

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):

Ainsdale Dunes

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

Ainsdale Dune Slacks Long Term Experiment

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

10.17028/rd.lboro.19077686

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

Jonathan Millett (Loughborough University), Ciara Dwyer (University of Lund)

- CONTACT E-MAIL:

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- METHODS (description of sampling design and methods):

Sefton Coast Special Area of Conservation (SAC) is located in North West England and consists of a 2074-ha coastal belt of frontal dunes approximately 30 km long and 2–4 km wide. There is a transition from active dynamic dunes on the seaward side to largely stable dunes inland. Ainsdale Sand Dunes National Nature Reserve (53°35'N, 03°0'W) was established in 1965 and forms the central section of the Sefton Coast SAC. The site contains a large area of fixed dunes and dune slacks. The water table is intensively monitored and rises and falls by over 50 cm in most years. In a typical year, 30% of the slacks are flooded to a depth of 10–30 cm, with 10% remaining flooded in the summer. Rabbits have been present since at least the late 17th century when the dunes were managed as warrens. The site still has a large rabbit population, which until 1991 was the only source of grazing. In 1991, Herdwick sheep were introduced onto the site at an approximate density of 2.5 sheep ha⁻¹ year⁻¹ and graze between September/October and May/June (approximately 200 sheep on 54 ha for 8 months of the year); Shetland Cattle were introduced in 2012. Livestock are moved around four enclosures and so each enclosure is grazed intermittently throughout the winter. mean annual rainfall 850 mm; mean annual maximum and minimum temperatures are respectively 13.6°C and 6.1°C. N deposition is approximately 13.7 kg N ha⁻¹ year⁻¹

In 1974, rabbit enclosures were erected in four dune slacks. These slacks were located along a 1-km transect orientated parallel to, and approximately 500 m from, the coast line, with one slack at either end and two located 60 m apart in the centre. Within each slack, three 1-m-high, 1.5 x 1.5 m rabbit enclosures were constructed. In 1991, when sheep grazing was introduced, sheep enclosures (1-m-high, 10 x 20 m) were erected around the rabbit enclosures at two of the dune slacks. These enclosures were impermeable to sheep, but permeable to rabbits. At the same time, new rabbit enclosures were erected in the same locations as, and to the same specification of, the original enclosures. The rabbit enclosures were also successful in excluding sheep from the plots.

Initially, vegetation was surveyed in two 0.5 x 0.5 m plot within each rabbit enclosure (n = 3 per slack) and two pairs of 0.5 x 0.5 m plots per slack outside of the enclosures (except for one dune slack where 3 such plots were established). Where erected, the sheep enclosures enclosed all survey plots in the dune slack. Therefore, additional survey plots were established outside of the sheep enclosures in 2009 (n = 3 per slack). Vegetation composition was measured immediately after the rabbit enclosures were erected in July 1974 and then in June/July of 1975, 1976, 1984, 1985, 1986, 2009 and 2019. The exceptions were the plots established in 2009 (only measured in 2009 and 2019) and plots where the rabbit enclosures disintegrated and therefore failed to exclude rabbits or sheep (not measured after 2009). Vegetation composition was measured using the line-point intercept method. Wire pins (2 mm in diameter) were inserted vertically into the vegetation at 5-cm intervals along a 0.5-m transect (n = 10 pins per plot). The number of times each plant species touched each pin was recorded.

- ENVIRONMENTAL DATA (list of environmental data measured):

Photosynthetically Active Radiation (PAR), water table depth, soil temperature

- 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)

Relevés have received the following treatments: 1. site grazing regime – rabbit grazing up to 1991, rabbit plus sheep since 1991 and cattle since 2012, 2. Rabbit + livestock enclosures: no grazing since 1974, and 3. Livestock enclosures (rabbit access permitted): continual rabbit grazing only.

Loughborough, 28/01/2022

Jonathan Millett