Peatland nutrition, hummock formation and carbon sequestration in Wester Ross

This poster, based on observations in moorland areas of Wester Ross, considers how plant growth and peat formation may be faster in places where phosphate levels are elevated because of enrichment by birds and animals within the ecosystem.

1. Phosphorus (P) availability often limits the growth of plants, including mosses, in upland landscapes.

2. Hummocks form in peatland areas where birds perch because phosphate, concentrated in bird droppings, acts as a fertiliser promoting plant growth.

4. Fox, pine-marten and otter visit hummocks to mark their territories. They may leave behind bones in addition to P-rich urine and faeces. Why?

3. Prominent hummocks are favoured perches for crows and raptors which deposit pellets rich in bone fragments (Ca & PO_4) in addition to P-rich guano.

7. Red deer like to graze around hummocks and translocate P back into surrounding areas.

5. Hummocks support high biodiversity with mosses, lichens, crowberry, blaeberry, insects, spiders, small mammals and other biota which may be absent from other areas nearby. How many species can you find?

6. Red grouse selectively browse phosphate-enriched vegetation around hummocks.

8. *Racomitrium* hummocks are often associated with meadow pipits.

9. Meadow pipits feed on insects and spiders, often around peatland pools.

10. Phosphate addition can contribute to faster growth of peatland plants but also faster decomposition of plant remains.

The consequences for peat formation and biodiversity may vary according to background levels of PO_4.

11. Hummock formation demonstrates that ecosystem-derived phosphate addition can increase carbon sequestration within culturally oligotrophied (phosphorus-depleted) landscapes.

12. What are the optimum levels of ecosystem-derived phosphate deposition to maximise peat formation and carbon sequestration, and to support biodiversity and wildlife production in Wester Ross?

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