

List of references of DTs published until the present day:

- Adroit, B., Girard, V., Kunzmann, L., Terral, J.F., Wappler, T., 2018. Plant-insect interactions patterns in three European paleoforests of the late-Neogene-early-Quaternary. *PeerJ* 2018, 24. <https://doi.org/10.7717/peerj.5075>
- Adroit, B., Wappler, T., Terral, J.F., Ali, A.A., Girard, V., 2016. Bernasso, a paleoforest from the early Pleistocene: New input from plant-insect interactions (Hérault, France). *Palaeogeography, Palaeoclimatology, Palaeoecology* 446, 78–84. <https://doi.org/10.1016/j.palaeo.2016.01.015>
- Adroit, B., Zhuang, X., Wappler, T., 2020. A case of long-term herbivory: specialized feeding trace on *Parrotia* (Hamamelidaceae) plant species. <https://doi.org/10.1098/rsos.201449>
- Andruchow-Colombo, A., Gandolfo, M.A., Cúneo, N.R., Escapa, I.H., 2021. *Ginkgoites villardeseoanii* sp. nov., a ginkgophyte with insect damage from the Upper Cretaceous (Maastrichtian) Lefipán Formation (Chubut, Patagonia, Argentina). *Cretaceous Research* 105124. <https://doi.org/10.1016/j.cretres.2021.105124>
- Cariglino, B., 2018. Patterns of insect-mediated damage in a Permian *Glossopteris* flora from Patagonia (Argentina). *Palaeogeography, Palaeoclimatology, Palaeoecology* 507, 39–51. <https://doi.org/10.1016/j.palaeo.2018.06.022>
- Carvalho, M.R., Wilf, P., Barrios, H., Windsor, D.M., Currano, E.D., Labandeira, C.C., Jaramillo, C. a, 2014. Insect leaf-chewing damage tracks herbivore richness in modern and ancient forests. *PloS one* 9, e94950. <https://doi.org/10.1371/journal.pone.0094950>
- Correia, P., Bashforth, A.R., Simunek, Z., Cleal, C.J., Sá, A.A., Labandeira, C.C., 2020. The history of herbivory on sphenophytes: a new calamitalean with an insect gall from the Upper Pennsylvanian of Portugal and a review of arthropod herbivory on an ancient lineage. *International Journal of Plant Sciences* 181, 1–30. <https://doi.org/10.1086/707105>
- Currano, E.D., Jacobs, B.F., 2021. Bug-bitten leaves from the early Miocene of Ethiopia elucidate the impacts of plant nutrient concentrations and climate on insect herbivore communities. *Global and Planetary Change* 207, 103655. <https://doi.org/10.1016/j.gloplacha.2021.103655>
- Currano, E.D., Wilf, P., Wing, S.L., Labandeira, C.C., Lovelock, E.C., Royer, D.L., 2008. Sharply increased insect herbivory during the Paleocene–Eocene Thermal Maximum. *Proceedings of the National Academy of Sciences of the United States of America* 105, 1960–1964. <https://doi.org/10.1073/pnas.0708646105>
- Ding, Q., Labandeira, C.C., Meng, Q., Ren, D., 2015. Insect herbivory, plant-host specialization and tissue partitioning on mid-Mesozoic broadleaved conifers of Northeastern China. *Palaeogeography, Palaeoclimatology, Palaeoecology* 440, 259–273. <https://doi.org/10.1016/j.palaeo.2015.09.007>

- Ding, Q., Labandeira, C.C., Ren, D., 2014. Biology of a leaf miner (Coleoptera) on *Liaoningocladus boii* (Coniferales) from the Early Cretaceous of northeastern China and the leaf-mining biology of possible insect culprit clades 72, 281–308.
- Dong, J., Sun, B., Mao, T., Yan, D., Liu, C., Wang, Z., Jin, P., 2018. *Liquidambar* (Altingiaceae) and associated insect herbivory from the Miocene of southeastern China. *Palaeogeography, Palaeoclimatology, Palaeoecology* 497, 11–24. <https://doi.org/10.1016/j.palaeo.2018.02.001>
- Donovan, M.P., Iglesias, A.R.I., Wilf, P., Labandeira, C.C., Cúneo, N.R., 2018. Diverse plant-insect associations from the latest Cretaceous and Early Paleocene of Patagonia, Argentina. *Ameghiniana* 55, 303–338.
- Donovan, M.P., Lucas, S.G., 2021. Insect herbivory on the Late Pennsylvanian Kinney Brick Quarry flora , New Mexico, USA. *New Mexico Museum of Natural History & Science* 84, 193–207.
- Donovan, M.P., Wilf, P., Labandeira, C.C., Johnson, K.R., Peppe, D.J., 2014. Novel Insect Leaf-Mining after the End-Cretaceous Extinction and the Demise of Cretaceous Leaf Miners, Great Plains, USA. *PLoS ONE* 9, e103542. <https://doi.org/10.1371/journal.pone.0103542>
- Dowd, D.J.O., Brew, C.R., Christophel, D.C., Norton, R.A., 1991. Mite-Plant Associations from the Eocene of Southern Australia. *Science* 252, 99–102. <https://doi.org/10.1126/science.252.5002.99>
- Fernández, J.A., Chiesa, J.O., 2019. Plant-insect interactions in the fossil flora of the Bajo de Veliz Formation (Gzhelian - Asselian): San Luis, Argentina. *Ichnos* 0, 1–11. <https://doi.org/10.1080/10420940.2019.1697263>
- Filho, E.B. dos S., Adami-Rodrigues, K., Lima, F.J. de, Bantim, R.A.M., Wappler, T., Saraiva, A.Á.F., 2017. Evidence of plant–insect interaction in the Early Cretaceous Flora from the Crato Formation, Araripe Basin, Northeast Brazil. *Historical Biology* 2963, 1–12. <https://doi.org/10.1080/08912963.2017.1408611>
- Gandolfo, M.A., Zamaloa, M. del C., 2021. Southern high-latitude plant-insect interactions from the Miocene of Tierra del Fuego, Argentina. *International Journal of Plant Sciences* 182, 1–10. <https://doi.org/10.1086/714285>
- Giraldo, L.A., Labandeira, C.C., Herrera, F., Carvalho, M., 2021. Rich and specialized plant-insect associations in a middle-late Paleocene (58-60Ma) Neotropical Rainforest (Bogotá Formation, Colombia). *Ameghiniana* 58, 75–99. <https://doi.org/10.5710/AMGH.17.02.2021.3390>
- Hazra, T., Adroit, B., Hazra, M., Spicer, R.A., Spicer, T.E.V., Bera, S., Khan, M.A., 2022. New discovery of rare insect damage in the Pliocene of India reinforces the biogeographic history of Eurasian ecosystems. *Review of Palaeobotany and Palynology* 298, 104589. <https://doi.org/10.1016/j.revpalbo.2021.104589>
- Khan, M.A., Bera, S., Spicer, R.A., Spicer, T.E. V, 2015. Plant-arthropod associations from the Siwalik forests (middle Miocene) of Darjeeling sub-Himalaya, India.

- Palaeogeography, Palaeoclimatology, Palaeoecology 438, 191–202.
<https://doi.org/10.1016/j.palaeo.2015.07.019>
- Kodrul, T.M., Maslova, N.P., Vasilenko, D. v., Herman, A.B., Xu, Q., Jin, J., Liu, X., 2018. A preliminary assessment of plant–biotic interactions in the Eocene of South China: Evidence from *Liquidambar* L. (Saxifragales: Altingiaceae). *Palaeogeography, Palaeoclimatology, Palaeoecology* 492, 147–160.
<https://doi.org/10.1016/j.palaeo.2017.12.020>
- Labandeira, C.C., Anderson, J.M., Anderson, H.M., 2018. Expansion of Arthropod Herbivory in Late Triassic South Africa: The Molteno Biota, Aasvoëlberg 411 Site and Developmental Biology of a Gall, in: Lawrence, H.T. (Ed.), *Late Triassic World*. Springer, New York, pp. 623–719.
- Labandeira, Conrad C., Johnson, K.R., Lang, P., 2002. Preliminary assessment of insect herbivory across the Cretaceous-Tertiary boundary: Major extinction and minimum rebound. *Special Paper of the Geological Society of America* 361, 297–327.
<https://doi.org/10.1130/0-8137-2361-2.297>
- Labandeira, C. C., Johnson, K.R., Wilf, P., 2002. Impact of the terminal Cretaceous event on plant-insect associations. *Proceedings of the National Academy of Sciences*. <https://doi.org/10.1073/pnas.042492999>
- Labandeira, C.C., Kustatscher, E., Wappler, T., 2016. Floral assemblages and patterns of insect herbivory during the Permian to Triassic of northeastern Italy. *PLoS ONE* 11, 1–50. <https://doi.org/10.1371/journal.pone.0165205>
- Labandeira, C.C., Kvaček, J., Mostovski, M.B., 2007a. Pollination drops, pollen, and insect pollination of Mesozoic gymnosperms. *Taxon*.
<https://doi.org/10.2307/25065853>
- Labandeira, C.C., Tremblay, S.L., Bartowski, K.E., Vanaller Hernick, L., 2014. Middle Devonian liverwort herbivory and antitherbivore defence. *New Phytologist* 202, 247–258. <https://doi.org/10.1111/nph.12643>
- Labandeira, C.C., Wilf, P., Johnson, K., Marsh, F., 2007b. Guide to insect (and other) damage types on compressed plant fossils. Version 3.0. Smithsonian Institution, Washington, DC 3, 25.
- Lara, M. Ben, Cariglino, B., Zavattieri, A.M., 2016. Palaeoenvironmental interpretation of an Upper Triassic deposit in southwestern Gondwana (Argentina) based on an insect fauna, plant assemblage, and their interactions. *Palaeogeography, Palaeoclimatology, Palaeoecology* 476, 163–180.
<https://doi.org/10.1016/j.palaeo.2017.03.029>
- Liu, H.Y., Wei, H.B., Chen, J., Guo, Y., Zhou, Y., Gou, X.D., Yang, S.L., Labandeira, C., Feng, Z., 2020. A latitudinal gradient of plant–insect interactions during the late Permian in terrestrial ecosystems? New evidence from Southwest China. *Global and Planetary Change* 192, 103248.
<https://doi.org/10.1016/j.gloplacha.2020.103248>

- Maccracken, S.A., Labandeira, C.C., 2019. The Middle Permian South Ash Pasture assemblage of north-central Texas: Coniferophyte and gigantopterid herbivory and longer-term herbivory trends. *International Journal of Plant Sciences* 181. <https://doi.org/10.1086/706852>
- Moreno-Domínguez, R., Maccracken, S.A., Santos, A.A., Wappler, T., 2022. Plant–insect interactions from the Late Oligocene of Spain (La Val fossil site, Estadilla, Huesca) and their palaeoclimatological implications. *Palaeogeography, Palaeoclimatology, Palaeoecology* 586, 110782. <https://doi.org/10.1016/j.palaeo.2021.110782>
- Na, Y., Sun, C., Wang, H., Dilcher, D.L., Yang, Z., Li, T., Li, Y., 2018. Insect herbivory and plant defense on ginkgoalean and bennettitalean leaves of the Middle Jurassic Daohugou Flora from Northeast China and their paleoclimatic implications. *Palaeoworld* 27, 202–210. <https://doi.org/10.1016/j.palwor.2017.08.002>
- Pinheiro, E.R.S., Gallego, J., Iannuzzi, R., 2015. First report of feeding traces in Permian *Botrychiopsis* leaves from western Gondwana. *Palaios* 30, 613–619. <https://doi.org/10.2110/palo.2014.091>
- Pinheiro, E.R.S., Iannuzzi, R., Tybusch, G.P., 2012. Specificity of leaf damage in the Permian “*Glossopteris* Flora”: A quantitative approach. *Review of Palaeobotany and Palynology* 174, 113–121. <https://doi.org/10.1016/j.revpalbo.2012.01.002>
- Robledo, J.M., Pinheiro, E.R.S., Gnaedinger, S.C., Wappler, T., 2018. Plant-Insect Interactions on Dicots and Ferns From the Miocene of Argentina. *Palaios* 33, 338–352. <https://doi.org/10.2110/palo.2017.100>
- Rozefelds, A.C., Sobbe, I., 1987. Problematic insect leaf mines from the Upper Triassic Ipswich Coal Measures of southeastern Queensland, Australia. *Alcheringa An Australasian Journal of Paleontology* 11, 37–41. <https://doi.org/10.1080/03115518708618979>
- Santos, A.A., Sender, L.M., Wappler, T., Engel, M.S., Diez, J.B., 2021. A Robinson Crusoe story in the fossil record: Plant-insect interactions from a Middle Jurassic ephemeral volcanic island (Eastern Spain). *Palaeogeography, Palaeoclimatology, Palaeoecology* 583. <https://doi.org/10.1016/j.palaeo.2021.110655>
- Schachat, S.R., Labandeira, C.C., Chaney, D.S., 2015. Insect herbivory from early Permian Mitchell Creek Flats of north-central Texas: Opportunism in a balanced component community. *Palaeogeography, Palaeoclimatology, Palaeoecology* 440, 830–847. <https://doi.org/10.1016/j.palaeo.2015.10.001>
- Schachat, S.R., Labandeira, C.C., Gordon, J., Chaney, D., Levi, S., Halthore, M.N., Alvarez, J., 2014. Plant-Insect Interactions from Early Permian (Kungurian) Colwell Creek Pond, North-Central Texas: The Early Spread of Herbivory in Riparian Environments. *International Journal of Plant Sciences* 175, 855–890. <https://doi.org/10.1086/677679>

- Wappler, T., 2010. Insect herbivory close to the Oligocene-Miocene transition - A quantitative analysis. *Palaeogeography, Palaeoclimatology, Palaeoecology* 292, 540–550. <https://doi.org/10.1016/j.palaeo.2010.04.029>
- Wappler, T., Denk, T., 2011. Herbivory in early Tertiary Arctic forests. *Palaeogeography, Palaeoclimatology, Palaeoecology* 310, 283–295. <https://doi.org/10.1016/j.palaeo.2011.07.020>
- Wappler, T., Kustatscher, E., Dellantonio, E., 2015. Plant–insect interactions from Middle Triassic (late Ladinian) of Monte Agnello (Dolomites, N-Italy)—initial pattern and response to abiotic environmental perturbations. *PeerJ* 3, e921. <https://doi.org/10.7717/peerj.921>
- Wilf, P., Labandeira, C.C., Johnson, K.R., Cuneo, N.R., 2005. Richness of plant–insect associations in Eocene Patagonia: A legacy for South American biodiversity. *Proceedings of the National Academy of Sciences* 102, 8944–8948. <https://doi.org/10.1073/pnas.0500516102>
- Wilf, P., Labandeira, C.C., Kress, W.J., Staines, C.L., Windsor, D.M., Allen, A.L., Johnson, K.R., 2000. Timing the radiations of leaf beetles: Hispines on gingers from latest cretaceous to recent. *Science* 289, 291–295. <https://doi.org/10.1126/science.289.5477.291>
- Xiao, L., Labandeira, C.C., Dilcher, D.L., Ren, D., 2022. Arthropod and fungal herbivory at the dawn of angiosperm diversification: The Rose Creek plant assemblage of Nebraska, U.S.A. *Cretaceous Research*. <https://doi.org/10.1016/j.cretres.2021.105088>
- Xu, Q., Jin, J., Labandeira, C.C., 2018. Williamson Drive: Herbivory from a north-central Texas flora of latest Pennsylvanian age shows discrete component community structure, expansion of piercing and sucking, and plant counterdefenses. *Review of Palaeobotany and Palynology* 251, 28–72. <https://doi.org/10.1016/j.revpalbo.2018.01.002>
- Zhang, S.H., Chen, T.Y., Zeng, X., Yu, Y., Zhang, Y., Xie, S.P., 2018. Plant–insect associations from the upper Miocene of Lincang, Yunnan, China. *Review of Palaeobotany and Palynology* 259, 55–62. <https://doi.org/10.1016/j.revpalbo.2018.09.008>
- Zhou, W., Chen, B., Sun, W., He, X., Hilton, J., Chen, B., Sun, W., He, X., Hilton, J., 2020. A new giantopterid genus from the late Permian of the Daha Coalfield , Tibetan Plateau and its implication on plant–insect interactions. *Historical Biology* 00, 1–13. <https://doi.org/10.1080/08912963.2020.1860033>
- Zidianakis, G., Kovar-Eder, J., Zelilidis, A., Iliopoulos, G., 2020. Evidence of plant–arthropod interaction in the fossil assemblage from Pitsidia (Messara Basin, Crete, Greece; Upper Miocene). *N. Jb. Geol. Paläont. Abh.* 295, 101–115. <https://doi.org/10.1127/njgpa/2020/0872>

List of references used to generate maps and statistical analysis in R software.

BIVAND, R., and LEWIN-KOH, N., 2021, maptools: Tools for Handling Spatial Objects: <https://CRAN.R-project.org/package=maptools>.

CHAMBERLAIN, S., BARVE, V., MCGLINN, D., OLDONI, D., DESMET, P., GEFFERT, L., and RAM, K., 2021, rgbif: Interface to the Global Biodiversity Information Facility API: doi: 10.7287/peerj.preprints.3304v1. url: <https://CRAN.R-project.org/package=rgbif>.

CODE BY RICHARD A. BECKER, O.S., and VERSION BY RAY BROWNRIGG., A.R.Wilks.R., 2018, mapdata: Extra Map Databases: <https://CRAN.R-project.org/package=mapdata>.

CODE BY RICHARD A. BECKER, O.S., VERSION BY RAY BROWNRIGG. ENHANCEMENTS BY THOMAS P MINKA, A.R.Wilks.R., and DECKMYN., A., 2021, maps: Draw Geographical Maps: <https://CRAN.R-project.org/package=maps>.

DUNNINGTON, D., 2021, ggspatial: Spatial Data Framework for ggplot2: <https://CRAN.R-project.org/package=ggspatial>.

HESTER, J., and BRYAN, J., 2021, glue: Interpreted String Literals: <https://CRAN.R-project.org/package=glue>.

HOCKING, T.D., 2021, directlabels: Direct Labels for Multicolor Plots: <https://CRAN.R-project.org/package=directlabels>.

HSIEH, T.C., MA, K.H., and CHAO, A., 2016, iNEXT: an R package for rarefaction and extrapolation of species diversity (Hill numbers): *Methods in Ecology and Evolution*, v. 7, p. 1451–1456, doi: 10.1111/2041-210X.12613.

KAHLE, D., and WICKHAM, H., 2013, ggmap: Spatial Visualization with ggplot2: *The R Journal*, v. 5, p. 144–161. <https://journal.r-project.org/archive/2013-1/kahle-wickham.pdf>.

KASSAMBARA, A., 2020, ggpubr: “ggplot2” Based Publication Ready Plots: <https://CRAN.R-project.org/package=ggpubr>.

OKSANEN, J., 2019, Vegan: ecological diversity Jari Oksanen processed with vegan 2.5-5 in R Under development (unstable): <https://cran.r-project.org/web/packages/vegan/vignettes/diversity-vegan.pdf>.

OOMS, J., 2021, magick: Advanced Graphics and Image-Processing in R: <https://CRAN.R-project.org/package=magick>.

PEREIRA, R.H.M., and GONCALVES, C.N., 2021, geobr: Download Official Spatial Data Sets of Brazil: <https://CRAN.R-project.org/package=geobr>.

SOUTH, A., 2017, rnaturalearth: World Map Data from Natural Earth: .

WICKHAM, H., 2016, ggplot2: Elegant Graphics for Data Analysis: p. 267.

WICKHAM, H., 2020, httr: Tools for Working with URLs and HTTP: <https://CRAN.R-project.org/package=httr>.

WICKHAM, H., HESTER, J., CHANG, W., and BRYAN, J., 2021, devtools: Tools to Make Developing R Packages Easier: <https://CRAN.R-project.org/package=devtools>.

WILKE, C.O., 2020a, cowplot: Streamlined Plot Theme and Plot Annotations for “ggplot2”: <https://CRAN.R-project.org/package=cowplot>.

WILKE, C.O., 2020b, ggtext: Improved Text Rendering Support for “ggplot2”: <https://CRAN.R-project.org/package=ggtext>.