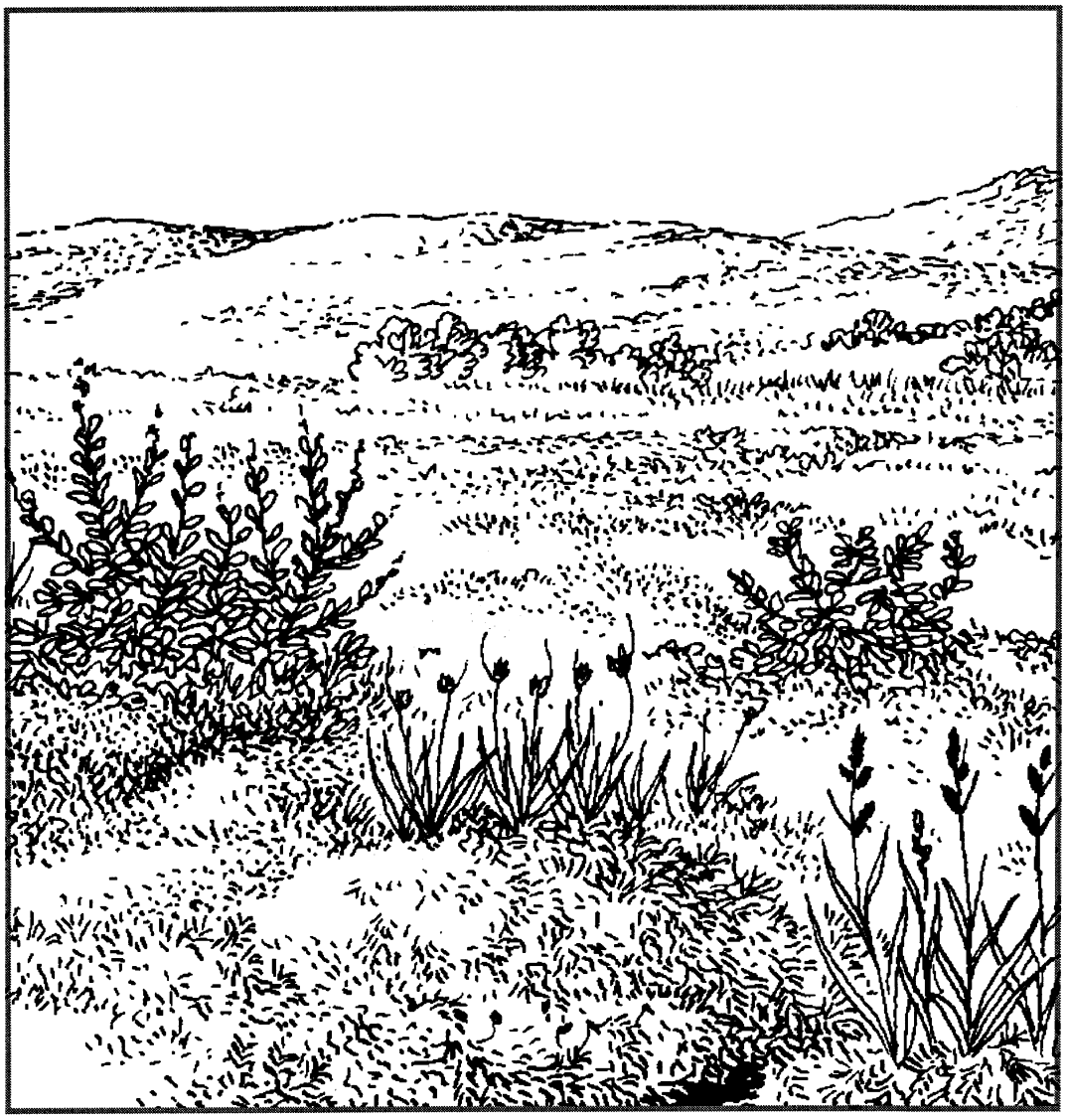
ENGLISH NATURE

Sustainable grazing practices on the South West moors of England

(includes site reports annex)

No. 254 - English Nature Research Reports



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ISSN 0967-876X

SUSTAINABLE GRAZING PRACTICES ON THE SOUTH WEST MOORS OF ENGLAND

ANNEX: SITE REPORTS

(ANONYMOUS VERSION)

A REPORT TO ENGLISH NATURE

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October 1996

List of sites:

Dartmoor

D1 Heather newtake
D2 Heather common (part)
D3 Heather newtake
D4 Heather + south-western heath common
D5 Heather + south-western heath common
D6 South-western heath newtake
D7 South-western heath common

Exmoor

E1 Heather
E2 Heather
E3 Heather
E4 Heather
E5 Heather + south-western heath
E6 Coastal south-western heath common
E7 Coastal south-western heath
E8 Coastal south-western heath
E9 Blanket bog
E10 Blanket bog

Bodmin Moor

B1 South-western heath

West Penwith

W1 South-western heath
W2 South-western heath

NVC communities

The following NVC (National Vegetation Classification) plant communities are identified by their community codes in the text:

H4 *Ulex gallii - Agrostis curtisii* heath.
H8 *Calluna vulgaris - Ulex gallii* heath.
H12 *Calluna vulgaris - Vaccinium myrtillus* heath.
U4 *Festuca - Agrostis - Galium* grassland.
M6 *Carex echinata - Sphagnum recurvum/auriculatum* mire.
M15 *Scirpus caespitosus - Eriophorum vaginatum* wet heath.

Definition of Livestock Units (LUs):

The following are standard MAFF definitions.

Cattle (>2 years)	1.0	
Cattle (0.5–1 year)	0.4	
Cattle (0.5–2 years)	0.6	(the ESA definition, used only where data were available only on this basis)
Sheep (>1 year)	0.15	
Ponies	1.0	

For the purposes of producing mean stocking levels, summer is taken to be May–October inclusive, winter as November–April.

SITE D1

Site summary

A heather and acid grassland newtake of about 90 ha attached to a tenanted Dartmoor farm which abuts open moor, forestry and enclosed, improved land. Altitude: 300–530 m. Rainfall: 1800 mm p.a. Growing season: 200 days. Soils are predominantly well-drained, humose, gritty loams of the Moor Gate series, with wetter peaty soils of the Laploud series in valley mire. The whole farm is subject to a DNPA management agreement and is being run in an environmentally friendly way, under which heather moorland is grazed only in summer by sheep. Since 1992, cattle have only had use of dry grassland slope, after the fencing off of 46 ha of mainly heather on the hill top.

Vegetation

The higher plateau is dominated by old heather and bilberry (NVC H12a), with some bell heather and cross-leaved heath, and bryophytes and lichens associated with the older stands. Heather covers some 40% of the entire newtake. Much of the heather is in good condition, tall and vigorous: 20 ha has 90-100% cover. However, the older stands on the lower west slopes are leggy and damaged by heather beetle and heavier grazing prior to 1992. Younger stands of 5–15 years old on the southern slope cover 0–30% and show signs of overgrazing. The heather becomes patchy as it grades into acid grassland (U4a) on the slopes. This grassland is species poor, with sheep's fescue, common bent, heath bedstraw and tormentil in a close-cropped sward. The small area of valley mire (M6a) comprises Sphagnum mosses, sedges and a variety of species characteristic of Dartmoor mires. Bracken increased prior to spraying in the recent past.

A 1969 airphoto shows that the (southern) slope used to have more heather. Ground survey in 1994 suggested that the overall habitat quality was quite good. In 1995, an assessment of the condition of heather and other dwarf shrubs, over the whole newtake, gave an EN Grazing Index score of 8 (components 1–3 scoring 3, 2 and 3), indicating that the unit is "probably overgrazed" and presumably reflects damage on the slopes prior to the fencing of the heather block in 1992, when grazing levels were higher.

Vegetation types (46 ha fenced area only):

	Area (ha)	%
Heather moorland	36.5	79
Dry acid grassland	8.5	19
Valley mire	1.0	2

Farm enterprise

A typical hill farm, short of in-bye land, reliant on purchased feed, producing store cattle (suckled calves) and lambs for sale. In-bye comprises some 75% of the 325 ha of land available.

Type and ratios of stock

(The ratios below are calculated from overall livestock densities in LU/ha).

1992–1995:

Only mixed breed ewes in heather area. Grass slope: cross-bred suckler cows 62%, mixed breed ewes 31% and ponies 7%.

1972-1992:

Cross-bred suckler cow numbers increased from 15 to 50, while mixed breed ewe numbers declined from 400 to 200. Therefore the ratio of cattle to sheep changed from 20% : 80% to 62% : 38%.

Stock management

Over the last 23 years, there has been an increase in cattle and a reduction in sheep numbers. A fence was erected in 1992 around 46 ha of the main heather area, in order to achieve sheep-only grazing in summer and to exclude all stock in winter.

Heather area

Grazed during May–October by 120 ewes, mixed breed. Before the fence was erected, cattle used this area rarely and sheep especially in severe weather.

Grass slope

Cross bred suckler herd (Friesian cross, Limousin cross and Welsh Black) which calve throughout the year. Calves are sold at 6–8 months. The cattle, calves and 30 replacements are housed over winter and fed home-produced and purchased big bale silage, supplemented by straw and blocks. The use of fertiliser is minimal.

Stock numbers, densities and timings

1992–1995: Fenced area (46 ha)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sheep	–	–	–	–	120	120	120	120	120	120	–	–
Total LUs	–	–	–	–	18	18	18	18	18	18	–	–
Total LU/ha	–	–	–	–	0.39	0.39	0.39	0.39	0.39	0.39	–	–

Overall mean: 0.2 LU/ha; summer mean: 0.39 LU/ha; winter mean: nil.

Combined with the totals on the previously inclusive grassy slope (see below), this gives an overall mean of 0.94 LU/ha, with 1.04 in summer and 0.84 in winter.

1992-1995: Grass slope (about 44 ha)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	47	47	47	47	47	47	47	47	47	47	47	47
Sheep	160	160	160	160	160	160	160	160	160	160	160	160
Ponies	5	5	5	5	5	5	5	5	5	5	5	5
Total LUs	76	76	76	76	76	76	76	76	76	76	76	76
Total LU/ha	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73

Overall mean: 1.73 LU/ha; summer and winter means are also 1.73 LU/ha.

1972–1991: Overall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	15-50	15-50	15-50	15-50	15-50	15-50	15-50	15-50	15-50	15-50	15-50	15-50
Sheep	400-200	400-200	400-200	400-200	400-200	400-200	400-200	400-200	400-200	400-200	400-200	400-200
Total LUs	75-80	75-80	75-80	75-80	75-80	75-80	75-80	75-80	75-80	75-80	75-80	75-80
Total LU/ha	0.83-0.89	0.83-0.89	0.83-0.89	0.83-0.89	0.83-0.89	0.83-0.89	0.83-0.89	0.83-0.89	0.83-0.89	0.83-0.89	0.83-0.89	0.83-0.89

Overall mean: 0.86 LU/ha; summer and winter means are also 0.86 LU/ha.

Pre-1972:

30–40 Galloway cattle were probably present on the newtake for most of the winter; 12 South Devon cattle were also kept and may have used the newtake in summer. 100 sheep were also grazed during May–November. These indicate stocking levels of 0.3–0.6 LU/ha, that is less than during 1972–92.

Supplementary feeding

None in the main heather area, although hay is fed to stock on the grass slopes from October–May or June. Silage used to be fed, but now only indoors.

Burning

A block of about 20 ha was burned during 1965–67 and a further 5 ha block during 1967–69. Much of the heather is mature and none has been burned since 1972, apart from a 2 ha DNPA-managed burn in 1995 (although about 10 ha of the heather area was burned "accidentally" in 1996).

Conclusion

The retention of the heather block within this newtake was no doubt facilitated by the presence of more attractive grazing and shelter on the slopes of the unit. Prior to the fencing of the main area of heather and the adoption of a DNPA grazing level there, stocking levels were high (about 0.86 LU/ha year round), though stock mostly used the grassier slopes. Possibly the homogeneous nature of the heather area, which had developed a poor age structure in the absence of programmed burning, provided little incentive to stock. Some heather loss has occurred on these slopes, where cattle and ponies still graze.

This is not a typical farm and the stocking rate and seasonal pattern of grazing is unlikely to be repeated on a similar farm without a particular interest and commitment to environmentally friendly management. More commercial methods are used on the farm only where they fit in. The DNPA whole-farm management agreement provides an important financial supplement, without which the farm may not be commercially viable.

SITE D2

Site summary

A 602 ha common, comprising predominantly high quality heather moorland, which hosts very good populations of moorland birds. Two commoners graze sheep, while more sheep and varying numbers of cattle trespass, the latter having been fed in winter on an adjacent common. Soils are predominantly well-drained, humose, gritty loams of the Moor Gate series, but locally peaty gleyed podsols of the Princetown series. Altitude: 350–500 m.

Vegetation

Overall, the common is predominantly dry heather moorland, mostly in good condition. The site exhibits some evidence of natural regeneration by layering of old, degenerate heather. ADAS land cover air photo interpretation suggests that about 23 ha (4%) may be fragmented dwarf shrubs (i.e. at 10–25% cover). In 1995, an assessment of the condition of heather and other dwarf shrubs, over the southern quarter of the common, gave EN Grazing Index scores of 2 and 7 (components 1–3 scoring 1, 0, 1 and 3, 4 and 0, respectively), indicating that part of this area (as with the bulk of the common to the north) has not been damaged by grazing, whereas the extreme south-west is in "intermediate" condition. The latter reflects localised damage caused by the presence of a trespassing Beulah flock, which receives supplementary feeding. In addition, the extreme northern end of the common was severely damaged prior to the early 1990s as a result of winter feeding on an adjacent common.

Vegetation types:

	Area (ha)	%
Dry Heathland	497	83
Valley mire	14	2
Bracken	87	14
Acid grassland	4	1

Farm enterprise

Type and ratios of stock

(The ratios below are calculated from livestock densities in LU/ha)

Sheep (Scotch Blackface and Beulahs) 91%, cattle (Galloway) 3% and ponies 6%, over the year as a whole.

Stock management

1988–1996:
Seven Belted Galloways graze in the summer months, but only during the day in winter (they are moved to in-bye land at night). About 100 Scotch Blackface graze roughly the same area, except when they are taken off during mid-March–early June and for dipping in autumn. A separate flock of 200 Beulahs tends to use a different area, while 300 Scotch Blackface graze a further section of the common. About 30 ponies stray on to the common regularly (assumed to represent 15 LUs in each month). Trespassing stock at the northern end of the common, belonging to neighbouring commoner, have declined in number in recent years with a reduction in winter feeding.

Stock numbers, densities and timings

1988–1996:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	7	7	7	7	7	7	7	7	7	7	7	7
Sheep	600	600	600	250	300	600	600	600	600	300	300	600
Ponies	15	15	15	15	15	15	15	15	15	15	15	15
Total LUs	112	112	112	59.5	67	112	112	112	112	67	67	112
Total LU/ha	0.19	0.19	0.19	0.10	0.11	0.19	0.19	0.19	0.19	0.11	0.11	0.19

Overall mean: 0.16 LU/ha; mean summer and winter both 0.16 LU/ha.
(Note that these figures exclude trespassing stock using the far northern section of the common, where localised overgrazing has occurred, and hence underestimate the total stocking level. However, it is unlikely that the true stocking level over the highest quality heather area significantly exceeds the above figures).

Pre-1988:
Data not available, though much of the area is claimed to have been understocked and not grazed sufficiently.

Supplementary feeding

The Beulahs are fed from January to April in the same area each year, in the shelter of a valley. The effects of this are limited to this part of the common, so avoiding any widespread poaching or overgrazing of the heather areas. Past winter feeding at the northern end of the common caused severe heather damage or loss, but this has now ceased.

Burning

Most of the northern two-thirds of the common was burned, in blocks of 5–100 ha (mean size 27 ha) at some time during 1965–87, since when only small blocks of less than 5 ha have been burned in what apprears to be a sensitive and practical fashion. In contrast, only about 25 ha of the southern third has been burned since 1965, leaving much mature heather.

Conclusion

This part of the common holds some of the best quality dwarf shrubs on Dartmoor. The scarcity of burning over about half of the common has led to a rather even-aged structure, but heather layering is widespread. Evidence from EN Grazing Indices confirm that virtually undamaged heather occurs in the area used by a commoner who stocks at no more than about 0.18 LU/ha. However, an adjacent area of intermediate quality heather grazed by trespassing sheep (about 0.2 LU/ha) had a higher Grazing Index score, though not in the "overgrazed" category. Much of the common is reputed to have been undergrazed in the past, but supporting data are not available. Burning over the remainder of the area has ensured a more varied structure, although burns have been rather large in the past. Current burning practice over part of the common entails pragmatic burns of around 4 ha, which are well-used by hardy sheep in the year of the burn.

SITE D3

Site summary

A tenanted Dartmoor newtake of 96 ha, on the edge of the north Dartmoor plateau, bordered on one side by another newtake, on another by open moorland. Altitude 390–430 m. Rainfall 1800 mm. Growing season 200 days. Soil: Hexworthy series podsol. The newtake is grazed by suckler cows and sheep and is subject to DNP management agreement.

Vegetation

Largely NVC H12 heather moorland, with heather and bilberry abundant, interspersed with patches of acid grassland. Purple moor-grass is more abundant in places with deeper peat and soil waterlogging. Western gorse is significant on the western side of the newtake where it abuts a mosaic of valley mire heathland and acid grassland communities. Species-poor acid grassland occurs in places, mainly bent/fescue, but locally purple moor-grass and mat-grass. The upper plateaux contain blanket mire with a variety of characteristic species in good condition, including Sphagnum mosses.

Vegetation types:

	Area (ha)	%
Heather moorland	57	60
South-western heath	7	7
Acid grassland	4	4
Blanket mire	18	18
Valley mire	10	11

One area has changed from heather to purple moor-grass since 1975, probably as a result of a fire in 1984.

Farm enterprise

Predominantly a livestock rearing farm, with 36 ha of in-bye, producing suckler calves and store and finished lambs. The farm produces insufficient silage (from 12 ha) for the winter requirements of the suckler cow herd. The spring-calving cattle from the newtake are away-wintered at a cost of £7.50 per head per week.

The following details refer only to the newtake:

Type and ratios of stock

(The ratios below are calculated from livestock densities in LU/ha)

1990–1995:

Jun-Sep: suckler cows (first cross Galloway) 83% and sheep (Scotch Blackface) 17%; at other times only the sheep.

1988–1990:

Jun-Oct (sometimes later): suckler cows (Galloway) 77% and sheep (Scotch Blackface) 23%; at other times only the sheep.

1985–1988:

Mid Jun–mid Aug: suckler cows (Galloway type, plus others, including South Devons, in 1986) 91% and sheep (Scotch Blackface) 9%; at other times only the sheep.

Mid 1970s–1985:

Jun-Oct: suckler cows (Galloways) 94% and sheep (Scotch Blackface) 6%; at other times only the sheep.

1950s–mid 1970s:

Mid Jun–Sep: suckler cows (Galloways) 95% and sheep (Scotch Blackface) 5%; at other times only the sheep.

Stock management

About 100 sheep use the newtake for about half the time throughout the year (assumed to represent 7.5 LUs in each month). In addition, suckler cows are used to graze purple moor-grass (*Molinia caerulea*) from midsummer to early autumn; they graze in-bye (or are housed indoors) before and after being away wintered during mid November–April.

Stock numbers, densities and timings

Sheep grazing has remained constant since the 1950s, but summer cattle numbers have fallen from 150–200 during the 1950s–1970s to around 30 in recent years.

1990–1995:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	–	–	–	35	35	35	–	–	–
Sheep	50	50	50	50	50	50	50	50	50	50	50	50
Total LUs	7.5	7.5	7.5	7.5	7.5	7.5	42.5	42.5	42.5	7.5	7.5	7.5
Total LU/ha	0.08	0.08	0.08	0.08	0.08	0.08	0.44	0.44	0.44	0.08	0.08	0.08

Overall mean: 0.17 LU/ha; summer mean: 0.26 LU/ha; winter mean: 0.08 LU/ha.

1988–1990:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	–	–	–	25	25	25	25	–	–
Sheep	50	50	50	50	50	50	50	50	50	50	50	50
Total LUs	7.5	7.5	7.5	7.5	7.5	7.5	32.5	32.5	32.5	32.5	7.5	7.5
Total LU/ha	0.08	0.08	0.08	0.08	0.08	0.08	0.34	0.34	0.34	0.34	0.08	0.08

Overall mean: 0.17 LU/ha; summer mean: 0.25 LU/ha; winter mean: 0.08 LU/ha.

1985–1988:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	–	–	80	80	80	–	–	–	–
Sheep	50	50	50	50	50	50	50	50	50	50	50	50
Total LUs	7.5	7.5	7.5	7.5	7.5	87.5	87.5	87.5	7.5	7.5	7.5	7.5
Total LU/ha	0.08	0.08	0.08	0.08	0.08	0.92	0.92	0.92	0.08	0.08	0.08	0.08

Overall mean: 0.29 LU/ha; summer mean: 0.50 LU/ha; winter mean: 0.08 LU/ha.

Mid 1970s–1985:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	–	–	125	125	125	125	–	–	–
Sheep	50	50	50	50	50	50	50	50	50	50	50	50
Total LUs	7.5	7.5	7.5	7.5	7.5	132.5	132.5	132.5	132.5	7.5	7.5	7.5
Total LU/ha	0.08	0.08	0.08	0.08	0.08	1.38	1.38	1.38	1.38	0.08	0.08	0.08

Overall mean: 0.51 LU/ha; summer mean 0.95 LU/ha; winter mean: 0.08 LU/ha

1950s–mid 1970s:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	–	–	150*	150*	150*	150*	–	–	–
Sheep	50	50	50	50	50	50	50	50	50	50	50	50
Total LUs	7.5	7.5	7.5	7.5	7.5	157.5	157.5	157.5	157.5	7.5	7.5	7.5
Total LU/ha	0.08	0.08	0.08	0.08	0.08	1.64	1.64	1.64	1.64	0.08	0.08	0.08

* but over 200 in the 1960s.

Overall mean: 0.57 LU/ha; summer mean: 1.12 LU/ha; winter mean: 0.08 LU/ha.

Supplementary feeding

No history of winter feeding. Feed blocks were used briefly in the summers of 1990, 1992 and 1993.

Burning

Until recently, burns appear to have been large and fairly regular. About 40 ha was burned during 1965–67 and blocks of 10 ha and 20 ha during 1967–69. A large burn in 1984 may have been responsible for a change from heather to purple moor-grass in one area. Three blocks of 1–4 ha were burned in 1995 and a block of about 17 ha in 1996.

Conclusion

This site appears to have benefited from a historic restriction to only summer grazing by cattle, together with a substantial reduction in these numbers since 1988. The cost of away-wintering these stock imposes a financial burden on the tenant. One criticism of the management is the absence of cattle in early summer when purple moor-grass growth commences.

SITE D4

Site summary

A 990 ha common, at 300–500 m AOD, containing substantial areas of heather, valley mire and dry acid grassland, with rather suppressed south-western heath in peripheral, lower parts (below 400 m). Soils comprise peaty gleyed podsol of the Princetown series on the higher slopes; raw, deep peat of the Crowdy series in the mires; and wet or well-drained gritty loams of the Hexworthy or Moor Gate series, respectively, on the lower slopes. The commoners include one grazier who is respected for his animal husbandry and who is particularly sensitive to environmental issues; his farm enterprise is described as an example.

Vegetation

A complex mosaic of H12 upland heath, H4 south-western heath, blanket and valley mire and both wet and dry acid grassland. Heather cover and condition are best on the higher, more remote parts of the common. On the lower fringes, and occasionally in mires, the heather condition is often damaged, sometimes by cattle, and locally replaced by poor quality grassland dominated by coarse grasses. Heather beetle is considered to be a threat to some of the remaining areas of heather. There has been localised poaching at the fringes of the common.

Vegetation types (based on survey of 911 ha only):

	Area (ha)	%
Dwarf shrub moorland	403	44
Blanket/valley mire	409	45
Purple moor-grass	22	2
Acid grassland	59	7
Bracken	13	1
Gorse	5	<1

Farm enterprise

An example commoner is described to illustrate environmentally sensitive (and perhaps sustainable) management of the moor (though recent stocking data, gathered by Dartmoor Commoners' Council, are given for the entire common in the following table).

Other land available to the commoner comprises 120 ha of in-bye, 200 ha newtake and 60 ha grass keep. Use of fertiliser on the in-bye is 'modest'.

Type and ratios of stock

(The ratios below are calculated from livestock densities in LU/ha)

Current:

Cattle (64%): mixed herd of Galloway/Blue-Grey (110), South Devons (85) and crossbred (20), plus replacements and bulls.

Sheep (36%): Scotch Blackface (426), North Country Cheviot x Scotch cross (224) and Bluefaced Leicester x Scotch cross (146).

(The overall stocking ratio for the entire common is 68% cattle, 7% sheep and 25% ponies)

Stock management

Cattle:

Forty cattle calve in the autumn and the rest in spring. 110 Galloways are kept on an adjacent newtake from mid-June to 25 October, when they return to inbye, where their calves are weaned. After 6–8 weeks, the suckler cows return to the common and overwinter, being fed along with the ponies and sheep. They are brought onto in-bye as they calve and return to the newtake from mid-May onwards. Thirty replacement heifers are retained on the inbye. The South Devons stay on the inbye, except from July to October when 20 dry cows and heifers run on the common; their calves are either sold in September as suckled calves at 6–8 months of age or at 18 months as forward stores.

(The example commoners' father used to keep less than 20 Galloway sucklers on the common, without supplementary feeding, and achieved about 50% calving.)

Sheep:

Approximately 430 Scotch Blackface are kept on the common throughout the year except for 3–4 weeks in November for tupping on the inbye. They are fed in winter and are sold from mid-July onwards. The cross-bred flock of Mules and North Country Cheviots stay mainly on the inbye ground, with 450 wintered away during December–February. They lamb on in-bye in April and are weaned in August, the lambs being sold as both finished and store. The Cheviots are returned after weaning to the moor, where they stay until they are brought onto in-bye for tupping in October. Draft ewes are sold during August–October.

Stock numbers, densities and timings

There have been no substantial changes since the 1980s.

Mid-1994–1995:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	200	193	175	160	60	88	88	75	102	189	169	209
Young cattle	–	–	–	–	19	19	19	39	33	33	27	7
Sheep	685	685	685	520	655	670	850	850	900	720	–	245
Ponies	52	52	52	52	52	52	52	52	52	52	52	52
Total LUs	352	348	330	290	218	248	276	281	302	362	232	306
Total LU/ha	0.36	0.35	0.33	0.29	0.22	0.25	0.28	0.28	0.31	0.37	0.23	0.30

Overall mean: 0.29 LU/ha; summer mean: 0.28 LU/ha; winter mean: 0.31 LU/ha.

Supplementary feeding

Cattle and sheep outwintered on the commons are fed hay and cobs from 10 December to 10 May, a period of 150 days. This is shared by the ponies. The daily total is 20 bales (360 kg) of hay and six bags (150 kg) of cobs (3 kg of hay and 0.7 kg of cobs per cow). Those cattle kept indoors or on in-bye are fed silage.

Burning

Blocks of about 30 ha and 50 ha were burned during 1965–67, blocks of 30, 50 and 100 ha during 1967–69 and about 10 ha in 1995.

Conclusion

This is one of the least heavily stocked of the Dartmoor commons. Critical factors in its management are not only the relatively low numbers and hardy breeds of stock involved, but the seasonality of grazing. The removal of cows to a newtake in May–September allows some regeneration of the sward, although the abundant purple moor-grass must be under-utilised as a result.

It should be noted that the example commoner maintains that an "acceptable" calving rate (in HLCA terms) apparently can only be attained by the use of supplementary feeding. Although the latter is carried out with great care by the example commoner, this is not the case with others. Neither have the effects of this "sensitive" feeding been monitored objectively and some doubt must remain that wheeling damage and associated cattle trampling are completely innocent of damaging dwarf shrubs.

SITE D5

Site summary

A north Dartmoor common of 944 ha holding substantial areas of heather and blanket bog, though the latter, like most of that on Dartmoor, is degraded. Altitude 300–550 m and rainfall 1600–1800 mm p.a. Soils comprise Moor Gate, Princetown, Laploud and Crowdy series. Monthly stocking figures are not available, but the annual mean grazing level has been estimated from overall figures supplied. The farm enterprise of an example commoner is given to illustrate local patterns of land use.

Vegetation

The common is dominated by extensive heathland and mire areas. Heather and bilberry on the higher parts of the common remain in good condition, having been assisted no doubt by the decline in cattle numbers since the EN survey (1989/90). Heather utilisation at a small ESA monitoring sample site averaged 16% (but 79% of the samples were classified as suppressed) in 1994. However, much heather has been lost from the lower slopes as a result of cattle grazing and winter feed systems, though conditions have improved recently.

Vegetation types (based on survey of 913 ha):

	Area (ha)	%
Heathland	519	57
Blanket/valley mire	253	28
Purple moor-grass	16	2
Other grassland	42	5
Bracken	83	9

Farm enterprise

The farm of an example commoner is described below (though the estimated overall stocking level for the common includes the stock belonging to all commoners).

An owner-occupied beef and sheep farm in north Dartmoor, farming 247 ha of enclosed ground which includes rented land, grass keep and unimproved pasture. The farm is all grass, of which silage is taken off 57 ha (first cut) and 20 ha (second cut). The farming system is based on the production of both finished calves and forward stores from the suckler herd and finished lamb from the sheep enterprise. There are two distinct farming systems, upland (on the common) and lowland. Winter feed is based on home grown

silage and hay. The practices of this commoner have changed little in recent years, though there have been fewer cattle on the common in the 1990s.

Type and ratios of stock

(The percentages below are calculated from livestock densities in LU/ha)

Cattle (55%): 60 Galloway cows, 140 Limousin cross, 3 bulls and 50 replacement heifers.
Sheep (45%): 550 Scotch Blackface plus 150 Scotch ewe lambs and 600 Mules.
(The overall stock ratio on the common is 39% cattle : 51% sheep : 10% ponies).

Stock management

There are two distinct livestock systems: the Galloway suckler cows and Scotch Blackface ewes are confined to the common, and the Limousin cows and Mules use the inbye ground.

Galloway:

60 suckler cows and 25 replacement heifers are kept on a high part of the common from late August to April. Forty remain on the area all summer, the rest being brought off from May to August for calving and bulling. The cows calve during mid April–June, and the calves are weaned and sold as stores at 12–14 months. The heifers are leared to the hill and develop resistance to tick born diseases.

Scotch Blackface:

The flock is brought off the moor during November–20 December for tupping. 620 return to the moor and the poorest ones stay on the inbye. The poorer ewes are then progressively withdrawn from the moor, with up to 200 returning to the inbye for lambing. About 400 ewes lamb on the moor. Approximately 160 ewe lambs are retained for breeding, 150 sold as stores and the remainder are finished. The hill flock stays on the moor until brought down for shearing in July, after which they are returned to the moor.

Limousin:

These kept on the inbye, 100 calving in October–November, 10 in mid-year and the remaining 30 in spring. They are overwintered indoors on silage and minimal concentrates. Calves are sold finished (60) or as 10-month-old stores (100).

Mules:

470 ewes and 130 ewe lambs. These are kept on the inbye all year round, except for lambing inside. About 300 mules go away for winter keep for 12 weeks.

Stock numbers, densities and timings

Estimated overall mean for the whole common: 0.25 LU/ha during 1991–96, but 0.3 previously, when more cattle were kept.

1991–96:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	120	120	120	75	75	75	75	100	120	120	120	120
Sheep	925	925	925	925	925	1075	1325	1300	1075	925	525	–
Ponies	25	25	25	25	25	25	25	25	25	25	25	25
Total LUs	284	284	284	239	239	261	299	320	306	284	224	145
Total LU/ha	0.30	0.30	0.30	0.25	0.25	0.28	0.32	0.34	0.32	0.30	0.24	0.15

Overall mean: 0.28 LU/ha; summer mean: 0.30 LU/ha; winter mean: 0.26 LU/ha.

Supplementary feeding

The Galloway cows receive a supplementary feed of 0.7 kg (1.5 lbs) of cobs and 4 kg (10 lbs) of hay (0.25 bale/cow) per day from mid-December to mid-May (150 days). The Scotch Blackface sheep have access to some of this supplement. Silage was fed on heather prior to 1991, when more cattle were kept.

Burning

Two large areas, one of 130 ha, were burned during 1965–67 and at least three blocks of 5–10 ha since then. Little burning has taken place in recent times.

Conclusion

Despite past reduction in dwarf shrubs cover in the lower parts of this common, the recent overall reduction in stock numbers has contributed to an improvement in the condition of the common. Winter feeding practices by the example commoner illustrate what appear to be the minimum requirements to maintain an acceptable calving rate. Rapid regrowth in dwarf shrubs in the absence of stock has been graphically demonstrated within an exclosure plot on the lower slopes.

SITE D6

Site summary

A tenanted Dartmoor newtake of 222 ha, adjacent to other newtakes, but not to open moorland or common. Altitude 250–420 m. Rainfall 1800 mm. Growing season 200 days. Soils comprise well-drained, humose, gritty loams of the Moor Gate series and peaty gleyed podsols of the Hexworthy series. Associated in-bye produces insufficient silage to support the farm's stock. Currently only beef store production. Additional income is generated by a five-month winter let of the newtake for suckler cows. Subject to DNP management agreement.

Vegetation

The south-western heath contains areas of dense western gorse with scattered heather, bell heather and bilberry interspersed with patches of acid grassland. Regular burning has produced a varied structure of age and species composition. The heather-dominated moorland also has varying proportions of bilberry. Again, burning has produced a varied structure of age and composition with patches of more grassy, recently-burnt heather and older stands. The valley mire is dominated by Sphagnum mosses, with sedges and soft-rush. The newtake has never received inputs and heather has probably increased. The scarcity of gorse, compared with other newtakes, is notable, and may have resulted from the history of well-controlled burning.

Vegetation types:

	Area (ha)	%
South-western heath	137	62
Heather moorland	81	36
Valley mire	4	2

Farm enterprise

Type and ratios of stock

(The ratios below are calculated from livestock densities in LU/ha)

Mid 1980s–1996:

Suckler cows only (Galloway in winter, South Devon and Hereford cross in summer).

1977–mid 1980s:

July–September: suckler cows, sheep (Cheviot, Exmoor) and ponies (Dartmoor), in the ratio 85:10:5. Rest of the year: suckler cows (Galloway cross) and ponies (Dartmoor), in the ratio 91:9.

1970–1977:
All year: ponies. July–October: suckler cows (Galloway cross) and ponies (Dartmoor) in the ratio 89:11.

1947–1970:
June–September: suckler cows (Galloway, South Devon and mixed breeds), sheep (Dartmoor, Devon Longwool, Devon Closewool and Exmoor) and ponies (Dartmoor), in the ratio 67:6:27. Rest of the year: suckler cows (Galloway) and ponies (Dartmoor), in the ratio 50:50.

Stock management

Mid 1980s–1996:
The newtake is sub-let for outwintering (November–April) by a Galloway suckler herd, which are supplemented with a daily ration of hay and cobs. The tenant's stock (South Devon and Hereford cross) calve on in-bye in April–May and are then summered on newtake, June–September. The calves are weaned and sold as stores, October–December. The suckler herd is retained on in-bye, then winter-housed and fed on home-produced silage, supplemented by bought-in straw, molasses and big-bale silage; the use of concentrates is minimal.

Stock move widely across the newtake, sheltering in gullies in bad weather. They tend to follow human tracks, especially through areas of gorse.

Stock numbers, densities and timings

Mid 1980s–1996:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	125	125	125	125	–	–	90	90	90	90	–	125
Sheep	–	–	–	–	–	–	–	–	–	–	–	–
Ponies	6	6	6	6	6	6	6	6	6	6	6	6
Total LUs	131	131	131	131	6	6	96	96	96	96	6	131
Total LU/ha	0.59	0.59	0.59	0.59	0.02	0.02	0.43	0.43	0.43	0.43	0.02	0.59

Overall mean: 0.4 LU/ha; summer mean: 0.3 LU/ha; winter mean: 0.5 LU/ha.

1977–mid 1980s:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	120	120	120	120	120	120	200	200	200	120	120	120
Sheep	–	–	–	–	–	–	150	150	150	–	–	–
Ponies	12	12	12	12	12	12	12	12	12	12	12	12
Total LUs	132	132	132	132	132	132	235	235	235	132	132	132
Total LU/ha	0.59	0.59	0.59	0.59	0.59	0.59	1.06	1.06	1.06	0.59	0.59	0.59

Overall mean: 0.71 LU/ha; summer mean: 0.83 LU/ha; winter mean: 0.59 LU/ha.

1970–1977:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	–	–	–	100	100	100	100	–	–
Sheep	–	–	–	–	–	–	–	–	–	–	–	–
Ponies	12	12	12	12	12	12	12	12	12	12	12	12
Total LUs	12	12	12	12	12	12	112	112	112	112	12	12
Total LU/ha	0.05	0.05	0.05	0.05	0.05	0.05	0.5	0.5	0.5	0.5	0.05	0.05

Overall mean: 0.2 LU/ha; summer mean: 0.35 LU/ha; winter mean: 0.05 LU/ha.

1947–1970:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	20	20	20	20	20	220	220	220	220	20	20	20
Sheep	–	–	–	–	–	600	600	600	600	–	–	–
Ponies	20	20	20	20	20	20	20	20	20	20	20	20
Total LUs	40	40	40	40	40	330	330	330	330	40	40	40
Total LU/ha	0.18	0.18	0.18	0.18	0.18	1.46	1.46	1.46	1.46	1.18	0.18	0.18

Overall mean: 0.615 LU/ha; summer mean: 0.93 LU/ha; winter: 0.18 LU/ha.

Supplementary feeding

In the 1960s and early 1970s hay and straw were fed to outwintered cattle, with hay and silage in the late 1970s and 1980s. Currently, the outwintered cattle receive daily rations of 3.5 kg of hay and up to 0.75 kg of concentrate per animal, the latter being given during January–April. Feeding areas are usually spread around the newtake.

Burning

During 1947–62, large blocks totalling about a quarter of the newtake were burned annually. This continued, but at a smaller scale, up to 1970. Since 1970, most of the newtake has been burned in small blocks on a seven year rotation, when heather becomes 'woody' and 'choked' by western gorse, i.e. having attained about 40–60 cm in height.

Conclusion

Despite periods of high stocking levels, particularly during 1947–70, and a history of relatively high numbers of cattle in winter, this newtake remains in surprisingly good condition. Evidence suggests that a lack of sheep may be important in maintaining good quality dwarf shrubs, provided that supplementary feeding is minimal and good burning practice is achieved.

SITE D7

Site summary

An 847 ha, low-lying (150–200 m) Dartmoor common, dominated by south-western heath, with substantial areas of scrub. Soils: mainly free-draining fine loamy clays of the Manod series. Reduced numbers of active commoners has led to a reduction in scrub control, giving rise to problems classically associated with lowland heath. Fencing along the roadside has effectively divided this common, facilitating stock control. A large (300 ha) section of the common holds most of the heathland interest, the remainder being dominated by acid grassland, bracken and scrub. Visitor pressure is high and the area is used for a wide range of recreational activities. There have been complaints in the past about animal welfare and some accidental burns.

Vegetation 1994

Over a 300 ha, fairly discrete, part of the site there is judged to be an ideal mosaic of dense dwarf shrubs (NVC H4) interspersed with acid grassland and areas of dense bracken, liberally scattered with European gorse and other scrub. There are some areas of very old heath (perhaps 50 years old), but a good mix of ages and structure generally. However, the secretary of the commoners' association considers that, on parts of the common, heather has been lost to gorse and bracken in the last decade. Mean heather utilisation at an ESA monitoring site on the fringe of the common was 72% in 1994, suggesting considerable suppression at this sample site. A tradition of winter feeding by one commoner in the proximity of this site, plus the old age of the heather sampled, probably explains this anomaly.

Separate statistics are given below for the both the whole common and for the part of it which holds the best quality heathland.

Vegetation types:

	Whole common		Heathland part	
	Area (ha)	%	Area (ha)	%
South-western heath	221	26	210	67
Acid grassland	105	12	16	5
Bracken	180	21	20	6
Scrub or woodland	235	28	68	22
Other	106	13	–	–

Farm enterprise

Type and ratios of stock

(The ratios below are calculated from livestock densities in LU/ha)

1980–1996:
Cattle: suckler cows and cross-bred beef, spring and summer.
Sheep: mainly Scotch Blackface, spring and summer.
Ponies: Dartmoor and Dartmoor/Shetland cross.
These are present in the ratio 6.5% cattle, 20% sheep and 73.5% ponies.

Stock numbers, densities and timings

There has been a decline in numbers of ponies, with 420–650 during 1970–80, 310–380 during 1981–90 and 300–340 since (assumed to average 335 during 1981–96). There have been about 600 sheep and 40–50 cattle on the common since 1980. Winter cattle numbers are assumed to be one-third of those in summer.

1981–1996:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	15	15	15	45	45	45	45	45	45	15	15	15
Sheep	600	600	600	600	600	600	600	600	600	600	600	600
Ponies	335	335	335	335	335	335	335	335	335	335	335	335
Total LUs	440	440	440	470	470	470	470	470	470	440	440	440
Total LU/ha	0.52	0.52	0.52	0.56	0.56	0.56	0.56	0.56	0.56	0.52	0.52	0.52

Overall mean: 0.54 LU/ha; summer mean: 0.55 LU/ha; winter mean: 0.53 LU/ha.

Supplementary feeding

Cattle and ponies are fed during winter and early spring with hay, silage and straw. Details of the quantities involved is not available.

Burning

Historically carried out annually in March on a 10-year rotation. In recent years, burning has become less frequent and more difficult to organise, with fewer active commoners and concerns about public nuisance. Some burns have been initiated by DNP.

Conclusion

This low-lying, outlying common has high quality lowland heath, but is regarded as undermanaged and too scrubby by the commoners. The history of management includes regular burns and grazing by cattle, sheep and especially ponies (74% of overall LUs). This combination has produced a very varied, high quality site, but there are concerns about sustainable control of scrub (even with the predominance of ponies), public perceptions of heathland burning and the difficulties of achieving small-scale burns with reduced manpower.

SITE E1

Site summary

An enclosed grazing unit of 188 ha lying at 350–480 m. Annual rainfall is about 1400–1600 mm. Soils: mainly permeable acid podsol with a thin peat layer over a stony leached layer; also small areas of poorly-drained, seasonally-wet loam with a peaty surface horizon.

Vegetation

The vegetation is mainly dry heath (NVC H12) or a mosaic of this and dry acid grassland (U4e). Heather and bilberry are constant, with a mixture of fine grasses making up the acid grassland. No signs of burning or overstocking at survey in 1992. In 1996, purple moor-grass dominance was of concern, following removal of cattle in 1992.

Vegetation types (for 161 ha):

	Area (ha)	%
Dry heathland	34	21
Heath/acid grassland mosaic	73	45
Acid grassland	14	9
Blanket bog	17	11
Molinia/Juncus grassland and wet heath	16	10
Bracken	7	4

Farm enterprise

The following data refer to the single grazier.

An owner-occupied upland beef and sheep farm, producing both store and finished suckled calves and prime lambs. The farm lies at an altitude of 270 m and makes good use of the grazing unit. The in-bye totals 88 ha (25 ha arable, 55 ha improved permanent grass and 8 ha unimproved grassland). The grazing period extends to about 200 days. Winter conservation is based on home-grown silage and hay. A substantial area of grass keep is purchased annually.

Type and ratios of stock

Current:

Sheep: flock of 550 mules and Swaledale ewes.

[Cattle: 50 Hereford x Friesian and Charolais cross suckler cows and 22 replacements, all of which are kept on in-bye.]

Stock management

1992–1996

A stockproof fence divides the grazing unit into two separate management units. The sheep enterprise is based on two distinct flocks, a pure Swaledale hill flock and a halfbred mule flock producing finished lambs which are sold from July to December. The grazing unit is used mainly by the Swaledale flock throughout the winter and again by all sheep after weaning in July–September. The suckler herd never grazes the grazing unit.

Pre-1992

Prior to the farm changing hands in 1992, 30 suckler cows and 500 ewes (with up to 1000 for 10 weeks during July–September) used to graze the grazing unit. However, these stock frequently had free access to in-bye through the moorland gates.

Stock numbers, densities and timings

1992–1996 (ESA regime):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sheep	240	240	240	–	120	240	390	390	390	390	–	210
Total LUs	36	36	36	–	18	36	59	98	98	59	–	32
Total LU/ha	0.19	0.19	0.19	–	0.1	0.19	0.31	0.52	0.52	0.31	–	0.17

Overall mean: 0.22 LU/ha; summer mean: 0.32 LU/ha; winter mean: 0.12 LU/ha.

Pre-1992:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	30	30	30	30	30	30	30	30	30	30	30	30
Sheep	500	500	500	500	500	500	500	1000	1000	500	500	500
Total LUs	105	105	105	105	105	105	105	180	180	105	105	105
Total LU/ha	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.96	0.96	0.56	0.56	0.56

Overall mean: 0.625 LU/ha; summer mean: 0.69 LU/ha; winter mean: 0.56 LU/ha.
(Note that the pre-1992 densities are over-estimates, because stock often had access to inbye through open moor gates).

Supplementary feeding

1992–96:

Sheep are fed hay and cobs only during severe winter conditions.

Pre-1992:

Cattle and sheep were fed hay and cake, but the site was moved around to prevent poaching. Always fed in troughs, not on the ground. Feeding of cattle began in November and of sheep in January, both continuing through to April.

Burning

No burning has been carried out since about 1979.

Conclusion

It is difficult to conclude much from the stocking levels prior to 1992, because livestock had frequent access to improved grass (although not since 1992). Since a reduction of stock numbers in 1992, principally the removal of cattle, the level of sheep grazing has been inadequate to keep purple moor-grass under control. Thus, at current stocking levels the area appears to be undergrazed and would benefit from cattle grazing during the main purple moor-grass growth period of late May to August.

SITE E2

Site summary

A 172 ha grazing unit, dominated by good quality heather and grazed by a single tenant. Sheep grazed only, with stocking levels gradually building up from the 1970s to 1992, when the vegetation was surveyed. Although grazing levels are high, stock are removed for six months of the year. Altitude 270–370 m. Soils: acid permeable podsol with a thin peat layer on the eastern side and well-drained, slightly stony loam on the western side.

Vegetation

Largely heather-dominated dry heath with purple moor-grass constant at low cover. Smaller areas of acid grassland and bracken and a significant area of heath/acid grassland mosaic. In 1992, the vegetation showed no signs of overgrazing, with heather in patches of various heights depending on the interval since burning; recently burnt areas were vigorously regenerating; heather beetle damage had occurred over several hectares.

Vegetation types:

	Area (ha)	%
Dry heath	141	82
Heath/acid grassland mosaic	18	11
Acid grassland	6	3.5
Bracken	6	3.5

Farm enterprise

Type and ratios of stock

1993-1996 (under ESA agreement):
May–September: 250 Scotch Blackface only, plus lambs.
Winter: about 150 Scotch Blackface only.

1980s–1992:
Mid-May–August: up to 500 Scotch Blackface only
January–March: As above, but in reduced numbers (taken as 300).

1970s:
Fewer sheep, building up gradually to the flock of 500.

Stock management

The Scotch Blackface sheep are taken off between September and the end of December for flushing and tupping on the inbye, and from March-May. The sheep tend to graze over the whole of the site. The grazier holds a grazing licence for other land onto which he can put his sheep when necessary (1400 ewes are put on for up nine months) and another common is used sporadically.

Stock numbers, densities and timings

Mid-1980s–1992:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sheep	300	300	300	–	250	500	500	500	–	–	–	–
Total LUs	45	45	45	–	38	75	75	75	–	–	–	–
Total LU/ha	0.26	0.26	0.26	–	0.22	0.44	0.44	0.44	–	–	–	–

Overall mean: 0.19 LU/ha; summer mean: 0.255 LU/ha; winter mean: 0.13 LU/ha.

Supplementary feeding

None.

Burning

25–40 ha in most years, on an approximate 10 year rotation.

Conclusion

The extensive dry heath area has been reasonably well-managed by sheep-only grazing (overall mean 0.19 LU/ha) and rotational burning (but unfortunately in very large blocks), producing healthy, mixed-age heather. The removal of stock for part of the year to avoid overgrazing has maintained the vegetation in good condition.

SITE E3

Site summary

This is a 368 ha grazing unit dominated by heather in good condition. Altitude 300–410 m. Rainfall 1600 mm p.a.. The soils are mainly permeable podsols of the Larkbarrow series, with a thin peat layer over stony sandstone drift, plus Denbigh series typical brown earths around the edges.

Vegetation

Most of the site is dry heather moorland (H12a), with high heather cover and some *Erica cinerea*, and a mosaic of heather and acid grassland (H12c/U4e) on west-facing slopes. Small areas of wet heath (M15d) and mire also occur. The high cover of heather in 1992 suggests that most of the area was in good condition then and the situation is unlikely to have deteriorated since.

Vegetation types (331 ha surveyed):

	Area (ha)	%
Heather moorland	227	69
Heather/acid grassland mosaic	67	20
Bracken	23	7
Wet heath	11	3
Improved grassland	3	<1

Farm enterprise

A tenanted beef and sheep unit of 814 ha producing suckled calves and light and store lambs. The farm includes 200 ha of arable and ley grassland, 49 ha of improved and 50 ha of unimproved grassland, and about 500 ha of moorland grazing. Conservation is based on big bale and pit silage and ley grassland. The inbye land is heavily stocked for the four summer months and full use being made of moorland for both winter and summer grazing. However, entry to the ESA in 1994 necessitated substantial changes to the farming policy, with additional land being purchased, new buildings erected and cattle being housed.

Type and ratios of stock

(The ratios below are calculated from livestock densities in LU/ha)

1985–1996:

Hereford and Friesian suckler cows (90), in-calf heifers (12) and bulls (3).

Sheep comprise Scotch Blackface (550) plus 1650 Exmoor, Exmoor cross North Country Cheviot and Scotch Blackface cross North Country Cheviot.

Cattle : sheep ratio 23% : 77%.

Stock management

1985–1996:
Practice prior to ESA agreement in 1994 was to outwinter the suckler cows on the grazing unit and feed them silage from November to May. Since the 1994/95 winter they have been housed and fed silage. About one-third of the herd calves in August/September and the remainder from January to April. The calves are sold before winter at 6–12 months old.

The ewes spend 12 weeks on the moorland grazing units in the winter and are taken off for 3 weeks for tupping on inbye in November and for 3–4 weeks in April for lambing, the lambs being sold during September–November. Lambing rates are 80% for the Scotch Blackface, 110–120% for the remainder. The moorland is heavily stocked at weaning from August to October.

Stock numbers, densities and timings

1980–1994:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	90	90	90	90	–	–	-	–	–	–	45	90
Sheep	500	500	500	–	500	500	500	1500	1500	1000	125	500
Total LUs	165	165	165	90	75	75	75	225	225	150	64	165
Total LU/ha	0.45	0.45	0.45	0.24	0.20	0.20	0.20	0.61	0.61	0.41	0.17	0.45

Overall mean: 0.37 LU/ha; summer and winter means: both 0.37 LU/ha.

Supplementary feeding

Cattle were fed silage on the heather moor in ring feeders for many years, but since the 1994/95 winter have been housed over winter and fed silage (ESA agreement requiring no cattle wintered on the moor). Survey in 1992 showed that the feeders had caused severe poaching over a 1–2 ha area and areas of grass indicated a history of chronic, localised winter overgrazing of heather. Sheep are now fed hay and silage on the inbye land.

Burning

Although largely unplanned, the general policy has been to burn the heather when it reaches about 40 cm, i.e. every 10–12 years, with large areas ("tens of acres") being burnt at once. Weather conditions are crucial at this site, as it faces north and is often too wet to burn. *Molinia* areas are burnt more frequently, usually every 3–4 years, after which they are heavily grazed.

Conclusion

Until coming under ESA agreement, this unit had overall stocking at 0.37 LU/ha, with peaks in winter (due to outwintered cattle) and especially August/September (sheep after weaning). This site has suffered localised poaching due to past winter feeding. In addition, the area of heather/grassland mosaic suggests some losses of heather, though no estimates of utilisation have been made. The recent withdrawal of cattle from the moor under ESA prescription should resolve these and the quality of the heather should now be higher than at the time of EN survey in 1992.

SITE E4

Site summary

A 671 ha tenanted grazing unit, which has been sparsely grazed with little active management during the last decade or so. The tenants use the moor principally to rest inbye in late summer, when high densities of sheep have been put out after dipping.

Vegetation

A very diverse unit, most of which is dominated by heather, though sometimes in mosaics with purple moor-grass or bilberry, with smaller areas of acid grassland, mire and scrub.

ESA heather monitoring in 1993 estimated 12% utilisation, with 56% of samples being suppressed at MLURI thresholds (which MAFF would regard as "overgrazed" for HLCA purposes); 79% of randomly placed quadrats contained heather (39% building, 61% mature/degenerate), giving a mean of 34% heather cover, and mean dwarf shrub height was 23 cm. In addition, over EN heather grazing indices covering more than half of the moor were obtained in 1995: the scores for the eight index units sampled were 1, 1, 3, 4, 5, 5, 5 and 8; all had component 3 scores of 0. These scores suggest "good" to "intermediate" condition, reflecting some localised grazing damage.

Stock numbers, densities and timings

1993–1996 (excluding ponies)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	9	18	18	18	18	18	18	–	–
Sheep	–	–	–	–	–	119	419	527	502	220	–	–
Total LUs	–	–	–	9	18	36	81	97	93	51	–	–
Total LU/ha	–	–	–	0.01	0.03	0.05	0.12	0.14	0.14	0.08	–	–

Overall mean: 0.05 LU/ha; summer mean: 0.09 LU/ha; winter mean: 0.002 LU/ha.

Pre-1993:
Cattle: 35, rising to 43 in July and 39 in August.
Sheep: up to 2470 licensed, only during summer, mostly during July–October, after dipping.
Ponies: no details available, but present all year.
Overall mean (excluding ponies): 0.12 LU/ha; summer mean: 0.19 (max. 0.6) LU/ha; winter mean 0.05 LU/ha.

Supplementary feeding

Prior to coming into ESA agreement, cattle had been fed for many years in winter just outside the grazing unit, on two separate inbye fields. This had the effect of removing heather from the areas around the gateways.

Burning

Prior to about five years ago, burning was carried out on an *ad hoc* basis by tenants, though they are not keen to burn. Burns have occasionally been extensive.

Conclusion

This site has been managed by tenants essentially as part of a lowland sheep system, in that large numbers of sheep have been put onto the moor for a few weeks after dipping. Despite low mean stocking density, a heather utilisation estimate prior to entry in ESA agreement suggested that some suppression had occurred, presumably as a result of the high sheep densities at a time when heather is least able to withstand grazing damage.

SITE E5

Site summary

A 284 ha grazing unit, grazed at present by a single grazier. Altitude 340–440 m. Soils: podsols of the Larkbarrow and Lydcott series. Heath fritillary breeds over part of the common.

Vegetation

The majority of the common is a mosaic of H4, H8 and H12 heathland communities. A varied age structure has been produced by the history of regular burning. However, some patches of heather have been left to over-mature and these support a rich understory of bryophytes. Much of the scrub is European gorse.

Vegetation types:

	Area (ha)	%
South-western heath and heather moorland	245	86
Bracken	16	6
Acid grassland	5	2
Valley mire	4	1
Scrub	14	5

Farm enterprise

Type and ratios of stock

Mixed flock of Scotch Blackface and Beulah sheep. No cattle or ponies in 1992 (but some in winter since and also ponies from 1995).
Winter: Scotch Blackface.
Summer: Scotch Blackface and Beulahs; also Exmoor Horns in the 1970s and earlier.

Stock management

1970s–1992
The sheep flock increased from about 400 to 500 ewes, both Scotch Blackface and Beulahs. About 250 were left on for the winter and were fed. The sheep were taken off for lambing, tupping and dipping.

Stock numbers, densities and timings

The flock has steadily increased since the 1970's from about 400 to 500 ewes. The common has always been grazed all year round, although sheep numbers were lower in winter.

1970s–1992:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sheep	250	250	–	–	450	450	450	450	450	–	250	250
Total LUs	38	38	–	–	68	68	68	68	68	–	38	38
Total LU/ha	0.13	0.13	–	–	0.24	0.24	0.24	0.24	0.24	–	0.13	0.13

Overall mean: 0.14 LU/ha; summer mean: 0.20 LU/ha; winter mean: 0.09 LU/ha.

Supplementary feeding

The sheep have been fed hay, silage and minerals off the common each winter.

Burning

Areas of about 20 ha have been burned regularly on a 5–6 year cycle. Such areas are considered too large and inappropriate areas have been burnt, such as heath fritillary sites, gorse and bracken.

Conclusion

This site has a varied age structure created by regular burning (though of large blocks) and maintained in good condition by low sheep stocking levels (0.14 LU/ha over the year as a whole). Supplementary feeding has been off the common (although there is recent evidence of supplementary feeding for cattle on the common).

SITE E6

Site summary

A tenanted coastal heath common of 188 ha, lacking complete stockproof fencing. Altitude 100–350 m. Soils are mainly permeable podsols of the Larkbarrow series, with a small area of free-draining, fine loamy podsol of the Manod series. The site has been traditionally managed by burning and sheep grazing, and although stock numbers have been high, the sheep have concentrated on an area of grass and hence have grazed the heath quite lightly. The vegetation is mainly south-western heath and is in very good condition.

Vegetation

Though the proportions of the different vegetation communities are not available, the vast majority of the site is dry coastal heath (principally H4a), with varying proportions of heather and western gorse. Small areas of bracken and acid grassland also occur. The vegetation is in very good condition and is considered to be possibly the best example of its kind on Exmoor. ESA heather monitoring in 1993, on this common and its neighbour, estimated 11% utilisation overall, with 25% of the samples suppressed using MLURI thresholds (the values for this site and E8 were the lowest of the 10 random heathland grazing units sampled); 90% of randomly placed quadrats contained heather (16% pioneer, 84% building), giving 40% mean cover, and mean dwarf shrub height was 18 cm.

Farm enterprise

Type and ratios of stock

A mixed flock of Welsh and Texel/Suffolk cross ewes has grazed the site for at least 15 years. No cattle or ponies.

Stock management

Current:

About 280 ewes graze both the inbye land and the common all year round, with fewer sheep on the common in the winter. This management has been very similar since the 1970s.

1970s–1993:

About 150 Welsh ewes grazed the common all year except February–March, when they were taken off for lambing. In addition, 350 Texel x Suffolk ewes grazed from April to November, grazing the inbye from December to March. Although most of the common is fenced, up to 20 sheep strayed from an adjacent common. The ewes tended to graze

mainly the grassy area nearest the farm rather than the whole of the common, so the actual grazing pressure has been much lower on the heath than the figures suggest.

Stock numbers, densities and timings

From 1993-96, the maximum levels were 280 ewes in summer, 180 in winter.

1970s–93:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sheep	150	–	–	500	500	500	500	500	500	–	500	150
Total LUs	23	–	–	75	75	75	75	75	75	–	75	23
Total LU/ha	0.12	–	–	0.40	0.40	0.40	0.40	0.40	0.40	–	0.40	0.12

Overall mean: 0.25 LU/ha; summer mean: 0.33 LU/ha; winter mean: 0.17 LU/ha.

Supplementary feeding

No winter feeding has occurred on the heathland. The ewes were fed silage on an area of grass on the common for 15 years prior to entering ESA agreement in 1993. Overgrazing may have occurred at the grass/dwarf shrub interface where sheep were being fed, though the grassy area may have been large enough to prevent this.

Burning

A record of burning since 1987 shows that much of the heath has been extensively burned in recent years, notably in 1993, when about 40% of the common was burned (including up to 75% of the H4/H8 area). Generally, however, burning has been carried out on an *ad hoc* basis by a neighbour.

Conclusion

This site is a very good example of coastal heath which has been well managed by regular (though sometimes extensive) burning and light sheep grazing. The potentially harmful effects of winter feeding have been minimised by generally avoiding the heathland area, where grazing pressures have been lower than the figures would indicate.

SITE E7

Site summary

A 93 ha block of coastal heath with good stockproof fencing, which has allowed control of stock since 1982. The site is a prime example of coastal heath which has been managed by cattle and sheep grazing, and has been burnt on rotation. Stock numbers were gradually reduced over a ten year period prior to vegetation survey in 1990. Altitude: 60–320 m. Soils are permeable podsols with a thin peat layer over stony sandstone drift.

Vegetation

Most of the area is south-western heath (H4) dominated by western gorse, heather and bell heather. The heathland has a varied age structure as a result of programmed burns. A large block of acid grassland has high bracken cover and scattered heather. A small area of mire consists of species-rich flush supporting specialised plants and invertebrates.

Vegetation types:

	Area (ha)	%
South-western heath	57	61
Acid grassland	30	33
Scrub/bracken	5	5
Mire	1	1

Farm enterprise

Type and ratios of stock

(The ratios below are calculated from livestock densities in LU/ha)

1993–present day (under ESA agreement):
May–October: cattle (25%) and sheep (75%). Cattle are mixed breed Welsh mountain and Galloway crosses. Up to six Exmoor ponies in summer.
November–April: sheep only; mixed breed flock of Scotch Blackface, Herdwicks and Exmoor Horns.

1989–92:
Summer: cattle (16%) and sheep (84%).
Winter: sheep only, breeds as above.

1982–1989:
Summer: cattle (10%) and sheep (90%).
Winter: sheep only, breeds as above.

1972-1982:
Managed under an agricultural tenancy without any real control of stock numbers and "hardly any grazing at all".

Stock management

The land was fenced from 1982, when systematic management began. The most important trend has been the gradual reduction in sheep over a period of 10 years, from about 250 to the recent level of 75.

Stock numbers, densities and timings

1993–1996 (under ESA agreement):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	6	6	6	6	6	6	6	–	–
Sheep	75	75	75	75	90	90	90	90	90	90	75	75
Ponies	–	–	–	–	6	6	6	6	6	6	–	–
Total LUs	11	11	11	17	26	26	26	26	26	26	11	11
Total LU/ha	0.12	0.12	0.12	0.19	0.28	0.28	0.28	0.28	0.28	0.28	0.12	0.12

Overall mean: 0.20 LU/ha; summer mean: 0.28 LU/ha; winter mean: 0.13 LU/ha.

mid-1989–1992:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	6	6	6	6	6	6	6	–	–
Sheep	150	150	150	150	150	150	150	150	150	150	150	150
Total LUs	23	23	23	29	29	29	29	29	29	29	23	23
Total LU/ha	0.24	0.24	0.24	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.24	0.24

Overall mean: 0.28 LU/ha; summer mean: 0.31 LU/ha; winter mean: 0.25 LU/ha.

1982–1989:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	6	6	6	6	6	6	6	–	–
Sheep	250	250	250	250	250	250	250	250	250	250	250	250
Total LUs	38	38	38	44	44	44	44	44	44	44	38	38
Total LU/ha	0.4	0.4	0.4	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.4	0.4

Overall mean: 0.44 LU/ha; summer mean: 0.47 LU/ha; winter mean: 0.41 LU/ha.

Supplementary feeding

None (except in severe weather conditions).

Burning

Some areas were burned in the 1970s. Systematic management began in the 1980s with the burning of large blocks. Since then, smaller areas have been burned as part of a 10+ year cycle, to allow some areas of heather to mature.

Conclusion

A good example of Exmoor coastal heath, being the product of a period of poor management prior to 1982 (ploughing, undergrazing and extensive burns), followed by more systematic management with the provision of fencing. The most significant factor affecting vegetation in recent years has been the reduction in sheep numbers, from 0.44 LU/ha during 1982–89, to 0.28 during 1989–92 and 0.20 under subsequent ESA agreement. Sheep grazing has predominated, with only a few summer cattle, and winter feeding has not taken place. After rejuvenating over-mature heather by burning in the 1980s, subsequent smaller burns have maintained large areas of mixed age heather.

SITE E8

Site summary

A coastal Exmoor grazing unit of 415 ha. Altitude 50–300 m. Soils are mainly coarse, loamy, well-drained brown earths of the Lydcott series, with a small area of permeable podsol of the Larkbarrow series.

Vegetation

There are extensive areas of dry south-western heath (H4/H8), quite uniform and species-poor, but generally in good condition. Bracken dominates on steeper slopes and the heathland also grades into coastal combes, rocks and cliff-top maritime grassland. ESA heather monitoring in 1993 revealed 9% utilisation overall (the lowest recorded during the exercise), 31% of samples being suppressed; only 25% of randomly-placed quadrats contained heather (8% pioneer, 92% building), with a mean cover of 10% and mean dwarf shrub height of 23 cm.

Vegetation types (347 ha surveyed):

	Area (ha)	%
South-western heath	232	67
Bracken	72	21
Woodland	43	12

Farm enterprise

Type and ratios of stock

(The ratios below are calculated from livestock densities in LU/ha)

1994-96:
Cattle (16%): mainly Devon crosses.
Sheep (84%): various breeds put out by different graziers; mixed flock of Scotch Blackface and Welsh.

Pre-1994:
Cattle 7% : sheep 93%.

Stock management

1994–1996:
May–October: 1,200 ewes
December–February inclusive: 500 ewes

Mid-November–February inclusive: 40 cattle.

1980–1993:
30–40 cattle and followers have wintered on the area for the past 30 years. Sheep numbers have fluctuated widely, as various rights to graze existed, but were very often not used. The general situation in the 1980s was light to undergrazed, with hardly any grazing at all in the very late 1980s–early 1990s, after which grazing control improved and licenses were issued. Generally, the grazing unit was summer grazed by sheep only, with smaller numbers in winter. The sheep used the whole area, with flocks from different graziers running together. The woodland areas are used by stock for shelter.

Stock numbers, densities and timings

1994-96:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	40	40	–	–	–	–	–	–	–	–	40	40
Sheep	500	500	–	–	140	540	1340	1340	600	–	–	500
Total LUs	115	115	–	–	21	81	201	201	90	–	40	115
Total LU/ha	0.28	0.28	–	–	0.05	0.20	0.48	0.48	0.22	–	0.10	0.28

Overall mean: 0.20 LU/ha; summer mean: 0.24 LU/ha; winter mean: 0.15 LU/ha.

1980–93 (based on licences issued, rather than actual stocking levels):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	30	30	–	–	–	–	–	–	–	–	30	30
Sheep	1200	1200	–	–	1200	1200	1200	1200	1200	1200	–	1200
Total LUs	210	210	–	–	180	180	180	180	180	180	30	210
Total LU/ha	0.51	0.51	–	–	0.43	0.43	0.43	0.43	0.43	0.43	0.07	0.51

Overall mean: 0.35 LU/ha; summer mean: 0.43 LU/ha; winter mean: 0.27 LU/ha.

Supplementary feeding

No silage or hay fed to cattle, only concentrates from November to January.

Burning

No proper burning plan existed until 1991. Occasional spot burning was carried out by tenants, often of gorse, though dwarf shrubs would also have been burnt. Accidental burns have occurred throughout this period.

Conclusion

Past grazing, as judged by grazing licences, was light (although there is some evidence to suggest that this may not have been the case in practice). No major burns have been recorded and small, planned and accidental burns have contributed to the diversity of the heath. The regular winter cattle grazing of the same sized herd has also been beneficial (e.g. in maintaining habitat suitable for high brown fritillary), especially as they have not been fed hay or silage out on the heath.

SITE E9

Site summary

A grass moor of 97 ha, generally well stockproofed, with blanket bog and wet heath of high ecological value. Altitude range 300–400 m. Soils are mainly poorly drained, loams with peaty topsoil, with some areas of acid podsol. Management has been stable for many years, with sheep grazing only in the summer and cattle taken off in very wet winter conditions.

Vegetation

Largely acid grassland, with blanket bog and wet heath of high ecological value maintained by grazing and without any burning. The vegetation is quite heavily grazed for much of the year, but is nevertheless in quite good condition, without any evidence of overgrazing (apart from localised poaching on the slopes).

Vegetation types:

	Area (ha)	%
Acid grassland	82	85
Blanket bog	11	11
Wet heath	4	4

Farm enterprise

Type and ratios of stock

Cattle: Angus x Friesian, Hereford x Friesian and Simmental x Friesian.
Sheep: mainly Scotch Blackface.
Cattle 66% : sheep 34% (calculated from livestock densities in LU/ha)

Stock management

1992
Sheep:
Mid June–mid September, 300 ewes; mid October–mid November, 350 Scotch Blackface.

Cattle:
From mid-May to mid-July, 90 autumn calving cows. In dry years, from mid-November to the end of January, 70 spring calving cows are outwintered. In wet years, the cows are taken off early, often at the end of December.

No stock graze from February to mid-May.

1982–1991

Similar stocking regime, but with fewer sheep: 250 Scotch Blackface and about 75–80 cattle.

Stock numbers, densities and timings

1992

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	70	–	–	–	45	90	45	–	–	–	35	70
Sheep	–	–	–	–	–	150	300	300	150	150	150	–
Total LUs	70	–	–	–	45	113	90	45	23	23	58	70
Total LU/ha	0.72	–	–	–	0.46	1.16	0.93	0.46	0.23	0.23	0.59	0.72

Overall mean: 0.46 LU/ha; summer mean: 0.58 LU/ha; winter mean: 0.34 LU/ha.

Supplementary feeding

Cattle are fed 1 tonne of silage daily from November to January, avoiding the wettest areas. Mineral licks are also provided.

Burning

None.

Conclusion

The most valuable ecological part of this site, the blanket bog, has been maintained, despite quite heavy grazing. The management has been stable over recent years with no major changes. Cattle have been outwintered only in dry conditions, which has minimised poaching damage to the wet area.

SITE E10

Site summary

A tenanted area of 45 ha, including blanket bog of high ecological value, managed under a winter cattle grazing regime, though the general condition of the vegetation is considered to be somewhat overgrazed. Altitude 430–470m. Soils are acid podsols of the Lydcott series.

Vegetation

This site has a large area of blanket bog of high botanical value, with abundant *Molinia*, *Sphagnum* and occasional dwarf shrubs. This area has not been burned or drained and is of significant conservation importance. The remainder of the area is species-poor, semi-improved acid grassland, with a mixture of grasses and rushes. Apart from localised poaching around a mineral lick, the vegetation was in quite good condition when surveyed by EN in 1995. However, ESA heather monitoring in 1993 estimated 30% utilisation, with 83% of the samples being suppressed; 76% of randomly placed quadrats contained heather (68% building, 32% mature/degenerate), giving 11% mean cover of heather, and mean dwarf shrub height was 13 cm.

Vegetation types:

	Area (ha)	%
Blanket bog	25	56
Upland acid grassland	20	44

Farm enterprise

Type and ratios of stock

1960s–1996:
Summer: cattle only (South Devon, North Devon, Hereford cross and Charolais). Occasional Scotch Blackface sheep straying from neighbour (about 2–20 individuals at any one time).
Winter: no stock.

Stock management

Summer grazing of 60–70 suckler cows. No stock feeding.

Stock numbers, densities and timings

Stock numbers have remained stable since the 1960s at 60–70 cows plus calves each summer.

1960s–1996:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	–	–	–	30	65	65	65	65	65	65	–	–
Total LUs	–	–	–	30	65	65	65	65	65	65	–	–
Total LU/ha	–	–	–	0.67	1.44	1.44	1.44	1.44	1.44	1.44	–	–

Overall mean: 0.78 LU/ha; summer mean: 1.44 LU/ha; winter mean: 0.11 LU/ha.

Supplementary feeding

None.

Burning

None.

Conclusion

The management of this site has been stable for some years and has ensured the survival of the important vegetation communities. However, the stocking levels may be too high and some reduction should optimise the condition of the blanket bog and heather.

SITE B1

Site summary

A previously overgrazed 726 ha common, which has seen a dramatic regrowth of dwarf shrub following recent reductions in stocking level under MAFF guidance. Altitude 250–330 m. Soils are peaty gleyed podsols of the Hexworthy and Princetown series.

Vegetation

Significant blocks of this once heavily-grazed and grassy common have reverted to south-western heath, rather dominated by western gorse, with lower cover of heather and bell heather. In a survey of Bodmin Moor during 1994–96, an assessment of 18 grazing index units produced EN Grazing Index scores between 11.1 and 12.0 (highest in the grassier units), indicating heavy suppression. The remainder of the common is principally acid grassland and mire. Several blocks of what is now semi-improved grassland within the moorland received post-war applications of sea sand.

Vegetation types:

	Area (ha)	%
South-western heath	236	32
Acid grassland	236	32
Heath/grassland mosaic	95	13
Mire	108	15
Mire/grassland mosaic	45	6
Semi-improved grassland	22	3

Farm enterprise

Type and ratios of stock

Since 1990, the proportion of cattle has declined, whereas proportions of sheep and ponies appear to have increased. Cattle are principally a mix of Galloway and cross-breeds, whilst sheep are mainly Scotch Blackface.

Stock ratios (%), calculated from livestock densities in LU/ha.

	Cattle	Sheep	Ponies
1995	46.5	24	29.5
1994	48	23	29
1992	42	30	28
1991	54	37	9
1990	66	21	13

Stock numbers, densities and timings

The following tables are based on counts carried out by MAFF as part of its HLCA monitoring.

1995:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	128	71	91	136	71	92	156	74	126	90	78	104
Sheep	259	154	99	112	123	220	731	794	778	487	293	91
Ponies	101	62	45	76	48	62	53	67	66	60	80	51
Total LUs	268	156	151	229	137	187	319	260	309	223	202	169
Total LU/ha	0.37	0.21	0.21	0.32	0.19	0.26	0.44	0.36	0.43	0.31	0.28	0.23

Overall mean: 0.30 LU/ha; summer mean: 0.33 LU/ha; winter mean: 0.27 LU/ha.

1994:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	221	199	155	71	100	98	91	126	43	84	84	105
Sheep	262	282	258	97	72	295	308	1166	794	489	294	130
Ponies	65	64	48	71	127	42	77	63	71	74	20	93
Total LUs	325	305	242	156	238	184	214	364	233	231	148	218
Total LU/ha	0.45	0.42	0.33	0.21	0.33	0.25	0.29	0.50	0.32	0.32	0.20	0.30

Overall mean: 0.33 LU/ha; summer mean: 0.34 LU/ha; winter mean: 0.32 LU/ha.

1992:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	160	62	64	35	45	23	146	121	94	98	127	144
Sheep	122	101	28	56	51	198	1117	1299	1021	817	281	116
Ponies*												

* monthly figures for ponies not available, but average number counted during the year was 62.

Overall mean (including pony average): 0.30 LU/ha; summer mean: 0.36 LU/ha; winter mean: 0.25 LU/ha.

1991:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	152	82	63	95	58	69	84	136	54	89	218	229
Sheep	411	158	67	16	251	533	865	1132	1251	709	156	442
Ponies	30	58	40	91	(55)	(55)	(55)	(55)	(55)	(55)	(55)	(55)
Total LUs	244	164	113	188	151	204	269	361	297	250	296	350
Total LU/ha	0.34	0.23	0.16	0.26	0.21	0.28	0.37	0.50	0.41	0.34	0.41	0.48

Ponies assumed to be 55 (the mean for January–April) for May–December, in the absence of count data

Overall mean: 0.33 LU/ha; summer mean: 0.35 LU/ha; winter mean: 0.31 LU/ha.

1990:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	231	?	143	132	?	?	357	117	143	205	208	223
Sheep	240	?	120	–	?	?	1335	725	278	444	114	476
Ponies	50	?	92	74	?	?	28	–	–	72	24	–
Total LUs	317	?	253	206	?	?	585	226	185	344	249	294
Total LU/ha	0.44	?	0.35	0.28	?	?	0.80	0.31	0.25	0.47	0.34	0.40

Overall mean: 0.41 LU/ha; summer mean: 0.46 LU/ha; winter mean: 0.36 LU/ha.

Supplementary feeding

Hay and cobs have been fed for some years, though this has declined with the lowering of stock numbers since 1990.

Burning

No burning was carried out until one large block (perhaps over 50 ha) 1996, when commoners and others felt unable to tolerate the obstruction caused to stock, horses and humans by the western gorse component of the heathland. The dwarf shrubs had "closed canopy" and attained a height of 30–40 cm after five years of apparently unsuppressed growth.

Conclusion

South-western heath has re-grown strongly over much of the site after 1990, since the stocking level of 0.41 LU/ha (0.46 in summer, 0.36 in winter) was reduced to 0.28–0.33 subsequently (0.33–0.36 in summer, 0.25–0.32 in winter).

In contrast, another heathland block of 1418 ha **[West Moor]**, monitored over the same period has <u>not</u> shown such dramatic heathland restoration, despite similar reductions in stocking. Survey of 19 grazing index units in 1994–96 gave EN Grazing Index scores of 11.7–12.0. The stocking levels (LU/ha, from MAFF counts) at this site have been as follows:

	1990	1991	1992*	1994	1995
Summer	0.42	0.30	0.40	0.32	0.25
Winter	0.31	0.21	0.31	0.21	0.29
Overall	0.35	0.26	0.36	0.26	0.27

* including an assumed monthly total of 100 ponies.

The lack of response at this second site is no doubt results from very heavy dressings of sea sand (lime) applied in the 1940s to reduce acidity: some hundreds of tonnes were spread widely over the common. This "sweetened" much of the herbage and encouraged hard grazing, which removed dwarf shrubs extensively. Subsequently, there was a history of winter feeding damage up to 1990, with a high ratio of sheep present.

SITE W1

Site summary

A 50 ha block of south-western heath, grazed (unusually for West Penwith) by a mix of cattle and sheep, in conjunction with further blocks of "rough" land totalling 130 ha. The site is a common, with one main active commoner. Altitude 200–240 m. Soils are organic sandy silt loams of the Hexworthy series. After cessation of grazing because of TB in the 1940s, the site was managed only by extensive burns, roughly every ten years, the last in 1981. In the mid-1980s, agricultural management was re-introduced, initially using ponies for a year to create a system of pathways through the dense heath.

Vegetation

Over 90% of the site is covered with dense south-western heath (H4), well dissected by paths and tracks. Limited areas of wet heathland communities occur on a plateau area, while the lower slopes have small areas of dense bracken and gorse.

Farm enterprise

The main commoner runs a beef and sheep enterprise, having left dairying recently. He has about 73 ha of "clean" (inbye) land and a further 300 ha of "rough" land available for grazing.

Type and ratios of stock

Cattle: Galloways and Highland (10–12).
Sheep: Cheviots (300), plus 30 half-breds in June/July.
Cattle 23% : sheep 77% (based on livestock densities in LU/ha).

Stock management

Sheep (300) and cattle (10–12) are run between this site and neighbouring rough land, the former having free movement, the latter being moved between units in order to enhance habitats (e.g. cattle moved onto this site to control purple moor-grass in mid-June, and off another in late winter to avoid damage to vernal communities under bracken). Cattle are on inbye from March to mid-June for calving and the bull is introduced in August. Sheep lamb on rocky ("sacrificial") rough land elsewhere during March/April.

Stock numbers, densities and timings

Figures in the following table have been adjusted to account for time spent outside this grazing unit.

1995–1996:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cattle	4	4	–	–	–	10	7	4	4	4	4	4
Sheep	100	100	50	50	100	100	100	100	100	100	100	100
Total LUs	19	19	8	8	15	25	22	19	19	19	19	19
Total LU/ha	0.38	0.38	0.15	0.15	0.3	0.5	0.44	0.38	0.38	0.38	0.38	0.38

Overall mean: 0.35 LU/ha; summer mean: 0.40 LU/ha; winter mean: 0.30 LU/ha.

At times during the last decade cattle numbers have been higher, with up to 80 at times during December–March, being supplementary fed on a bracken area or on adjacent inbye. At such times the total stock level was up to 1.9 LU/ha and some trampling damage and erosion occurred in the vicinity of the feeding sites.

Supplementary feeding

Supplementary feeding (see above) has resulted in localised poaching and has now stopped following intervention by the ESA Project Officer. Apart from this, small quantities of hay and silage have been fed to the cattle when they were on inbye prior to calving. Sheep require cobalt intake.

Burning

In 1981, an extensive fire spread over most of the common, the last of several extensive fires at roughly ten-yearly intervals during 40 years which lacked any other management. Two small (2–3 ha) blocks have been burned, in 1989 and 1996, under ESA agreement. These have been burnt to natural firebreaks (i.e. tracks) in the absence of a practical alternative in the rocky terrain typical of West Penwith.

Conclusion

This relatively large heathland block has been maintained in generally good condition over the last decade by a mixture of hardy cattle and sheep, following the use of ponies to open up a system of pathways through otherwise virtually unbroken heath. Occasionally, cattle outwintered at high density have caused localised habitat degradation as a result of trampling and supplementary feeding. Small-block burns commenced with ESA agreement, adding some diversity to the heathland age-structure. Comparison with a similar adjacent, but ungrazed (and unmanaged, since being burned in 1981) site reveals the value of using livestock and carefully planned, small-scale burns in producing structural diversity to the heathland.

SITE W2

Site summary

An inland heath of **[area to be confirmed]** at an altitude of 180–200 m, grazed by cattle and burned by a single active commoner. Soils are mainly acidic organic sandy silt loams of the Hexworthy series.

Vegetation

This unit comprises mostly south-western heath (H4) of variable quality, with an area of valley mire. An EN Grazing Index assessment in 1995 covering part (17 ha) of the common most degraded by frequent burning and grazing (see below under "Burning") produced scores of 7 and 8 (with component 1, 2 and 3 scores of 2, 4, 1 and 2, 4, 2 for the index units), suggesting intermediate–poor condition.

Farm enterprise

Type and ratios of stock

Only cattle are grazed, by the single active commoner.

Stock management

Cattle roam widely over the unit during the day, but are housed at night.

Stock numbers, densities and timings

Cattle have been grazed all year round by a single commoner for about 30 years at about 0.14 LU/ha, but with considerable variation over the unit, due to concentration on areas which have been burned regularly.

Supplementary feeding

Stock are not fed on the common.

Burning

The active commoner has burned some areas of dwarf shrubs about every four years: with the concentration on these areas by stock, the dwarf shrubs have become stunted and bare ground is permanently visible; soil analysis indicates that such areas have become exceptionally nutrient-poor. Other, "accidental", burns have occurred in summer, including inappropriate areas such as valley mire.

Conclusion

This common is very diverse, although exhibiting some symptoms of poor management, such as burning at frequent intervals.