

Barbel-frien

If you think that is a daft title, try thinking about the opposite; just how many examples of barbel-unfriendly farming have you seen?

Never mind the sight of dead fish floating after a severe farm pollution incident, the less obvious, more insidious effects of farm pollution may still lead to the decline or loss of a barbel fishery. Every issue of Fish Legal details at least one serious pollution incident involving farm pollution and Environment Agency statistics indicate that there are still major problems, so this is something which needs to be dealt with. However, before going into the fixes which are being put in place, it is as well to think about farm pollution and just how it affects barbel fisheries.

Farm pollution and its effects

Some of the sources of farm pollution can be quite difficult to spot and, given that the impact may also not be obvious, it is quite easy to miss what is going on. Some of the main pollutants and their impacts include:

Phosphate – farming accounts for major phosphorus inputs in some catchments. It comes from fertilisers applied to crops and to pastures and from urine and manure from livestock. While phosphorus binds to soil, there is only so much it can hold and after that it gets

released and washed out to end up in water courses. Excess phosphorus leads to eutrophication which in turn leads to excess growth of plants. The main problem is that phosphorus tends to encourage growth of diatoms which grow on the plants, choking them and leading to a loss of cover. Diatoms can also grow on gravels, leading to them getting blocked up and of no use for spawning barbel.

Nitrogen – this is another nutrient which leads to eutrophication. As with phosphorus, nitrogen can come from fertilisers applied directly to fields as well as from urine and manure from livestock. Excess nitrogen tends to lead to excess weed growth and can also lead to algal blooms (green water).

Pesticides – a major pesticide incident usually leads to lots of dead fish, but chronic pollution can also have an enormous impact on fisheries. While they may not kill fish, pesticides can wipe out their invertebrate food as has happened up upland rivers with sheep dips. While spills or careless spraying may lead to a major incident, pesticides can get into rivers in unlikely sounding routes such as through being bound to soil particles.

Manure – in addition to nitrogen and phosphorus, manure can bring a host of other problems. Manure has a very high BOD (biological oxygen demand) which leads to rapid deoxygenation of the water. It also tends to contain high levels of ammonia which is highly toxic to fish. Manure can be washed directly off fields by heavy rain but leakage from slurry pits is also a major problem and the liquid from these can be highly polluting.

Silage – obviously nobody goes around throwing silage into the water, but if you have ever been close to a silage clamp, apart from the smell, you would also see liquid seeping from it. This is highly polluting, with a very high BOD, and is very acidic. Being highly liquid, it is capable of seeping into waters unnoticed which can give major water quality problems.

Soil – this is often overlooked but it is still a serious pollutant. In addition to all the other pollutants which may be carried with the soil, soil particles cloud water cutting out light which will, in combination with the smothering effects lead to a loss of plant growth. Soil will also choke spawning gravels and lead to consolidation which makes it impossible for barbel to spawn. Even if they did spawn, the eggs would probably be smothered by sediments and die.

Is it a big problem?

It is difficult to get detailed information on low-level pollution incidents, but there are quite good statistics

available for Category 1 (major) and Category 2 (serious) incidents, both of which are likely to result in a significant impact on a barbel fishery. To put things in perspective, overall Category 1 and 2 incidents have fallen dramatically over the years, declining from over 7,000 in 1993 to 723 in 2008. Farming accounted for about 20% of all Category 1 and 2 incidents and appears to have accounted for a similar number of incidents in recent years after the initial, steep fall. There were also 14,924 Category 3 (minor) incidents in 2008, but it is not clear what proportion of these were caused by farming. Clearly, farm pollution is still a big problem, especially when the low-level effects are taken into account. An indication of the scale of soil erosion can be had from the fact that DEFRA say that soil loss can be as high as 20 tonnes per ha per annum and the Environment Agency reckons that total soil loss in England and Wales is 2.2 M tonnes per annum and a fair bit of that ends up in rivers.

How does it happen?

Pollution incidents from agriculture are very varied in their causes, but the thing that links them all together is water. Water is an excellent solvent and can run or seep over great distances, acting as the means to transport pollutants into water courses. Some of these routes are obvious, such as a pesticide sprayer being washed in a river or a silage clamp collapsing near a river, but many are much more difficult to track. Some of the less obvious routes

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include such things as:

Farm tracks – the very fact that farm traffic is going up and down a track in wet weather can cause problems, turning the surface into a muddy mess from which rain will wash sediment and pollutant rich slurry which will find the quickest way down hill. A track which heads downhill towards a river can act as a conduit for such pollution and speed its passage into the water course. You may even see running water heading along the ruts in a track in search of the lowest ground which is usually a river.

Farm gates – if you travel along the Wye valley you may be familiar with the river of red, muddy water that flows out of farm gates when it rains. Such run-off can come from arable land or it may come from grazing land. Cattle often gather by a gate, waiting to be fed or milked and they will puddle the ground, creating a mud and manure-filled stream of pollution out of the gate. Watch where this goes; you might see it head off down the round, into a ditch and then . . . where?

Ditches – farm ditches are not generally designed to deliver pollutants into water courses, but they often do, either by neglect or oversight. Ditches can also carry all sorts of other pollution if run-off from a farm gets into them, whether this is from a vandalised diesel tank or a leaky silage clamp.

Silage clamps and slurry pits – modern

designs mean that these should not be able to leach liquid and highly polluting waste into ditches, but older ones often do. They are supposed to be well away from any water and surrounded by bunds to keep any leakage contained, but unfortunately, not all are properly designed, constructed and maintained so leakage can be a problem.

The solutions

Enough problems! What

about solutions and who to turn to for help? Fortunately, there is, or at least was until the pre-budget report, money in the kitty with DEFRA for the Catchment Sensitive Farming Initiative. Whether that will survive the threatened cutbacks remains to be seen, but at the moment, it offers a means of channelling funds to give advice to farmers on how to reduce the impact of agriculture on the aquatic environment. There is

some information on the Initiative on the DEFRA website, but it is pretty impenetrable material, best suited as bedtime reading for insomniacs. There is better and more user-friendly information on the Environment Agency website and that is the best place to look for someone to help you on your river. You could also contact your fisheries officer in the EA as they should know about Catchment Sensitive farming and so



Cattle have puddled the soil near this gate (above) into a muddy mess. During heavy rain this mud can be washed out onto the road (left) and then into a water course.

Photos courtesy of HWT



Here a farm track had become very muddy in wet weather due to heavy traffic. See the flow of muddy water flowing off through a channel into the adjoining water course.

be able to help you into the system. It is also a good idea to get the fisheries team on board with any proposals from the start so that they can put in additional advice and consultancy. The Campaign for the Farmed Environment was launched recently which includes some initiatives for tackling problems of farm pollution, including run-off and soil erosion so it is worth having a look at what is on their website. It has a long list of partners, including Natural England, Environment

Agency and the National Farmers Union. Take a look at the CFE website to see what is going on in your area. The Wildlife Trusts are worth contacting too in case they have an involvement. Not many have been involved, but if you can link in, so much the better. If you look at the Hampshire and Isle of Wight Wildlife Trust website, you can find simple and well-explained guidance on how farming

can cause problems, how to prevent these problems occurring in the first place and how to put things right if problems have occurred. These are well worth a look before you take any further action as they provide you with a clear and easily read brief on key topics.

The Trust has been involved in getting the Initiative working with Hampshire farmers in a number of catchments. They held a soil workshop for farmers in the Loddon catchment and there was the first surprise – this was very well attended, so do not assume that farmers are not interested. In fact, they often are very interested in improving the environment on their farms but are often limited by lack of expertise

and shortage of funds for environmental projects. The H&IOWWT, by talking to Loddon farmers and walking them through the problems and solutions in their own fields, has made some good progress on getting best practice adopted. Many of the things are so simple that anyone can do them. Solutions can be as simple as re-sighting feeding troughs away from water courses to reduce soil run-off from trampled ground or fencing river banks and controlling access for drinking to avoid banks being poached by cattle. There work has now come the end of the first round of funding but is now continuing to offer some support to farmers with funding from the Environment Agency. The



Above: Loddon catchment farmers at a soil workshop run by the Hants Wildlife Trust.

farmers continue to work on reducing the impact of agriculture on catchments which is very encouraging.

Further information
Further information, including links to websites dealing with the Initiative have been put on the Research and Conservation pages of the Barbel Society website.

An example of good arable practice. The wheat crop in the right has a lot of bare soil which could be washed into the river. In this case, the farmer has left a wide, grassed strip to prevent run-off.



Useful web links for barbel friendly farming

Pollution statistics can be found on the Environment Agency and DEFRA websites at:

Serious pollution incidents in England and Wales involving pesticides:

<http://www.environment-agency.gov.uk/research/library/data/58893.aspx>

Pollution incidents from agriculture:

https://statistics.defra.gov.uk/esg/indicators/d404_data.htm

Water pollution incidents:

<http://www.environment-agency.gov.uk/research/library/data/34353.aspx>

Information on the Catchment Sensitive Farming Initiative can be found:

On the DEFRA website at: **<http://www.defra.gov.uk/foodfarm/landmanage/water/csf/index.htm>** where there are plenty of links to further information.

On the Campaign for the Farmed Environment websites at: **<http://www.cfeonline.org.uk>**. CFE is industry-led and you can check out the links to all the CFE partners for further information.

Also check out the pages of Natural England to see what they are doing on Catchment Sensitive Farming:

<http://www.naturalengland.org.uk/ourwork/farming/esf/default.aspx> where you can also see what funds might be available to farmers in your area. These can be vital in persuading farmers to take action to reduce the impact of agriculture on the riverine environment.

There is a lot of useful information about farming and for farmers on the HWT website. Start at:

<http://www.hwt.org.uk/pages/advice-2.html> where you can see information on what advice is available, but make sure you check out the Loddon Farm Advice link: **<http://www.hwt.org.uk/pages/loddon-farm-advice-2.html>** where you can download an excellent set of advisory brochures on various aspects of catchment sensitive farming (see the bottom of the page).

It is also worth looking at your local wildlife trust via the Wildlife Trusts: **<http://www.wildlifetrusts.org>** and just click through to "Your Local Trust" to see what's going on (there may not be anything on catchment sensitive farming):

<http://www.wildlifetrusts.org/index.php?section=localtrusts>