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Data Article

Data on recreational activities, respondents' values, land use preferences, protection level and biodiversity in nature-based tourism areas in Finland

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ABSTRACT

We present the first dataset that can be used to associate peoples' opinions with comprehensive biodiversity and cultural heritage values. The socio-ecological dataset includes 1) place-based information on peoples' recreational activities, values expressed as pleasant and unpleasant sites, and negative preferences concerning land use in terms of tourism, nature protection and forestry, and 2) compiled information on scored biodiversity values and protection level of sites. The data are organized in 1ha grid cells. The data were compiled from a rural nature-based tourism area in two municipalities northern Finland. Peoples' opinions were assessed using a public participation geographic information system (PPGIS) and the data were merged with spatial biodiversity data from the same area. The data are directly related to the article Tolvanen et al. [1]. Biodiversity data, also utilized in Tolvanen et al. 2020, were compiled from various sources and scoring was done in Kangas et al. [2]. References to individual respondents and spatial locations of markings were removed.

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The data are useful in evaluating the relationship between people's values and biodiversity.

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Specifications Table

Subject	Environmental science
Specific subject area	Conservation planning, land use planning, planning of nature-based tourism areas
Type of data	Tables (basic statistics) Pdf document (Supplementary file 1: survey) CSV file: Definitions of variables CSV file: Dataset
How data were acquired	Public Participation GIS (PPGIS) survey Biodiversity value scoring made in Kangas et al. [2]
Data format	Raw csv excel data
Parameters for data collection	Analysed data: summary Tables Most data were acquired using an Internet-based PPGIS survey. Scored biodiversity data were achieved from Kangas et al. [2], in which the assessment of ecological values had been conducted for the same research area as the PPGIS survey.
Description of data collection	The Internet-based survey was advertised in media, social media, through project partners, and at specific events. One or two people were available in most of the events to attract attention and help the respondents. Biodiversity scoring contains four variables: the protection level, species value, predicted habitat suitability value, and habitat value.
Data source location	Institution: Natural Resources Institute Finland Region: Puolanka and Hyrynsalmi municipalities in the province of Kainuu Country: Finland Latitude and longitude for collected data: Puolanka 64°52'05"N, 027°40'15" Hyrynsalmi 64°40'35"N, 028°29'40"E Biodiversity scoring data: Kangas et al. [2]
Data accessibility	With the article
Related research article	Authors' names Anne Tolvanen, Katja Kangas, Oili Tarvainen, Esa Huhta, Anne Jäkäläniemi, Marketta Kyttä, Ari Nikula, Vesa Nivala, Seija Tuulentie, and Liisa Tyräinen Title The relationship between people's activities and values with the protection level and biodiversity Journal Tourism management In Press

Value of the Data

- These data are the first dataset to associate peoples' opinions with comprehensive biodiversity and cultural heritage values.
- The data are valuable for land use planners, nature tourism area planners and conservation planners in assessing the relationship between human values and biophysical characteristic of the environment.
- The data can be used to assess the relationship between peoples' values and biodiversity and to provide comparison material for related social-ecological studies elsewhere.

1. Data Description

Supplementary file 1 presents the PPGIS survey.

Definitions of variables csv file provides information on the variables and their abbreviations. Dataset csv file contains 145,365 rows of data.

Table 1 presents the summary statistics of the variables in the dataset. Due to the high number of zero values in the 1 hectare grid cells, the median is usually 0.

Table 2 presents the adequacy of the PPGIS sampling. Adequacy was analyzed using KMO function (psych package) presented in Revelle [3]. The function calculates the overall measure of sampling adequacy (MSA), as well as estimates for each variable. The measure is known as the Kaiser-Meyer-Olkin (KMO) index, varying between 0 and 1 according to Kaiser [4] and Cerny & Kaiser [5]. KMO indices higher than 0.6 and 0.8 indicate satisfactory and good sampling, respectively. Concerning the whole dataset the KMO indices ranged between 0.75 - 0.94 (**Table 2**), which indicates good sampling.

2. Experimental Design, Materials and Methods

2.1. PPGIS survey

PPGIS survey was developed in which eight recreational activities could be marked on a map. These were: Hunting and Fishing, Forestry Activity, Collecting Natural products, Nature Observation, Work, Other Activity, Hiking and Sports, and Motorized Vehicle Activity.

Table 1

Basic statistics concerning the grid cells scored according to their biodiversity values and respondents' activities, values and negative preferences.

Variable	n	mean	sd	se	median	min	max	skew	kurtosis
Biodiversity									
Species	145364	0.88	11.85	0.03	0	0	810	29.26	1426
Modelling	145364	11.92	25.98	0.07	0	0	90	2.44	4.49
Habitat	145364	31.42	110.2	0.29	0	0	810	5.71	35.81
Activities									
HuntFish	145364	1.13	1.36	0	1	0	9	1.61	3.43
ForestryAct	145364	0.32	0.75	0	0	0	5	2.81	8.29
NatProduct	145364	1.26	1.79	0	1	0	11	2.01	4.56
NatObserv	145364	1.66	2.41	0.01	1	0	14	1.89	2.92
Work	145364	0.36	0.65	0	0	0	4	1.71	2.12
OtherAct	145364	0.16	0.49	0	0	0	5	3.56	15.02
HikeSport	145364	1.86	3.12	0.01	0	0	21	2.12	3.92
Motorsport	145364	0.35	0.96	0	0	0	7	3.69	15.56
Values									
Peaceful	145364	0.01	0.09	0	0	0	4	15.23	302
Beautiful	145364	0.01	0.11	0	0	0	6	16.99	432
Safe	145364	0	0.06	0	0	0	3	26.58	895
Versatile	145364	0	0.06	0	0	0	3	19.16	423
EasyAccess	145364	0	0.08	0	0	0	6	27.25	1117
Passable	145364	0	0.06	0	0	0	4	28.2	1029
Training	145364	0	0.08	0	0	0	8	39.35	2406
Culture	145364	0	0.05	0	0	0	2	21.27	465
Economic	145364	0	0.04	0	0	0	1	25.42	644
OtherVal	145364	0	0.03	0	0	0	2	48.36	2606
Negative preferences									
Tourism	145364	0.34	0.81	0	0	0	5	3.02	9.39
ForestryNP	145364	1.71	2.68	0.01	1	0	14	2.14	4.21
Protection	145364	0.6	1.31	0	0	0	7	2.46	5.31

Table 2

Kaiser-Meyer-Olkin factor indicating the adequacy of data by each variable.

MSA for each variable	
HuntFish	0,91
ForestryAct	0,85
NatProduct	0,94
NatObserv	0,87
Work	0,94
OtherAct	0,86
HikeSport	0,86
Motorsport	0,83
Peaceful	0,9
Beautiful	0,83
Safe	0,83
Versatile	0,85
EasyAccess	0,83
Passable	0,91
Training	0,87
Culture	0,89
Economic	0,75
OtherVal	0,83
Tourism	0,83
ForestryNP	0,9
Protection	0,91

In addition, nine values for sites being pleasant were marked, being: Peaceful, Beautiful, Safe, Versatile Species Assemblage, Easy Access, PassableTerrain, Training Opportunities, Culture History Values, Economic Value, and Other Value.

Negative preferences towards tourism, nature protection and forestry were also marked on the map.

Data on the protection level and biodiversity were received from other organizations and are not presented in their original format here. Scoring of biodiversity values was made by biodiversity experts in Kangas et al. [2] and is available in the dataset.

2.2. Scoring

Concerning respondents' recreational activities, scores for each activity both from the marked polygons and points was calculated. Each 1 ha grid cell that was completely or partially marked was given one score. In each grid cell, the final score per activity was the sum of the scores given by all respondents for that activity.

Concerning values representing pleasant sites, each marked grid cell was given one score. In each grid cell, the final score per pleasant/unpleasant site value was the sum of the scores given by all respondents for that value.

Concerning negative preferences towards tourism, nature protection and forestry, each grid cell that was completely or partially marked was given one score for the respective preference. In each grid cell, the final score per negative preference was the sum of all scores given by all the respondents for that preference.

Protection level and biodiversity values were calculated for each 1 ha grid cell of the research area. The scoring was carried out in Kangas et al. [2], in which the scores can be seen in Table 1. The protection levels (named as RESTRICTED in Kangas et al. [2]) were classified into four categories based on the IUCN classification and the size of the area. Concerning biodiversity values three layers were scored: 1) the habitat: endangered and rare habitats, for which the IUCN classification scheme was used to form the scoring criteria, 2) species: endangered and rare species, for which the IUCN classification scheme was used to form the scoring criteria, and

3) modelling: habitats suitable for 18 valuable old-growth species based on the habitat suitability modelling. The following classes were used for labeling in this study: No value: < 10 scores, low value: 10 – 89 scores, intermediate value: 90 – 809 scores, high value > 810 scores.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships which have, or could be perceived to have, influenced the work reported in this article.

Ethics Statement

All ethical considerations have been addressed. Any reference to individual respondents has been deleted.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.dib.2020.105724](https://doi.org/10.1016/j.dib.2020.105724).

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