

Combining the welfare of fishes and fishermen in artisanal vs. industrial fisheries

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“The better the fish, the higher the price.”

You know by your personal market experience that there is some truth in this saying. Usually, wild fish is more expensive than farmed one of the same species and size—because most consumers believe that wild fish is of higher quality. Maybe, maybe not.

You may also know that wild fishes caught by short lines—hand line, pole and line—achieve a higher market price than the same species caught by nets or longlines. The reason is simple: fishes caught by short lines are less damaged and have eventually been less stressed.

The better the fish, the higher the price. Is this true also for fishes who experienced improved welfare or at least suffered less?

In fisheries, the welfare we can concede to fishes, or to aquatic animals in general, is

- a) by preserving their habitat, and
- b) by adopting protocols of humane catch and slaughter.

The second kind of action will be explored here, which does not mean that the first one would be less important—the contrary is rather true.

Now, what happens when fishermen take care of acting in a way to keep the suffering of the fishes as short and as low as possible? Are they rewarded by a higher price and overall fairer conditions?

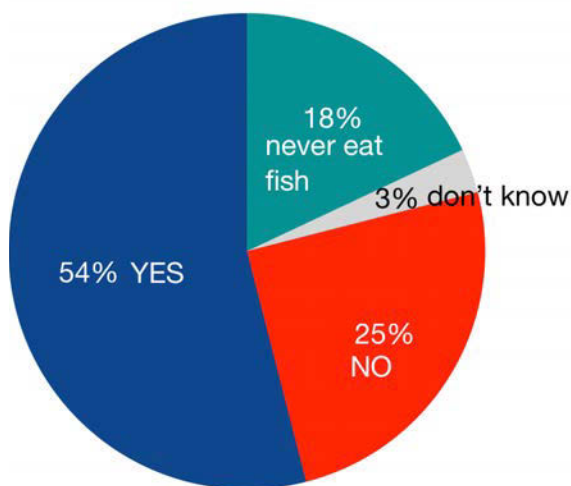
The results of two experiments in the real world may indicate an answer. We will explore these experiments and discuss their potential and limits, together with the question whether the effect is reversed as well: Do fishermen who experience fairer conditions pay more attention to the welfare of the fishes they catch? To close the thematic circle of the Summer Shoal, we will also discuss how far the findings can be adapted to fish farming.

1) Higher income for a Swiss artisanal fisherman

In the year 2000, when fair-fish Switzerland prepared for its work, we wanted to know what a) consumers knew about what happens to fishes subject to catch, b) if they bothered about their suffering, and c) if they would be ready to pay a premium for fish caught and killed in a more humane way. We investigated these questions by a series of representative surveys, carried out by the renowned institute Link.

Asking first with an open question, people bothered first of all about freshness, taste, and quality, but hardly ever about suffering. Asking directly on this subject, however, a majority showed concern about fishes suffering. Going deeper into it, 54% percent of the persons asked said to be ready to pay more:

If you were given a guarantee that the fish you buy were humanely killed and did not suffer for long, would you be prepared to pay a little more for them?



How much more would you pay?

(out of the 54% YES at left)



Basis: 125 persons interviewed on phone, selected at random in the German speaking part of Switzerland, June 2000, LINK. The small sample allows but a very rough indication of what could be expected in real life.

When fair-fish launched its then label in Switzerland, in 2000, together with the artisanal fisherman Schmid (1) at the lake of Neuchâtel, the directive was to stun and kill each fish as soon as taken out of the gill net. Schmid had been the only one ready to adopt the directives and to undergo third party audit, also due to the fact that he was helped by a second person on board, a rare advantage in European inland fisheries nowadays as the market price usually cannot cover anymore the costs of two on the boat. After having passed the audit, Schmid got recommended by fair-fish and managed to sell his catch on a local town market in Berne at 50 cents higher (3% up) than before. Unfortunately, he retired after three years having reached his 65 years, and no other fisherman wanted to take up with what they deemed to be too strict directives.

The fair-fish directives at that time, however, consisted mainly of stunning and killing each fish after being freed from the gill net by blowing its head on the border edge of the boat before storing it in ice, a method that had already been applied before, on a voluntary basis, by a minority of Swiss artisanal fishermen, and only in some cases, i.e. when the haul was



Schmid and assistant: Four hands at the net – two hands free or stunning and killing.

not big and the weather was not stormy. It has never been clear whether, by this method, the fish were duly stunned and at the same time killed. Our directives were, as a matter of fact, not so strict at all, but apparently the first ones in place with a label in fisheries.

Eight years later, in 2008, the method became a prescription by the new Swiss animal protection law, after campaigns by fair-fish and animal welfare organisations. Sadly, a year later this prescription was weakened by an internal agreement between Swiss federal authorities and artisanal fishermen's organisations: Hence, stunning and killing is not mandatory any-more in case of "too big" catch or "too rough" weather, with the result that one of these two "exceptions" is always occurring... Back to the start, then.

The fair-fish directives, originally agreed upon with some fishermen on a voluntary basis, had become mandatory only in 2000, driven by the demand of the second biggest Swiss retail chain, Coop, which had been looking for organic Swiss fish since some years in vain. When the Swiss organic organisation finally finished its directives for aquaculture, Coop dropped us instantly. But at that time, we had already developed our certification scheme and decided to market it together with our first – and only – partner, until he resigned.

Artisanal fishermen in Switzerland, early 2000:
~150 full professional
~200 semi-professional
• of which 5 participated on a voluntary basis
• 1 got fair-fish certified

The main problem of the professional fishermen in Switzerland consists of big catches during the summer season, especially in the holiday season when many of their clients are away. Eventually, they might be ready to adopt some rules imposed by an organisation which guarantees to market such surplus. While even the big retailers are ready to help in such cases of abundance only occasionally, how should a small label association be able to bridge such accidental gaps between supply and demand?

2) Fair trade for Senegalese artisanal fishermen

In 2004, fair-fish got introduced by a Swiss NGO and its local partner to artisanal fishermen in Senegal, in regions far away from the big fish markets, in the Saloum estuary region in the country's south and in some artisanal ports along the 700 km long coast (2). This project

found the interest of the biggest Swiss retail chain, Migros, which drove us to much more demanding directives (3).

a) Reducing fish suffering

Before starting the project, we thoroughly reviewed the process of catching, stunning and killing. We had never been happy with gill netting which causes the once entangled fish to get even more entangled while trying to escape, a useless fight that in the most extreme case can last from the set of the net at nine in the evening to its haul at six in the morning in summertime, resulting in landing many dead fish because of suffocation in the warm water, poor in oxygen; some fishermen even drop the net back in the morning after the haul, lengthening the fishes' fight to an entire day. In wintertime, when the water is cool and rich in oxygen, the fight can even last up to two days as in this season, fishermen return only every second morning to the net. It was clear that we would no longer accept such a catch method.

In addition, we wanted to get rid of the doubt whether a fish had been really rendered unconscious and subsequently killed by the simple blow on its head. We searched for a method that would stun and kill the fish in two distinct but easy to handle actions. Finally, an intern who had been fishing since his early days developed a stainless steel club, wearing at its one end a heavy crown with a screw thread to administer the blow on the fish's head, leaving an easy to control trace, whereas the other end contains a round blade for cutting the gills, i. e. to sever the fish's main artery. After tests a series of such fair-fish clubs has been produced by an artisan school class in Senegal. To train the fishermen on this method was simple, they understood quickly why and how to do it after our local team leader reminded them of the Sure in the Quran which tells them to sharpen the sword well before killing the lamb in order to reduce its pain.



The two ends of the fair-fish club, one for stunning (left) and one for killing (right)

b) Respect for the marine environment

The rest was more demanding. Whereas in Switzerland, the ecology of fisheries is already monitored by the competent authorities, and fair market conditions for the fishermen are not a crucial concern, the situation in a developing country is fully different. There was a much

cited authority in place, but it turned out that their latest assessments, of few stocks only, were obsolete as the government had not allocated any means for it since years. We therefore asked Friend of the Sea (FOS) for their advice, allowing only the catch of species approved by FOS to be offered under the fair-fish label—none of the much sought-after and thus overfished species like groupers, giltheades or barracudas.

Regarding the fishing methods, we observed various methods and practices locally in place in order to measure the duration of captivity and the feasibility of stunning and killing each fish as soon as taken out of the water. Finally, we decided to accept, for the time being, four traditional methods which manage to hold no fish captive longer than 30 minutes max:

- encircling gill net
- beach seine, solely if drawn to the boat, not to the beach (mangroves preservation)
- handline
- throw net

For other methods in place, mainly purse seine operated by big pirogues, or short longlines, we decided to postpone an eventual certification to a later project step.



Top left: A beach seine after having been divided into small compartments.

Top right: Handliners.

Left: An encircling gill net being put in a circle by one pirogue, while the second one is standing still with the other end of the net.

c) fair trade

The most demanding task, however, was to develop a fair trade scheme, a task in which we were completely alone as no fair trade scheme had ever touched fisheries (and still today, no fair trade scheme seriously does)—in shocking contrast to the fact that fish as a com-



*Top left: The fish trade is in the hands of the women under fair-fish certification.
 Top right: School attendance of the fishermen's kids is controlled.
 Lower left: Fish boxes, ice and life jackets were brought to the fisher villages.
 Lower right: Diversification: support for the building of a local medical post, creating 3 local jobs.*

modity is more important for developing nations than all food and luxury food products together. Why is their still no fair fish trade? One reason might be that artisanal fisheries in developing countries cannot simply be organised in cooperatives to satisfy the ideological concepts of fair trade organisations in the north.

The success of our project consisted in

- higher and non-fluctuating prices paid to the fishermen (at least 10% higher than the annual average price paid on the local market)
- guaranteed acceptance of the pre-ordered fish weight as long as caught and killed in accordance with the label directives
- fisherwomen were paid for their traditional role of treating and commercialising the catch
- ice, boxes and a financial aid for transporting the catch to our local cold store
- health insurance for the fishermen, the fisherwomen and their kids (by their inscription, we were able to control the kids' school attendance)
- additional payment (equaling 10% of the price paid to the fishermen) to the community for economical projects outside of fishing, in order to stimulate the diversification of the local economy and by that the reduction of a) the dependence on dwindling fish and b) the pressure on fish stocks.

The fair-fish project in Senegal, 2004-2010:
















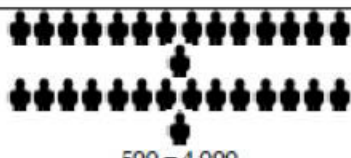
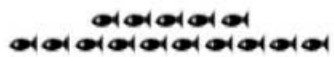

- first ever certification scheme respecting fish welfare, marine environment, and fair trade
- 21 imports of ~100 kg fillets each (2006-2007)
- 7 artisanal fisher villages involved from time to time
- with ~ 150 fishermen and 40 fisherwomen

Unfortunately, despite of a feasibility study welcomed by Migros, the retailer decided to step out of the project as they were afraid of an eventual economic risk, having never carried out test sales. We then tried to cooperate with other retailers in Switzerland and in Germany, but the problem remained the same: Bridging the gap between small scale fisheries in Africa and big scale retailers in Europe—who did not want to play more than an expectant part in the project—was simply not feasible in the long run for our small association. The problem, at least in Switzerland, was not the product price, roughly 20% above a comparable conventional offer; the big problem might have been rather the narrow commercial perspective because cooperating with artisanal fishermen who operate widely dispersed along the coastline does not promise much economy of scale.

The advantage of artisanal fisheries

Speaking of the welfare of fishes and of fishermen, artisanal fisheries bring great advantages compared to their industrial opponents:

- Many artisanal fishing methods conform easier with the requirements of humane catch and slaughter. In fact, a few industrial vessels, mainly purse seiners, are equipped with

FISHERY BENEFITS	LARGE SCALE 	SMALL SCALE 
Number of fishers employed	 about ½ million	 over 12 millions
Annual catch for human consumption	 about 30 million t	 same: about 30 million t
Capital cost of each job on fishing vessels	\$\$\$\$\$\$\$\$\$ 30,000 - 300,000	\$ 300 - 3,000
Annual catch reduced to meals and oils	 20 - 30 million t	 Almost none
Annual fuel consumption	 About 37 million t	 About 5 million t
Catch per tonne of fuel consumed	 =  1 - 2 t	 =  4-8 t
Fishers employed for each \$1 million invested in vessels	 5 - 30	 500 - 4,000
Fish and other sealife discarded at sea	 8-20 million t	 Very little

Graphic adapted by
Jennifer Jacquet et
al., 2008

conveyors and continuous electrical stunners similar to the ones in aquaculture, but this does not reduce the welfare impact of the catch. In general, industrial fisheries operate with all kinds of huge nets or extreme longlines and with no stunning in place, subjecting the fishes to long-lasting and great suffering.

- Artisanal fisheries, together with their downstream, create about 25 times the labour turnover of their industrial counterpart, which indicates that the job argument usually brought forward by the industrial lobby is ridiculous.

3) Discussion of the results

In the Swiss case—with one single exception—the perspective to obtain a better price and fairer conditions did not motivate artisanal fishermen to try for fish welfare. They did not believe that their catch would be marketable at a higher price, given the lower price of rivaling imported fish offers. They were not convinced by the outcome of our opinion polls indicating that half of Swiss consumers would accept a price premium for more humanely caught and killed fish.

In 2009, an investigation with artisanal fishermen at the Pointe de la Bretagne in France, well-known for their Sea bass, provided a similar result: Even if many of them by their practice almost fully complied with our directives developed in Senegal, they were not interested in a fair-fish certification—even free of charge—as they had a well-established chain of custody in place allowing the consumer to trace back from the tag in the fish back to the boat, and they thought that this would already cover the interest of those consumers who were ready to pay a higher price, whereas fish welfare would not be perceived as an added value.

Fish caught and killed in a less painful way may reward the fishermen if they believe the market will accept a higher price.

On the other hand, artisanal fishermen in a developing country who lack access to a well paying market are much more prone to comply with fish welfare directives, provided they are understandable and feasible. A fish welfare scheme can offer them a perspective in a situation which is almost bare of opportunities and make them potential ascenders. In contrast, artisanal fishermen in industrial countries seem to be used to their still liveable situation of objectively dwindling prospects, even when scared to become descenders.

Thus, fish caught and killed in a less painful way may reward the fishermen if they believe the market will accept a higher price.

To put the question in the reverse way: Will fishermen pay more attention to reducing the suffering of the fish when they experience an improvement of their economic situation? The Senegal experiment suggests a positive answer: During the project, the situation of the involved fishermen improved, and their motivation to pay attention to the suffering of the fish never ceased, to such an extent that after some training, the reduction of fish suffering was the least problem we had to tackle with.

This might come true also for their colleagues in industrial countries, if a market programme succeeds to prove that their economical situation improves when they deliver fish from a less painful catch.

However, we could not find any studies on the positive effect of fishermen's welfare on fish welfare and suggest further research.

Are these findings adaptable also to aquaculture?

The positive correlation between reduced fish suffering and improved quality of the fish meat has been emphasised in a review comparing various stunning methods by D. Robb and C. Kestin already in 2002). The assumption that fish welfare in general correlates positively with the product quality suggests itself.

In a recent study on the aquaculture industry, FAIRR (4), a network of investors raising awareness of environmental, social, and governance risks caused by intensive livestock production identified among ten key issues fish welfare as an “emerging risk” and as “linked with the financial performance of aquaculture companies, demonstrating how companies that prioritised welfare issues experienced financial outperformance.

The analyst attributes this strong performance to the mitigation of reputation risk and the fish health benefits associated with higher welfare standards.”

But does this mean that an aquaculture company will achieve higher market prices by observing higher fish welfare standards? Fish welfare is still a too young concern in the market to dare a valid statement. While it is probable that the first companies offering their fish with a fish welfare certificate will gain a premium, the bulk of the companies following the pioneers will probably not. But it is safe to assume that fish farmers will have to comply with fish welfare criteria in order to defend their place on the market, whereas the ones who don't care about it will face a price decline in the long term.

In the long run, the main effect of respecting fish welfare might not be to achieve a higher price but to defend ones place on the market.

Summary of negative impacts on welfare and quality shown by the different slaughtering methods

Method	negative impact		loss of consciousness
	on welfare	on quality	
Asphyxiation	high	high	<i>slowly</i>
Asphyxiation on ice	high	low	
Exsanguination *	very high	high	
Carbon dioxide narcosis	high	high	
Evisceration *	very high	high	
Decapitation	very high	--- ***	
Anaesthetics **	very low	very low	
Salt or ammonia bath	very high	high	
Anoxic water bath	high	--- ***	
Electro-immobilisation	very high	very high	
Percussive stunning	low	low	<i>rapidly</i>
Hydraulic shock	very low	very high	
Spiking, coring, ike jime	low	low	
Shooting	low	low	
Electrical stunning	very low	low	

* not stunned ** Eugenol *** insufficient evidence

Source: D H F Robb + S C Kestin (2002), Methods Used to Kill Fish: Field Observations and Literature Reviewed, Animal Welfare 2002, 11: 278

Links to background information:

- (1) <http://www.fair-fish.ch/de/was-wer-wo/wo/schweiz/> (in German only)
- (2) <http://www.fair-fish.ch/de/was-wer-wo/wo/senegal/> (in German)
English: <http://www.fair-fish.ch/de/english/>
- (3) <http://fair-fish.net/guidelines/>
- (3) <https://www.fairr.org/article/shallow-returns-esg-issues-in-aquaculture/>