

Ash and Martock Nature - Phosphate Survey

Report 3

Wetmoor

Andrew Clegg, July 2022

Wetmoor lies between Long Load and Langport and spans the River Yeo. It is an SSSI and is designated as of international significance under the Ramsar Convention. The Moor is fed naturally by run-off from higher ground north and south. All water ultimately drains into two drains north and south of the Yeo. The main focus of this study is Long Load Main Drain which flows via sluices through four levels (Outmoor, Wetmoor, Whitmoor and Eastmoor) before being moved up into the Yeo at Huish Pumping Station normally by a single pump (a little over 1m³/sec) controlled automatically by variations in the Main Drain level. A secondary source of water is Thorney Moor, the low land around Muchelney bordering the river Parrett.

The Moor is shown on the map which also shows seven sampling points (A to G) selected to illustrate changes in phosphate concentration as water flows through the moor south of the river.



Wetmoor Hydrology

The map shows the Moor hydrology under normal summer conditions when the catchment flow is supplemented by three inlets from the rivers. Two inlets provide a flow from the Yeo upstream near Long Load. This flow is controlled by sluices with all the water ultimately entering the Long Load Main Drain which is pumped back into the Yeo at the Huish Pumping Station.

A third inlet takes water from the Parrett upstream near Thorney and the main drain flows alongside and then under the Langport-Muchelney road ultimately joining the main drain a little upstream of the pumping station.

Wetmoor Phosphate Loads (ppm)

The table shows phosphate measurements at points A to E on the map in the first 6 months of 2022.

Winter management (Nov-Mar) - all inlets from Parrett and Yeo closed

Summer management - three inlets open, one from Parrett, two from Yeo feeding sluice D

Month	Management	A	B	C	D	E
		Parrett at Muchelney	Flow from Parrett inlet under Muchelney Road	Long Load Main Drain at Huish pump outlet.	Sluice controlling water flowing down the moor	Yeo at Long Load
February 2022	Winter	0.56 ppm			0.00 ppm	0.49 ppm
March 2022	Summer*	0.90 ppm	0.16 ppm		0.00 ppm	0.31 ppm
May 2022	Summer		0.15 ppm	0.14 ppm	0.40 ppm	0.82 ppm
June 2022	Summer	1.63 ppm	0.73 ppm	0.20 ppm	0.76 ppm	0.85 ppm

*Yeo inlets open but Parrett inlet closed because of insufficient water.

Note - a watercourse in a good ecological state has a phosphate load of less than about 0.04ppm

Emerging patterns

- Wetmoor receives no excessive phosphate from its agricultural catchment and so is an example of what the Moors could be like. The only excess phosphate is delivered from the rivers Parrett and Yeo when inlets are opened in summer.
- The two rivers, Parrett and Yeo, show a permanent phosphate concentration seldom below about 0.5ppm in winter and 0.8ppm in summer, the Parrett being the higher. This is notably largely independent of the rate of flow and river level and is possibly related to legacy phosphate within the river silt.
- When the two inlets from the Yeo are opened in summer, phosphate is detected in Wetmoor rhynes in concentrations that decrease as the water flows away from the inlets. The concentration is reduced by around 75% by the time it reaches the pump at Huish but this could in part be caused by dilution by run-off from the higher land to the south. This raises the question of what ultimately happens to the phosphate removed; is it recycled back to the river in winter or does it permanently enter the Moor sediments?
- The concentration of phosphate reaching the Huish pump shows a steady increase during the summer. It is anticipated that this will drop back to zero when the inlets are closed in winter.
- There is some evidence that when the Huish pump is on in normal conditions, phosphate concentration in the Yeo is diluted by around 5%. The pump typically is triggered for 15 minutes each hour.
- In summary, the mass of phosphate, above normal levels, entering Wetmoor from its catchment annually is zero. The mass entering the Moor from the river inlets and subsequently recycled is probably of the order 1 tonne annually.

Data sources

Survey data. <http://www.somersetlevelsphosphate.org.uk>

Pump activity. <https://riverlevels.uk/long-load-main-drain-muchelney-huish-episcopy-ps> and <https://riverlevels.uk/river-yeo-muchelney-huish-episcopi-ps>