

## Ireland

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The 2015–2017 ‘call for data’ issued by the International Cooperative Programme on Modelling and Mapping was focused on biodiversity critical loads. The call contained two primary tasks: (a) to derive nitrogen and sulphur critical load functions taking into account their impact on biodiversity, and (b) to update national critical load data on acidity and eutrophication. The Irish National Focal Centre (NFC) submitted a response as outlined below.

**Critical loads for biodiversity:** In response to the 2015–2017 ‘call for data’, PROPS-CLF was applied to ~420 plant relevé plots representing eight EUNIS habitats (D1 [n = 8], E1.26 [66], E1.7 [63], E2.2 [30], E3.51 [216], F2 [8], F4.11 [12], and F4.2 [18]). The habitat types were determined by the National Parks and Wildlife Service (NPWS) during field surveys conducted between 2007–2013; a top soil sample was also collected from each plot for the determination of carbon and nitrogen. Plant species selected for the Habitat Suitability Index (HSI) were based on habitat-specific ‘positive indicator species’ provided by the NPWS; critical loads for biodiversity were determined at  $HSI = 0.667$ .

In general, the maximum (biodiversity) critical loads for nitrogen ( $CLN_{max}$ ) were broadly consistent with empirical critical loads for nutrient nitrogen, with grasslands showing higher  $CLN_{max}$  (see Figure IE-1). The

Habitat Suitability Index (HSI) ranged from 0.119 (E2.2) to 0.912 (E3.51), with a median of 0.492 (Figure IE-1). The maximum (biodiversity) critical load for sulphur ( $CLS_{max}$ ) had a wider range, with grasslands showing lower values compared with heathlands and peatlands (Figure IE-2). The relevé plots were mapped onto 337 unique habitat polygons (with 1–8 relevés per habitat polygon) covering a total ecosystem area of 345 km<sup>2</sup>.

**Updates to national critical load database:** Minor updates were applied to the national critical loads database since the 2011 ‘call for contributions’; the national terrestrial receptor ecosystem habitat map was refined following discussion with national habitat experts (NPWS). The protection status for each ecosystem was derived from national maps of Nature Reserves, Natural Heritage Areas (NHA), Special Areas of Conservation (SAC) and Special Protection Areas (SPA). Empirical critical loads of nutrient nitrogen were assigned to all receptor ecosystems under the critical load habitat map based on output from the ‘Workshop on the Review and Revision of Empirical Critical Loads and Dose-response Relationships’, Noordwijkerhout (The Netherlands), June 2010. Modelled nutrient nitrogen ( $CL_{nutN}$ ) was only estimated for managed forest habitats (G1, G3.1 and G4.6).

**Future activities:** The NFC will continue to support activities under the LRTAP Convention, with a greater focus on determination of critical loads for biodiversity.

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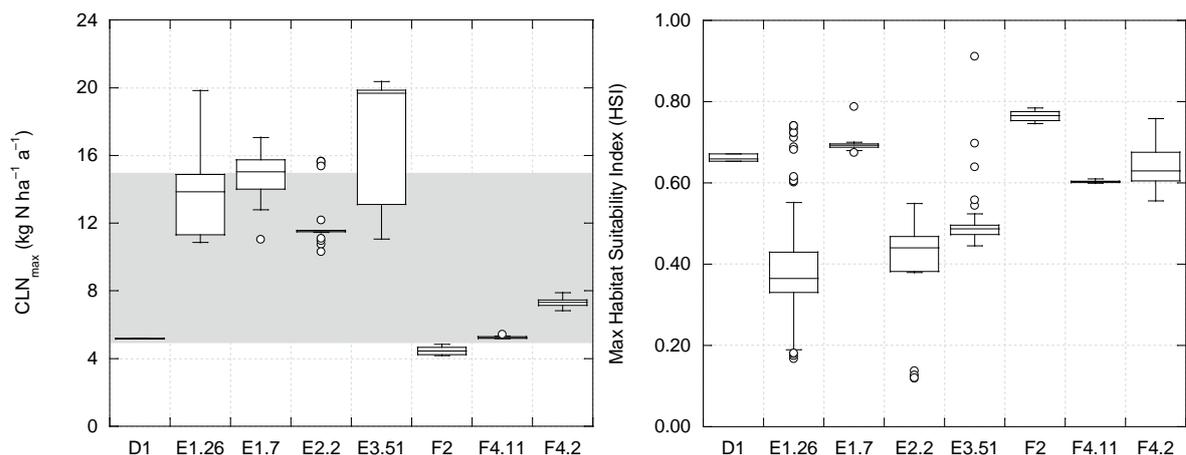


Figure IE-1. Box-plot showing the maximum critical load of nitrogen ( $CLN_{max}$  [kg N ha<sup>-1</sup> a<sup>-1</sup>]) and maximum Habitat Suitability Index (HSI) for each habitat type. The grey band represents a range of 5–15 kg N ha<sup>-1</sup> a<sup>-1</sup>.

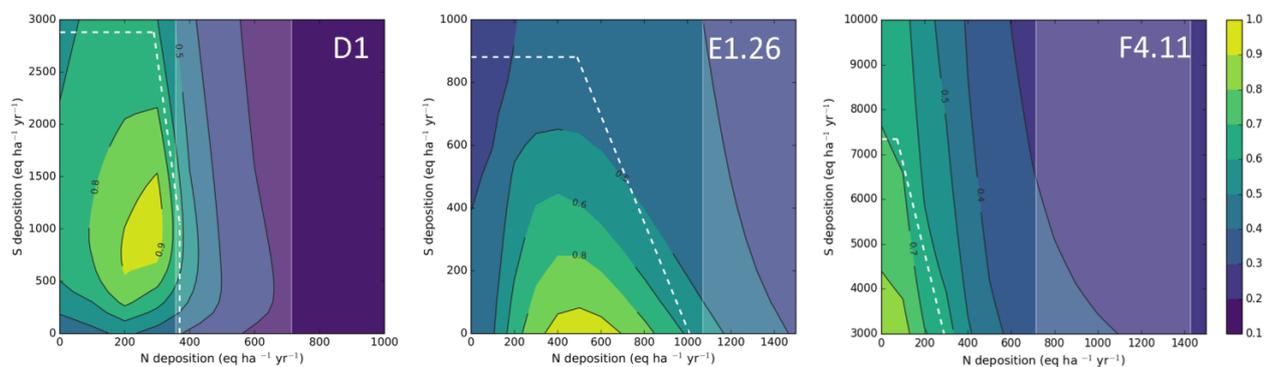


Figure IE-2. Average Habitat Suitability Index (HSI) isoline plots for three EUNIS habitats (D1, E1.26 and F4.11). The white dashed line indicates the average N-S critical load function; the number of vegetation plots for each habitat ranged from 8 (D1) to 66 (E1.26). The vertical shading indicates the recommended empirical nutrient nitrogen range.