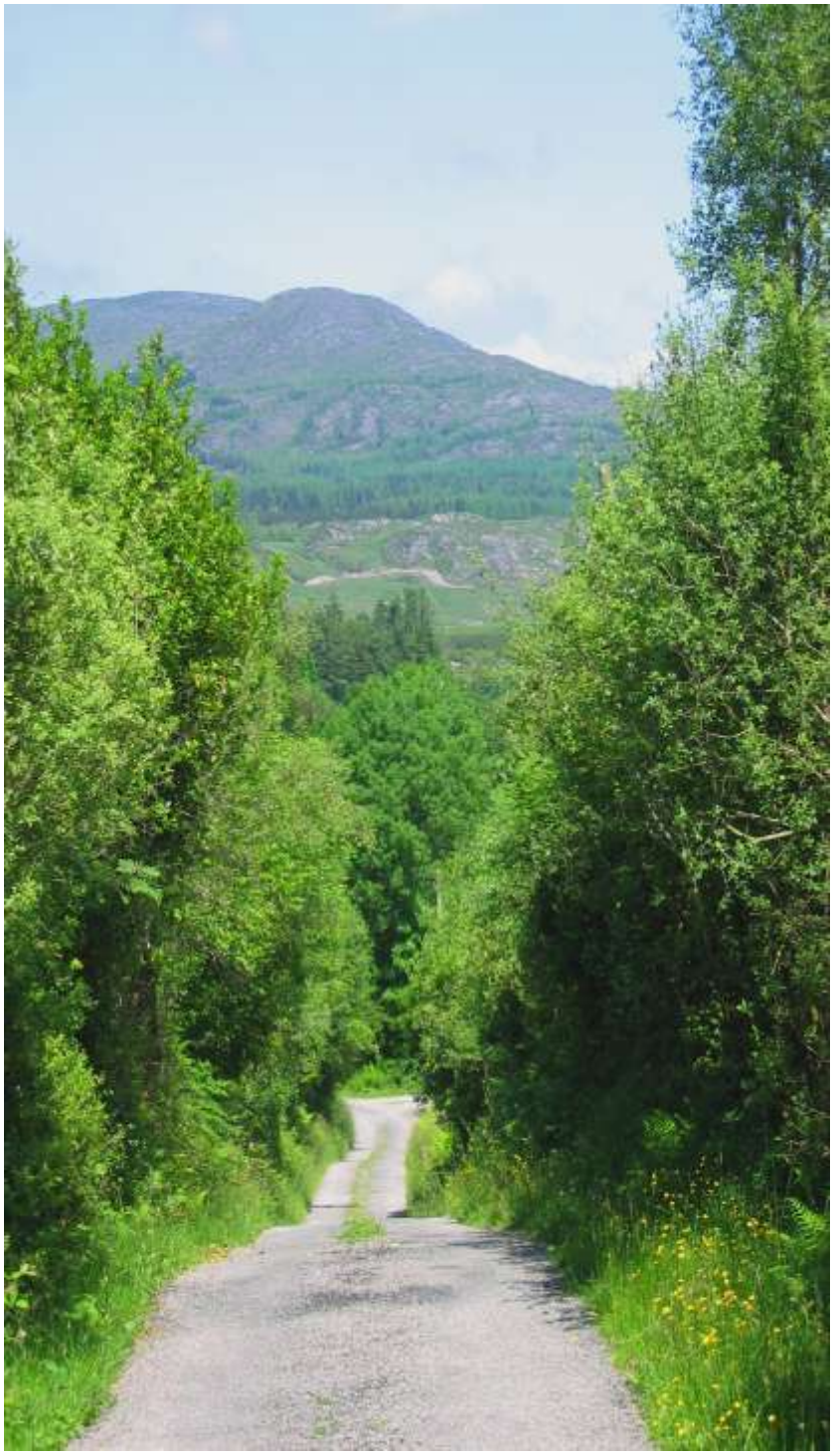
Amelioration of Forestry Impacts

In the Coomhola River Catchment

The Coomhola River is host to a pristine ecosystem, historically rated Q4-Q5 by the EPA (based on benthic macro-invertebrate indicator species), which supports important salmon and freshwater pearl mussel populations.

Coomhola Salmon Trust, ltd.

December 2007



The view, from below Maugha Cross near Lough Atooreen, of Borlin's *Cnoc Garbh* mountain, near the top of the Coomhola River catchment. Visible in the distance on the slopes of *Cnoc Garbh* are plantations of Sitka spruce. (Photo June 2005).

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Executive Summary

Coomhola Salmon Trust, ltd., on behalf of the Coomhola Salmon and Trout Anglers' Association, and the Coomhola and Borlin Community Association, express concern at:

- recent (summer 2007) clear-felling of Coillte Teoranta-owned Sitka spruce plantation located on the slopes of *Cnoc Garbh* mountain at Derrynafinchin, Borlin, Coomhola, Bantry, County Cork;

- evidential departure from best practice procedures in the course of this operation, and;

- the potential impact of this activity upon the capacity of the Coomhola River and its catchment to sustain a traditional ecology and biodiversity for which it is renowned, and its potential to impact upon public water supplies.

Coomhola Salmon Trust, ltd., furthermore invite Coillte Teo. to enter into a dialogue with a view to establishing a viable, long-term, and sustainable forestry/land-management plan which shall assist in conserving and enhancing diverse terrestrial and instream habitats in the Coomhola River catchment.

Composite photograph of clear-fell at Derrynafinchin, Borlin, Coomhola, Bantry, Co. Cork (photo taken on 21 November 2007)

Introduction and Background

The Coomhola River Catchment consists of several distinctive, dramatic, and scenically beautiful valleys, which sweep down from the *Cnoc Bui* massif (the highest mountain in County Cork at 2,224'/712m) in the Caha and Shehy Mountain Ranges on the Kerry border. Characterised by heavily glaciated old red sandstone, these mountains and valleys contribute rushing streams to the main Coomhola River channel (Coomhola is the anglicisation of *Cuim tSeola*, "*Valley of the torrents*"), which flows into Bantry Bay at Snave Bridge between Glengarriff and Bantry. Ninety square kilometres encompass 23 town lands, home to circa 350 people. Most of these households would be resident for several generations. Concern was expressed by the residents of the catchment about the imminent clear-felling of Sitka stands and the capacity for impacts in the November 2005 10-Year Strategic Plan (see Appendices 2 and 3, following).

The River, historically classified at prescribed (benthic macro-invertebrate) sampling points as Q4-Q5 (high to highest water quality) by the Irish Environmental Protection Agency, is host to, amongst other species; otters, kingfishers, dippers, sea trout, and important stocks of both the (Continentally-extinct and nationally-threatened) freshwater pearl mussel and Atlantic salmon. Both of the latter species are highly vulnerable to nutrient enrichment and silt deposition.

The Coomhola River, based on average tag-returns (as specified by Fisheries Acts, 2002) over the past three years and the probability of stock sustainability, was amongst a select group of Irish salmon rivers to be cleared by the Central Fisheries Board and the Department of Communications, Marine and Natural Resources to remain "open" for salmon angling during the angling season 2007. As of this writing (end-November, 2007), it is reported by the South Western Regional Fisheries Board that there are "large" numbers of mature adult salmon residing in pools throughout the system. The majority of these would be expected to spawn during December 2007 and January 2008. Viability of local Atlantic salmon (*Salmo salar)* and freshwater pearl mussel (*Margaritifera margaritifera)* stocks is underpinned by mesotrophic- to oligotrophic- (medium- to low-) nutrient waters, together with an absence of water-borne particulate solids (silts). Where other rivers, throughout Europe, have suffered degradation of these qualities, resident salmon and pearl mussel populations have disappeared. A variety of factors may combine to contribute to a deterioration of water quality which may bring about collapse of these, and other, sensitive species.

Attention is further drawn to the Cork County Council Local Area Plan (2005) in which it is stated: (From 17.1.2): "It should be noted that the biological quality of the River Coomhola currently meets the standards set under the Local Government (Water Pollution) Act 1977 (Water Quality Standards of Phosphorous) Regulations 1998. There is a requirement that this good water quality be maintained." It should also be noted that a Group Water Scheme extracts water from the lower Coomhola River at Snave, and this serves a large number of households in the lower Coomhola valley.

The Coomhola Salmon and Trout Anglers Association, and the Coomhola Borlin Community Association, have requested Coomhola Salmon Trust, ltd., to open dialogue with Coillte Teoranta to ensure that the forestry element, within the context of wider Coomhola River Catchment land-usage, does not contribute to a deterioration of various parameters of water quality within the Coomhola River.

Capacity for Impact

Concern is expressed that the Derrynafinchin clear-fell, and future land management plans for this and other Coillte owned tracts in the Coomhola River catchment, have the capacity to negatively impact upon instream and terrestrial habitats within the catchment. Reference is made in the first instance to excerpts from the "Code of Best Forest Practice - Ireland" (Forestry Service, Department of the Marine and Natural Resources, 2000), Section 12, "Final Harvest", 12.15 "Adverse Impacts", together with relevant notes (*in italics*):

- Lack of consultation with relevant authorities, interest groups and the local community

There are two well-established citizens' groups in the Catchment; the Coomhola & Borlin Community Association and the Coomhola Salmon and Trout Anglers's Association; neither of these bodies were consulted in the planning stage for the Derrynafinchin clearfell. It is our understanding that both groupings would have been receptive to consultative overtures from Coillte. (See Appendices 3 and 4).

- Inadequate brash mats (for harvest machinery forwarding operations), leading to soil damage and sedimentation

There is no little sympathy for the realities of forestry harvest…but the best-practice guidelines for heavy machinery traversing the landscape do not appear to have been adhered to. Properly maintained brash on forwarding routes assists in minimising erosion. With regard to the overall effort in the harvest and extraction of product, a minimum extra effort in maintaining brash would have assisted in reducing silt and nutrient recruitment to the local stream and, ultimately, the main channel of the Coomhola River. Coomhola Salmon Trust, ltd. dive inspections in September 2007 in low water conditions in the lower reaches of the river (fully 8.5km downstream of the harvested area) revealed historically unprecedented turbidity (associated with suspended solids and increase in presence of algae , which could be associated with the Derrynafinchin clear-fell).

The photograph shows secondary harvest access road (unexcavated). Brash mat has not been maintained adequately…with the depressions created by the vehicle tracks/wheels collecting surface waters and acting as drains to deliver silts to the stream.

- Site and environmental damage due to poor timing and failure to curtail operations in adverse weather conditions

It is our understanding that it required intervention from the South Western Regional Fisheries Board to suspend machinery harvesting during extraordinary rainfall in the course of the 2007 summer-based harvest. With all due respect to contractors, overheads, and tight schedules, violation of pristine instream habitats cannot be countenanced, and Coillte must devise contingency to avoid a reoccurrence of these events. It is reported anecdotally that large pools of mud and debris accompanied the loaded forwarders descending the extraction route…this is presumed to be one of the chief sources of observed silt recruitment into the main Coomhola River.

- Sediment entering aquatic zones

Our concern is to minimise silt and sediment recruitment into the streams and river, as they have the ability to limit and retard instream biodiversity. "If the fines less than 1mm are greater than 14% (of total river benthic aggregate sample), salmon ova mortality starts to increase. Measuring pool volumes in affected tributaries and ones without logging next spring or summer, might also work to quantify the problem and the loss of juvenile habitat. Bugs in logged and unlogged streams would likely show a difference in the number of Mayflies, Stoneflies and Caddisflies (EPT), as well as overall taxa (richness), and the percentage of a sample dominated by one species (Percent Dominance)." (P. Higgins, personal correspondence)

This stream, rising from out of the harvested area, would normally run clear at the low-water conditions it is photographed in here…it is easy to see the silt content colouring it brown.

- Rutting and compaction through the overuse of tracks

The vertically-oriented primary forwarding road reveals the erosive effects of gravity-driven water velocities which have stripped the surface of organic particles as well as fine clays, sands, and grits, all to the detriment of aquatic habitats downstream.

- Landscape adversely affected by extent and nature of felling operation

"When clearfelling happens, there is a complex response underground. Roots and rootlets die, underground flora and fauna (always an immense complex) goes into overdrive, and enormous quantities of tied-up nutrients are released. This can and often does result in a "flush" of nutrients going into the streams and rivers. If the stream is naturally low in nutrients (if is it normally quite clear in the warm months, this is likely so), then even small increments of added nutrient will cause a bloom of algae and other freshwater flora." (M. Furniss, personal correspondence)

This photo demonstrates a good example of brash left undisturbed on the harvested site…this practice contributes to soil and fertility conservation, and preventing erosion.

A debrashed site shows the loss of soil cover, contributing to erosion.

Contrast between brashed and unbrashed areas; note how soil and clay fines are stripped by rain and drainage erosion (leaving heavier gravels) whereas the brashed areas are to some degree "self-conserving" and are able to buffer the erosive effects.

Summary and Conclusions

Disturbed ground is anathema to concerns of soil conservation/fertility as well as to aquatic and terrestrial habitat integrity. In the course of landscape management, a minimalisation of disturbance and related impacts must be of over-riding concern to the steward. The Coillte clear-fell at Derrynafinchin, Borlin, Coomhola, Bantry, County Cork has not achieved best-practice principles as set out by the Forestry Service, and these actions hold as yet unquantified implications for catchment terrestrial and aquatic habitats, as well as potential effects upon the local Group Water Scheme.

There are further concerns expressed by local community groups and individuals with regard to future replanting and management of the Derrynafinchin site, as well as other Coillte holdings in the Coomhola River catchment and the adjacent catchment (part of the *Cnoc Garbh* plantation is in the Ouvane River catchment, another important salmon, sea trout, and freshwater pearl mussel habitat).

Accordingly, Coomhola Salmon Trust, ltd., acting on behalf of the Coomhola and Borlin Community Association and the Coomhola Salmon and Trout Anglers' Association, request Coillte to:

1) Provide a copy of the Harvest Plan including the Risk Assessment associated with the Derrynafinchin clear-fell;

2) Provide a copy of the Reforestation Plan for the land parcel in question;

3) Engage with Coomhola Salmon Trust, ltd., as designated representative of the community, in full and transparent consultation with a view to determining an acceptable long-term management plan for Coillte-managed forestry in the area which would seek to address Coillte's concerns of viability together with an amelioration of the impacts of forestry activities within the catchment.

Silt trap constructed by contractors is commendable, but will require maintenance.

Appendix A: "Code of Best Forest Practice - Ireland" (Published by the Forest Service, Department of Marine and Natural Resources, 2000)

From "Background, Environmental Values, Water Quality", pg. 12: "Water values are concerned with protecting water quality, ecology and stability, and controlling onsite and downstream impacts… Establishment, harvesting and road construction impact on the hydrology, chemistry an level of sedimentation in aquatic zones, through compaction by heavy machinery, soil displacement, increased run-off through drainage… In the guidelines, sensitive areas are identified based on several criteria, e.g. base-poor geology, low water pH, location in salmon fishing and spawning areas.

"Impact Appraisal" (pg. 33): "Environmental impacts vary widely and can affect soil, water quality, landscape, ecological and scientific values, cultural and archaeological values, and biodiversity. In Ireland, water impacts are considered highly important. Water impacts are a possibility on most sites due to Ireland' oceanic climate, the wide distribution of streams, rivers and lakes (especially in areas suitable for forestry), and their suitability for salmonids."

3. New Planting Sites

3.3.2.2 Environmental Considerations for sites:

Water quality: In order to take into account the requirements of salmonids, fisheries considerations arise even where only minor aquatic zones are evident. Salmonids require oxygenated, uncontaminated non-acid water.

6. Planting

6.10.1: "In general, do not plant within aquatic buffer zones. The development of natural riparian vegetation within the buffer zone should be encouraged, and this may involve the planting of single or small groups of suitable native tree species such as birch, willow, alder, oak, and ash. Such planting is permitted in the buffer zone and within 5m of the aquatic zone, if this would, in the view of the Regional Fisheries Board, have a beneficial effect on that particular aquatic zone."

9. Forest Maintenance

9.5: "Issues which may arise relate to failure to maintain and empty out sediment traps (leading to sedimentation entering aquatic zones)…"

12. Final Harvesting

12.4 Felling Coupes: Large felling coupes over 25ha may be acceptable on flat terrain or valley bottoms where visual impact is minimised. Felling in very sensitive lanscape areas should be limited to 5-15ha. While broad guidelines on coupe size are to be considered, size limits should not be absolute but relate to the size of the forest or water catchment unit. In the latter case, the coupe size will influence the likelihood of nutrient pollution. This would be an important issue if a catchment contributes to a drinking water supply." (*Note: There is a "Group Water Scheme located at Snave town land, downstream from Derrynafinchin*).

12.6.3 Felling and Site Factors (excerpts):

* Install all necessary ancillary structures (e.g. additional drainage, sediment traps, log steps, aquatic zone crossings, corduroy strips) before harvesting commences or, where appropriate, as harvesting progresses. Maintain these features throughout the operation.

* Exclude all operations from buffer and exclusion zones stipulated for aquatic zones…the outer perimeter of these zones should be marked clearly with a perimeter fence, brightly coloured paint marks on trees, or brightly coloured tape. Machines should not enter these zones during felling or extraction.

* Create and maintain dense, fresh brash mats on all machine routes, to avoid soil damage, erosion and sedimentation. Concentrate brash on primary routes and at the junction of the extraction path and landing site. Where the soil bearing capacity is low, specify prompt extraction to ensure that

fresh brash is available for extraction machinery. In all cases, brash mats should be renewed when they become heavily used and worn.

* Ensure that important wildlife habitats retained for biodiversity purposes are protected during harvesting. Plan operations with due regard to the breeding and nesting seasons of important species, and associated features such as badger setts and heronries. If possible and where wind firmness and landscape considerations allow, retain some stems to grow on to old age, ideally scattered throughout the site. Some deadwood should also be left *in situ* after felling, in the form of standing dead stems or naturally fallen trunks, or as logs deliberately left behind on the forest floor.

* On sites which have a high risk of soil erosion or with soils of low bearing capacity, consider suspending mechanised operations during and immediately after periods of particularly heavy rainfall.

12.15 Adverse Impacts (excerpts):

* Lack of consultation with relevant authorities, interest groups and the local community

* Inadequate brash mats (for harvest machinery forwarding operations), leading to soil damage and sedimentation

* Site and environmental damage due to poor timing and failure to curtail operations in adverse weather conditions

* Sediment entering aquatic zones

* Rutting and compaction through the overuse of tracks

* Landscape adversely affected by extent and nature of felling operation

14. Forest Roads

14.6 Road Construction - Site Issues

* All roads should be allowed to consolidate, dry out and settle before use, so that they do not become rutted from traffic.

* The condition of roads, drains and culverts should be assessed prior to and immediately after harvesting and transport operations. Photographic evidence gathered at this stage may assist in any subsequent disputes.

* Ensure adequate drainage and run-off control, installing sediment traps if required

14.11 Best Practice

* Implement relevant operational measures relating to aquatic zones…important habitats/ biodiversity issues, landscape and other environmental factors

* Avoid wet and unstable sites, and sites prone to erosion

* Keep gradient low, where possible

* Reseed unstable spoil

15. Reforestation and Woodland Improvement

(*From Introduction*): "Reforestation represents an opportunity to improve the forest in terms of species diversity, production and cultivation. Reforestation also provides a unique opportunity to enhance the forest's biodiversity and landscape functions and to establish aquatic buffer and archaeological exclusion zones which may have been absent in the previous rotation."

15.5 Best Practice:

* Consult with relevant authorities, interest groups and the local community particularly for large areas

* Good Reforestation Plan

* Avail of opportunities to diversify species

* Avail of biodiversity and landscape opportunities

* Effective brash management

* Implement relevant operational measures relating to aquatic zones, archaeological sites, important habitats/biodiversity issues, landscape and other environmental factors

* Maintain the necessary buffer and exclusion zones in relation to aquatic zones…

16. Biodiversity and Specialised Woodlands

(*From Introduction*): "Numerous measures can be implemented to enhance the biodiversity function of Ireland's production forests. Protective measures are also needed for forests located in nationally designated concervation areas.

16.3 Biodiversity: Forest owners and managers should be aware of the legislation impacting on the use of land for forestry. These include: the European Union Habitats Directive (Council Directive 92/43/EEC) and Birds Directive (Council Directive 79/409/EEC)…; guidelines on the Pan-European Landscape Diversity Stategy; and the Wildlife Act 1976 and the Wildlife (Amendment) Bill 1999.

16.3.3 Planning and Managing for Biodiversity (excerpts):

* Adhere to "Forestry and Water Quality Guidelines" regarding the protection of aquatic zones and associated wildlife.

* During all forest operations, avoid soil damage and minimise general site disturbance…

Appendix B: Excerpts from "Comments on DRAFT Mad River Total Maximum Daily Load (TMDL) for Sediment and Turbidity", P. Higgins, 2007

Note: Higgins' comments are generally apropos to the developing situation in the Coomhola Catchment and are therefore included here as an Appendix:

"The Draft TMDL …(recognises) that 74% of sediment pollution stems from land use activities and calling for a 98% reduction in human caused sediment sources. Kaufmann et al. (1999) and Rieman et al. (1993) point out that salmonids cannot be recovered unless the anthropogenic sources of stress on habitat are lessened or abated."

And, it is important to view the Derrynafinchin clear-fell in the context of wider catchment activities:

"Dunne et al. (2001) studied cumulative watershed effects related to timber harvest in northern California. They point out the problems that arise when timber harvests or road segments are looked at individually and not in conjunction with all activities in a watershed and warn that at-risk populations can be lost, if cumulative effects are ignored and anthropogenic stressors continued: "The concern about cumulative effects arises because it is increasingly acknowledged that, when reviewed on one parcel of terrain at a time, land use may appear to have little impact on plant and animal resources. But a multitude of independently reviewed land transformations may have a combined effect, which stresses and eventually destroys a biological population in the long run."

"In order to recover…salmon habitat, timber harvest should be limited to 1-1.5% POI" (percentage of inventory, e.g., *the percentage of the entire forestry stock in a given catchment*) (Reeves et al.,1993; Klein, 2003).

He summarises: "The geologic setting of the Mad River makes the landscape highly susceptible to erosion and patterns of land use on industrial timber lands within the Middle, Lower and North Fork Mad River sub-basins are well over those recognized as triggering watershed and water quality degradation. Consequently, the final *Mad River TMDL* should specifically note the prior failure of the timber harvest review process to prevent water pollution, loss of fish habitat and the decline of salmon and call for a change in approach to future timber harvest oversight to reverse these problems."

This Google Earth image shows extensive patch clearcuts in the Lindsay Creek watershed approaching or exceeding the threshold of prudent risk for maintaining salmon (Reeves et al., 1993).

Appendix C: From "Our Valley, Our Future; Coomhola & Borlin Ten Year Strategic Plan 2005-2015", Chapter 2, Environment and Infrastructure,
Action M, page 20

(Note: the 10 Year Strategic Plan for the valleys was adopted and published by the Coomhola Borlin Community Association, November 2005; the "Actions" cited here in Appendixes 2 and 3 represent the democratic aspirations of the wider community and express the concerns which the community had regarding the imminent clear-felling of Sitka plantations within the catchment A simple "local consultation", as prescribed by Forestry Service "Code of Best Forest Practice, would have revealed the existence of this group and their concerns).

ACTION M: Forestry – Strictly Controlled / No Big Plantations. Promote Diverse Broadleaf / Deciduous / Native Plantations

Keynote: Trees play a vital role in a landscape…apart from their aesthetic value, they promote shelter and air quality, contribute useful timber resource, and increase bio-diversity across a wide range of species. But there is a concern about wholesale coniferous plantation, and its capacity to negatively impact upon our valley. Arterial drainage, intense phosphate fertilisation, associated road-building and clear-felling all have the ability to cause serious pollution…we wish to avoid these negative repercussions.

What is our target?

To expand, protect, and develop ecological and economic value of woods with priority on native species and to create a better habitat for wildlife & birds. To promote the eventual harvest of quality timber. Discourage new plantations adjacent to houses or areas of natural beauty. Monitor clear-cutting of existing coniferous plantations which would lead to siltation and despoiling of the rivers.

Team – who might be involved?

Landowners
Coomhola/Borlin Community Association
Coillte
Dept. of Agriculture
Local farmers
Local landowners
National Parks & Wildlife

What work needs to be done to make this happen?

- Research all agencies involved in this action and draw up a strategy that addresses fund-raising, planting programme and an awareness raising campaign
- Involve all community including local school children
- Research forestry amenities/tourism potential

What is the Timeframe for this Action?

From 2006 ongoing

Appendix D: From "Our Valley, Our Future; Coomhola & Borlin Ten Year Strategic Plan 2005-2015", Chapter 2, Environment and Infrastructure,
Action Q, page 22

Action Q: Campaign to Save Atlantic Salmon

Keynote: Historically, Salmon were so plentiful in the Coomhola River that they were considered "uncountable". Now they must be considered an endangered species. How can we support the wider efforts to encourage their return, to everyone's benefit?

What is our target?

To restore the dwindling population of Atlantic Salmon (and Sea Trout) in the Coomhola River.

Team: Who might be responsible?

Coomhola Borlin Community Association
Department of Communications, Marine, and Natural Resources
Coomhola Salmon and Trout Anglers' Association
Coomhola Salmon Trust / StreamScapes
Irish Farmers' Association
Coomhola National School
Central Fisheries Board
South Western Regional Fisheries Board

What work needs to be done to make this happen?

Query viability of Department's Resource Management Plan/Lobbying; Continue wild (native, indigenous) salmon stocking scheme; organise stock and habitat surveys with Central Fisheries Board; instream and riparian enhancement works; anticipating instream habitat degradation from Borlin (and other) forestry road-building and clear-felling; publication of "best-practice principles" for a variety of future development including site clearance, septic tank installation and management, silt containment, "activity buffering" to minimise all potential impacts upon river and stream habitats.

What is the Timeframe for this Action?

From 2006