

Case study: otter DNA analysis

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There is no correlation between sprainting and the frequency of use of an area by otters (Kruuk *et al.* 1986) and female and male otters are very similar in size and appearance so cannot be (reliably) sexed by observation of video footage. The only way to reliably obtain information of otter numbers and sex is by DNA analysis of spraints and this work was performed at the University of Sheffield. The DNA analysis of spraints was performed by a team led by Dr Deborah Dawson, in the Department of Animal and Plant Sciences. Amy Withers, a MSc student at the University of Leeds and co-supervised by Dr Hannah Dugdale, visited Sheffield for 3 months (June-August 2017) and completed the lab work supported by staff with experience in the techniques required. There are well documented difficulties of using spraints for DNA analysis. The team successfully developed new methods to increase the amount of data obtained. The spraints analysed were collected mostly in summer 2016 and spring 2017. DNA was extracted and samples were genetically sexed and genotyped with 7 newly designed microsatellite markers to create genetic profiles for each sample which were compared to identify individuals. This identified the presence of at least 3 different individuals, and possibly up to 7 individuals, across the 48km of the Don surveyed during 2016-17. At least one of the individuals was a male (spraint collected in 2017). Males take no part in the rearing of cubs and otters territories typically do not overlap. Therefore based on the reported sizes of otter territories (20-30km in freshwater systems, Erlinge 1967), it is unlikely that more than one male or a single mother and offspring are present within urban-suburban Sheffield, perhaps with other otters passing through. Additionally a female was detected at a more rural location, from a spraint collected in 2016. Further work is being performed at the University of Sheffield to obtain fuller genetic profiles which may also enable the team to obtain an estimate of territory size for some individuals and confirm whether otters are truly resident and breeding on the Don or whether they are passing through to more desirable territories.

References

- Kruuk H, Conroy JWH, Glimmerveen U and Ouwerkerk EJ (1986) The use of spraints to survey populations of otters *Lutra lutra*. *Biological Conservation*, **35**, 187-194.
- Erlinge S (1967) Home range of the otter *Lutra lutra* in Southern Sweden. *Oikos*, **18**, 186-209.