EPCN

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Value Ponds in the 21st Century

Eyes of the Landscape

PROGRAMME and ABSTRACTS

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Field cultivation in pond rich arable landscapes and implications for amphibians

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Pond rich arable landscapes are often used by intensive agriculture. On the other hand, these regions are habitat of many species of amphibians. Due to their biphasic behaviour, individuals use aquatic as well as terrestrial habitats. Very often extensive migrations between both types of habitat occur. Under conditions of low structured and intensively used arable landscapes temporal and spatial coincidences of management procedures and amphibians are unavoidable. Depending on damaging rates population declining effects can be caused.

From 2006 to 2008 we conducted a research project on these coincidences. Based on extensive field investigations, we identified major conflicts between agriculture and amphibian species, and we concluded basic rules for a sound land management. Mineral fertilizers in form of granules widely spread on the soil surface are considered serious. Within 5 days, up to 50 % of the population of single amphibian species had contacts with the granules at the soil. Depending on soil moisture and rate of dissolution of fertilizers, individuals are affected more or less heavily. Soil cultivation by plough is a second major threat for amphibians. Some wet spots within crop fields as well as the short and dense vegetation cover of winter rape (during stubble period after harvesting) attract amphibians due to microclimate and food supply. If these areas of arable fields are ploughed the animals are buried deeply into the soil without any chance to escape. Thus these spots act as traps for animals, and a massive loss of amphibians can be estimated.

Injection technology of mineral fertilizer into the soil is one protection measure to avoid contact of amphibians with harmful fertilizers. Substitute ploughing for reduced soil cultivation without plough is a second recommendation for farming. The well known buffer strips along water bodies are of highest importance for amphibians and thus strictly recommended to agriculture.