

# Gorse consumption of ponies: a review

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Figure 1. Gower Pony Experience pony eating European Gorse on Wildlife Trust of South and West Wales: Overton Cliff, Gower, S. Wales.

Gorse has been demonstrated to be consumed by ponies grazing Atlantic Heath areas in both the UK (Tyler, 1972, Pratt *et al*, 1986, Putman *et al*, 1987, Baker, 1993, Bullock & Pakeman, 1996) and in North West Spain (Riguiero-Rodriguez *et al*, 2012, Aldezabal *et al*, 2013, Ferreria *et al*, 2013, Fagundez, 2016, Lopez *et al*, 2017a and b, Gonzales-Hernandez *et al*, 2020). It is noted that where heathland is the predominant resource, that goats are superior to sheep, and ponies superior to cattle in terms of how well they thrive in the environment as well as their impact upon it (Garcia *et al*, 2012). Grazing animals create and maintain their own short forage, a dynamic equilibrium which is estimated to take five or more years (Bullock & Pakeman, 1996). Long-term grazing by ponies and cattle in the New Forest has resulted in short and closed small scale mosaic of heath and acid grassland vegetation with lower amounts of scrub and *Molinia* species – harder grazing reduces dwarf shrubs and increases the number of microsites for species with low competitive ability and increases species richness (Bullock & Pakeman, 1996). Where pony grazing was used to reduce gorse dominance in an Atlantic heather-gorse dominated understory in NW Spain, plant biodiversity was increased under both rotational and continuous grazing (Riguiero-Rodriguez *et al*, 2012) and a greater positive impact on biodiversity was still seen 6 years after grazing had been suspended in continuous versus rotational grazing (Gonzales-Hernandez *et al*, 2020). Higher levels of biodiversity have also been recorded where ponies graze endemic *Erica mackayana* wet heath in Galicia, NW Spain (Fagundez *et al*, 2016).

Research encompassing gorse consumption by ponies focuses on the effects of season on volume consumed (Putman *et al*, 1987 and Baker, 1993), the effects of rotational versus continuous grazing on plant species diversity and suppression of gorse fuel load (Riguiero-Rodriguez *et al*, 2012 and Gonzalez-Hernandez *et al*, 2020), the effects of grazing on plant composition and species diversity (Bullock & Pakeman, 1997, Lopez *et al*, 2017a) and on the welfare of ponies grazing heathland (Lopez *et al*, 2017b).

## Seasonality of Gorse Consumption

Ponies select their diets to maximise productivity and digestible nitrogen content (crude protein), and it is also likely that they select their diet in order to get the greatest intake of digestible fibrous, dry matter according to the season. Western Gorse is equivalent to grass in its crude protein content: grass 113g CP per kg dry matter, gorse 115g kg dry matter (Lopez *et al*, 2017b) – European Gorse is likely to have a similar feed value having been traditionally used as winter livestock fodder

in the UK. Ponies prefer to graze grass but over winter consume proportionally more gorse; January to March making up 10.2 to 11.8% of their total diet in the New Forest (Table 1: Putman *et al*, 1987) and 32% on Exmoor (Table 2: Baker, 1993). Putman *et al* (1987) note a marked changeover in diet in April and May to a predominately grass based diet (80 to 90% grass) and from October to December a shift away from grass which reduces to 50%, with gorse and holly leaves making up most of the difference.

**Table 1: Proportion of Gorse and Heather in the winter diet of ponies grazing the New forest. Putman *et al*, 1987**

Month	October	November	December	January	February	March	April
Gorse	1.2	3.3	9.0	11.8	12.8	10.2	1.2
Heather	2.5	5.3	9.7	6.7	7.3	5.2	3.2

**Table 2: Pony Diets – Withypool Common, Exmoor in 1976 (hot, dry summer) Baker, 1993**

Plant type	Percentage of diet (as recorded from identifiable plant material in faeces)				
	Winter	Spring	Summer	Autumn	Total Diet
Grasses	31	57	76	60	58
Rushes	4	11	7	8	8
Heather	14	15	4	8	10
Gorse	32	1	-	9	9
Bracken	-	-	1	-	-
Other	19	16	12	15	15

Gorse made up over 25% of the ponies' diet in gorse-heather heath in NW Spain in October and November before they were removed to housing on lower pastures (ponies managed for meat production) (Ferreira *et al*, 2013). In Riguero-Rodriguez *et al* (2012) it was noted that gorse reduction was more marked in the second period rotation occurring from January to May compared to the first period which encompassed later summer and autumn where it's possible the ponies had not fully switched to a winter diet as observed by Putman *et al* (1987) and Baker (1993).

## Gorse versus Heather Consumption

It is generally cited that horses do not eat heather, yet the results of both Baker (1993) and Putman *et al* (1987) clearly refute that since heather consumption is clearly recorded. Heather itself is reported to have a lower crude protein content: 79g per kg of dry matter (Lopez *et al*, 2017b) and is a more lignified plant making it less palatable to ponies. Lopez *et al* (2017b) compared the proportions of plant species consumed across three vegetation types: heather dominant, gorse (Western Gorse *Ulex gallii*) dominant, and gorse-heath grass (see table 3).

Table 3. Vegetation types and plant composition. Lopez <i>et al</i> , 2017b							
Enclosure Vegetation Type	Percentage cover in 2010				Total diet composition 2010 to 2012 (%)		
	Heather	Gorse	Herbaceous plants inc. grass	Other e.g. dead material	Heather	Gorse	Grass
Heather	40	15	10	35	38		48
Gorse	5	52	13	30		49	42
Gorse-Grass	4	39	27	30		40	50

Over three successive grazing periods, each from May to October (or earlier when ponies with poor bodily condition were removed) from 2010 to 2012 heather cover increased across all three vegetation types, even despite increased heather consumption in proportion to availability in the Heather vegetation type enclosure. Gorse cover decreased across all enclosures (mean 35% in 2010 down to 24% in 2012) and herbaceous cover increased from a mean of 16% in 2010 to 23% in 2012). Ponies maintained good bodily condition in both the gorse and gorse-grass enclosures but lost weight and had to be removed early from the heather dominated enclosure. This indicates that where stocking density is higher (the New Forest has a high stocking density (Putman *et al*, 1987)) and where heather cover is greater, ponies are more likely to consume heather as a result. But where gorse is available as an alternative it is more likely to be eaten in favour over heather.

However, where ponies were grazed on short heathland in the Cantabrian Mountains of NW Spain (63% heather cover, 19.3% Western Gorse, 9.7% herbaceous and 8% dead cover) with access to



*Figure 2. Ponies' ability to eat larger volumes of gorse lies in their ability to dexterously handle the material with their mobile lips and top and bottom incisor teeth and to grind with their large molars as well as their ability to ferment the crushed gorse in their hindgut to unlock its nutritional value*

improved pasture (57% perennial rye grass, 20% white clover and 16.7% native grasses and other plants) from May to the end of November, ponies ate increasingly more gorse from September (17% of diet) to November (28% of diet) but also more heather (17% of diet) in September, whereas in other months heather consumption was much lower, between 1 and 5% of total (Ferreira *et al*, 2013). It might be that heather was more palatable for some reason during that month than at any other time in the May to November study period. Although gorse and herbaceous plant consumption still reached higher levels.

### Stocking density, grazing strategy, gorse distribution, cutting and burning

Cutting and burning gorse each encourage gorse regeneration and encourage grazing animals into gorse dominated areas (Bullock & Pakeman, 1996). Ponies eat more gorse when it is found growing alongside favoured grass patches (Aldezabal *et al*, 2013), and while cutting and burning gorse each allow more tender, young shoots of gorse to proliferate which are more palatable (Riguiero-Rodriguez *et al*, 2012), it might also be the case that such cutting or burning also allows regeneration of grass, also attracting grazing ponies who bite more gorse adjacent to preferred grass patches.



*Figure 3. Gorse is more likely to be bitten where it is found alongside patches of grass, opening up more area adjacent to gorse for colonisation by other flora*

When sites are stocked at over 400kg of pony per hectare, gorse cover has been shown to decrease: Lopez *et al* (2017a & b) at just over 500kg of pony per hectare and Riguiero-Rodriguez *et al* (2012) at 400kg of pony per hectare. Rotational grazing in the study by Riguiero-Rodriguez *et al* (2012) had a greater impact on reducing gorse cover compared to continuous stocking. Rotational grazing prevented the ponies from only selecting the most palatable parts of the gorse plant and prevented a dynamic equilibrium forming between the ponies and the gorse. After 2 and 6 year pauses from grazing the effects of grazing at this site could still be seen. Grazed sites had higher total and rare species richness compared to ungrazed control areas after six years rest from grazing regardless of the system however this effect declined after six years (Gonzalez-Hernandez *et al*, 2020).

## Recommendations

Ponies eat increased amounts of gorse when the stocking density is higher ( $\geq 400$ kg of pony liveweight per hectare) and during the winter months. Therefore, to reduce gorse cover, stocking density is likely to need to approach 400kg of pony per hectare, and or that grazing is continued over winter. Gorse offers a feed value roughly equivalent to native grasses therefore high proportions of

gorse in the diet are unlikely to result in undernourished ponies with consequent poor welfare. Where there are large areas of exclusive gorse cover, cutting some of the gorse will enable the ponies to increase their gorse intake directly through provision of younger, more palatable gorse shoots, and indirectly by allowing more grass cover to infiltrate the gaps.

### Gower Pony Experience ponies

Our ponies weigh between 150 and 250kg.

## References

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