

Applied Research Partnerships with Developing and Transition Countries

Swiss Universities of Applied Sciences and Universities of Teacher Education

Project title

Promotion of small waterbodies networks in the biodiversity hotspot Cerrado (Brazil), for their services to rural activities and to biodiversity

Thematic focus

Water resource, biodiversity, ecosystem services

Year

2012

Project location

Cerrado (State of Goiás), Brazil



Swiss Institution

hepia, University of Applied Sciences Western Switzerland
Address: 150 route de Presinge, CH- 1254 Jussy, Switzerland
(Dr Beat Oertli, Prof HES)

Partner Institution

Universidade Federal de Goiás (UFG), Instituto de Ciências Biológicas, Departamento de Ecologia
(Dr Paulo de Marco Junior)

Description

Small waterbodies are presently still widespread and numerous in the Brazilian Cerrado, even if under pressure of a growing agriculture. Ponds and small lakes are mostly artificial as a result of traditional rural activities (animal farming, small farm holdings, fishing). Each farm has its own network composed of several ponds. They provide a crucial water resource to rural activities. Ponds are undoubtedly also critical for maintaining the regional aquatic and terrestrial biodiversity in this world biodiversity hotspot.

Objectives

- Identify the socio-economic values of small waterbodies in the Cerrado.
- Identify the ecological value of these waterbodies considering their biodiversity and the ecological services they provide.
- Identify the threats on the small waterbodies and their provided services.
- Propose a strategy for promotion of small waterbodies networks, targeted to local (farmers, private owners, schools) and regional (e.g. state water agency, municipalities) stakeholders.

Development relevance

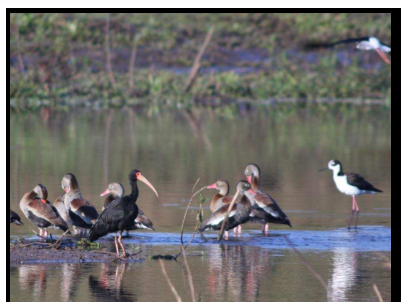
Ponds are used by rural activities and by animals (cattle, horses, wildlife). They satisfy also domestic use and irrigation of small production of vegetables and fruits. They may also be used for fish production consumed by farmers, providing also an additional income, or to a lower extend for angling.

The outcomes of the applied project have aims beneficial for the environment and the society:

- Conservation of biodiversity linked to small waterbodies in the Brazilian Cerrado (one of the 34 world biodiversity hotspot),
- Promote the ecosystems services (of small waterbodies) to the rural communities.



Ponds provide a crucial water resource, for example for cattle



Ponds host also an exceptional biodiversity as birds, but also dragonflies, amphibians, aquatic plants.

KFH

Rektorenkonferenz der Fachhochschulen der Schweiz
Conférence des Recteurs des Hautes Ecoles Spécialisées Suisses
Conferenza dei Rettori delle Scuole Universitarie Professionali Svizzere
Rectors' Conference of the Swiss Universities of Applied Sciences



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development
and Cooperation SDC

Main features of the project

Three important components of the system will be investigated:

- the pond as a structural component of the landscape,
- the biodiversity which depends on the pond and on its surrounding environment
- the socioeconomic component, which includes mostly farmers and its employees, but also others which may use pond in leisure activities.

Our main strategy is firstly to determine (i) the importance of ponds to the biodiversity, (ii) the importance of ponds for the economic activities and (iii) the kind of services, especially those directly involving the biodiversity, which are used by the socio-economic component in the ponds.

Based on that information we will be able to determine the perceived economic value of those ponds and, consequently, the perceived (economic and non-economic) value of the biodiversity in this system. We assume that any successful conservation strategy must deal with these perceived socio-economic values in order to produce sustainable effects. Our primary strategy at this time, is to highlight the current and potential values of the ponds and their biodiversity in these landscapes, most of them probably unknown by many of the possible stakeholders in this system.

The expected results are:

1. Identification of the socio-economic values of small waterbodies in the Brazilian Cerrado: (i) Socio-economic typology of small waterbodies , (ii) Social services provided by the waterbodies, with quantification of their respective importance.
2. Identification of the ecological value of these waterbodies considering their biodiversity and the ecological services they provide: (i) Biotypology of small waterbodies, (ii) Biodiversity associated with the different types of waterbodies.
3. Identification of the threats on the ponds and their provided services: (i) Description of the evolution of the landscape, (ii) Preliminary prediction of the future landscape. (iii) List of conditions leading to pond degradation and to emerging negative values.
4. Propose a strategy for promotion of pond networks, targeted to local and regional stakeholders: (i) Communication tools (for farmers, local and regional managers, schools), (ii) Implementation of educational courses designed for teachers and professionals, (iii) Support for the technical management of ponds (creation of new ponds, restoration of degraded ponds, etc.)



Each farmer has built his own pond (or network of ponds) and manages it for the various services it provides.



Biodiversity assessment in a pond near Goiânia. This investigation was conducted by UFG and UAS (hepia) at the start of the program (March 2012) for standardisation of the sampling methods.