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Environmental Drivers of Plant Diversity of Chalk Grasslands in North-Western France †

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Abstract: In Europe, chalk grasslands are considered as biodiversity hotspots, hosting rare species (*e.g.* orchid and endemic species). However, since the mid 20th century, this habitat is threatened by changes in agricultural practices, especially the decline of pastoralism and recent anthropogenic nitrogen inputs. In this national research project ('SURPAS' project, French Ministry for the Ecological Transition, UMS PatriNat, OFB), we aimed to identify the main factors driving plant composition and richness of these chalk grassland communities to update our knowledge and recommendations in terms of conservation measures. The study was carried out in Natura 2000 chalk grassland sites in the valley of Somme river, in north-western France. We performed botanical and habitat surveys (topography and soil measures, vegetation structure, composition and biomass, fodder quality) at two spatial scales, in 1x1 m and 4x4 m plots. Data were analyzed using multivariate analyses (CCA) and mixed models. Our main results showed that plant height, South exposure, litter thickness and woody species abundance drive composition and richness species, and that nitrogen inputs in the ecosystem, *Brachypodium pinnatum* dominance and tree colonization were currently the major threats to the conservation of the diversity of chalk grasslands.

Keywords: plant community; sheep grazing; *Brachypodium pinnatum*; species composition; species richness; soil composition; fodder quality; biomass; ecosystem services; Natura 2000; conservation