Updated list of bumblebees (Hymenoptera: Apidae) from the Spanish Pyrenees with notes on their decline and conservation status

CONCEPCIÓN ORNOSA¹, FÉLIX TORRES² & PILAR DE LA RÚA³,⁴
¹Departamento de Zoología y Antropología Física. Facultad de Biología. Universidad Complutense. c/ José Antonio Nováis, 12. 28040 Madrid, Spain. E-mail: paddy@bio.ucm.es
²Departamento de Biología Animal, Ecología, Parasitología y Edafología. Universidad de Salamanca. Campus Miguel de Unamuno s/n. 37071 Salamanca, Spain. E-mail: torres@usal.es
³Departamento Zoología y Antropología Física, Facultad de Veterinaria, Campus de Espinardo, Universidad de Murcia, 30100 Murcia, Spain. E-mail: pdelarua@um.es
⁴Corresponding author

Abstract

The Pyrenees, where Euro-Siberian, Mediterranean and alpine faunas join together, have a large biodiversity of bumblebees. We compiled historical literature records of bumblebee species from the Spanish Pyrenees, and then compared these to contemporary surveys to assess trends in elevational distribution. Twenty-eight species (including thirty-five subspecies) were found in the contemporary survey. Nine species and two subspecies previously present were not detected, some included on the Spanish Red List. With the exception of a few species, a reduction of the altitudinal range and an oro-philous tendency was observed at both upper and lower elevational levels, suggesting an upward trend towards better-preserved high areas. Our results reinforce the need to develop new protection programs and more restrictive conservation measures for bumblebee populations, species and their habitats.

Key words: Biodiversity, Bombus, decline, habitat loss, pollinators, Spain

Introduction


Several factors have influenced the persistence, abundance or decline of bumblebee populations (Cameron et al. 2007, 2011, Rasmont et al. 2015, Goulson et al. 2015). According to Goulson et al. (2015), the decline in abundance and diversity of flowers, the simultaneous and chronic exposure to cocktails of agrochemicals and novel parasites accidentally spread by humans and climate change, are likely to exacerbate this situation in the future. The spill over of pathogens from commercial honeybee (and even bumblebee) colonies into wild populations has been implicated recently (Meeus et al. 2011, Mathew et al. 2013, Fürst et al. 2014, Potts et al. 2016) in the decline of native pollinators, since commercial colonies may have high pathogen loads, and are potentially likely to establish in the wild native bumblebee populations. Despite these recent human impacts, climatic fluctuations during recent glacial events should also be taken into account to explain present extinction rates and reduced