
Editorial

Alfredo Salibián

Applied Ecophysiology Program,
Basic Sciences Department (PRODEA-INEDES),
National University of Luján,
P.O. Box 221 (B6700ZBA)-Luján, Argentina;
Buenos Aires Province Scientific Research Commission (CIC),
Calle 526, entre 10 y 11 (1900)-La Plata, Argentina
Email: salibian@mail.unlu.edu.ar

Biographical notes: Alfredo Salibián graduated as a pharmacist and biochemist from the University of Buenos Aires, and commenced his research as a comparative animal physiologist. For his PhD in Biological Sciences (University of Chile) he investigated the mechanisms of ion transport through the *in vivo* skin of South American anurans. His long-standing scientific interest and active involvement has focused on aquatic ecotoxicology, with particular emphasis on toxicity monitoring methods of surface waters and sediments of peri-urban water bodies and on biochemical, morphological and behavioural biomarkers of toxicity in aquatic vertebrates. At the same time he has developed intensive teaching, both at the graduate and postgraduate level; at present he is Emeritus Professor at the National University of Luján, Senior Researcher at the Buenos Aires Province Scientific Research Commission and a member of the National (Argentinean) Academy of Pharmacy and Biochemistry (Biochemical Ecotoxicology Chapter).

Since the proposal put forward by Thruhaut, exactly 40 years ago, to link toxicology to the *eco* in ecology, the subjects of ecotoxicology in general and aquatic ecotoxicology in particular have evolved into their current profile and identity, ultimately recognised by the scientific community as an interdisciplinary specialisation combining – among others – areas belonging to both biological and biochemical sciences.

Latin America has not been foreign to this integrating development of different areas of knowledge coalescing into a single body for the scientific interpretation of the impacts of anthropic activity in its ecosystems. It was thus that Scientific Associations were organised, aiming thematically at ecotoxicology, publishing their journals and summoning scientific meetings at local, regional and international level; in the light of this development in scientific activity around ecotoxicological topics, some international environmental toxicology societies have also established their branches and celebrated their meetings in our region. Ecotoxicology thus ultimately emerges on an increasingly frequent basis as a regular feature against the background of other scientific meetings, in a highly fruitful interdisciplinary exercise.

It is important to note that while all of the above were taking place, political changes were installing the economic globalisation model in the region, linked closely to the appropriation, manipulation and exploitation of natural resources by local and transnational private companies, all of which led to a variety of negative consequences, ranging from

the social to the environmental. Therefore, the apparent temporal proximity of these two events – the development and establishment of ecotoxicology and neo-liberalism in the southern cone of America – is doubtless no accident.

The articles comprising this special issue of *IJEnvH* describe, though necessarily in only a partial manner, yet on scientific bases provided by field and laboratory surveys, a variety of harmful effects of chemicals and human activities on freshwater environments.

The Andean region is the backdrop to the development of hundreds of mining exploitations, the progress of which is linked to severe ecotoxicological problems affecting both soil and water alike; the work done by Miller et al. is a well-documented descriptive survey of the impacts of one of these mining developments being carried out in Bolivia; in this case, with adverse effects expanding not only locally but also – as might be expected – beyond the frontiers of the country of origin.

The Suquia river basin, a site harbouring one of the largest human conglomerates in Argentina, second only to Buenos Aires, is an area characterised by intense industrial activity. The river where Monferrán et al. carried out their research is both the source of drinking water for the city of Cordoba and the final receptacle for complex industrial and urban waste discharges. Their paper shows the results of monitoring domestic origin dichlorobenzene in the water and sediments of this river, providing evidence of the dynamics of their transport and distribution.

Over the last few years, Argentina has expanded its agricultural and cattle-farming frontiers giving way to the cultivation of soybean, in a process involving the advance of transgenic crops, the loss of biodiversity, the spoiling of numerous native ecosystems and severe social and environmental problems linked to the intensive and sustained use of agricultural chemicals. The paper by Agostini et al. deals with the ecological consequences of these practices, in particular with the effects of two insecticides (cypermethrin and endosulphan) used in fumigating these crops, evaluating in situ their effects on the native amphibian populations, particularly during the initial phases of their development.

The concentrations of heavy metals in the continental aquatic medium in the region, predominantly in peri-urban environments, frequently reach values far above the maximums allowed for the protection of aquatic life, and therefore involve a severe sanitary and environmental risk. The papers prepared by Bilos and Ferrari (and their collaborators) show results in connection with these elements. In the first of those studies, the aim of their research was a particular population of the Asiatic Clam, a successful invasive mollusc that has colonised the de la Plata river estuary, and which is put forward as a biomonitor for heavy metal contamination. Here the authors describe the temporal dynamics of bio-accumulation of seven trace elements in this species, and show the different regulation and accumulation strategies used by the species, depending on the size of each individual.

The next paper (by Ferrari et al.) deals with the effects of sub-lethal cadmium on the epithelium structure of the gills, critical organs for homeostasis in fish, using scanning electron microscopy. These authors carried out their work under laboratory conditions, using native teleost species as test organisms, showing that the metal is responsible for tissue destructuring, which, curiously enough, may be reversible when the fish are transferred to clean media.

The results provided by scientometry are considered with particular interest by, among others, the decision-makers in the areas of science and technology, with elements and conclusions that overflow into other areas such as education or economy, or into the design of local or regional collaborative interaction strategies among research groups.

In our region this type of information is as yet incipient. This is why the contribution made by Geracitano et al. is valuable, because it presents the results of quantitative analysis for scientific production and the impacts of environmental surveys, on the basis of surveys involving toxicity biomarkers, published by Latin American researchers in that period. The authors show that, between 1999 and 2008, Brazil, Mexico, Argentina and Chile were the countries providing (in that order) the largest number of contributions.

Finally, I would like to express my appreciation to our colleagues on the Editorial Board and to others who generously accepted the tasks of scientific evaluation of the papers that make up this issue and thus contributing to improve the excellence of the texts. I would also like to include in my gratitude Dr. Marcelo E. Conti, Editor-in-Chief of the *IJEnvH*, for his constant cooperation, patience and encouragement throughout the process of preparing this special issue.