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Mining Contamination Disrupts Successional Change in Salt Marshes

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Salt marshes can generally be considered as sinks for metals. Research into salt marshes in Cornwall, UK suggests those estuaries heavily impacted by mining contamination are characterised by a less diverse vegetation compared with a significantly less-polluted site. Assessment using the National Vegetation Classification on the mid-marsh confirmed an *Armeria maritima*-dominated community was to be found in the most metal-enriched salt marsh of Restronguet Creek. However, this plant was co-dominant with *Plantago maritima* in the moderately contaminated marsh of Lelant and not present at all in the Camel, which has been subject to limited mining related contamination. Using canonical correspondence analysis, vegetation abundance data was compared with geochemical variables within the sediment. Metals were studied using extractions to signal bioavailability. *P. maritima* was not associated with the very high metal levels found in Restronguet Creek. *A. maritima*, had some association with soluble copper and was closer to the bulk of metals than *P. maritima*. As tolerance to adverse conditions and competitiveness are mutually exclusive, *A. maritima*, therefore, exists in a successional relationship with *P. maritima*. *A. maritima* then appears to be outcompeted by *P. maritima* in marshes with low metal loadings. Moderately high metal content results in a loss of competitiveness by *P. maritima* allowing *A. maritima* to co-dominate. In extremely metal-rich estuaries, however, *P. maritima* is unable to compete, allowing *A. maritima* to colonize the mid-marsh. Vegetation community may, therefore, be useful as an indicator of the level of metal contamination.