FISHNET - A TRANSDISCIPLINARY PROJECT ON THE DECLINE OF FISH POPULATIONS IN SWISS RIVER SYSTEMS

Patricia Holm, Interdisciplinary Center for General Ecology, University of Berne, Falkenplatz 16, 3012 Berne, and Swiss Federal Institute for Environmental Science and Technology (EAWAG)*, 8600 Dübendorf, Switzerland

Summary
Fishnet is an information and communication platform. Within its framework, research projects are initiated and coordinated, their results are integrated, and practical measures for addressing the problem of declining fish populations are developed and proposed to the public.

Background
For several years, a decline of fish populations was observed in different river systems. Both the public as well as the administration recognized this problem. Selected areas of drastic decline were identified and research projects on the health status of fish, the hydrobiology and the river morphology were carried out. However, the causes for the decline remain unclear.
It was in March 1998 when representatives of all cantonal fishery administrations, of the federal administration and of research institutions came together to discuss the extent of the decline in fish numbers and the often quoted impaired health status. This meeting resulted in a declaration of intent to build up a nationwide network. This network should investigate the causes of the observed alterations and implement measures to alleviate and improve the situation.

Organisation
In December 1998, fishnet was born as a coordinative and transdisciplinary network. It is a joint project of the Swiss Agency for the Environment, Forests and Landscape (SAEFL), the Swiss Federal Institute for Environmental Science and Technology (EAWAG), the cantons, research institutions, chemical industry and the Swiss fishery association. It has a planned period of 3 to 5 years.
A strategic committee is composed of senior members of the civil service and further representatives of administration, fisheries and science. The strategic committee controls the success and is responsible for the introduction of politicial measures.
A project management team also exists and is comprised of experts from science, industry and administration with different disciplinary backgrounds. This team is responsible for the detailed planning, synthesis, coordination and development of measures to adress this problem of declining fish stocks.

Aims
Fishnet aims to

- document the decline of fish populations and fish harvests,
- evaluate the health status of wild fish in Swiss rivers,
- define the causes of the alteration in population size and health status, considering pollutants, physical parameters (e.g. temperature, alteration of the hydrological regime, obstructions along the river) and fish diseases,
- introduce applied measures for repopulation of badly affected systems. This implies the coordination of running projects as well as an identification of additional research needs and initiation of such projects,
- identify and remove principal pollutant sources,

design, propose and introduce counteractive measures,

- monitor the ongoing success of the measures applied.

Action plan
A prerequisite for success is to put the aims into hypotheses (Tab. 1). In workshops with experts from both the fishnet and external, these hypotheses will be evaluated and subsequently put into specific research questions. Many research projects and activities are necessary to provide answers to the different questions. Several research projects were running and actions implemented by the time fishnet was first formed. Thus, it is necessary to differentiate between projects of general interest and projects

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dealing specifically with the aims and questions of fishnet, so called sub-projects. Therefore, a list of criteria was developed: Coaches of the project management team with expertise in the respective research areas classify the projects. They are also responsible for the exchange of results and methodological knowledge between the sub-projects and the project managment team. It is the prior task of this team to coordinate the efforts of the different sub-projects, reduce overlaps and use the arising synergies in order to reach the aims of fishnet. An iterative process is necessary to integrate the results of the sub-projects allowing the development of a promising synthesis (Fig. 1). In conclusion, a generation of various procedural options during the restricted duration of fishnet is planned.

Instruments

Different tools have already been established to shift our focus from the supply of knowledge to the demand for it. Among them is a list containing all projects of relevance for the fishnet, a collection of copies of all published and grey literature on fishnet-relevant projects and a sample and material-market. The latter offers the opportunity to announce the need and the supply, respectively, for specific material or samples. All these instruments should help to build up synergies and avoid overlaps between the different sub-projects. The results of the research projects must be synthesized and should lead to the development of alleviative measures. For communication, different media are used. The project management team meets every month for a whole-day meeting and is in permanent contact via telefone and e-mail. Information on the results of the research projects, on the proposed actions as well as on the further progress is provided in regularly held seminars, in the regularly published fishnet- info brochure and on a website (www.fischnetz.ch). These platforms are open for all experts and the interested public.

Strength

Compared to single research projects of selected disciplines without transdisciplinary collaborations and exchange, fishnet provides the following advantages:

- The collaboration of experts with different disciplinary and institutional backgrounds provides a continuous and direct integration of their knowledge into fishnet, and, vice versa, to their origin institutions.
- The network of running projects is the prerequiste for success since it avoids overlapping research time and resources and creates synergies.
- The intensive communication and the iterative process provides a high flexibility for corrections in the planning of new projects.
- A standardization of methods in the different research fields, their broad distribution and recommendation is of advantage for improved comparability. This facilitates the transfer of knowledge and supports the explanation of procedural options.
- For exchange of know-how and experience which is not available within the project organisation, external experts are asked to collaborate. Depending on the question, persons from industry, research, offices or authorities will be approached. Expert knowledge is also required when communicating with the public, where the development and introduction of measures is of topical interest. Since the reasons for the fish decline are probably not restricted to Switzerland, information exchange with projects abroad addressing similar questions will be established.
- The acceptance for specific measurements can be increased when the responsible institutions can be integrated early and in a collaborative manner.

Current experience

Many people are full of ideas and enthusiasm and start projects which they want to integrate into fishnet after the project started. This makes it difficult to steer activities in respect to fishnet aims. In addition, the project management team run the risk of reacting to settled projects instead of initiating projects on the most pressing questions.

It is regarded as a prerequisite for success that the need for a broad collaboration and coordination between the different sub-projects is accepted by everybody involved. Furthermore, experts realize that the integration of their results into a promising synthesis needs time and know-how. While quantitative synthesis work is relatively well-known, experiences with qualitative approaches are still underrepresented in our group.

References

www.fischnetz.ch

Tab. 1. The 12 working hypotheses of the project fishnet can be summarised and grouped as follows:

Hypotheses	The fish decline is the result of...
1	... the combination of many small effects
2-5	... water pollution (chemical substances)
6, 7	... habitate alterations
8	... decreased abundance of food organisms
9	... inappropriate stocking practices
10	... fisheries and predators
11, 12	... altered climatic factors

Fig. 1