DiSSCo UK: A new partnership to unlock the potential of 137 million UK-based specimens

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Abstract

Between September 2021 and March 2022, a consortium across the twelve nations and regions of the United Kingdom (UK), led by the Natural History Museum (NHM), London, participated in a study to develop the business case and plan to support a national programme of natural science collections digitisation. This work, funded by the Arts and Humanities Research Council (AHRC), sought to understand the size and diversity of UK natural science collections; establish the readiness of UK institutions to undertake digitisation; and develop training materials to pilot regional digitisation, building on prior investments in digitisation and informatics by the NHM. This presentation sets out the key findings from this work and is presented as a “blueprint” to scale up digitisation and cooperation through a national infrastructure programme: DiSSCo UK. This programme is part of the UK’s contribution to DiSSCo, the Distributed System of Scientific Collections, a partnership of institutions who share a vision to empower science and society, in balance with nature, to make reliable knowledge and evidence about the natural world available to all.

Through the Francis Crick Institute and the Turing Institute, the UK has successfully created world-leading medical research and data science collaborations. DiSSCo UK is crafting a business case to do the same for bio- and geodiversity. Our data shows that the UK holds some of the world’s most important natural science collections, with more than 137 million specimens collected from across the globe and stored in more than 90 institutions throughout the country. Firstly, advances in molecular, genetic, artificial intelligence (AI) and machine learning technologies are enabling new scientific discoveries and new commercial opportunities to be extracted by digitising these collections and making the data available to scientific researchers and commercial venture partners. Secondly, UK collections play a critical and culturally sensitive role in supporting a range of arts and humanities research. These collections continue to shape our culture, our view of ourselves and our place in the world, addressing issues of inclusivity and relevance. Lastly, data from these collections underpin local, regional and national policy-making, providing information not only central to monitoring change in the environment, but also for testing predictions of future change, to ensure UK policies are ‘nature positive’ and evidence-led.

Recent work commissioned by the NHM has confirmed an economic value of at least £2 billion with a 7–10 times return on investment from UK collections digitisation with economic opportunities across biodiversity conservation, control of invasive species, medicine discovery, agricultural research and development, and mineral exploitation (Popov et al. 2021). Over time, we propose to build DiSSCo UK out to not only digitise our national collection but to create a national infrastructure that supports real-time integration between biological, human health, meteorological, geographic (e.g., land use) and geological data. It will provide a dynamic view of the state of the world's biodiversity, its threats and human well-being; facilities to support large-scale genomic and chemical analysis of the UK natural science collections, including an on-demand bio-sample service, promoting legal and FAIR (Findable, Accessible, Interoperable and Reusable) access to genetic resources for the benefit of research and society; a coordination office to support the activities of a distributed network of UK organisations holding, generating and analysing natural science data; and an adequate annual budget to support core staffing, workshops, outreach, scholarships, sabbaticals, training activities and other running costs.

Keywords

digitisation, United Kingdom, natural history collections, survey, plan, blueprint, business case

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Conflicts of interest

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