Research finds ethical sourcing of seeds required for global restoration

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Hundreds of thousands of tonnes of wild seeds are needed to restore plant ecosystems globally but overharvesting risks their depletion unless ethical seed-sourcing regulations are developed, Curtin University research has found.

A paper, published today in journal *Current Biology*, concluded that inadequate regulatory frameworks controlling wild-seed sourcing, limited farming capacity and seed wastage are impeding moves towards the sustainable practice of native-seed collection.

Lead author Dr. Paul Nevill, from the ARC Centre for Mine Site Restoration (CMSR) in Curtin's School of Molecular and Life Sciences, said resources continued to be eroded by habitat loss, land degradation and climatic change.

"Without robust regulatory measures to meet the global demand to revegetate plant populations, over-collection of seeds from wild populations threatens further erosion," Dr. Nevill said.

"The wild harvesting of seed at scales required to meet global restoration demands is not sustainable, therefore ethical seed-sourcing for restoration now represents a core issue in responsible restoration practice."

Dr. Nevill said investment in native seed farms founded on robust business models to ensure their long-term commercial viability, the

introduction of a regulatory framework to ensure the integrity of seed quality, and the development of seed enhancement and precision seeding technologies to ensure the maximum conversion of seed to plants was needed.

Paper co-author and CMSR Director John Curtin Distinguished Professor Kingsley Dixon said seeds remained the most cost-effective means for large-scale restoration because they were portable, easy to sow and harvest, suitable for long-term storage and especially easy to deliver.

However, Professor Dixon warned that because seed production for most plants followed a lengthy, high-risk process of flowering, pollination and seed maturation, plants might be unable to compensate for sudden losses in seed outputs as a result of harvesting.

"These declines could potentially lead to a loss of resilience for the whole ecosystem, particularly as drying climates are expected to reduce seed production rates and alter seed maturation and seed persistence in soil," Professor Dixon said.

"We advocate a range of measures to achieve more ethical seed-sourcing for ecological restoration that will also provide commercial returns and value to governments and communities."

The paper, titled "Ethical sourcing of wild seeds: a key issue in meeting global restoration targets," was also co-authored by CMSR's Dr. Adam Cross and funded by the Australian Research Council.

More information: Paul G. Nevill et al. Ethical seed sourcing is a key issue in meeting global restoration targets, *Current Biology* (2018). DOI: 10.1016/j.cub.2018.11.015

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