Collaboration for Environmental Evidence

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Plain Language Summary
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Systematic Map
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Evidence of 841 worldwide wildlife translocations to, from, or within protected areas show that conservation-motivated relocation programs mainly involve reintroductions and supplementations rather than climate-driven introductions

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Photo: Svetozar Cenisev

841 studies of translocation events were collected, mainly carried out in North America (including central America) (N=224) and Oceania (Australia, New Zealand) (N=217). Most of the events are one-off supplementations and "supplemented reintroductions". Existing evidence on translocations concern animals (82%) much more than plants (18%) and mammals were by far the most transferred group among animals (56%). Survival, space use, and demography metrics were the most studied outcomes on translocated species. Protected areas are both providers and receivers in translocation events, but overall their involvement is mainly to host translocated animals.

Why is this Evidence Synthesis Needed?

Climate change is reshaping species' ranges worldwide, whereas protected areas are defined geographical spaces. This situation has raised important questions about the need for protected areas to adapt, including how to ensure that they remain beneficial for biodiversity in such a changing context. One of the solutions put forward is translocation, consisting of manually moving individuals (animals or plants) for example from one protected area to another. Although a very intrusive method, it may be required to ensure the sustainability of certain populations in cases where the species would not be able to track favourable climates.

Here we wanted to gather existing evidence on the use of translocation to inform protected area actors. We searched and catalogued - as comprehensively as possible worldwide translocation events that involved a protected area, either providing or receiving individuals. We considered translocation as an introduction (assisted migration, ecological replacement), reintroduction, or supplementation. We extracted information from all the studies, including the species translocated, the type of intervention, the outcome studied on the translocated populations, the motivation, the climatic zone of the capture/release sites, or the involvement of the protected area with the translocated individuals (from, to, from-to, within).

This Collaboration for Environmental Evidence systematic map provides a global catalogue of translocation events in which a protected area is involved (i.e., has provided and/or received individuals). The map summarizes evidence from 841 studies of translocation events (including animals and plants).

Main Findings

What studies are included?

841 studies of translocation events (including animals and plants) are included in this systematic map, extracted from 498 articles. These studies spanned a range of northern and southern hemisphere regions (69 countries worldwide). The majority of translocations (622/841) were carried out for conservation purposes. The most translocated animal groups included mammals, birds, and reptiles, while the most translocated plant groups were Magnoliopsida (magnolia) and Liliopsida (lily). Most species are translocated to protected areas from non-protected sites. Only 7 studies (4 plants, 3 insects) were directly motivated by climate change pressures (6 assisted migrations, 1 trial supplementation to reinforce resilience).

What is the type, extent, and distribution of existing evidence on the outcomes of such wildlife translocations?

Concerning animals (686), the most common intervention was that of "reintroduction + supplementation" (176) a species previously extinct or extirpated reintroduced into its historical range and later reinforced. 158 translocations were of "one-off reintroductions" or supplementations. The exact nature of 182 translocations was unknown as information was lacking in their methods. For studies on plants (155), the most common intervention was "supplementation" (44). Across the entire database (841 translocations), evidence is skewed towards assessing survival (i.e., proportion of individuals alive or level of mortality since translocation), demography (i.e., population growth overtime), and space use (i.e., the dispersal and home range distances). 592 translocations involved a transfer of individuals from non-protected sites to protected sites, 196 transfers of species were from one protected area to another, 47 translocations occurred within the same protected area and in 27 rare cases, species were translocated from a protected area and released into non protected sites.

What are the Implications of the Review Findings?

One of the questions this systematic map raises is whether translocation is already used, today, to adapt species ranges in the context of climate change, particularly within the protected area networks. The map shows that, for the moment, translocations are mostly used in reaction to imminent threats (from rescue operations and human-wildlife conflicts, to improving the conservation status of focal species) and not to future climate threats. Among cases where fine-scale köppen Geiger climates zones (at capture and release) were known (358 translocations), 11% changed climate zones between capture and release sites (including all possible programme motives). The majority of cases were short distance translocations (i.e., 0-100 km), however, 55 animal translocations involved distances of over a 1000 km (43 for conservation purposes, 5 trials, 1 rewilding, 1 rescue, 2 conflicts, and 3 unknown motives).

Regarding the role of protected areas, the majority of cases (592 translocations) involved a transfer of individuals from non-protected sites to protected sites whereas 196 transfers of species were from one protected area to another ("From-To") and 47 translocations occurred within the same protected area.

It should be noted that in many studies information was unclear or not provided (climate zone, description of sites, etc.).

Photo:Yoksel Zok

Synthesis Time Frame

Literature searches were conducted July 2020 (search engines) and August 2020 (databases), without any time restrictions. This CEE Systematic Map was published in October 2021.

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