uneasiness is to find an ethical fundament of what we do. To If

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[3] English native readers might be puzzled finding the quality of "being" ascribed also to plants as they do not dispose of spirit or soul. Sure that they don't? (cf. footnote 2). We use the word "being" making allusion to the German word "Lebewesen" which embraces all creatures that are able to come into life, to develop, to react to their environment, to reproduce and to die.– For the rest, there is a growing number of beings which science doubts where to relate to: plant or animal?

[4] Yuval Noah Harari, "Sapiens. A Brief History of Humankind", 2014.

we need a pet to live with, we can concentrate our interest on finding out what the animal would prefer to live like by its desire, and facilitate it. If we need to eat bread, we can at least help to find out what the wheat grass would like to live from its own[2] and to change agriculture accordingly. If we need to hunt, we should first find out how the animal behaves naturally and how we can catch, stun and kill it in the least painful way and in the shortest time. If we need to eat a piece of meat, we could at least support initiatives that advocate the most respectful ways of reproduction, husbandry and slaughter.

No matter what moral decision we take individually, we can all contribute jointly to the development of a philosophically less contradictory attitude, to an ethic that reconciles the use of and the respect for other living beings.

When we accept that our living depends on the consumption of other beings in any instance, there is no principal ethical contradiction in eating a fish and advocating fish welfare. There may, of course, appear many individual contradictions, like behaving as an animal welfare activist but not distinguishing between fish produced ruthlessly and fish harvested respectfully when shopping. Similarly, it would be hypocritical to ask for the most species-appropriately grown fish but not caring about the environmental or social impacts of the production process.

Consequently, the very question is:

What makes a being's life "good"?

1. To be alive, of course – but after death, which is an indispensable ingredient of any life, by what would you judge a life has been good?

2. To live up to the potential of the species. In the case of humans: to learn, to succeed in tasks, to enjoy special moments, to be in good company, to rely on strong relations, to look back on one's own path of life with satisfaction, to sense being missed by somebody when having passed away… But what could it mean for fishes to live up to the potential of their own species? This is exactly the field FishEthoBase tries to explore.

3. To gradually differentiate oneself from conspecifics. In humans this is a fundamental trait which has to do with self-consciousness and perso-nality. Why should it be so different for many if not all fish species? How else would you explain the precision of a school's movement at high speed if not by the interaction of individuals? Machinery? Hidden exogenous forces? God?

Fishery biologists have found evidence for **personality** in as different species as salmonidae (Rainbow trout[5], Brown trout[6], Atlantic salmon[7]), Sea bream[8] or Nile tilapia[9]. This should not surprise as personality traits are even found in invertebrates like crickets[10]. FishEthoBase has by purpose been designed to search for and call attention to findings of categories that many scientists still do not and often would not consider with fish, like playing, joy and desire, self-concept and even personality.

We are of course aware of a **large variety of different definitions of fish welfare.**
On the conservative pole of the continuum we still find some scientists who deny the ability of fish to sense pain, like John

[5] Brown, G. E., M. C. O. Ferrari, et al. Retention of acquired predator recognition among shy versus bold juvenile rainbow trout. Behavioral Ecology and Sociobiology, 2012; DOI: 10.1007/s00265-012-1422-4

[6] Kortet, R., A. Vainikka, et al. Behavioral variation shows heritability in juvenile brown trout Salmo trutta. Behavioral Ecology and Sociobiology, 2014

[7] fishethobase.fair-fish.ch/en/ethology/2/findings/salmo-salar#Intelligence

[8] fishethobase.fair-fish.ch/en/ethology/5/findings/sparus-aurata#Intelligence

[9] fishethobase.fair-fish.ch/en/ethology/6/findings/oreochromis-niloticus#intelligence_consciousness

[10] Niemela, P. T., E. Z. Lattenkamp, N. J. Dingemanse. Personality-related survival and sampling bias in wild cricket nymphs. Behavioral Ecology, 2015; DOI: 10.1093/beheco/arv036

D. Rose[11] [12] or Robert Arlinghaus[12] [13] who urge welfare standards to be "nature-based", on "objective indicators", rather than "feeling-based" and thus "highly speculative"[11].

They are opposed by a majoritarian group of scientists, clearly represented by various review studies[14] [15], who continue to provide evidence for pain sensitivity in fishes, like Lynn Sned-

don[16], or in decapodes, like Robert Elwood[17].

On the progressive pole of the continuum[18] we find a small but increasing group of researchers looking beyond the pain issue. To name but two of them here: Victoria Braithwaite[19] who advocates a concept that encompasses "also fear, hunger, thirst and pleasure", and Gilson Volpato[20] who approaches the understanding of fish welfare by giving them free choice among different options to learn what they like or dislike.

[11] Rose, James D. The neurobehavioral nature of fishes and the question of awareness and pain. Reviews in Fisheries Science,10(1):1–38 (2002).

[12] Rose, James D., Robert Arlinghaus, et al. Can Fish really Feel Pain? Fish and Fisheries, 2014, 15, 97-133

[13] Arlinghaus, Robert, S J Cook, et al. Fish welfare: a challenge to the feeling-based approach, with implications for recreational fishing. Fish and Fisheries 2007, 8, 57-71

[14] Maccio-Hage, Isabelle. Pain in fish (overview). 2005, fair-fish. www.fair-fish.ch/files/pdf/wissen/pain_in_fish.pdf

[15] Segner, Helmut. Fish, Nociception and pain. A biological perspective. 2012, Federal Committee on Non-Human Biotechnology ECNH. http://www.ekah.admin.ch/fileadmin/ekah-dateien/dokumentation/publikationen/EKAH_Band_9_Fish__Englisch__V2_GzA.pdf

[16] Sneddon, Lynn U. The evidence for pain in fish: The use of morphine as an analgesic. Applied Animal Behaviour Science, 2003, 83, 153–162. doi:10.1016/S0168-1591(03)00113-8

[17] Elwood, Robert W.. Evidence for pain in decapod crustaceans. Animal Welfare, 2012, 21, 23-27. doi: 10.7120/096272812X13353700593365 ISSN 0962-7286

[18] Brunner Singh, Jeannine, and Billo Heinzpeter Studer. Fischleid (overview). 2011, fishfacts 3. http://www.fair-fish.ch/files/pdf/feedback/facts_3_dl.pdf

[19] Braithwaite, Victoria A, and P. Boulcott. Pain perception, aversion and fear in fish. Diseases of aquatic organisms, 2007, 75, 131-138.

[20] Volpato, Gilson L. Challenges in assessing fish welfare. 2009, Ilar Journal, 50, 329-337.