ReSurveyEurope

Project Metadata Form

When contributing data to ReSurveyEurope, please fill in this form for each resurvey project and send it to Ilona Knollová (ikuzel@sci.muni.cz) together with the database. A resurvey project is understood as repeated sampling of a certain type of vegetation in a certain study area using specific methods.

- PROJECT NAME (identical with the Resurvey Project name given in the database):

  LOTVS20_48_49

- FULL PROJECT NAME (use if the full project name is longer than used in the database):

  Grazing intensity of heather moorland

- REFERENCE (publication or URL or DOI of the dataset if published online):

  Pakeman R.J., Nolan A.J. 2009. Setting sustainable grazing levels for heather moorland: a multi-site analysis. J Appl Ecol 46, 363–368.
  Pakeman, R.J., Hulme, P.D., Torvell, L. and Fisher, J.M., 2003. Rehabilitation of degraded dry heather [Calluna vulgaris (L.) Hull] moorland by controlled sheep grazing. Biological Conservation, 114, 389-400.
  Hulme, P.D., Merrell, B.G., Torvell, L., Fisher, J.M., Small, J.L. and Pakeman, R.J., 2002. Rehabilitation of degraded Calluna vulgaris (L.) Hull-dominated wet heath by controlled sheep grazing. Biological Conservation, 107, 351-363.
  Grant, S.A., Milne, J.A., Barthram, G.T. and Souter, W.G., 1982. Effects of season and level of grazing on the utilization of heather by sheep. 3. Longer-term responses and sward recovery. Grass and Forage Science, 37, 311-320.

- DATA OWNER: person(s), institution(s):

  Robin Pakeman

- CONTACT E-MAIL:

  Robin.Pakeman@hutton.ac.uk

- METHODS (description of sampling design and methods):

  LOTVS20 - The data set consists of two blocks of four fenced plots located on a *Calluna vulgaris*-dominated moorland in a degraded state near Dufftown, Morayshire, United Kingdom (Pakeman et al. 2003). The treatments imposed on the fenced plots were: 1) sheep grazed in winter (WL, 0.82 animals ha^{-1} yr^{-1}) and fenced against rabbits, 2) sheep grazed in winter (WH, 1.64 animals ha^{-1} yr^{-1}) and fenced against rabbits, 3) sheep grazed in summer (SL, 0.93 animals ha^{-1} yr^{-1}) and fenced against rabbits, 4) sheep grazed in summer (SH1.86 animals ha^{-1} yr^{-1}) and fenced against rabbits. In addition, two types of exclosures in each plot provided the following treatments: 5)

ungrazed (S, fenced against sheep, but open to rabbits), and 6) ungrazed (SR fenced against sheep and rabbits). Finally, 7) measures were also made on the open hill with a higher but unknown density of sheep (O). Every year from 1990 to 1995, each species was measured in a transect, using the inclined-point quadrat method (Tinney et al. 1937) (32·5° to the horizontal). All contacts with 5 pins were recorded in 20 quadrat positions per plot.

LOTVS48 - "The data set consists of 8 plots located in two blocks on a degraded moorland previously dominated by *Calluna vulgaris* on the Road Cut heft at the Redesdale Experimental Farm in Northumberland, United Kingdom (Hulme et al. 2002). There were four grazed treatments – W – winter low, S – summer low and L – year-round low density grazing (all equivalent to 0.7 sheep ha^{-1} yr^{-1}) and M – year round moderate grazing (0.7 sheep ha^{-1} yr^{-1}). In addition, each plot had a small exclosure which were treated as a single exclosure plot per block (E) and the area surrounding each block was treated as a final treatment of 2.1 sheep ha^{-1} yr^{-1} (treatment O). Every year from 1989 to 1994, each species was measured in a transect, using the inclined-point quadrat method (32·5° to the horizontal). A minimum of 25 points contacts were recorded, and the procedure was repeated in 20 permanent quadrat locations per plot, giving a minimum total of 500 contacts per plot.

LOTVS49 - The data set consists of a range of unpublished grazing studies brought together in Pakeman & Nolan's (2009) meta-analysis, except for the previously published work at Glensaugh (Grant et al. 1982). Vegetation cover was monitored using the inclined-point quadrat method (32·5° to the horizontal) at twenty locations per plot.

Redesdale – Burnhead. Northumberland, UK: The 12 plots were divided evenly across three areas (mature heath (BMH), pioneer phase heather regenerating primarily by vegetative means after burning of young stands of heather in 1987 (BR1), and pioneer phase heather regenerating from seed after burning older stands of heather in 1987 (BR2)) with four treatments per area. The four treatments were: 1) ungrazed (N), 2) sheep grazed (L, 0.4 ha^{-1} yr^{-1}), 3) sheep grazed (M, 0.8 ha^{-1} yr^{-1}), and 4) sheep grazed (H, 1.2 ha^{-1} yr^{-1}). Impacts were also recorded on open hill adjacent to each block (O, 1.8 sheep ha^{-1} yr^{-1}).

Claoniag near Tarbert Loch Fyne, Argyll and Bute, UK: Two blocks, one in mature heather (CMH) and one in regenerating heather (CR1). Four fenced treatments per block, 1) low at 0.4 sheep ha^{-1} yr^{-1} (L), 2) moderate at 0.8 sheep ha^{-1} yr^{-1} (I), 3) high at 1.2 sheep ha^{-1} yr^{-1} (H), 4) fenced against both cattle and sheep. Two further treatments were monitored, 5) fenced against cattle but open to the hill flock (C, 1.5 sheep ha^{-1} yr^{-1}), also 6) sheep and cattle (variable stocking) recorded from the open hill (O, 1.5 sheep ha^{-1} yr^{-1}).

Dundonnell near Ullapool, Highland, UK. Four grazing and exclusion treatments: 1) low (L) at 0.4 sheep ha^{-1} yr^{-1}, 2) moderate (I) at 0.8 sheep ha^{-1} yr^{-1}, 3) high (H) at 1.2 sheep ha^{-1} yr^{-1}, 4) fenced against sheep (N). Impacts on the open hill were also recorded (O, 0.4 sheep ha^{-1} yr^{-1}).

Glensaugh, Aberdeenshire, UK. Nine, unreplicated grazing treatments. Plots were no set stocked but sheep density was manipulated to remove a set proportion of the current season's heather growth in summer and autumn. The combinations and their corresponding sheep densities were 0/0 (0 sheep ha^{-1} yr^{-1}), 0/40 (i.e., no grazing in summer but 40 % of current season's shoots removed in autumn, 3.994 sheep ha^{-1} yr^{-1}), 0/80 (6.02), 40/0 (1.74), 40/40 (4.05), 40/80 (5.34), 80/0 (3.42), 80/40 (4.02), 80/80 (4.05).

Otterburn, Northumberland: No stocking densities were available but fenced plots were left open at different times of year to allow grazing by free ranging sheep. Plots 11 and 23 all year grazing, plots 12 and 22 winter grazing, plots 13 and 21 summer grazing, plots 14 and 24 were ungrazed. Impacts were recorded by measuring heather utilisation.

- ENVIRONMENTAL DATA (list of environmental data measured):

No environmental data recorded.

- MANIPULATED PLOTS (description of the treatment if the plots were manipulated, e.g. mowing twice a year, fertilizing by NPK once a year, post-fire succession)

Different type of grazing intensity, cattle and sheep grazing

LOTVS metadata, 17.6.2021

Robin Pakeman

[place, date]

[owner´s name]