GEVAD Code Number	GV163
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Title	Valuing the recreational benefits from the creation of nature reserves in Irish forests
Reference	Ecological Economics, 33, 237–250
Country	Ireland
Location	Irish forests in Northern Ireland and in Republic of Ireland
Date of reference	2000
Environmental Good or Service Valued	
- General	Amenity, Flora
- Specific	Forest recreation, Forest attributes analysis, Nature Reserves
Activity involved	Investigation of the effects of creating Nature Reserves (NRs) on the recreational value of woodlands
Environmental change	The Irish forest sites surveyed differed in many of the attributes that could affect a visitor's recreational experience. This study concentrates on a few that were measured, and that could be important for forest managers. The vector of site attributes **q** included total area (TOTAREA in 100 hectare units), under the hypothesis that the sheer extent of a forest could affect the experience of its visitors. It also included a dummy variable (NATRES= 1 or 0) to reflect the presence or absence of a NR in the forest, a major policy issue being the desirability of such reserves. To assess the impact of large old trees, which are such a salient feature of forest landscapes, the percent of total trees planted before the year 1940 was used (PRE1940). Another descriptor of the forest landscape included in **q**, was the percentage of land covered with conifers (CONIFS) broadleaves (BDLEAF) and larch (LARCH) (measured in ten percentage points to decrease numerical errors). A measure of site congestion (CONGEST expressed as 1,000 visits/car park space/year) was used to control for the negative effect of inadequate facilities and crowding on the utility of a visit.
Survey information	
Location characteristics	Nature Reserves (NRs) within public forests are areas of conservation landuse, mostly covering sites no greater than 10 to 20 hectares. Creating NRs in public forests is one important way of preserving biological diversity and providing ecological goods to the public. Yet the economic benefits of the creation of NRs are not well known. Managers of public forests must often provide timber revenues as well as biodiversity protection and a natural setting for outdoor recreation. In much public woodland the managerial task is therefore that of providing both market and non-market goods. Although the creation of NRs in forests is sometimes in conflict with the use of woodland for outdoor recreation, a nature conservation site within the forest adds to most visitors' recreational experience. Some studies indicate that social benefits for non-market goods of forests are sizeable and may exceed those provided by traditional forest market products.
Socio-economic characteristics	No information was provided
Type of survey	Primary
Date of survey	1992
Valuation method	Contingent valuation method
Survey size	9400 visitors from 26 sites
Collection of information	On-site face to face interviews
Payment vehicle	Charge for admission in the site
Economic measure	Willingness to pay - close-ended questions
Econometric model	Yes
Other information	
Results	
	The presence of a NR has a significant positive effect on the WTP. Other forest characteristics that influence WTP significantly are forest area, site congestion, number of old trees, and proportion of conifers, broadleaf species and larches (this least common species being most important). The estimated mean and median WTP for a single visit in each forest as well as the changes after creating a NR are given in Tables 1 and 2 respectively. The yearly aggregate impact on visitors welfare from the introduction of NRs has been also estimated. This was done by multiplying the estimated per visit changes in *WTP* by the yearly number of visits to each forest. The results are in Table 3 and show that amongst Northern Irish forests, creating NRs at Tollymore and Hillsborough would increase welfare the most. NRs at Lough Key and Hazelwood would make the largest welfare contribution in the Republic of Ireland. The total yearly welfare increase due to creating NRs is estimated at £251,628 (£226,277-£278,718) in Northern Ireland and £318,042 (£265,103-£382,036) in the Republic of Ireland. However, these are probably lower bound estimates of the true changes in social welfare.

Table 1. Predicted WTP for a single visit in forests without a nature reserve.

Northern Ireland Forests					
Tollymore		**Castlewellan**		**Hillsborough**	
Mean	Median	Mean	Median	Mean	Median
183 (175-192)*	136 (90-101)	175 (168-182)	129 (125-135)	102 (95-108)	75 (71-80)
Drum Manor		**Gortin glen**		**Ballypatrick**	
Mean	Median	Mean	Median	Mean	Median
144 (135-154)	107 (100-114)	174 (166-184)	129 (123-136)	175 (166-186)	130 (123-137)
Gosford		**Somerset**			
Mean	Median	Mean	Median		
160 (154-168)	119 (114-124)	169 (162-176)	125 (121-130)		
Republic of Ireland Forests					
Lough Key		**Hazelwood**		**Dun a Dee**	
Mean	Median	Mean	Median	Mean	Median
240 (204-282)	178 (151-209)	214 (178-260)	159 (132-192)	191 (175-209)	142 (130-155)
Dun a Ree		**Currachase**		**Cratloe**	
Mean	Median	Mean	Median	Mean	Median
180 (168-194)	133 (124-143)	237 (205-274)	176 (152-203)	164 (154-174)	121 (114-129)
John F Kennedy		**Douneraile**		**Killykeen**	
Mean	Median	Mean	Median	Mean	Median
221 (195-249)	163 (145-184)	262 (212-326)	194 (157-241)	144 (133-157)	107 (99-116)
Farran		**Guaghan Barra**			
Mean	Median	Mean	Median		
150 (140-162)	111 (103-120)	172 (164-181)	128 (122-134)		

*10% confidence interval.

Table 2. Predicted changes in per visit WTP to forests without a nature reseserve, after creating one.

Northern Ireland Forests					
Tollymore		**Castlewellan**		**Hillsborough**	
Mean	Median	Mean	Median	Mean	Median
37 (27-48)	27 (20-35)	37 (27-48)	27 (20-35)	22 (15-28)	16 (11-21)
Drum Manor		**Gortin glen**		**Ballypatrick**	
Mean	Median	Mean	Median	Mean	Median
31 (22-39)	23 (17-29)	37 (27-47)	27 (20-35)	37 (27-48)	28 (20-35)
Gosford		**Somerset**			
Mean	Median	Mean	Median		
34 (24-44)	25 (18-33)	36 (26-47)	27 (19-34)		
Republic of Ireland Forests					
Lough Key		**Hazelwood**		**Dun a Dee**	
Mean	Median	Mean	Median	Mean	Median
51 (35-71)	38 (26-52)	46 (30-64)	34 (22-48)	41 (29-54)	30 (22-40)
Dun a Ree		**Currachase**		**Cratloe**	
Mean	Median	Mean	Median	Mean	Median
38 (27-49)	28 (20-36)	50 (34-69)	37 (26-51)	35 (25-45)	26 (19-33)
John F Kennedy		**Douneraile**		**Killykeen**	
Mean	Median	Mean	Median	Mean	Median
47 (33-63)	35 (24-46)	56 (36-80)	41 (27-59)	31 (22-39)	23 (17-29)
Farran		**Guaghan Barra**			
Mean	Median	Mean	Median		
32 (23-41)	24 (17-30)	37 (26-47)	27 (20-35)		

Table 3. Predicted welfare changes due to the introduction of a nature reserve, for the population of visitors at each site (Pound sterling per year).

Northern Ireland Forests			
Tollymore	**Castlewellan**	**Hillsborough**	**Gosford**
58,186	40,790	110,310	15,743
Drum Manor	**Gortin glen**	**Ballypatrick**	**Somerset**
7,109	11,081	5,656	2,743
	Republic of Ireland Forests		
Lough Key	**Hazelwood**	**Dun a Dee**	**John F Kennedy**
76,515	45,510	40,610	40,291
Dun a Ree	**Currachase**	**Cratloe**	**Douneraile**
22,950	25,150	10,434	22,284
Farran	**Guaghan Barra**	**Killykeen**	
15,950	9,150	9,198	

The total welfare change for the set of forests investigated here exceeds 570 thousand pounds per year. At the current frequency of forest visits this constitutes a considerable flow of benefits. A capitalization at a conservative discount rate of 3 percent gives a present value of approximately 19 million pounds. A more conservative figure would use the lower bound of the 90 percent confidence interval. This would still give a present value of welfare change from introducing NRs of approximately £7.5 million for Northern Ireland and 8.8 for the Republic of Ireland.