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EUROPEAN INLAND FISHERIES ADVISORY COMMISSION

TWENTY-THIRD SESSION

Wierzba, Poland, 26 May – 2 June 2004

PROGRESS REPORT SUB-COMMISSION III - Protection of the Aquatic Resource

Chairperson: A.J.P. Raat (The Netherlands)
Vice-Chairperson: D. Gerdeaux (France)
Rapporteur: P. Gérard (Belgium)
Technical Secretary: U. Barg (FAO)

Activities and achievements of the Sub-Commission during the intersessional period are summarized as follows:

***Ad hoc* Working Party on Effects of Physical Modification of the Aquatic Habitat on Fish Populations**

Convener: M. Zalewski

An international Symposium on Ecohydrology and Physical Fish Habitat Modifications in Lakes was organized on 26-28 November 2003 in Mondsee (Austria). Mr Zalewski and Mr Josef Wanzenböck (Austria), conveners of the Mondsee symposium, supplied the information on the results of the meeting for this report.

The meeting was attended by 38 participants from 17 different countries. The rationale of the meeting was that physical modifications of lake habitats are considered to be one of the major causes of changes in fish communities, biodiversity and productivity. The need to understand the complex ecology of modifications in the water body has recently been given an impetus by the EU Water Framework Directive. Thus it was in the interest of EIFAC to include the impacts of habitat modification on fisheries as a separate theme in the symposium. The objectives of the symposium were:

1. To share knowledge and experiences among fish ecologists and limnologists from different countries and to present a timely summary of the state of the art of studying habitat modifications and their remedy or reversal, as well as the effects on fish communities, species and populations, and on other lake biota.

2. To identify gaps in our knowledge related to all types of lake habitat changes and their effects on lake ecology.
3. To help the development of guidelines for planning and actions related to lake management.
4. To raise awareness of the role and effect of direct and indirect lake habitat modifications on fishes and other biota, which will be achieved via ongoing activities and the activities by a newly established task force of people dedicated to promote ecohydrology specifically for lake ecosystems.

The proceedings of the meeting will be published in the international scientific journal *Ecohydrology & Hydrobiology*. The editors of this special volume, Mr J. Wanzenböck (Austria), Mr P. Hickley (UK) and Mr M. Zalewski (Poland), will be responsible for the scientific quality of the proceedings volume and will support its dissemination.

During the symposium an “Ecohydrology Task Force“ was established aimed at future actions (at the moment preliminary for discussion and development), like:

1. Distribution of the Proceedings to UNESCO International Hydrological Programme (IHP) key persons (HELP - Hydrology for the Environment, Life and Policy, FRIEND - Flow Regimes from International Experimental and Network Data, regional IHP offices).
2. Organization of the Workshop with representatives of IHP on the perspectives of restoration of aquatic habitats (after publishing Proceedings of the Mondsee Symposium).
3. Participation of the members of the Ecohydrology Task Force Group in the UNESCO International Hydrological Programme activities concerning perspectives of restoration of physically degraded habitats.
4. Elaboration of guidelines for restoration of physically degraded habitats.

The convener of the EIFAC Working party plans to integrate the activities of the Working Party with the UNESCO International Hydrological Programme – Ecohydrology. Members of the Working Party are convinced that the 2001 publication of the papers from the first meeting of the EIFAC Working Party concerning rivers (*International Journal of Ecohydrology & Hydrobiology*, volume 1 (3)) and the publication of the papers presented at the second symposium on lakes, should be a key for inviting participants to the Working Party.

During the 23rd Session of EIFAC continuation of the Working Party and cooperation with the UNESCO IHP programme will be discussed.

***Ad hoc* Working Party on Methodologies for Rehabilitation of Lakes and Reservoirs**

Convener: H. Lehtonen

The Ad hoc Working Party is preparing a Manual on Rehabilitation of Lakes and Reservoirs for Fish. The editors, Mr H. Lehtonen, Mr I.G. Cowx and Mr R. Müller, plan that the work will be completed during 2004. Drafts of all chapters are available, but the final editing requires considerable revision to avoid duplication, improve coverage and provide the appropriate level of knowledge for the intended audience (planners and managers). At present, the chapters are written as high level technical documents and not as a manual for end users. Blackwell Science is willing to publish the book in the same format as the book on Rehabilitation of Rivers for Fish, thus this redrafting is critical to ensure complimentary of documents. It was felt that Blackwell Science needs to make a proposal for a co-publishing agreement to the FAO Publication Sales and Marketing Group. Sponsoring the publication by Governmental agencies of member countries, e.g. the Environment Agency (UK), was identified as another possibility to finance the publication of the Manual.

The Manual has the following chapters:

- Introduction (Lehtonen)
- Typology of lakes and reservoirs (Cowx)
- Habitats and habitat requirements (Kainz)
- Classification of lacustrine habitats (Cowx)
- Impacts of man's activities on habitats (Cowx)
- Methods of rehabilitation (Lehtonen)
- Management and rehabilitation of regulated lakes (Vehanen)
- Rehabilitation of eutrophic lakes (Müller)
- Rehabilitation of acidified lakes (Appelberg)
- Biomanipulation (Horppila)
- Management of spawning and nursery areas (Winfield)
- Management of aquatic vegetation (Coops)
- Rehabilitation of lake shores (Biro)
- Rehabilitation of lake fisheries by stocking (Cowx)
- Conclusions (editors)

***Ad hoc* Working Party on Prevention and Control of Bird Predation**

Convener: E. Staub

The Working Party is acting as a liaison group. It was felt that information on prevention and control of bird predation is useful for EIFAC. During the 23rd Session of EIFAC the status of the Working Party will be discussed.

Mr David Carss (UK) kindly supplied the following information on REDCAFE (Reducing the Conflict between Cormorants and Fisheries on a Pan-European Scale).

REDCAFE

The REDCAFE project was designed to complement and develop previous work through synthesising available information on Cormorant conflicts and aspects of Cormorant ecology leading to them, through identifying methods of reducing the current Europe-wide conflict between Cormorants and fisheries interests and collating expert evaluations of their practical use. The project also addressed a specific Cormorant-fisheries conflict case study involving recreational angling in S.E. England. REDCAFE took a novel approach to delivering solutions to these problems by, for the first time, bringing together avian, fisheries and social scientists and many other relevant 'stakeholders' to discuss and report on these issues in a rigorous, coordinated and equitable manner. With these aims in mind, a pan-European network of project participants was established comprising 49 people representing 43 organisations from 25 countries and including seven main stakeholder groups: commercial fishermen, recreational fishermen, aquaculturists, avian/wetland conservationists, fisheries scientists, avian ecologists and social scientists.

REDCAFE had five Work Packages with overall objectives of synthesising available information on Cormorant conflicts with fisheries, incorporating best estimates of associated financial losses, synthesising available information on Cormorant ecology, focussing on those factors leading to conflicts with fisheries, producing a set of potential management tools, from population-level to site-specific control, incorporating information on their efficacy and cost-effectiveness, developing and running a Multiple Criteria Decision Model, incorporating appropriate socio-economic aspects, for a specific Cormorant-fishery conflict or a specific geographical area and disseminating information on Cormorant conflicts with fisheries, relevant aspects of Cormorant ecology, and strategies for conflict resolution at the local, national and European level.

The REDCAFE project has finished. The final report "Reducing the conflict between Cormorants and fisheries on a pan-European scale, REDCAFE, Final Report of a Concerted Action funded by the European Union", was edited by Mr D.N. Carss, NERC's Centre for Ecology and Hydrology, Banchory in Scotland, and is available on <http://banchory.ceh.ac.uk/redcafe/redcafedocs.htm>.

The REDCAFE report concluding remarks are that full information from REDCAFE should be disseminated as widely as possible so that the lessons learned from the project can be applied elsewhere. The establishment of a pan-European information exchange network would greatly facilitate the conflict resolution process and allow stakeholders to view their own particular situations in the broader continental context. Information must be exchanged at several levels: within and between disciplines of natural and social science, between scientists and other stakeholders, and between all interested parties and politicians, policy makers and the general public. The most important next step after dissemination is to build on the findings of REDCAFE so that local stakeholders can begin to develop effective site-specific strategies for resolving local conflicts. The formation of an information exchange network would be a very useful tool to facilitate the rapid transfer of ideas, experiences, management techniques, their implementation and subsequent outcomes. It could also offer stakeholders opportunities for discussion and could provide them with clear information on the actual costs (both invested and saved) of specific techniques. Although the REDCAFE project is the most comprehensive attempt to address Cormorant-fishery conflicts at the pan-European scale, it is clear that the project is merely the first step. Opportunities must now be explored to further develop the foundation framework that REDCAFE has developed in linking science with society and advancing processes of conflict management across a range of European contexts.

The REDCAFE Cormorant-conflict synthesis demonstrated clearly that such conflicts are complex, in terms of both biology and equally important social and economic issues. This synthesis is an important first stage towards developing trust and collaborations between all those affected by Cormorant conflicts. These issues are as much a matter of human interests as they are of biology. It is hoped that this element of REDCAFE's work will indeed be the start of a management process for Cormorant-fisheries conflict issues and, by implication, for wider environmental issues affecting fisheries and aquatic conservation across Europe. A formal approach to applying REDCAFE philosophy to the thousands of other case studies across Europe is needed. Moreover, while the onus is currently on biologists to solve what are essentially people-people conflicts, professionals in other disciplines should be increasingly involved in these conflict management issues.

A COST Action to take the REDCAFE network forward has recently been approved by EU. This new project (called INTERCAFE) will build on the REDCAFE network and include more local stakeholders, social scientists, economists and policy-makers. The planning for this project has been started and the project will run for four years.

Interactions between Fish and Birds

An output of the EIFAC Working party, in conjunction with the REDCAFE group is the book *Interactions between Fish and Birds, Implications for Management*, edited by I.G. Cowx (Fishing News books ISBN 0632063858). This book represents the proceedings of a Hull International Fisheries Institute / EIFAC conference of the same title held in April 2001. The book covers the interactions between wild bird populations (many protected by law) and fish, the impact of fisheries on bird populations, methods to control bird populations, methods to ameliorate the impact of birds, and management scenarios to manage the conflicts. The book draws together contributions from all over the world to provide an insight into many case studies and conflicts in managed situations as well as looking at the overall ecology of such interactions in normal unmanaged ecosystems.

***Ad hoc* Working Party on Influence of Management Practices on the Environment**

Convener: M. Aprahamian

The Convener of the Working Party, Mr M. Aprahamian reported that a meeting was held at the 22nd Session of EIFAC on June 15th, 2002 in Windermere, UK. Impact of stocking, biomanipulation, rehabilitation, impact of fish community management and conservation were discussed at the meeting.

The Windermere meeting identified issues where EIFAC could help by providing advice:

- The impacts of current fisheries management on freshwater ecosystems.
- How to predict the effect of current management practices on the environment.
- How to determine whether current management measures are appropriate.
- How best to promote sustainable management practices.
- How best to integrate process management, e.g. understanding what is happening around the catchment and identifying where management is needed.

The Windermere meeting concluded that EIFAC could help by providing guidelines / best practice advice on the following themes:

- Biomanipulation guidelines. In this respect the recent document of the Environment Agency (UK) on biomanipulation can serve as an useful reference for the Working Party.
- Stocking guidelines.

Sixteen papers from the meeting and an overview paper are to be published in a special issue of Fisheries Management and Ecology in May 2004. The proceedings were compiled by Mr Heiner Naeve.

Though high level generic guidelines are available it was considered that more detailed practitioner focused guidelines are necessary - in particular dealing with carrying capacity in both, rivers and still waters, risk assessment, costs and benefit analysis of different stocking strategies including examples of negative impacts (introgression, increased exploitation of wild stocks and other wildlife), how to mitigate if possible, and positive impacts (reducing exploitation on rivers). In this respect, the Environment Agency (UK) is developing a manual which will serve as an useful reference for further activities.

The activities of the Working Party are in line with the 1990 terms of reference with the exception of the topics dealing with stocking. This activity must be integrated in the programme of the Working Party on Introductions and Stocking. During the 23rd Session of EIFAC future activities of the Working Party will be discussed. Also the integration of activities with the EIFAC Working Party on Introduction and Stocking will be part of the discussion.

***Ad hoc* Working Party on Handling of Fishes in Fisheries and Aquaculture**

Convener: A.J.P. Raat

During the 22nd Session, EIFAC decided to establish an Ad hoc Working Party on Handling of Fishes in Fisheries and Aquaculture. A compilation of the basic scientific knowledge on the effects of handling of fishes in fisheries and aquaculture (fishing methods, harvest, holding and rearing, use of anaesthetics, slaughter) was prepared. In March 2003 a questionnaire was sent to EIFAC correspondents and other relevant persons or organizations to compile information on the current practice of handling of fishes in fisheries and aquaculture, including training programmes, and collate existing codes of practice and guidance in EIFAC member countries and relevant information from other countries. The report also identifies the relevant Web sites and other sources for information on welfare and handling of fishes and other relevant topics.

A workshop meeting of the Ad hoc Working Party in Utrecht (Netherlands) was organized in March 2004. The results of the workshop and the document will be presented to the 23rd Session together with recommendations for future actions of EIFAC on handling of fishes in fisheries and aquaculture.

Liaison Group on EU Water Framework Directive (WFD)

Liaison Group: I.G. Cowx / A.J.P. Raat

During the 22nd Session of EIFAC in Windermere a Liaison Group, consisting of Mr A.J.P. Raat and Mr I.G. Cowx, on the WFD was established. The Group sets out the consequences of the WFD for fisheries and fisheries management, reports about these consequences to EIFAC and acts as a link between the EIFAC Ad hoc Working Party on Fish Monitoring and the EU project: Development, Evaluation and Implementation of a Standardized Fish-based Assessment Method for the Ecological Status of European Rivers (FAME). The 23rd Session of EIFAC will decide about continuation of the Liaison Group.

The following activities can be reported.

EU-funded project FAME

Development, Evaluation and Implementation of a Standardised Fish-based Assessment Method for the Ecological Status of European Rivers <http://fame.boku.ac.at/>. Documents on the following working packages of the project can be downloaded from this web site. The site also refers to the publications and meetings of the participants in the FAME project.

Since the EXCOM meeting in May 2003 the FAME project has screened national data, because the development of the new assessment methodologies are based on existing field sampling data, provided by FAME partners and national fishery administrations. The existing national datasets differ in level of precision, type of sampling and variables included. To ensure that as many fishing occasions as possible could have been included, some environmental data could have been delivered either as the direct measured values or as a classified variable. After the data had been put into the standardised database by each partner country, the central database was established by the National Board of Fisheries in Sweden. The data in FIDES refer to five spatial levels/scales:

- Site: The sampled site in the stream.
- River segment level which is defined as: 1 km for small rivers (catchment <100 km²), 5 km for medium-sized rivers (100-1 000 km²), 10 km for large rivers (>1 000 km²).
- Catchment level, which is the whole catchment (watershed) upstream of the site.
- River basin: The river basin up- and downstream of the site. The river basin stretches down to the sea or a confluence into an equally sized or larger river.
- Whole river basin: The river basin up- and downstream of the site. The whole river basin stretches down to the sea.

The FAME project has now developed European level models to predict the deviation of the fish communities from good ecological status. These are following a spatially based approach focussing on the distribution and abundance of fish in different regions, which is a modelling approach that uses the physical and biological characteristics to predict the fish community structure and a classical index of biological integrity. Similar models have also been developed for each partner country and ecological zone. The models are currently being field tested. Reporting of the FAME project is expected towards the end of 2004. This will be in conjunction with a conference to be hosted by the University of Hull International Fisheries Institute in April 2005. EIFAC is requested to support this meeting through this Liaison Group and its network.

EU-funded project AQEM

The Development and Testing of an Integrated Assessment System for the Ecological Quality of Streams and Rivers throughout Europe using Benthic Macroinvertebrates <http://www.aqem.de/>. The project finished in 2002.

EU-funded project STAR

Standardisation of River Classifications (STAR): Framework method for calibrating different biological survey results against ecological quality classifications to be developed for the Water Framework Directive <http://www.eu-star.at>.

Ecological and human health effects from endocrine disrupting substances

During the 22nd Session of EIFAC in Windermere it was decided to discontinue the Ad hoc Working Party on Evaluation of Ecological and Human Health Effects from Endocrine Disrupting Substances. It was further decided that the Chairperson of Sub-Commission III should have a watching brief on the new developments on the effects of endocrine disruptors on fish and fish populations. Many wildlife species, especially fish, show signs of feminisation, with male fish producing large quantities of female egg yolk protein and developing sexual organs that are intermediate between male and female features, resulting in so-called intersex fish. During the 23rd Session of EIFAC it will be decided whether the watching activities of the Chairperson of the Sub-Commission III in the field of endocrine disrupting substances, will be continued.

CREDO Cluster

Relevant information is supplied on the CREDO cluster <http://www.credocluster.info/index.html> that compiles information on projects dealing with reproductive disorders in humans and wildlife. Four projects funded by the European Union form the core of the CREDO cluster: EDEN, COMPRENDO, EURISKED and FIRE. Together, they represent over 60 research laboratories in Europe, with a total budget of more than 20 million Euros. The website of the CREDO cluster also refers to eight associated programmes in the field of endocrine disrupting substances.

CITYFISH

Modelling the Ecological Quality of Urban Rivers: Ecotoxicological Factors Limiting Restoration of Fish Populations <http://www.biosciences.bham.ac.uk/labs/taylor/CITYFISH.htm>. The overall objectives of the project are to determine the ecotoxicological factors limiting restoration of sustainable fish populations in polluted urban rivers in four European countries. In the UK and Italy the chosen species is chub, (*Leuciscus cephalus*), in the Netherlands and Germany it is bream (*Abramis brama*). Fish sampled from the wild population, plus fish held in cages at each sampling site, are being studied with respect to their swimming performance in relation to the pollution load they have accumulated. Fish exposed in relatively polluted conditions swim at slower sustainable rates than fish from clean water. This will affect their ability to maintain position or migrate within the river system.

The project includes a study to investigate the ways that people perceive the risks associated with poor ecological quality and the social advantages of a healthy fish population, in urban rivers. The outcome of the project will be an overview of the combined technological and socio-economic factors affecting implementation of an urban river ecosystem with a sustainable population of healthy fish and the development of more sensitive criteria for judging the quality of rivers, based on analysis of their fish populations.

ACE

ACE stands for: "Analysing combination effects of mixtures of estrogenic chemicals in marine and freshwater organisms" <http://www.the-ace-project.info>. The project aims to contribute to the hazard assessment of endocrine disrupting chemicals in aquatic systems by analysing and assessing the effects of multi-component mixtures of xenoestrogens on biological systems, ranging from the sub-cellular level to populations of fish.

Aquatic Environmental Hazard Assessment Criteria and Methods

The 2001 EXCOM meeting proposed that possibilities be investigated for the establishment of an Ad hoc Working Party on Aquatic Environmental Hazard Assessment Criteria and Methods, possibly in collaboration with related activities of the IMO/FAO/UNESCO-IOC/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP). The progress of this initiative was discussed during the EXCOM meeting in May 2003. It was decided that during the 23rd Session of EIFAC it will be proposed to discontinue the activities of this Working Party.