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# HABITAT NETWORKING: A NEW CHANCE FOR THE OTTER IN EUROPE?

CLAUS REUTHER

*Aktion Fischotterschutz e. V. Otter Zentrum, D-29386 Hankensbüttel, Germany*

ABSTRACT – One of the main problems for otter protection in Germany as well as in Europe is the fragmentation and isolation of populations. In Germany a thriving population exists in the eastern parts of the country while in the central parts only isolated populations remain, and in the western parts the species is extirpated. On the basis of this situation a habitat network program is in progress with the aim to protect and restore not only those habitats where the otter still remains but also those habitats which can function as a network to connect the thriving with the isolated populations. This network focuses on existing protected wetlands or rivers and restoration activities in wetlands or rivers. The situation of the otter in Europe (excluding Scandinavia and the British Isles) is comparable to that in Germany. There are stable or thriving populations in the eastern and western parts while in Central Europe only isolated populations remain. Following the German otter habitat network program possibilities are shown and discussed to establish a habitat network program for the otter on a European level.

Key words: *Lutra lutra*, Conservation, Habitat restoration, Europe.

RIASSUNTO – *Ripristino di una rete di ambienti favorevoli alla lontra: una nuova possibilità per la specie in Europa?* – Uno dei principali problemi riguardanti la conservazione della lontra (*Lutra lutra*) in Germania, come del resto in Europa, è la frammentazione e l'isolamento delle popolazioni. In Germania, una cospicua popolazione esiste nella parte orientale, mentre in quella centrale sono presenti nuclei isolati; nella porzione occidentale del paese la specie è invece praticamente estinta. Tenendo presente questa situazione, è stato avviato un programma di ricostruzione di una rete di ambienti favorevoli alla lontra con l'obiettivo di proteggere e ripristinare non solo gli ambienti in cui la specie è attualmente presente, ma anche quelli che possono funzionare come rete di collegamento tra le popolazioni isolate. Questo programma focalizza l'attenzione sul ripristino delle zone umide e degli ambienti fluviali. La situazione della lontra in Europa, ad eccezione della Scandinavia e della Gran Bretagna, è comparabile a quella tedesca. Ci Sono floride popolazioni nei paesi ad est ed ad ovest, mentre nella parte centrale esistono solo nuclei isolati. Sulla base del programma delineato per la Germania, nel presente lavoro sono evidenziate e discusse le possibilità di realizzare a scala europea una rete di ambienti favorevoli alla lontra.

Parole chiave: *Lutra lutra*, Conservazione, Ripristino ambientale, Europa.

## INTRODUCTION

The discussion about the reasons for the dramatic decline of the otter *(Lutra lutra)* in Central Europe concentrates on three main factors: pollution, habitat destruction and accidental mortality. It is disputed whether or not one of the firstnamed factors alone or a combination of them is the major cause of decline.

Accidental mortality is of high importance especially for depleted populations (Green, 1991). Therefore in several countries measures have been developed to

stop road traffic casualties (Korbel, 1993) and the drowning of otters in fish traps (Madsen, 1991).

The chance to stop the use of bioaccumulating organochlorine pollutants is increasing, as more and more national laws and international conventions regulate the production and use of pesticides or industrial environmental contaminants (like PCBs). But the problem is that these pollutants are accumulated in the environment (i.e. in the otter's food chain, too) and it will take a long time to catabolize or reduce their residues to a non-toxic level (Mason, 1989; Weber, 1990).

Independent of the discussion which influence pollutant and/or habitat threat has on the decline of the otter, it needs to proceed on the assumption that the latter factor is of importance for the survival of the species. Measures such as the draining of marshes, channelization of rivers, removal of bankside vegetation etc. have reduced the diversity and impaired the ecological processes of many wetlands, rivers and lakes in Central Europe and thereby destroyed and reduced otter habitats (Reuther in press a). There are also many national and international laws with the object to protect habitats of endangered species like the otter. These may help in regions where the otter is still widespread and its habitats are largely undestroyed. But in great parts of Central Europe the situation of the otter populations and of the otter habitats call into question whether or not the protection of habitats alone will be able to give this species a chance for survival.

This realization has led to the discussion whether or not the release (re-introduction or re-stocking) of otters or the restoration of habitats is an adequate way to stabilize and to increase the Central European otter population. The discussion on the advantages and disadvantages of otter releases is very controversial, but it seems to be consensus that it presupposes the restoration of suitable living conditions (Reuther, 1992a). So the main difference between the otter release camp and the habitat restoration lobby is the question whether or not the increase of depleted populations and the recovery of former distribution areas should be enforced artificially or awaited as part of a natural development.

There are many different ways and methods of habitat restoration. There is one camp which prefers a more technical way in the form of artificial otter holts, stairs which allow otters to enter and to get out of canals, food pools, etc. (Herwarden, 1987; Winter, 1990; Jongh, 1991). These people are focused exclusively on the otter and its (known or assumed) demands on habitat structures. The position of the other camp is based on the ecological processes and functions of habitats. These people argue that we do not know enough about the real requirements of the otter to be able to "construct" an otter biotope and that nature conservation should not be focused exclusively on one species. They prefer the protection and the restoration of complete biocenoses which include the otter (Reuther, 1992b).

Looking at the development of otter populations in Europe we have to admit a clear tendency that formerly closed populations have been reduced in number and split into more and more isolated subpopulations which are not viable. The example given by Reuther (1980) from the German federal state Lower Saxony (Fig. 1) illustrates this tendency very impressive. This knowledge led to the request that the stabilization of isolated populations and their reconnection with one another should have top priority alongside the protection of the remaining stable populations.

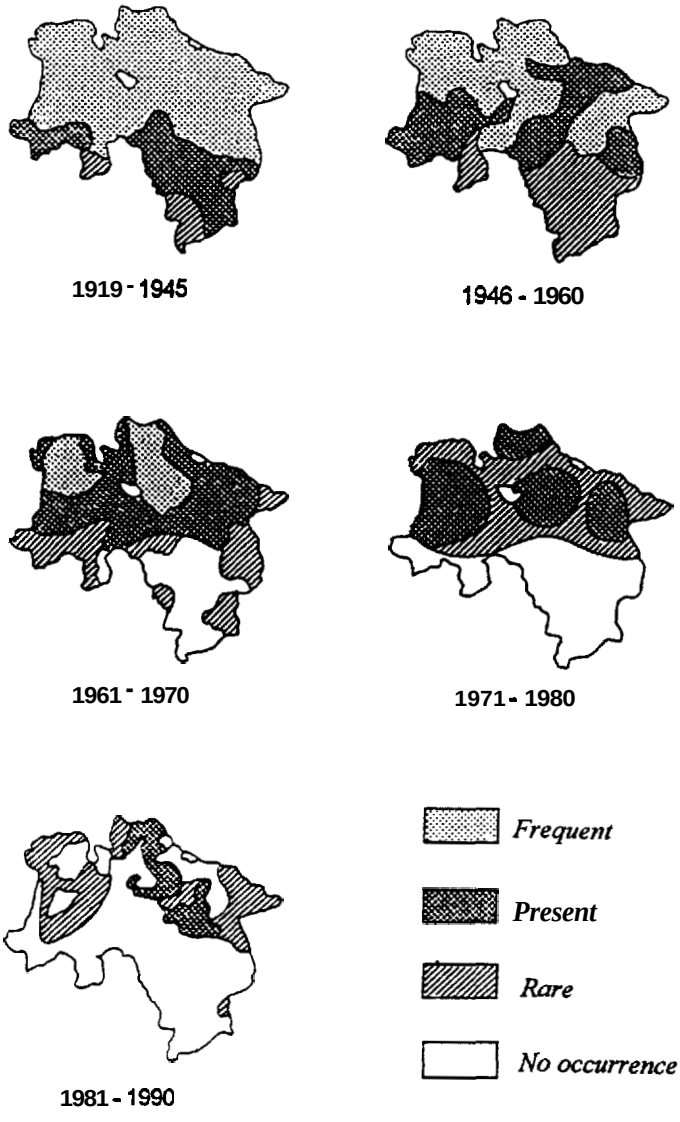


Fig. 1 – Development of otter distribution in Lower-Saxony (Germany) 1919-1990 (from Reuther, 1980).

The conception for such a network was developed for Germany in a program called "Otter 2000" by Reuther (1992c). Because of the central geographic position of Germany within Europe this program could be a first step for a European otter habitat network (Reuther in press b).

## THE SITUATION IN GERMANY

The distribution of the otter in Germany shows a clear east to west decline (Fig. 2). The three federal states Mecklenburg-Vorpommem, Brandenburg (incl. Berlin) and Saxony show thriving and presumably even increasing populations. Here, too,

an east to west decline is evident. While the otter is widespread in the eastern parts of these federal states its presence becomes scarce in the western parts. But there are many areas where it looks like a population surplus is recovering new areas or reinforcing adjacent occurrences. Within the neighbouring federal states Schleswig-Holstein (incl. Hamburg), Lower-Saxony (incl. Bremen) and Saxony-Anhalt only isolated remainder populations survive. They are highly endangered. The Bavarian otter population occupies a special position. It is not connected with other German otter occurrences but with those in the Czech Republik and in Austria. This

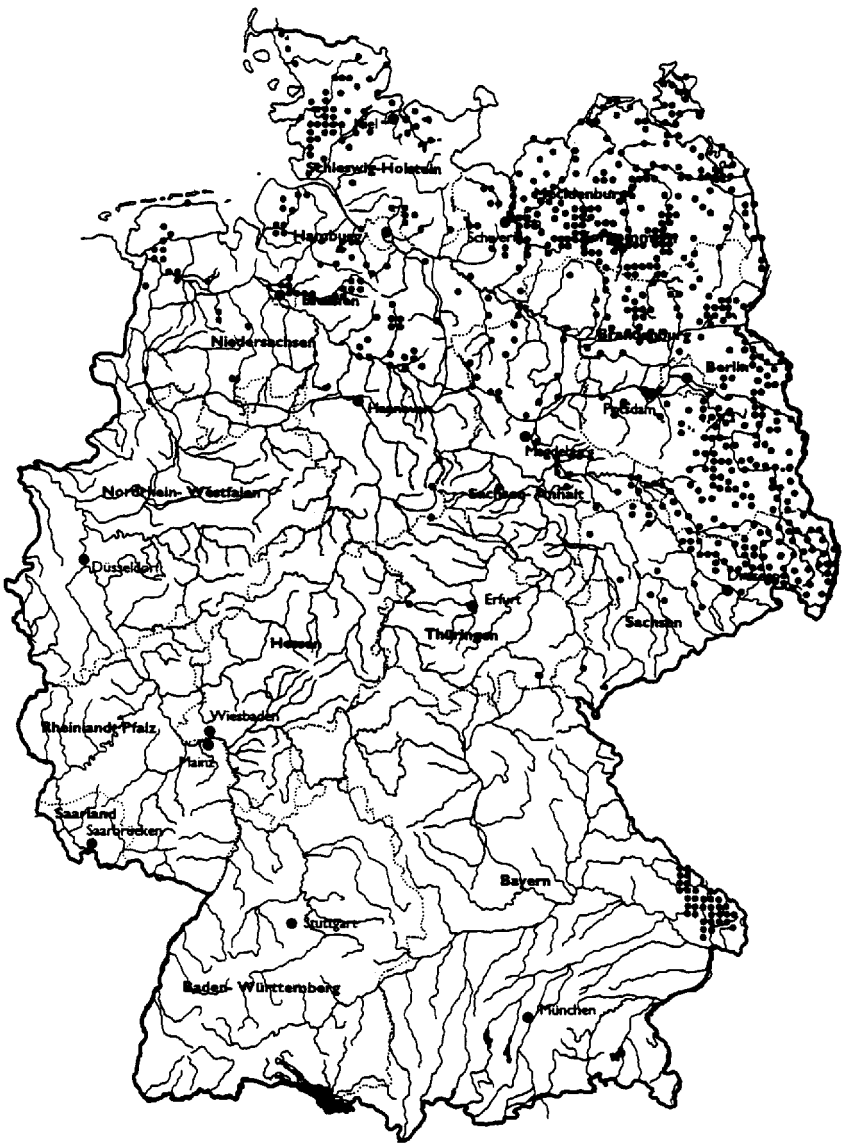


Fig. 2 – Otter distribution in Germany in the 80's (from Reuther, 1992c).

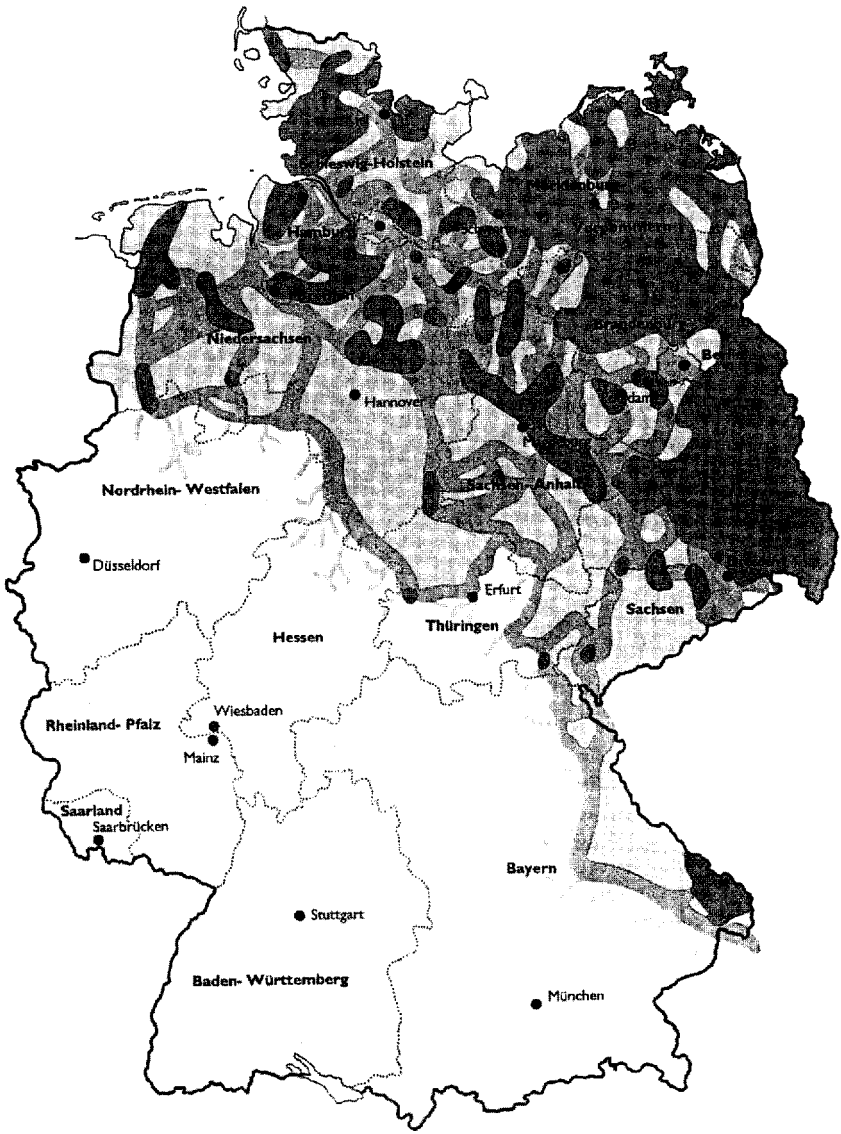


Fig. 3 - The four steps for an habitat network in Germany (from Reuther, 1992 c).
Dark grey planes: the core areas of otter distribution in the 80's which should be protected.
Medium grey planes: potential migratory corridors which should be developed.
Light grey planes: recovery habitats between the core areas and the migratory corridors which should be developed.
Light grey lines: potential migratory corridors for an expansion of the distribution area.

population was near extinction ten years ago and looks like it is an increasing population now. In the other 6 German federal states the otter has gone extinct over the last 2-3 decades.

Realizing that the remaining, isolated otter populations in West Germany have only very little chance to survive by their own resources, ways have to be developed

to minimize the risk of their total extinction and to establish the preconditions for their invigoration. In Schleswig-Holstein and in Lower-Saxony the otter populations declined rapidly within the last decade despite several habitat management activities (which have been carried through, unfortunately, more or less half-heartedly). The Bavarian population, in contrast, increased within this period, probably due to immigrating otters from the Czech Republic and from Austria. This experience has led to the conclusion that the survival of the West German otter populations depends on the possibility to be invigorated by additional animals from areas where the living conditions were (artificially) or have (naturally) changed to a more positive level.

A first draft for a network of potential migratory corridors for Germany is shown in figure 3. It is based on the main river systems connecting West and East Germany. Another fact we have to come to terms with is that it is not enough to concentrate our otter protection efforts to the small rivers or undisturbed wetland areas. We also have to take in consideration the waters systems of the big rivers and streams because they are those which guarantee a large-scale effect.

But the establishment of these migratory corridors can only be the second step after the conservation of the core populations. The third step has to be a habitat management program for the areas between these corridors. This will form the base for a widespread recovery of habitats by the otter. Extending beyond such a new closed and thriving distribution area, the fourth step will be only a question of time: the recovery of more and more habitats by the otter.

The program 'Otter 2000' contains some aspects which should enforce the described measures, such as regular surveys and observation of population and distribution trends, research programs on the otter's biology, mortality factors and other threats as well as effects of habitat protection/restoration measures, and the establishment of a national coordination group which serves towards the harmonizing of the regional and supraregional otter protection activities.

## THE SITUATION IN CENTRAL EUROPE

Following the assumption that at the turn of the last century the distribution area of the otter covered the whole of Europe, the map (Fig. 4) of Macdonald and Mason (1992) shows the extreme reduction of the otter's distribution area in Central Europe within the last 90 years. Now we have to acknowledge a divergence of a Western and an Eastern European otter population. In Central Europe the areas are increasing where the otter has become extinct.

Following the hypothesis of Macdonald and Mason (1992), the areas where the otter has become extinct are those with the greatest production of plastics and those with the greatest risk for contamination in due to airborne pollutants (Fig. 4). But these are also the areas with the highest human population density and the most intensive landscape use.

Germany, Switzerland and Austria have a central position in Central Europe and could serve as a bridge connecting the Western and the Eastern European otter populations. However, in Switzerland the otter is extirpated and in Germany and Austria there are remaining otter occurrences only in the eastern parts (Weber, 1990; Reuther, 1992c; Gutleb, 1992).

The German otter habitat network program 'Otter 2000' in its current orientation is focused mainly on the northern and eastern parts of Germany. Its realization could

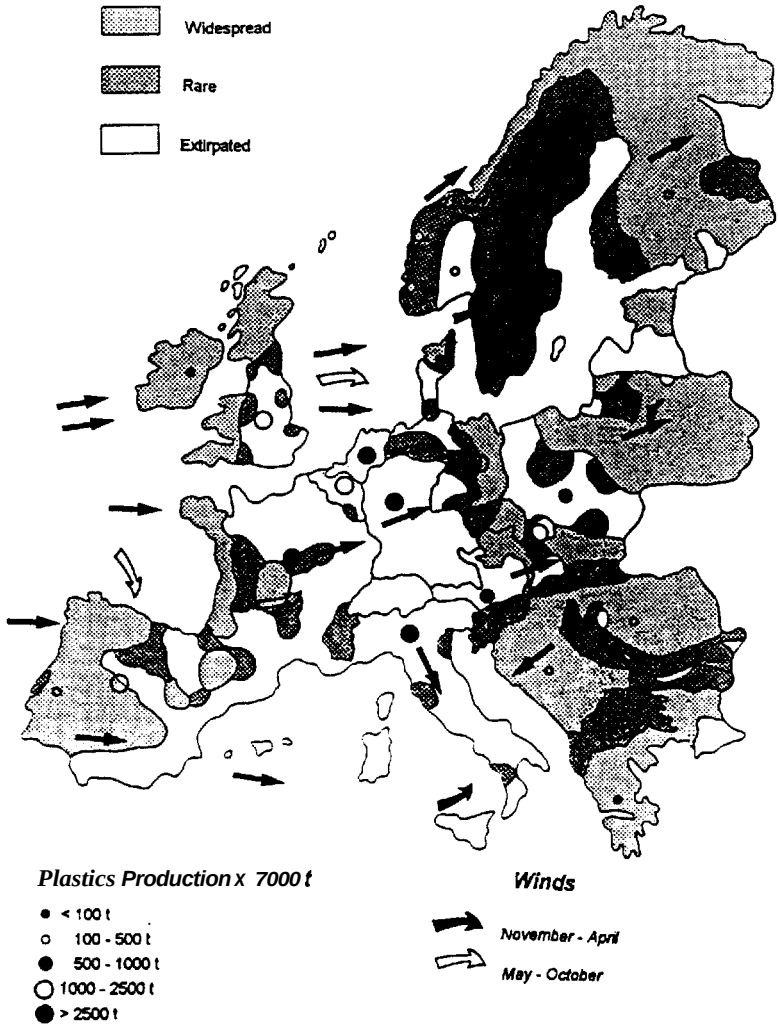


Fig. 4 – Distribution of the otter in Europe, plastics production and main wind directions (from Macdonald & Mason, 1992).

form the base for a linkage from the north--astern German otter population in Mecklenburg-Vorpommern and Schleswig-Holstein to the Danish otter population - one which is mainly restricted to the peninsula of Jutland.

Another linkage is thinkable from the thriving population in Mecklenburg-Vorpommern and Brandenburg via the isolated populations in Schleswig-Holstein, Saxony-Anhalt and Lower-Saxony to the remaining and highly endangered populations in the Netherlands, Belgium and Luxemburg. A second step of this linkage could be the establishment of a connection to the French otter population.

For a southern linkage between the Central European as well as the East European and the French and Iberian otter populations two connections are thinkable. One could follow the northern foot of the Alps and the other the regions south of the Alps as this mountain range as a whole does not offer optimal

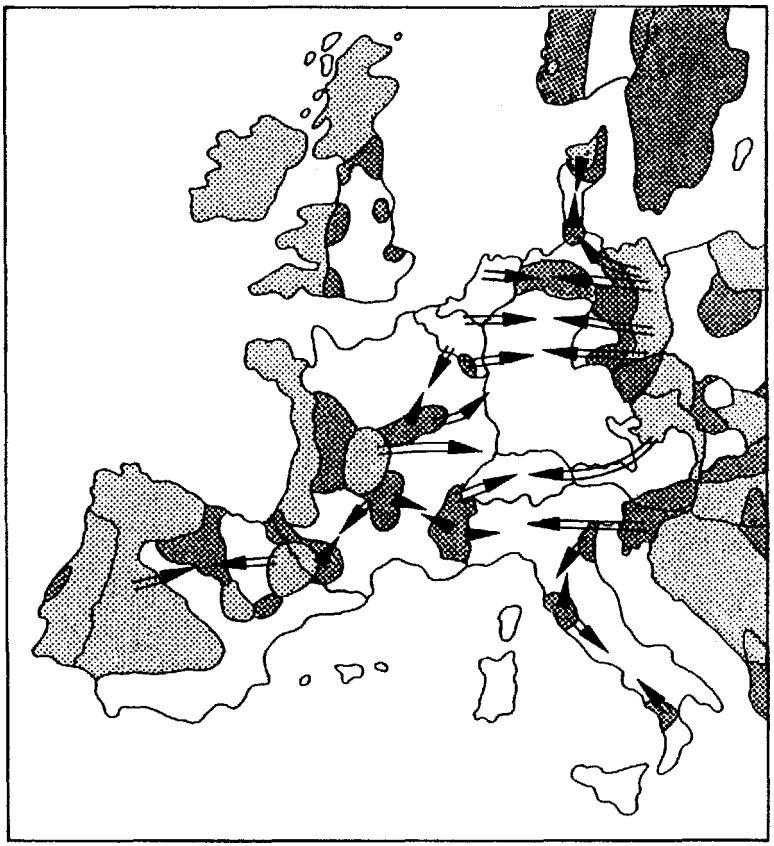

Fig. 5 – Main linkages for a European otter habitat network.

conditions to be included into such a habitat network.

The northern route could connect the otter population in the Czech Republic, North-eastern Austria and South-eastern Bavaria via the south of Germany and the north of Austria and Switzerland with those in Eastern and Central France. But this requires a stabilization of the remaining otter populations and an intensive habitat management program in the very large area between where no otters exist.

The southern route could connect the otter population in Hungary, the south-eastern parts of Austria, Slovenia and Slovakia via the fragmented occurrences in Italy and with the French and maybe the Spanish otter population. This is also a very long way and presupposes the stabilization of the scattered and sometimes isolated populations in all before-mentioned countries.

## OTTER PROTECTION NEEDS HABITAT NETWORKING

There is a good chance to develop such a European habitat network program. International conventions such as the Berne Convention of the Council of Europe or the Fauna-Flora-Habitat-Convention of the EC offer the legal background which is (or has) to be refined for national laws and initiatives.

The fundamental problem of this conception is not mainly its organization or

funding but more the aspect of time. From an ecological point of view we have to ask if the scattered Central European otter populations will survive the time which is needed to restore the habitats in those areas where the otter is already extirpated. And from the anthropocentric point of view which nowadays dominates the position of nature conservation we have to ask if the conservationists are prepared to wait with activities like re-introductions or re-stockings until all chances for a natural recolonization are used.

The answer to the firstnamed question is hard to find because of the little knowledge we have of the otter's biology and of the reasons of its decline. But we should be aware that many new facts have been detected within the last two decades and that these scientific results have been transferred into practical conservation measures in a very view cases only so far. So what we need for the very near future are parallel activities on three levels:

i) we have to continue our basic research on the otter's biology and on the reasons of its decline.

*ii)* we have to transfer the results of this research into practical conservation and restoration measures.

*iii)* and we have to study the effects of these conservation and restoration activities, especially their influence on the development of the otter's population.

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