

**Aquatic habitats of the Upper Paraguay River-Floodplain-System and parts of the Pantanal (Brazil)**

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**Abstract**

The Paraguay-Paraná river system forms an important ecological corridor across South America. Here, we report the first description of the fluvial geomorphology and the physical structure of aquatic habitats along the main channel a 200-km long section of the Upper Paraguay River between Cáceres city and Taiamã island (Mato Grosso, Brazil). Four functional sets were identified: (a) main channel and anabranches, (b) floodplain channel, (c) floodplain lake, and (d) aquatic-terrestrial-transition zone. The diversity of functional units was higher in the meandering and transitional sectors (Brillouin index 1.957 and 2.003) than in the straight and fluviolacustrine sectors (Brillouin index 1.562 and 1.577, respectively). In the transversal dimension, the relatively homogeneous habitats of the main channel contrasted with the heterogeneous floodplain habitats. We attribute this morphological diversity to changes in the hydrological connectivity, caused e.g. by drifting large macrophyte mats or by multi-year periods of higher and lower inundation phases.

**Key words:** Physical habitat, wetland, floodplain, large river, Pantanal, conservation

**Expansion of the invasive bivalve mollusk *Dreissena bugensis* (quagga mussel) in the Don and Volga River Basins:  
Revisions based on archived specimens**

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**Abstract**

Archived specimens of *Dreissena*, collected as part of a long-term biomonitoring effort in the lower Don and Volga River systems and dating back to 1979, were re-examined. Originally identified as *Dreissena polymorpha* or variants thereof, some of the specimens were identified to be *Dreissena bugensis*. Based on this new evidence, the invasion history of *D. bugensis* in these two river systems was re-evaluated. The finding of *D. bugensis* in the lower Volga River in the early 1980s rather than in the late 1980s/early 1990s indicates that its spread was much slower than earlier believed. Apparently, widespread dispersal was greatly facilitated by the completion of the reservoir system in the Volga River in the late 1980s which created conditions that were more conducive to this species. Upstream dispersal in both the Don and Volga Rivers was likely a function of human-mediated transport.

**Key words:** Volga-Don canal; nonindigenous species; biological invasions; aquatic invaders; Ponto-Caspian region

**The fish fauna in the Montedoglio reservoir (Tuscany, Italy) five years after its creation.**

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**Abstract**

To assess the current ecosystem status of Montedoglio Reservoir and surrounding waters, the fish fauna has been analysed in 1993, about five years after the first experimental impoundment. Total number of 898 fishes of fifteen species have been collected of the total biomass of 117 kg. The most abundant species were pumpkinseed (*Lepomis gibbosus*), goldfish (*Carassius auratus* L.), bleak (*Alburnus alburnus alborella* De Fil.), largemouth bass (*Micropterus salmoides* Lac.), rudd (*Scardinius erythrophthalmus* L.), and chub (*Leuciscus cephalus* L.), while the three: Carp (*Cyprinus carpio* L.), goldfish, and largemouth bass accounted for the most biomass. Of the most common species, carp, chub, largemouth bass and rudd provided insight into population structure and growth. In 1992, a year of heavy spring rains and a rapid water exchange, a year-class abundance across all species was particularly poor. The results of water levels and outflows between 1992-1994 showed a high degree of instability of the system. It appeared to favour fish species depositing their eggs inshore (i.e. chub) and predators (i.e. largemouth bass), while species with life stages feeding on plankton or benthos were not favoured.

**Key words:** fish populations, reservoir, impoundment, growth, management, river Tiber.

## **Enzymatic activity of yeast-like fungi isolated from different types of waters**

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### **Abstract**

The goal of the study was to compare enzymatic activities of *Candida albicans*, *Candida guilliermondii* and *Rhodotorula glutinis* collected from different aquatic ecosystems of Olsztyn. The highest enzymatic activity was observed in isolates obtained from astatic reservoirs (isolates of *Candida albicans* and *Rhodotorula glutinis* produced the complete set of 19 hydrolases tested). A slightly lower enzymatic activity was observed in isolates from a lake and the lowest in those from a river. The widest enzymatic spectrum as well as high and very high enzymatic activity (20-45 nmols) were found in isolates of *Rhodotorula glutinis* originating from the lake and astatic reservoirs and in *Candida guilliermondii* isolates from the lake. Both species are reported by hydrologists as important in the processes of waters self-purification.

**Key words:** Enzymatic activity, yeast-like fungi, aquatic ecosystems

**Seasonal variability of aquatic chemistry and phytoplankton communities  
in a shallow floodplain lake of the Daugava River, Latvia**

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**Abstract**

Seasonal changes of water level, aquatic chemistry and phytoplankton composition of the Daugava's floodplain lake Grīvas was studied in 1999. Significant influence of the Daugava's floods on the lake's water level was found. Filling, drainage and isolation phases in hydrological regime of the lake were distinguished. The Daugava's floodwater influx in April caused considerable water level rising and dilution of the lake's water column. Small diatoms and greens formed the spring maximum at the highest water level. After the floods, concentration of total diluted solids and nutrients increased, typical planktonic algae species were replaced by epiphytic and benthic species and rich macrophyte vegetation developed as in other shallow lakes.

**Key words:** floodplain lake; hydrology; nutrients; phytoplankton development

**Efficiency of purification of wastewater by a treatment with subsurface and surface flows**

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**Abstract**

The removal of the nutrients: different forms of nitrogen, phosphorus and carbon, by two constructed wetland systems with reed (*Phragmites australis*) was investigated between the spring 2000 and the summer 2001. Two systems: reed pond with surface flow and sand reed bed with subsurface flow, have been compared

Both the systems show high performance wastewater purification during whole vegetation season. Higher removal of nitrogen forms and organic carbon was observed in the reed bed with subsurface flows. This can be caused by higher biomass and density of plants than that, in reed pond with surface flow. The content of phosphorus in both systems significantly increased.

**Key words:** constructed wetlands, domestic wastewater treatment, nitrogen, phosphorus, carbon, reed.

**Participation of birds in the circulation of pathogenic fungi descend from water environments: a case study of two species of Charadriiformes birds**

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**Abstract**

Mycological studies covered two species of Charadriiformes birds: Dunlin - *Calidris alpina* (41 individuals) and Ringed plover - *Charadrius hiaticula* (8 individuals). Swabs were collected from their beaks cavity and cloacae. Fungi (38 strains) were isolated from 29 birds (59.18% of the investigated). The most abundant were the yeast-like fungi (*Candida*, *Cryptococcus*, *Rhodotorula*), substantially dominated by *Candida albicans*, which constituted 42.11% of all the fungi obtained. The fungi of the *Aspergillus* and *Cryptococcus* genera were found considerably less frequently (23.68% and 15.79%, respectively). The fungi isolated from beaks (19 birds) can be acknowledged as commensals (although parasitism cannot be excluded), whereas the fungi from cloacae (5 birds) may indicate mycosis of the gastrointestinal tract. As all of these fungi are potentially pathogenic to humans and animals, the examined birds were found to be an important link in the epidemiological chain of mycoses, associated with water reservoirs or infected birds.

**Key words:** *Calidris alpina*, *Charadrius hiaticula*, water environments, pathogenic fungi, mycoses