Does wing morphology of the active flyer Calliphora vicina change as it invades islands ruled by flightless insects?

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I am a Research Asssociate recently hired at INRA, Forest Zoology Research Unit. My research interests lie in the relationship between the success of invasive and/or expanding species and the way they fit the novel selection regimes they encounter as they expand and disturb newly colonized habitats. I also focus on the effects of climate change as it may facilitate biological invasions or trigger range expansions. The tools I use to study population differentiation as a consequence of the invasion (or range expansion) process range from geometric morphometrics to ecophysiology and metabolomics.

Does wing morphology of the active flyer *Calliphora vicina* change as it invades islands ruled by flightless insects?

The cosmopolitan blowfly *Calliphora vicina* established in the sub-Antarctic Kerguelen Islands in the late 1970s, following a warming period that allowed its full development. Although temperature and wind may limit its flight activity, it invaded the archipelago towards sites remote from the introduction point. While most native competitors have converged to flightlessness as a response to local stringent environmental conditions, the flight strategy of *C. vicina* might be either a handicap or a competitive advantage under ongoing climate change. Using geometric morphometrics, we questioned whether the wing changed over time within the archipelago (1998 vs. 2009), and compared its morphology with a continental population from a temperate area (1983 vs. 2009). Wing shape plasticity to temperature was also experimentally investigated. We found no cues of relaxed selection on flight morphology in the invaded range. However, comparatively rapid changes of wing shape occurred over time in females from the Kerguelen Islands, despite a shorter time-lag between the samples compared to the continental population. We also reported different reaction norms to temperature for wing shape between the populations. These findings are consistent with a fingerprint of local adaptation to the peculiar environmental conditions encountered in the invaded range, but additional studies are necessary to test this hypothesis. From an evolutionary standpoint, sustained flight capability under the novel sub-Antarctic conditions may be critical in the invasive success of *C. vicina*, given the flightlessness rule observed in native competitors. To address the adaptive significance of the changes recorded, further studies should tackle their aerodynamic consequences and future evolution.