Highland red deer tracked by GPS in innovative landscape-scale study of behaviour and habitat use

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A pioneering scientific research project using GPS collars has been launched to track red deer movement and behaviour in the west Highlands to help land managers take informed decisions about how to manage deer health, numbers and habitats.

The study is a partnership project between charity Affric Highlands and Durham University, supported by the Association of Deer Management Groups. The study area includes a diverse network of landowners with different land management practices, such as sporting estates and conservation organisations.

By strengthening understanding of how red deer move through and use the landscape, the initiative will provide scientific evidence to support future decisions and collaboration between landholdings on managing deer densities and restoring habitats such as native woodlands and peatlands.

“Red deer are a vital part of Scotland’s upland landscapes and rural economies – but increased populations have led to challenges in balancing ecological health, biodiversity, and land management objectives,” said Nicola Williamson, field officer for Affric Highlands.

“Strengthening our understanding of how these iconic and ecologically important animals move across estates and habitats is key to recovering ecosystems and improving deer health. This in turn supports rural economies and livelihoods through skilled deer management, and sustainable sport and nature-based tourism.”

While deer management is a much-debated topic in Scotland, limited scientific data is available to help inform and support approaches to practical management and achieve biodiversity goals at landscape-scale.

The research in the South Ross Deer Management Group area will deploy GPS collars on 22 stags from Glen Affric to the west coast. Twelve stags have already been collared, to be followed by a further 10 this winter. Six GPS ear tags have been deployed on deer calves to provide data on hind movements, with a plan to tag more calves next spring.

The collars allow researchers to analyse where red deer prefer to be, and how they interact with the environment, including their habitat preferences during rutting, calving and foraging.

Data will be stored on the collars, but also sent via satellite to EarthRanger – an app which allows deer stalkers to view deer movements and manually add their own observations.

Researcher Dr Eilidh Smith from Durham University said: “Through this innovative research, we’ll be tracking and mapping red deer movements to assess their seasonal migrations, home range sizes, and responses to human activities such as fencing, culling and commercial stalking.

“We’ll also conduct habitat surveys in areas where the GPS data reveal that deer have been foraging or sheltering, to analyse their environmental impacts.”

The project team will work closely with landowners and deer managers to support collaboration across landholdings for better-informed and sustainable deer management. So far, 18 deer stalkers from 14 sporting estates are involved, bringing invaluable knowledge of deer behaviour, built over decades of experience.

Arran Matheson, a deer stalker on Scotland’s west coast who has been involved in the project, said: “Taking part in the red deer collaring project with Nicola and Eilidh has been a great experience. We’ve worked together to locate, track, and fit GPS collars on the deer as part of this important conservation effort. This will give vital data about the deer's habitat use and movement patterns, and it’s something I know a lot of stalkers will be very interested in.”

The project, which adheres to the highest standards of animal welfare, has been granted a licence by the UK Home Office, and was also approved by Durham University’s Animal Welfare and Ethical Review Body. Capture protocols were designed in close collaboration with veterinarian Dr Neil Anderson from the Royal (Dick) School of Veterinary Studies.

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The team at Affric Highlands is currently working to secure additional funding for the initiative, to enable more GPS collars to be deployed and to fund the collation of the two years' worth of data for use by land managers.

The red deer (Cervus elaphus) is Scotland's largest surviving terrestrial mammal, and a keystone species that plays a crucial role in natural processes, shaping the landscape by grazing grasses and sedges, browsing tree shoots and shrubs, and trampling and wallowing.

But high red deer populations are a major barrier to the large-scale natural regeneration of native woodlands – continuing centuries of human-driven deforestation and negatively affecting deer health and welfare.

Including roe deer and non-native sika, it is estimated there are around one million wild deer in Scotland, up from around 500,000 in 1990. Deer populations can range in densities, sometimes exceeding 40 deer per square km. Deer management is the UK's single largest terrestrial wildlife management operation.

With support from the Association of Deer Management Groups, many deer managers in the Highlands are working towards sustainable deer numbers in line with current and future legislation around Scotland's biodiversity goals.

Affric Highlands launched as an independent charity this spring, after being established by Trees for Life with support from Rewilding Europe. The community-focused initiative is the UK's largest rewilding landscape, and aims to restore nature and create social and economic benefits across more than 200,000 hectares of the central Highlands over the next 30 years. See www.affrichighlands.org.

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