Welfare and ethics in fish farming

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As an introduction to a round-table discussion conducted at the 10th EAFP conference in Dublin, Prof. Trygve T. Poppe gave an overview of the topic showing some of the production-related diseases causing welfare concern in salmonid farming and raising a number of questions for discussion:

Over the years, several animal production industries have seen the emergence of a number of new malformations and abnormal conditions that may be classified as production-related diseases or husbandry diseases (Shepherd & Poupard, 1975; Poppe, 2000). These disorders have emerged concurrently with the intensification of farming practices including changes in breeding, feeding, and holding technology. Because previously dominant infections are now effectively controlled by vaccination programs, it is believed that this type of diseases now account for a large proportion of disease losses in aquaculture.

Typical husbandry diseases in today’s intensive farming of Atlantic salmon are readily identified by visual observation or gross necropsy. Studies reporting cataracts (Ersdal et al., 2001; Wall, 1998), post-immunisation peritonitis with adhesions (Poppe & Breck, 1997), various types of skeletal malformations (deviation of the mandible, “pugheads”, shortening of operculae, platyspondyly (Baeverfjord et al., 1997; Kvellestad et al., 2000) or soft tissue malformations (deficient septum transversum, situs inversus of the heart, ventricular hypoplasia, aberrant heart morphology, swimbladder anomalies, hypoplastic pyloric caece) (Poppe et al., 1997; Poppe et al., 1998; Poppe & Taksdal, 2000), and wounds or skin ulcers can readily be found in scientific literature. Obviously, many of these conditions may reduce the ability of the fish for normal respiration, feed intake and/or behaviour, and some studies have shown adverse effects on production parameters (Ersdal et al., 2001). Typically, such fish are the first to die during stress caused by netting, grading, treatments or transport.

In many countries, fish farming has developed into a huge and fast growing industry. Concurrent with such growth, management characteristics are similar to other large-scale industrial enterprises are evolving, with increasing focus on production effectiveness, maximum profit and economic output. Centralised decision-making and a change in management towards personnel with limited biological knowledge (lawyers, investors and economists) is evident. Under the laws of economy, the benefits of pushing production outweigh the negative economical effects of malformations and other production diseases, leaving the fate of each fish of little concern. Furthermore, our present knowledge of pain perception in fish is limited and unlike ter-
restrial animals, fish cannot scream. We all know, however, that absence of evidence (or indications) is by far no evidence of absence. That pain indeed can be felt by fish should form the basis for our judgements and practices regarding fish welfare aspects of our work as scientists. Needless to say, the same obligation would have widespread consequences when applied on a broader scale, not only in aquaculture, but also for traditional fisheries and angling.

The quality of our foods, including farmed fish products, is being increasingly focussed by consumers, and consumer perception of food quality also includes welfare and well-being of food producing animals. It is therefore a dilemma that industrial fish farming tends to push for quantity more than for quality, and that funds are readily spent for improving quantity and cost-effectiveness of production, leaving limited emphasis on welfare and ethical aspects. Dr. Poppe concluded his presentation asking: - Why have we let this happen?

In the discussion following his presentation, divergent views were voiced on several of the issues raised. According to Dr. Oidtmann (Germany), the situation may be explained by the relative lack of efforts to identify risk factors and causes of these diseases, pointing to the need for specific funding, and several attendants supported her views. Dr. Vandaele (Belgium) argued that current EU regulations for licensing of injectable fish vaccines will prevent major abdominal side-effects and thus that this aspect of husbandry diseases should be of little concern. He was contradicted by Dr. Midtlyng and Dr. Poppe (Norway), who argued that pre-licensing studies – due to our lack of knowledge about causation - likely fail to experimentally reproduce those conditions that occasionally may lead to unacceptable local reactions.

According to Dr. Hjeltnes (Norway), malformations and other husbandry diseases become an ethical issue when we know the causes, but fail to act adequately. In writing this report, we would like to reply that recognising the problem but failing to address pathogenesis and causation and/or to commit resources towards such research is equally unethical. Dr Hjeltnes also pointed to the fact that we know little about the incidence of the described pathological conditions in natural populations because such fish will never reach adulthood in the wild. Consequently, observations done in fish farms may reflect the increased chance of cultured fish with naturally occurring abnormalities to survive beyond the fry or larval stage. Dr. Poppe (Norway) replied that even so, when man takes the advantage of abnormally high survival rates, we also retain the moral responsibility to solve the problem this may create.

Dr. Storset (Norway) commented on one of the pictures shown by the speaker (lack of Septum transversum) which has been shown to correlate with high egg incubation temperature. Following this finding, the industry took steps to reduce their incidence. As yet other malformations are still of unknown causation, he argued that the industry will act if and when we find out.

In a comment to Dr. Hjeltnes, Dr. Midtlyng questioned if survival rates below 80-90% can really be considered normal and acceptable for food producing animals under human custody, pointing at the livestock sector for comparative aspects.
Dr. Cassigioli (Chile) provided information about the current production increase in Chile (40% per year) and that research can hardly keep up with such a growth. However, both survival rates and growth rates of farmed fish are much higher than 10 years ago, albeit the development has also brought up the problems of certain deformities.

Professor Larsen (Denmark) asked which are the indicators of acceptable fish welfare and stirred a sequence of discussion where Dr. Murphy (Ireland) pointed to the “set of freedoms” to be enjoyed by farm animals: freedom to behave normally and freedom from fear, predation, and from disease. Dr. Oidtmann supplemented that in Germany, legislation supporting such aims for food producing animals including fish has been adopted. However, determining the living conditions for farmed fish is more difficult than for terrestrial animals, and attempts to specify conditions for trout farming have been abandoned because it proved too difficult. Dr. Bagna (Italy) regretted the paucity of guidelines and regulation for welfare in fish, and the fact that the 1996 EU regulations do only apply to salmonids but not to non-salmonids such as sea bass and sea bream.

Dr. Mellergaard (Denmark) emphasised that there is a trend that the consumer is the one that may demand higher quality animals which are not pushed so fast, and that we should turn towards the consumers to support fish welfare issues. Dr. Slierendrecht (Denmark) named the French “label rouge” as an example for current developments. Dr. Schlotfeldt (Germany) voiced scepticism in that people may want slower grown better quality animals, but do not really want to pay more money for it. According to Dr. Schlotfeldt, market, profits, shareholders and globalisation generally do not take account of animal welfare and such avidity for profit is incompatible with good welfare conditions. Dr. Nygaard (Norway) questioned the validity of this argument as most of the production diseases in aquaculture also have a negative economic impact for the fish farmer. As an example, cataracts and associated poor performance also reduce the market value of the fish. The fish producing sector’s involvement in these issues can be documented through the industry funded surveys (Ersdal et al., 2001) and on-going explanatory research in Norway.

Dr. Onarheim (Norway) emphasised that improved legislation has to foot on knowledge about what is painful or uncomfortable for the fish research, leading us towards the most appropriate ways to improve their conditions. Dr. Mellergaard believed that there is a reluctance to address especially the pain issue, as our findings may have severe consequences also for traditional fisheries and angling.

In response to the need for scientific studies and background materials concerning fish welfare and ethics, Dr. Grant (UK) pointed towards a published leaflet on fish welfare. From a recent Norwegian seminar on animal ethics, authors coming from the philosophical sciences (Follesdal, 2000) published several contributions relating to the ethics of aquaculture production. According to Dr. Midtlyng, the issue of fish welfare and ethics is, however, too important to leave for the philosophers alone.

Towards the end of the discussions, the EAFP President Dr. Schlotfeldt appealed to all at-
tendants to make “more noise” with the EU and other funding bodies to increase research funding for research in fish welfare and ethics. The traditional priority of governmental funding bodies towards research on infectious diseases (Dr. Midtlyng), should be changed to include all diseases and disorders causing economic losses. Such shift in priorities is according to Dr. Hjeltnes already being seen in Norway.

Words by Dr. Poppe (Norway) may serve to summarise the attitude common to the participants of the discussion: “As biologists and veterinarians, we are obliged to be the spokesmen and -women for the fish. In other words, it is our responsibility, both as human beings and as professionals, to be alert and warn the public when we feel that limits are pushed beyond the acceptable”. The authors would like to add: - also to utilise our intellectual capacity to unravel the pathogenesis, risk factors and causes of husbandry diseases, and effective remedies for their control.

Colleagues who are interested in the topic should contact the authors (trygve.poppe@veths.no or paul.midtlyng@veso.no) in order to create a network of interested fish pathologists, and to include animal welfare in fish farming in the main scientific programme of the next EAFP conference in 2003.

References:


