

PRESENTATION

RESERVOIR ECOLOGY: A TRIBUTE TO JOSÉ GALIZIA TUNDISI AND TAKAKO MATSUMURA TUNDISI

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The construction of large reservoirs in Brazil, mainly for hydroelectricity and public water supply, reached its maximum development in the 1960s and 1970s. Since that time it was known that the proper management and exploitation of reservoirs for multiple uses would be possible only after the development of a deep understanding of the mechanisms of these systems. Thus, in the 1970s the research in reservoirs has progressed significantly due to the efforts of the scientific community in line with the needs of hydroelectricity and water supply companies to allow planning and minimize impacts on these systems. Thus, some of the first systematic studies in reservoirs were carried out in 1971 by the couple José G. Tundisi and Takako Matsumura Tundisi and collaborators in the Lobo/Broa Reservoir, located in the subtropical region of Brazil. Such studies, involving structural and functional description of the communities of phytoplankton, zooplankton, benthos and fish and their interrelations with the climatology and hydrology, enabled the development of the “Broa Model” (Tundisi 1978), aimed the implementation of a systematic work and a standardized methodology based on long-term quantitative research, which could be used as a template for research conducted by other teams. Such approaches have triggered numerous studies in other reservoirs in Brazil (Henry 1999).

Another important advance in the limnology of reservoirs has been the development of the project “Typology of Reservoirs in the State of São Paulo”, funded by FAPESP and also conducted by the couple Tundisi and collaborators in 1979, which main objective was the characterization of 52 reservoirs in

the State of São Paulo for the purpose of management of these ecosystems according to their trophic status and provide information for management (Tundisi, 1980, Tundisi *et al.* 1988).

These pioneering large projects have enabled the achievement of substantial amounts of data, as well as standardization of methodologies, qualification of people and implementation of an integrated and multidisciplinary approach to ecology of reservoirs (Pompeo 2010). These scientific advances in reservoir limnological research resulted in numerous publications, many of which are compiled into volumes with synthetic approach involving basic and applied aspects (Tundisi 1988, Tundisi *et al.* 1993, Agostinho & Gomes 1997, Henry 1999, Tundisi & Straskraba 1999, Nogueira *et al.* 2006).

In consideration of the contributions to limnology in Brazil and in the world, this special issue of *Oecologia Australis* is a tribute to Professor Jose Galizia Tundisi and Takako Matsumura Tundisi throughout their 50 years of career. Many of the authors of this volume are researchers that at some point in their careers interacted with the Tundisis, but also researchers in the field of ecology of reservoirs that submitted articles spontaneously which will contribute strongly to the dissemination of scientific knowledge in this area.

The special issue includes a chapter written by the couple Tundisi with a description of their scientific trajectory in the field of limnology (Tundisi & Matsumura Tundisi 2011).

The process of eutrophication of surface water has been touted as one of the biggest problems

of today, considering it as one of the most visible examples of human-caused changes in the biosphere (Smith & Schindler 2009). So much of the articles presented in this special issue addresses topics related to the process of eutrophication on the biological communities in reservoirs (Han & Dumont 2011, Gonzalez & Quirós 2011, Fermino *et al.* 2011, Silva 2011). Barbosa *et al.* (2011), on the other hand, demonstrated the effectiveness of ecosystem services in reducing eutrophication and maintenance of aquatic communities, and Mello *et al.* (2011) associated zooplankton species richness and abundance with the hydrological cycle in a eutrophic reservoir. Other articles address topics related to the responses of biological communities to changes in water level (Henry *et al.* 2011), as well as the effects of the construction of reservoirs on the biological community (Alho 2011), which proposes guidelines

for appropriate monitoring program based in medium and long term studies. Roland *et al.* (2011) address aspects related to bacterial metabolism (production, respiration and growth efficiency) in Brazil and several reservoirs of different ages after filling, while Nakamoto (2011) address an idea of ecological purification for drinking water supply originated from Broa Reservoir studies during his visit in Brazil in 1974.

In this sense, besides the well-deserved tribute to the Professors Jose Galizia Tundisi and Takako Matsumura Tundisi into account their contributions to limnology in Brazil and worldwide, this special issue of *Oecologia Australis*, launched during the XIII Brazilian Congress of Limnology: Science and Management of Continental Waters in a Changing World, aims at the dissemination of current scientific knowledge on the ecology of reservoirs.

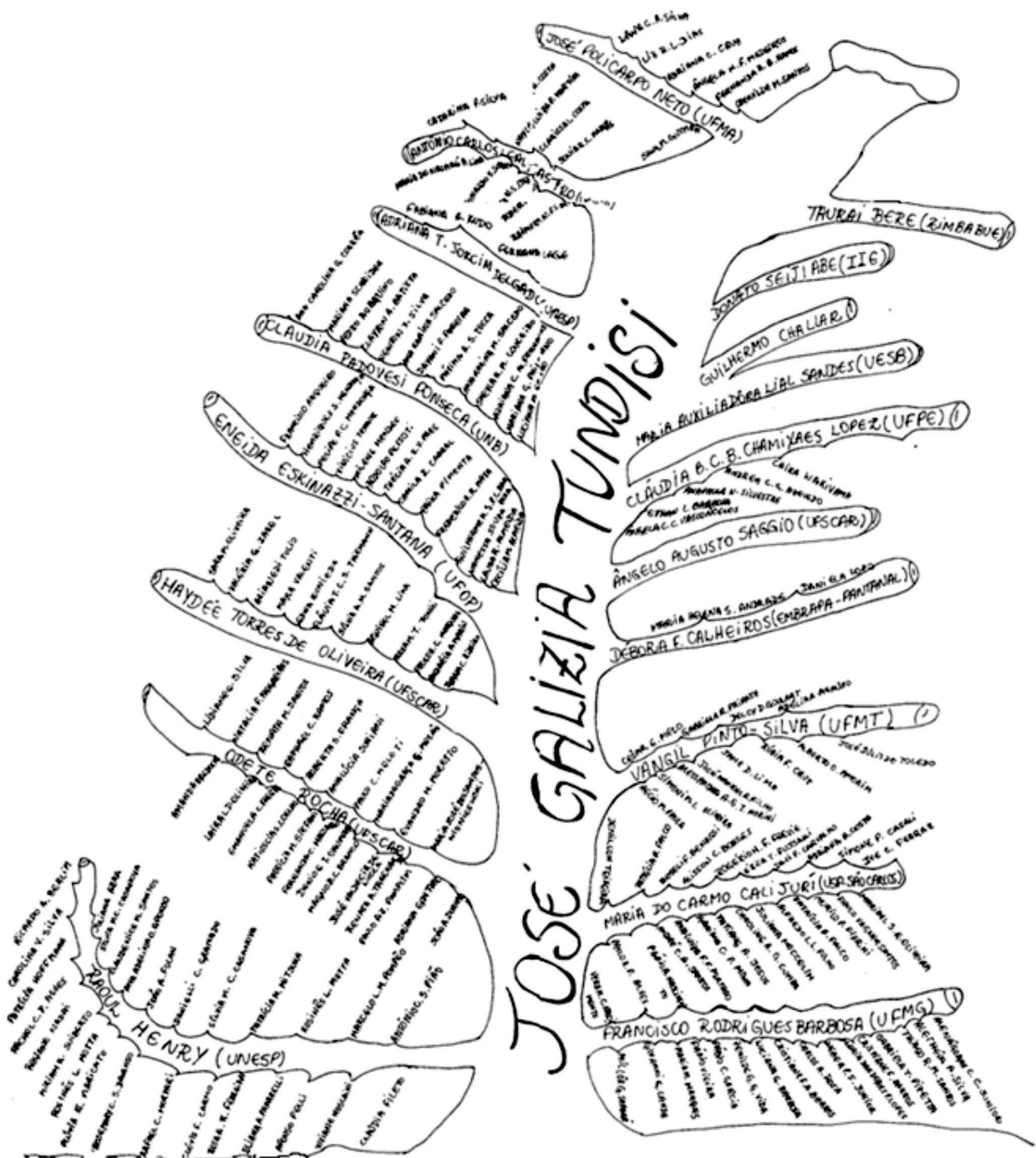


Figure 1. Simplified phylogenetic intellectual tree of Prof. Dr. José Galizia Tundisi up to the third generation. Picture built by Negreiros & Silva 2011.

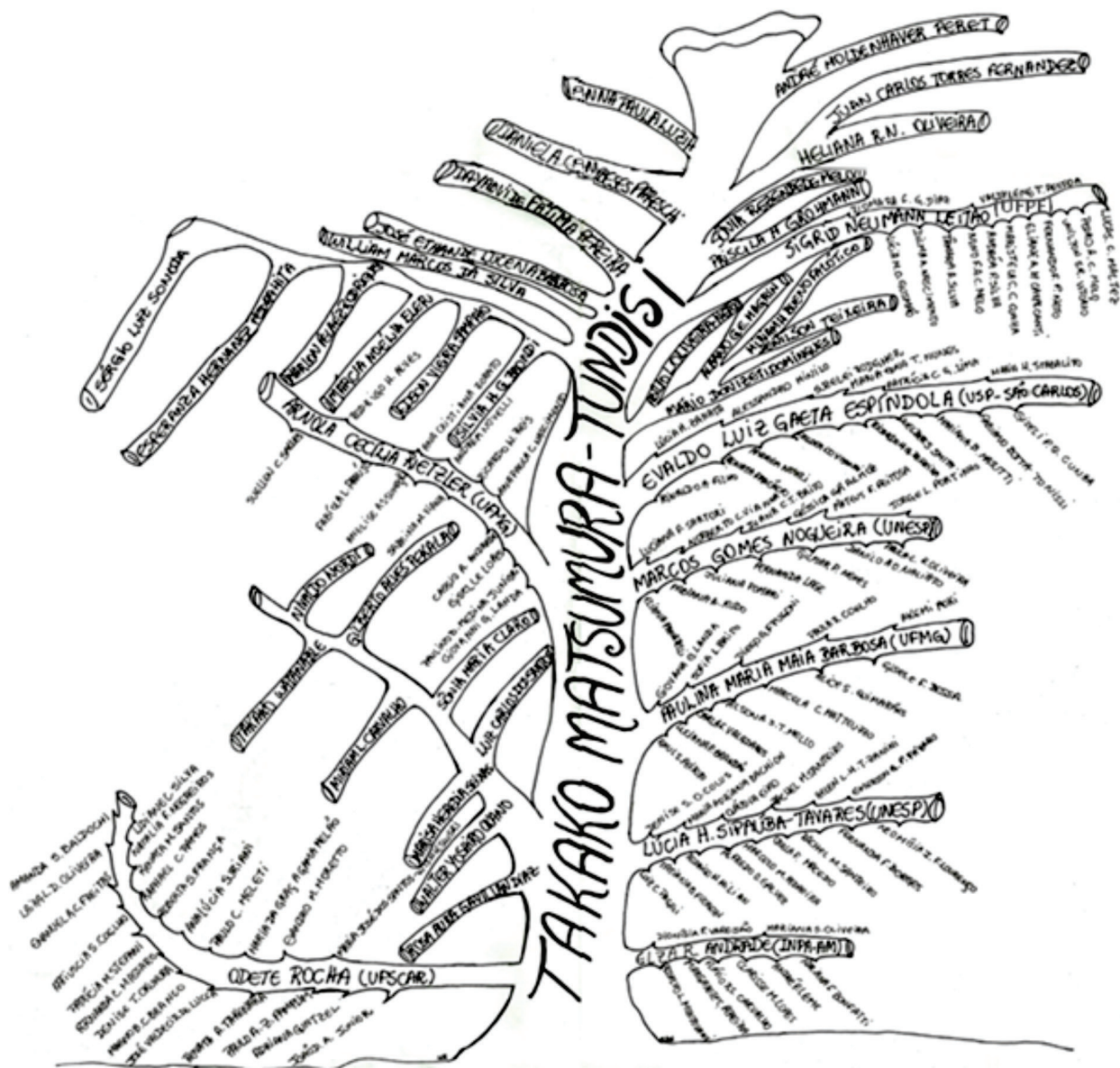


Figure 2. Simplified phylogenetic intellectual tree of Prof^a. Dr^a. Takako Matsumura-Tundisi up to the third generation. Picture built by Silva & Negreiros 2011.

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