

# Restoring Reedbed Habitat—A Case Study in Northern England.

S. Ross<sup>1</sup>, G. Hammond<sup>1</sup>, J. Traill<sup>2</sup>

<sup>1</sup>Penny Anderson Associates  
<sup>2</sup>Yorkshire Wildlife Trust  
Natural England

Penny Anderson Associates was commissioned by Yorkshire Wildlife Trust to design and carry out vegetation monitoring at Pulfin Bog Site of Special Scientific Interest (SSSI). The 3 year study aimed to identify changes in common reed (*Phragmites australis*)-dominated fen and reed sweet-grass (*Glyceria maxima*)-dominated swamp.

The reed-dominated community represents the main interest feature of the site and there is some concern that it's extent is decreasing, while the species-poor *Glyceria*-dominated community may be increasing. Management objectives for the SSSI are targeted towards increasing the extent and species-diversity of the *Phragmites* fen.

Different areas of the site have been subject to four different management regimes (summer grazing, winter cutting of reed, summer cutting of reed and an untreated area) in order to reduce reed sweet-grass dominance and increase overall plant species diversity across the site. The effect on vegetation and rare plant species was monitored from 2011 to 2013.

Summer cutting appeared to be the most successful treatment, but results suggest hydrological restoration needs to be included alongside vegetation management to more fully restore the reedbed habitat.

## The Monitoring:

A vegetation monitoring strategy was devised and implemented from 2011 to 2013 comprising:

- National Vegetation Classification (NVC) and Nationally Scarce plant surveys.
- Mapping the reedbed extent.
- Monitoring the effect of the different management treatments.
- Sampling water/peat chemistry and peat depth.

## NVC Community Types:

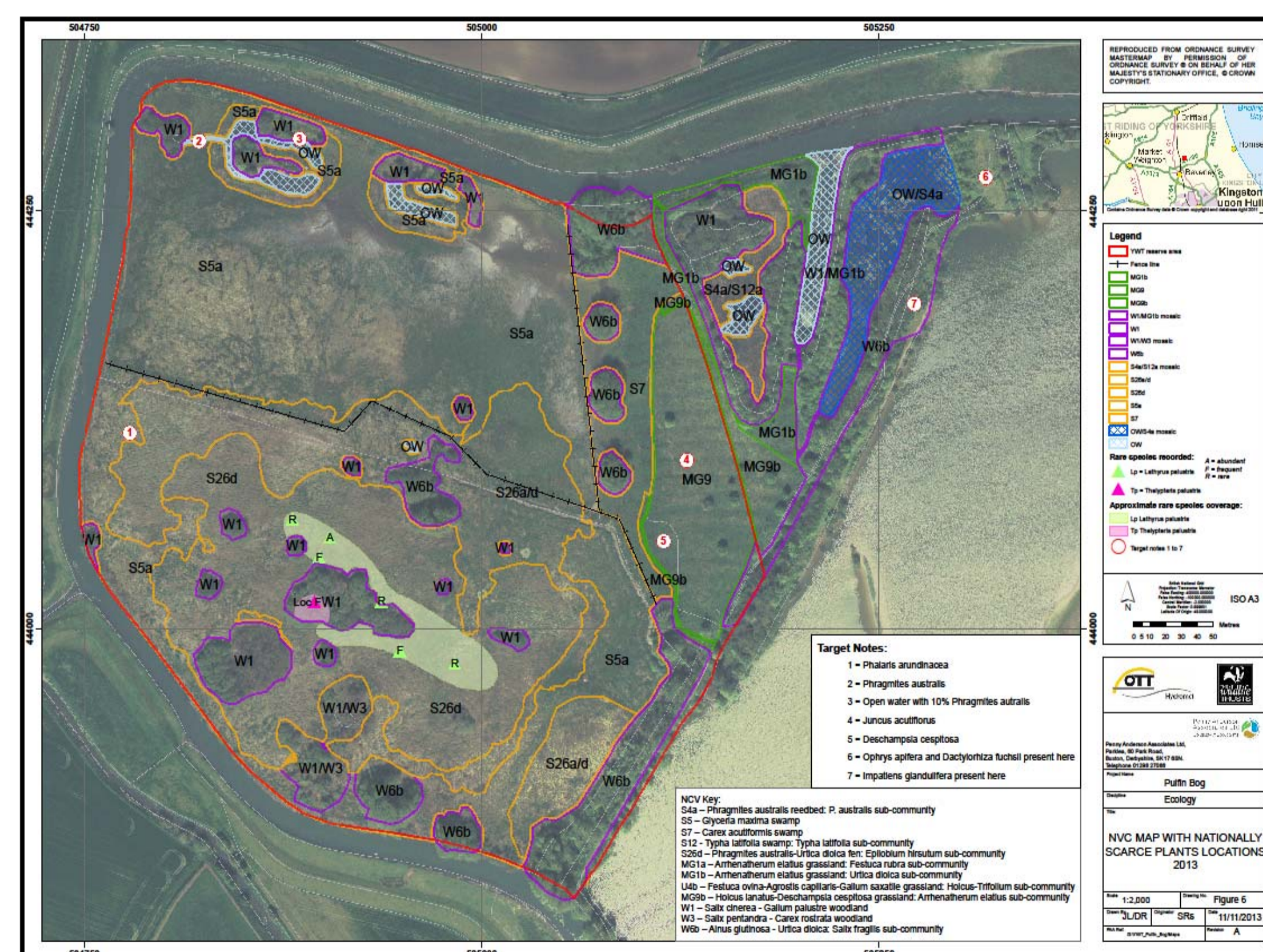
The NVC survey identified S26d *Phragmites australis* – *Urtica dioica* fen, *Epilobium hirsutum* sub-community with pockets of S4 *Phragmites australis* swamp/reedbed.

The vegetation is typical of floodplain fens and associated with winter flooding occurs. On Pulfin Bog, springs from the chalk aquifer and winter flooding from the river are important in the overall hydrological regime.

The wetland area to the north is S5 *Glyceria*-dominated swamp.

S7 *Carex acutiformis* swamp occurs as restricted pockets of vegetation within the main wetland.

The current survey mapped the 11ha of S26d reedbed, an increase from the 7ha previously mapped, suggesting that the retraction of the reedbed has been halted.



## Rare Plants:

Marsh pea (*Lathyrus palustris*) and marsh fern (*Thelypteris palustris*) were both relocated on the wetland area.

Marsh pea was also noted along the grassland/wetland edge to the east of the reserve.

Fibrous tussock sedge (*Carex appropinquata*) was not relocated on site and may now not occur on this site.



## The Management Effects:

**Treatment 1 (summer cattle grazing)** was applied to reed sweet-grass areas. This treatment showed no trends in reducing cover of reed sweet-grass or increasing the cover of common reed.

There was a reduction in the height of the vegetation in the first year after cattle grazing was introduced (2012) although this recovered in 2013.

There was a more sustained trend towards increasing plant diversity.

**Treatment 2 (winter cutting)** was applied where common reed was being out-competed by reed sweet-grass. There were small reductions in reed sweet-grass and small increases in common reed.

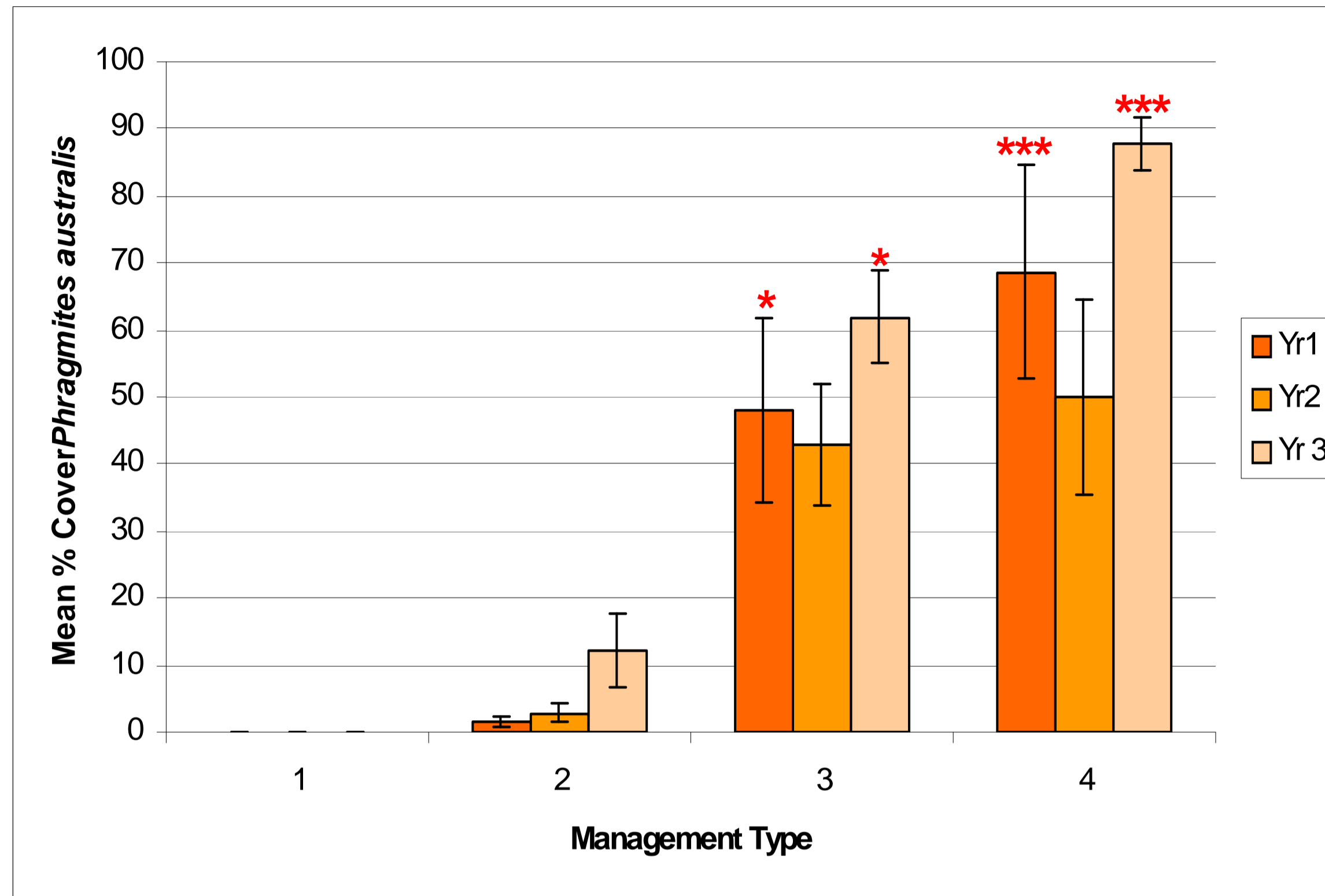
Vegetation height and plant diversity remained stable with winter cutting not impacting on the summer re-growth.

Overall this treatment may result in very slow re-establishment of common reed in place of reed sweet-grass, but the effects appear relatively weak.

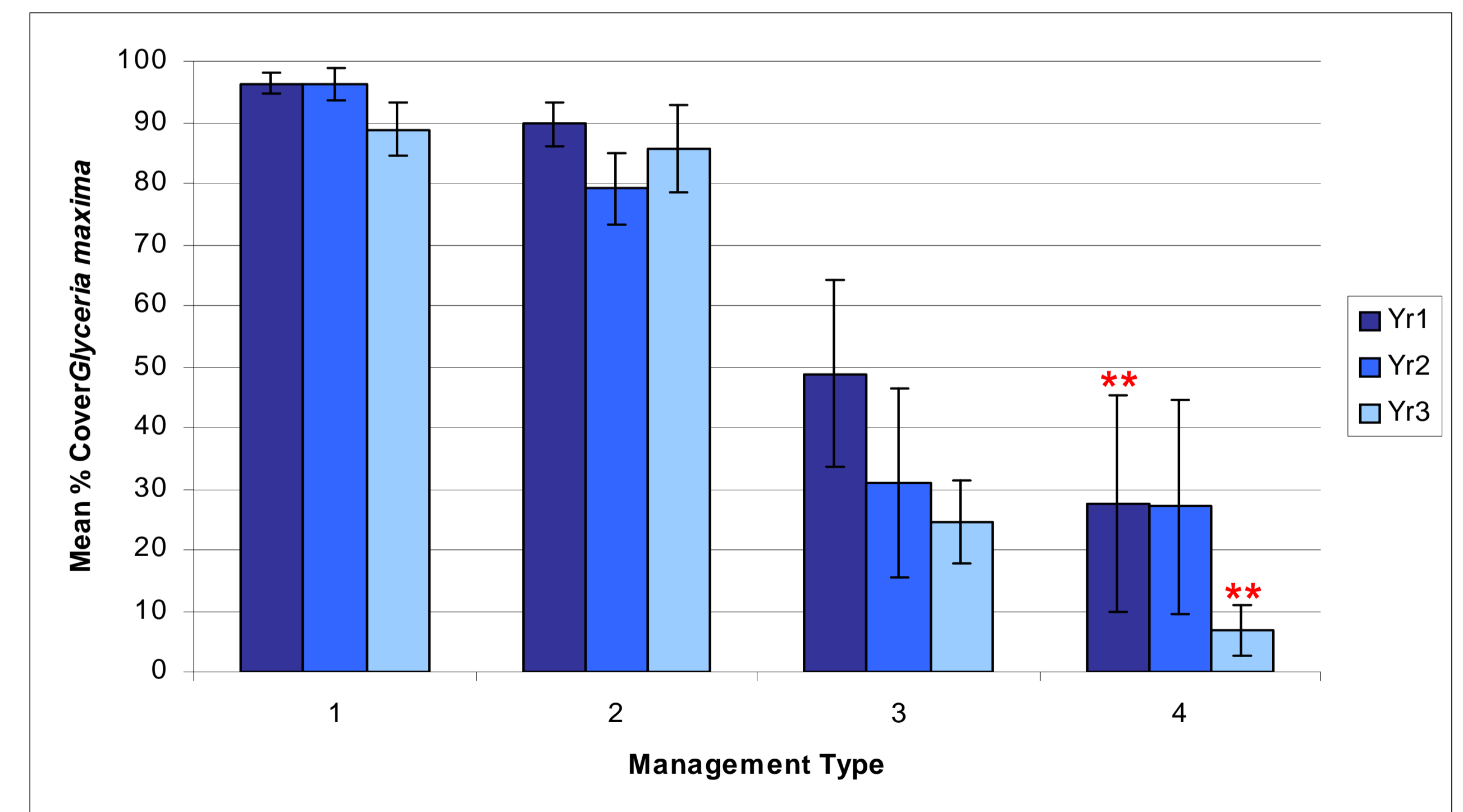
**Treatment 3 (summer cutting)** was on common reed dominated areas with the aim of diversifying the reedbed. Reed sweet-grass was already at a lower cover but the management reduced further the cover of this species. There was a small increase in common reed suggesting summer cutting benefits this species.

Overall, this treatment yielded the greatest benefits in terms of the objectives set for the site.

**Treatment 4 (no grazing, no cutting)** was applied to the reedbed area. This area acted as an untreated site helping to identify if factors other than the management treatment applied might be acting upon the vegetation. This area followed Treatment 3 very closely, showing similar trends in reducing reed sweet-grass cover, increasing common reed cover, increasing vegetation height and increasing species diversity over time.



**Figure 1** Change in Cover of Common Reed Under Different Management Treatments (2011—2013).



**Figure 2** Change in Cover of Reed Sweet-grass Under Different Management Treatments (2011—2013).