

Scientific name	<i>Muntiacus reevesii</i>
Common name	Muntjac deer
Broad group	Vertebrate
Number of and countries wherein the species is currently established	4: BE, IE, NL, UK
Risk Assessment Method	GB NNRA
Links	https://secure.fera.defra.gov.uk/nonnativespecies/downloadDocument.cfm?id=386
1. Description (Taxonomy, invasion history, distribution range (native and introduced), geographic scope, socio-economic benefits)	Muntjac are increasingly viewed as an important quarry by hunters in England (Smith-Jones <i>et al.</i> , 2004). In the absence of Muntjac, this benefit would continue to be provided by other deer species.
6. Can broadly assess environmental impact with respect to ecosystem services	Food crops – Muntjac may consume and flatten cereal crops. Raw materials and carbon sequestration – repeated browsing of coppice by muntjac can retard or prevent tree growth (Cooke, 1998). Cultural – Complete removal of ground layer vegetation has significantly reduced the biodiversity value of nature reserves in the east of England (Cooke & Farrell, 2001). Muntjac may be a reservoir of bovine tuberculosis for livestock (Ward & Smith, 2012). Additional severe impacts on Ecosystem Services: can impact forest, and damage gardens and horticulture industry. Also vehicle collisions are a major problem.
8. Includes status (threatened or protected) of species or habitat under threat	Lowland deciduous woodlands and all biodiversity that depends on ground and shrub-layer vegetation (Putman & Moore, 1998).
9. Includes possible effects of climate	Already established in areas with colder climate than native range. Likely to increase with climate change. Muntjac have expanded their range in

<p>change in the foreseeable future</p>	<p>the UK at an annual rate of 8.2% in recent years, and are predicted to be capable of spreading throughout the majority of England and Wales (Acevedo <i>et al.</i>, 2010). They favour warm climates, naturally ranging throughout the forests of subtropical China and Taiwan, but can survive the temperate winters of England. Warmer, wetter conditions and milder winters predicted by some climate change models are likely to favour the spread and persistence of muntjac in Europe. Although native to subtropical forests, Muntjac have adapted very well to the ecoclimatic zones of southern Britain. Prolonged periods of snow/frozen ground resulted in high mortality in the winter of 1962/63 (Chapman <i>et al.</i>, 1994). Northern Britain, being generally colder and with a shorter growing season for ground vegetation than more southern regions, is likely to be less favourable. Milder winters are likely to favour this aseasonal breeder. With a warming climate exotic deer as reservoirs of diseases may play a role in future UK livestock and wildlife disease management, thus the impact on native species can be expected to increase (Böhm <i>et al.</i>, 2007). Warmer winters and springs has been correlated with increased recruitment and overwinter survival of deer, and is related to the increase of exotic deer particularly at high latitudes (Fuller & Gill, 2001).</p>
<p>11. Documents information sources</p>	<p>Acevedo P, Ward AI, Real R, Smith GC. 2010. Assessing biogeographical relationships of ecologically related species using favourability functions: a case study on British deer. <i>Diversity and Distributions</i> 16: 515-528.</p> <p>Baiwy, E. ; Schockert, V. ; Branquart, E. (2013) Risk analysis of the Reeves' muntjac <i>Muntiacus reevesi</i>, Risk analysis report of non-native organisms in Belgium. Cellule interdépartementale sur les Espèces invasives (CiEi), DGO3, SPW / Editions, 36 pages.</p> <p>Böhm M, White PC, Chambers J, Smith L, Hutchings M. 2007. Wild deer as a source of infection for livestock and humans in the UK. <i>The Veterinary Journal</i> 174: 260-276.</p> <p>Chapman N, Harris S, Stanford A. 1994. Reeves' Muntjac <i>Muntiacus reevesi</i> in Britain: their history, spread, habitat selection, and the role of human intervention in accelerating their dispersal. <i>Mammal Review</i> 24: 113-160.</p> <p>Cooke A. 1998. Survival and regrowth performance of coppiced ash (<i>Fraxinus excelsior</i>) in relation to browsing damage by muntjac deer (<i>Muntiacus reevesi</i>). <i>Quarterly Journal of Forestry</i> 92: 286-290.</p>

	<p>Cooke A, Farrell L. 2001. Impact of muntjac deer (<i>Muntiacus reevesi</i>) at Monks Wood National Nature Reserve, Cambridgeshire, eastern England. <i>Forestry</i> 74: 241-250.</p> <p>Fuller R, Gill R. 2001. Ecological impacts of increasing numbers of deer in British woodland. <i>Forestry</i> 74: 193-199.</p> <p>Putman R, Moore N. 1998. Impact of deer in lowland Britain on agriculture, forestry and conservation habitats. <i>Mammal Review</i> 28: 141-164.</p> <p>Smith-Jones C, Smith-Jones C, Boon A. 2004. <i>Muntjac: Managing an Alien Species</i>. COCH Y BONDDU BOOKS.</p> <p>Ward AI, Smith GC. 2012. Predicting the status of wild deer as hosts of <i>Mycobacterium bovis</i> infection in Britain. <i>European Journal of Wildlife Research</i> 58: 127-135.</p> <p>See also:</p> <ul style="list-style-type: none"> - The Belgian risk analysis report - The Irish risk analysis report
Main experts	<p>Piero Genovesi Melanie Josefsson</p>
Other contributing experts	<p>Olaf Booy Riccardo Scalera Belinda Gallardo</p>
Notes	<p>In how many EU member states has this species been recorded? List them. Five: Belgium, France, Ireland, Netherlands, United Kingdom</p> <p>In how many EU member states has this species currently established populations? List them. Two: Ireland, United Kingdom</p> <p>In how many EU member states has this species shown signs of invasiveness? List them. One: United Kingdom</p> <p>In which EU Biogeographic areas could this species establish?</p>

	<p>Atlantic, Continental (sub-optimal)</p> <p>In how many EU Member States could this species establish in the future [given current climate] (including those where it is already established)? List them.</p> <p>Nine: Belgium, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Slovenia, Spain, Portugal, United Kingdom</p> <p>In how many EU member states could this species become invasive in the future [given current climate] (where it is not already established)? List them.</p> <p>Three: Belgium, France, Netherlands</p> <p>The risk assessment would benefit from specific data from other European countries (IR, BE and NL? FR?), but the overall result would not change. See risk assessments for BE and IR.</p>
Outcome	Compliant