

# Bibliography

- Abdullah, W., Elsayed, W.M., Abdelshafeek, K.A., Nazif, N.M. & Singab, A.N.B. (2016) Chemical constituents and biological activities of *Cleome* genus: a brief review. *International Journal of Pharmacognosy and phytochemical research*, **8**, 777–787.
- Aho, K. A. (2013) *Foundational and applied statistics for biologists using R*. CRC Press.
- Aho, K.A. (2018) Asbio: A Collection of Statistical Tools for Biologists. R package version 1.5-3. [cited 08 November 2018].
- Aho, K.A. (2022) Asbio: A Collection of Statistical Tools for Biologists. R package version 1.8–2.
- Albrecht, C.F., Joubert, J.J. & De Rycke, P.H. (2001) Origin of the enigmatic, circular, barren patches ('Fairy Rings') of the pro-Namib. *South African Journal of Science*, **97**, 23–27.
- António, T.E.M. (2022) Plant diversity and vegetation patterns in the north of the Kaokoland endemic centre, Iona National Park. Doctoral dissertation, Namibia University of Science and Technology, Namibia.
- Apel, C. (2018) Spatial and activity patterns of *Ocymyrmex velox* in the Marienfluss Valley, Namibia. Bachelor thesis, Institute of Plant Science and Microbiology, University of Hamburg.
- Arnqvist, G. & Mårtensson, T. (1998) Measurement error in geometric morphometrics: Empirical strategies to assess and reduce its impact on measures of shape. *Acta Zoologica Academiae Scientiarum Hungaricae*, **44**, 73–96.
- Arshad, M.A. (1982) Influence of the termite *Macrotermes michaelseni* (Sjost) on soil fertility and vegetation in a semi-arid savannah ecosystem. *Agro-ecosystems*, **8**, 47–58.
- Austin, J.W., Bagnères, A.G., Szalanski, A.L., Scheffrahn, R.H., Heintschel, B.P., Messenger, M.T., Clément, J.-L. & Gold, R. E. (2007) *Reticulitermes mallei* (Isoptera: Rhinotermitidae): A valid Nearctic subterranean termite from Eastern North America. *Zootaxa*, **26**, 1–26.
- Barbosa, L.A.G. (1970) *Carta Fitogeográfica da Angola*. Instituto de Investigação Científica de Angola, Luanda.
- Bardunias, P.M., Calovi, D.S., Carey, N., Soar, R., Turner, J.S., Nagpal, R. & Werfel, J. (2020) The extension of internal humidity levels beyond the soil surface facilitates mound expansion in *Macrotermes*. *Proceedings of the Royal Society B: Biological Sciences*, **287**, 20200894.
- Becker, T. (2007) The phenomenon of fairy circles in Kaokoland (NW Namibia). *Basic and Applied Dryland Research*, **1**, 121–137.
- Becker, T. & Getzin, S. (2000) The fairy circles of Kaokoland (North-West Namibia) – origin, distribution, and characteristics. *Basic and Applied Ecology*, **1**, 149–159.
- Bischoff, G. (2013) Activity Patterns and Behaviour of *Tetramorium* Ants in Fairy Circle Ecosystems. Bachelor thesis, Institute of Plant Science and Microbiology, University of Hamburg.
- Bohn, C. (2014) Population genetics on the sand termite *Psammotermes allocerus* in Namib Desert fairy circles. Master thesis, Institute of Plant Science and Microbiology, University of Hamburg.
- Bollig, M. (1997) Risk and risk minimisation among Himba pastoralists in northwestern Namibia. *Nomadic Peoples*, **1**, 66–89.
- Bollig, M., & Gewald, J.B. (2000) People, Cattle and Land. *Transformations of a Pastoral Society in Southwestern Africa*. Köppe, Köln.
- Bonanomi, G., Incerti, G., Stinca, A., Carteni, F., Giannino, F. & Mazzoleni, S. (2014) Ring formation in clonal plants. *Community Ecology*, **15**, 77–86.
- Bonanomi, G., Mingo, A., Incerti, G., Mazzoleni, S. & Allegranza, M. (2012) Fairy rings caused by a killer fungus foster plant diversity in species-rich grassland. *Journal of Vegetation Science*, **23**, 236–248.
- Bothma, J.d.P. & Nel, J.A.J. (1980) Winter food and foraging behaviour of the aardwolf *Proteles cristatus* in the Namib-Naukluft Park. *Madoqua*, **12**, 141–149.
- Bourguignon, T., & Roisin, Y. (2011). Revision of the termite family Rhinotermitidae (Isoptera) in New Guinea. *ZooKeys*, **148**, 55–103.
- Bourguignon, T., Šobotnik, J., Sillam-Dussès, D., Jiroš, P., Hanus, R., Roisin, Y. & Miura, T. (2012) Developmental Pathways of *Psammotermes hybostoma* (Isoptera: Rhinotermitidae): Old Pseudergates Make up a New Sterile Caste. *PLoS One*, **7**, e44527.
- Brandl, R., Hacker, M., Epplen, J.T. & Kaib, M. (2005) High gene flow between populations of *Macrotermes michaelseni* (Isoptera, Termitidae). *Insectes Sociaux*, **52**, 344–349.
- Breiman, L., Friedman, J., Stone, C.J. & Olshen, R.A. (1984) *Classification and regression trees*. CRC press. Boca Raton, Florida.
- Brown, G., Scherber, C., Ramos Jr, P. & Ebrahim, E.K. (2012) The effects of harvester ant (*Messor ebeninus* Forel) nests on vegetation and soil properties in a desert dwarf shrub community in north-eastern Arabia. *Flora-Morphology, Distribution, Functional Ecology of Plants*, **207**, 503–511.
- Brune, A. (2014) Symbiotic digestion of lignocellulose in termite guts. *Nature Reviews Microbiology*, **12**, 168–180.
- Burke, A. (2006) *The Sperrgebiet: Managing its biodiversity*. EnviroScience and Namibia Nature Foundation, Oranjemund and Windhoek, 100 pages.
- Burke, A. & Loots, S. (2020) Plant endemics of the TsaulKhaeb (Sperrgebiet) National Park. *Namibian Journal of Environment*, **4**, 62–70.
- Caldwell, M.M., Dawson, T.E. & Richards, J.H. (1998) Hydraulic lift: consequences of water efflux from the roots of plants. *Oecologia*, **113**, 151–161.
- Campbell, N.A. & Atchley, W.R. (1981) The geometry of canonical variate analysis. *Systematic Biology*, **30**, 268–280.
- Carrington, D. (2014) Namibia's 'fairy circles': Nature's greatest mystery? CNN, <https://edition.cnn.com/2014/06/13/world/africa/namibia-fairy-circles-nature-greatest-mystery/index.html>.
- Carteni, F., Marasco, A., Bonanomi, G., Mazzoleni, S., Rietkerk, M. & Giannino, F. (2012) Negative plant soil feedback explaining ring formation in clonal plants. *Journal of Theoretical Biology*, **313**, 153–161.
- Chouvenec, T., Šobotnik, J., Engel, M. S., & Bourguignon, T. (2021). Termite evolution: mutualistic associations, key innovations, and the rise of Termitidae. *Cellular and Molecular Life Sciences*, **78**(6), 2749–2769.
- Clark, P.J. & Evans, F.C. (1954) Distance to nearest neighbor as a measure of spatial relationships in populations. *Ecology*, **35**, 445–453.
- Coaton, W.G.H. (1958) The hodotermitid harvester termites of South Africa. Department of Agriculture, Union of South Africa.
- Coaton, W.G.H. (1962) Control of the hodotermitid harvester termites in the Karoo. *Journal of the Entomological Society of Southern Africa*, **25**, 318–327.
- Coaton, W.G.H. (1981) Fossilised nests of Hodotermitidae (Isoptera) from the Clanwilliam District, Cape Province. *Journal of the Entomological Society of Southern Africa*, **44**, 79–81.
- Coaton W.G.H. & Sheasby J.L. (1972) Preliminary report on a survey of the termites (Isoptera) of South West Africa. *Cimbebasia Memoirs* **2**, 1–129.
- Coaton W.G.H. & Sheasby J.L. (1973) National Survey of the Isoptera of Southern Africa. 3. The Genus *Psammotermes* Desneux (Rhinotermitidae). *Cimbebasia*, **3**, 19–28.
- Coaton, W.G.H. & Sheasby, J.L. (1973) National Survey of the Isoptera of southern Africa. 1. The genus *Baicalitermes* Sands (Termitidae: Nasutitermitinae). *Cimbebasia*, **3**, 2–7.
- Coaton, W.G.H. & Sheasby, J.L. (1974) National survey of the Isoptera of southern Africa. 6. The Genus *Microhodotermes* Sjöstedt (Hodotermitidae). *Cimbebasia*, **3**, 47–59.
- Coaton, W.G.H. & Sheasby, J.L. (1974) National survey of the Isoptera of southern Africa. 6. *Hodotermes mossambicus* (Hagen) *Cimbebasia*, **3**, 106–137.

- Coaton, W.G.H. & Sheasby, J.L. (1975) National Survey of the Isoptera of Southern Africa. 10. The Genus *Hodotermes* Hagen (Hodotermitidae). *Cimbebasia*, **3**, 105–138.
- Coaton, W.G.H. & Sheasby, J.L. (1976) National survey of the Isoptera of southern Africa. 11. The genus *Coptotermes* Wasmann (Rhinotermitidae: Coptotermitinae). *Cimbebasia*, **3**, 140–172.
- Coetzee, M.E. (2021) Soils of the Skeleton Coast National Park and SCIONA project area in Namibia. Windhoek, Namibia.
- Cohen, J. (1960) A Coefficient of Agreement for Nominal Scales. *Educational and Psychological Measurement*, **20**, 37–46.
- Cox, G.W. (1987) The origin of vegetation circles on stony soils of the Namib Desert near Gobabeb, South West Africa/Namibia. *Journal of Arid Environments*, **13**, 237–244.
- Cox, G.W., Lovegrove, B.G. & Siegfried, W.R. (1987) The small stone content of mima-like mounds in the South African Cape region: implications for mound origin. *Catena*, **14**, 165–176.
- Cramer, M.D. & Barger, N.N. (2013) Are Namibian “fairy circles” the consequence of self-organizing spatial vegetation patterning? *PLoS one*, **8**, e70876.
- Cramer, M.D., Barger, N.N. & Tschinkel, W.R. (2017) Edaphic properties enable facilitative and competitive interactions resulting in fairy circle formation. *Ecography*, **40**, 1210–1220.
- Cramer, M.D. & Midgley, J.J. (2015) The distribution and spatial patterning of mima-like mounds in South Africa suggests genesis through vegetation induced aeolian sediment deposition. *Journal of Arid Environments*, **119**, 16–26.
- Curtis, B.A. (1985) The dietary spectrum of the Namib Desert dune ant *Camponotus detritus*. *Insectes Sociaux*, **32**, 78–85.
- d’Herbès, J.M., Valentin, C., Tongway, D.J. & Lep-run, J.C. (2001) Banded vegetation patterns and related structures. *Banded vegetation patterning in arid and semiarid environments* (ed. by P.J. Edwards, R.M. May and N.R. Webb), pp. 1–19. Springer, New York.
- Dangerfield, J.M., McCarthy, T.S. & Ellerly, W.N. (1998) The mound-building termite *Macrotermes michaelsoni* as an ecosystem engineer. *Journal of Tropical Ecology*, **14**, 507–520.
- Danin, A. & Orshan, G. (1995) Circular arrangement of *Stipagrostis ciliata* clumps in the Negev, Israel and near Gokaeb, Namibia. *Journal of Arid Environments*, **30**, 307–313.
- Darimont, C.T., Reimchen, T.E. & Paquet, P.C. (2003) Foraging behaviour by gray wolves on salmon streams in coastal British Columbia. *Canadian Journal of Zoology*, **81**, 349–353.
- Dayrat, B. (2005) Towards integrative taxonomy. *Biological Journal of the Linnean Society*, **85**, 407–415.
- Deblauwe, V., Barbier, N., Couteron, P., Lejeune, O. & Bogaert, J. (2008) The global biogeography of semi-arid periodic vegetation patterns. *Global Ecology and Biogeography*, **17**, 715–723.
- Deblauwe, V., Couteron, P., Bogaert, J. & Barbier, N. (2012) Determinants and dynamics of banded vegetation pattern migration in arid climates. *Ecological Monographs*, **82**, 3–21.
- Dinter, K., Paarmann, W., Peschke, K. & Arndt, E. (2002) Ecological, behavioural and chemical adaptations to ant predation in species of *Thermophilum* and *Graphipterus* (Coleoptera: Carabidae) in the Sahara Desert. *Journal of Arid Environments*, **50**, 267–286.
- Duncan, F.D. & Hewitt, P.H. (2009) Observations on the foraging behaviour of the harvester termite, *Hodotermes mossambicus* (Hagen) (Isoptera: Hodotermitidae). *Bulletin of Entomological Research*, **79**, 631–642.
- Dunkerley, D. (2018) Banded vegetation in some Australian semi-arid landscapes: 20 years of field observations to support the development and evaluation of numerical models of vegetation pattern evolution. *Desert*, **23**, 165–187.
- Eggerton, P. (2010) An introduction to termites: biology, taxonomy and functional morphology. *Biology of Termites: A Modern Synthesis* (ed. by D.E. Bignell, Y. Roisin, and N. Lo), pp. 1–26. Dordrecht, Springer.
- Eicker, A., Theron, G.K. & Grobbelaar, N. (1982) 'n Mikrobiologiese studie van 'kaal kolle' in die Giribesvlakte van Kaokoland, SWA-Namibië. *South African Journal of Botany*, **1**, 69–74.
- Eldridge, D.J. (1994) Nests of ants and termites influence infiltration in a semi-arid woodland. *Pedobiologia*, **38**, 481–492.
- ESRI (2011) ArcGIS Desktop: Release 10. *Environmental Systems Research Institute*, CA.
- Feddes, R.A., Hoff, H., Bruen, M., Dawson, T., De Rosnay, P., Dirmeyer, P., Jackson, R.B., Kabat, P., Kleidon, A. & Lilly, A. (2001) Modeling root water uptake in hydrological and climate models. *Bulletin of the American Meteorological Society*, **82**, 2797–2810.
- Fick, S.E. & Hijmans, R.J. (2017) WorldClim 2: new 1-km spatial resolution climate surfaces for global land areas. *International Journal of Climatology*, **37**, 4302–4315.
- Fox-Dobbs, K., Doak, D.F., Brody, A.K. & Palmer, T.M. (2010) Termites create spatial structure and govern ecosystem function by affecting N<sub>2</sub> fixation in an East African savanna. *Ecology*, **91**, 1296–1307.
- Galt, N.S. & Meyer, J.J.M. (2018) The southern Namibian (Garub) fairy circles: The role of the phytotoxic properties of the toxic succulent, *Euphorbia gummiifera*. *South African Journal of Botany*, **115**, 286.
- Geerts, S., Van der Linden, J. & Van der Linden, E. (2016) The ecology and foraging behaviour of the harvester termite, *Baicaliotes hainesi* in semi-arid grasslands in the northwestern interior of South Africa. *Insectes Sociaux*, **63**, 457–465.
- Getzin, S., Nambwandja, A., Holch, S. & Wiegand, K. (2021) Revisiting Theron’s hypothesis on the origin of fairy circles after four decades: *Euphorbias* are not the cause. *BMC ecology and evolution*, **21**, 1–23.
- Getzin, S., Wiegand, K., Wiegand, T., Yizhaq, H., Von Hardenberg, J. & Meron, E. (2015a) Adopting a spatially explicit perspective to study the mysterious fairy circles of Namibia. *Ecography*, **38**, 1–11.
- Getzin, S., Wiegand, K., Wiegand, T., Yizhaq, H., Von Hardenberg, J. & Meron, E. (2015b) Clarifying misunderstandings regarding vegetation self-organization and spatial patterns of fairy circles in Namibia: a response to recent termite hypotheses. *Ecological Entomology*, **40**, 669–675.
- Getzin, S. & Yizhaq, H. (2019) Unusual Namibian fairy circle patterns in heterogeneous and atypical environments. *Journal of Arid Environments*, **164**, 85–89.
- Getzin, S., Yizhaq, H., Bell, B., Erickson, T.E., Postle, A.C., Katra, I., Tzuk, O., Zelnik, Y.R., Wiegand, K., Wiegand, T. & Meron, E. (2016) Discovery of fairy circles in Australia supports self-organization theory. *Proceedings of the National Academy of Sciences*, **113**, 3551–3556.
- Getzin, S., Yizhaq, H., Cramer, M.D. & Tschinkel, W.R. (2019) Contrasting global patterns of spatially periodic fairy circles and regular insect nests in drylands. *Journal of Geophysical Research-Biogeosciences*, **124**, 3327–3342.
- Getzin, S., Yizhaq, H. & Tschinkel, W.R. (2021) Definition of “fairy circles” and how they differ from other common vegetation gaps and plant rings. *Journal of Vegetation Science*, **32**, e13092.
- Giess, W. (1971) A preliminary vegetation map of South West Africa. *Dinteria*, **4**, 5–114.
- Gilad, E., von Hardenberg, J., Provenzale, A., Shachak, M., & Meron, E. (2004) Ecosystem engineers: from pattern formation to habitat creation. *Physical Review Letters*, **93**, 098105.
- Gilad, E., von Hardenberg, J., Provenzale, A., Shachak, M., & Meron, E. (2007) A mathematical model of plants as ecosystem engineers. *Journal of Theoretical Biology*, **244**, 680–691.
- Gossweiler J. & Mendonça, F.A. (1939) Carta Fito-geográfica de Angola. Ministério das Colónias, Lisboa.
- Goudie, A.S. (1972) Climate, weathering, crust formation, dunes, and fluvial features of the Central Namib Desert, near Gobabeb, South West Africa. *Madoqua*, **2** (1), 54–62.
- Goudie, A.S. (2022) Nebkhas: An essay in aeolian biogeomorphology. *Aeolian Research*, **54**, 100772.
- Goudie, A.S. & Viles, H. (2014) *Landscapes and Landforms of Namibia*. Springer Dordrecht.

- Govorushko, S. (2019) Economic and ecological importance of termites: A global review. *Entomological Science*, **22**, 21–35. <https://doi.org/10.1111/ens.12328>
- Grabovsky, V.I. (2018) A model of vegetation cover in conditions of resource scarcity: Fairy rings in Namibia. *Biology Bulletin Reviews*, **8**, 169–180.
- Gregory, P.H. (1982) Fairy rings: free and tethered. *Bulletin of the British Mycological Society*, **16**, 161–163.
- Grohmann, C. (2010) Termite mediated heterogeneity of soil and vegetation patterns in a semi-arid savanna ecosystem in Namibia. Doctoral dissertation, Universität Würzburg.
- Grohmann, C., Oldeland, J., Stoyan, D. & Linsenmair, K.E. (2010) Multi-scale pattern analysis of a mound-building termite species. *Insectes Sociaux*, **57**, 477–486.
- Grube, S. (1993) Untersuchungen zum Wassergleichgewicht bei Termiten in ariden Lebensräumen am Beispiel von *Psammotermes allocerus* Silvestri. Doctoral dissertation, Freie Universität Berlin.
- Grube, S. (2000) Soil dumps: indicators of foraging activity by *Hodotermes mossambicus* (Hagen) (Isoptera: hodotermitidae) in northern Namibia? *Cimbebasia*, **16**, 269–270.
- Grube, S. (2002) The fairy circles of Kaokoland (Northwest Namibia) – is the harvester termite *Hodotermes mossambicus* the prime causal factor in circle formation? *Basic and Applied Ecology*, **3**, 367–370.
- Grube, S. & Rudolph, D. (1995) Termites in arid environments: the water balance of *Psammotermes allocerus* Silvestri. *Mitteilungen der Deutschen Gesellschaft für Allgemeine und Angewandte Entomologie*, **10**, 665–668.
- Gunter, F., Oldeland, J., Picker, M.D., Henschel, J.R. & Jürgens, N. (2022) Cryptic subterranean diversity: Regional phylogeography of the sand termite *Psammotermes allocerus* Silvestri, 1908 in the wider Namib region. *Organisms Diversity & Evolution*, 1–12. <https://doi.org/10.1007/s13127-022-00580-w>
- Gutteridge, G. (2017) Invertebrates of Southern Africa and their Tracks & Signs. Jacana Media, Auckland Park. 409 pp.
- Harris, W.V. (1967) Termites of the genus *Anacanthotermes* in North Africa and the near east (Isoptera: Hodotermitidae). *Proceedings of the Royal Entomological Society of London: Series B*, **36**, 79–86.
- Hausberger, B., Kimpel, D., van Neer, A. & Korb, J. (2011) Uncovering cryptic species diversity of a termite community in a West Africa savanna. *Molecular Phylogenetics and Evolution*, **61**, 964–969.
- Hebert, P.D.N., Cywinska, A., Ball, S.L. & DeWaard, J.R. (2003) Biological identifications through DNA barcodes. *Proceedings of the Royal Society B: Biological Sciences*, **270**, 313–321.
- Hellemans, S., Sobotnik, J., Lepoint, G., Mihaljevic, M., Roisin, Y. & Bourguignon, T. (2022) Termite dispersal is influenced by their diet. *Proceedings of the Royal Society B*, **289**, 20220246.
- Henschel, J.R. (1994) Diet and foraging behaviour of huntsman spiders in the Namib dunes (Araneae: Heteropodidae). *Journal of Zoology*, **234**, 239–251.
- Henschel, J.R. (1997) Psammophily in Namib desert spiders. *Journal of Arid Environments*, **37**, 695–707.
- Henschel, J.R. & Lubin, Y.D. (1992) Environmental factors affecting the web and activity of a psammophilous spider in the Namib Desert. *Journal of Arid Environments*, **22**, 173–189.
- Herzig-Straschil, B. & Herzig, A. (1989) Biology of *Xerus princeps* (Rodentia, Sciuridae). *Madoqua*, **16**, 41–46.
- Hibbitts, T.J., Whiting, M.J. & Stuart-Fox, D.M. (2007) Shouting the odds: vocalization signals status in a lizard. *Behavioral Ecology and Sociobiology*, **61**, 1169–1176.
- Holt, J.A. & Lepage, M. (2000) Termites and soil properties. *Termites: evolution, sociality, symbiosis, ecology* (ed. by T. Abe, D.E. Bignell and M. Higashi), pp. 389–407. Springer Science & Business Media, Dordrecht, The Netherlands.
- Inward, D.J.G., Vogler, A.P. & Eggleton, P. (2007) A comprehensive phylogenetic analysis of termites (Isoptera) illuminates key aspects of their evolutionary biology. *Molecular Phylogenetics and Evolution*, **44**, 953–967.
- IUSS Working Group WRB (2015) World Reference Base for Soil Resources 2014, update 2015. International soil classification system for naming soils and creating legends for soil maps. *World Soil Resources Reports No. 106*. FAO, Rome.
- Izenman, A.J. (2008) *Modern multivariate statistical techniques. Regression, classification and manifold learning*. Springer, New York.
- Jacobson, K.M. (1996) Macrofungal ecology in the Namib Desert. A fruitful or futile study? *McIlvainea* 21–32.
- Jacobsen, N.H.G. & Moss, H. (1987) A contribution to the flora of the northern Namib. *Dinteria*, **19**, 27–68.
- Jacobson, K., van Diepeningen, A., Evans, S., Fritts, R., Gemmel, P., Marsho, C., Seely, M., Wennadt, A., Yang, X. & Jacobson, P. (2015) Non-rainfall moisture activates fungal decomposition of surface litter in the Namib Sand Sea. *PLoS One*, **10**, e0126977.
- Jankowitz, W.J., Van Rooyen, M.W., Shaw, D., Kaumba, J.S. & Van Rooyen, N. (2008) Mysterious circles in the Namib Desert. *South African Journal of Botany*, **74**, 332–334.
- Jones, C.G., Lawton, J.H. & Shachak, M. (1994) Organisms as ecosystem engineers. *Oikos*, **69**, 373–386.
- Jones, J.A. (1990) Termites, soil fertility and carbon cycling in dry tropical Africa: a hypothesis. *Journal of Tropical Ecology*, **6**, 291–305.
- Jouquet, P., Bottinelli, N., Shanbhag, R.R., Bourguignon, T., Traoré, S. & Abbasi, S.A. (2016) Termites: the neglected soil engineers of tropical soils. *Soil Science*, **181**, 157–165.
- Jouquet, P., Traoré, S., Choosai, C., Hartmann, C. & Bignell, D. (2011) Influence of termites on ecosystem functioning. Ecosystem services provided by termites. *European Journal of Soil Biology*, **47**, 215–222. <https://doi.org/10.1016/j.ejsobi.2011.05.005>
- Jouquet, P., Traoré, S., Harit, A., Choosai, C., Cheik, S. & Bottinelli, N. (2020) Moving beyond the distinction between the bright and dark sides of termites to achieve sustainable development goals. *Current Opinion in Insect Science*, **40**, 71–76. <https://doi.org/10.1016/j.cois.2020.05.010>
- Jürgens, N. (1986) Untersuchungen zur Ökologie sukkulenter Pflanzen des südlichen Afrika. *Mitteilungen aus dem Institut für Allgemeine Botanik Hamburg*, **21**, 139–365.
- Jürgens, N. (1991) A new approach to the Namib Region. *Végétatio*, **97**, 21–38.
- Jürgens, N. (1996) Psammophorous plants and other adaptations to desert ecosystems with high incidence of sandstorms. *Feddes Repertorium*, **107**, 345–359.
- Jürgens, N. (1997) Floristic biodiversity and history of African arid regions. *Biodiversity & Conservation*, **6**, 495–514.
- Jürgens, N. (2004) A first classification of the vegetation of the Richtersveld (RSA) and directly adjacent regions in Namibia and South Africa. *Biodiversity & Ecology*, **2**, 149–180.
- Jürgens, N. (2013) The biological underpinnings of Namib Desert fairy circles. *Science*, **339**, 1618–1621.
- Jürgens, N. (2015) Exploring common ground for different hypotheses on Namib fairy circles. *Ecography*, **38**, 12–14.
- Jürgens, N., Desmet, P.G., Rutherford, M.C., Mucina, L. & Ward, R.A. (2005) Desert Biome. *The Vegetation of South Africa, Lesotho and Swaziland* (ed. by L. Mucina and M.C. Rutherford), pp. 300–323. South African National Biodiversity Institute, Pretoria.
- Jürgens, N., Gunter, F., Oldeland, J., Gröngroft, A., Henschel, J.R., Oncken, I. & Picker, M.D. (2021b) Largest on earth: Discovery of a new type of fairy circle in Angola supports a termite origin. *Ecological Entomology*, **46**, 777–789.
- Jürgens, N., Haarmeyer, D.H., Luther-Mosebach, J., Dengler, J., Finckh, M. & Schmiedel, U. (2010) *Patterns at local scale: The BIOTA Observatories*. Klaus Hess Publishers, Göttingen & Windhoek.
- Jürgens, N., Oldeland, J., Hachfeld, B., Erb, E. & Schultz, C. (2013) Ecology and spatial patterns of large-scale vegetation units within the central Namib Desert. *Journal of Arid Environments*, **93**, 59–79.

- Jürgens, N., Oncken, I., Oldeland, J., Gunter, F. & Rudolph, B. (2021a) Welwitschia: Phylogeography of a living fossil, diversified within a desert refuge. *Scientific reports*, **11**, 1–14.
- Jürgens, N., Strohbach, B., Lages, F., Schmiedel, U., Finckh, M., Sichone, P., Hahn, L.M. & Zieglski, P. (2018) Biodiversity observation—an overview of the current state and first results of biodiversity monitoring studies. *Biodiversity & Ecology*, **6**, 382–396.
- Jürgens, N., Vlieghe, K.E.P., Bohn, C., Erni, B., Gunter, F., Oldeland, J., Rudolph, B. & Picker, M.D. (2015) Weaknesses in the plant competition hypothesis for fairy circle formation and evidence supporting the sand termite hypothesis. *Ecological Entomology*, **40**, 661–668.
- Kaffarnik, S. (2009) GC/MS-Analytik von Boden- und Termitennestmaterial aus Feenkreisen, Doctoral dissertation, University of Hamburg.
- Kappel, C., Illing, N., Huu, C.N., Barger, N.N., Cramer, M.D., Lenhard, M. & Midgley, J.J. (2020) Fairy circles in Namibia are assembled from genetically distinct grasses. *Communications Biology*, **3**, 1–8.
- Kassambara, A. & Mundt, F. (2017) Factoextra: extract and visualize the results of multivariate data analyses. *R package version 1.0.5*. (accessed 8th November 2018).
- Klak, C., Hanacek, P. & Bruyns, P. (2017) Out of southern Africa: Origin, biogeography and age of the Aizoioideae (Aizoaceae). *Molecular Phylogenetics and Evolution*, **109**, 203–216.
- Klak, C., Reeves, G. & Hedderson, T. (2004) Unmatched tempo of evolution in Southern African semi-desert ice plants. *Nature*, **427**, 63–65.
- Klingenberg, C.P. (2011) MorphoJ: an integrated software package for geometric morphometrics. *Molecular Ecology Resources*, **11**, 353–357.
- Kocarek, M. & Kodesova, R. (2012) Influence of temperature on soil water content measured by ECH2O-TE sensors. *International Agrophysics*, **26**, 259–269.
- Koch, C. (1962) The Tenebrionidae of Southern Africa, XXXI. Comprehensive notes on the tenebrionid fauna of the Namib Desert. *Annals of the Transvaal Museum*, **24**, 61–106.
- Kohfahl, C., Molano-Leno, L., Martínez, G., Vunderlinden, K., Guardiola-Albert, C. & Moreno, L. (2019) Determining groundwater recharge and vapor flow in dune sediments using a weighable precision meteorological lysimeter. *Science of the Total Environment*, **656**, 550–557.
- Korb, J. (2003) Thermoregulation and ventilation of termite mounds. *Naturwissenschaften*, **90**, 212–219.
- Krasulová, J., Hanus, R., Kotalová, K., Šobotník, J., Sillam-Dussès, D., Tichý, M. & Valterová, I. (2012) Chemistry and Anatomy of the Frontal Gland in Soldiers of the Sand Termite *Pseudotermes hybostoma*. *Journal of Chemical Ecology*, **38**, 557–565.
- Kuhn M. (2018) Caret: classification and regression training. *Astrophysics Source Code Library*, ascl-1505, R package version 6.0-80 (accessed 8th November 2018).
- Kuhn, M. & Johnson, K. (2013) *Applied predictive modeling*, 26th edn. Springer, New York.
- Kutner, M.H., Nachtsheim, C.J., Neter, J. & Li, W. (2005) *Applied Linear Statistical Models*. McGraw Hill Irwin, New York.
- Lancaster, N. (2014) Dune systems of the Namib Desert—a spatial and temporal perspective. *Transactions of the Royal Society of South Africa*, **69**, 133–137.
- Lasser, J., Nield, J.M., Ernst, M., Karius, V., Wiggs, G.F.S. & Goehring, L. (2019) Salt Polygons are caused by convection. *arXiv preprint arXiv*, **1902.03600**.
- Lê, S., Josse, J. & Husson, F. (2008) FactoMineR: An R package for multivariate analysis. *Journal of Statistical Software*, **25**, 1–18.
- Lefever, R. & Lejeune, O. (1997) On the origin of tiger bush. *Bulletin of Mathematical Biology*, **59**, 263–294.
- Legendre, P. & Gallagher, E.D. (2001) Ecologically meaningful transformations for ordination of species data. *Oecologia*, **129**, 271–280.
- Legendre, P. & Legendre, L. (2012) *Numerical ecology*, 24th edn. Developments in Environmental Modelling. Elsevier, Amsterdam.
- Lemke, K. (2018) A general study about the ant species *Carebara kunensis* of the Namib Desert with special regard to their foraging behaviour and -activity. Bachelor thesis, Institute of Plant Science and Microbiology, University of Hamburg.
- Lewis, R.J. (2000) An introduction to classification and regression tree (CART) analysis. *Annual meeting of the society for academic emergency medicine in San Francisco, California*, Vol. 14, Citeseer, 1–14.
- Lewis, E.R., Narins, P.M., Jarvis, J.U., Bronner, G., & Mason, M.J. (2006) Preliminary evidence for the use of microseismic cues for navigation by the Namib golden mole. *The Journal of the Acoustical Society of America*, **119**, 1260–1268.
- Li, Y., Wang, Y. & Yao, Q. (2020) Nebkhas origination in arid and semi-arid regions: An overview. *Acta Ecologica Sinica*, **40**, 500–505.
- Lo, N., Kitade, O., Miura, T., Constantino, R. & Matsumoto, T. (2004). Molecular phylogeny of the Rhinotermitidae. *Insectes Sociaux*, **51**, 365–371.
- Loh, W.-Y. (2011) Classification and regression trees. *Wiley Interdisciplinary Reviews: Computational Statistics*, **1**, 14–23.
- Lorenz, C., Almeida, F., Almeida-Lopes, F., Louise, C., Pereira, S.N., Petersen, V., Vidal, P.O., Virdinio, F. & Suesdek, L. (2017) Geometric morphometrics in mosquitoes: What has been measured? *Infection, Genetics and Evolution*, **54**, 205–215.
- Louw, G.N. & Seely M.K. (1982) Ecology of desert organisms, 1st edn. Longman Group Limited, London and New York.
- Lovegrove, B.G. & Siegfried, W.R. (1986) Distribution and formation of Mima-like earth mounds in the western Cape Province of South Africa. *South African Journal of Science*, **82**, 432–436.
- Lubin, Y.D. & Henschel, J.R. (1990) Foraging at the thermal limit: burrowing spiders (*Seothyra*, Eresidae) in the Namib desert dunes. *Oecologia*, **84**, 461–467.
- Lüscher, M. (1961) Air-conditioned termite nests. *Scientific American*, **205**, 138–145.
- Macfadyen W.A. (1950) Vegetation patterns in the semi desert plains of the British Somaliland. *Geographic Journal*, **116**, 199–210.
- Maestre, F.T., Benito, B.M., Berdugo, M., Concostrina-Zubiri, L., Delgado-Baquerizo, M., Eldridge, D.J., Guirado, E., Gross, N., Kéfi, S., Le Bagousse-Pinguet, Y., Ochoa-Hueso, R. & Soliveres, S. (2021) Biogeography of global drylands. *New Phytologist*, **231**, 540–558.
- Maher, B.A. (1998) Magnetite biomineralization in termites. *Proceedings of the Royal Society of London. Series B: Biological Sciences*, **265**, 733–737.
- Marsh, A. C. (1987) Thermal responses and temperature tolerance of a desert ant-lion larva. *Journal of Thermal Biology*, **12**, 295–300.
- Martin, M.M. & Martin J.S. (1978.) Cellulose digestion in the midgut of the fungus-growing termite *Macrotermes natalensis*: the role of acquired digestive enzymes. *Science*, **199**, 1453–1455.
- Matimati, I., Musil, C.F., Raitt, L. & February, E. (2013) Non rainfall moisture interception by dwarf succulents and their relative abundance in an inland arid South African ecosystem. *Ecohydrology*, **6**, 818–825.
- McAuliffe, J.R., Hoffman, M.T., McFadden, L.D., Bell, W., Jack, S., King, M.P. & Nixon, V. (2019a) Landscape patterning created by the southern harvester termite, *Microhodotermes viator*: Spatial dispersion of colonies and alteration of soils. *Journal of Arid Environments*, **162**, 26–34.
- McAuliffe, J.R., Hoffman, M.T., McFadden, L.D., Jack, S., Bell, W. & King, M.P. (2019b) Whether or not heuweltjies: context-dependent ecosystem engineering by the southern harvester termite, *Microhodotermes viator*. *Journal of Arid Environments*, **163**, 26–33.
- McAuliffe, J.R., Hoffman, M.T., McFadden, L.D. & King, M.P. (2014) Role of aeolian sediment accretion in the formation of heuweltjie earth mounds, western South Africa. *Earth Surface Processes and Landforms*, **39**, 1900–1912.
- Mendelsohn J. & Mendelsohn, S. (2018) Sudoeste de Angola: um Retrato da Terra e da Vida. South West Angola: a portrait of land and life. Arte e Ciência.



- Meron, E. (2012) Pattern-formation approach to modelling spatially extended ecosystems. *Ecological Modelling*, **234**, 70–82.
- Meron, E. (2015) *Nonlinear Physics of Ecosystems*. CRC Press Boca Raton. 329 pp.
- Meron, E. (2019) Vegetation pattern formation: The mechanisms behind the forms. *Physics Today*, **72**, 30–36. <https://doi.org/10.1063/PT.3.4340>
- Meyer, J.J.M., Heyman, H.M., Senejoux, F., Degashu, P., Galt, N., Nxumalo, D. & Labuschagne, N. (2017) The chemical ‘footprints’ of *Euphorbia* species found in the mysterious fairy circles of Namibia. *South African Journal of Botany*, **100**, 351.
- Meyer, J.M., Schutte, C.S., Galt, N., Hurter, J.W. & Meyer, N.L. (2021) The fairy circles (circular barren patches) of the Namib Desert—What do we know about their cause 50 years after their first description? *South African Journal of Botany*, **140**, 226–239.
- Meyer, J.J.M., Schutte, C.E., Hurter, J.W., Galt, N.S., Degashu, P., Breetzke, G., Baranenko, D. & Meyer, N. L. (2020) The allelopathic, adhesive, hydrophobic and toxic latex of *Euphorbia* species is the cause of fairy circles investigated at several locations in Namibia. *BMC ecology*, **20**, 1–23.
- Meyer, J.J.M., Senejoux, F., Heyman, H.M., Meyer, N.L. & Meyer, M.A. (2015) The occurrence of triterpenoids from *Euphorbia gummifera* inside the fairy circles of Garub in the southern Namibian pro-desert. *South African Journal of Botany*, **98**, 10–15.
- Meyer, V.W., Braack, L.E.O., Biggs, H.C. & Ebersohn, C. (1999) Distribution and density of termite mounds in the northern Kruger National Park, with specific reference to those constructed by *Macrotermes Holmgreni* (Isoptera: Termitidae). *African Entomology*, **7**, 123–130.
- Mills, A.J., Milewski, A., Fey, M.V., Groengroeft, A. & Petersen, A. (2009) Fungus culturing, nutrient mining and geophagy: a geochemical investigation of *Macrotermes* and *Trinervitermes* mounds in southern Africa. *Journal of Zoology*, **278**, 24–35.
- Möhlig, W. (2002) The language history of Herero as a source of ethnohistorical interpretations. *People, Cattle and Land: Transformations of a pastoral society in southwestern Africa* (ed. by M. Bollig and J.-B. Gewald), pp. 119–146. Rüdiger Köppe, Köln.
- Moll, E.J. (1994) The origin and distribution of fairy rings in Namibia. *Proceedings of the 13th Plenary Meeting AETFAT*, Malawi, **2**, 1203–1209.
- Moore, J.M. & Picker, M.D. (1991) Heuweltjies (earth mounds) in the Clanwilliam District, Cape Province, South Africa: 4000-year-old termite nests. *Oecologia*, **86**, 424–432.
- Muche, G., Schmiedel, U. & Jürgens, N. (2012) BIOTA Southern Africa biodiversity observatories vegetation database. *Environmental Monitoring and Assessment*, **184**, 655–678.
- Muche, G., Schmiedel, U., Finckh, M. & Jürgens, N. (2018) BIOTABase – a unique software to handle complex biodiversity observation data and environmental data. *Climate change and adaptive land management in southern Africa – Assessments, Changes, Challenges and Solutions* (ed. by R. Revermann, K. Krewenka, U. Schmiedel, J.M. Olwoch, J. Helmschrot, and N. Jürgens), pp. 458–459. *Biodiversity & Ecology*, **6**, Klaus Hess Publishers, Göttingen & Windhoek.
- Mucina, L., Jürgens, N., Le Roux, A., Rutherford, M.C., Schmiedel, U., Esler, K.J., Powrie, L.W., Desmet, P.G. & Milton, S.J. (2006) Succulent Karoo Biome. *Strelitzia*, **19**, 220–299.
- Mühlenpfordt, M. (2013) Activity patterns and foraging behavior of *Messor denticornis* ants in fairy circle ecosystems of the Namib Desert. Bachelor thesis, Institute of Plant Science and Microbiology, University of Hamburg.
- Müller, B., Linstädter, A., Frank, K., Bollig, M. & Wissel, C. (2007) Learning from local knowledge: modeling the pastoral-nomadic range management of the Himba, Namibia. *Ecological applications*, **17**, 1857–1875.
- Myagkiy, A., Moretti, I. & Brunet, F. (2020) Space and time distribution of subsurface H<sub>2</sub> concentration in so-called “fairy circles”: Insight from a conceptual 2-D transport. *Bulletin de la Société Géologique de France-Earth Sciences Bulletin*, **191**, 13.
- Naiman, R.J., Melillo, J.M. & Hobbie, J.E. (1986) Ecosystem alteration of boreal forest streams by beaver (*Castor canadensis*). *Ecology*, **67**, 1254–1269.
- Naude, Y., Van Rooyen, M.W. & Rohwer, E.R. (2011) Evidence for a geochemical origin of the mysterious circles in the Pro-Namib desert. *Journal of Arid Environments*, **75**, 446–456.
- Noirot, C. & Darlington, J.P.E.C. (2000) Termite nests: Architecture, regulation and defence. *Termites: evolution, sociality, symbioses, ecology* (ed. by T. Abe, D.E. Bignell and M. Higashi), pp. 121–139. Springer Netherlands, Dordrecht.
- Oguz, I., Stocker, B. & Jürgens, N. (2004) Succulent plant communities and edaphical factors along a coast-inland-transect in the Sandveld of the Northern Richtersveld. *Biodiversity & Ecology*, **2**, 133–149.
- Ollier, C.D. & Seely, M. (1977) Patterned ground near Gobabeb, central Namib desert. *Journal of Arid Environments*, **10**, 213–214.
- Or, D. & Wraith, J.M. (1999) Temperature effects on soil bulk dielectric permittivity measured by time domain reflectometry: A physical model. *Water Resources Research*, **35**, 371–383.
- Orlói, L. (1967) An agglomerative method for classification of plant communities. *The Journal of Ecology*, **55**, 193–206.
- Patton, P.C., Pickup, G. & Price, D.M. (1993) Holocene palaeofloods of the Ross River, central Australia. *Quaternary Research*, **40**, 201–212.
- Phan, T.H., Van Gorp, H., Li, Z., Huynh, T.M.T., Fujita, Y., Verstraete, L., Eyley, S., Thielemans, W., Uji-I, H., Hirsch, E.B., Mertens, S.F.L., Greenwood, J., Ivashenko, O. & De Feyter, S. (2019) Graphite and graphene fairy circles: A bottom-up approach for the formation of nanocorrals. *ACS nano*, **13**, 5559–5571.
- Picker, M.D., Hoffman, M.T. & Leverton, B. (2007) Density of *Microhodotermes viator* (Hodotermitidae) mounds in southern Africa in relation to rainfall and vegetative productivity gradients. *Journal of Zoology*, **271**, 37–44.
- Picker, M.D., Ross-Gillespie, V., Vlieghe, K. & Moll, E. (2012) Ants and the enigmatic Namibian fairy circles—cause and effect? *Ecological Entomology*, **37**, 33–42.
- Pickford, M., Senut, B. & Dauphin, Y. (1995) Biostratigraphy of the Tsondab sandstone (Namibia) based on gigantic avian eggshells. *Geobios*, **28**, 85–98.
- Platnick, N.I. & Griffin, E. (1990) On *Rastellus*, a new genus of the spider family Ammoxenidae (Araneae, Gnaphosoidea). *American Museum Novitates*, **2995**.
- Potts, A.J., Midgley, J.J. & Harris, C. (2009) Stable isotope and <sup>14</sup>C study of biogenic calcrete in a termite mound, Western Cape, South Africa, and its palaeoenvironmental significance. *Quaternary Research*, **72**, 258–264.
- Pringle, R.M. & Tarnita, C.E. (2017) Spatial self-organization of ecosystems: integrating multiple mechanisms of regular-pattern formation. *Annual Review of Entomology*, **62**, 359–377.
- Prötzel, D., Heß, M., Schwager, M., Glaw, F. & Scherz, M.D. (2021) Neon-green fluorescence in the desert gecko *Pachydactylus rangei* caused by iridophores. *Scientific Reports*, **11**, 1–10.
- Ramond, J., Pienaar, A., Armstrong, A., Seely, M. & Cowan, D.A. (2014) Niche-Partitioning of Edaphic Microbial Communities in the Namib Desert Gravel Plain Fairy Circles. *PLoS ONE*, **9**, e109539. doi:10.1371/journal.pone.0109539
- Ravi, S., D’Odorico, P., Wang, L. & Collins, S. (2008) Form and function of grass ring patterns in arid grasslands: the role of abiotic controls. *Oecologia*, **158**, 545–555.
- Ravi, S., Wang, L., Kaseke, K.F., Buynevich, I.V. & Marais, E. (2017) Ecohydrological interactions within “fairy circles” in the Namib Desert: Revisiting the self-organization hypothesis. *Journal of Geophysical Research: Biogeosciences*, **122**, 405–414.
- Renger, M., Bohne, K., Facklam, M., Harrach, T., Riek, W., Schäfer, W., Wessolek, G. & Zacharias, S. (2009) Ergebnisse und Vorschläge der DBG-Arbeitsgruppe „Kennwerte des Bodengefüges“ zur Schätzung bodenphysikalischer Kennwerte. *Wilhadi*, **5**, 21682.

- Revermann, R., Krewenka, K., Schmiedel, U., Olwoch, J.M., Helmschrot, J. & Jürgens, N. (eds.) (2018) Climate change and adaptive land management in southern Africa – Assessments, Changes, Challenges and Solutions. Klaus Hess Publishers, Göttingen & Windhoek.
- Rietkerk, M. & van de Koppel, J. (2008) Regular pattern formation in real ecosystems. *Trends in Ecology and Evolution*, **23**, 169–175.
- Robinson, E.J. (2014) Polydomy: the organisation and adaptive function of complex nest systems in ants. *Current Opinion in Insect Science*, **5**, 37–43.
- Rodell, M., Houser, P.R., Jambor, U.E.A., Gottschalk, J., Mitchell, K., Meng, C. J., Arsenault, K., Cosgrove, B., Radakovich, J., Bosilovich, M., Entin, J. K., Walker, J. P., Lohmann, D. & Toll, D. (2004) The global land data assimilation system. *Bulletin of the American Meteorological Society*, **85**, 381–394.
- Rohlf, F.J. (2017) *tpsDig version 2.31*. New York: Department of Ecology and Evolution and Anthropology, State University of New York at Stony Brook.
- Rohlf, F.J. (2018) *tpsUtil version 1.75*. New York: Department of Ecology and Evolution and Anthropology, State University of New York at Stony Brook.
- Roisin, Y. & Lenz, M. (1999) Caste developmental pathways in colonies of *Coptotermes lacteus* (Froggatt) headed by primary reproductives (Isoptera, Rhinotermitidae). *Insectes Sociaux*, **46**, 273–280.
- Roonwal, M.L. & Bose, G. (1962) An African genus *Psammotermes* in Indian termite fauna, with fuller description of *P. rajasthanicus* from Rajasthan, India. *Records Indian Museum*, **58**, 151–158.
- Roonwal, M.L. & Chhotani, O.B. (1989) Fauna of India, Isoptera (Termites). *Zoological Survey of India*.
- Roy, V., Demanche, C., Livet, A. & Harry, M. (2006) Genetic differentiation in the soil-feeding termite *Cubitermes* sp. *affinis subarquatus*: occurrence of cryptic species revealed by nuclear and mitochondrial markers. *BMC Evolutionary Biology*, **6**, 102. <https://doi.org/10.1186/1471-2148-6-102>.
- Ruiz-Reynés, D., Gomila, D., Sintes, T., Hernández-García, E., Marbà, N. & Duarte, C. M. (2017) Fairy circle landscapes under the sea. *Science Advances*, **3**, e1603262.
- Rutherford, M.C. & Westfall, R.H. (1994) *Biomes of southern Africa: an objective categorization*. National Botanical Institute, Pretoria.
- Sanabria, C., Dubs, F., Lavelle, P., Fonte, S.J. & Barot, S. (2016) Influence of regions, land uses and soil properties on termite and ant communities in agricultural landscapes of the Colombian Llanos. *European Journal of Soil Biology*, **74**, 81–92.
- Sasakawa, K. (2016) Utility of geometric morphometrics for inferring feeding habit from mouthpart morphology in insects: Tests with larval Carabidae (Insecta: Coleoptera). *Biological Journal of the Linnean Society*, **118**, 394–409.
- Schmieder, D.A., Benítez, H.A., Borissov, I.M., & Fruciano, C. (2015) Bat species comparisons based on external morphology: a test of traditional versus geometric morphometric approaches. *PLoS one*, **10**, e0127043.
- Schutte, C.E. (2019) Predictive modelling of Namibian fairy circles and their co-occurrence with *Euphorbia* species using Geographical Information Systems (GIS). Doctoral Dissertation, University of Pretoria.
- Schutte, C.E., Meyer, J.J.M. & Breetzke, G. (2018) Are the fairy circles of Namibia caused by *Euphorbia* species? *South African Journal of Botany*, **115**, 308.
- Shaanika, H.N. (2020) Assessing the likelihood that burrowing gerbils in the central Namib are ecological engineers. Namibia University of Science and Technology, Windhoek.
- Shaanika, H., Wassenaar, T. & Eiseb, S. (2019) *Gerbils of the Namib Desert—are they ecological engineers?* GOBABEB Namib Research Institute, Gobabeb.
- Sheffer, E., Yizhaq, H., Gilad, E., Shachak, M. & Meron, E. (2007) Why do plants in resource-deprived environments form rings? *Ecological Complexity*, **4**, 192–200.
- Sieben, A.J., Barger, N.N., Cramer, M.D., Tschinkel, W.R., Wiegand, T. & Shoemaker, L.G. (2019) Herbivory and soil resources impact the maintenance of landscape gap patterning and the spatial arrangement of grasses during pattern collapse. *ESA Annual Meeting (August 11–16)*. ESA.
- Sileshi, G.W., Arshad, M.A., Konaté, S. & Nkuni-ka, P.O. (2010) Termite-induced heterogeneity in African savanna vegetation: mechanisms and patterns. *Journal of Vegetation Science*, **21**, 923–937.
- Sillam-Dussès, D., Hanus, R., Abd El-Latif, A. O., Jiroš, P., Krasulová, J., Kalinová, B., Valterová, I. & Šobotník, J. (2011) Sex Pheromone and Trail Pheromone of the Sand Termite *Psammotermes hybostoma*. *Journal of Chemical Ecology*, **37**, 179–188.
- Silvestri, F. (1908) B. Archiptera (I). Termitidae. *Denkschriften der Medicinisch-Naturwissenschaftlichen Gesellschaft zu Jena*, **13**, 69–82.
- Sjöstedt, Y. (1900) Monographie der Termiten Afrikas. *Kungliga Svenska Vetenskapsakademiens Handlingar*, **34**, 1–236.
- Sjöstedt, Y. (1912) Neue Termiten aus Tripolis, Ober-Ägypten, Abessinien, Erithrea, dem Gallaland und Somaliland. Wiksells Boktryckeri, Uppsala.
- Sjöstedt, Y. (1925) Revision der Termiten Afrikas 3. Monographie. *Kungliga Svenska Vetenskapsakademiens Handlingar*, **3**, 1–419.
- Skiljan, I. (2012). „IrfanView.“ URL <http://irfan-view.tuwien.ac.at/>.
- Skinner, J.D. & Chimimba, C.T. (2013) *Mammals of the southern African subregion*. Cambridge University Press, Cambridge.
- Slavich, P.G. & Petterson, G.H. (1993) Estimating the electrical conductivity of saturated paste extracts from 1: 5 soil, water suspensions and texture. *Soil Research*, **31**, 73–81.
- Sokol, J. (2018) Visiting the Mysterious Fairy Circles of the Namib Desert. *The Atlantic* <https://www.theatlantic.com/science/archive/2018/05/visiting-the-mysterious-fairy-circles-of-the-namib-desert/560639/>
- Spaargaren, O.C. & Deckers, J. (1998) The world reference base for soil resources. *Soils of Tropical Forest Ecosystems*. Springer.
- Stander, P.E. (2019) Lions (*Panthera leo*) specialising on a marine diet in the Skeleton Coast National Park, Namibia. *Namibian Journal of Environment*, **3**, 1–10.
- Stengel, I. (2000) Brousse tigré – Muster und Materialverspülung und Pflanzenwuchs in Südnamibia. *Petermanns Geographische Mitteilungen*, **144**(2), 4–5.
- Stronen, A. V., Navid, E.L., Quinn, M.S., Paquet, P.C., Bryan, H.M. & Darimont, C.T. (2014) Population genetic structure of gray wolves (*Canis lupus*) in a marine archipelago suggests island-mainland differentiation consistent with dietary niche. *BMC Ecology*, **14**, 1–9.
- Swart, R. (2008) How old is the Namib really – A geological perspective. *Namib: Secrets of a desert uncovered* (ed. by M.K. Seely and J. Pallett), pp. 1–201. Venture Publications, Windhoek.
- Tarnita, C.E., Bonachela, J.A., Sheffer, E., Guyton, J.A., Coverdale, T.C., Long, R.A. & Pringle, R.M. (2017) A theoretical foundation for multi-scale regular vegetation patterns. *Nature*, **541**, 398–401.
- Taylor, W.A., Lindsey, P.A. & Skinner, J.D. (2002) The feeding ecology of the aardvark *Orycteropus afer*. *Journal of Arid Environments*, **50**, 135–152.
- Tevis, L.J. & Newell, I.M. (1962) Studies on the biology and seasonal cycle of the giant red velvet mite, *Dinothrombium pandorae* (Acari, Trombididae). *Ecology*, **43**, 497–505.
- Therneau, T., Atkinson, B. & Ripley, B. (2018) rpart: Recursive Partitioning and Regression Trees. R package version 4.1–13.
- Theron, G.K. (1979) Die verskynsel van kaal kolle in Kaokoland, Suidwes-Afrika. *Journal of the South African Biological Society*, **20**, 43–53.
- Tinley, K.L. (1971) Etosha and the Kaokoveld. *African Wild Life Protection Society*, **25**, 1–16.
- Tlidi, M., Lefever, R. & Vladimirov, A. (2008) On Vegetation Clustering, Localized Bare Soil Spots and Fairy Circles. *Lecture Notes in Physics*, **751**, 381–402. [https://doi.org/10.1007/978-3-540-78217-9\\_15](https://doi.org/10.1007/978-3-540-78217-9_15)

- Tschinkel, W.R. (2010) The foraging tunnel system of the Namibian Desert termite, *Baicaliotes hainesi*. *Journal of Insect Science*, **10**, 65, 1–17.
- Tschinkel, W.R. (2012) The life cycle and life span of Namibian fairy circles. *PloS one*, **7**, e38056.
- Tschinkel, W.R. (2015) Blog to Ecography. Comments by WR Tschinkel in response to Ecography article by Juergens, N. <https://www.ecography.org/blog/new-studies-fairy-circles-need-account-new-observations-their-spatial-patterns> (accessed 14th August 2021).
- Turner, J.S. (2001) On the mound of *Macrotermes michaelseni* as an organ of respiratory gas exchange. *Physiological and Biochemical Zoology*, **74**, 798–822.
- Uys, V.M. (2002) *A guide to the termite genera of southern Africa* (No. 15). Plant Protection Research Institute, Agricultural Research Council, Pretoria.
- Van der Walt, A.J., Johnson, R.M., Cowan, D.A., Seely, M., Ramond, J. (2016) Unique microbial phylotypes in Namib Desert dune and gravel plain Fairy Circle soils. *Applied and Environmental Microbiology*, **82**, 4592–4601. <https://journals.asm.org/doi/10.1128/AEM.00844-16>
- Van Rooyen, M.W., Theron, G.K., Van Rooyen, N., Jankowitz, W.J. & Matthews, W.S. (2004) Mysterious circles in the Namib Desert: review of hypotheses on their origin. *Journal of Arid Environments*, **57**, 467–485.
- Viljoen, P.J. (1980) Veldtypes, verspreiding van die groter soogdiere en enkele aspekte van die ekologie van Kaokoland. Doctoral dissertation, University of Pretoria.
- Vlieghe, K. & Picker, M. (2019) Do high soil temperatures on Namibian fairy circle discs explain the absence of vegetation? *PloS one*, **14**, e0217153.
- Vlieghe, K., Picker, M.D., Ross-Gillespie, V. & Ernie, B. (2014) Herbivory by subterranean termite colonies and the development of fairy circles in SW Namibia. *Ecological Entomology*, **40**, 42–49.
- Wagner, T.C., Richter, J., Joubert, D.F. & Fischer, C. (2018) A dominance shift in arid savanna: An herbaceous legume outcompetes local  $C_4$  grasses. *Ecology and Evolution*, **8**, 6779–6787.
- Wagner, T.C., Uiseb, K. & Fischer, C. (2021) Rolling pits of Hartmann's mountain zebra (*Zebr equus hartmannae*) increase vegetation diversity and landscape heterogeneity in the Pre-Namib. *Ecology and Evolution*, **11**, 13036–13051.
- Walsh, F.J., Sparrow, A.D., Kendrick, P. & Schofield, J. (2016) Fairy circles or ghosts of termitaria? Pavement termites as alternative causes of circular patterns in vegetation of desert Australia. *Proceedings of the National Academy of Sciences*, **113**, E5365–E5367.
- Walsh, F., Kendrick, P., Evans, T., Moore, D., Nelson, M., Oldham, C., Schofield, J. & Sparrow, A. (2022, preprint) First Peoples and scientists concur that 'fairy circles' are termite linyji, Research Square.
- Wan, T., Liu, Z., Leitch, I.J. et al. (2021) The *Wetwitschia* genome reveals a unique biology underpinning extreme longevity in deserts. *Nature Communications*, **12**, 1–15.
- Wang, X. (2015) Vapor flow resistance of dry soil layer to soil water evaporation in arid environment: An overview. *Water*, **7**, 4552–4574.
- Ward, J.D. (1988) Eolian, fluvial and pan (playa) facies of the Tertiary Tsonab Sandstone Formation in the central Namib Desert, Namibia. *Sedimentary Geology*, **55**, 143–162.
- Ward, J.D. & Corbett, I. (1990) Towards an age of the Namib. *Namib Ecology*, **25**, 17–26.
- Ward, J.D., Seely, M.K. & Lancaster, N. (1983) On the antiquity of the Namib. *South African Journal of Science*, **79**, 175–183.
- Watson, A. (1980) Vegetation polygons in the central Namib Desert near Gobabeb. *Journal of Arid Environments*, **11**, 315–325.
- Watson, J.A.L. & Gay, F.J. (1970). The role of grass-eating termites in the degradation of a mulga ecosystem. *Search*, **1**, 1–43.
- Watson, J.A.L., Lendon, C. & Low, B.S. (1973) Termites in Mulga Lands. *Tropical Grasslands*, **7**, 121–126.
- Webb, J.K., Shine, R., Branch, W.R. & Harlow, P.S. (2000) Life history strategies in basal snakes: reproduction and dietary habits of the African thread snake, *Leptotyphlops scutifrons* (Serpentes, Leptotyphlopidae). *Journal of Zoology*, **250**, 321–327.
- Weesner, F. (1970) External Anatomy. *Biology of termites*, Vol. I (ed. by K. Krishna & F.M. Weesner), pp. 1–23. Academic Press, New York.
- Wells, S.G. & Dohrenwend, J.C. (1985) Relict sheetflood bed forms on late Quaternary alluvial-fan surfaces in the southwestern United States. *Geology*, **13**, 512–516.
- Wharton, R.A. (1981) Namibian Solifugae (Arachnida). *Cimbebasia Memoir*, **5**, 1–87.
- Whiteford, W.G. & Eldridge, D.J. (2013) Effects of ants and termites on soil and geomorphological processes. *Treatise on Geomorphology*, **12**, 281–292.
- Whittington-Jones, G.M., Bernard, R.T.F. & Parker, D.M. (2011) Aardvark burrows: a potential resource for animals in arid and semi-arid environments. *African Zoology*, **46**, 362–370.
- Wildermuth, B. (2020) Spatial patterns, life history and biological interactions of termite colonies (*Macrotermes* sp.) in the thorn bush savanna of Central Namibia. Master thesis, Institute of Plant Science and Microbiology, University of Hamburg.
- Wildermuth, B., Oldeland, J. & Juergens, N. (2021) A beneficial relationship: associated trees facilitate termite colonies (*Macrotermes michaelseni*) in Namibia. *Ecosphere*, **12**, e03671.
- Will, K.W., Mishler, B.D. & Wheeler, Q.D. (2005) The perils of DNA barcoding and the need for integrative taxonomy. *Systematic Biology*, **54**, 844–851.
- Williams, L.A.D., Vasques, E., Reid, W., Porter, R. & Kraus, W. (2003) Biological activities of an extract from *Cleome viscosa* L. (Capparaceae). *Naturwissenschaften*, **90**, 468–472.
- Williams, R.M.C. (1966) The east African termites of the genus *Cubitermes* (Isoptera: Termitidae). *Transactions of the Royal Entomological Society of London*, **118**, 73–118.
- Yizhaq, H., Al-Tawaha, A.R.M.S. & Stavi, I. (2022) A first study of *Urginea maritima* rings: A case study from southern Jordan. *Land*, **11**, 285. <http://dx.doi.org/10.3390/land11020285>.
- Zanne, A.E., Flores-Moreno, H., Powell, J.R. et al. (2022) Termite sensitivity to temperature affects global wood decay rates. *Science*, **377**, 1440–1444. <https://doi.org/10.1126/science.abo3856>
- Zelditch, M.L., Swiderski, D.L., Sheets, H.D. & Fink, W.L. (2004) *Geometric morphometrics for biologists*. Elsevier, Amsterdam.
- Zeidler, J. (1997) *Distribution of termites (Isoptera) throughout Namibia-environmental connections*. Doctoral dissertation, University of Witwatersrand.
- Zelnik, Y.R., Meron, E. & Bel, G. (2015) Gradual regime shifts in fairy circles. *Proceedings of the National Academy of Sciences*, **112**, 12327–12331.