

## Human Well-being Impacts of Terrestrial Protected Areas

### Record of initial systematic literature search and tests

This document describes the process of search strategy development and testing of retrieved searches in order to identify an optimal search strategy for identifying relevant literature. The initials of searcher (SED = Sarah Dalrymple) and date followed by search strings and number of returned results from a given database are given below. Any comments by the searcher to explain changes to search strings or other activity are given in square brackets. Search string identifiers will be used in the document name of EndNote libraries in order to keep track of which search strings generated which returns.

#### **SED 19.09.11**

##### **Search string 1.1:**

("protected area" OR "nature reserve" OR "wilderness area" OR "national park" OR "regional park" OR "state park" OR "provincial park" OR "natural monument" OR "management area" OR "forest reserve" OR "wetland reserve" OR "game reserve" OR "world heritage site")

AND

(Poverty OR "human well\*" OR economic\* OR "human health" OR livelihood OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem services" OR "natural resources")

Web of Knowledge (*Lemmatization off*) = approximately 6,538

[A number of studies identified in the 'test library' were not identified using search string 1.1. Some are 'grey' literature and would not be expected to appear in the WoK database. These have been included in the test library because they may contain important primary references and it is envisaged that they would be identified in internet search engines instead. Other articles are not primary but are in peer-reviewed publications. Although these articles may not be appropriate for inclusion in the SR, they demonstrate how different terms are used in this context and ought to be captured by the search. A third group have not been captured by this search despite being relevant primary peer-reviewed. The search string will be expanded in order to capture these (see Table 1) as explained below.

Fortin & Gagnon (1999) – title and abstract only refer to 'national parks' and search string 1.1 has no wild card after this term in order to include plurals.

Barrett & Travis (2011), Brockington et al (2006) – 'Comment' papers: no abstract means WoK only searches titles and these don't meet search string 1.1 requirements.

Wilkie et al (2006) – similar to above but does include 'parks' without the prefix 'national' or equivalent.

Lewis et al (2011) – doesn't mention any PA term in title or abstract due to primary research taking place on effectiveness of community business model. However, presence of PAs in region is integral to income generation from wildlife tourism so paper has relevance to SR.]

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**Table 1** Test library articles used to determine adequacy of search string. 0 = absence from search results using search string 1.1 (above), 1 = presence in search results.

Study	Study type	WoK search	Notes
Adams, W. M., R. Aveling, et al. (2004). "Biodiversity conservation and the eradication of poverty." <i>Science</i> 306(5699): 1146-1149.	Review	0	Paper in WoK but not identified using this search string.
Barrett, C. B., A. J. Travis, et al. (2011). "On biodiversity conservation and poverty traps." <i>Proceedings of the National Academy of Sciences of the United States of America</i> 108(34): 13907-13912.	Comment	0	Paper in WoK but not identified using this search string.
Bass, S. R., D.; Smith, J. (2010). <i>Look both ways: mainstreaming biodiversity and poverty reduction</i> . IIED Briefing Papers, International Institute for Environment and Development: 4.	Briefing paper	0	<i>Grey literature</i> .
Bedunah, D. J. and S. M. Schmidt (2004). "Pastoralism and protected area management in Mongolia's Gobi Gurvansaikhan National Park." <i>Development and Change</i> 35(1): 167-191.	Primary research	1	
Brockington, D., J. Igoe, et al. (2006). "Conservation, human rights, and poverty reduction." <i>Conservation Biology</i> 20(1): 250-252.	Comment	0	Paper in WoK but not using this search.
Coad, L., Campbell, A., Miles, L., Humphries, K. and U. K. Cambridge (2008). <i>The Costs and Benefits of Protected Areas for Local Livelihoods: a review of the current literature</i> . Working Paper. Cambridge, U.K., UNEP World Conservation Monitoring Centre: 42.	Report/review	0	<i>Grey literature</i> .
Ezebilu, E. E. and L. Mattsson (2010). "Socio-economic benefits of protected areas as perceived by local people around Cross River National Park, Nigeria." <i>Forest Policy and Economics</i> 12(3): 189-193.	Primary research	1	
Ferraro, P. J., M. M. Hanauer, et al. (2011). "Conditions associated with protected area success in conservation and poverty reduction." <i>Proceedings of the National Academy of Sciences of the United States of America</i> 108(34): 13913-13918.	Primary research	1	
Fiallo, E. A. and S. K. Jacobson (1995). "Local communities and protected areas: Attitudes of rural residents towards conservation and machalilla national park, Ecuador." <i>Environmental Conservation</i> 22(3): 241-249.	Primary research	1	
Fortin, M. J. and C. Gagnon (1999). "An assessment of social impacts of national parks on communities in Quebec, Canada." <i>Environmental Conservation</i> 26(3): 200-211.	Primary research	0	Paper in WoK but not identified using this search string.
Joppa, L. N. and A. Pfaff (2011). "Global protected area impacts." <i>Proceedings of the Royal Society B-Biological Sciences</i> 278(1712): 1633-1638.	Primary research	1	Not relevant for SR
Lewis, D., S. D. Bell, et al. (2011). "Community Markets for Conservation (COMACO) links biodiversity conservation with sustainable improvements in livelihoods and food production." <i>PNAS</i> 108(34): 13957-13962.	Primary research	0	Not so useful for SR? Intervention = community business, not the PA itself
Naughton-Treves, L., J. Alix-Garcia, et al. (2011). "Lessons about parks and poverty from a decade of forest loss and economic growth around Kibale National Park, Uganda." <i>Proceedings of the National Academy of Sciences of</i>	Primary research	1	

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the United States of America 108(34): 13919-13924.			
Roe, D. (2010). Linking Biodiversity Conservation and Poverty Alleviation: A State of Knowledge Review. CBD Technical Series No: 55: 71.	Report/review	0	Grey literature.
Roe, D. W., M.; Elliot, J. (2010). Linking Biodiversity Conservation and Poverty Reduction: What, Why and How?, Zoological Society of London.	Conference report	0	Grey literature.
Sandbrook, M. R., D. (2010). Linking Conservation and Poverty Alleviation: the case of Great Apes An overview of current policy and practice in Africa. An overview of current policy and practice in Africa.	Report	0	Grey literature.
Schmidt-Soltau, K. and D. Brockington (2007). "Protected areas and resettlement: What scope for voluntary relocation?" World Development 35(12): 2182-2202.	Primary research	1	
Wilkie, D. S., G. A. Morelli, et al. (2006). "Parks and people: Assessing the human welfare effects of establishing protected areas for biodiversity conservation." Conservation Biology 20(1): 247-249.	Comment	0	Paper in WoK but not identified using this search string.

### **SED 21.09.11**

#### **Search string 1.2:**

[Wild cards added to capture plurals of PA types and 'livelihoods']

("protected area\*" OR "nature reserve\*" OR "wilderness area\*" OR "national park\*" OR "regional park\*" OR "state park\*" OR "provincial park\*" OR "natural monument\*" OR "management area\*" OR "forest reserve\*" OR "wetland reserve\*" OR "game reserve\*" OR "world heritage site\*")

AND

(Poverty OR "human well\*" OR economic\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem services" OR "natural resources")

Web of Knowledge *Lemmatization = off*

= approximately 10,203

[Search string 1.2 captures Fortin & Gagnon (1999) where search string 1.1 did not.]

#### **Search string 1.3:**

[Replacement of any terms containing 'park' (i.e. 'national park\*') with 'park\*' in order to capture studies that refer more generally to protected areas as parks without any prefix.]

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("protected area\*" OR "nature reserve\*" OR "wilderness area\*" OR park\* OR "natural monument\*" OR "management area\*" OR "forest reserve\*" OR "wetland reserve\*" OR "game reserve\*" OR "world heritage site\*")

AND

(Poverty OR "human well\*" OR economic\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem services" OR "natural resources")

Web of Knowledge *Lemma*tization = off

= approximately 16,585

[Search string 1.3 now includes Wilkie et al (2006) but potentially many other irrelevant articles. Noted that 'wildlife reserve' is a term used in this context. Search string 1.4 will include this.]

#### **Search string 1.4:**

("protected area\*" OR "nature reserve\*" OR "wilderness area\*" OR park\* OR "natural monument\*" OR "management area\*" OR "forest reserve\*" OR "wetland reserve\*" OR "game reserve\*" OR "world heritage site\*" OR "wildlife reserve\*")

AND

(Poverty OR "human well\*" OR economic\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem services" OR "natural resources")

Web of Knowledge *Lemma*tization = off

= approximately 16,636 hits

#### **Search string 1.5:**

[Search string 1.5 has replaced all types of reserve with the search term 'reserve\*'.]

("protected area\*" OR reserve\* OR "wilderness area\*" OR park\* OR "natural monument\*" OR "management area\*" OR "world heritage site\*")

AND

(Poverty OR "human well\*" OR economic\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem services" OR "natural resources")

Web of Knowledge *Lemma*tization = off

= approximately 113,235 hits

[Far too many returns for this search. Try adding 'conservation' as a further sub-string.]

**Search string 1.6:**

("protected area\*" OR reserve\* OR "wilderness area\*" OR park\* OR "natural monument\*" OR "management area\*" OR "world heritage site\*")

AND

(Poverty OR "human well\*" OR economic\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem services" OR "natural resources")

AND

conservation

Web of Knowledge *Lemmatization = off*

= approximately 15,835 hits

[In an initial check of the returns I saw some that apparently did not satisfy the search terms so got the pdf copy and searched for individual terms e.g. 'protected' within the document. When WoK searches using the search strings provided, is it possible that it would pick up the 'reserved' part of the copyright message?! i.e. 'reserve\*' returns © 2009 Elsevier B.V. All rights reserved. Similarly, do authors' affiliations result in a return i.e. if an author works for a nature reserve or national park? Will assume that the 'reserve\*' portion of the search string needs to be more specific and re-instate those terms.]

**Search string 1.7:**

("protected area\*" OR "nature reserve\*" OR "wildlife reserve\*" OR "forest reserve\*" OR "wetland reserve\*" OR "game reserve\*" OR "wilderness area\*" OR park\* OR "natural monument\*" OR "management area\*" OR "world heritage site\*")

AND

(Poverty OR "human well\*" OR economic\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem services" OR "natural resources")

AND

conservation

Web of Knowledge *Lemmatization = off*

= approximately 8,016 hits

[Still some concern that the PA terms are not adequate so terms recognized by the UN (Chape et al. 2003) have been added. 'Conservation' may now be redundant – needs testing. Also, search string 1.7 would exclude 'socio-economic' so added a wildcard and 'ecosystem service' and 'natural resource' both need wildcards to capture plurals.]

**Search string 1.8:**

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("protected area\*" OR "protected landscape\*" OR "nature reserve\*" OR "wildlife reserve\*" OR "forest reserve\*" OR "wetland reserve\*" OR "game reserve\*" OR "conservation reserve\*" OR "biosphere reserve\*" OR "wildlife sanctuar\*" OR "wilderness area\*" OR park\* OR "natural monument\*" OR "natural feature\*" OR "management area\*" OR "conservation area\*" OR "world heritage site\*" OR "wetland\* of international importance" OR "special protection area\*" OR "biogenetic reserve\*" OR "special area\* for conservation" OR "ASEAN heritage" OR "conserved area\*")

AND

(Poverty OR "human well\*" OR socio-econom\* OR econom\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem service\*" OR "natural resource\*")

AND

conservation

Web of Knowledge *Lemmatization = off*

= approximately 10,026 hits

[Captures all primary literature in test library and all but one of the peer-reviewed publications. Of the first 100 returns from search string 1.8, 68 were deemed relevant or potentially so from title only.]

### **Search string 1.9:**

[Test to see if the removal of 'conservation' makes much difference to number of returns.]

("protected area\*" OR "protected landscape\*" OR "nature reserve\*" OR "wildlife reserve\*" OR "forest reserve\*" OR "wetland reserve\*" OR "game reserve\*" OR "conservation reserve\*" OR "biosphere reserve\*" OR "wildlife sanctuar\*" OR "wilderness area\*" OR park\* OR "natural monument\*" OR "natural feature\*" OR "management area\*" OR "conservation area\*" OR "world heritage site\*" OR "wetland\* of international importance" OR "special protection area\*" OR "biogenetic reserve\*" OR "special area\* for conservation" OR "ASEAN heritage" OR "conserved area\*")

AND

(Poverty OR "human well\*" OR socio-econom\* OR econom\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem service\*" OR "natural resource\*")

Web of Knowledge

*Lemmatization = off*

= approximately 19,870 hits

[Too many hits due to 'park\*' with no 'conservation' filter. Captures all primary literature in test library and all but one of the peer-reviewed publications. Of the first 100 returns from search string 1.9, 38 were deemed relevant or potentially so from title only. Although this is much lower than that of search string 1.8, there were seven articles captured in this search that were not captured by 1.8 due to the 'conservation' filter. Of these, only two were thought to be particularly relevant, the other five were included with a very cautious approach to study rejection.

Two studies caught by search string 1.9 but not by 1.8:

Siikamaeki, J. (2011). "Contributions of the US state park system to nature recreation." *Proceedings of the National Academy of Sciences of the United States of America* 108(34): 14031-14036.

Tomicevic, J., I. Bjedov, et al. (2011). "Exploring the park-people relation: collection of *vaccinium myrtillus* L. By local people from kopaonik national park in serbia." *Environmental management* 48(4): 835-846.

Both of the above studies would have been captured by re-instating specific park-related search terms.]

### **Search string 1.10:**

("protected area\*" OR "protected landscape\*" OR "nature reserve\*" OR "wildlife reserve\*" OR "forest reserve\*" OR "wetland reserve\*" OR "game reserve\*" OR "conservation reserve\*" OR "biosphere reserve\*" OR "wildlife sanctuar\*" OR "wilderness area\*" OR "national park\*" OR "state park\*" OR "regional park\*" OR "provincial park\*" OR "country park\*" OR "natural monument\*" OR "natural feature\*" OR "management area\*" OR "conservation area\*" OR "world heritage site\*" OR "wetland\* of international importance" OR "special protection area\*" OR "biogenetic reserve\*" OR "special area\* for conservation" OR "ASEAN heritage" OR "conserved area\*")

AND

(Poverty OR "human well\*" OR socio-econom\* OR econom\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem service\*" OR "natural resource\*")

= approximately 12,922 hits

[Although still a lot of returns, this search string seems to capture all the relevant articles from search string 1.8 and 1.9 whilst also removing much of the spurious material. See spreadsheet 'Test library search results.xls' and worksheet entitled 'Comparison 1.8, 1.9 and 1.10'.]

### SED 03.10.11

[Discussion between SED and ASP about number of returns using 1.10 registered concern at the number and possibility of reducing the search to only terms that were associated with IUCN PA categories I-IV. Search string altered accordingly and tested as per description below.]

### **Search string 2.1**

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("protected area\*" OR "nature reserve\*" OR "wilderness area\*" OR "national park\*" OR "natural monument\*" OR "natural feature\*" OR "management area\*" OR "world heritage site\*" OR "biosphere reserve\*")

AND

(Poverty OR "human well\*" OR socio-econom\* OR econom\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem service\*" OR "natural resource\*")

Lemmatization off

WoK = 10,989 returns [SED 04.10.11 mistake in number of returns reported corrected from previously circulated version].

[Search string 2.1 has retained the PA terms associated with IUCN categories I-IV with the addition of other terms that are in use globally. Returns are less whilst still performing equally well against the test library (Table 2) compared to more detailed search strings. Any literature absent from this search is expected to be picked up from other databases and internet search engines detailed in the protocol.]

**Table 2** Test library returns from search string 2.1

Study	Study type	WoK search	Notes
Adams et al. (2004)	Review	0	Paper in WoK but not identified using this search string.
Barrett et al. (2011)	Comment	0	Paper in WoK but not identified using this search string.
Bass & Smith (2010)	Briefing paper	0	<i>Grey literature.</i>
Bedunah & Schmidt (2004)	Primary research	1	
Brockington et al. (2006)	Comment	0	Paper in WoK but not using this search.
Coad et al. (2008)	Report/review	0	<i>Grey literature.</i>
Ezebilo & Mattsson (2010)	Primary research	1	
Ferraro et al. (2011)	Primary research	1	
Fiallo & Jacobson (1995)	Primary research	1	
Fortin & Gagnon (1999)	Primary research	1	
Joppa & Pfaff (2011)	Primary research	0	Not relevant for SR but title suggests potential relevance
Lewis et al. (2011)	Primary research	1	Not so useful for SR? Intervention is a community business programme not the PA itself
Naughton-Treves et al. (2011)	Primary research	1	

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Roe, D. (2010)	Report/review	0	Grey literature.
Roe & Elliot (2010)	Conference report	0	Grey literature.
Sandbrook (2010)	Report	0	Grey literature.
Schmidt-Soltan & Brockington (2007)	Primary research	1	
Wilkie et al. (2006)	Comment	1	

### SED 05.10.11

Search string 2.1 downloaded to endnote, library entitled 'WoK search string 2\_1.enl'.

Duplicates removed automatically, new total = 6,006 (4,983 duplicates removed).

Saved on M: and U: drives.

### **Search string 2.2**

("protected area\*" OR "nature reserve\*" OR "wilderness area\*" OR "national park\*" OR "natural monument\*" OR "natural feature\*" OR "management area\*" OR "world heritage site\*" OR "biosphere reserve\*")

AND

(Poverty OR "human well\*" OR socio-econom\* OR econom\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem service\*")

Lemmatization=Off

WoK = 8,670

[Removal of 'natural resources' reduces hits by approx. 2300 with no loss of success in finding the test library compared to Search string 2.1.]

### **Search string 2.3**

("protected area\*" OR "nature reserve\*" OR "wilderness area\*" OR "national park\*" OR "natural monument\*" OR "natural feature\*" OR "management area\*" OR "world heritage site\*" OR "biosphere reserve\*")

AND

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(Poverty OR "human well\*" OR socio-econom\* OR econom\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "natural resource\*")

Lemmatization=Off

WoK = 10,678

[Negligible reduction of returns when 'ecosystem services' – retain.]

#### **Search string 2.4**

("protected area\*" OR "nature reserve\*" OR "wilderness area\*" OR "national park\*" OR "natural monument\*" OR "natural feature\*" OR "management area\*" OR "world heritage site\*" OR "biosphere reserve\*" OR conservation)

AND

(Poverty OR "human well\*" OR socio-econom\* OR econom\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem service\*")

Lemmatization=Off

WoK = 83,570

#### **Search string 2.5**

("protected area\*" OR "nature reserve\*" OR "wilderness area\*" OR "national park\*" OR "natural monument\*" OR "natural feature\*" OR "management area\*" OR "world heritage site\*" OR "biosphere reserve\*" OR "biodiversity conservation")

AND

(Poverty OR "human well\*" OR socio-econom\* OR econom\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem service\*")

Lemmatization=Off

WoK = 11,022

[Best performance against test library (Table 3) whilst still returning manageable numbers of hits.]

**Table 3** Test library returns from search string 2.5

Study	Study type	WoK search	Notes
Adams et al. (2004)	Review	1	
Barrett et al. (2011)	Comment	1	
Bass & Smith (2010)	Briefing paper	0	<i>Grey literature.</i>
Bedunah & Schmidt (2004)	Primary research	1	
Brockington et al. (2006)	Comment	0	Paper in WoK but not using this search.
Coad et al. (2008)	Report/review	0	<i>Grey literature.</i>
Ezebilo & Mattsson (2010)	Primary research	1	
Ferraro et al. (2011)	Primary research	1	
Fiallo & Jacobson (1995)	Primary research	1	
Fortin & Gagnon (1999)	Primary research	1	
Joppa & Pfaff (2011)	Primary research	0	Not relevant for SR but title suggests potential relevance
Lewis et al. (2011)	Primary research	1	Not so useful for SR? Intervention is a community business programme not the PA itself
Naughton-Treves et al. (2011)	Primary research	1	
Roe, D. (2010)	Report/review	0	<i>Grey literature.</i>
Roe & Elliot (2010)	Conference report	0	<i>Grey literature.</i>
Sandbrook (2010)	Report	0	<i>Grey literature.</i>
Schmidt-Soltau & Brockington (2007)	Primary research	1	
Wilkie et al. (2006)	Comment	1	

SED 11.10.11

**Search string 3.1**

("protected area\*" OR "nature reserve\*" OR "wilderness area\*" OR "national park\*" OR "natural monument\*" OR "natural feature\*" OR "management area\*" OR "world heritage site\*" OR "biosphere reserve\*" OR "biodiversity conservation")

AND

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(Poverty OR "human well\*" OR socio-econom\* OR econom\* OR "human health" OR livelihood\* OR "social capital" OR "social welfare" OR empowerment OR equity OR "ecosystem service\*" OR perception\* OR attitude\*)

Lemmatization=Off

WoK = 12,782

[Search string 3.1 includes two new outcome terms: 'perception\*' and 'attitude\*' at the suggestion of MB.]