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A very low River Wye in Hereford this summer

West Country naturalist and scientist Dr Mark Everard looks at the effects on our rivers of the UK's hot, dry summer

The pros and cons of the hot summer on our rivers

The drought of 1976 may have seen more prolonged days without rain, but 2018 has certainly been a scorcher during which Iberia bathed in near-record temperatures of up to 48°C. However, in comparing years, we have to account of the facts that we now live in a more crowded world with an 80 per cent greater human population with a rising per capita water demand.

Today's world is far thirstier, placing ever-greater demands on rivers and other surface waters but, more significantly, on unseen groundwa-ter reserves extracted in rising volumes. Depleted groundwater dries wetlands, springs and underground inputs to rivers (known as ‘base-flow’). Signs of stress on our rivers, as on our crop and grazing lands, are all too apparent.

Declining water depth and flows matched by rising temperatures and depressed oxygen levels mean that fish kills, as well as heroic fish rescues, have been topical. Algal growth stimulated by warm and sluggish current has also swamped native water plants and choked gravels with brown films, algal-enriched silt layers also bubbling up and often mistaken for sewage pollution.

For the naturalist, the signs have been there since far earlier in the year, even during those earlier months when people were asking, “Will it ever stop raining?” As the age-old country saying goes, “If the oak is out before the ash, then we’ll only have a splash; if the ash is out before the oak, then we’ll surely have a soak.” In early April this year, the leaf buds of oak tree burst out a full fortnight ahead of those of the ash. Mother Nature clearly had an inkling of what was to come.

However, drought does not automatically mean doom and gloom for all of river life. For some of our fish, it is in fact very good news. This is particularly so for summer-spawning species found at the north of their geographical distribution in Britain, in particular, the chub, often conspicuous cruising the warm surface during sunny days, and the barbel that mainly resides on the river bed.

Both of these fish need warm river water to stimulate late spring or early summer spawning, and may in some cool years fail to spawn entirely. As for many river fish, there is also a seasonal ‘double whammy’ favouring or inhibiting successful procreation. The first whammy relates to the need for adequate food and no excessive cold during the winter preceding spawning, enabling female fish to invest a good quantity of yolk into the eggs maturing within their bodies. Without this boost, the subsequent growth of hatching fry may be significantly compromised. The second whammy is the requirement for warm, shallow river margins, as much as 10°C warmer than water in the main river channel, supporting rich algal and small invertebrate food and promoting the rapid growth of juvenile fish.

Rapid growth in their first summer is vital if these small fish are to endure autumnal and winter spate flows. A cool summer following a cold winter is very bad news indeed often resulting in a complete wipe-out of the year’s hatchings, while drought conditions can lead to a strong ‘year class’ of young fish joining the population.

Some waterside plants too, particularly annuals with heavier seeds, can prosper on gravel and silt margins exposed by declining water levels. These include some of our scarcer species, adapted to exploiting and also closely dependent upon this type of environmental variability.

Nature is nothing if not adaptive, but also fascinating. No two years or seasons are a carbon copy in terms of temperature, rainfall and other factors, so the precise tapestry of nature changes constantly. Though seasonal patterns repeat year after year, different species predominate. For the river-watcher, there is always something exciting happening in every season, be dry or wet.

Dr Mark Everard’s new book Riverwatch: The Waterside Diaries of a Naturalist-Angler celebrates the vista of river life as it morphs with the seasons. Mark is a naturalist, angler and scientist living in north Wiltshire, and an avid river watcher.