



Statistical Skills: Spearman's Rank Correlation

An ecologist working for MoorLIFE wants to study the relationship between two of the moorland plants growing on the Blanket Bog at Joseph's Patch on Bleaklow. The site was restored in 2003 by the addition of grass seed, lime and fertiliser. Monitoring of the



vegetation cover has taken place and the following table is an extract from the data that has been collected.

Both *Calluna vulgaris* (Common Heather) and *Vaccinium myrtillus* (Bilberry) are typical moorland and bog shrubs. The ecologist



wants to know if the two plants compete with one another or if they are more likely to grow with each other.

Complete a Spearman's Rank Correlation test on the data to analyse the relationship between the two plant species then answer the questions below.

Questions

1. Suggest how the data would have been collected and how the sites would have been chosen.
2. Why do you think the data was recorded in terms of percentage cover of the plants instead of counts for the number of each species?
3. Is there a negative or positive association between the two plants? Can you explain this result?
4. Are you satisfied that enough data were collected? What method could be used to ensure enough data sets were collected?
5. Why was it important that all the data were collected on the same or similar dates in the year?

www.moorsforthefuture.org.uk/moorlife

The MoorLIFE project is co-funded by the European Union's Life+ programme and delivered by Moors for the Future Partnership.

Partners include: Environment Agency, Natural England, National Trust, Peak District National Park Authority, United Utilities and Yorkshire Water.



Table I Extract from monitoring data for Joseph's Patch

Quadrat ID	Date monitored	Percentage cover	
		Calluna vulgaris	Vaccinium myrtillus
JP001	21/07/2011	30	5
JP003	20/07/2011	0	40
JP004	21/07/2011	50	50
JP005	25/07/2011	50	5
JP006	25/07/2011	70	10
JP007	21/07/2011	0	25
JP007b	21/07/2011	50	0
JP008	21/07/2011	60	4
JP009	22/07/2011	71	0
JP010	20/07/2011	0	0
JP011	21/07/2011	0	10
JP012	25/07/2011	0.5	2
JP013	25/07/2011	0	35
JP014	21/07/2011	0	20
JP015	22/07/2011	0	0
JP016	22/07/2011	0	15
JP017	20/07/2011	0	0
JP018	21/07/2011	2	75
JP019	22/07/2011	0	4
JP020b	20/07/2011	2	2
JP021	21/07/2011	0	30
JP022	20/04/2011	0	15
JP023	20/07/2011	15	5
JP024	20/07/2011	0	25
JP025	20/07/2011	0	40
JP026	20/07/2011	0	0.25

www.moorsforthefuture.org.uk/moorlife

The MoorLIFE project is co-funded by the European Union's Life+ programme and delivered by Moors for the Future Partnership.

Partners include: Environment Agency, Natural England, National Trust, Peak District National Park Authority, United Utilities and Yorkshire Water.



Hypothesis:

Null Hypothesis:

www.moorsforthefuture.org.uk/moorlife

The MoorLIFE project is co-funded by the European Union's Life+ programme and delivered by Moors for the Future Partnership.

Partners include: Environment Agency, Natural England, National Trust, Peak District National Park Authority, United Utilities and Yorkshire Water.