



Alexandro B. Leverkus



Profesor Titular de Universidad

Ver información de contacto y docencia

- [ResearchGate](#)
- [Google Scholar](#)
- [ORCID](#)
- [Twitter:](#)
 - Personal: [@alexleverkus](#)

<http://ecologia.ugr.es/>

- Experimento colaborativo Seeding vs Planting: @seedvsplant



Parcelas de investigación tras el incendio de Las Peñuelas en 2017



Bellota de encina previa a su recolección para un experimento de siembra



Experimento sobre la regeneración de Quercus ante el cambio climático

Divulgación y Prensa

- Guía para la siembra de bellotas (PDF)
- Dispositivo para proteger bellotas de depredadores en las siembras
- Las sociedades aprenden de los desastres más leves para lidiar con las grandes catástrofes
- Necesidad de planificar reforestaciones para evitar incendios
- Oportunidad para restaurar ecosistemas tras incendios

Publicaciones

- **2023**

- Lázaro-González A, Tamultaityté G, Castro J, Uscola M, Leverkus AB 2023. Seedling establishment in a deciduous and an evergreen oak under simulated climate change. **For Ecol Manage** 550: 121498. <https://doi.org/10.1016/j.foreco.2023.121498> (PDF)
- Cours J, Bouget C, Barsoum N, Horák J, Le Souchu E, Leverkus AB, Pincebourde S, Thorn S, Sallé A (2023) Surviving in changing forests: abiotic disturbance legacy effects on arthropod communities of temperate forests **Current Forestry Reports** 9: 189–218. <https://doi.org/10.1007/s40725-023-00187-0>
- Kriegel P et al. (autor 20/32) 2023. Ambient and substrate energy influence decomposer diversity differentially across trophic levels. **Ecology Letters** 26:1157–1173 <https://doi.org/10.1111/ele.14227>
- Juli Pausas, Leverkus AB, 2023. Disturbance ecology in human societies. **People and Nature** 5: 1082-1093 <https://doi.org/10.1002/pan3.10471>

- Lázaro-González A, Andivia E, Hampe A, Hasegawa S, Marzano R, Santos AMC, Castro J, Leverkus AB. 2023. Revegetation through seeding or planting: A worldwide systematic map. **J Environ Manage** 337:117713 <https://doi.org/10.1016/j.jenvman.2023.117713>
- Molina-Morales M; Leverkus AB; Albaladejo-Robles G; Martínez-Baroja L; Pérez-Camacho L; Villar-Salvador P; Rebollo S; Rey-Benayas JM; Castro J. 2023 Linking animal behaviour and tree recruitment: caching decisions by a scatter hoarder corvid determine seed fate in a Mediterranean agroforestry system. **Journal of Ecology** 111:400–411 <https://doi.org/10.1111/1365-2745.14004>
- **2022**
 - Leverkus, A.B., Thorn, S., Lindenmayer, D.B., Pausas, J. (2022). Tree planting goals must account for wildfires. **Science** 376:588–9 <https://doi.org/10.1126/science.abp8259>
 - Viljur et al. (autor 32/54), 2022. The effect of natural disturbances on forest biodiversity: an ecological synthesis. **Biological Reviews** 97: 1930-1947. <https://doi.org/10.1111/brv.12876>
 - Leverkus, A.B. & Castro, J., 2022. Restoration of Mediterranean forest ecosystems after major disturbances: The Lanjarón post-fire experiment over 15 years of succession. In: Zamora R. & Oliva M., eds. The Landscape of Sierra Nevada: A unique laboratory of global processes. **Springer** (ISBN: 978-3-030-94218-2) pp 229–240 (**LINK**)
 - Zamora, R. et al. (author position 4/8) 2022. Concluding notes: Ecosystems of Sierra Nevada in the Anthropocene: a new cocktail of species and ecological interactions. In: Zamora R. & Oliva M., eds. The Landscape of Sierra Nevada: A unique laboratory of global processes. **Springer** (ISBN: 978-3-030-94218-2) pp 307–310
- **2021**
 - Leverkus, A.B. et al., 2021. Restoring oak forests through direct seeding or planting: Protocol for a continental-scale experiment. **PLoS ONE** 16: e0259552 <https://doi.org/10.1371/journal.pone.0259552>
 - Juan-Ovejero et al. (author position 3/5) 2021. Decadal effect of post-fire management treatments on soil carbon and nutrient concentrations in a burnt Mediterranean forest. **For. Eco. Manage.** 498: 119570 <https://doi.org/10.1016/j.foreco.2021.119570>
 - Gustafsson L et al. (author position 3/6) 2021. Disturbance interval modulates the starting point for vegetation succession. **Ecology** 102: e03439 doi: <https://doi.org/10.1002/ecy.3439>
 - Leverkus A.B. et al., 2021. Environmental policies to cope with novel disturbance regimes –steps to address a world scientists’ warning to humanity". **Environmental Research Letters** 16: 021003. <https://doi.org/10.1088/1748-9326/abdc5a>
 - Leverkus A.B., et al., 2021. Resilience impacts of a secondary disturbance: Meta-analysis of salvage logging effects on tree regeneration. **Journal of Ecology** 109:3224–3232 <https://doi.org/10.1111/1365-2745.13581>

- Leverkus. A.B., Navarro, F.B. 2021. One size fits some (serie EcoPics). **Frontiers in Ecology and the Environment** 19: 333
- Leverkus A.B. et al., 2021. Seeding or planting to revegetate the world's degraded land: Systematic review and experimentation to address methodological issues. **Restoration Ecology** 29:e13372 <https://doi.org/10.1111/rec.13372>
- Martínez-Baroja et al. (posición autor 5/9) 2021. Caching territoriality and site preferences by a scatter-hoarder drive the spatial pattern of seed dispersal and affect seedling emergence. **J. Ecol.** 109: 2342-2353 <https://doi.org/10.1111/1365-2745.13642>
- Gustafsson, L., Granath, G., Nohrstedt, H.Ö., Leverkus, A.B., Johansson, V. (2021) Burn severity and soil chemistry are weak drivers of early vegetation succession following a boreal mega-fire in a production forest landscape. **Journal of Vegetation Science** 32: e12966 <https://doi.org/10.1111/jvs.12966>
- 2020
 - Leverkus, A.B., Crawley, M.J. (2020) Temporal variation in effect sizes in a long-term, split-plot field experiment. **Ecology** 101:e03009 <https://doi.org/10.1002/ecy.3009>
 - Leverkus, A.B., Gustafsson, L., Lindenmayer, D.B., Castro, J., Rey Benayas, J.M., Ranius, T. & Thorn, S. (2020) Salvage logging effects on regulating ecosystem services and fuel loads. **Frontiers in Ecology and the Environment**. 18:391-400 <https://doi.org/10.1002/fee.2219>
 - Leverkus, A.B., Thorn, S., Lindenmayer, D.B., Pausas, J. (2020) Wildfire debate needs science, not politics. **Science** 370:416-17 <https://doi.org/10.1126/science.abf1326>
 - Leverkus, A.B., Buma, B., Wagenbrenner, J., Lingua, E., Marzano, R., Burton, P., Thorn, S. (2020) Tamm review: Does salvage logging mitigate subsequent forest disturbances? **Forest Ecology and Management** 481:118721 <https://doi.org/10.1016/j.foreco.2020.118721>
 - Thorn, S., Chao, A., Georgiev, K.B., Müller, J., Bässler, C., Campbell, J.L., Castro, J., Chen, Y.-H., Choi, C.-Y., Cobb, T.P., Donato, D.C., Durska, E., Macdonald, E., Feldhaar, H., Fontaine, J.B., Fornwalt, P.J., María, R., Hernández, H., Hutto, R.L., Koivula, M., Lee, E.-J., Lindenmayer, D., Mikusiński, G., Obrist, M.K., Perlík, M., Rost, J., Waldron, K., Wermelinger, B., Weiß, I., Żmihorski, M., Leverkus, A.B. (2020) Estimating retention benchmarks for salvage logging to protect biodiversity. **Nature Communications** 11:4762 <https://doi.org/10.1038/s41467-020-18612-4>
 - Thorn, S., Seibold, S., Leverkus, A.B., Michler, T., Müller, J., Noss, R.F., Stork, N., Vogel, S., Lindenmayer, D.B. (2020). The living dead –acknowledging life after tree death to stop forest degradation. **Frontiers in Ecology and the Environment** 18:505-512 <https://doi.org/10.1002/fee.2252>
 - Leverkus, A.B., Rey Benayas, J.M., Solís, P., Sierra, J.M. (2020) Enabling conditions for the implementation and conservation outcomes of a private nature reserve. **Ecological Solutions and Evidence** 1:e12019 <https://doi.org/10.1002/2688-8319.12019>

• 2019

- Martínez-Baroja, L., Pérez-Camacho, L., Villar-Salvador, P., Rebollo, S., Quiles, P., Gómez-Sánchez, D., Molina-Morales, M., Leverkus, A.B., Castro, J. & Rey-Benayas, J.M. (2019) Massive and effective acorn dispersal into agroforestry systems by an overlooked vector, the Eurasian magpie (*Pica pica*). **Ecosphere**, 10:e02989 <https://doi.org/10.1002/ecs2.2989>
- Molinas-González, C. R., Castro, J., González-Megías, A., Leverkus, A.B. (2019) Effects of post-fire deadwood management on soil macroinvertebrate communities. **Forests** 10:1046 <https://doi.org/10.3390/f10111046>
- Thorn, S., Müller, J., Leverkus, A.B. (2019) Preventing future forest diebacks. **Science** 365:1388 <https://doi.org/10.1126/science.aaz3476>
- Rebollo, S., et al. (posición autor 7/19) (2019) Servicios de la avifauna (high mobile link species) en mosaicos agroforestales: regeneración forestal y regulación de plagas. **Ecosistemas** 28:32-41 <https://doi.org/10.7818/ECOS.1736>
- Löf, M. et al. (posición autor 4/8) (2019) Tamm Review: Direct seeding to restore oak (*Quercus* spp.) forests and woodlands. **Forest Ecology and Management** 448:474-489 <https://doi.org/10.1016/j.foreco.2019.06.032>
- Leverkus, A.B., García Murillo, P., Jurado Doña, V., García Pausas, J. (2019) Wildfire: Opportunity for restoration? **Science** 363:134-135 <https://doi.org/10.1126/science.aaw2134>
- Thorn, S. Leverkus, A.B., Thorn, C.J., Beudert, B. (2019). Education and knowledge determine preference for bark beetle control measures in El Salvador. **Journal of Environmental Management** 232:138-144 <https://doi.org/10.1016/j.jenvman.2018.11.032>
- Castro, J., Leverkus, A.B. (2019). Effect of herbaceous layer interference on the post-fire regeneration of a serotinous pine (*Pinus pinaster* Aiton) across two seedling ages. **Forests** 10:art74 <https://doi.org/10.3390/f10010074>
- Müller J, Noss R, Thorn S, Bässler C, Leverkus AB, Lindenmayer D. 2019. Increasing disturbance demands new policies to conserve intact forest. **Conservation Letters** 12:e12449 <https://doi.org/10.1111/conl.12449>

• 2018

- **Leverkus, A.B.**, Thorn, S., Gustafsson, L. & Lindenmayer, D.B. (2018). Salvage logging in the world's forests: Interactions between natural disturbance and logging need recognition. **Global Ecology and Biogeography** 27:1140-1154 <https://doi.org/10.1111/geb.12772>
- **Leverkus, A.B.**, et al. (21 autores). (2018). Salvage logging effects on regulating and supporting ecosystem services - A systematic map. **Canadian Journal of Forest Research** 48:983-1000 <https://doi.org/10.1139/cjfr-2018-0114>
- Thorn, S. et al. (posición autor 18/28). 2018. Impacts of salvage logging on biodiversity - a meta-analysis. **Journal of Applied Ecology** 55:279-289 <https://doi.org/10.1111/1365-2664.12945>

2017

- Leverkus, A.B., Jaramillo-López, P.F., Brower, L.P., Lindenmayer, D.B., Williams, E.H. 2017. Mexico's logging threatens butterflies. **Science** 358:1008 <https://doi.org/10.1126/science.aar3826>
- Leverkus, A.B., Carrión, M., Molina-Morales, M., Castro, J. 2017. Effectiveness of diesel as a mammal repellent for direct seeding of acorns. **Forests**. 8:276 <https://doi.org/10.3390/f8080276>
- Molinas-González, C., Castro, J., Leverkus, A.B. 2017. Deadwood decay in a burnt Mediterranean pine reforestation. **Forests** 8:158. <https://doi.org/10.3390/f8050158>
- Leverkus, A.B., Castro, J. 2017. An ecosystem services approach to the ecological effects of salvage logging: Valuation of seed dispersal. **Ecological Applications** 27:1057-1063 <https://doi.org/10.1002/eap.1539/full>
- Molinas-González, C., Leverkus, A.B., Marañón-Jiménez, S., Castro, J. 2017. Fall rate of burnt pines across an elevational gradient in a Mediterranean mountain. **European Journal of Forest Research** 136:401-409 <https://doi.org/10.1007/s10342-017-1040-9>
- Castro, J., Molina-Morales, M., Leverkus, A.B., Martínez-Baroja, L., Pérez-Camacho, L., Villar-Salvador, P., Rebollo, S., Rey Benayas, J.M., 2017. Effective nut dispersal by magpies (*Pica pica* L.) in a Mediterranean agroecosystem. **Oecologia** 184:183-192 <https://doi.org/10.1007/s00442-017-3848-x>
- **2010-2016**
 - Leverkus, A.B. 2016. Regeneración post-incendio de la encina mediante procesos naturales y asistidos y valoración económica de los servicios ecosistémicos. **Ecosistemas** 25:121-127 <https://doi.org/10.7818/ECOS.2016.25-3.15>
 - Leverkus, A.B., Rey Benayas, J.M., Castro, J., 2016. Shifting demographic conflicts across recruitment cohorts in a dynamic post-disturbance landscape. **Ecology** 97:2628-39 <https://doi.org/10.1002/ecy.1527>
 - Leverkus A.B., Castro J., Delgado-Capel M., Molinas-Gonzales C., Pulgar M, Marañón-Jiménez S., Delgado-Huertas A., Querejeta, J.I. 2015. Restoring for the present or restoring for the future: Enhanced performance of two sympatric oaks (*Quercus ilex* and *Quercus pyrenaica*) above the current forest limit. **Restoration Ecology** 23:936-946 <https://doi.org/10.1111/rec.12259>
 - Castro J., Leverkus A.B., Fuster F. 2015. A new device to foster oak forest restoration via seed sowing. **New Forests** 46:919-929 <https://doi.org/10.1007/s11056-015-9478-4>
 - Leverkus A.B., Rojo M., Castro J. 2015. Habitat complexity and individual acorn protectors enhance the post-fire restoration of oak forests via seed sowing. **Ecological Engineering** 83:276-280 <https://doi.org/10.1016/j.ecoleng.2015.06.033>

- Leverkus A.B., Lorite, J., Navarro, F., Pérez Sánchez-Cañete, E., Castro J. 2014. Post-fire salvage logging alters species composition and reduces cover, richness, and diversity in Mediterranean plant communities. **Journal of Environmental Management** 133:323-331 <https://doi.org/10.1016/j.jenvman.2013.12.014>
- Leverkus A.B., Castro J., Puerta-Piñero C., Rey-Benayas J.M. 2013. Suitability of the management of habitat complexity, acorn burial depth, and a chemical repellent for post-fire reforestation of oaks. **Ecological Engineering** 53:15-22 <https://doi.org/10.1016/j.ecoleng.2013.01.003>
- Castro J., Puerta-Piñero C., Leverkus A.B., Moreno-Rueda G., Sánchez-Miranda A. 2012. Post-fire salvage logging alters a key plant-animal interaction for forest regeneration. **Ecosphere** 3:90 <https://doi.org/10.1890/ES12-00089.1>
- Leverkus A.B., Puerta-Piñero C., Guzmán J.R., Navarro J., Castro J. 2012. Post-fire salvage logging increases management costs and reduces seedling survival in a Mediterranean mountain ecosystem. **New Forests** 43:601-613 <https://doi.org/10.1007/s11056-012-9327-7>
- Puerta Piñero C., Sánchez-Miranda A., Leverkus A., Castro J. 2010. Management of burnt wood after fire affects post-dispersal acorn predation. **Forest Ecology and Management** 260:345-352 <https://doi.org/10.1016/j.foreco.2010.04.023>

Otras publicaciones con revision por pares (selección)

- Castro J. et al. 2015. In: Herrero A., Zavala M.A. (eds). Los Bosques y la Biodiversidad frente al Cambio Climático: Impactos, Vulnerabilidad y Adaptación en España. MAGRAMA, ISBN 978-84-491-0038-3. Madrid, pp. 595 - 694.
- Leverkus A.B. et al. 2015. **Environmental Evidence** 4:16 <https://doi.org/10.1186/s13750-015-0042-7>
- Leverkus A.B., et al. 2014. **Ecosistemas** 23:48-54 <https://doi.org/10.7818/ECOS.2014.23-2.07>
- Castro J., Leverkus A.B. 2013. En: Martínez Ruiz C., et al. (Eds.) Avances en la restauración de sistemas forestales. SECF-AEET. ISBN: 978-84-937964-6-4. Madrid, pp. 27- 34.
- Leverkus A.B., et al. 2013. En: Martínez Ruiz C., et al. (Eds.) Avances en la restauración de sistemas forestales. SECF-AEET. ISBN: 978-84-937964-6-4. Madrid, pp. 35- 40.

Patentes

- Castro, J., Leverkus, A.B. (Inventores). Protector de semillas ante depredadores. Patente # P201690010, concedida 24/01/2017, país de prioridad: España (con PCT). Explotada comercialmente por Grupo Sylvestris.
- Castro, J., Leverkus, A.B. (Inventores). Protector de semillas ante depredadores. Patente # P201331441, concedida 23/07/2014, país de prioridad: España (con PCT). Explotada comercialmente por Grupo Sylvestris.

Proyectos de investigación recientes y en curso

- Transición hacia un mayor éxito de revegetación: Implicaciones a gran escala de sembrar o plantar para la restauración ecológica (TED2021-130976B-100). Ministerio de Ciencia e Innovación/ NextGeneration. PI: AB Leverkus.
- Asilvestramiento del almendro: Evolución rápida y dinámica agroecológica (PID2022-143099OB-I00). Ministerio de Ciencia e Innovación. IP: R. Rubio de Casas. 2023-26.
- Avances en la investigación e innovación tecnológica de la dehesa para una gestión adaptada al calentamiento global IN-DE (PP.AVA23.INV2023.30). Convocatoria interna IFAPA para proyectos de líneas estratégicas. Fondos FEDER. 2023-26. 206.572. IP: María Patrocinio González Dugo.
- Plantando cara al fuego 2 (FCT-20-16729). Ministerio de Ciencia e Innovación, Convocatoria de ayudas para el fomento de la cultura científica, tecnológica y de la innovación. IP: A. Merino. 2022-23.
- RESTAURACIÓN de bosques y sistemas agroforestales mediterráneos: Implicaciones del método de reforestación (plantación vs. siembra directa) bajo gradientes de estrés ambiental (RESTAURABIEN)(RTI2018-096187-J-100). Ministerio de Ciencia, Innovación y Universidades. IP de proyecto de la convocatoria 2018 de “Proyectos de I-D Retos Investigación”, modalidad “JIN”. **IP: Alejandro B Leverkus.** 2019-2022.
- Efectos individuales e interactivos de múltiples factores de estrés sobre la regeneración post-incendio (SR18/1376). British Ecological Society. **IP: Alejandro B Leverkus.** 2019-2020.
- Thematic center on mountain ecosystem & remote sensing, deep learning-AI e-services University of Granada-Sierra Nevada. ERIC **LifeWatch**; Programa Operativo Plurirregional FEDER. IP: Regino Zamora. 2021-2023.
- Estabilidad y resiliencia de Comunidades Ecológicas: Cambio Global, perturbaciones múltiples y efectos sobre la biodiversidad (B-FQM-366-UGR20). **Universidad de Granada/ FEDER.** IP: MA Muñoz. 2021-2023
- Nuevas técnicas para la regeneración asistida de la dehesa II (PP.AVA.AVA2019.004). IFAPA Andalucía/ FEDER. IP: F Navarro Reyes. 2019-2022.

INFORMACIÓN DE CONTACTO Y DOCENCIA