

The attitudes of recreational user representatives to pollution reduction and the implementation of the European Water Framework Directive

Neil Ravenscroft and Andrew Church

School of Environment and Technology, University of Brighton, Lewes Road, Brighton BN2 4GJ, UK Contact N.Ravenscroft@brighton.ac.uk

Introduction - recreation and water quality

The European Water Framework Directive (WFD) was introduced in 2000 as part of the wider legislative framework that the European Union (EU) has developed for water protection and management. It covers inland surface water, coastal water, groundwater and transitional water bodies. Member states of the EU are responsible for the implementation of WFD and by 2015 most water bodies must be of 'good ecological status' (GES) assessed with reference to their biological and physico-chemical features. According to the (European) Environment Directorate-General (2005), the benefits that will arise from water quality improvements under WFD can be divided into three distinct areas:

- Commercial benefits – such as cleaner water requiring less treatment that has a conventional market valuation;
- User benefits – such as water-related recreation – where those using water bodies directly and indirectly (e.g. as a backdrop to walking) can be identified and can be assumed to put some subjective value on access to water resources as a medium for recreation; and

- Non-user benefits – such as knowledge that all water bodies are in GES and where those deriving the benefits cannot readily be identified.

Of these, the second - user benefits - has generated particular attention, for it is felt that it could be the most substantial form of benefit to emerge from the water quality improvements (Environment Directorate-General, 2005; Bateman, et.al 2006, Hanley, et.al 2006, Entec UK Ltd, 2006). This is largely on the basis of a growing body of evidence and opinion that reducing pollution levels improves the quality of the experience for participants in many water related recreation activities. The activities that may benefit from a reduction in pollution include: bathing, swimming, scuba diving and other activities where there is direct contact with the water (Jagals, 1997; Pendleton, et al, 2001; Dor, et al, 2003; Hanley, et al, 2004; Turbow, et al, 2004; Söderqvist, et al, 2005; Lepesteur, et al, 2006; Novotny, et al, 2007; Rao, 2008); inland and sea fishing (Freeman, 1995; Willis and Garrod, 1999; Grosch, et al, 2000; Wolter and Arlinghaus, 2003; Massey, et al, 2006); and surfing (Laviolette, 2006; Surfers Against Sewage, 2007; Wheaton, 2007).

While all these studies claim that there is a causal relationship between pollution and levels of recreational activity, there are some notable divisions in the findings. In particular, the work on fishing and surfing generally focuses on constraints and reduced enjoyment of the activities (Wolter and Arlinghaus, 2003; Massey, et al, 2006; Laviolette, 2006), whereas the work on swimming and water-contact activities is much more about barriers that prevent activity (Dor, et al, 2003; 2004; Söderqvist, et al, 2005). In addition, some of the studies note that the determining factor in participation

is often people's perceptions of water quality, rather than the actual levels of pollution, or any scientific evidence about the impact of the pollution on human health and wellbeing. Indeed, Pendleton, et al (2001) found that perceptions were more significant than factual information in the decisions that people made about swimming in the waters around Los Angeles County, while Hanley, et al (2004) have questioned whether actual or perceived measures of pollution should be used in such cases.

What emerges from this body of research is that there is a form of 'water quality gradient' – part evidential and part perceptual – that determines the interactions between recreation activity levels and water quality. At one extreme, the polluted waters around Berlin (Grosch, et al, 2000), Chicago (Novotny, et al, 2007) and Hyderabad (Rao, 2008) have been – and continue to be - in need of remediation before any recreational activity can (re)commence. At lower pollution levels – where the health impacts of pollution are still evident – recreation activities do occur, whether swimming in the waters of Los Angeles County (Pendleton, et al, 2001), or fishing off the US Atlantic coast (Massey, et al, 2006), although the quality of these activities might be enhanced by lower pollution levels. Lower down the water quality gradient, it is apparent that many forms of recreation can take place largely without impact, even when the quality of the water is less than ideal (Freeman, 1995; Dor, et al, 2003). There are, clearly, different water quality 'thresholds' that influence levels of activity for different recreational pursuits. For example, fishing can take place in waters that are not considered suitable for contact activities such as swimming. Furthermore, Wheaton (2007) suggests that committed, and experienced, participants may have different thresholds to beginners (see also University of Brighton, 2001).

While providing useful guidance about the current nature of the interaction between water quality and recreation, this body of work is incomplete in a number of respects for considering the potential recreational user benefits likely to arise from the WFD. The majority of the studies refer to the constraints associated with highly polluted waters, of which there are now relatively few in the UK and western EU, certainly compared to twenty years ago (European Environment Agency 2009). There is also little evidence or opinion about the effects of water quality on a number of recreational activities including commonly undertaken sports such as canoeing and kayaking, high participation recreational activities that use the water as a background amenity such as walking, cycling and bird watching, and newly emerging sports such as kite surfing or triathlon. In cases where recreation activity is taking place, little attention has been paid to the marginal benefits derived from marginal increases in water quality which is particularly important in assessing the potential recreational effects of WFD since many waters in the western EU already comply with mandatory quality guidelines, meaning that future quality changes arising from WFD may be marginal. There is also little indication of how far participants' (and non-participants') claims about their responses to water quality improvements are borne out in practice. A few studies on specific recreational activities have already noted how there is a noticeable difference between what individuals claim they will do in response to changes in water quality and their actual behaviour (Hanley et.al. 2004). These deficiencies in current research raise challenges for decision-making during the implementation of WFD.

Member states of the EU have to take into account costs and benefits when identifying investment priorities to achieve GES (Europa 2009). Such decisions will be problematic if there are uncertainties as to the likely implications of WFD measures for different types of water recreation pursuits. We seek to address these deficiencies in research and to examine how changes in water quality linked to WFD may influence water recreation through the analysis of data collected from interviews with senior representatives of 24 UK recreational stakeholder groups. The details of the data collection process are discussed below but the interviews were designed to understand the interactions between changes in water quality and actual recreational activity and practice, rather than just perceptions of water quality, for a wide range of water related pursuits including those not covered in previous studies such as emergent sports and high participation land based activities that use water environments. In reflecting Wheaton's (2007) observation about the impact of experience on people's perceptions of constraints, the study has been informed by Bourdieu's (1990) 'feel for the game' (see Noble and Watkins 2003, Hunter 2004). Bourdieu discussed practice as a 'process of becoming' to develop identity and self interest that involved the body as both a site of social memory and a work-in-progress, with movements refined according to newly learned skills and experiences As Bourdieu states, the "feel for the game" involves:

“... the practical mastery of the logic of the imminent necessity of a game – a mastery acquired by experience of the game, and one which works outside conscious control and discourse (in the way that, for instance, techniques of the body do)” (Bourdieu, 1990: 61).

We have used this embodied view of 'the game' to frame the interactions between water recreation participants and water quality, as they use knowledge, experience and skills to develop practices to negotiate water quality risks to the body.

The study and methods

The findings upon which this paper is based are drawn from a study, commissioned by the UK Government's Department for Environment, Food and Rural Affairs (Church, et al, 2008), into the valuation of the recreation benefits of improvements in water quality. The study analysed how improvements to water quality are likely to benefit water related recreational pursuits, which pursuits are likely to benefit and how the market and non-market elements of these benefits might be quantified. Table 1 lists the recreational bodies interviewed, nearly all of which were membership organisations that individuals, clubs or collective groups involved in a recreational pursuit pay to join. These included the national governing bodies for particular sports which are normally societies or associations whose role is to organise, regulate and promote a particular water sport or recreational pursuit for the full range of participants from elite to novice. Other membership organisations interviewed that would not be termed national governing bodies included the National Trust, which was set up to preserve and protect historic buildings, the coast and countryside which means it has to manage the recreational use of water bodies. The National Trust also involves many volunteers as do the

conservation campaigning organisations Thames 21, Surfers Against Sewage and the Marine Conservation Society which are environmental charities part of whose activities involves supporting members and volunteers in outdoor recreational conservation projects for enhancing water environments.

Table 1 - List of sporting and recreational organisations interviewed

Water-Related Sporting Organisations
Amateur Rowing Association
Amateur Swimming Association
British Canoe Union
British Kite Surfing Association
British Sub-Aqua Club
British Surfing Association
British Triathlon Association
British Water Ski Federation
Inland Waterways Advisory Council
Model Powerboat Association
National Federation of Anglers
River and Lake Swimming Association
Royal Yachting Association
Salmon and Trout Association
Surfers Against Sewage
Surf Life Saving Association
Welsh Canoe Association
Land-based Groups and Associations

British Horse Society
Cycle Touring Club
Marine Conservation Society
National Trust
Ramblers Association
Royal Society for the Protection of Birds
Thames 21

Table 1 also indicates that a number of membership organisations that oversee land based sport and recreation were interviewed. They were selected because water can provide an important and distinctive amenity for these activities and the organisations have been involved in campaigns to make more use of certain watersides such as bicycle riding on canal side paths or horse riding on beaches. By involving a wide range of bodies in terms of the sport and recreational pursuits the intention was to address the limitations of some previous studies that focus only on one pursuit.

The interviews were conducted with senior staff and were recorded, transcribed and analysed for recurring themes, using a ‘constant comparison’ method (Glaser & Strauss, 1967). This involved coding the data and identifying themes with categories through a process of oscillation and escalation in order to build an accurate picture for theoretical elaboration. The topics covered by the interview questions included the influence on recreational participation and activity of water quality, pollution, water quantity, WFD and other factors such as physical access to water. The importance of interviewing senior staff was that they already had knowledge of the measures associated with WFD having attended briefings or read documentation. They also could provide an overview

of how participation and activities for their recreational pursuit had been changing in recent years.

The list of organisations in Table 1 ensured that a comprehensive overview could be undertaken of water recreation activities in the UK. The interviews also enable our analysis to shift the focus of research on water quality and recreation from individual perceptions to expert opinions often informed by knowledge about how activities take place and participation rates have changed in response to shifts in water quality. In selecting experts we do not seek to downplay the significance of lay knowledges (see Laviolette, 2006, for example) but, rather, to tap into specific knowledges that exist within sport governing bodies and related organisations, in an attempt to access whatever information and evidence has been collected by the governing bodies. The discussion that follows, therefore, allows an examination of the effects WFD may have on different recreational pursuits.

Findings – general perceptions

The majority of the interviewees felt that water quality is no longer a major factor in determining whether people undertake or enjoy a particular pursuit. Many of them contrasted the situation 15 or 20 years ago with the position now, in the process claiming that it is now unusual for water to be contaminated in the ways that it used to be:

“People used to say ‘I surfed the shit pipe today’, it was literally coming out, but things like that don’t happen anymore. If it was a problem they’d be talking about it. You have to assume the whole country is getting better and you can see that when the Blue Flags¹ get awarded.” (surfing representative)

There is a general acknowledgement that the situation has improved as a result of a growing awareness of the problems allied to a strong commitment from recreational organisations and government bodies to tackling it. While pressure groups such as Surfers Against Sewage were acknowledged as having been instrumental in bringing water pollution to public attention, it has been the improvements made by local authorities and water companies, guided by the Environment Agency and other bodies, that are seen as having made the difference. And it is now accepted that local authorities and the Environment Agency respond immediately to pollution incidents:

“People will say ‘the water’s polluted here’ and they’ll speak to the local water authority to find out what’s happening, why it’s happened, people are just a bit more aware now.” (surfing representative)

The result of this change of culture is that most participants now feel that the majority of coastal and inland waters are clean enough to use for recreation. Thus, the overall position, for many activities, is exemplified by the following claim from a swimming

¹ The Blue Flag is a voluntary eco-label awarded to over 3300 beaches and marinas in 39 countries across Europe, South Africa, Morocco, Tunisia, New Zealand, Canada and the Caribbean (see <http://www.blueflag.org/>)

representative, who felt that there are no longer serious constraints to participating in open water bathing and swimming:

“We are on the crest of a wave because all of the publicity is about healthy living...our organisation is telling people it is just like any other sport, there is nothing to be ashamed of.”

(swimming representative)

This does not mean that water quality, pollution and its health consequences are not considered in participation decisions and choices of sites. As is shown below, specific pollution incidents are taken seriously and in using any site participants often weigh up health risks against other factors. Nevertheless, the ‘understanding’ that the quality of the water is no longer a major concern was shared by interviewees involved in a range of activities and they often stressed that other factors, such as socialising or the right type of water conditions, are far more influential in the choice of sites:

“The guys that are new to the sport, the ‘Weekend Warriors’, they’ll tend to go to Newquay or Woolacombe, not just for the surfing but for the social aspect as well. They’ll want to make a bit of a social weekend of it. Whereas the hardy hardcore traveller will just want to go surfing wherever the waves are....” (surfing representative)

As this quote suggests, the assertion that water is now generally suitable for recreation activities is often held by those who are new to water activities. It also tends to be held by those who do not immerse themselves in the water. In particular, walkers, riders and cyclists all perceive water quality to have improved in recent years, to the point where it is not a health risk and evidence of pollution and litter will not detract from water as an aesthetic backdrop to recreation. For participants in land based recreation other attributes of a site were often considered to be of higher value: the steepness or gentle gradients of a track next to a river valley were important for different types of mountain biker; the view from a riverside walk matter to walkers and particular types of habitats for bird watchers. There was little indication from the representatives of these activities that water quality is a barrier or constraint to their activities. These views are epitomised by the following quote from a cycling representative:

“For mountain bikers, depending if you’re hardcore or determined, it tends to be very much the quality of the trail and if there’s a river there and it’s crossable, then that’s great, but water is much more of a family cycling thing. You know, nice places to go where there are things for the kids to do and they can have a splash, honeypot sites that have multi-use in one location.” (Cycling representative)

Findings - Participant practice, water quality and WFD

The view that water quality was only a minor influence on recreational activity and choice of site was not shared universally amongst interviewees, with a number of representatives claiming that for some elements of water environments the situation has deteriorated over the past 15 to 20 years. The marine and wildlife conservation organisations interviewed, for example, felt that there is now more debris and litter left on beaches and other recreational environments. In general, those interviewees who identified water quality as a current constraint on recreational activity were most concerned about specific pollution incidents and sites where water quality had been reduced. Such views were expressed by representatives from angling, marine conservation volunteering, surfing, outdoor swimming and triathlon. For angling, fluctuations in the biochemical quality of the water had a negative impact on participant's enjoyment:

“If there is pollution then you haven't got the fish and people can't participate. Even the slightest amount of pollution affects the fish. They do not feed properly. They are unhealthy. Pollution makes the water unsightly and the fish unhealthy for us.” (Angling representative)

In addition to the general impact of poor water quality, representatives for sports involving immersion in the water noted that individual incidents of pollution can 'severely limit' their activity at particular moments. This related, in particular, to pollution from sewage, urban and agricultural run-off and harbour/port activity:

“Pollution is a concern in certain areas and at certain times....We’ve had members become ill due to a place where it has rained a lot and they weren’t aware that there was a lot of farm chemicals and other stuff coming off into the water. At the local level people know what to avoid and when to avoid it; for visiting people they aren’t aware of it so much.” (kite surfing representative)

It was noted by the representatives of several sports, including swimming, triathlon, surfing and sub-aqua diving, that high levels of pollution, even for relatively short periods, can act as an absolute barrier to participation and some sites that people are not prepared to use:

“If there is a body of water that is polluted we just don’t go near it. It just stops the sport happening.” (sub-aqua representative)

While underlining the fact that high levels of pollution can prevent recreation occurring, a number of these representatives made the point that they do not simply leave the polluted waters, but start campaigning for improvements in the quality of the water. The work of Surfers Against Sewage and organisations such as Thames 21 were widely cited in this regard. Importantly, it is also argued that, in most cases, water quality – or the minimum quality required for an activity to proceed – is not an absolute that is capable of precise measurement. Rather, certainly for experienced participants, it is

about judgement – what ‘feels right’. There is thus an acceptance that water quality varies, across time and space, and that each participant should use a mix of knowledge and experience to assess for themselves whether they think that it is safe for them to continue:

“You develop a sixth sense. The water must smell good, the water must taste good. I will not swim in water that I would not put in my mouth. So you know if something is not right and you get out.” (swimming representative)

This assertion was repeated by many of the respondents; participating in water related activities does not mean that people become inured to the discomfort and dangers of pollution and poor water quality. They may accept that the quality of some waters, at some times, is below the threshold that they are willing to tolerate, but in such cases they – largely – get out of the water and do not get in again until they have found suitable conditions. While concurring with the view that participants should not remain in dirty or contaminated water, it was also argued by the representatives of some activities that on certain occasions there is little choice but to choose water that is below an acceptable quality, if their sport is to remain active. This is, it is argued, because new and minority sports often cannot access the inland waters that they desire because other established activities have already claimed legal rights over them. In English and Welsh law the owners of land beside inland waters also own the land under the water and so control who has the rights to use this water, except where a public right of navigation has been established (Church et.al. 2007). This access situation means that some sports

have to use only certain inland waters where they can negotiate access, in the hope that they can claim better and more waters as their popularity grows. For major competitive events this inevitably puts pressure on competitors and organisers to under-report pollution incidents, in case they are banned from these waters. This is especially problematic if under-reporting of illness occurs. It was suggested, for sports involving competitive swimming on inland waters, that participants tolerate water-related illnesses because they value the recreational pursuit and consider that public awareness of the potential ill effects of swimming in certain waters would have an adverse affect on wider participation:

“...it’s really difficult because people don’t want to tell you [if they got ill]...they are scared that we will close the event down.

They quite often keep schtum...” (triathlon representative)

Despite this admission, most of the representatives were keen to stress that, in most waters most of the time, pollution is no greater hazard than any of the other factors that make water a potentially dangerous environment. They stated that, with the exception of scuba diving, there is no constant calculation of the hazards posed by debris, sediment and water clarity. Evaluations of risks - and concomitantly the opportunities to participate - derive instead from iterative practices that are neither self-identical nor stable. As such, deriving norms of practice for water-based sport and recreation as a whole can only be partial or contingent, informed by the developing self-identities and past experiences of the participants, in conjunction with external regulatory practices that inform choice ranging from societal expectation, peer pressure, official information

on pollution incidents, to formal codes and laws. The influence of the balance between individual responsibility and social regulation on participation in recreation was stressed, in particular, by a number of sport governing bodies:

“It is important that participants know their skill level and the suitability of their equipment for an activity, have knowledge of the water and conditions they expect to encounter both afloat and ashore; and be responsible for their actions, especially if acting as a leader of a party. There is always an element of risk whatever you are doing or where you are.” (canoeing representative)

A similar type of recognition takes place across most water recreation pursuits – that organisations need to offer suitable training, information and advice, and that participants need to assess all the aspects of their proposed activity prior to commencing:

“All our volunteers undergo training in water quality issues things like cuts have to be covered, they mustn’t touch their mouths and eyes whilst they are on the river foreshore – just the basic health and safety stuff, which we wouldn’t have to do if it wasn’t for the water quality. There’s no doubt that it does deter people from getting involved.” (conservation representative)

While water quality is certainly an issue for many, other factors that affect water related sport and recreation, such as safe access to and egress from the water, can be an equal or greater concern:

“Say, we go to swim in the Dee in Cheshire, physical access is not all that readily available. There is a lot of private land and there are only a few places where you can go in and out. So you will obviously not tend to swim long distances like you do in a lake because you’ll be drawn by the current downstream and you may not find a place to get out.” (swimming representative)

This emphasis on the need for each participant to take personal responsibility for their actions and respond to forms of social regulation means that externally-driven WFD measures to improve water quality will have varying impacts, depending on a range of other factors that shape decisions about how and where to participate. As noted earlier, many of the interviewees felt that water quality had only a limited impact on the participation and the nature of recreational activity. Nevertheless, representatives for angling, two immersion sports (river/lake swimming and triathlon) and the land based pursuits of walking, bird watching and river/marine conservation volunteering, felt that WFD-related improvements could potentially enhance their activity especially if linked to other environmental improvements as the quote below suggests:

“The vast majority of walkers would like to see the countryside alive with wildlife and be as attractive a habitat as possible, with water quality a part of this overall picture.” (walking representative)

Other studies have noted that water quality improvements do not necessarily improve fish populations to the benefit of anglers (Wolter and Arlinghaus, 2003) but the angling representatives interviewed felt that on balance water quality improvements would be beneficial to anglers. Some interviewees, however, argued that the WFD measures had the potential to damage to their recreational interests and enjoyment. The quote below is taken from a respondent with responsibilities for inland water recreation and boating in a national organisation who felt, as did some other stakeholders, that WFD implementation could divert money away from recreational and public access activities. This would particularly affect boating on inland waters and future opportunities to improve walking and cycling opportunities alongside rivers and canals:

“The cost of dredging sediments to reach good ecological status is very high and who is going to pay for it? If it’s the Environment Agency or British Waterways they will have to divert money away from supporting public access and the recreation experience....The cost of meeting WFD objectives could limit the opportunities for recreation and economic growth.” (boating representative)

Rather than imply that measures to improve water quality are not required, this quote underlines the more general position found in the research, that for most participants in most activities, pollution is not a major factor in the decisions they make about what to do and where. Rather, pollution is one of the many factors that have to be considered each time a participant makes a decision about whether or not to use a particular piece of water. In no case did any respondent suggest that their activity faced insurmountable barriers because of poor water quality, although some (angling, conservation, swimming, sub aqua diving and surfing) claimed that poor water does constrain their activities in some locations, some of the time. For most respondents, therefore, the question of whether or not the waters they use are in GES is not one that they would place highly as a constraint to their activities. Few waters are now seen as being so heavily polluted that this will stop activities on a routine basis. Other factors such as legal access to water, supporting facilities, water conditions (e.g. waves for surfing) and socialising opportunities were believed to be far more influential on the nature of water recreation in the UK. This suggests that if WFD improvements to achieve GES take place on water bodies that are already close to this water quality status then some recreationalists are likely to see such improvements as of marginal significance.

Discussion - water quality and the practice of recreation

In his work, Bourdieu (1990) observes that cultural practices such as water related recreation are mediated by reflexive bodies used to display specific skills and experience that confirm that participants have the “feel for the game”. This is about displaying mastery of the logic of the practice, in the process associating with others

who have attained this mastery and dissociating from those who have not. Bodily practice is at the core of this mastery, in positing the body as a site of social memory (in this case about the implications of contact with polluted water) as well as a work in progress, as new skills and experiences are embodied. This is very much the message given by the respondents: those who have embodied the knowledge available about polluted waters are able to make reasoned judgments about the extent of their exposure to it. Furthermore, and consistent with Bourdieu's (1998) *practical reason*, the respondents also display reflexivity about their responsibilities, particularly in terms of the messages that their actions send to those who do not yet have the feel for the game.

As such, the respondents feel able – even obliged - to raise concerns about the potential impacts of polluted water without suggesting that absolute barriers to participation are routinely experienced. Rather, their rhetoric concentrated on the individual as having bodily responsible for making the decision about whether or not to enter a particular water environment. As suggested by Bourdieu (1990), the respondents argued that both experienced and novice recreational participants need to develop a reflexive relationship with the environment to establish a culture of practice that is tailored to their physical and technical competencies. In addition, it was argued that participants need to understand (embody) the influence of social regulation, varying from the law on access to water, to training guidance from a coach (a further example of Bourdieu's, 1998, *practical reason*).

This practice and embodied view of 'the game' captures the interactions between many water recreation participants and water quality as they use knowledge, experience and

skills to develop practices to negotiate water quality risks to the body and the nature of various forms of social regulation. Of course, the possibilities to practice are constantly in flux (Bourdieu 1990), meaning that the possibilities of participation in recreational activities are informed by a developing consciousness of spatial imaginings drawn from previous experience, bodily maturity, habits and sensitivity to seasonal conditions. The expert opinions of the interviewees highlighted the complex interactions between water quality and the nature of recreational practice and how these will vary markedly spatially and temporally. Indeed, there is probably further research to be undertaken considering how the practice of negotiating risk and water quality varies by social background and lifestyle which are important influences on recreation practice (Wheaton 2007).

Within this context, what is most striking in these findings is the level of complexity surrounding people's decisions to undertake recreation activities in waters of often unknown water quality. While asserting that visible signs of pollution would lead people to cease recreation activity, much of the rhetoric presented by interviewees from recreational stakeholder organisations concerned assessing the risks of the activity, acknowledging that poor water quality is a health risk, but not often a major one. Indeed, it is apparent that many participants have routinely used waters that they knew to be of low quality, and have accepted that they would sometimes suffer illness as a result. While being broadly consistent with Hanley, et al's (2004) study of Scottish beaches, where bathers did not place a high value on improvements in water quality, these findings do reflect an interesting departure from Pendleton, et al's (2001) findings for California, where perceptions were generally more negative than the residual level

of pollution warranted. There is no way of assessing why this difference has occurred, although it may be because user representatives wished to underplay the significance to their activities of poor water quality. But this seems unlikely, since it would be counter-intuitive not to underline the potential benefits to be gained from improvements in water quality so as to encourage the improvements to occur.

Rather, it seems more likely that pollution levels in most inland and coastal waters in the UK are broadly compatible with the requirements of most water-related recreation activities. Most representatives contrasted the current position with the high levels of pollution found in the past (ideas here of the body as social memory), while also feeling confident that local authorities and the Environment Agency react quickly and effectively to pollution incidents brought to their attention. Allied to this is the reality, for some activities, that there are more pressing issues facing them, such as gaining secure and appropriate legal access to the waters that they want to use (Church, et al, 2007). As some representatives stated given these issues, consideration of water quality probably has a lower priority than it deserves. This is exacerbated by concerns that resources devoted to improving the quality of water that is already generally suited to recreational use may mean that other recreational improvements with greater utility to users may go unfunded.

However, pollution and poor water quality remain an important issue for some water related recreational activities, and is influential at certain points in time for most of the other activities considered in this study. As the angling and conservation representatives argued, poor water quality reduces the available habitat, which leads to a reduction in

biodiversity. Poor water quality has also hindered the development of triathlon and open water swimming on inland waters. While more waters are becoming available for these activities, there is still a feeling, certainly in triathlon, that it is better to hide water-related illnesses than risk losing valuable activity spaces. A similar picture emerges for other water-contact activities, such as scuba diving, surfing and kite surfing. While these activities no longer routinely take place in dirty water, concerns remain that immersion in (and inadvertently drinking) some of the waters that are used could lead to illness. In addition, most of the representatives mention the severity of isolated pollution incidents, usually occurring after heavy rain often involving agricultural run-off into rivers. These concerns are consistent with much of the literature on the subject (see, for example, Langford, et al, 2000; Schuwerack, et al, 2007), which documents the impact of pollution incidents in a range of water environments.

The interviews with senior representatives of water related recreation stakeholder organisations revealed quite differing views about the influence on recreation of water quality and WFD. Nevertheless, a practice based view of water recreation allows some generalisations to be drawn regarding the relationship water recreation participants have with water quality and pollution. These findings suggest that a series of water recreation activity relationships can be defined, based on practice and embodied contact with water. These activity relationships condition the use of water and, thus, attitudes towards water quality, and they coalesce into four main water related recreation activity groups as follows:

- *Amenity activity* – water bodies provide an amenity backdrop to a pursuit such as coastal walking or bird watching;
- *Angling and conservation activity* – includes game, coarse and sea fishing with a rod, as well as a variety of conservation and environmental activities that can involve activities related to waters, water sides and wildlife;
- *Immersion activity* – the participant is in direct contact with the water and the pursuit involves being regularly, partly or fully immersed in water (e.g. swimming, sub aqua, kite surfing, triathlon or windsurfing);
- *On-water non-immersion activity* – the participant is on a water body and in direct contact with the water but immersion is not an intended part of the pursuit (e.g. sailing and canoeing).

These four groups reflect the practice based activity relationship between participants and the water bodies that they use. The impacts of water quality improvements on recreation will, in part, be determined by this relationship. Furthermore, the findings suggest that each activity group has the following specific relationship with water quality and the organisations responsible for developing WFD measures to achieve GES:

- *Amenity activity*: a desire for certain aesthetic appearances and the knowledge that the water is clean leads to a socio-political pressure from individuals and

representative organisations to ensure that the environment is healthy and can support biodiversity;

- *On-water, non-immersion activity*: few health precautions are taken, but there is awareness that pollution incidents could increase risks to the point where participation ceases until the incident has been cleared up and there is a belief that such incidents are usually addressed effectively by the authorities;
- *Angling and conservation activity*: water quality needs to be addressed to manage potential risks, to ensure the health and safety of participants and to ensure improved biodiversity and fish stocks;
- *Immersion activity*: individuals make decisions about the thresholds beyond which their participation ceases, in the knowledge that health risks still exist, are less than in the past, but cannot be controlled in the short term by recreational groups;

As this suggests, each individual has a personal relationship with water environments that is informed by the activity in which they are participating, by their experience of such participation, and by their knowledge of water quality and health-related issues. For the amenity user – the walker, cyclist, birdwatcher and horse rider – the water does not pose any immediate health risk (unless they inadvertently fall in), leaving them in a position to assert absolutes about the need for high water quality to improve aesthetic appearances and protect biodiversity. To some extent, the same applies to those

interested in angling and conservation, although their practical work in water environments means that they experience a level of bodily exposure that the amenity users do not and they have to take health and safety precautions to reduce the risk of illness following contact with the water. In addition, the anglers also depend on the quality of the water to provide them with fish to catch.

For the immersion and on-water, non-immersion activities, there is a reasonable expectation of direct contact with the water, either through intentional or unintentional immersion. Since there is no way of mitigating this contact, other than not participating, those seeking these experiences have to make continuous assessments of water quality and the potential impact that the water quality may have on them if they come into contact with it. This was perceived by interviewees no longer to be such a highly charged political issue as it was in the past, although water quality lobbying groups such as Surfers Against Sewage still campaign to improve water quality and conditions, as other studies have also found (Laviolette, 2006; Wheaton, 2007). Water quality, however, is not just a simple health and safety issue. Rather, it is about individual responsibility and decision making. Evidence from the interviews with recreational stakeholder groups suggests that, in the main, most representatives feel that those in their sports and recreational activities are not routinely called upon to make decisions about whether or not to participate in particular waters. Previous studies suggest that the water quality 'thresholds' that influence the decisions of recreational participants vary by the type of activity (Freeman, 1995; Pendleton, et al, 2001; Dor, et al, 2003; Massey, et al, 2006). This study indicates that the nature of these decisions and thresholds can only be fully understood by examining the cultures of practice and the

activity relationship with water quality that have developed for different recreational pursuits. The implications of these findings for the WFD are that the user benefits aspired to in WFD legislation (Environment Directorate-General 2005) will be uneven.

Conclusions

As this research has shown, there can be little doubt that water quality is a significant consideration in the decisions that people take about whether or not to participate in water related recreation. In contrast to much of the extant literature, however, the practice of water related recreation in contemporary Britain is not overly constrained by concerns about pollution and poor water quality. Senior representatives of recreational stakeholder bodies do suggest that some pursuits are likely to benefit from improvements in water quality. These include mass participation land based amenity pursuits like walking and cycling that use the water as a backdrop, as well as specific water based activities such as angling and swimming. However, rather than measures water quality having an actuarial basis, such that certain maximum pollution levels are required in order for water related recreation to proceed, the study has shown that participation is largely informed by bodily practice. And the more practiced the body, the more reflexive an individual can be in determining whether the water at a given place and time is suitable for them to participate.

While supporting previous research that has suggested that participants respond to perceptions rather than actual measures of water quality, this study has shown that these perceptions are not the arbitrary whims of ill-informed people, but the result of bodily

practice. Following Bourdieu (1990, 1998), participants use heuristic devices informed by their experience and practice to make judgements about where and when they will participate in their activity. These heuristic devices are central to people's 'feel for the game'; for the more experienced participants, these devices are part of their self-identity – that they have the skills to make sound judgements about when to participate and when not to. Water quality is, thus, one of a number of issues that they will consider in making their judgements, but for most people it is unlikely to be the major issue, at least until there is an incident that leads them to reassess their participation (at that specific time and location). As a result, it seems apparent that, for most participants, water quality improvements over the last twenty years mean that WFD improvements may make only marginal differences to the significance of water quality for recreation and consequently will be of only marginal utility to recreationalists.

References

Bateman, I.J., Brouwer, R., Davies, H., Day, B.H., Deflandre, A., Di Falco, S., Georgiou, S., Hadley, D., Hutchins, M., Jones, A.P., Kay, D., Leeks, G., Lewis, M., Lovett, A.A., Neal, C., Posen, P., Rigby, D. and Turner, R.K. (2006) Analysing the agricultural costs and benefits of implementing the Water Framework Directive. *Journal of Agricultural Economics* 57(2): 221-237.

Bourdieu, P. (1990) *The logic of practice*. Cambridge: Polity.

Bourdieu, P. (1998) *Practical reason. On the theory of action*. Palo Alto, CA: Stanford University Press.

Church, A., Gilchrist, P. and Ravenscroft, N. (2007) Negotiating recreational access under asymmetrical power relations: the case of inland waterways, in England. *Society and Natural Resources* 20(3): 213-227.

Church, A., Gilchrist, P., Ravenscroft, N. and Taylor, B. (2008) *Water Framework Directive: valuation of recreational benefits of improvements in water quality – potential benefits and data requirements*. Collaborative Research Programme on River Basin Management Planning Economics, Project 4f. London: Defra. <http://www.wfdcrp.co.uk/pdf/pdf%5CProject%204f%20-%20CRP%20Use%20And%20Access%20Final%20Report.pdf>

Dor F.; Bonnard R.; Gourier-Fréry C.; Cicoella A.; Dujardin R.; Zmirou D. (2003) Health risk assessment after decontamination of the beaches polluted by the wrecked ERIKA tanker. *Risk Analysis* 23(6): 1199-1208.

Entec UK Ltd (2006) *Benchmark Costs Database and Guidance on the Application of the Cost-Effectiveness Methodology*. Final Report, CRP Project 2c, October 2006 (London: Defra).

Environment Directorate-General (2005) *Introduction to the new EU Water Framework Directive*. Brussels: Environment DG. <http://europa.eu.int/comm/environment/water/water-framework/overview.html>

Europa (2009) *The Water Framework Directive*. Summaries of EU legislation. http://europa.eu/legislation_summaries/agriculture/environment/l28002b_en.htm.

European Environment Agency. (2009) *Quality of Bathing Water - 2008 bathing season*. Copenhagen: EEA European Environment Agency.

Freeman, A.M. (1995) The benefits of water quality improvements for marine recreation: a review of the empirical evidence. *Marine Resource Economics* 10: 385-406.

Glaser, B. and Strauss, A. (1967) *The Discovery of Grounded Theory*. London: Weidenfeld & Nicholson.

Grosch, U.; Rennert, B. and Hilge, V. (2000) Development and use of surface waters, and the fate of the related fisheries in the Berlin area of Germany. *Fisheries Management & Ecology* 7(1): 179-188.

Hanley, N., Bell, D. and Alvarez-Farizo, B. (2004) Valuing the benefits of coastal water quality improvements using contingent and real behaviour. *Environmental and Resource Economics* 24(3): 273-285.

Hanley, N., Wright, R.E. and Alvarez-Farizo, B. (2006) Estimating the economic value of improvements in river ecology using choice experiments: an application to the water framework directive. *Journal of Environmental Management* 78: 183-193.

Hunter, L. (2004) Bourdieu and the social space of the PE class: reproduction of Doxa through practice. *Sport, Education and Society* 9(2): 175 – 192.

Jagals, P. (1997) Stormwater runoff from typical developed and developing South African urban developments: definitely not for swimming. *Water Science and Technology* 35(11): 133-140.

Langford, I.H., Georgiou, S., Bateman, I., Day, R.J. and Turner, K. (2000) Public perceptions of health risks from polluted coastal bathing waters: a mixed methodological analysis using cultural theory. *Risk Analysis* 20: 691-704.

Laviolette, P. (2006) Green and extreme: free-flowing through seascape and sewer. *World Views: Global Religions, Cultures and Ecology* 10(2): 178-204.

Lepesteur, M., McComb, A.J. and Moore, S.A. (2006) Do we all face the same risk when bathing in the estuary? *Water Research* 40: 2,787-2,795.

Massey, D.M., Newbold, S.C. and Gentner, B. (2006) Valuing water quality changes using a bioeconomic model of a coastal recreational fishery. *Journal of Environmental Economics and Management* 52(1): 482-500.

NERA Economic Consulting and Accent Market Research (2007) *The Benefits of Water Framework Directive Programmes of Measures in England and Wales*. Final Report, CRP Project 4b/c, November 2007 (London: Defra).

Noble, G. And Watkins, M. (2003) So, how did Bourdieu learn to play tennis? Habitus, consciousness and habituation *Cultural Studies* 17(3): 520 – 539

Novotny, V., O'Reilly, N., Ehlinger, T., Frevert, T. and Twait, S. (2007) A river is reborn – Use Attainability Analysis for the Lower Des Plaines River, Illinois. *Water Environment Research* 79(1): 68-80.

Pendleton, L., Martin, N. and Webster, D.G. (2001) Public perceptions of environmental quality: a survey study of beach use and perceptions in Los Angeles County. *Marine Pollution Bulletin* 42(11): 1,155-1,160.

Rao, E.N. (2008) From poison ponds to pleasure spots: the restoration of Hyderabad Lakes. *Annals of the New York Academy of Sciences* 1140(1): 129-134.

Schuerack, P.M.M., Neal, M. and Neal, C. (2007) The Dart Estuary, Devon, UK: a case study of chemical dynamics and pollutant mobility. *Hydrology and Earth Systems* 11(2): 382-398.

Söderqvist, T., Eggert, H., Olsson, B. and Soutukorva, A. (2005) Economic valuation for sustainable development in the Swedish coastal zone. *AMBIO: A Journal of the Human Environment* 34(2): 169-175.

Surfers Against Sewage. (2007) *Climate Change: A Surfer's Perspective*. St Agnes: SAS.

Turbow, D., T. H. Lin, and Jiang, S. (2004) Impacts of beach closures on perceptions of swimming-related health risk in Orange County, California. *Marine Pollution Bulletin* 48(1-2): 132-136.

University of Brighton Consortium. (2001) *Water-based Sport and Recreation: The Facts*. Bristol, England: Department of Environment, Food and Rural Affairs. (www.defra.gov.uk/wildlife-countryside/resprog/findings/watersport.pdf)

Wheaton, B. (2007) Identity, politics and the beach: environmental activism in Surfers Against Sewage. *Leisure Studies* 26(3): 279-302.

Willis, K.G. and Garrod, G.D. (1999) Angling and recreational values of low-flow alleviation in rivers. *Journal of Environmental Management* 57(2): 71-83.

Wolter, C. and Arlinghaus, R. (2003) Navigation impacts on freshwater fish assemblages: the ecological relevance of swimming performance. *Reviews in Fish Biology and Fisheries* 13(1): 63-89.