

*The rise and fall of biodiversity in Western literature provides insight into nature's contribution to our communication*

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Next to providing food and raw materials and supporting and protecting ecosystems, biodiversity may contribute to our wellbeing by providing non-material services. These contribute to our scientific endeavours, our recreation, our mental health or our cultural practices. However, these contributions are notoriously difficult to quantify. We propose a method to quantify the extent of biodiversity in creative literature, as a significant part of culture and communication, by determining diversity indexes of plants and animals in books from across nearly three centuries. We suggest that our results may provide insight into historical trends in the societal awareness of biodiversity and suggest a demand for a minimum of biodiversity to generally support verbal communication. Supported by the latest advances in automated processing of natural language, we searched for a comprehensive list of 240,000 English labels for biological taxa in the largest open collection of fiction books from 1705 to 1969, totalling to almost 16,000 works by 4,000 authors. Based on this information we calculated different facets of biodiversity in books in a standardised way. We found that biodiversity in Western literature first increased until the 1830s, probably because of humanity uncovering and colonising large parts of the world as well as improving research and education. Beginning in the 1830s, biodiversity in literature decreased again. A possible cause is an alienation from nature triggered by the onset of urbanisation, industrialisation and intensified land-use change. This is the first investigation analysing biodiversity patterns in books in the context of nature's contribution to people's communication.

