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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Standing Committee

RESEARCH PROGRAMME ON THE EUROPEAN OTTER
IN THE TŘEBOŇ BIOSPHERE RESERVE
(CZECH REPUBLIC)

Provisional appraisal report - Part Two
Visit of 27/02 to 2/03/1996

by

René ROSOUX

Parc Naturel régional du Marais Poitevin

Val de Sèvre et Vendée

43 rue de l'Eglise - 17170 LA RONDE

France

I. FOREWORD

This appraisal is the second evaluation of the interdisciplinary research programme on the otter population in the Třeboň Biosphere Reserve.

It supplements and updates the first report of the appraisal carried out in May 1995.

This winter visit, planned in summer 1995, was made by Mr Libois, senior lecturer at the Ethology Laboratory of the Liège Zoology Institute, who specialises in the otter diet, and myself. So that the visit could take place in the best possible conditions, we examined all the status reports available on the programme. For some of the studies on specific subjects, we did not have access to any new documents written since the first appraisal report.

In that respect, our evaluation remains incomplete, because we did not have, or simply could not consult, documents on all the subject studies and sub-projects.

In substance, the general remarks and the conclusions of the first report, submitted in November 1995, remain relevant. However, certain subject studies considered more important, in line with the original protocol, will be analysed in detail.

These are, in particular :

- the use of habitats by otters and the behavioural study of otters in the wild;
- the otter diet in relation to the trophic potential of habitats and, as a corollary, the impact of otter predation on fish biocenosis.

II. STUDIES IN PROGRESS AND SUGGESTIONS ON RESEARCH METHODS AND PROCESSING OF RESULTS

1 - Use of habitats by otters and behavioural study of otters in the wild

This subject covers three sub-projects (points 1, 2 and 3) of the original protocol.

The first sub-project, on the use of habitats and a quantitative estimate of the otter population in the Třeboň reserve, particularly needed snow so that tracks and trails could be identified. Fortunately, the site was covered with snow in early 1996 and the research team was able to make several surveys in the selected habitats.

We have received partial results from Mr L. Zimek but we have not yet seen a detailed report or maps on habitat use. This approach, although very limited in time, is nevertheless interesting as regards both the spatio-temporal use of vital areas and, in the field of intraspecific relations, this type of environment where the species seems to be more gregarious than in other regions.

We urge the authors to be especially careful with estimates of otter population density, given the random nature of the method used (see 1995 appraisal report).

- Study on habitat use by the otter in the central core of the site

For this sub-project, the research team managed to capture four otters but only one could be used for telemetric observation, over an 18-day period.

We received by mail on 7 April 1996 a status report on research activities for this study.

It will be recalled that this study began in summer 1994 and demanded a considerable investment of energy by the team responsible for the programme.

It should also be mentioned that in ethological studies using telemetric tracking, there are many problems involved in capturing, anaesthetising, fitting with transmitters and monitoring otters, all the more so in regions with a great many human activities and uses connected with the wetlands.

In view of the timetable and the importance of this programme in the general project, more otters should be captured and an attempt should be made to monitor at least one individual for several months.

In any case, at the very least, the information collected on the first tagged otter should be exploited, with emphasis on the following :

- analysis of nycthemeral cycle (phases of rest and activity over a 24-hour period) and analysis of activities;
- analysis of movements and areas used ,to define spatio-temporal use of vital territory (over an 18-day period);
- description of habitats and dens used (based on eco-ethological typology);
- recording of any signs of contact with other otters.

The activity report we received, although descriptive, seems satisfactory but the data needs to be analysed and the results presented in the form of maps, graphs, diagrams and tables. These initial results seem interesting but are largely insufficient.

In view of the cost of and investment put into this kind of study, we suggest that if funds permit, the team should continue its efforts and ensure a maximum return on equipment. Continuous work over a period of at least 2 or 3 months is necessary in order to envisage the computer processing of data and hope for a significant outcome.

Sub-project no.3 on the observation of otters in the wild is also interesting, for two reasons in particular:

- in this region, otters are not too shy and can be observed at dawn and dusk (the research team even has optical equipment for night-time observation);
- in a social sense, otters in this sector appear to have a rather gregarious lifestyle, at least at certain times of the year, whereas in most parts of Europe they lead individual lives (except for coastal populations).

Although these three sub-projects use three different types of methodology, ideally they should be dealt with in the same report under clearly distinct chapters, preferably with a combined conclusion.

2 - The otter diet in relation to the trophic potential of habitats and the impact of otter predation on fish biocenosis

The documents and reports submitted relating to studies on the otter diet and its effect on fish populations are interesting, particularly as they seem to confirm the dietary opportunism of the otter and the fact that carp becomes a key component of the diet when there is little food available.

Research in this area conducted so far at Třeboň is crucial in that it is the only research capable of ascertaining the real extent of damage to commercial fish stocks, a very sensitive point in relations between the otter and fish farmers, and therefore a central issue for the protection of the species in the region.

This work must be continued and even stepped up. It should aim to arrive at more exact estimates and a more synoptic view of the problem. In this respect, there should be better coordination among the various studies in progress (Roche, Kucherova, Krizova, Vyslouzilova) and it might be a good idea to supplement the sampling plans.

The trophic situations in Třeboň are very complex and it is probably illusory to hope to find very distinctive situations, given :

- the geographical imbrication of the rivers, canals and many ponds, all managed in different ways, and
- the movements of the otters between these different ecological entities.

We believe there is an approach to the problem that takes account of that complexity and that will not require much additional effort.

Technically, the studies conducted so far have lacked precision, and this too can be rectified without undue effort. It will be necessary to :

1. Respect complex situations

This will require a non-targeted spraint sampling plan on specific sites. Given that spraints have been collected on the basis of a well-defined plan from specific locations, it would be a shame not to continue and complete the study. However, spraints could also be collected from additional sites (at least 20) albeit less frequently (once each season for one year, rather than once every two months for two years). The locations would be selected in the Biosphere Reserve so as to cover a wide range of ecological conditions or conditions imposed by fish farming. Each collection site would be characterised by the content of collected spraints and the environmental conditions. The results could be processed by multivariate data analysis (PCA or CFA).

2. Ensure greater accuracy

One of the aims of the Třeboň otter project, undoubtedly one of its main aims, is to determine the impact of this predator on commercial fish stocks. The results of electric fishing and data available on the stocking of ponds are extremely valuable for the study of this problem, even if it is impossible to obtain exact information on fish populations given the number and size of the ponds. It is hardly possible to improve on what has already been done on this subject in the region, without spending considerable sums.

However, where the otter's diet is concerned, it is possible to improve on the estimates made to date.

A. The chosen means of expressing results is the relative frequency of occurrence (RFO) of a type of prey in the spraints. This is often the only means possible of expressing results for medium-sized carnivores, but it has two major drawbacks :

- it overestimates, often largely, the importance of big prey which leave their remains in many spraints. This is especially so when the presence of scales in spraints is used to count an occurrence;
- it systematically underestimates the importance of small prey, which leave identifiable remains in very few spraints. Also, it is not unusual to find the remains of several individuals of the same species in a single spraint. In such cases, the RFO method counts only one occurrence of that species, which is a further source of underestimation.

B. The method used to estimate the mass of fish eaten is also very imprecise. It uses a calculation based on the relationship between fish size and the radius length of their scales, always taken from the same place to ensure lines of regression. When a scale is found in a spraint, it is impossible to determine from which part of the fish it comes. The scales of a fish are not all the same size, far from it! The use of these calculations therefore leads to serious errors in estimating biomass.

To avoid these problems, it is essential not only to count the number of occurrences but also to determine the quantity of different prey (by counting individuals).

Compared with other carnivores, the otter has the advantage of having a very fast digestion. The bones of its prey are barely damaged by gastric secretions and can easily be found in the spraints. In addition to scales and vertebra, specific skeletal parts can also be found (mainly parts of the head); there will be either one or two (left and right) such parts per fish, making an accurate count of the number of fish eaten a straightforward process. This technique has proved effective for small and medium-sized fish (up to approximately 25cm; 50cm for eels). For bigger fish, whose heads the otters do not eat, the technique using vertebra or scales remains indispensable.

As there is a high degree of correlation between the dimensions (length, diameter, etc) of these head bones and fish length, this technique is a much more accurate way of estimating the mass consumed. It is also possible to use much more accurate histograms of the frequency distribution of the size categories of fish consumed, which can easily be compared with the results obtained during pond clearance or electric fishing.

We discussed these points with K. Roche and sent him a copy of our identification key for fish head parts, where he will find the linear correlation equations for determining the size of the fish consumed.

As we mentioned in the first report and having received the approval of Mr K. Roche, we propose that, as for the ethological studies, sub-projects 4, 5 and 6 should be grouped.

The persons in charge of the subject studies could compare their results, consider parallel processing of data and draw up joint conclusions.

III. CONCLUSION

The interdisciplinary otter research programme conducted in the Třeboň Biosphere Reserve remains vital for the understanding and dynamic protection of the species in the Czech Republic.

According to local scientists, the reports of researchers from different European countries and the field surveys carried out for the appraisal, this ecological complex, despite the considerable impact of human presence, is very important for the local otter population, especially as otter distribution in the Czech Republic is far from homogenous and seems to be limited to two separate areas, relatively far from each other.

It must be recognised that the research programme is very ambitious and, although funding corresponds overall to the budget estimate, it will be difficult to achieve the stated objectives in the time planned in the Council of Europe's original schedule.

Today, the study reports show that some activities are progressing, particular those on the otter's diet, trophic potential, behaviour, the use of habitats and ecotoxicology.

However, the studies are far from completely exploited; the programme coordinator should arrange a meeting of the sub-project leaders to ensure that the subject programmes are progressing as they should and, where appropriate, to draw up initial results.

If necessary, and after consultation with the steering committee, it might be a good idea to redefine research assignments, group certain sub-projects and concentrate investments on studies deemed to be a priority.

The ethological and ecological studies on the use of habitats, social behaviour, feeding strategy and the impact on fish habitats are, in our view, the most interesting and, in any event, the most useful for a good understanding of how the local otter population functions. In the long term, the results of these studies should serve to draw up a management plan for the natural habitats and food resources of the otter.

We also feel it would be judicious to continue the ecotoxicology programme, along the lines of the studies conducted abroad, albeit without encroaching on time reserved for the other research subjects.

In any event, the overall project coordinator should organise a seminar for the purpose of bringing together all the results of research done over the last three years, to be attended by the steering committee (which, at first glance, gives little help to the research team) and, if appropriate, by the experts and promoters of the research programme.

The programme aims should be pursued in the spirit of research conducted for the protection of a species which is becoming depleted, included in Appendix II of the Bern Convention, and which is a veritable biological indicator of the richness and diversity of aquatic habitats.

René ROSOUX
Roland LIBOIS
13 May 1996