1. Assessment of current status for salmon and sea trout

1.1. Current status of salmon stocks on the Frome and Piddle

The principal method for assessing the current salmon stock on the Frome uses the returning adult salmon numbers derived from the resistivity fish counter at East Stoke (see 2.3) and converts these data into the number of eggs deposited each year. This annual egg deposition figure is compared to the minimum desirable spawning stock calculated for this river catchment, the conservation limit (CL).

In calculating the conservation limit we take into account the survival of different life stages of the salmon, and by factoring in sea survival we can understand the role of in-river and/or homewater factors on the salmon stock for that river. A failure of the stock to meet its conservation limit indicates that one or more in-river and/or homewater factors are limiting the stock.

Compliance with the current conservation limit for the Frome is shown in the figure below. A management target is also shown, this is the figure that should be aimed at in order to achieve the objective of meeting or exceeding the CL in at least four years out of five. Based on trends in conservation limit compliance the Frome salmon stock is deemed to be “probably not at risk”, i.e. has a probability of between 50% and 95% of meeting the management objective in 2014.

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1 Homewater factors are defined as those marine waters within the Environment Agency’s jurisdiction for migratory salmonids and generally relate to exploitation.
Compliance with the current conservation limit for the Piddle is shown in the figure below. A management target is also shown. Due to lack of information on the Piddle, the number of salmon entering the Piddle is estimated from the Poole Harbour net catch, assuming 10% of the catch are Piddle fish\(^2\) and calculating annual net exploitation rates from River Frome salmon run data. Based on trends in conservation limit compliance the Piddle salmon stock is deemed to be “at risk”, i.e. has a very low probability (less than 5%) of meeting the management objective in 2014.

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Current status of sea trout stocks have been assessed nationally by calculating the trend in catch per licence day (CPUE) for sea trout between 1999–2008 and the mean catch between 2006–2008 as a percentile of the catch between 1996–2005. Based on this assessment neither the Frome or Piddle sea trout stocks are deemed to be in the “at risk” category. (Frome - “trend in CPUE stable and current stock between 20% and 50% of reference period”, Piddle - “trend in CPUE significantly up and current stock >50% of reference period”).

1.2. Salmon and sea trout catches on the Frome and Piddle

Although fish counter data provide a better and independent measure of the spawning stock, the rod and net catch data can provide an indication of trends to support (or contradict) these and other data. These need to be interpreted with care due to the variation in current fishing conditions, fishing effort and the incomplete coverage of the salmon run.

The following figures show the salmon and sea trout rod catch for the Frome and Piddle and the salmon and sea trout catch data from the remaining net in Poole Harbour which exploits the fish stocks of both rivers. The salmon graphs display a significant decline in catches at the beginning of the 1990s and a fluctuation around a much reduced level since this time.
The rod caught sea trout show no long-term trend, although the catches appear to peak every 20 years.
On the Frome all rod caught salmon are returned to the river – a voluntary catch and release measure. On the Piddle any salmon caught in the Environment Agency owned rod fishery in the lower river must be returned.
The current Net Limitation Order for Poole Harbour restricts the number of licensed seine nets to one, and currently all salmon and sea trout intercepted by this net are released – see section 6.

1.3. Water Framework Directive

Under the programme for the Water Framework Directive, 11 river basin district plans set out actions and priorities to protect and improve the water environment in England and Wales.

We have identified specific priorities for action for fisheries within our planning at the river basin district level. For each river, we also address the local situation, assessing stock status, the issues affecting the stock and the solutions. We consider the characteristics of the fishery, potential partners and opportunities to increase participation.

In 2008 the Environment Agency launched the new sea trout and salmon strategy which fits with the Water Framework Directive. Catchment summaries for both the Frome and Piddle will be produced under the new sea trout and salmon strategy. These will address the local situation and supersede Salmon Action Plans produced in previous years.

For the purposes of the WFD the River Frome catchment is divided into 11 water bodies. Of these six are classified as “good” and include the Upper Frome, River Hooke, Tadnoll Brook, River Win, Luckford Lake Tributary and Sydling Water. The Winniford Stream is designated as “moderate” while the North Stream, River Cerne and Frome headwaters are classified as “poor”

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due to their fisheries element. The Lower Frome and Furzebrook Stream designation is “poor” as a result of the phytobenthos score under the biological element. All of the above waterbodies with a current overall status of “poor” are expected to achieve “good ecological status” by 2015. The Winniford Stream objective is to achieve this status by 2027.

For the purposes of the WFD the Piddle is divided into four waterbodies. The lower Piddle is classified as “poor” due to the fish, macrophyte and phytobenthos elements – this is expected to be “good” by 2027, with fish element achieving “good ecological status” by 2015 – the main reason for the “poor” classification is the paucity of eels and the work being undertaken in the catchment will improve migration. The Bere Stream is “good”. The other two waterbodies, Piddle (upper) and Devils Brook, have no classification for fish as we have no fish data collected between 2003 and 2008.

2. Monitoring

The present survey programme was introduced in 2001 with the aim of providing nationally consistent fisheries data that could be used to address local issues as well as specific management questions. There has been a shift of emphasis towards monitoring areas that support important game and coarse fisheries rather than general catchment coverage. The aim of the national survey is to collect high quality scientific information, which the Environment Agency can use to provide sound fishery and environmental advice. The programme was revised in 2006 and the number of sites reduced.

The programme consists of three monitoring components; temporal, spatial and sentinel. Temporal sites are fished annually at specific locations or reaches. Collectively these sites will show trends or patterns over a larger area, but require data sets of a minimum of 30 years before significant trends are identified. However, this does not preclude the use of these results to investigate short term or catchment specific issues for inclusion in environmental impact assessments (EIAs), or other plans.

Spatial sites are sampled at five-year intervals and aim to show differences between groups of sites, e.g. between different sub-catchments or habitat types.

Sentinel sites are also surveyed every five years. The sites are considered natural or semi-natural and are not fished or only experience very light angling pressure. These sites are instantaneously assessed for their self-sustaining fish populations rather than statistical comparisons.

2.1. Electric fishing in the Frome

The National Fisheries Monitoring Programme is undertaken to monitor fish stocks and also to provide sufficient data to manage the fishery at a local level. A number of sites are electric fished in each catchment every year, and in addition there is a rolling programme which covers a catchment in
greater detail every six years. In 2009 the Frome catchment was monitored in this way. The overall aim of the survey was to provide a general indication of the environmental health of the Frome catchment in terms of the status of both coarse and salmonid fish stocks at both site level and for the catchment as a whole.

19 sites were fished (6 quantitative, 12 semi-quantitative, 3 timed/CPUE), and an additional 5 operational sites were surveyed as part of ongoing fish passage investigations (semi-quantitative). The details of this survey can be found in the report\(^5\). A summary of the findings are given here.

The River Frome catchment supports self sustaining populations of brown trout and sea trout. The brown trout length frequency data shown in the figure below display the steady annual mortality form typical of wild trout populations reflecting the relatively low level of stocking on this river.

Survey sites on the side streams and carriers, many providing the best spawning and nursery areas in the catchment, produced high densities and also supported the greatest diversity of fish species. The Waterbarn Stream at East Burton is a good example, nine species being recorded including salmon. The Frome retains a largely indigenous stock of riverine species.

Very few coarse fish were recorded in both the upper and lower reaches of the River Frome. However, it is known that well established populations of both dace and roach are present, and this observation is thought to be as a result of the more recent restricted distribution of sites within the catchment.

The eel data collected suggest that there has been a decline in eel density and an increase in mean length which would indicate reduced recruitment. Length frequency data from 2009 recorded a good range of lengths present, suggesting a mix of sexes and that eel migration is not restricted.

Water quality results for the catchment indicate consistent high quality. Improvements over time have been recorded, however nitrate and

\(^5\) River Frome Fisheries Technical Review 2009
orthophosphate levels indicate that agriculture and land use issues still need to be addressed in some areas. Biological data support this and the overall assessment is that water quality is not a limiting factor for the fish community in the Frome.

2.2. Electric fishing in the Piddle

Four quantitative sites were fished as part of the National Fisheries Monitoring Programme. The 2005-2009 data set for the site at Throop shows a reduction in numbers and fish density each year. The remaining sites continue to provide information on the fish population of the Piddle and in particular the state of eels. Future monitoring at these sites will provide us with information on the success of the new eel pass at Baggs Mill.

2.3. Game and Wildlife Conservation Trust fish counter at East Stoke

The Environment Agency makes a substantial annual contribution to the running of the adult and smolt salmon counters at East Stoke on the lower Frome which enables these long-term data sets to continue to be collected. These data are used in assessing compliance of the salmon stock with the conservation limit and calculating the future probability of meeting the management objective, i.e. meeting or exceeding the CL in at least four years out of five.

The resistivity fish counter operated by the Game and Wildlife Conservation Trust (GWCT) provides a reliable annual count of upstream migrating salmon. This record provides dependable data to assess the current status of the salmon stock and its performance compared to previous years. The figure below shows the current counter data.

![River Frome fish counter data showing gross and nett upstream salmon movements, 1973-2009](image)

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6 summary available for each site surveyed
7 source Bill Beaumont, Game and Wildlife Conservation Trust
The ability to monitor downstream fish movements from 1985 allows the nett upstream movement to be calculated, the gross number of movements is also shown to allow annual comparisons to be made back to 1973.

It can be seen from this graph that after the crash in salmon stocks at the beginning of the 1990s the population has fluctuated around a much reduced level and is currently amongst the lowest levels seen.

2.4. Redd counting in the Frome

The partnership between the Environment Agency and the Frome, Piddle and West Dorset Streams Fisheries Association delivered salmon a redd count in the Frome catchment again this winter undertaken by Casterbridge Fisheries LTD. Conditions were perfect for redd counting in January 2010, with lower water levels and clear water.

The area covered included the entire River Cerne and Sydling Brook, much of the River Hooke and the entire main river from Maiden Newton to Wool Bridge.

Only one redd was observed upstream of the hatches at Crockway House near Nunnery Mead - the fish pass at this site is the subject of an investigation to improve conditions for passage (see section 4.2). Vandalism at Nine Hatches resulted in the unwelcome adjustment of the newly refurbished hatches, making upstream passage difficult. In addition the number of trees in the bottom two fields of the River Cerne is thought to have hindered passage here, and as a result no salmon redds were recorded upstream of the newly refurbished boulder weir at Charminster.

The number of redds upstream of the new fish pass at Louds Mill in Dorchester is again very encouraging (44 out of the total 168). A map of the recorded redds is shown here.
Overall, the number of redds is lower than last winter.

In addition the Environment Agency completed a redd count of the Tadnoll Brook in February 2010 to inform ongoing investigations – the recorded salmon redds are included in the map above (an additional 14 redds).

3. Habitat Enhancement

3.1. Dorset Wildlife Trust Upper Frome Enhancement

Few salmon have spawned in the heavily shaded stretch of the River Frome between Nunnery Mead and Samways Bridge at Frampton in recent years due to highly compacted gravels. A suitable electric fishing site was surveyed in August prior to the enhancement works and as well as brown trout both 0+ and 1+ salmon were found indicating that there has been some limited salmon spawning in the area over the last two winters as a minimum. In addition we looked in the nearby narrower side-channel where the gravels are much looser and as expected here we found greater numbers of both salmon and brown trout.

The Upper Frome Enhancement Scheme was undertaken by Dorset Wildlife Trust, with the co-operation of all seven owners of land or fishing rights and the Frampton Millennium Green Trust. The scheme was funded by the Environment Agency, the Dorset Area of Outstanding Natural Beauty’s Sustainable Development Fund and the Wild Trout Trust. The work in this one kilometre stretch of river, undertaken by contractors and volunteers, has improved gravels in the river bed, introduced current deflectors to improve water flow and reduce erosion of the banks. Some further thinning of the tree canopy over the winter will let in more light on the shallows.
The Environment Agency is also investigating the fish pass at Crockway House in this area aiming to improve fish passage at this site so salmon can more regularly access spawning grounds upstream – see section 4.2 (Maiden Newton is considered to be the upstream limit for salmon).

3.2. Dorchester Fishing Club Enhancement Scheme

The Environment Agency and the Dorchester Fishing Club undertook a partnership project in the Club waters upstream of Louds Mill to improve salmon spawning habitat and fishing in the area. The work involved the creation of new islands in the vicinity of Whitfield Hatches, as well as bank revetment and the introduction of flow deflectors to reduce erosion, improving about 300 m of river.

In addition further flow deflectors were constructed in a 400 m stretch of the very straight Stinsford Channel.
3.3. Water Level Management Plans enhancements at Woodsford

Following the refurbishment of Nine Hatches the aim of this large-scale project was to enhance an over-deep and uniform reach of the River Frome in the Woodsford area which had been dredged in the past. The SSSI classification was “unfavourable condition” due to the low fish populations, little marginal habitat and little or no diversity of in-channel habitat.

As a result of the work, four new riffles have been created, the u-shaped channel has been re-profiled, exposing gravel berms and creating pools and gullies, resulting in better habitat for spawning salmon and trout, and the creation of back channels and the introduction of large woody debris has provided juvenile refuges.

This site is now being used as a demonstration site for the techniques used, which included the use of mature trees placed in the river.

3.4. Gravel cleaning in the Frome catchment

The partnership between the Environment Agency and the Frome, Piddle and West Dorset Streams Fisheries Association delivered a programme of gravel cleaning in the Frome catchment during September and October undertaken by Casterbridge Fisheries Ltd. An expanded programme cleaned 2,769 m² over 41 sites. A map of the locations cleaned is shown here.
3.5. River Frome Rehabilitation Plan

The FRB team are involved in the new Frome Rehabilitation Plan launched in January 2010 by the Biodiversity Outcome Measures team (formerly WLMP team). The aim is to plan and direct work which will restore the SSSI to favourable condition, as well as being used to lever funds from various sources.

4. Fish Passage Issues

4.1. Cerne Fish Passage Improvements

The old hatches at Charminster (SY67879246) diverting water to a leat feeding a lake in the grounds of Wolfestone House fell into disrepair. As part of a flood alleviation measure in the 1990s the dilapidated hatches were replaced by a sandbag and boulder weir. The location of the boulders has since caused concern over the ability of trout and salmon to pass the weir and increased bank erosion (picture right – before)
In the summer of 2009 the Environment Agency reduced the porosity of the weir using a plastic membrane – the flow under the weir was the likely primary cause of bank erosion, and rearranged existing and additional rocks to reform the rock ramp, directing flows so as to enable fish passage (picture left - after).

4.2. **Upper Frome fish passage**

The Environment Agency is investigating the fish pass at Crockway House near Nunnery Mead. We had a level survey of the site done in the summer of 2009 and will be monitoring the effect of the current hatch operation on water levels in the fish pass area. In future we would like to modify the hatch operation, or physically modify the fish pass (or a combination) aiming to improve fish passage at this site so salmon can more regularly access spawning grounds upstream (Maiden Newton is considered to be the upstream limit for salmon).

4.3. **Eel pass at Baggs Mill on the Piddle**

The South West Area Eel Action Plan (still in draft) highlighted Baggs Mill as the top priority for an eel pass due to the old mill channel now being redundant, and the gauging weir being too high velocity for elvers to pass. Our data clearly show that since the 1970s fewer and fewer smaller eels have been found in surveys above Baggs Mill with only large eels upstream. Recent bi-annual eel surveys have shown only elvers below Baggs Mill, but encouragingly still in their hundreds per survey site.
Baggs Mill Eel Pass is a new type of pumped pass design which allows the gauging of the weir to be unaffected while still allowing eel passage. A monitoring station on the eel pass will give a full eel count each year. This pioneering project design will lead the way for eel passage in the South West area.

The project, which cost £18,000 was funded by Water Framework Directive money, and has now been completed.

4.4. Plans for other eel passes on tilting weirs in the Frome

Eel passes are planned for the tilting weirs at Duddle Farm, Pallington and Water Barn. These structures have to remain in a raised position in order to ensure the correct flow apportionment between channels and this makes them difficult for eels to pass. The bespoke structures have now been designed and fabricated and will be installed from April 2010 as part of the Water Level Management Plan.

5. Regulation and enforcement

5.1. Regulation of fish movement and Byelaws in both the Frome and Piddle

The FRB team have continued to regulate the movement of fish to and from the Rivers Frome and Piddle, as well as considering applications made under
fisheries byelaws to work in these rivers. In addition, we continue to be consulted by other teams applying Flood Defence and planning regulations.

5.2. Enforcement

The main enforcement issues in the Frome and Piddle area relate to the use of legal and illegal nets within the upper areas of Poole Harbour and inside the lower river, poaching in the Frome above Wareham and the vulnerability of fish below obstructions and at spawning sites.

In response to these issues, the Environment Agency carries out enforcement patrols at vulnerable periods throughout the Harbour when salmon are migrating, patrolling by boat and on land in both covert and overt roles, we also involve the Police, Sea Fisheries and the Marine Fisheries Agency in multi-agency enforcement and use information received to target enforcement activities.

6. Other

The Environment Agency provides funds to facilitate the release of net-caught salmon by the licence holder in Poole Harbour. This allows GWCT to tag and assess the condition of these fish post capture which provides information for future NLO.

Nicole Caetano 09 April 2010