Book of Abstracts

LIMNOLOGIA2018

XIX Conference of the Iberian Association of Limnology
Inland waters and XXI century challenges: from scientific knowledge to environmental management
24 – 29 June 2018, Coimbra, Portugal

Welcome to LIMNOLOGIA 2018

Inland freshwaters represent only a minor fraction of total waters of our planet; however they comprise a large variety of systems, including lakes, lagoons, ground waters, streams and rivers that greatly differ in size, and water chemistry. Inland waters also support a strikingly and disproportionately high level of the world's biodiversity.

Historically, inland waters are linked to the rise of ancient civilizations. Many ancient civilizations grew and flourished along large rivers or other large sources of freshwaters as centers of intensive anthropogenic activities. Some civilizations collapsed due to environmental changes resulting in water scarcity. Some of the worst recent environmental disasters are related to bad water management (e.g. the collapse of the Aral sea). The misuse of water resources is an ongoing process, with large rivers that run dry (e.g. Colorado, Indus, Yellow) and dubious hydrological plans threatening biodiversity and marginalized human societies (e.g. inner Niger Delta). Unsafe water kills more people than all wars; it is estimated that every year 1.7 million people die in the world because of water related problems.

Inland waters provide ecosystem services to humans, including clean water for consumption, irrigation and hydropower, food, cultural and spiritual values. However, humanity's growing water needs, global climatic change, nutrients and pollutants run-off are exacerbating challenges of water scarcity and quality, which will in turn, increase the pressure we place on our inland waters.

These pressures challenge human societies to better understand rivers to properly manage freshwater resources. The Iberian Limnological Association meeting, to be held in Coimbra in June 2018, will be an interactive platform for scientists, policy makers, environmental managers, industry and all those interested in inland waters to discuss and share their ideas and expertise. We welcome all to the 2018 AIL meeting.

PROAQUA MARE U C FCTUC FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE DE COIMBRA imar AIL

CÂMARA MUNICIPAL COIMBRA MUSEU DA CIÊNCIA UNIVERSIDADE DE COIMBRA UNICAM Sistemas Analíticos, Lda Filsat PRAXIS Pure malt beer

Venue

University of Coimbra, Polo II
Rua Silvio Lima
3030-790 COIMBRA

40°11’10.98”N 8°24’41.57”W

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Response of Fish Communities to Hydropeaking along a Morphological Gradient

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High-head hydropower plants are an important renewable energy source as they allow a quick response to short-term changes in the electricity market. However, their operation mode – the release of pulsed flow – affects downstream river ecosystems and has been identified as a critical threat to fish populations. The majority of hydropeaking studies so far restricted their investigations to single river case studies or experimental flumes. Here we utilized an extensive Austrian-wide database containing biological (fish population surveys), hydrological (natural flow and hydropeaking) and morphological data (variability screening). We analyzed the response of fish communities to hydropeaking (magnitude, frequency, timing, ramping rate) in Austrian rivers. Therefore, we dissected the multimetric Fish Index Austria into its associated metrics (e.g., guilds, population structure) and analyzed juvenile fish metrics to quantify river sites of varying degrees of pulsed flow along a morphological gradient. We present initial results from the database analysis and discuss potential options to mitigate the adverse impact of pulsed flow operations on fish populations.

Efeitos de barreira comportamental seletiva com estímulos acústicos, luz e bolhas, no salmonídeo: *S. truta* e ciprinídeos: *P. duriense* e *L. Bocagei*

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Resumo: O desenvolvimento de barreiras comportamentais seletivas e adaptadas às espécies piscícolas autóctones dulçaquícolas constitui uma importante ferramenta na salvaguarda dos fluxos migratórios das espécies potamódromas ameaçadas pela regularização dos cursos de água. Estes sistemas comportamentais podem fornecer condições específicas de orientação dos peixes para zonas de desova ou habitats de substituição, ou exercer efeito repulsivo no seu afastamento das armadilhas hidráulicas impostas por aproveitamentos hidroelétricos. A resposta das espécies dulçaquícolas selecionadas ao estímulo acústico (Sweep-up 2000Hz), estímulos luminosos (Strobe Light – 600 flashes/minuto) e cortina de bolhas, foram testadas em condições de laboratório, quer de forma isolada, quer de forma combinada: acústica/luz/bolhas. Apesar da diferenciação de sensibilidades registadas entre a espécie salmonícola testada: *Salmo trutta* e as espécies ciprinícolas testadas: *Pseudochondrostoma duriense* e *Luciobarbus bocagei*, em relação aos ensaios isolados com estímulos acústicos (maior sensibilidade repulsiva nas espécies ciprinícolas), assim como em relação aos ensaios isolados com estímulos luminosos (maior sensibilidade repulsiva na espécie salmonícola), quando utilizados de forma combinada apresentam sensibilidades repulsivas semelhantes e elevadas. A cortina de bolhas de forma isolada evidenciou sensibilidade repulsiva muito baixa para todas as espécies testadas. Os resultados demonstram o elevado potencial das barreiras comportamentais seletivas para peixes com base em sistemas combinados acústica/luz/bolhas, principalmente em cursos de água Salmo – ciprinícolas.