

UKGAP Theme 1: Furthering the Frontiers of the Geosciences

UKGAP Indicator 1: Recognition within research - the number of refereed research papers relating to UK geodiversity

Relevance

Determining the number of published research papers about the UK's geodiversity and geoconservation provides a level of understanding of the importance of UK geodiversity and geoconservation in general within the academic research community. Since many of the authors of the research papers are also university lecturers, the data may also give an indication of the extent to which UK geodiversity is taught, or used to illustrate fundamental geological principles, within higher education.

Data Sources

Eight peer-reviewed periodicals are used as the source data for the number of refereed research papers relating to UK geodiversity: Proceedings of the Geologists' Association; Palaeontology; Journal of the Geological Society; Scottish Journal of Geology; Proceedings of the Yorkshire Geological Society; Bulletin of the Geological Society of Norfolk; Mercian Geologist; and the Journal of Quaternary Science.

Two peer-reviewed periodicals are used as the source data for the number of refereed research papers relating to geoconservation: Proceedings of the Geologists' Association; and Geoheritage.

Background to the Data

The eight periodicals were selected to provide a reasonable representation of the variety of published British geological journals. Mercian Geologist and the Journal of Quaternary Science have been added to the list of journals reviewed, as recommended in previous indicator reports. Some of them focus on international subjects (*Palaeontology* for example, although with a European bias) and some, by their nature, have a more national or regional focus (*Bulletin of the Geological Society of Norfolk* for example). Between them, the eight periodicals also represent different sizes of journal and different readership. The eight periodicals were also selected for their ease of data collection, with back issues available online.

The method selected to identify whether papers related to UK geodiversity was kept simple. For the eight periodicals listed, each issue from 2006 onwards was considered. In addition, back issues from 1955 onwards at 10-yearly intervals were also considered. In this way, a trend over a wider timeframe could be established. The title of each paper and its abstract were reviewed to confirm whether the paper dealt with any of the many aspects of geodiversity. In fact all papers within the selected journals concerned geodiversity. A direct reference to a UK place was the method used to identify whether the research related to the UK.

Peer-reviewed papers in the Proceedings of the Geologists' Association and Geoheritage were assessed for their geoconservation content, as recommended in previous indicator reports. The title and abstract of research papers were reviewed for the terms (geo)conservation, (geo)heritage and protection.

Data (UK Geodiversity)

Table 1 below shows the total number of peer-reviewed papers within each publication and the number of these that relate to UK geodiversity. The first chart shows the percentage of papers relating to UK geodiversity compared to all papers within the eight selected journals. In addition, a separate chart has been produced to portray the relevant data for each publication.

Table 1: Number of Papers Relating to Geodiversity (Total and UK)

Year	Proceedings of the Geologists' Association		Palaeontology		Journal of the Geological Society		Scottish Journal of Geology		Proceedings of the Yorkshire Geological Society		Bulletin of the Geological Society of Norfolk		Mercian Geologist		Journal of Quaternary Science		All Publications	
	Total	UK	Total	UK	Total	UK	Total	UK	Total	UK	Total	UK	Total	UK	Total	UK	Total	UK
1955	6	4	7	5	19	13	n/a	n/a	9	9	4	4	n/a	n/a	n/a	n/a	45	35
1965	25	20	44	29	17	11	25	24	13	12	5	5	9	9	n/a	n/a	138	110
1975	30	27	56	33	48	34	26	26	22	22	7	7	6	6	n/a	n/a	195	155
1985	31	26	40	14	86	38	21	21	8	8	5	5	4	4	12	6	207	122
1995	24	23	45	18	110	24	26	23	13	13	2	2	3	3	23	12	246	118
2005	24	12	78	10	86	15	12	12	11	11	4	4	6	5	58	7	279	76
2006	20	16	81	9	89	17	17	17	14	14	6	6	4	3	64	21	295	103
2007	28	16	92	18	102	26	21	21	9	9	2	2	3	2	62	16	319	110
2008	23	14	90	11	88	18	17	17	10	10	3	3	5	3	59	12	295	88
2009	23	21	79	12	98	21	21	21	7	7	2	2	5	1	73	7	308	92
2010	40	19	75	12	98	17	22	22	8	8	2	2	2	2	2	2	249	84
2011	55	43	84	11	91	21	23	23	17	9	2	2	2	2	2	2	276	113
2012	53	37	74	10	67	19	16	15	15	15	3	3	7	5	98	11	333	115
2013	53	37	76	4	82	22	13	12	10	10	3	3	6	6	78	9	321	103
2014	57	35	62	4	69	9	17	16	4	3	0	0	3	3	76	4	288	74
2015	13	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	8

Note: The first publication of the Scottish Journal of Geology available online is 1965.
 Note: The first publication of Palaeontology available online is 1957, but it is included here under the 1955 category.
 Note: Mercian Geologist was first published in 1964.
 Note: Journal of Quaternary Science was first published in 1986, but it is included here under the 1985 category.
 Note: Partial data is included for 2015, but is not discussed in this report

Figure 1: The percentage of geodiversity-related papers which deal with UK geodiversity - all journals

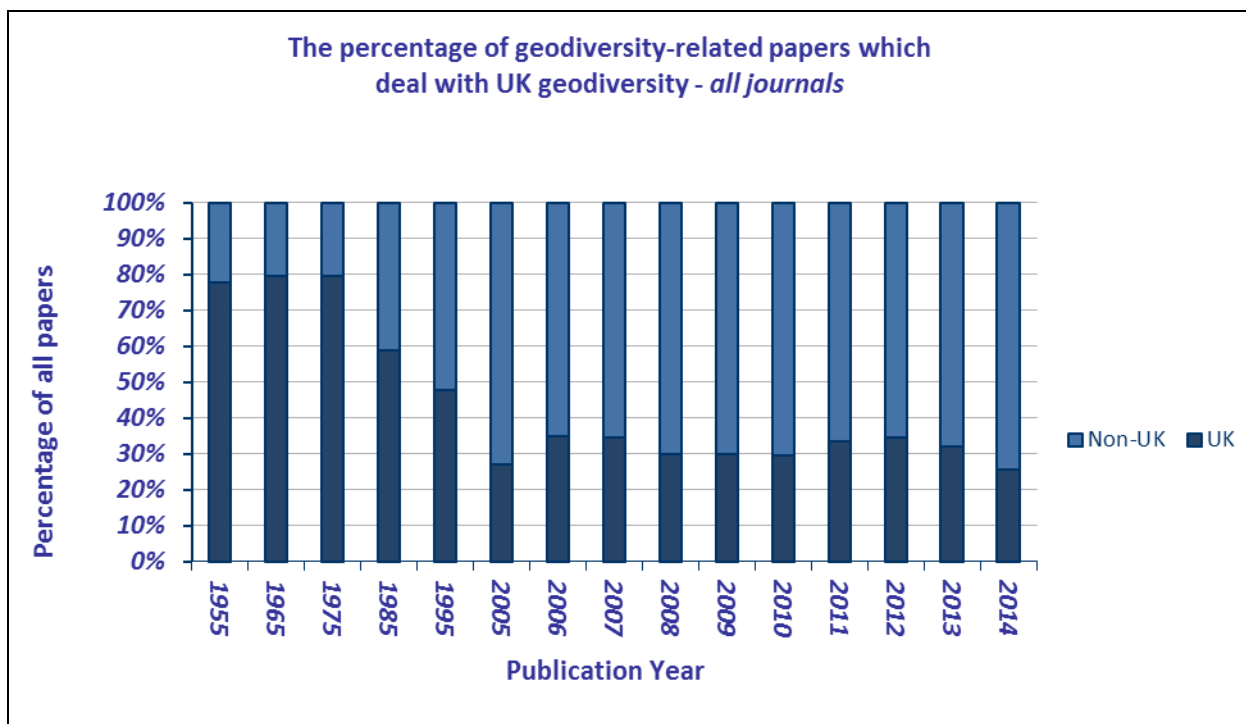


Figure 2: The number and share of geodiversity-related papers which relate to UK geodiversity - Proceedings of the Geologists' Association

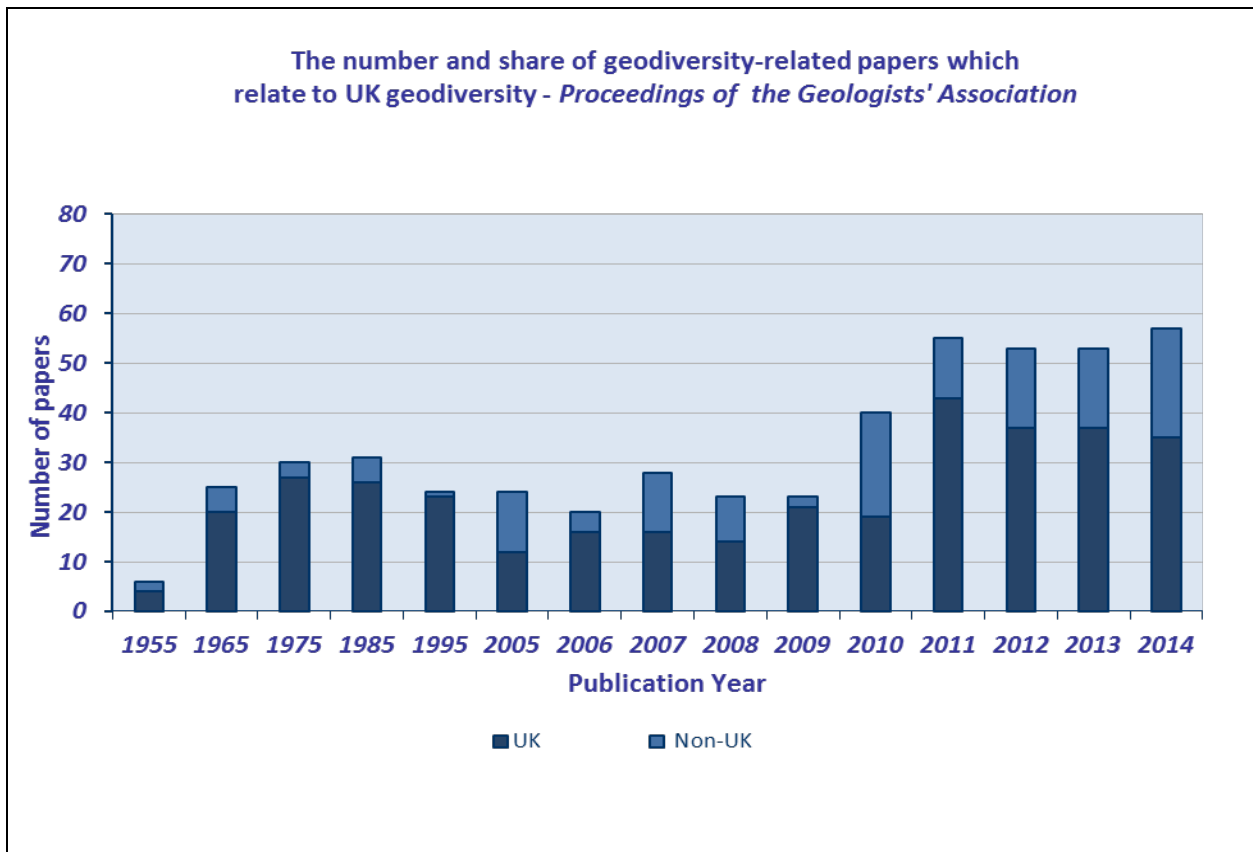


Figure 3: The number and share of geodiversity-related papers which relate to UK geodiversity - Palaeontology

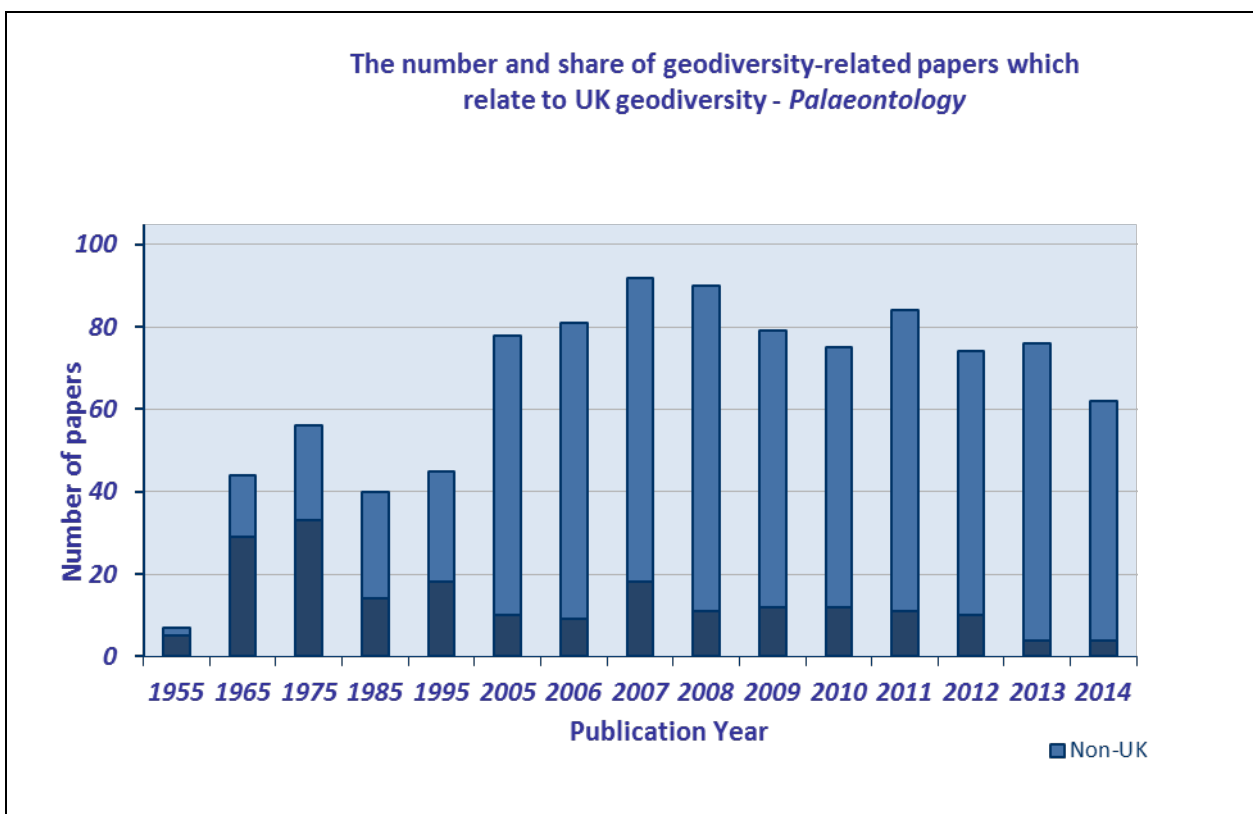


Figure 4: The number and share of geodiversity-related papers which relate to UK geodiversity - Journal of the Geological Society

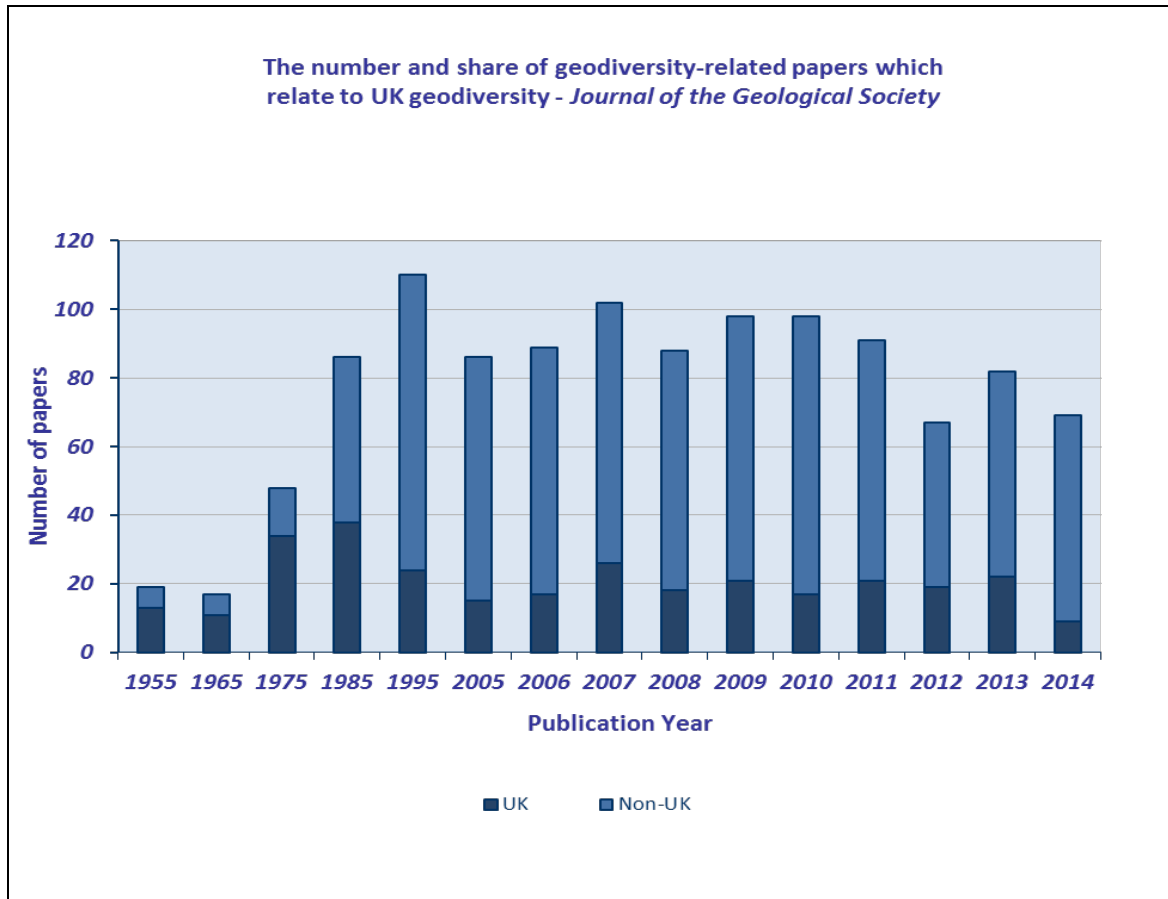


Figure 5: The number and share of geodiversity-related papers which relate to UK geodiversity - Scottish Journal of Geology

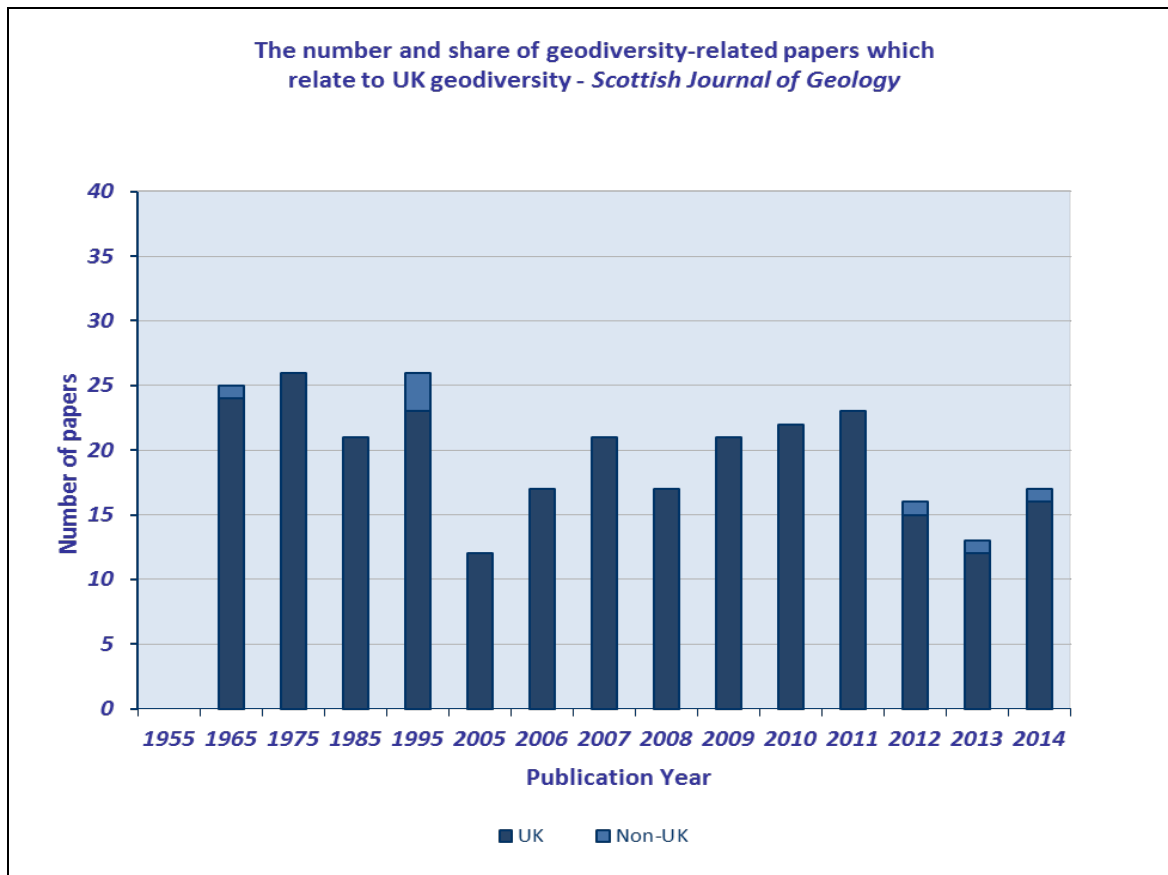


Figure 6: The number and share of geodiversity-related papers which relate to UK geodiversity - Proceedings of the Yorkshire Geological Society

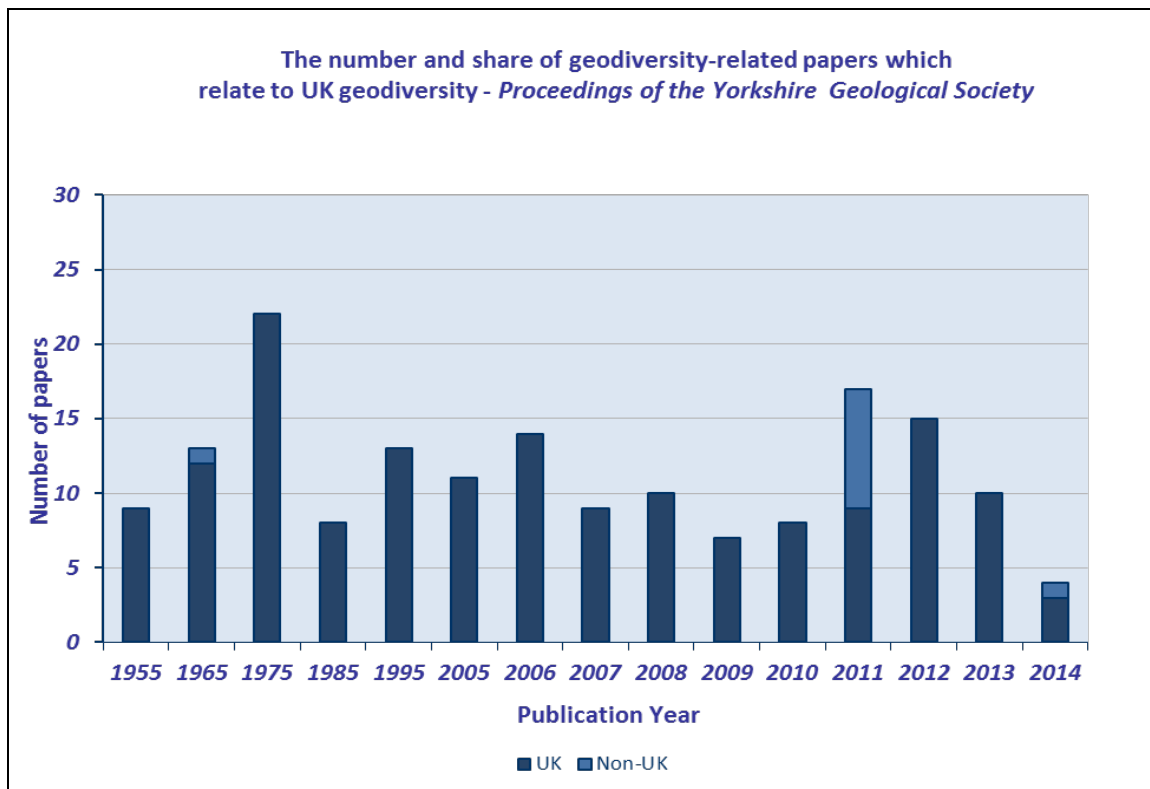


Figure 7: The number and share of geodiversity-related papers which relate to UK geodiversity - Bulletin of the Geological Society of Norfolk

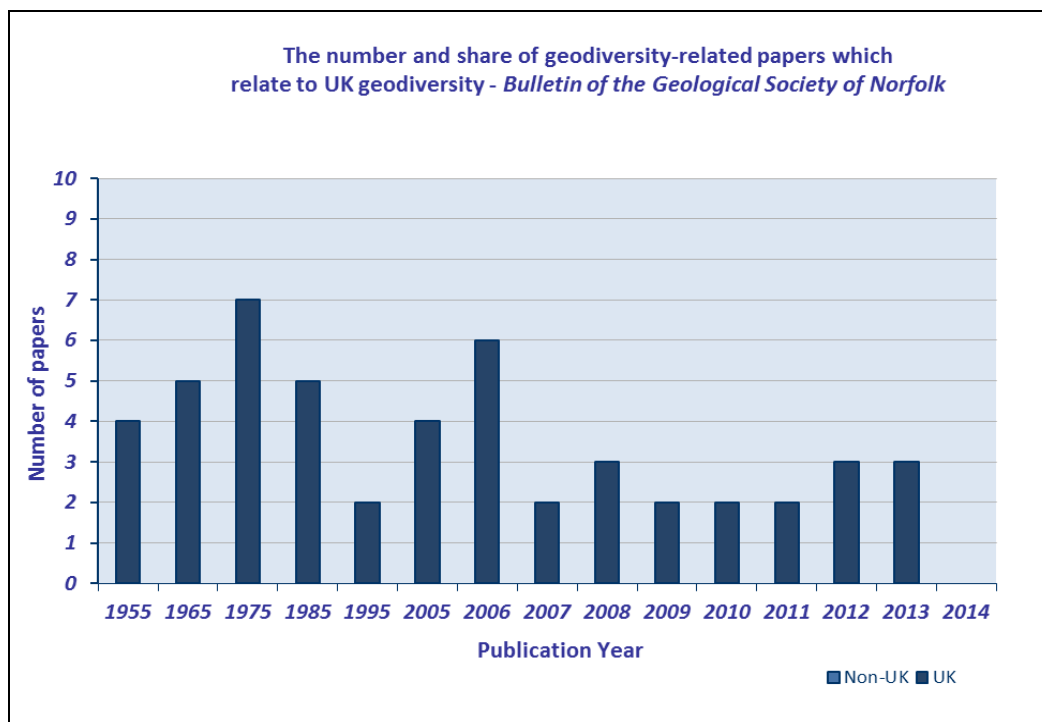


Figure 8: The number and share of geodiversity-related papers which relate to UK geodiversity – Mercian Geologist.

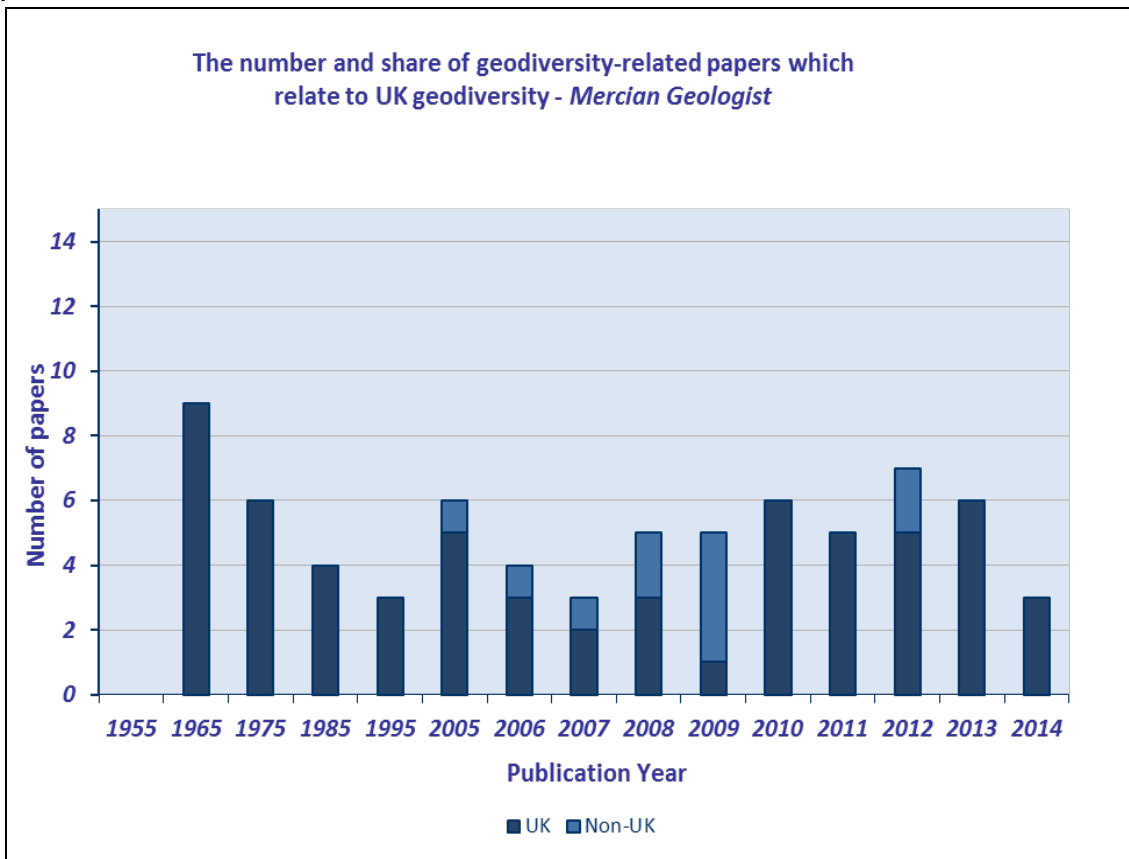
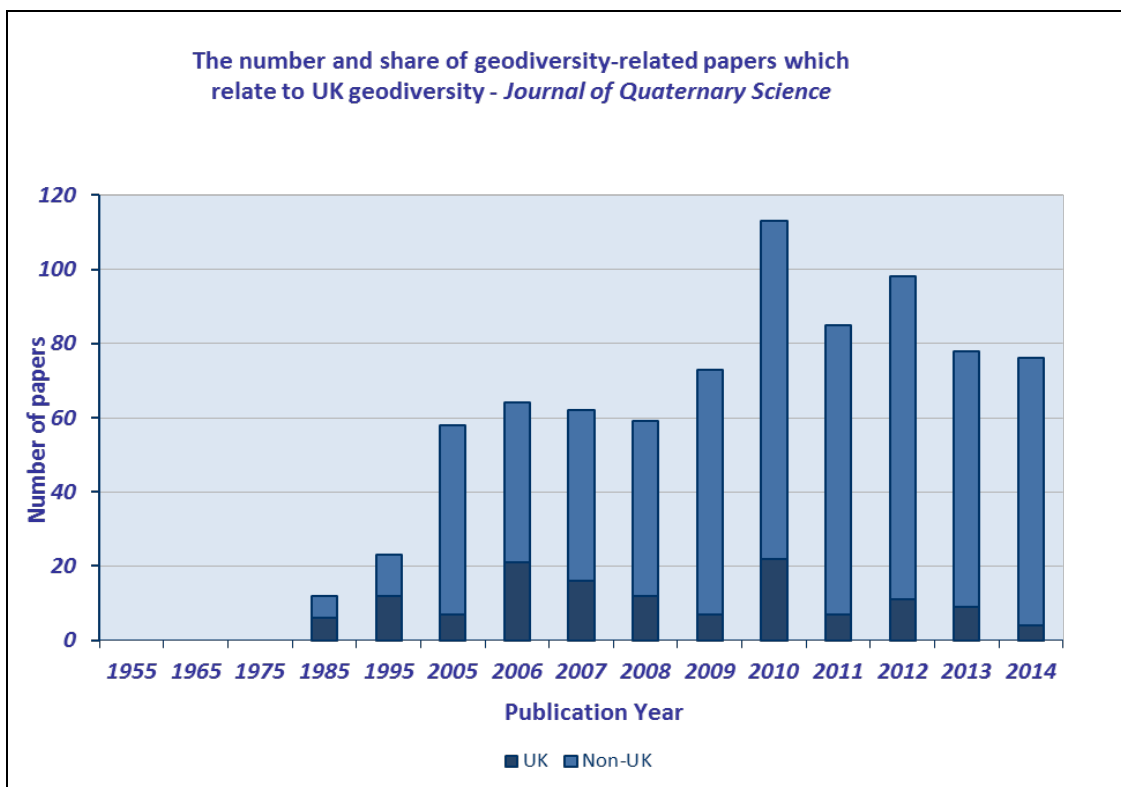


Figure 9: The number and share of geodiversity-related papers which relate to UK geodiversity – Journal of Quaternary Science.



Assessment of Trend (UK geodiversity)

To the extent that the regional- or country-based periodicals deal with geodiversity, the focus is almost entirely on the UK, as might be expected, whilst in more broadly-based publications, with the exception of the Proceedings of the Geologists' Association (traditionally based on UK fieldwork and applied research), the proportion of papers relating to UK geodiversity is much lower, particularly from 2005 onwards. Some further detail is provided below:

- *The Proceedings of the Geologists' Association*: Between 1955 and 1995, for the years considered, the majority of papers related to UK geodiversity. In 2005, 2006 and 2007 inclusive, only approximately half the papers related to UK geodiversity. However in 2008 and 2009, the number of papers relating to UK geodiversity again predominated. Whilst the total numbers of papers saw a large increase in 2010, the number of papers relating to UK geodiversity did not rise to the same degree. However, in 2011, the total number of papers remained similar to 2010 but the number of papers relating to UK geodiversity saw a rise. In 2012, there was a peak in papers (70 papers) with a slight drop in 2013 (63 papers). This trend is reflected in the papers published on UK geodiversity (2012: 50 papers and 2013: 43 papers). This publication has seen an overall increase in UK geodiversity related papers since 2006 and has the greatest total number of contributions during this period.
- *Palaeontology*: In 1955, 1965 and 1975 more than half the papers related to UK geodiversity. In 1985 and 1995, less than half of the papers related to UK geodiversity. There was a significant increase in the total number of papers from 2005 onwards (to around 85 papers), but the number of papers relating to UK geodiversity did not rise, but in fact showed a marked decline from the 1995 figure (dropping from 18 papers in 1995 to 10 papers in 2005). From 2005, with the exception of a slight rise in 2007, the number of papers relating to UK geodiversity has been consistently low (at around 11 papers but with a nadir of 4 papers in 2013 and 2014) when compared to the total number of papers (between 74-90 papers for the period 2008-2014).
- *Journal of the Geological Society*: In 1955 and 1965, there were a total number of about 20 papers and a significant proportion of these related to UK geodiversity. There was a significant increase in the total number of papers in 1975 (to 48 papers) and again in 1985 and from 2005 onwards (to around 100 papers) with a drop to around 67 in 2012 and 82 in 2013. However, whilst the number of papers relating to UK geodiversity initially increased in 1975 (to 34 papers), there was not a similar rise in 1985 (38 papers) and in 1995, there was a decrease (24 papers). From 2005 onwards, the number of papers relating to UK geodiversity remained similar at about 20 papers each year. In 1995 and from 2005 onwards, the number of papers relating to UK geodiversity has been consistently low when compared to the total number of papers, particularly low in 2014 (9 papers).
- *Scottish Journal of Geology*: For all years considered from 1965 onwards, nearly all papers relate to UK geodiversity. From 2005 onwards, all papers within this publication concern UK geodiversity with the exceptions of 2012-2014 when all papers but 1 related to UK geodiversity. Overall numbers of papers have remained consistent at around 20 papers per year, although during 2012-2014, the number of papers has dropped to around 15 papers.
- *Proceedings of the Yorkshire Geological Society*: With the exceptions of 1965, 2011 and 2014, all papers within this publication concern UK geodiversity. The numbers of papers published each year is generally low, normally between 10 and 20.
- *Bulletin of the Geological Society of Norfolk*: All papers within this publication concern UK geodiversity for all years considered from 1955 onwards. This publication has the lowest total number of contributions during the period (normally less than 5 papers are published per year) and has seen an overall decline in numbers since 2006 to less than 3 papers a year.
- *Mercian Geologist*: The number of papers published per year is generally low and most issues have one paper which does not relate to UK geodiversity, with the exception of 2009 where only 1 out of 5 papers were published relating to UK geodiversity.
- *Journal of Quaternary Science*: With the exception of 1985 and 1995, where approximately half the papers published related to UK geodiversity, the number of UK geodiversity papers has been consistently low. From 2005, where 1/3 of papers related to UK geodiversity there has been a steady decline to around 1 in 10 papers per year.
- *Overall*: In 1955, 1965 and 1975, the percentage of contributions to the selected publications relating to UK geodiversity is similar, at about 80% for each of these years. In 1985, 1995 and 2005, a decline in the percentage of contributions to the selected publications relating to UK geodiversity is observed with the percentage dropping to just 30% in 2005. From 2006 to 2010 inclusive, the total number and percentage of contributions to the selected publications relating to UK geodiversity both

remain surprisingly consistent, at about 85 papers a year and about 35% of all geodiversity-related articles published by the selected journals. In 2011, both the total number of papers within the selected publications and the number of papers relating to UK geodiversity (108 papers; 40% of total published papers) increased and again in 2012 (112 papers; 46% of total published papers). However in 2013, despite an increase in published papers (153 papers), there was a drop in UK geodiversity papers (94 papers; 34% of total published papers).

Data (geoconservation)

Table 2 below shows the total number of peer-reviewed papers within each publication and the number of these that relate to geoconservation. The first chart shows the percentage of papers relating to geoconservation compared to all papers within the two selected journals. In addition, a separate chart has been produced to portray the relevant data for each publication.

Table 2: Number of Papers Relating to Geoconservation (total and geoconservation)

Year	Proceedings of the Geologists' Association		Geoheritage		All Publications	
	Total	Geoconservation	Total	Geoconservation	Total	Geoconservation
1985	31	1	n/a	n/a	31	1
1995	24	1	n/a	n/a	24	1
2000	26	0	n/a	n/a	26	0
2005	24	0	n/a	n/a	24	0
2006	20	1	n/a	n/a	20	1
2007	28	0	n/a	n/a	28	0
2008	23	1	n/a	n/a	23	1
2009	23	1	7	7	30	8
2010	40	1	11	9	51	10
2011	55	5	25	19	80	24
2012	53	9	20	16	73	25
2013	53	18	19	16	72	34
2014	57	4	26	24	83	28
2015	13	0	8	8	21	8

Note: Geoheritage was first published in 2009.

Note: Partial data is included for 2015, but is not discussed in this report.

Figure 10: The percentage of geoconservation-related papers - all journals

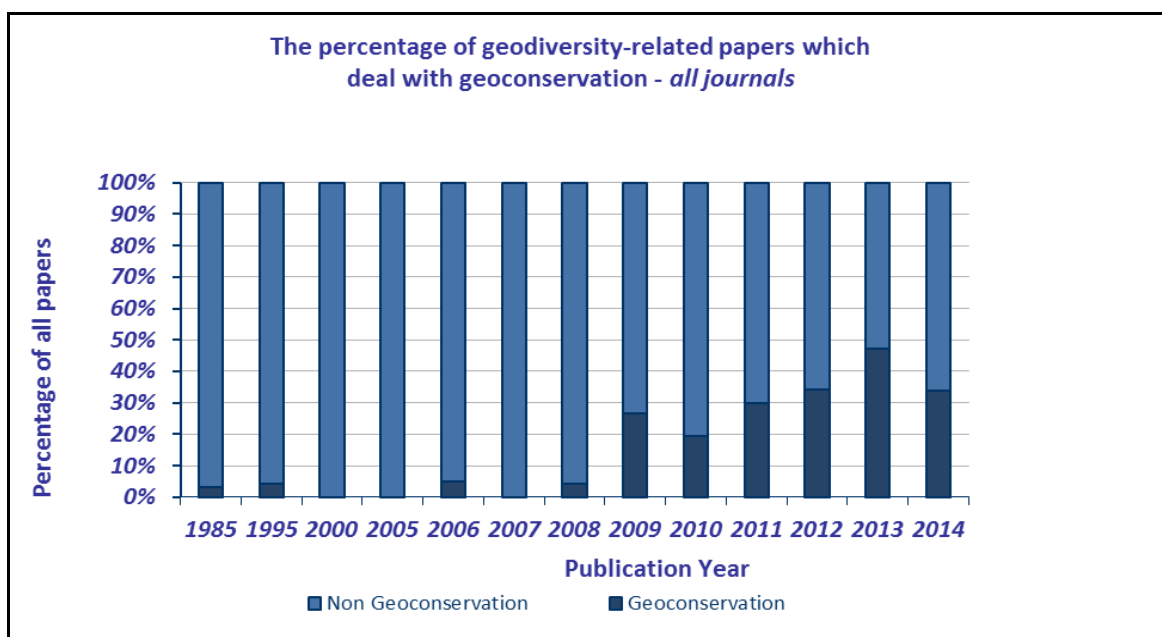


Figure 11: The number and share of geoconservation-related papers – Proceedings of the Geologists' Association.

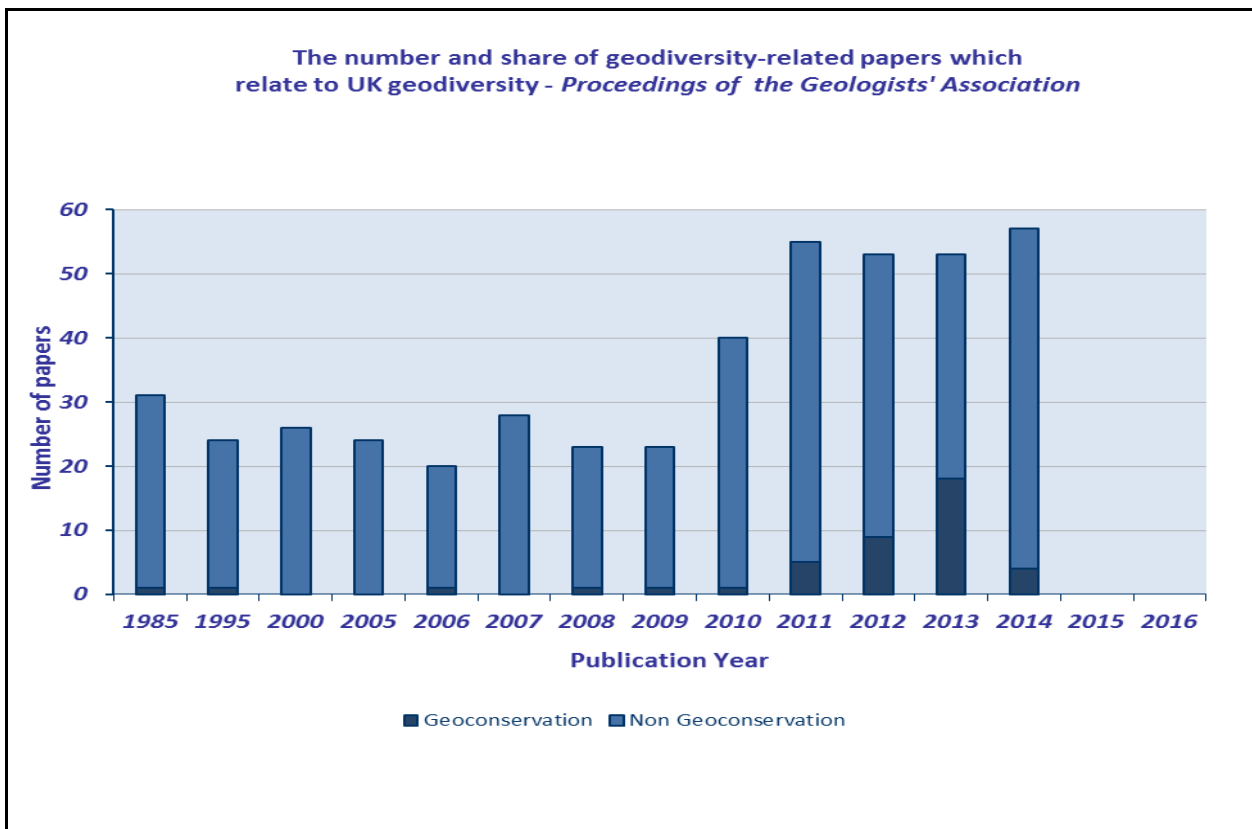
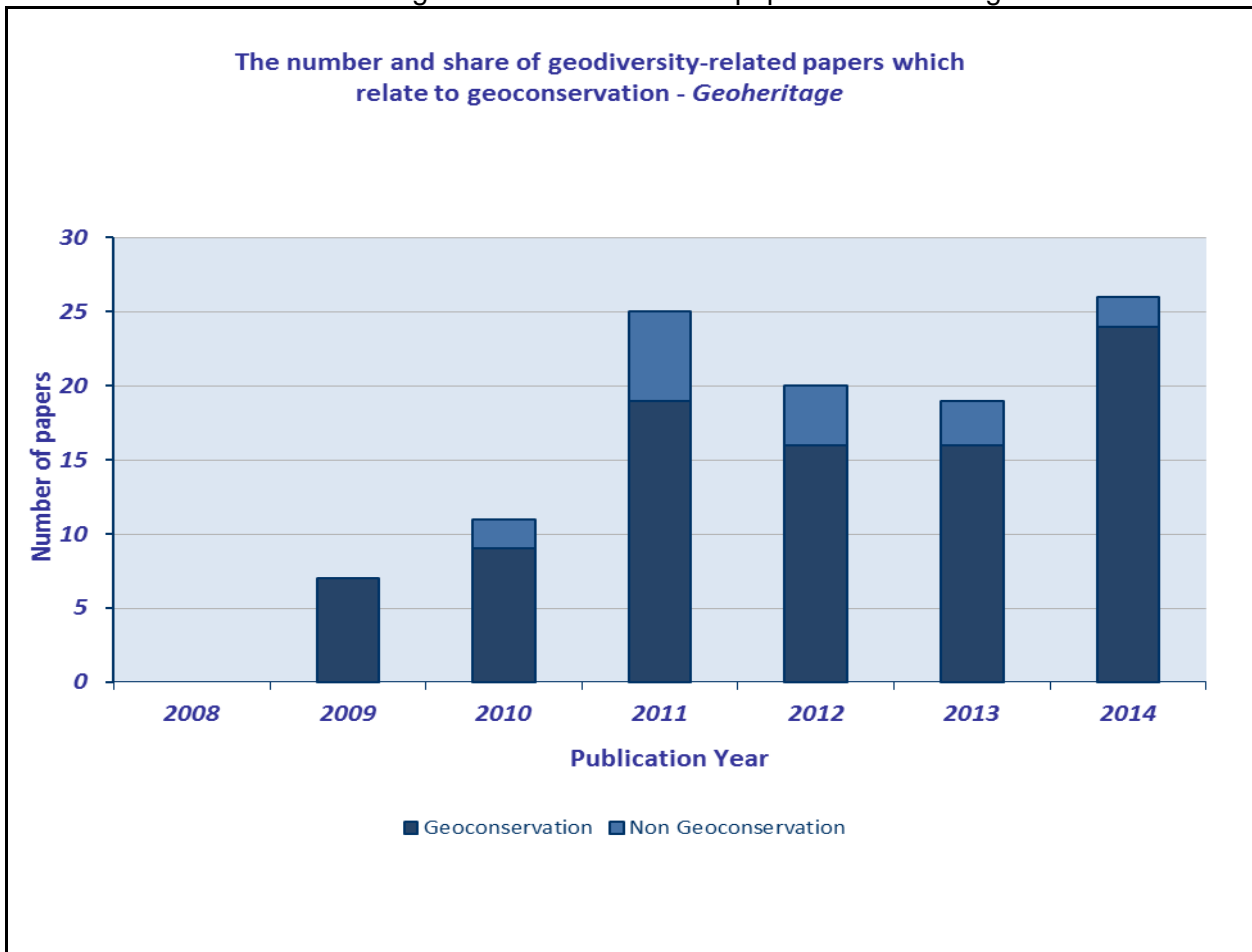


Figure 12: The number and share of geoconservation-related papers – Geoheritage.



Assessment of Trend (UK geodiversity)

Generally there seems to have been an increase in the number of papers published in relation to geoconservation, particularly since 2009 when *Geoheritage* was first issued.

- *The Proceedings of the Geologists' Association*: Since 2010, there has been an increasing number of geoconservation papers published within this journal. A special issue was devoted to this topic in 2013, when 18 out of 53 papers discuss geoconservation topics. For the quarter immediately after the publication of the special issue *Geoconservation for science and society* (volume 124, issue 4), 9 of the top 25 most downloaded papers were related to a geoconservation topic, with a total of 759 downloads. Between 2011 and November 2014, 10 of the top 20 most often cited papers from the *Proceedings of the Geologists' Association* were on a geoconservation topic. Geoconservation is now explicitly mentioned in the recently revised 'Aims and Scope' of the journal (2013).
- *Geoheritage*: This journal was first published in 2009 and covers all aspects of geoheritage and its protection. As expected from the scope of the journal, the majority of papers discuss geoconservation topics with only one or two papers per year not specifically including the selected geoconservation key words.

Data Limitations

The data are limited by the subjective analysis applied to confirm each individual paper's reference to UK Geodiversity and geoconservation. The same method (if not the same person) should be used each year to complete the analysis.