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Georg RAST, Petr OBRDLIK, Piotr NIEZNANSKi, Detlef Günther-DIRINGER

ODER-FLOODPLAIN-ATLAS: A BASIC TOOL FOR FLOOD PROTECTION, NATURE CONSERVATION AND REGIONAL PLANNING

ATLAS ODRZAŃSKICH TARASÓW ZALEWOWYCH: PODSTAWOWE NARZĘDZIE OCHRONY PRZECIWPOWODZIOWEJ, OCHRONY PRZYRODY I PLANOWANIA REGIONALNEGO

WWF-Auen-Institut, Germany

At the beginning of the 90-ties of the 20th century, the Oder River region at the geographical center of Europe is regaining its political importance. The Oder valley is also an important economical, communications and environmental corridor at both the north-south and east-west directions. This relates closely to a new development plan for navigability, including a connecting channel with the Danube River. However, after the great flood of summer 1997, key attention is concentrated on flood protection for the future.

Environmental protection views these plans as a threat to the most valuable natural resources of the Oder River. The materials, which are to serve as a basis for the development decisions, show major shortage. Data about the Oder River valley subject to these plans are often not compatible between the neighboring countries as well as incomplete.

For future discussions regarding the development of the Oder valley and in order to facilitate easier access to a publicly available environmental database, a special overflow/reservoir area atlas of the Oder River has been prepared and presented in order to:

- record, present and evaluate the current ecological status of the flowing waters – overflow areas along the entire Oder valley, with the aid of selected uniform biotopes and bioindicators.
- determine the general flood protection conditions in relation to the possible recovery of retention areas, based on the combined ecological/ water management data and area usage information

The atlas covers the overflow areas of the Oder valley including the Oder backwaters at the tributaries' mouth sections. The area and range of the Oder overflow areas corresponds to the natural flood areas or the natural path of Oder in the event of flood. Considering that the majority of these areas are protected with embankments, their extent had to be determined based on various data, which did not allow for exact estimation.

The evaluated areas span along the Oder River starting at the Oder city (Ostravskỳ kraj, Czech Oder River km 81) at the Czech Republic, and ends at the South end of the Szczecin city at Poland. The length of this river section is 785 km (of the 855 km total including the mouth at the Szczecin bay), the respective length of the valley is about 650 km. The entire evaluated area is about 3600 km^2.

Considering that data in a form of just maps would be somewhat ambiguous and unclear, the Atlas also includes a fairly long commentary.

The commentary also presents a short historical outline of developments of the overflow areas essential to the ecological system as well as aspects related to ecology and protection of the natural scenery of this valley. This will provide a reader with comprehensive understanding of the ecology of the overflow areas.

Considering the relatively new approach as well as the difficult initial requirements, at the least because of the three language nature of the Atlas, the next section includes methodical information, stating definitions, a selection of biotope data as well as a description of the cartographic data.

Of all biotopes 12 have been selected as authoritative. Additionally, the Atlas includes data about 10 plant-, 8 fish- and 14 bird indicators.

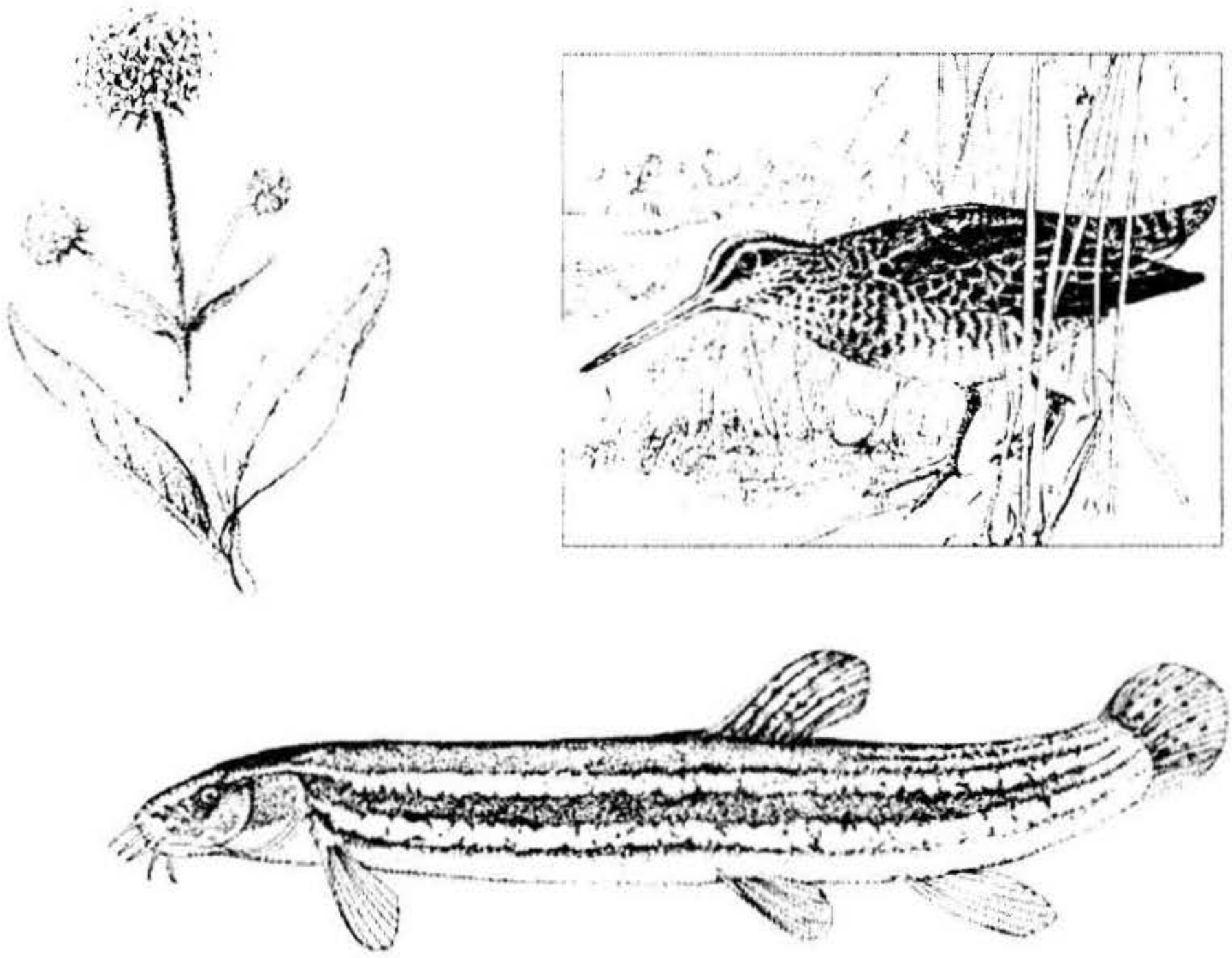

Fig. 1 *Examples of the bioindicators (Succisa pratensis, Gallinago gallinago, Misgurnus fossilis)*

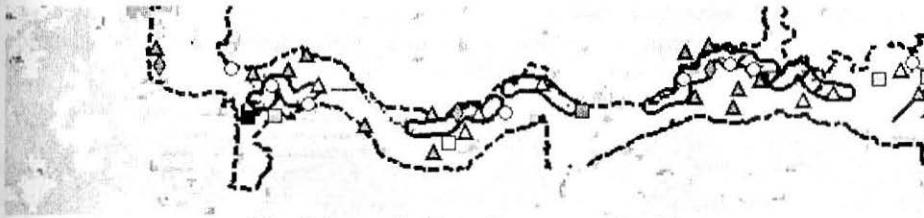

Fig. 2 *Part of a bioindicatormap (birds)*

A 1: 25.000 topographic map has provided the basic data. All of the data has been stored in a Geographical Information System (GIS). The various environment types have been presented using a 1 : 50 000 scale, whilst the bioindicators us a 1 : 500 000 scale. In order to assure clarity, the smallest biotope areas taken into consideration are 10 ha. As a supplement to the biological data, the Atlas also includes basic water management information (embankments, river kilometer marks, dams, weirs, etc.), as well as data pertaining to the protected areas, which has been obtained in part in digital form from various agencies or elaborated by the WWF- Auen- Institute.

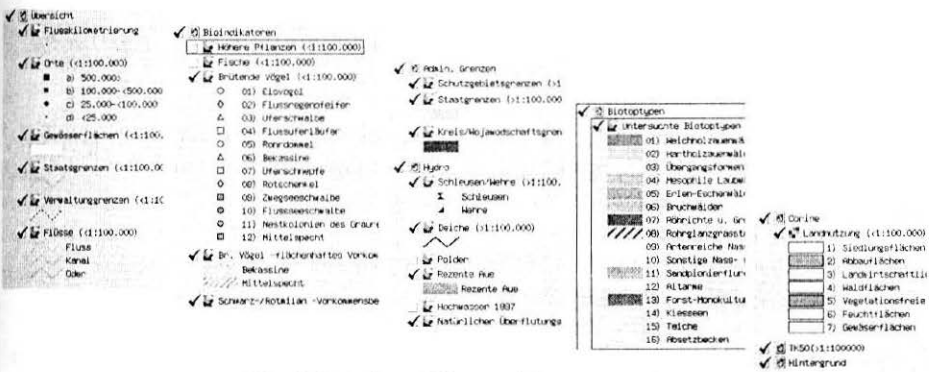

Fig. 3 *Display of the used layer-structure*

Besides the maps, the commentary also describes the actual condition of the natural overflow areas subject to independent evaluation. As for the flora and fauna, the description of the actual conditions is limited to just a few selected biotopes and bioindicators. The Atlas of course cannot serve as a complete reference inventory of all species or an indication of existence of endangered species from the red list. It cannot also meet the expectations for preparing full biotope maps (according to the environmental protection laws of the German land union) of the discussed regions.

The assessment includes as first only areas of selected biotopes and areas of woodland biotopes having a share in the selected overflow area.

The next layer contains important flood information, presented on a separate foil, matched in each case with a topographical base and biotope data. This includes:

- location of flood protection embankments,

- regularly flooded areas today,
- areas flooded during the flood of summer 1997, and existing and planned floodwater retention areas (referred herein as polders).

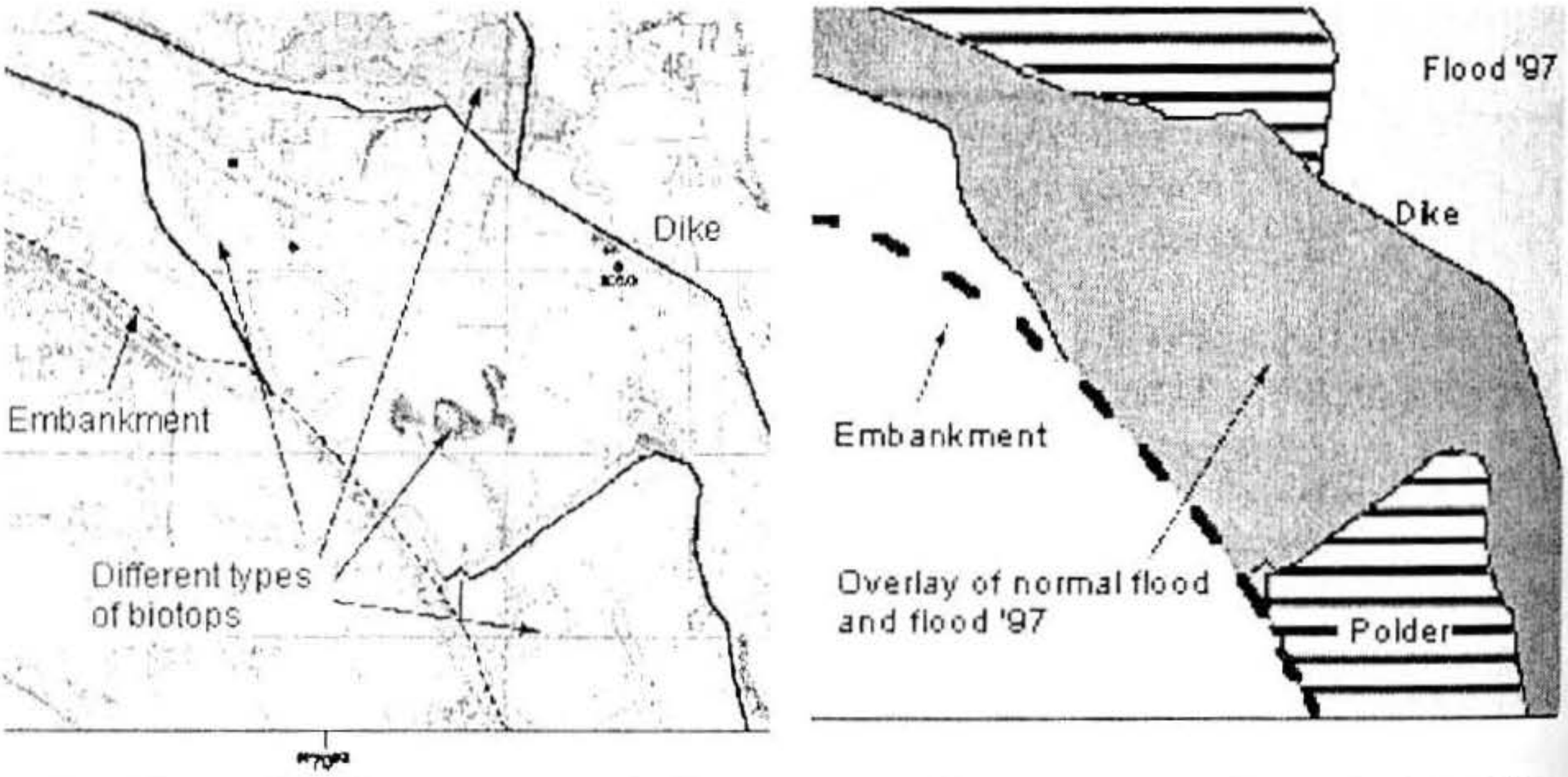

Fig. 4 *Part of the biotopemap with the corresponding transparent layer (right) of the hydrological information*

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- existing and planned floodwater retention areas (referred herein as polders).

All of the area data matches the GIS results, which have been presented again in Table 3. It should be noted that in reference to the flood of summer 1997, a total of 2050 km^2 of the evaluated region have been flooded, which is twice the area of the current overflow areas (around 970 km^2).

Using the above as basis, further analysis and result application hints have been presented (limited to information regarding environment protection, flood protection, land usage and river bed regulation and melioration). The following should be especially stressed:

- lack of an appropriate protection area scheme for the Oder overflow areas. Taking this into account, the homestead directive is considered vital.
- of all the woodlands (500 km2) of the evaluated region, almost 50% (235 km2) are classified as valuable in light of environmental protection and the selected environment types; over 2/3 of these valuable woodlands (147 km2) are within regularly flooded areas today. The Oder overflow areas are thus also the largest valuable riparian forest areas, at least in comparison to Rhine, Elbe or Vistula.
- also the valuable meadowland area is very large having 383 km2 (at least 50% of all green areas at the evaluated region).

- considering the ongoing developments, the slower flow sections of Oder still serve as a home for various endangered bioindicator species, and contribute to interweaving the delicate fauna and flora elements.

The following guidelines can be given for town and country planning and area development:

considering flood protection of the entire region in view of the flood of summer 1997, the overflow areas require urgent protection.

- considering the large and very large biotope areas without an assigned appropriate protection status, as well as the future changes in the farming and woodland management, it is recommended to urgently develop a common strategy for protected areas in the Oder Valley.
- some of the Oder valley sections require for the functional recovery of the ecological bio-corridor.
- the great river control investment foreseen in the „ Program for Oder 2006", which includes building of stages of fall and control of rivers, is a major threat to the natural environment in the overflow areas of the Oder valley, which is of global value.
- the combination of the planned expansion of retention areas using additional overflow areas with the aided creation of typical riparian habitats will be beneficial for both water management as well as natural environment protection.

The Atlas herein can serve as a basis for elaborating future area development plans for the entire Oder river basin.