

Which strategies to conserve and restore metallophytes threatened by intensive mining activities in Southeastern D. R. Congo

Soizig Le Stradic, Sylvain Boisson, Maxime Séleck, Guylain Handjila, Grégory Mahy

▶ To cite this version:

Soizig Le Stradic, Sylvain Boisson, Maxime Séleck, Guylain Handjila, Grégory Mahy. Which strategies to conserve and restore metallophytes threatened by intensive mining activities in Southeastern D. R. Congo. 6th World Conference in Ecological Restoration, Aug 2015, Manchester, United Kingdom. hal-04664030

$\begin{array}{c} {\rm HAL~Id:~hal\text{-}04664030} \\ {\rm https://hal.inrae.fr/hal\text{-}04664030v1} \end{array}$

Submitted on 29 Jul 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.







Which strategies to conserve and restore metallophytes threatened by intensive mining activities in southeastern D.R. Congo?

Soizig Le Stradic ¹, Sylvain Boisson ¹, Maxime Séleck ¹, Guylain Handjila ² & Grégory Mahy ¹



soizig.lestradic@ulg.ac.be

¹BIOSE - Biosystem Engineering Department, Biodiversity and Landscape Unit, Gembloux Agro-Bio Tech, University of Liege, Belgium ² Tenke Fungurume Mining SARL, Route de l'aéroport, Lubumbashi, Haut Katanga, Democratic Republic of Congo

Context

Integration of economic activities with environmental integrity: case of mining activities in southeastern Democratic Republic of Congo (Fig. 1).

While pristine habitats are threatened by mining activities, plant communities include numerous endemic species (Fig. 2).



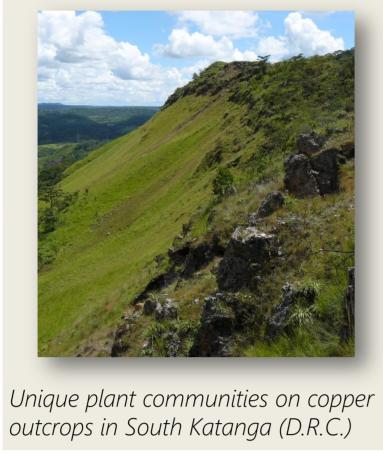
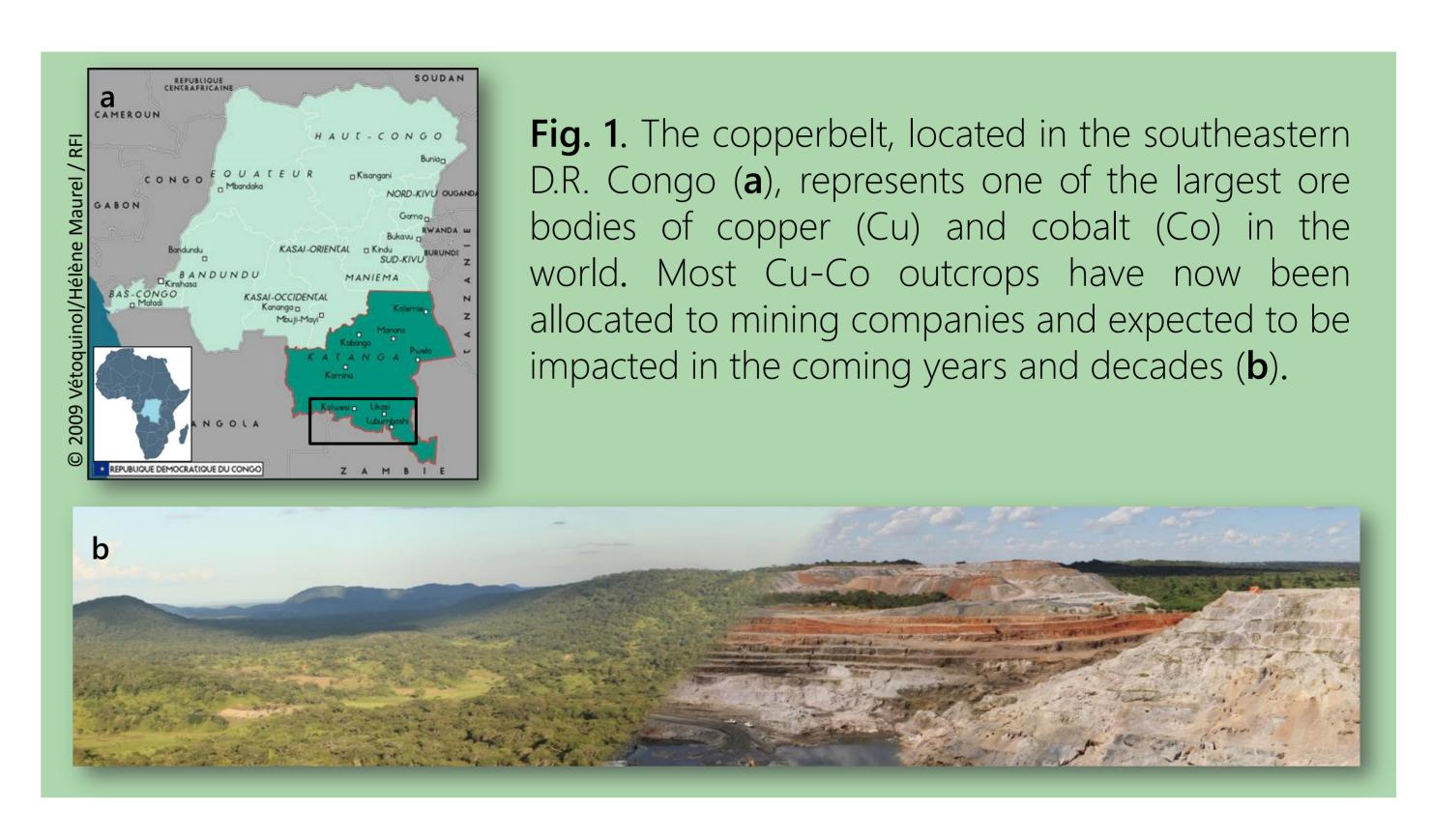




Fig 2. Due to high available copper and cobalt concentrations in soils, Cu-Co hills present original plant communities with over 600 metallophytes including 56 endemics,



► How do we conserve and restore Cu-Co communities?

Phytostabilization

- With native grass species

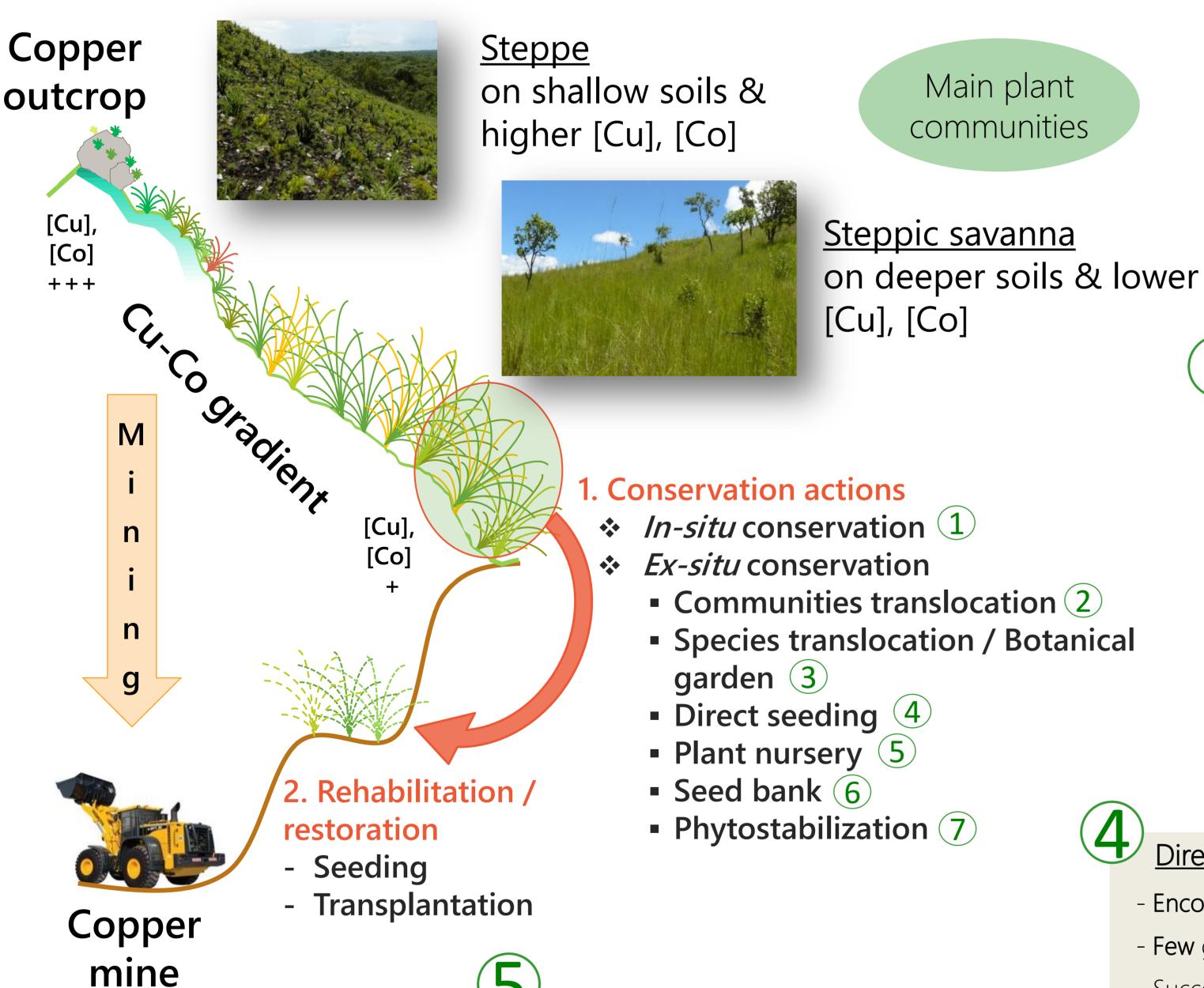
- On anthropogenic polluted sites

- Seeding or seedling transplantation

gain information on ecology of plant communities & experience on the restoration of copper vegetation

temporarily store and conserve native copper plant diversity for future re-establishment on post-mining sites

Complementarity of implemented actions:



In-situ conservation Protected areas

Plant Micro Reserve

communities - Good seed source - Limited surfaces

- Conservation of **pristine**

- Potentially damaged by illegal miners and mine prospection

Communities translocation

- Whole-turf translocation is more effective than topsoil translocation
- Success depends on community-type: better results for steppe than steppic savanna
- Higher weed invasion in topsoil

- Problem to translocate structuring species with Xylopodium (e.g. Cryptosepalum maraviense)





Whole-turf translocation





- Encouraging first results on topsoil
- Few germination in whole-turf communities - Success is species dependent





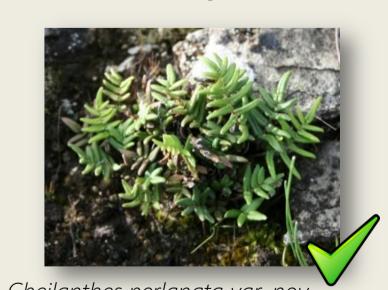
Ultra

drying in

silicagel



→ In pristine copper outcrops → In translocated communities → In botanical garden



Cheilanthes perlanata var, nov Success depends on species

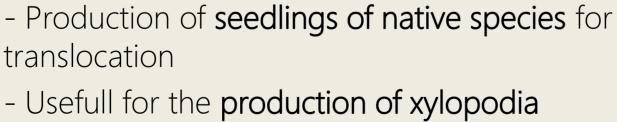


Can be a valuable solution for deep rooted species



Botanical garden:

Where most threatened species of concern are translocated

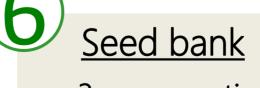


species and **structuring** species

Seedling production in nursery

- Importance of adequate material availability





- 3 conservation sites
- → Botanic Garden Meise → University of Lubumbashi
- → Mine site
- Most species with orthodox seeds
- Regular **seed** viability tests







- Developing of partnership between universities and mining companies
- Improving restoration programs using native plant material
- Delivering appropriate know-how to mining companies