

Brazilian limnologists: “tear down this wall”

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Last year I visited State University of Maringá, Brazil. After the visit and the discussions there, editor Roger P. Mormul encouraged me to write an opinion letter to the Bulletin of the Brazilian Society of Limnology, and here is my response.

Brazilian limnology is comprehensive and versatile judged from the literature and presentations at the impressive and popular recurring Brazilian Limnology Congress. In these years, Brazilian limnology attempts to become far more international than before, with a rapidly growing publication rate in English-language journals and extensive sandwich programmes for students and researchers – benefitting not only Brazilian limnological research but international research as well as it gives us better insight into the results from this part of the world and strengthens research relationships. Brazilian limnological research shows a great future promise, there is no doubt about that. My visit in Maringá and impressions gained from, among others events, the Limnology Congress in Natal and discussions with students and young scientists there leave the impression, though, that research – with some very good exceptions – is mainly discipline oriented, even when it comes to ecological studies. Focus is directed at, for instance, phytoplankton, zooplankton or fish, but most often not simultaneously in the

same systems or, if so, often not in a coordinated manner. I attended several lectures in Natal where phytoplankton, zooplankton and fish were related to a number of physico-chemical environmental parameters (PCA, RDA etc.), whereas relevant biological variables were only rarely included. When asking phytoplankton lecturers about the importance of zooplankton or zooplankton lecturers about the importance of fish, the answer was frequently – “we are not working with this” despite the fact that the international literature is rich in examples of the importance of top-down control in lakes. In my opinion it gives little meaning to explain variations in biomass and composition of zooplankton without including fish. In Maringá, I was deeply impressed by the inclusion of multiple limnological disciplines/groups of organisms – from the smallest to the largest – in the research at one place. I believe that this is the norm at many other universities in Brazil. This is a huge strength that should guarantee top-class limnological ecosystem research. However, it was also my impression that this potential for holistic-oriented research – with good exceptions, of course – is not fully exploited because of lack of cooperation between the discipline-oriented labs. This led me to quote the US ex-president Ronald Reagan’s famous words – “Tear down this wall”. My advice is

to keep the door to the single-discipline laboratories to maintain your disciplinary strength (this has been widely lost in Europe and other parts of the world) but to remove part of the walls between the laboratories to permit cross-disciplinary research and facilitation— both within a given university environment and across universities and other research institutions. Today's best limnological eco-research takes place when the disciplines meet. Brazil has a unique chance to set a significant international agenda for several reasons – there are many limnologists in the country, disciplinary research is strong and Brazil is a huge country covering many latitudes and longitudes and thus many types of

ecosystems (some really unique) and climate zones. Thus, it provides ample opportunities for conducting comparative studies and comparative experiments; many ecosystems have a long history which also allows interesting studies about the interaction between ecology and evolution. So, as a shallow lake researcher who has worked with regime shifts and resilience of ecosystems for many years, I encourage Brazilian limnology to actively reduce resilience (“tear down psychological and perhaps some physical walls”) in limnological research to induce a more rapid shift to a more holistic ecosystem research than would otherwise be the case. By doing so, Brazilian limnology will have a bright future to the benefit of us all.