Foreword
IRD Duhallow is a community based, bottom-up Local Development Company. It was established in 1989 by local businessmen who also were salmon anglers, to address economic and agricultural decline, rising unemployment and outmigration resulting in a precipitous drop in the population of the Duhallow region. IRD Duhallow has successfully earned the confidence of the region’s communities and landowners and driven the development of micro and small enterprises, community based social enterprises, activity and culture based rural tourism, locally accessible life-long learning and training and has animated the establishment of over one hundred and eighty community development groups, organisations and support networks through a number of European and national funded programmes such as LEADER and Social Inclusion.

The national policy of planting uplands and marginal land with Sitka Spruce encouraged inward forestry investment with the tax efficient, EU funded premia, which resulted in the greatest change in land use in these areas since cultivation began and saw many small-holders sell up and in the main leave the area.

This national policy, pursued by successive governments, while very successful in terms of scale and output, had the effect of defining the value of uplands and marginal land, solely in terms of its ability to become forestry land, with little or no emphasis being put on its value as significant nature environments and home to rare and endangered species. The low intensity farming, carried out by successive generations on this land had ensured the quality habitats necessary for wild Atlantic Salmon, Freshwater Pearl Mussels, Otters, Kingfishers, Lamprey and indeed Raptors to thrive.

In the meantime, farming in the marginally better lowlands along the river courses, was becoming more intensive as farmers were driven to produce more in order maintain incomes. The opportunities for off-farm income is limited due to the peripheral nature of the region and the large size of the county often leads to prioritisation of development nearer the city and centres of population. Furthermore, EU Farm Payments have traditionally been based on scale of output, which put even greater upward pressure on production, leading to greater efficiency and widespread land drainage.

Against this backdrop and cognoscente of the decline in Salmon and Otter populations, as well as the critical state of the Freshwater Pearl Mussel, IRD Duhallow drew up its Strategic Plan in 2008, with Environment as a fourth pillar alongside social, culture and economic development. We identified the need to work through landowners, stakeholders such as anglers and communities as well as the competent authorities, State sector and local authorities, tasked with enforcement including that of the Water Framework Directive.

IRD Duhallow was introduced to the LIFE Biodiversity Programme through its Chairman Michael Twohig, who was a member of the Blackwater Salmon Development Group where the merits of the programme had been discussed. Our Environment Working Group, under the chairmanship of Michael Doyle embraced the challenge of planning and making an application to the European Commission. Inland Fisheries Ireland, which was represented on our board by Susanne Campion, came in immediately as project partners and agreed to second one of their staff, Fran Igoe who had previous experience drawing up and implementing a Life Programme. We received support and guidance from Brian Earley in the Department of the Environment and Pat Dawson of National Parks and Wildlife Service in Killarney in putting our submission together.

We were thrilled when we learned that our bid was successful and that at last we had the necessary resources to make a real and lasting difference to the Environment while at the same time demonstrating that we could have a “Living Countryside” and a demonstration project which other areas could replicate.

While we were confident in our in-depth knowledge of the region, its landowners and farmers, its communities and businesses, our proven track record in delivering a range of innovative European and national programmes, we were also acutely aware that the task we had set ourselves was not insignificant. We were motivated by the challenge of taking the necessary measures, which we believed would ensure the survival of the endangered species identified in the project area and the
absolute necessity to bring farmers and the community along with us as well as gaining the support of the relevant authorities.

Fran Igoe joined the staff of IRD Duhallow as Project Scientist and Kieran Murphy joined as the Assistant Scientist, as part of the Enterprise Team under the leadership of Eileen Linehan. Teresa Collins was the first finance officer and was replaced by Caroline O Carroll. The bulk of the ground work involved the removal of huge swathes of Himalayan Balsam, the planting of willow and other native species to prevent the riverbank erosion, which was causing much of the situation that is so detrimental to the survival of young Freshwater Pearl Mussels. This mammoth task could not have been carried out without the Trojan work of our Rural Social Scheme participants, who are smallholders that do nineteen and a half hours work a week as well as continuing their farm enterprise. They embraced the work, which was difficult and often compounded by adverse weather conditions. One of the RSS participants Nuala Riordan, successfully undertook the task of bringing the story of the five target species of the Duhallow Life project, SAMOK, to the 36 primary schools in Duhallow and she won the minds and hearts of pupils and teachers alike. Kanturk Anglers offered voluntary labour and above all an in-depth knowledge of the Allow Catchment and Upper Blackwater and were inspired by our SAMOK work to undertake similar work in the Dalua and Glen Rivers through our LEADER Programme.

This report details the work we undertook in the project, the impact and results we achieved and the legacy SAMOK has left not only in the Duhallow region but in the country. The new Local Authorities Water and Communities Organisation (LAWCO) approach to implementing the Water Framework Directive with communities at its core, has been launched with Dr Fran Igoe on the team and he will be joined shortly by Kieran Murphy. I am confident they will bring the enthusiasm they showed in implementing SAMOK and their experience to this new initiative.

The pupils of Coláiste Treasa secondary school in Kanturk, inspired by IRD Duhallow’s Life project, won the Bronze award at the national Young Scientist Competition with their project on the Freshwater Pearl Mussel of the Allow.

Our Allow Catchment Management Group set up as part of IRD Duhallow, to lead our After Life plan has paved the way for similar river catchment management groups to be established by the 35 LEADER Groups and 15 Urban Partnerships that cover the entire country and the potential of our 50 fellow Local Development Groups to assist LAWCO in delivering on the Water Framework Directive cannot be underestimated.

The experience we gained as a company in planning and delivering this Life SAM OK programme has greatly increased our understanding and appreciation of the interconnectedness of nature and man. It has enriched us as a multi-faceted community led local development organisation and inspired us to work even harder to balance and preserve what is so unique in the environment in this region. We will continue to try to influence national and European policy, to properly value the contribution that farmers and landowners make to providing this rare and unique “Public Good” by adequately rewarding farmers and land owners to continue to provide the necessary habitats.

I hope that this report will inspire others to do the same.

Finally, I would like to thank Pobal who came on board as an Associated Beneficiary with payroll for RSS, Kathleen Stack and her staff in the Department of Social Protection. I also wish to thank Neil Wilkie and NEEMO, as well as Laszlo Becsy, Tommy Sejersen and Anne Burrill in the Commission for their guidance and support over the course of the project.

Maura Walsh
CEO - IRD Duhallow CLG
Introduction
In 2010, IRD Duhallow was successful in its bid for funding from the EU LIFE+ Programme targeting the Upper Blackwater River with various river restoration works in order to restore the habitats of the Atlantic Salmon, Freshwater Pearl Mussel, European Otter and Kingfisher. The total fund for the IRD Duhallow Blackwater SAMOK (Salmon, Mussel, Otter, Kingfisher) Project, commonly referred to as DuhallowLIFE, was €1,995,826. The Project was co-financed by the EU Commission (€935,650) and the Irish exchequer (€1,060,176), and was run by IRD Duhallow, in partnership with Pobal (Rural Social Scheme) and Inland Fisheries Ireland. The majority of the conservation works entailed in the project were directed at the River Allow catchment area.

The project was managed by our 23-member board of IRD Duhallow and by the Environment Working Group, with the day to day running of the project delegated to the Enterprise Team.

This Layman’s report outlines the work carried out by DuhallowLIFE. The DuhallowLIFE Project was a large scale project which aimed to improve the habitat and wildlife quality of the Munster Blackwater River within Duhallow, which is located in North Cork and East Kerry. The project, by working in partnership with the local community, farmers, anglers, state agency personnel and other stakeholders, aimed to develop practical solutions to promote the sustainable management of the countryside thereby protecting the river, its threatened species and the livelihoods of people working in the area and promoting the river as an amenity to be enjoyed by all.

Together with ten concrete on the ground practical actions we undertook another 19 actions concerned with public engagement, working with key stakeholders and monitoring of the project itself. Many of the lessons learnt are not only transferable to other river catchments in Ireland including Special Areas of Conservation but also to other areas in Europe. Ireland is currently within the second implementation cycle of the Water Framework Directive and the project is particularly relevant with regard to public participation and the development of a programme of measures for high status sites.

The initiation, by IRD Duhallow, of an integrated catchment management process on the River Allow has provided a framework for stakeholder engagement and has been described as an “exemplar” by the Department of the Environment.

However, it must to acknowledged that the success of the project could not have been achieved without the buy in, support and commitment of the local community in Duhallow, by volunteers and the broad range of organisations and groups who worked, together with our scientists and Rural Social Scheme participants and supervisors, to improve the conservation status of the upper catchment of the River Blackwater. This buy-in was made possible by the long established relationships IRD Duhallow has developed over 25 years of serving the local community.
IRD Duhallow and EU LIFE+ Programme

Key actions, of this innovative project, aimed to protect threatened European species including Atlantic Salmon (*Salmo salar*), Freshwater Pearl Mussel (*Margaritifera margaritifera*), European Otter (*Lutra lutra*) and Kingfisher (*Alcedo atthis*) within the upper reaches of the River Blackwater. The Munster Blackwater River is designated as a Special Area of Conservation (SAC Site Code: 002170) under the EU Habitats Directive.

During the course of the DuhallowLIFE project, the following was achieved.

- Electro-fishing surveys conducted on the Allow, Dalua and Brogeen rivers found that where the LIFE project conducted riverbank restoration Atlantic Salmon numbers increased.
- Baseline survey (28 km) of the River Allow for Freshwater Pearl Mussels.
- Glochidia (larvae of the freshwater pearl mussel) survey of the Allow and Dalua rivers which found that the mussels in the catchment are breeding.
- The invasive species Himalayan balsam (*Impatiens glandulifera*) was removed without the use of chemicals, from almost 35.5 km of river bank.
- In excess of 38 km of river bank was fenced to manage livestock access to the river. Practical innovative techniques were developed by the project to address issues on the ground including a "flood friendly fencing technique" developed for managing livestock grazing within floodplains.
- A novel "silt trapping technique" was developed to stop silt entering the river from farm drains.
- A non-invasive technique was also devised to manually construct small wetlands to enhance water retention in upland afforested areas without the use of heavy machinery.
- A "best practice technique" was developed to address excessive erosion of river banks. Over 400m of excessively eroding river bank has been stabilised using this soft engineering technique developed by the project.
- Thousands of native trees were planted in areas where riparian (river bank) tree cover was inadequate.
- Over 6 km of trees along river banks were pruned. Where riparian vegetation was found to be too dense causing excessive shading of the river bed, tree pruning and coppicing techniques were employed.
- Bespoke nest boxes suitable for low overpass bridges for dipper (*Cinclus cinclus*) were developed and placed under 20 bridges, 12 nest boxes for Kingfisher were placed in river banks and 10 artificial holts and 38 logs piles were placed to increase habitat for Otters.
- Road signage was also developed to alert drivers of the hazard that speeding vehicles pose to otters.
- 120,000 newsletters were produced in addition to brochures, information signage etc.
- Environmental calendars were produced for three consecutive years and distributed to all of the schools and farm co-ops and the wider community in Duhallow.
- Workshops were held on a range of topics relevant to the project and the SAC. Educational lectures were organised to address topics which the public themselves expressed an interest in.
- All National and Post Primary schools in Duhallow were visited more than twice with follow up field trips.
- A bespoke Locally Led Agri-Environment Scheme was developed, by our LIFE Project staff, suitable for the area, based on mitigation techniques and discussed with farmers through farm visits and walks.
- The River Allow Catchment Management continues to promote the work of the IRD DuhallowLIFE project and progress the management of the SAC. As a direct result of the project activities, the EPA has instructed that "Irish Water should review sludge management of all treatment plants located near rivers designated for freshwater pearl mussel and ensure that discharges from water treatment plants are not impacting on water quality of habitats".
The Munster Blackwater River

The Blackwater River is one of Ireland’s largest rivers, extending some 160km from source to sea and draining a catchment area in excess of 3,000km². The river rises in Duhallow in the mountains of east Co. Kerry, traversing much of Co. Cork flowing east into Co. Waterford, entering the sea at Youghal Bay. The river is one of Ireland's most important tourist angling rivers. Large numbers of tourist anglers travel from the UK and elsewhere to holiday in local fishing lodges, soak up the beautiful scenery and take time out from their busy lives to relax and fish. The river is also important from a biodiversity context as it supports a wide range of important wildlife species and habitats. For this reason, the river and many of its tributaries are designated as a Special Area of Conservation (SAC) under the EU Habitats Directive. Species of EU conservation importance present include otters, kingfishers, lampreys and Atlantic salmon. The river is the largest Special Area of Conservation designated for the protection of the rare Freshwater Pearl Mussel in Ireland.

Like so many other Irish rivers, a wide range of pressures have led to a decline in the river's habitat and water quality impacting negatively on fishing and the local economy. These pressures include changes in the landscape and water quality, forestry, intensification of agriculture, peat cutting, land reclamation, drainage, drinking water and waste water treatment, runoff from increasing road traffic, windfarm development, urbanisation and septic tanks. They all present challenges to the management of the river, industries and the wildlife dependent on it. These pressures are not unique to the Blackwater and are associated with most catchments in modern Ireland. Therefore, any conservation or management lessons learnt on the River Blackwater should be relevant for the management of other catchments. A key objective of the DuhallowLIFE project was to develop conservation strategies that can be transferred elsewhere.
How did DuhallowLIFE come about?

In 2009, IRD Duhallow was approached by the Kanturk and District Angling Club and Blackwater Salmon Development Group, through the Southern Regional Fisheries Board (now Inland Fisheries Ireland), with a view to develop a large scale project aimed at improving the river for fish. It was recognised that there was a need for a broader holistic approach, that took in all aspects of the biodiversity along the river rather than focusing just on fish and identified the EU LIFE Programme as the most appropriate source of funding. On consultation with ecologists, a pragmatic approach was taken. Follow a simple logic. Protect the most sensitive species, the Freshwater Pearl Mussel, and other species such as the Atlantic salmon and brown trout would also benefit. Freshwater Pearl Mussel require pristine habitat and water quality and therefore any efforts to protect them should improve the environment for other coexisting species including fish. Actions to protect other species such as Kingfisher, Dipper, and Otter were also added to the projects remit to further increase biodiversity improvements and importantly help increase engagement of the wider public. It was agreed that IRD Duhallow, with its 25-year history of delivering EU LEADER and National Programmes was best placed to develop the application and with its long established reputation locally, would be the best organisation to ensure buy-in from the local community. A team was put together and the completed application submitted.

IRD Duhallow was successful in its bid and the project was awarded funding in 2010. The project was then developed through direct participation with the local community to find solutions that would benefit wildlife conservation but importantly also find acceptance amongst the local community. Where possible "added value" solutions were sought which also brought tangible benefits to the local community (for example, the removal of invasive species and the development of a technique which facilitated the fencing of livestock in flood plains regularly drowned out during high rainfall events). Most of the on-the-ground works were carried out by participants on the IRD Duhallow Rural Social Scheme, who are themselves farmers from the area. The project was supported by volunteers drawn from all walks of life including universities, schools, industry, state agency staff and the wider community.
Projects Partners of DuhallowLIFE

Inland Fisheries Ireland
Along with being co-financiers of our LIFE Project, the expertise of Inland Fisheries Ireland (IFI) staff ensured fish stock surveys were conducted safely and efficiently. Also, the school field trips led by IFI perfectly complemented the school visits conducted by the project team. As IFI were project partners some essential licences (survey) and permissions (instream works during spawning season) were obtained far quicker than from other regulatory authorities.

Pobal
Pobal acts as an intermediary for programmes funded by the Irish Government and the EU. They administer the payroll for IRD Duhallow’s Rural Social Scheme (RSS). The RSS participants and supervisors were the backbone of the implementation and successes of the project’s concrete conservation works.
A Community Led Approach

From the beginning, as is the ethos of IRD Duhallow, the project took a people centred view by including the community at its core. In tandem with the on-the-ground conservation actions (of which there are ten) another 19 actions covered project planning and communication with the public and key stakeholders at a range of levels. The project endeavoured to form partnerships with the local landowners, interest groups and state agencies to maximise the projects reach and achieve buy-in from all stakeholders. Regular meetings, public information nights, field trips, door to door calls, newsletters, brochures, information signage all were developed as part and parcel with the project, so that that the local community and the wider stakeholder interest groups were kept informed. Much of the project work on the ground was carried out by participants on the Rural Social Scheme and volunteers.

“Taking a community led bottom up approach meant that the local community had direct input into the project, took a direct role in planning and execution of the project actions and provided local knowledge and expertise essential for its success”
Working with Schoolchildren

Education was a major element of the project. Thirty-six national schools and five secondary schools were visited in the classroom by the project team and given presentations on the project. The importance of the Natura 2000 site and the relevance of the EU Habitats Directive to their area was explained and demonstrations were given on the project actions. Later in the year these school children were transported by bus to their local stream or river, all tributaries of the Blackwater. Demonstrations on how fish are sampled by electrofishing were given by Inland Fisheries Ireland staff. The project team also gave demonstrations on how aquatic macroinvertebrates can be used to monitor of water quality. A bespoke fun "nature detective programme" developed by the project was also rolled out through the schools.

The schools also participated in a “Acorn planting” project, where school children were encouraged to collect acorns from Oak trees and plant them out. Demonstrations were given to the school children on what dippers nests look like, how to track otters and how Freshwater Pearl Mussels are aged.
Nature Detectives

The project developed a bespoke “Nature Detective Species Recording Programme” which was delivered to the school children by the project team with the assistance of a GIS specialist. This initiative of the programme was novel in a number of ways. Firstly, the entire project was put together with the input of children from its inception through the development phase. This facilitated the development of an age appropriate wildlife recording booklet into which the children could record the wildlife species in their neighbourhood. They were given maps specific to their own townlands and asked to mark in the route they took whilst recording. The data generated was then transferred to a bespoke online mapping system, also developed by the project. Students were encouraged to record the wildlife in their back gardens, farms and local community with the assistance of their parents or responsible adults. The onsite recording was done by the primary school children. On completion the recording sheets were returned to the project team for processing by secondary school Transition Year students. Work placement students from the University of Limerick worked with the LIFE project to interrogate the data and enter it online. These data were subsequently analysed further to determine if wildlife patterns could be extracted from the data to bring extra value from a conservation perspective.

The data is hosted on an online map (www.maps.duhallowLIFE.com) and can be interrogated for species presence and distribution. Stratified searches can also be made to examine distribution of species relative to schools, Natura 2000 site, forestry, etc. The data can be exported via an excel feature for statistical analysis. This initiative proved to be very popular and a questionnaire sent to the school principals found that the school children’s knowledge of wildlife and Natura 2000 sites had increased dramatically, as a result of their participation. The schools were eager to continue this type of engagement with IRD Duhallow. Fortunately, we have been successful with a second LIFE Project focused on the Hen Harrier, Merlin, Atlantic Salmon and Brook Lamprey.
Solar powered pumps were installed at a number of farms to pump water to cattle troughs as demonstrated to the project’s external monitor, Neil Wilkie (NEEMO), and Laszlo Becsy and Tommy Sejersen (desk officers for DG Environment, European Commission).

A major output of the project is that it now serves as a demonstration project to illustrate what can be done to improve nature conservation by working with farmers, at the practical level on the ground. This is of particular relevance to the protection of High Status Water Bodies which require measures over and above those prescribed for water bodies of Good Water Status.

The three demonstration farms we worked with on this project, provide real world examples of how nature and farming can co-exist in relative harmony rather than in perpetual conflict. The ethos of IRD Duhallow, which aims to improve not only the economy of the rural area but also the social, cultural, heritage and environment of the region, means that the project will continue to evolve and improve, and hopefully not only deliver a positive impact to the local environment but also provide insights for those with interest in sustainable management and nature conservation in Ireland and beyond.
River Bank Erosion: Development of Best Practice Technique

River erosion in the River Allow catchment was found to be severe along many river stretches, degrading farmland and negatively impacting on the environment by introducing excessive volumes of soil to Atlantic salmon spawning beds and Freshwater Pearl Mussel river bed habitat.

The project developed a novel “best practice technique” suitable for rivers, which works with nature using a minimum amount of engineering and disturbance to the site. This "best practice technique" was developed in partnership with the local farming community.

The technique involves re-profiling of the river bank, protecting the base of the eroding bank using locally imported quarried rock, the removal, storage and subsequent placement of the natural turf on the bank. Native trees are grown by planting large live willow stakes (sharpened using chainsaws) which will sprout into new trees together with planting of trees donated by the public. Christmas trees discarded after the holiday period by the public and donated to the project were also secured to fencing posts which has been driven into the ground using the bucket of a track machine.

In addition to this, willow fascines (bundles of willow slips laid horizontally) were also buried in places within the redesigned bank. Mitigation measures were put in place to ensure that the works, carried out under license from the relevant authorities, did not cause siltation to the river and that the design was such as to avoid the transfer of erosion to downstream sections.
Fencing

Fencing of river banks was carried out by Rural Social Scheme through the DuhallowLIFE to control livestock access to the river. Surveys had found that in many areas river banks were collapsing under the weight of livestock and riparian vegetation was limited due to grazing pressure. River bank vegetation in a healthy state provides protection to river banks during floods, as the roots of the plants bind the soil particles together and long grasses flatten under the flowing water offering further protection against erosion. Unmanaged livestock access to rivers can lead to increased nutrient pollution due to faeces and urine (a dairy cow can produce the equivalent amount of waste to that from more than 25 people). Cows will often spend long periods standing in water, especially during hot weather to cool off, increasing the risk of pollution and transfer of pathogens downstream.

Therefore, unmanaged livestock will not only damage river banks and cause siltation, but will also enter the water, especially during good weather, potentially damaging Freshwater Pearl Mussels by trampling them.

Project innovation

The value of fencing riparian areas to protect rivers is well established. But what can be done where land is particularly prone to flooding and farmers are not able to establish permanent fence lines along the riparian zone? This is a challenge that the DuhallowLIFE found itself in, at the beginning of the project and a solution was needed if fencing was to be retained along certain farms particularly prone to flooding.
Fencing and the maintenance of fence lines on land prone to flooding is a challenge for both landowners and conservationists. Where land is particularly prone to regular flooding, it is difficult, if not impossible, for farmers to establish permanent fence lines along the riparian zone. This is a particular problem where rivers collect large volumes of debris when in flood. Floating material can range from rushes and tree branches to fully grown trees. In more urban areas, domestic refuse and plastic bags can also be a problem. This debris will collect along the fence line if it is located within the floodplain. Typically, debris gathers on the fence impeding water flow and thereby placing additional pressure on the fence as flood water builds up behind it. Often the fence wire will snap or the entire fence is ripped out.

Though discussions with the local farmers DuhallowLIFE developed an innovative "flood friendly fencing” technique. The technique has worked extremely well and the initial trial test fence is still in place since its initial placement and trial in September 2012, despite major floods.

The “Flood Friendly Technique”

The “flood friendly fencing” technique is an inexpensive and effective fencing method suitable for the management of cattle and horses along flood prone watercourses.

1. The technique involves the use single strand electric fencing. Place the wire at a suitable height to restrict livestock access but maximise the extent of clearance allowing most flood water to flow beneath unimpeded.
2. Determine the areas where pressure is most likely to build up on a fence within the floodplain. This can be done by accessing freely available online aerial survey maps (www.bing.com/maps; www.google.ie/maps; etc) together with utilising local knowledge. Talk to landowners, local farmers and regular river users such as anglers with knowledge of the area. Look for signs of debris build up on vegetation or structures within the floodplain including where existing fences may occur. Mark these pressure points on the map.

3. Place strainer posts either side of the pressure points taking in the area with the highest risk of debris build up.

4. Between the strainer posts attach an “R-clip” and a “Gap handle” and attach electric fence. The tension of the wire between these two posts will need to be such that the “R-clip” and “Gap handle” will separate when placed under substantial pressure, but won’t separate unless this pressure is applied (i.e. won’t open easily if a cow brushes against it).

5. Inspect the fence after flood events. The fence should open at these pressure points if there was debris build up or a tree became snagged. Reconnect “R-clip” and a “Gap handle” where openings have occurred. Clear off debris should build-up occur around the strainer posts.
Alternative Drinking Solutions for Cattle

Working with Farmers – IRD Duhallow worked with farmers and landowners to reduce the impact of cattle crossing the river or accessing the river for drinking water. This work included the provision of extensive river bank fencing and the closure of cattle river drinking access points. Where appropriate alternative drinking water sources were provided. Only traditional access points were replaced and no new abstraction points were introduced. The alternative drinking water sources that were developed and rolled out included pasture pumps, rainwater harvesting and solar powered pump troughs. It is important not only for wildlife, but also the public and livestock, that river water quality is protected to avoid contamination from potential pathogens. This project action is going some way to address this issue which is also a potentially important public health and animal welfare issue.

Managed River Crossings

The project trialled and tested an alternative to allowing animals randomly cross the river whether to access new grazing paddocks or for milking. This alternative method was a managed crossing which was supported by an agreed “Cattle Crossing Management Plan” with the farmer. In this plan the farmer actively herds the animals across quickly, reducing the risk of animals stopping within the river and reducing the inevitable fouling of the river that occurs when animals are allowed to loiter within a river. Three of the crossing plans were developed with local farmers at key locations identified by the project.

“The replacement of unmanaged cattle drinks and crossing points with alternative drinking strategies including novel pumping systems has reduced the risk of siltation and organic pollution to the SAC”
Management of Silt from Agricultural Drains

The transfer of silt from farm drainage networks was found to be a major issue in the River Allow catchment. The project developed a novel silt trapping technique suitable for farm drains. Off the shelf designs were not available and without readily available expert advice, the project team set about developing its own project “innovation”. The design developed by our LIFE project has been tested and shown to be highly effective, removing not just silt moving along the bottom (entrained) of these actively eroding farm drains but also suspended solids. This technique is suitable for farm drains, especially those draining mineral soil areas, and are relatively inexpensive to construct and easy to maintain.

Installing and Maintaining Agricultural Silt Traps

Step 1: Install silt box (recommended dimension for maintenance 0.5m x 0.5m x 1m) with top flush with bed of drain. Any deeper may present a hazard to public and it may be decided to reduce depth to ~35cm depending on depth of drain.

Step 2: Secure fencing stakes at downstream end of box and if loose cobble is available place this at end. Attach used Christmas trees (normally only two required) to these stakes with cable ties. The Christmas trees will slow down water flow further while silt settles to the bottom of the box.

Step 3: To facilitate maintenance place heavy duty bags, either 0.5ton or 1-ton bag, depending on what is available (e.g. recycled bags used for builders’ stone), within the entrapment box. Stretch the bag out within the box so that silt will fall within the bag rather than behind or underneath it. The sides of the bags can be pinned back by pinning handles with a small wedge or stick. Make sure that the entire bag is submerged under water even if possible to avoid damage by sunlight. Submerged bags will last well over one year.

Step 4: After heavy rain events, each silt trap may have to be emptied. If using a bag liner, this can easily be done using a chain certified to carry loads in excess of 10ton using the front loader of a tractor for lifting. Alternatively, the trap can be emptied using a wide base hand shovel.

Traps are normally placed in a series of three providing a treatment train and inspected on a regular basis. The objective is to empty traps before the most downstream one has filled.
Rebalancing of Riparian Vegetation

Excessive river bank vegetation growth can reduce incident sunlight and cause undesirable levels of shading to rivers and has been shown to be negatively associated with juvenile salmonid densities in Irish rivers. River banks along the River Allow were identified as having areas that would benefit from tree pruning to increase the incident sunlight. Pruning at selected target areas along the River Allow main channel was carried out in consultation with the local angling club and landowners. New areas were opened up for angling access to reduce angling pressure in more ecologically sensitive Freshwater Pearl Mussel areas. Riparian tree pruning was carried out along 3.11km within a 6.46km length of river bank. This work concentrated on the lower reaches of the Rivers Allow, Dalua and Brogeen creating improved habitat for juvenile Atlantic salmon.

Native Trees Are Better: Along river banks where tree cover was low or absent a range of native trees were planted. These trees were sourced locally by teams of Rural Social Scheme participants and volunteers along the edges of native woodlands. Saplings were dug up and stored onsite by these teams and translocated for planting. This method of collection meant that all trees were of local provenance. Planting of trees of local provenance ensured that all trees are in synchrony with the local climatic conditions and biodiversity characteristics. The trees were kindly donated by members of the public and by Coillte (the Irish state owned forestry company). As a result, in excess of 7000 willow, 500 alder, 300 ash and 150 oak were planted.
Freshwater Pearl Mussel

The Munster Blackwater and its tributary the River Allow provide habitat for the Freshwater Pearl Mussel and as such have been designated Special Areas of Conservation. The species can only tolerate clean waters and will eventually succumb to even low level of pollution. The loss of Freshwater Pearl Mussel populations mostly occurs from the continuous failure to produce a new generation of mussels when clean gravel beds are lost due to the infiltration of fine sediment. This blocks the required levels of oxygen from reaching young mussels.

The five-year period in which the juvenile mussels are buried is one of the most vulnerable parts in their life-cycle.

“The population was found to be failing in its habitat quality (through evidence of heavy siltation and strong macrophyte growth), and in its population demographic profile, where it is evident that there are not the numbers of juveniles present in the population to provide sustainable replacement of the current adult numbers.” - River Allow Freshwater Pearl Mussel Sub-Basin Management Plan, 2010

Part of the complex lifecycle of a Freshwater Pearl Mussel is the larval, or glochidial, stage. The gills of young trout or salmon become the temporary home for glochidia. DuhallowLIFE and the Kanturk and District Angling Club conducted a survey of trout and salmon in the Allow and Dalua Rivers to ascertain the presence or absence of Glochidia on salmonid hosts. In order to protect the captured fish, the survey was conducted by catching the fish by rod and line. All fish were netted and examined for the presence of glochidia on their gills. The presence of glochidia in all sites monitored is significant and points to FPM reproduction taking place.
Freshwater Pearl Mussel Survey

In order to fully understand the requirements and conditions of the Freshwater Pearl Mussel in the River Allow, the habitat was surveyed. The project team was trained by Dr Evelyn Moorkens, one of Ireland’s Freshwater Pearl Mussel experts, in bathyscope and snorkel survey technique.

After training, licences were obtained from the National Parks and Wildlife Service and the snorkel survey of the River Allow commenced. In total, 28.5km of the River Allow was surveyed for Freshwater Pearl Mussels. The conditions in which the mussels were surviving in was also recorded. Over 17,000 individual mussels were recorded. The amount of silt deposited on the riverbed had a significant effect on the distribution of FPM in the River Allow.

DuhallowLIFE has looked to improve the habitat for Freshwater Pearl Mussels in the River Allow through a suite of measures, including riverbank restoration, prevention of silt loading of the river, improvement of riparian zones (e.g. fencing, planting and coppicing), prevention of cattle access to the river and raising public awareness of the species (e.g. school visits, public awareness presentations and the “Guess the Age of the Pearl Mussel” competition held at the annual National Ploughing Championship.

Silt deposition can greatly affect Freshwater Pearl Mussels

‘Guess the Age of the Pearl Mussel’ winner Rachel Walsh, picking up her prizes from Maura Walsh (CEO, IRD Duhallow) and Kieran Murphy (Assistant Scientist, DuhallowLIFE) at the 2014 Ploughing Championship.
Atlantic Salmon - Fish Stock Survey

The Munster Blackwater River is one of the most important salmon rivers in Europe. The river is an important angling destination for both tourist anglers and resident anglers. Alterations to the channel has led to significant bank erosion which has washed silt into the channel potentially impacting on salmon spawning beds. River pollution caused by industrial, forestry and agricultural land use can severely damage local populations. Also the wide spread and increased number of man-made obstacles such as dams, weirs or the alteration of watercourses makes migration impossible for the salmon.

In order to assess the effects of riverbank restoration, among other habitat improvement works, on the population of salmon and trout in the Allow catchment, fish stock surveys were conducted. This involved the use of electrofishing techniques. Electrofishing, or e-fishing involves creating an electric field in the water that temporarily immobilises the fish or influences the direction in which they swim, making them relatively easy to capture with a net.

These surveys were conducted by trained operators from project partners Inland Fisheries Ireland who were assisted DuhallowLIFE project and participants from the Rural Social Scheme. Two techniques were employed to sample all sites for fish: bank based efishing (wadeable sections of the river) and boat based efishing (deep water).

A four-year project is not long enough to observe significant changes in fish densities but slight improvements were noted where extensive riverbank restoration work was conducted on the River Dalua (0.43 salmon/m² in 2012 to 0.55 salmon/m² in 2014). Trout numbers also rose from 0.01/m² in 2012 to 0.06/m² in 2014.
**Action for Otters**

Otters are widespread in Duhallow and are important qualifying interests for the Special Area of Conservation. Biodiversity audits were carried out to determine the level of activity of otters in the area. Otters are normally elusive, shy creatures and are not often seen by the casual observer. Otter activity was assessed by examining traces left behind by the animal in the form of tracks, foot prints, spraints, slides and couches or resting places. Any burrows known as “holts” were also noted.

Where the LIFE project found that otter activity was low these areas were targeted for the placement of artificial otter holts. Otter log bundles were also placed at suitable locations along the river banks to increase the availability of resting areas for females and their young.

Otter holts: A total 10 artificial otter holts were constructed at IRD Duhallow’s Social Enterprise workshop following a design developed by the Suffolk Otter Trust. Holts were approximately 1.2m in width, had an internal chamber with two entrances. Construction of the holts was done using marine plywood to increase longevity of the boxes and 12” pipes were placed leading to the two entrances of the artificial holts. The holts were assembled and buried on site at predetermined locations based on the surveys referred to above. Suitability of the receiving site was determined against a range of habitat and disturbance criteria before placement was considered.

"Surveys established that otters were found to be widespread in the River Allow catchment. However, low occurrences or absences were noted in some areas and a targeting of these areas for the placement of otter holts was undertaken"

Otter log piles: In addition to the otter holts, 28 log piles were also placed throughout the catchment, mostly confined to suitable riparian areas. These piles were of a similar design to the timber-framed holts. An entrance, exit and internal chamber were constructed by placing logs on top of each other and covering the top with more logs and brush material to provide a roof for shelter from the elements. These were constructed using a range of locally sourced woody materials, usually material generated from tree pruning. A range of trees species were used including native willow and, at some locations, hazel, alder and ash.
Providing Nesting Opportunities for Kingfishers

Kingfishers (*Alcedo atthis*) are birds associated with rivers and protected under the EU Birds Directive. Fish are the main source of food for this attractive bird and adults burrow into high river banks to make their nests. Survey work carried out by BirdWatch Ireland and subsequently by IRD Duhallow failed to find evidence of kingfishers nesting along the banks of the River Allow. Walkover surveys did however identify sites potentially suitable for nesting (steep banks with adequate height above flood water level) and these sites were targeted for the placement of artificial nesting boxes. In total six suitable sites were identified and specially designed nest boxes for kingfisher were installed at each site. Two nest boxes were installed at each location to cater for the possibility of separate boxes being used for two broods of chicks.

Continued monitoring found that none of the nest boxes were utilised by kingfishers. Two sites were damaged by erosion associated with flooding and an evaluation carried out by BirdWatch Ireland concluded that the extent of riverbank erosion is probably a key factor limiting the Allow River as a nesting habitat for Kingfisher.
Providing Nesting Sites for Dippers

The Dipper (*Cinclus cinclus*) is an aquatic bird, associated with fast flowing streams and rivers. It is an indicator of clean water. This fascinating bird can walk submerged along the river bed whilst in search of food. No larger than a blackbird, the dipper has an unusual bobbing behaviour that has puzzled scientists for years.

Surveys were carried out at the beginning of the DuhallowLIFE project to determine the distribution of Dipper within the River Allow catchment. Dippers often use road bridges and other manmade structures for nesting if suitable crevices or ledges are available to build a nest upon. However, these features are less common on modern bridges and refurbished older bridges and it is often necessary to retrofit suitable nesting units for dipper.

Road bridges crossing the rivers in the catchment were surveyed during the first year of the project to determine their suitability for nesting. Bridge sites that might benefit from placement of nesting boxes were identified. Two dipper nesting unit designs were trialled and subsequently modified to suit local conditions. We monitored the nesting units on an annual basis. Both designs once modified were found to be very successful with an average annual uptake recorded at 65%. Following best practice, these nest platforms are cleared each year to encourage nesting the following year, and the nests used in classroom demonstrations in school. Twenty bridges have now been retrofitted with nesting platforms in the River Allow catchment.
Control of the Invasive Species Himalayan Balsam

A major success of the DuhallowLIFE project was the invasive species control programme developed to address the extensive infestations of Himalayan balsam (*Impatiens glandulifera*) along the banks of the River Allow and its tributaries.

Himalayan balsam, an attractive plant introduced into Ireland as an ornamental plant over 100 years ago, is considered to be one of the most invasive species in Ireland today.

A concentrated and sustained control programme has now resulted in the almost complete eradication of this invasive plant from over 35km of river bank and drainage network possibly making this the largest project of its type carried out in Europe. The project developed a technique to manually remove the plant without needing to resort to the application of chemicals. The plant which forms dense stands along river banks, suppresses the growth of native grasses and other native plants impacting on the riparian natural ecological balance. Due to its ability to outcompete other species it leaves riverbanks bare of vegetation in autumn as it dies back for the winter and rendering them liable to erosion.

Removal of Himalayan balsam was achieved entirely by pulling by hand following a carefully planned eradication programme, developed for the catchment and based on the life cycle characteristics for the Duhallow area determined by monitoring studies by DuhallowLIFE project. Removal was carried out primarily by an army of Rural Social Scheme participants, with support from anglers and volunteers who were trained in the correct identification of Himalayan balsam, and techniques developed by the project. Monitoring was carried out at a series of locations over the period to evaluate progress and to strategically direct crews. Repeat visits were conducted annually over a five-year period and will continue into the AfterLIFE phase of the project.
Planning is essential to any conservation and sustainable landscape management project. Currently there is no published official conservation plan for the River Blackwater SAC to support the Conservation Objectives of this important Natura 2000 site. Therefore, the DuhallowLIFE project consulted widely with stakeholders including the Competent Authorities to develop a conservation plan for the river. This was presented at different development stages to the River Allow Catchment Management Group for stakeholder input also. The plan identifies key areas and work practices needed to promote the conservation of the site. In addition, the DuhallowLIFE project developed a bespoke Locally Led Agri-Environment Scheme, in partnership with Cork County Council’s INTERREG TRAP Project. This was done with the direct engagement of local farming community through workshops and farm visits and identifies a number of farm specific measures (some developed by the DuhallowLIFE project suitable for the catchment).

A habitat restoration guide was also developed with the local fishing clubs to promote sustainable angling and better river habitat. Supporting these initiatives and to increase greater public awareness the project produced three colourful guides (Annex species found in the Allow catchment, Removal of Himalayan balsam and Farming techniques for protecting water) which can be downloaded from the project’s website (www.duhallowlife.com/lets-read).

Fifteen newsletters were also circulated to the local community targeting over 10,000 homes in Duhallow, updating the public on the progress of the project and informing readers on upcoming events. In addition, 3000 environmental calendars featuring wildlife within Duhallow, highlighting the EU Habitats Directive and how good landscape and environmental management benefits society were produced annually. Key messages included examples of project actions, volunteering and demonstrations on how environmental measures developed by DuhallowLIFE can be carried out by any landowner.

Information signage highlighting key features of the Natura 2000 site and the LIFE project were designed and placed at five locations in order to have maximum public impact. Each sign was customised to highlight specific wildlife unique to each selected site and measures that can be employed to protect it and to inspire the local community to continue to cherish and look after their local stretch of river and its associated wildlife long after the LIFE Project ends.
**Integrated Catchment Management: The River Allow**

Over the years the management of water has become more complex with an increasing demand on water as a resource coupled with a growing range of human activities impacting on it. To deal with these challenges Integrated Catchment Management is now generally accepted as the most effective way to manage water both here in Ireland and Internationally. Only by working together can we effectively manage and conserve water for our needs and that of the environment that we share with other creatures on this planet.

The IRD Duhallow LIFE project teamed up with EU funded INTERREG IV “The Territories of Rivers Action Plans (TRAP)” project (http://trapproject.eu) and Mary Immaculate College, University of Limerick to develop an Integrated Catchment Management process on the River Allow. This initiative aimed to build on the positive work of the DuhallowLIFE project, provide a framework for the project in the AfterLIFE phase of the project and most importantly engage wider stakeholder communities in the management of the river. The process also facilitates the resolution of challenges outside the scope and capacity of the DuhallowLIFE project. A plan was developed and regular meeting held that were well attended. In attendance at these meetings included senior staff from almost all of the relevant state agencies, NGO's, community groups, landowners, anglers and the public. In excess of 25 stakeholder groups have been in attendance with individual attendance ranging from between 24 and 37 people.

A range of issues have been addressed including the development of an approach to manage fallen trees blocking the river, the promotion of better integration on the management of the SAC and the SPA in the upland portion of the catchment and workshops for students studying Agriculture. This initiative has been described an "Exemplar" by the Environment Protection Agency for community engagement in Ireland. The project now serves as a demonstration site for the EPA co-ordinated Catchment Science Training Course for Public Authorities and key stakeholder groups involved in water management in Ireland.

The River Allow Catchment initiative led to the effective resolution of two continuous major pollution incidents in the catchment including the reversion of a long stretch of river from a “dead zone” to a high status site full of young salmon.
High Status Sites – A Need for an Integrated Approach and the Role of Local Development Companies

At the end of the last Ice Age our rivers formed undisturbed by humans. These rivers were clean, free from pollutants or other impacts that we associate with many rivers today. Sensitive wildlife such as Freshwater Pearl Mussel and Atlantic salmon would have been common. Today we refer to rivers or sections of rivers that are still in a similar condition as those early un-impacted water bodies as “high status” sites. Under the EU Water Framework Directive member countries are committed to categorise all river water bodies into water quality status categories from these most pristine or “high status” to the most degraded or “poor status” and come up with a plan to protect these “high status sites” as well as improve the status of the other categories. This is not an easy task and over the last 25 years Ireland has seen about 50% of its “high status sites” being downgraded due to negative impacts. The conservation of these sites, many of which are in Special Areas of Conservation, is difficult as they can be very sensitive to any impact, and changes can be subtle. Often it is not clear why they are degrading. In addition to this, getting the required coordinated response from both the public, industry and the state agencies is less than straightforward.

The Role of IRD Duhallow as a Local Development Company

The experience of DuhallowLIFE has been particularly useful in this regard as it has acted as a testing ground for the evolution of bespoke measures through DuhallowLIFE project innovations and the development of more effective community engagement. It has highlighted the difficulties facing communities and those wishing to improve the conservation status of their area. These include a bureaucratic and complex planning system, the wide range of licenses required and delays in their issue, the absence of an effective management system that takes a whole site view and that takes a proportionate approach to the determination potential risk versus gain. A vision for each Natura site, for example, needs to be developed in partnership with the local development company. IRD Duhallow has shown how the local development companies can support and lead communities and partner the competent authorities.
Recommendations for High Status Sites

1. A rethink on how community engagement is achieved. Work with local development companies. A determination on value of “high status” and Natura 2000 sites both in terms of the local economy and biodiversity is needed followed by a locally targeted campaign.

2. The planning process needs to be examined so that communities feel supported where they live in these high nature value areas. Projects aimed at the protection or enhancement of “high status” sites should not be overburdened by paperwork or unnecessary bureaucracy.

3. State agencies, especially competent authorities, need to establish clear objectives, road maps and appropriate measures in partnership with local development companies and their communities and work with other relevant statutory bodies to work towards the conservation objectives of Natura 2000 and those for “high status sites”.

4. Bespoke on site solutions may be required for certain areas and their development may require some element of risk to determine their effectiveness. This calculated risk should be assessed against the risk of doing nothing in sites that are actively degrading already.

5. Specific measures required may be realised through a tailored Agri-environment scheme capable of providing effective onsite protection. Farmers and landowners should be rewarded for good practice.

6. The impact from large scale industry (where they occur) both in terms of hydrological and pollution impacts needs to be effectively addressed through more innovative approaches to their management in high status sites, eliminating their impact on the environment.

7. A concerted effort will be required to develop innovations to address existing pressures, through better technology, for example appropriate wastewater treatment for Pearl Mussel Catchments, review of existing management of activities that pose risk, and strategic placement of measures to reduce this risk should failures occur.

8. In the overall scheme of things, a landscape management approach will most likely be needed. However initial targeting of identified key pressures such as pollution discharges is advised. It is advised that these are addressed during the initial community engagement process period to show farmers and the local communities that all sectors involved are acting in good faith to build up trust. The wider locally led landscape approach can then follow.

IRD Duhallow as a local development company has operated an integrated approached to rural development, which includes human, cultural, economic and environmental development.

We believe integrated approach will be required that involves all of the relevant bodies and local stakeholders, most probably taking an integrated and actions targeted approach similar to the approach we took for the implementation of this LIFE Project.

Kick sampling helps us determine the water quality in our rivers by monitoring the numbers and species of insects and invertebrates which live in the gravels of the river bed.

Salmon fry return to a once polluted section of river after the cooperative work of DuhallowLIFE and the River Allow Catchment Management Group.
Farming in Duhallow can be difficult on account of the heavy gley soils and high levels of rainfall. This environment makes it difficult to farm and avoid impacting on the environment. Agri-environment measures in their current form are not sufficient to effectively protect “high status” sites and Freshwater Pearl Mussel living within them. What is needed is a more strategic approach, which takes into account the needs of the farmers, the type of farming practice prevalent in the area, the farming environment and the receiving environment (i.e. the river and its community). Building on the experience of the IRD Duhallow LIFE project and working with the local farmers, a tailored Locally Led Agri-Environment Scheme was developed that should result in significant environmental improvements in the catchment. This scheme draws on the actions and innovations developed during the course of this LIFE project, together with the adoption of additional measures put forward by trained Agricultural advisors with experience in the types of farming practiced in the area and in consultation with local landowners. The scheme is a “results and actions based payments scheme” that would reward farmers, on an ongoing basis, for measures aimed at improving the conservation of the SAC. This Locally Led Agri-Environment Scheme has been presented to the Department of Agriculture with a view to acquiring funding under the Rural Development Programme (2014-2020).
Learnings and Information Exchange

A key objective of DuhallowLIFE was to learn from and exchange knowledge with other EU LIFE projects to promote sustainable land management and nature conservation across Europe. Many of the issues affecting the River Blackwater are of national and even international importance. Lessons learnt from the IRD Duhallow LIFE project are transferable to other areas in Europe with similar habitats and problems. In addition, the experiences from other EU LIFE projects both here in Ireland and Europe helped to inform the conservation strategies developed and implemented in Duhallow.


Presentations were made at the end of project conferences for MulkearLIFE (LIFE07/NAT/IRL/000342) and 3Water LIFE (LIFE08 NAT/B/000036) in Belgium. The project hosted visits from UK project which is focused on the conservation of Freshwater Pearl Mussels, Pearls In Peril (LIFE11 NAT/UK/000383): Slovenian EU LIFE projects AQUAVIVA (LIFE10 INF/SI/000135) which aimed to improve awareness of aquatic biodiversity and AQUALUTRA (LIFE04 INF/SI/000234) which focused on the conservation of otters. The project team also visited the ISAC LIFE Project (LIFE08NAT/UK/000201), RESTORE LIFE (LIFE09 INF/UK/000032), Mulkear LIFE and AQUAVIVA LIFE project.

Visitors from the Pearls in Peril LIFE Project team, Elain Gwilym and Jackie Webley enjoying riverside refreshments with DuhallowLIFE staff, landowner Tony Ahern and agricultural consultant PJ Phelan

Marjana Hönigsfeld Adamič of the AQUAVIVA LIFE Project with RSS participant Joe Sexton during the Slovenian project’s visit to Duhallow and the banks of the River Allow

IRD Duhallow CEO, Maura Walsh with Angelo Salsi, Head of LIFE Nature Unit, DG Environment, European Commission at the European Conference on the Participation of Private Landowners in Natura 2000 Management held in 2011

Ruaír Ó Conchúir explaining on-the-ground works during the fieldtrip part of the MulkearLIFE’s end of project conference
AfterLIFE

IRD Duhallow is committed to maintaining the actions delivered by our DuhallowLIFE project for a further five years beyond the project end date of June 2015. This is seen as an opportunity to build on the project’s successes. The core objectives are to ensure the maintenance of the measures delivered, between 2010 and 2015, and the continued input from the River Allow Catchment Management Group, which involves many relevant stakeholders.

Rural Social Scheme and Tús participants will be on hand to manage infestations of Himalayan Balsam along the Allow, Dalua, Brogeen Rivers and Rampart Stream and an eradication programme is in place to systematically tackle all four channels. Kanturk and District Trout Angling Club has also given its commitment to remove the tall invasive flower along the Allow River. Volunteers and students will also be deployed to monitor native plant regeneration. Fencing, cattle pumps and silt traps will also be maintained to ensure long-term improvements to the rivers of the Allow catchment.

The DuhallowLIFE project provided an excellent example of active stakeholder engagement for habitat and environmental management of a river catchment Special Area of Conservation. Without the involvement of landowners, anglers, state agencies and the general public many of the project actions could not have been achieved. The project, with many of its innovative measures in protecting rivers while maintaining landowners’ properties, has built on the foundation of trust between the agricultural communities and environmental projects, which IRD Duhallow built up over 25 years of bottom up development. The trusting relationship forged over the duration of the Project will be strengthened through the AfterLIFE programme.

Having RSS and Tús participants working on-the-ground to maintain many of the works conducted during the LIFE Project, and continually animating and supporting the River Allow Catchment Management Group, will ensure that landowners, and other stakeholders, will be engaged and invested in the long term process of protecting the River Allow and its tributaries.
**Conclusion**

The DuhallowLIFE project is a major EU LIFE funded conservation project that targeted the upper reaches of the River Blackwater in North Cork and Co. Kerry. Many of the conservation actions focused on the River Allow, an important Atlantic salmon and Freshwater Pearl Mussel River. A range of actions were carried out throughout Duhallow including actions aimed at the promotion of awareness of the Natura 2000 site, good environment stewardship and the project itself. Innovations and best practice techniques were developed with the local farming community and stakeholders to address issues affecting the conservation of the Natura 2000 site. Lessons learnt from the process are not only important for the management of the site and relevant to the management of other Freshwater Pearl Mussel River and Atlantic salmon rivers but are also relevant to the protection of Water Framework Directive “High Status Sites “.

“Nearly 28.5km of the River Allow has been snorkel surveyed for Freshwater Pearl Mussel. Over 17,600 individual mussels were recorded”

Building on the lessons learnt IRD Duhallow is now leading on a €3m RaptorLIFE project which aims to further enhance the upper reaches of the Special Area of Conservation and overlapping Special Protection Area.

The project developed an Integrated Catchment Management Initiative which should help with the implementation of the afterLIFE plan which is necessary to ensure that the works carried out under the project are maintained into the future and even built upon as part of a wider sustainable conservation strategy for the river. The template of this process is relevant to the management of other Irish rivers both in terms of the EU Water Framework Directive and the EU Habitats Directive. We are hopeful that the Locally Led Agri-scheme developed by the project will be adopted by the Department of Agriculture to support farmers working in a difficult environment as they endeavour to enhance the conservation status of the wildlife in this beautiful catchment.

The sustainable management of the river and its unique species is in all our interests and it is up to us as humans whether we can and are willing to rise to this challenge. If we don't we will lose not only an important part of our natural heritage but also opportunities to protect our rivers as drinking water sources, places of high amenity and ultimately an essential resource underpinning our local economy.
Acknowledgements:

The IRD DuhallowLIFE project (Blackwater SAMOK) was supported through the LIFE financial instrument of the European Community. IRD Duhallow CLG were Coordinating Beneficiary. The project’s Associated Beneficiaries were Inland Fisheries Ireland and Pobal.

The Board of IRD Duhallow and the members of the Duhallow Environment Working Group would like to thank the DuhallowLIFE Project staff for their hard work and commitment to the project.

We would also wish to thank Neil Wilkie (formerly of Astrale GEIE) and NEEMO, Laszlo Becsy, Tommy Sejersen, Angelo Salsi and Anne Burrill from the Directorate-General for the Environment in the European Commission and the Department of the Environment, Community and Local Government for their guidance and support over the course of the project.

The following also provided tremendous support and were vital to the success of the project:

IRD Duhallow
James O’Keeffe Institute, Newmarket, Co. Cork, Ireland
Telephone: 00-353-29-60633
Fax: 00-353-29-60694  •  Email: duhallow@irdduhallow.com

www.irdduhallow.com  |  www.duhallowlife.com