FITFISH WG2 meeting Porto 19 April 2018

Aim of the workshop

The workshop contributed specifically to the following action objectives (as formulated in the Work and Budget plan of the FITFISH action):

2. Evaluation of existing fish migration data, monitoring methodology for tracking migratory fish and bypass design, and the use of expertise within the platform to identify potential improvements;
5. The use of the established research network to search for collaborative project opportunities;
6. Set-up communication with policy makers (aquaculture, fisheries, environment and food authorities) for setting directions for policy and future studies;
8. Transfer of knowledge between scientists, industry and policy makers;
9. The use of the multidisciplinary nature of the platform to disseminate scientific reviews.

Agenda

The agenda of the workshop:

Time	Action
13:30-13:45	Introduction to the aims of the workshop
13:45-15:30	Discussion, round 1: inventory of insights during the FITFISH period + actions "after FITFISH"
15:30-16:00	Coffee / tea break
16:00-17:00	Round 2: Further discussion on follow-up actions and dissemination
16:00-17:00	Plenary presentation of WG2 results

Participants

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Results & Conclusions

During the first round of the discussion an inventory was made of important fish-migration-related issues/problems in the perception of the WG2 participants. These issues still persist and have become clearer during the course of the FITFISH project, especially through the personal contacts at the conferences and WG meetings.

- **Long-term and technologically innovative monitoring**. In order to gain more complete understanding of fish migration and the long-term effects of fish passages and other mitigation measures on populations, long-term data are essential. Technologically improved monitoring, for instance using new labels and tags enable the additional collection of environmental and behavioural data which can shed more light on the relationship between migration and the fish's environment. It should be given careful thought how to integrate new technologies with existing monitoring to ensure continuity of data collection and comparability.
- **Harmonisation of the assessment of fish passages**. Methodologies for assessments of fish passes vary considerably. The question remains what a good fish passage is. Harmonisation / standardisation efforts are on the way, including a CEN-report. The question remains as to what is standardised and at which time scales. An exchange of best practices is advisable.
- **Basic biological data collection**. Many species are poorly known. For instance, of the almost 400 freshwater species in Turkey, more than 50 are endemic, but of many it is not even known to what extent they are migratory (this holds especially for potamodromous fishes). The identification of "keystone" or "umbrella" fish species, that could represent an important part of the ichthyofauna could be helpful for the assessment of impacts of human-induced alterations to water bodies. This is especially important in ecosystems that are under pressure and have poorly-known, but rich biodiversity such as in the Mediterranean and Balkan areas, as well as in Turkey.
- **Better data collection and analysis**. There is a lot of data available from many projects related to fish migration. However, most of these data is collected within the context of (short) projects. Too much project-based research leads to fragmented data, and long-term developments are therefore difficult to follow. In addition to better data collection, the existing data is often poorly accessible and not analysed properly. Making existing datasets available and using more advanced data analysis could be a step forward.
- **Fish migration should not be looked at in isolation**. When considering fish migration, other activities should explicitly be taken into account. Hydropower is one of these activities. Still there are large hydropower schemes under development (often because of the reduction of CO_2-emission), that do not take into account the value of migratory fish species. Fishery is another activity that should be addressed.
- **Not all fish are equal**. Not all fish species have the same migration behaviour, but also individuals within species may differ considerably. This may lead to different responses in relation to migration blockage and mitigation measures, which means that in the design of fish passages the behaviour and the variability in behaviour should be explicitly incorporated. It also means that the application of particular blockages / mitigation measures may lead to the loss of genetic diversity, caused by the selection of parts of populations.

Within the above there are roughly three main lines of research interests / specialisations, which are all needed for the effective and efficient studying and solving of fish-migration-related problems. In brief these lines can be indicated as:

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1. **Monitoring technology** (main focus on development of innovative technology in fish migration monitoring);
2. **Fish passage design** (main focus on technological optimisation of fish passages);
3. **Behavioural biology** (main focus on the behaviour of migratory fish *vis-à-vis* migration obstacles and mitigation measures).

For the optimal study of fish migration and solutions of fish-migration issues preferably all three of these lines should be integrated. This requires dedicated effort of researchers with diverse backgrounds.
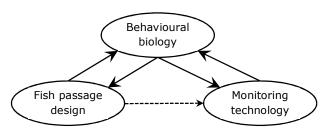

Fig: The interactions between the three main lines of specialisations / research interests in WG2. Solid arrows indicate strong interactions. The dashed line indicates a weaker interaction.

In the second part of the discussion consensus was reached on the joint writing of two papers:

1. A **position paper** on the most important fish-migration-related issues/problems in the perception of the WG2 participants (see above). This will be a paper to communicate the main results of WG2 to a wider audience. This does not necessarily need to be a scientific, peer-reviewed article. Leo Nagelkerke will take the lead in this.
2. A **review paper** on the status of migratory species in Europe and their major threats. The paper will contain the following aspects:
   a. Divide Europe in ecoregions;
   b. Establish what the main problems for migratory fish species are per ecoregion;
   c. Establish the relative importance of different threats in different ecoregions;
   d. Provide insight in the information caveats and suggest prioritisation od research;
   e. Future developments such as climate change (and perhaps invasive species and hydropower schemes) will be projected;

   Milan Řiha and Saulius Stakėnas will take the lead. This is aimed to be a scientific peer-reviewed article. There are some similar articles from North America that could serve as an inspiration.

Besides this a **questionnaire** was distributed among the FITFISH members. The questionnaire was filled in by 14 participants. A reminder will be sent out and the questionnaire will be online until 30 June 2018.

Achievements within FITFISH WG2
- The exchange of first-hand experiences in the meetings was very stimulating for all the participants (objectives 2, 6 & 8);
- The discussions on the state of the art in fish migration research led to a better insight into priorities, which resulted in (amongst others) the list in this report, which is aimed for producing a position paper and a review paper. Both papers will show the importance of integration of knowledge in the sense that an overview of the European

situation can be achieved which goes beyond the case-study approach usually applied in fish migration studies (objectives 2, 6 & 9);

- The questionnaire already led to a better view on the needs of scientists and policy makers (also clarified in the stakeholder workshop) (objectives 6 & 8);
- Several joint projects were conceived and funded from FITFISH contacts. Most of these projects were regional (eastern Europe / Mediterranean). The reason for not including partners from e.g. western Europe was mainly the result of concrete funding possibilities not available for all states within the network (objective 5);
- Several joint publications of FITFISH partners were produced (objectives 2 & 8).

Follow-up actions

1. The website will be kept live;
2. A position paper and a review paper will be written (see above);
3. Further collaboration on (regional) projects will be sought.