



Comparative analysis of element concentrations and translocation in three wetland congener plants: *Typha domingensis*, *Typha latifolia* and *Typha angustifolia*

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Highlights

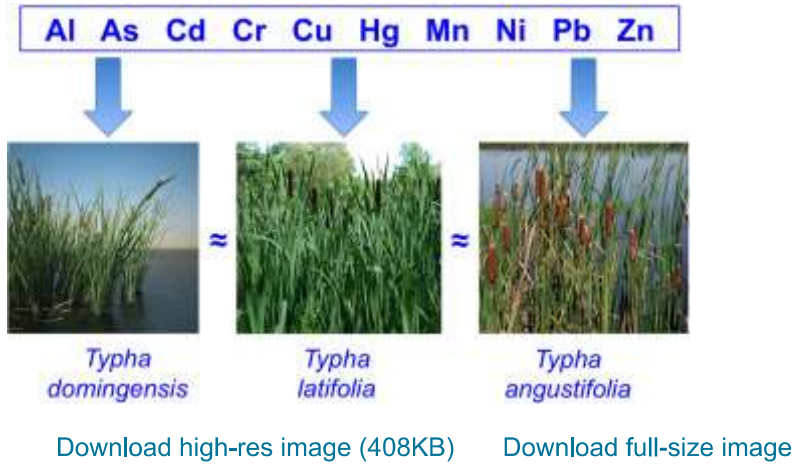
- Different *Typha* species showed similar element concentrations in their organs.
- Different *Typha* species showed similar sediment-root and root-leaf element mobility.
- Sediment-root element mobility was higher than root-leaf mobility in *Typha* species.
- *Typha domingensis*, *T. latifolia* and *T. angustifolia* show similar remediation capacity.

Abstract

This study analyzed the concentrations and distributions of Al, As, Cd, Cr, Cu, Hg, Mn, Ni, Pb and Zn in three different cattail species growing spontaneously in a natural wetland subject to municipal wastewater and metal contamination. The cattail species included *Typha domingensis*, *T. latifolia* and *T. angustifolia*. Results showed that all *Typha* species have similar element concentrations in roots, rhizomes and leaves, and similar element mobility from sediments to roots and from roots to leaves. This study corroborated three patterns of *Typha* species growing in metal contaminated environments: high tolerance to toxic conditions, bulk element concentrations in roots, and restricted element translocation from roots to leaves. This study showed that three different *Typha* species respond similarly to metal inputs under the same polluting field conditions.

Given their similar metal content and similar biomass size, our results suggest that *T. domingensis*, *T. latifolia* and *T. angustifolia* may have comparable capacity of phytoremediation. High element uptake and large biomass make *Typha* species some of the best species for phytoremediation of metal contaminated environments.

Graphical abstract



Keywords

CattailsWetlandsWastewaterSedimentsHeavy metalsSicily