EAS THEMATIC GROUP ON
EUROPEAN PERCID FISH CULTURE

European Percid Fish Culture (EPFC) workshop 2014 - Summary

by F. Schäfer, T. Policar and S. Teerlinck
with a comment by S. Meyer

The third workshop of the European Percid Fish Culture (EPFC) thematic group within EAS was held on **October 14th 2014 in San Sebastian**. This year's topic was

Genetic improvement approaches in percid fish & country experiences in percid culture

The workshop attracted 71 participants from all over Europe, including a considerable number of participants with a background in primary production of pikeperch and perch, as well as scientists from applied research institutes. In total, eight presentations were given within the two workshop topic areas. The initial ice-breaker and the coffee break proved to be lively opportunity to chat and network.

All presentations can be downloaded from the EPFC website: www.epfc.net

1. **Genetic improvement approaches in percid fish**
   1.1. Selective breeding of fish for dummies
   1.2. Design of a practical breeding program for pikeperch in the Netherlands
   1.3. DIVERSIFY project and pikeperch related activities
   1.4. A cost action proposal to provide a meeting point for European initiatives on emerging aquaculture species

2. **Development of Commercial Percid Culture – Country Experiences**
   2.1. New percids hatchery: Project PERCAFRANCE
   2.2. Perch production in Ireland, a success, but what next?
   2.3. Is Turkey a good place to produce pikeperch?

1 Genetic Improvement Approaches in Percid Fish

1.1 Selective breeding of fish for dummies (M. Vandeputte)

Download presentation.

Marc Vandeputte (INRA, FR) opened the session with an overview presentation on the origins of domestication of poultry, cattle and pigs, highlighting the aims and underlying mechanisms of selective breeding. Following this historic overview, the presentation was oriented along the lines of questions starting with "Which trait(s) to improve?" and the according evaluation methodology. Secondly, Marc highlighted the threat of inbreeding and how it can be avoided. As recommendation, only a high number of broodstock (minimum 50+, better 100+ or even 200+ animals, with higher

numbers necessary for selected populations) with an equal sex ratio effectively minimizes inbreeding. In this context, the introduction of "new blood" to the stock needs to be seen as a consequence of failure, not as a solution. It will be necessary to share the effort of keeping different populations over a period of several years in order to achieve progress. Next up, Marc outlined different breeding types such as individual selection, Norwegian family-based and French genotype-based schemes. He also addressed the obstacles coming along with the thorough implementation of a breeding program, such as the costs (private and/or public investment) and the necessity of combined, long-term (years to decades) efforts by scientists and farmers. He concluded by emphasizing that economy is the key to sustained investment and hence any breeding program needs to achieve economically relevant goals. Until its return of investment though, the costs for such a program need to be compensated by an appropriate model of cooperation and research.

1.2 Design of a practical breeding program for pikeperch in the Netherlands (R. Blonk, A. Kamstra, H. Komen)

Download presentation.

Andries Kamstra (IMARES, NL) gave an overview of the main bottlenecks for pikeperch production in the Netherlands. At present, there are several grow-out farms, but only very few hatcheries either producing fingerlings in pond or RAS-based production. Andries pointed out that pond-raised fingerlings are typically well conditioned and exhibit a good quality in terms of malformation and swim bladder inflation. But due to their very limited seasonal availability (typically only once per year) this source is insufficient for a year-round RAS-production. Opposed to this, RAS-fingerlings are generally available year-round as off-season induction is no longer considered a major issue, but quality can be quite erratic and variable between batches. This unfavorable situation is likely to be caused by the lack of structured breeding programs possibly accompanied by suboptimal production protocols. Therefore, to improve this situation a breeding program is needed, which addresses questions regarding the specific rearing environment (pond/RAS) and respective selective pressure of the environment.

1.3 DIVERSIFY project and pikeperch related activities (P. Fontaine)

Download presentation.

The DIVERSIFY program is a European FP7 project aiming towards "Exploring the biological and socio-economic potential of new or emerging candidate fish species for expansion of the European aquaculture industry". It started in December 2013, will run for 5 years, includes 31 partners in 10 countries and a budget of 9 M€. 10% of the budget is reserved for pikeperch as one of the six targeted species. The pikeperch relevant workpackages include reproduction & genetics (genetic variability in RAS broodstock and comparison to wild fish to define a genetic breeding program), nutrition (first feeding, enrichment products), larval rearing (protocol optimization, cannibalism), grow out (stress, immune & physiological status, domestication) and socioeconomics (product development, market strategies etc.). Regarding pikeperch genetics, the objectives are designed to avoid the loss of genetic variability and to maintain the potential of adaptation. Over 1000 samples have been collected so far that will be analyzed for population genetics parameters.

1.4 A COST action proposal to provide a meeting point for European initiatives on emerging aquaculture species (N. Duncan)

Neil Duncan from IRTA (ES) presented general information related to previous COST action proposal entitled "Realising the potential of production of new aquaculture finfish species in Europe through collaboration in scientific and technological innovation (NEWFINFISH)", which was not positively evaluated during past project call. Neil added other useful information and ideas for preparation of a new COST project proposal related to aquaculture of emerging species in Europe, where percid fish should be included such as interesting and promising fish species for diversification and new development of European inland aquaculture sector. The added value of a COST network, besides promotion of exchange and mobility among the scientific community, is the opportunity also for SMEs and other industry-based stakeholders to get involved in training activities and workshops and to influence the main fields of research in the respective field.

2 Development of Commercial Percid Culture – Country Experiences

2.1 New percids hatchery: Project PERCAFRANCE (J. Saint-Sevin)

Download presentation.

Located in Northern France, PERCAFRANCE owner Julien Saint-Sevin has built up a hatchery for perch and pikeperch in 2014 based on a former ornamental fish farm. The farm features a 500 m² production unit, seven temperature and light controlled rooms and an effluent control to ensure sustainable production. The presentation highlighted important aspects to consider when starting a company in the percid sector. In Julien's opinion, ambitious production volumes and high expected retail prices are likely to put an early end to such start-ups. PERCAFRANCE is set to serve different markets (e.g., fingerling and filet production) and in addition is offering a range of services regarding RAS farms with a focus on percids. At present, both species are being reproduced twice per year. Finally, Julien summarized the bottlenecks the production is facing and highlighted differences in-between the species, with pikeperch being more susceptible to stress and cannibalism, while size homogeneity, gamete quality and survival rate are smaller issues than in perch.

2.2 Perch production in Ireland, a success, but what next? (D. Toner)

Download presentation.

Serving mainly Swiss markets, pond-based perch production has been quite a success in Ireland, as Damien Toner (BIM, IE) points out. To further improve this, ongoing work is dedicated to a genetic approach in order to quantify and map levels of variation within the species across Europe and to test if growth might be improved by selective breeding measures. First results from in total 100 fast/slow growing fish are promising, revealing a good potential for selection. For example, it was possible to detect two out of eight perch "families" with fast growing offspring. Damien underlined the necessity of an increased efficiency of perch production in Ireland with reduction of production cost and provision of stable marketable perch production. Damien presented one possibility how to achieve this aim - using the split pond system as a tool for effective and stable perch production in Ireland. In such a system, fish are kept in only a small compartment of a larger, semi-artificial pond

and herewith combine intensive production and the benefits of a large water body. Future testing of this system is necessary in practice for future wide use in perch commercial farms.

2.3 Is Turkey a good place to produce pikeperch? (T. Bodur)

Download presentation.

Türker Bodur from Akdeniz University in Antalya (TR) presented the current status of freshwater fish production, the history and present state of pikeperch fishing and possible future developments regarding this species in Turkey. With trout being the major fish species produced in Turkey in over 1200 enterprises, more than 280 of which produce over 500 t per year, and carp being another freshwater species of less importance, percid fish may be a promising addition. Pikeperch have been introduced in large numbers already during the 1950s and today can be found in several lakes and basins almost all over the country, where they are fished commercially. Especially Eğirdir Lake and Beyşehir Lake in South-West Turkey are promising production locations for pikeperch, due to an existing infrastructure including 15 fish processing plants, 2 fisheries faculties and 2 research institutes in this region.

3 Conclusion and final remarks

Generally a high interest in participating in the EPFC workshop was recorded including a rich discussion among participants. Again EPFC thematic group obtained new members and their interest to work within EPFC thematic group. New information or plans about percid production progress in France, Ireland and Turkey was spread during the EPFC workshop. Basic information about current research and development work of workshop participants related to reproduction, hatchery operation, larval and juvenile culture, production of ongrowing and marketable fish including fish quality in perch and pikeperch were extended and discussed among all active partners. During this fruitful discussion, joint request arose to propose and established new European active COST project related to percid fish, which should associate all research and production partners interested in percid fish in Europe. The aim of this activity is better coordination of research and development of percid aquaculture and market sector in Europe which has generally high socio- economic potential.

4 “Big is beautiful – isn’t it?”: Upscaling of percid fish production in Europe

A comment by Stefan Meyer

The European Percid Fish Culture (EPFC) thematic group was established in 2012 and since then built an ever growing network of scientists and practitioners from all over Europe. It is a pleasure to see that EPFC has managed to sustain itself for this time period despite a very limited budget. This was (and still is) only possible due to substantial voluntary input from many active members. A big **Thank You** to all who contributed and still contribute to this success! EPFC will continue in this direction and will do its best to provide an added value for all participants and the sector.

In my opinion, pikeperch and perch truly are THE aquaculture diversification species for continental Europe. Both species are well-known from their fisheries and extensive production background and both of them exhibit a great biological potential for production in larger and more intense systems (e.g. RAS, split pond, etc.). There are definitely still a lot of bottlenecks that need to be overcome before “the big breakthrough”, i.e. leaving the candidate-status behind and becoming fully grown and established European aquaculture species. Genetics and breeding (topics addressed in 2014 edition of the EPFC workshop), cost reduction and market access among other technical and biological obstacles (previous and future workshops) will be addressed and solved in the near future. It just has to be like that, because there are so many extremely well qualified and determined people

working on it. So let's assume for a minute that percids will have their major breakthrough within the next five years' time…

…what happens then? What is the consequence of growing out of the candidate-status and becoming a fully renown and established aquaculture species? I have ambiguous associations with this thought: Consolidation to key players? Vertical integration from broodstock to ready product? Large RAS farms all over the place? Or is "big" not the only way forward? Will we see also alternative production methods? And is there still a niche for traditional extensive pond production? Nobody can tell at the moment! But it is certainly worth thinking about it.

EPFC therefore invites everyone from the percid sector to share his/her personal thoughts and prepositions for the future of the sector in the

next EPFC workshop entitled **"Big is beautiful – isn't it?: Upscaling of percid fish production in Europe"**

. Topic-related contributions are invited from all fields of technology, biology, market and supply chain research as well as case study reports and investment models. Participation will be free of charge, but a registration is mandatory.

The workshop will take place on the registration day of **Aquaculture Europe in Rotterdam, Tuesday, 20th October 2015, from 13 – 17 pm**.

Please register yourself by sending an email to info@epfc.net and check www.epfc.net for regular updates.