

Adalberto Luis Val

Born Date: July 31, 1956

Senior Scientist

Instituto Nacional de Pesquisas da Amazônia (INPA, Brazil).

Email: dalval@inpa.gov.br

a. Professional Preparation

1983, MSc, Freshwater Biology, Brazilian National Institute for Research of the Amazon, Brazil

1986, PhD, Freshwater Biology, Brazilian National Institute for Research of the Amazon, Brazil

1992, Post-Doc, Zoology, University of British Columbia, Canada

b. Graduate and Postdoctoral Advisors

Graduate (MSc.) advisor: Schwantes, A.R.; Brazilian National Institute for Research of the Amazon (INPA, Brazil)

Graduate (PhD) advisor: Schwantes, A.R.; Brazilian National Institute for Research of the Amazon (INPA, Brazil)

Postdoc advisor: David Randall; University of British Columbia (Canada)

c. Appointments (others are listed in the form)

1982 – Present: Senior Scientist, Brazilian National Institute for Research of the Amazon (INPA, Brazil).

2009 – Present: Coordinator of the National Institute of Science and Technology – ADAPTA-Amazon.

2006 – 2014: General Director, Brazilian National Institute for Research of the Amazon (INPA, Brazil).

2015 – 2016: Director of International Affairs, CAPES, Ministry of Education (Brazil)

2016 – Present: Vice-president of the Brazilian Academy of Sciences for the Amazon

2017 – 2022: Associated Professor, University of Laval, Canada

d. Recent Publications (out of > 200)

Artaxo, P., Almeida-Val, V.M.F., Bilbao, B., Brando, P., Bustamante, M., Coe, M.T., Correa, S.B., Cuesta, F., Costa, M.H., Miralles-Wilhelm, F., Silvério, V., Val, A.L., 2021. Impacts of Deforestation and Climate Change on Biodiversity, Ecological Processes, and Environmental Adaptation, in: C. Nobre, A. Encalada, E. Anderson, F.H. Roca Alcazar, M. Bustamante, C. Mena, M. Peña-Claros, G. Poveda, J.P. Rodriguez, S. Saleska, S. Trumbore, A.L. Val, L. Villa Nova, R. Abramovay, A. Alencar, A.C.R. Alzza, D. Armenteras, P. Artaxo, S. Athayde, H.T. Barretto Filho, J. Barlow, E. Berenguer, F. Bortolotto, F.A. Costa, M.H. Costa, N. Cuvi, P.M. Fearnside, J. Ferreira, B.M. Flores, S. Frieri, L.V. Gatti, J.M. Guayasamin, S. Hecht, M. Hirota, C. Hoorn, C. Josse, D.M. Lapola, C. Larrea, D.M. Larrea-Alcazar, Z. Lehm Ardaya, Y. Malhi, J.A. Marengo, J. Melack, M.R. Moraes, P. Moutinho, M.R. Murmis, E.G. Neves, B. Paez, L. Painter, A. Ramos, M.C. Rosero-Peña, M. Schmink, P. Sist, H. ter Steege, P. Val, H. van der Voort, M. Varese, G. Zapata-Ríos (Eds.), Amazon Assessment Report 2021. Science Panel for the Amazon (SPA). United Nations Sustainable Development Solutions Network, New York, USA, 406-436.

Bolzan, L.P., Barroso, D.C., Souza, C.F., Oliveira, F.C., Wagner, R., Baldisserotto, B., Val, A.L., Baldissera, M.D., 2021. Dietary supplementation with nerolidol improves the

- antioxidant capacity and muscle fatty acid profile of *Brycon amazonicus* exposed to acute heat stress. *Journal of Thermal Biology* 99, 103003. <https://doi.org/10.1016/j.jtherbio.2021.103003>
- Campos, D.F., Amanajás, R.D., Almeida-Val, V.M.F., Val, A.L., 2021. Climate vulnerability of South American freshwater fish: Thermal tolerance and acclimation. *Journal of Experimental Zoology A* 2021, 1-12. DOI: 10.1002/jez.2452
- Costa, J.C., Souza, S.S., Castro, J.S., Amanajás, R.D., Val, A.L., 2021. Climate change affects the parasitism rate and impairs the regulation of genes related to oxidative stress and ionoregulation of *Colossoma macropomum*. *Scientific Reports* 11, 22350. <https://doi.org/10.1038/s41598-021-01830-1>
- Fearnside, P.M., Berenguer, E., Armenteras, D., Duponchelle, F., Guerra, F.M., Jenkins, C.N., Bynoe, P., García-Villacorta, R., Guerra, F.M., Macedo, M., Val, A.L., Almeida-Val, V.M.F., 2021. Drivers and Impacts of changes in aquatic ecosystems, in: C. Nobre, A. Encalada, E. Anderson, F.H. Roca Alcazar, M. Bustamante, C. Mena, M. Peña-Claros, G. Poveda, J.P. Rodriguez, S. Saleska, S. Trumbore, A.L. Val, L. Villa Nova, R. Abramovay, A. Alencar, A.C.R. Alzza, D. Armenteras, P. Artaxo, S. Athayde, H.T. Barretto Filho, J. Barlow, E. Berenguer, F. Bortolotto, F.A. Costa, M.H. Costa, N. Cuvi, P.M. Fearnside, J. Ferreira, B.M. Flores, S. Frieri, L.V. Gatti, J.M. Guayasamin, S. Hecht, M. Hirota, C. Hoorn, C. Josse, D.M. Lapola, C. Larrea, D.M. Larrea-Alcazar, Z. Lehm Ardaya, Y. Malhi, J.A. Marengo, J. Melack, M.R. Moraes, P. Moutinho, M.R. Murmis, E.G. Neves, B. Paez, L. Painter, A. Ramos, M.C. Rosero-Peña, M. Schmink, P. Sist, H. ter Steege, P. Val, H. van der Voort, M. Varese, G. Zapata-Ríos (Eds.), *Amazon Assessment Report 2021*. Science Panel for the Amazon (SPA). United Nations Sustainable Development Solutions Network, New York, USA, 305-343.
- Ferreira, M.S., Barroso, D.C., Val, A.L., 2021. Use of energetic substrates after feeding in two Amazon Characidae fish: *Colossoma macropomum* and *Brycon amazonicus*. *Aquaculture Research* 52, 4550-4562. <https://doi.org/10.1111/are.15292>
- Frommel, A.Y., Kwan, G.T., Prime, K.J., Tresguerres, M., Lauridsen, H., Val, A.L., Gonçalves, L.U., Brauner, C.J., 2021. Changes in gill and air-breathing organ characteristics during the transition from water- to air-breathing in juvenile *Arapaima gigas*. *Journal of Experimental Zoology A*, 1-13. <https://doi.org/10.1002/jez.2456>
- Gonzalez, R.J., Patrick, M.L., Duarte, R.M., Casciato, A., Thackeray, J., Day, N., Val, A.L., 2021. Exposure to pH 3.5 water has no effect on the gills of the Amazonian tambaqui (*Colossoma macropomum*). *Journal of Comparative Physiology B* 191, 493–502. <https://doi.org/10.1007/s00360-021-01349-x>
- Johannsson, O.E., Ferreira, M.S., Scott-Smith, D., Wood, C.M., Val, A.L., 2021. Interplay of oxygen and light in the photo-oxidation of dissolved organic carbon. *Water Research* 201, 117332. <https://doi.org/10.1016/j.watres.2021.117332>
- Kochhann, D., SArmento, C.G., Oliveira, J.C., Queiroz, H.L., Val, A.L., Chapman, L.J., 2021. Take time to look at the fish: Behavioral response to acute thermal challenge in two Amazonian cichlids. *Journal of Experimental Zoology A* 2021, 1-10. 10.1002/jez.2541
- Leitão, C.S.S., Souza, E.M.S., Santos, C.H.A., Val, P., Val, A.L., Almeida-Val, V.M.F., 2021. River reorganization affects populations of dwarf cichlid species (*Apistogramma* Genus) in the lower Negro River, Brazil. *Frontiers in Ecology and Evolution* 9, 760287. [10.3389/fevo.2021.760287](https://doi.org/10.3389/fevo.2021.760287)
- MacCormack, T.J., Gormley, P.T., Khuong, N., Adams, O.A., Braz-Mota, S., Duarte, R.M., Vogels, C.M., Tremblay, L., Val, A.L., Almeida-Val, V.M.F., Westcott, S.A., 2021. Boron

- oxide nanoparticles exhibit minor, species-specific acute toxicity to North-Temperate and Amazonian freshwater fishes. *Frontiers in Bioengineering and Biotechnology* 9, 689933. doi: 10.3389/fbioe.2021.689933
- Morris, C., Val, A.L., Brauner, C.J., Wood, C.M., 2021. The physiology of fish in acidic waters rich in dissolved organic carbon, with specific reference to the Amazon basin: Ionoregulation, acid–base regulation, ammonia excretion, and metal toxicity. *Journal of Experimental Zoology A*, 1-21. <https://doi.org/10.1002/jez.2468>
- Pelster, B., Val, A.L., Dallinger, R., 2021. Recent advances in biology and physiology of tropical freshwater fish. *Journal of Experimental Zoology A* 335, 721-722. 10.1002/jez.2552
- Pereira, L.A.L., Amanajás, R.D., Oliveira, A.M., Paula-Silva, M.N., Val, A.L., 2021. Health of the Amazonian fish tambaqui (*Colossoma macropomum*): Effects of prolonged photoperiod and high temperature. *Aquaculture* 541, 736836. <https://doi.org/10.1016/j.aquaculture.2021.736836>
- Perry, S.F., Gilmour, K.M., Duarte, R.M., Wood, C.M., Almeida-Val, V.M.F., Val, A.L., 2021. The effects of dissolved organic carbon on the reflex ventilatory responses of the neotropical teleost (*Colossoma macropomum*) to hypoxia or hypercapnia. *Chemosphere* 277, 130314. <https://doi.org/10.1016/j.chemosphere.2021.130314>
- Pinto, G.L., Castro, J.S., Val, A.L., 2021. Copper and cadmium impair sperm performance, fertilization and hatching of oocytes from Amazonian fish *Colossoma macropomum*. *Chemosphere* 266, 128957. <https://doi.org/10.1016/j.chemosphere.2020.128957>
- Pörtner, H.O., Scholes, R.J., Agard, J., Archer, E., Arneth, A., Bai, X., Barnes, D., Burrows, M., Chan, L., Cheung, W.L., Diamond, S., Donatti, C., Duarte, C., Eisenhauer, N., Foden, W., Gasalla, M.A., Handa, C., Hickler, T., Hoegh-Guldberg, O., Ichii, K., Jacob, U., Insarov, G., Kiessling, W., Leadley, P., Leemans, R., Levin, L., Lim, M., Maharaj, S., Managi, S., Marquet, P.A., McElwee, P., Midgley, G., Oberdorff, T., Obura, D., Osman, E., Pandit, R., Pascual, U., Pires, A.P.F., Popp, A., Reyes-García, V., Sankaran, M., Settele, J., Shin, Y.J., Sintayehu, D.W., Smith, P., Steiner, N., Strassburg, B., Sukumar, R., Trisos, C., Val, A.L., Wu, J., Aldrian, E., Parmesan, C., Pichs-Madruga, R., Roberts, D.C., Rogers, A.D., Díaz, S., Fischer, M., Hashimoto, S., Lavorel, S., Wu, N., Ngo, H.T., 2021. PBES-IPCC co-sponsored workshop report on biodiversity and climate change. IPBES and IPCC. 10.5281/zenodo.4782538
- Sadauskas-Henrique, H., Scott-Smith, D., Val, A.L., Wood, C.M., 2021. Physicochemical properties of the dissolved organic carbon can lead to different physiological responses of zebrafish (*Danio rerio*) under neutral and acidic conditions. *Journal of Experimental Zoology A* 2021, 1-14. 10.1002/jez.2537
- Santos, C.H.A., Lu, Y., Fagundes, D.B., Walter, R.B., Val, A.L., Almeida-Val, V.M.F., 2021. Insight to new genes with sex-biased to bony-tongued fishes: Differentially expressed genes in adult individuals of *Arapaima gigas* revealed by RNA-Seq. *Aquaculture Research* 52, 5617-5629. <https://doi.org/10.1111/are.15437>
- Schöngart, J., Wittmann, F., Resende, A.F., Assahira, C., Lobo, G.S., Neves, J.R.D., Rocha, M., Mori, G.B., Quaresma, A.C., Demarchi, L.O., Albuquerque, B.W., Feitosa, Y.O., Costa, G.S., Feitoza, G.V., Durgante, F.M., Lopes, A., Trumbore, S.E., Silva, T.S.F., Steege, H., Val, A.L., Junk, W.J., Piedade, M.T.F., 2021. The shadow of the Balbina dam: A synthesis of over 35 years of downstream impacts on floodplain forests in Central Amazonia. *Aquatic Conservation: Marine and Freshwater Ecosystems* 2021, 1-19. <https://doi.org/10.1002/aqc.3526>

- Silva, J.M., Paz, A.L., Val, A.L., 2021. Effect of carvacrol on the haemato-immunological parameters, growth and resistance of *Colossoma macropomum* (Characiformes: Serrasalminidae) infected by *Aeromonas hydrophila*. *Aquaculture Research* 52, 3291-3300. <https://doi.org/10.1111/are.15174>
- Souza, C.F., Baldissera, M.D., Barroso, D.F., Lima, M.C.M., Baldisserotto, B., Val, A.L., 2021. Involvement of purinergic system and electron transport chain in two species of cichlids from the Amazon basin exposed to hypoxia. *Comparative Biochemistry and Physiology* 255, 110918. <https://doi.org/10.1016/j.cbpa.2021.110918>
- Val, A.L., Oliveira, A.M., 2021. *Colossoma macropomum*—A tropical fish model for biology and aquaculture. *Journal of Experimental Zoology A* 2021, 1-10. <https://doi.org/10.1002/jez.2536>
- Baldissera, M.D., Souza, C.F., Barroso, D.C., Pereira, R.S., Alessio, K.O., Bizzi, C., Baldisserotto, B., Val, A.L., 2020. Acute exposure to environmentally relevant concentrations of copper affects branchial and hepatic phosphoryl transfer network of *Cichlasoma amazonarum*: Impacts on bioenergetics homeostasis. *Comparative Biochemistry and Physiology* 238, 108846. <https://doi.org/10.1016/j.cbpc.2020.108846>
- Baldissera, M.D., Souza, C.F., Barroso, D.C., Pereira, R.S., Oliveira, F.C., Alessio, K.O., Wagner, R., Bizzi, C., Baldisserotto, B., Val, A.L., 2020. Consequences of oxidative damage on the fatty acid profile in muscle of *Cichlasoma amazonarum* acutely exposed to copper. *Fish Physiology and Biochemistry* 46, 2377-2387. <https://doi.org/10.1007/s10695-020-00884-8>
- Barroso, D., Almeida-Val, V.M.F., Val, A.L., 2020. Temperature and food availability alters the physiology and aerobic capacity of tambaqui (*Colossoma macropomum*). *Comparative Biochemistry and Physiology* 245A, 110704. <https://doi.org/10.1016/j.cbpa.2020.110704>
- Costa, J.C., Val, A.L., 2020. Extreme climate scenario and parasitism affect the Amazonian fish *Colossoma macropomum*. *Science of the Total Environment* 726, 138628. <https://doi.org/10.1016/j.scitotenv.2020.138628>
- Ferreira, G., Marcovitch, J., Val, A.L., 2020. A systematic review of the production chain of the *Arapaima gigas*, the giant fish of the Amazon. *Management of Environmental Quality* 31, 349-363. <https://doi.org/10.1108/MEQ-11-2019-0238>
- Johannsson, O.E., Ferreira, M.S., Scott-Smith, D., Crémazy, A., Wood, C.M., Val, A.L., 2020. Effects of natural light and depth on rates of photo-oxidation of dissolved organic carbon in a major black-water river, the Rio Negro, Brazil. *Science of the Total Environment* 733, 139193. <https://doi.org/10.1016/j.scitotenv.2020.139193>
- Jung, E.H., Brix, K.V., Richards, J.G., Val, A.L., Brauner, C.J., 2020. Reduced hypoxia tolerance and survival at elevated temperatures may limit the ability of Amazonian fishes to survive in a warming world. *Science of the Total Environment* 748, 141349. <https://doi.org/10.1016/j.scitotenv.2020.141349>
- Pelster, B., Wood, C.M., Braz-Mota, S., Val, A.L., 2020b. Gills and air-breathing organ in O₂ uptake, CO₂ excretion, N-waste excretion, and ionoregulation in small and large pirarucu (*Arapaima gigas*). *Journal of Comparative Physiology B* 190, 569-583. <https://doi.org/10.1007/s00360-020-01286-1>
- Ruiz-Jarabo, I., Amanajás, R.D., Baldisserotto, B., Mancera, J.M., Val, A.L., 2020. Tambaqui (*Colossoma macropomum*) acclimated to different tropical waters from the Amazon basin shows specific acute-stress responses. *Comparative Biochemistry and Physiology* 245, 110706. <https://doi.org/10.1016/j.cbpa.2020.110706>

e. Synergistic Activities

Member of Editorial Board of Neotropical Ichthyology and Acta Amazonica; Reviewer for Journal of Experimental Biology, Hydrobiology, Comparative Biochemistry and Physiology, Physiological and Biochemical Zoology, Brazilian Journal of Medical and Biological Research and Journal of Fish Biology; Clean; Aquatic Toxicology; Ecotoxicology and Environmental Sciences; Board member of Brazilian Society for the Advancement of Science (SBPC), Coordination for the Improvement of Higher Education (CAPES), CTNBio; Member of the Brazilian Academy of Sciences; Vice-President of the Brazilian Academy of Sciences for North Region; Consultant member of the Sustainable Amazon Foundation (FAS); *Ad-hoc* consultant for São Paulo, Rio de Janeiro, Amazonas, Minas Gerais and Rio Grande do Sul Research Foundations (FAPESP, FAPERJ, FAPEAM, FAPEMIG, FAPERGS); Curator of Djalma Batista Foundation (FDB).

f. Collaborators (>100)

Almeida-Val, V. (INPA), Baldisserotto, B. (UFSM), Bracelj, A. (Slovenia), Brauner, C. (Canada), Corrêa, M. (UFPR), Correia, T. (UFRJ), De Boeck, G. (Belgium), Derome, N. (Canada), Driedzic, W. (Canada), Duarte, R. (UNESP), Gomes, L. (UVV), Gonzalez, R. (USA), Henriques, J. (UFRGS), Holland, A. (Australia), Johannsson, O. (Canada), Pelster, B. (Austria), Perdomo, M. (Peru), Renshaw, G. (Australia), Rodriguez, P. (Chile), Scholz, S. (Germany), Sloman, K. (United Kingdom), Tuvikene, A. (Estonia), Wood, C. (Canada).

g. Student Advising (>190)

Dissertation advisor (62) / PhD Thesis advisor (31) / Postdoc supervisor (28) / Undergrad students (>80)

h. Funding (from 2003, regular grants not included)

INCT Adapta II – Adaptations of aquatic biota of the Amazon (US\$ 3,000,000) Period: 2017-2022
INCT Adapta – Adaptations of aquatic biota of the Amazon (US\$ 3,000,000) Period: 2011-2015
Climate change and vital processes of aquatic organisms (Bilateral cooperation Brazil/Slovenia) (US\$50,000) Period: 2011-2013
Science Without Border Program – visiting fellow (US\$ 100,000) Period: 2010-2015
Tropical BLM (International Copper Association) (US\$ 25,000) Period: 2007-2009

i. Awards (of 15)

2002 – Commendation of the National Order of Scientific Merit (Class Commander) / 2013 – Commendation of the National Order of Scientific Merit (Grand Cross Class) / 2004 – American Fisheries Society's Excellence Award / 2005 – Full member of the Brazilian Academy of Sciences / 2008 – Awarded the Gran Order of Legislative Merit of the State of Amazonas / 2016 - Awarded the honorable Anísio Teixeira Award for Higher Education