

# Findhorn Nairn and Lossie Rivers Trust

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# **TABLE OF CONTENTS**

Summary	3	
Foreword		
Introduction	7	
River Catchments		8
Management Organisations		9
Staff and Resources		10
The Management Plan	11	
Scope of the Plan		11
1. Climate Crisis		12
2. River Habitat and Land Use		14
Biosecurity and Invasive Non-Native Species		17
4. Fish and Fisheries		19
5. Marine and Inshore Environment		26
6. Education and Awareness		28
Funding Review		30
References	32	

# **SUMMARY**

This Management Plan has been developed by the Findhorn, Nairn and Lossie Rivers Trust and will have a duration of five years starting in 2021. The Plan outlines six priority areas: Climate Crisis, River Habitat and Land Use, Biosecurity and Invasive Non-Native Species, Fish and Fisheries, Marine and Inshore Environment, Education and Publicity.

Within these priorities, the Plan will seek to mitigate the effects of climate crisis through upland restoration. This will include working with landowners to:

- plant riparian woodlands to create shading along spawning tributaries to reduce the effects of warming temperatures
- block off moorland drains to slow water run off to preserve peatland. This will lead to better water retention and lessen the erosive effects of spates during the wetter rainfall patterns anticipated in the future.

River habitat work will concentrate on modified river areas and discussions with stakeholders will be pursued to determine any opportunities for returning these to a more natural form. Manmade obstructions will be further reviewed and those where significant benefits to fish populations are identified will be targeted for removal or improvement. The Trust will also continue to monitor catchment developments to provide guidance on the best practice for river works to ensure that there is no further damage or loss of fish habitat.

The Trust has become the lead organisation in the control of invasive non-native-species and this remains a high priority within the Plan. The Trust will continue to source funds and develop landowner-based agreements to expand the coordinated control program already underway for INNs plants and animals. Our Biosecurity plan will also be updated and implemented.

These actions will protect and improve riparian habitat and in turn provide better conditions for juvenile salmonids and other fish species. The Trust will maintain high-quality data collection to determine the distribution and abundance of fish stocks. To achieve this a juvenile survey program in line with the National Electrofishing Program for Scotland will be developed, smolt monitoring and tagging will continue, along with analysis of adult catch data. Core monitoring programs for predators, such as sawbill ducks, cormorants, and seals, will also continue. The Trust will explore the possibilities for developing a project for tagging adult salmon and sea

trout to examine recapture rates and exploitation and continue to develop other fish monitoring opportunities such as fish counters and traps.

The Plan will review the data available for salmon and sea trout migrations and behavior in coastal areas and develop closer links with inshore fisheries organisations to increase their awareness of the needs of salmon and sea trout.

The Trust will continue to work in partnership with the Findhorn and Lossie Fishery Boards and a wide range of other stakeholders and agencies and highlight the benefits that an ecologically resilient and economically vibrant river and fishery can bring to the local community in terms of jobs supported, quality of life and pride in the local environment.

# **FOREWORD**

The Findhorn, Nairn and Lossie Rivers Trust promotes sustainable management of river resources and fish populations through **research**, **restoration** and **education**. To achieve this, the Trust has worked closely with the District Salmon Fishery Boards for each river, and other relevant organisations. A charity and company limited by guarantee, the Trust relies on grants, donations and fundraising to implement projects.

In the last decade, the Trust has made good progress in tackling many of the issues facing the rivers and their inhabitants. Working with landowners, public authorities and agencies, business and individuals, the Trust has played an important role in improving the habitat of the rivers. Obstructions preventing fish migrating upstream have been removed; a good start on the elimination of non-native invasive species of both flora and fauna has been made and advice has been given on construction developments, channel realignment and peat stabilisation in the catchment. There is more to be done in each of these areas especially tackling non-native species. This plan details the projects in this area that will be taken forward over the next five years.

Importantly the Trust has established an excellent volunteer network that is active in many areas of our work. A good educational program in schools is proving beneficial and popular in enabling young people to understand more about the rivers and about fish and fishing. We will continue to build on these strong foundations.

The Trust now has a sound database of information about the rivers and the fish that live in them - principally salmon, sea trout and brown trout. It is essential that this work is kept up to date to monitor any changes that may be taking place. This is included in the plan.

All of this is good, but the Trust is aware of the global threats that endanger our rivers and many of the species that live in them. The Board believes that the Trust has an opportunity to build on our experience and expertise to make a greater impact in our charitable aims of conservation and restoration of the catchments and this is a high priority for action in this plan.

The Board has decided to change the name of the Trust to the Findhorn, Nairn and Lossie Rivers Trust to reflect the scope of our work more accurately in the river catchments.

Although much of the length of the rivers is classified as good to very good quality, it is clear that during the last two centuries the removal of natural forests, overgrazing and changing land use have significantly degraded the ecosystems of the rivers. Moreover, we now face a climate crisis which is causing increasing global temperatures and dramatically changing weather patterns. These factors combine to present a very serious threat to life in the catchment of our rivers, particularly to salmon. This demands our urgent attention.

These are global threats, which require large scale programs and significant funding to begin to reverse the trends. The Trust recognises that we have an important part to play to ensure that our river catchments benefit from these programs. For these programs to be effective, they will need to be coordinated at a scale beyond that of individual land holdings. A natural unit for this coordination is the river catchments. We will only succeed if we work in coalition with landowners and local interests, across catchments and with partners who enable scale and additional resources to be brought to bear on these issues. Significant additional funding will be required to achieve these objectives. The Board believes that such funding is available but will require different forms of partnerships to bring this to fruition.

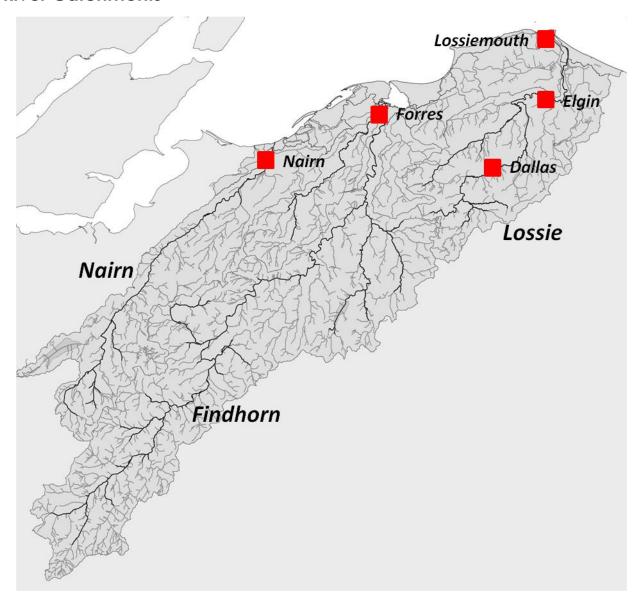
The Trust aims to make a significant contribution to this work over the next five years and beyond as is demonstrated in this plan. We look forward to working with all our friends and partners to achieve a common objective.

Mark Laing
Chairman

# INTRODUCTION

- This Management Plan has been developed by the Findhorn, Nairn and Lossie Rivers Trust (FNLRT) and will take a catchment-based approach to managing the riparian environment. It provides an outline of the main issues affecting the river catchments and provides a template for bringing about lasting practical measures to improvement of the aquatic environment and biodiversity.
- In a national context, many of the proposed actions in the Plan align closely with Scottish Government and the North Atlantic Salmon Conservation Organisation (NASCO) plans to protect rivers and salmon stocks. To ensure that our local activities remain in-line with and influence wider Government policies, membership and close cooperation with our representative body, Fisheries Management Scotland (FMS), will be maintained.
- This Plan outlines a catchment-based approach to management and prioritises work on ameliorating the effect of climate crises on our rivers, improving the ecology and biodiversity of the catchments, improving the natural structure of the rivers and the water quality and quantity of the rivers. Fish and fisheries remain a core priority and in addition, through promoting education and outreach, local communities should begin to recognise and appreciate the wider benefits of well managed rivers.
- To this end, the Trust are committed to working together with the Findhorn and Lossie Fishery Boards, Scottish Government Agencies and Local Authorities, NGOs and with similar aims, industrial partners looking for carbon offset funding and any other appropriate partners to deliver this plan at local and national level.

#### **River Catchments**



#### River Findhorn

- The River Findhorn has a catchment area of over 1,300km<sup>2</sup> and a stream network length of about 1,500km, of which the main river comprises 90km. Mean daily flow for the Findhorn is 19.6m<sup>3</sup>s<sup>-1</sup>. The Findhorn catchment can, very broadly, be split into three sections:
- Upper river, Source to Tomatin open hill and moorland with large areas of peat draining to the tributary burns and main stem of the river all of which tend to be quite steep and rocky with a lot of gravel. The principal land use is deer stalking and grouse shooting with some minor agricultural activity and plantation forestry.
- Middle river, Tomatin to Sluie increasingly steep sided valley leading into the gorge proper, the upper part draining from open heather hill and having a lot of unstable gravel banks, the lower part draining through a stable rocky gorge. The land use in the upper part is principally

- grouse moor with increasing amounts of commercial forestry. Forestry and agriculture are the predominant uses in the lower parts.
- Lower river, Sluie to Findhorn Bay principally agricultural land with some commercial forestry.

#### River Nairn

- The River Nairn has a catchment of over 313km<sup>2</sup> originates in the Monadhliath and flows 54km (36miles) north east to the Moray Firth. Mean daily flow is 5.5m<sup>3</sup>s<sup>-1</sup>.
- The Nairn rises in the steep hills within Aberarder and initially flows through a few miles of
  unstable gravels beds before meandering through a wide flat fertile valley. Land use is deer
  stalking and grouse shooting on the hills with agriculture in the valley. It then drops through
  a short and well wooded gorge section before widening again in the lower reaches where
  agriculture dominates the land use.

#### **River Lossie**

- The River Lossie has a catchment of over 216km<sup>2</sup> and flows 52km (31miles) to join the Moray Firth at Lossiemouth. Mean daily flow for the Lossie is 2.7m<sup>3</sup>s<sup>-1</sup>. The Lhanbryde Burn and Spynie Canal are also part of the catchment.
- In the Lossie catchment the predominantly land uses are agriculture, and forestry. The
  agriculture increases in intensity as the river approaches the sea. Large sections of the river
  and its tributaries have been significantly modified over the years.

#### **Coastal Burns**

• A small number of coastal burns are also present in the area, the largest are the Mosset Burn, the Kinloss Burn and the Millie Burn.

## **Management Organisations**

- A range of organisations have a part to play in managing a river catchment these include Scottish Government through Marine Scotland Science (MSS), Scottish Environmental Protection Agency (SEPA), NatureScot, local Councils (Moray and Highland) and District Salmon Fishery Boards. However, many other organisations also have an interest as well as landowners, farmers, and individuals.
- The Findhorn, Nairn and Lossie Rivers Trust (FNLRT) is an independent charity which
  promotes sustainable management of river resources and fish populations
  through research, restoration and education. The Trust has a broad remit and has worked
  closely with the three District Salmon Fisheries Boards, the angling associations, local

councils, Fisheries Management Scotland (<u>FMS</u>), SEPA, NatureScot, Scottish Coordination Centre (<u>SFCC</u>) and a range of other organisations.

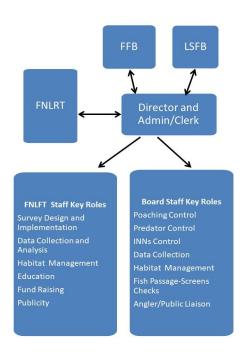


Figure 1: Operating structure for the Boards and FNLRT.

- District salmon fishery boards are the statutory bodies originated by the Salmon Fisheries Act of the 19th century and have management responsibility for salmon and sea trout within their districts. Salmon and sea-trout fisheries in Scotland are owned either by individuals or by clubs or associations and they can elect their representatives to form a Board at triennial elections.
- The District Boards finance their activities by levying a rate on the salmon proprietors which is reviewed annually.
- District salmon fishery boards (DSFBs) operate on all three rivers; <u>Findhorn Fishery Board</u>;
   <u>Nairn Fishery Board</u>; <u>Lossie Fishery Board</u>) and manage the interests of salmon and sea trout

fisheries. All three are members of FMS.

 The Findhorn and Lossie Boards provide support and funding for the Trust while Nairn Fishery Board withdrew support for the Trust in 2019 so the current management and operating structure is shown in Figure 1.

#### Staff and Resources

- The combined Board and Trust staff are a well-trained and dedicated workforce. The current staff for the Trust and Board are: Director, Administrator, Senior Bailiff and Assistant Bailiff.
- Specific project staff are currently SISI Project Officer, SISI Communications Officer and SISI Seasonal Project Officer. Additional seasonal workers are also contracted, and numerous volunteers also help-out.
- The Trust and Boards operate from an office at Logie Steading and hold a wide range of equipment from a rotary screw trap, electrofishing and other fish survey equipment, and INNs plant and animal control equipment.

# THE MANAGEMENT PLAN

## Scope of the Plan

- This Plan focuses on the rivers Findhorn and Lossie. However, many of the objectives such
  as climate crisis issues, biodiversity and INNs control can be readily applied to the Nairn
  catchment. Currently, the Plan does not focus on salmon and sea trout issues for the Nairn
  which is the remit of the Nairn Fishery Board.
- The Plan builds on the work achieved during the previous plans for the <u>Findhorn</u> and the <u>Lossie</u> and will operate from 2021 to 2026, incorporating regular reviews on progress.
- The Plan takes a holistic approach to consider habitat, land use, water quantity and quality, along with fish and aquatic wildlife, and identifies where the Trust can prioritize management effort. The growing effect of climate crisis is also highlighted and priorities for action are outlined.
- Many of the factors highlighted within this Plan are greater than the resources of Trust to tackle on its own so the development of and participation in stakeholder partnerships to address larger issues will be required.
- The Plan is designed to link together with other existing management plans such as the <u>River Basin Management Plan</u> (SEPA), <u>North East</u> Scotland and <u>Highland</u> Local Biodiversity Action Plans, <u>Moray Local Development Plan</u> and the Water Framework Directive (WFD).
- The Plan will be used in conjunction with the web-based salmon pressures tool that has been developed by MSS and FMS.

Within this Plan, six priority areas are identified, our vision for each priority is outlined followed by key issues, management objective and strategy. The six priorities are,

1.	Climate Crisis
2.	River Habitat and Land Use
3.	Biosecurity and Invasive Non-Native Species
4.	Fish and Fisheries
5.	Marine and Inshore Environment
6.	Education and Awareness

#### 1. Climate Crisis

## "To mitigate the effects of climate change"

Issue	Objective	Priority	Strategy
1.1 Climate crisis is increasing river temperatures to potentially critical levels for salmonids and other native aquatic species.  1.2 Historical drainage of	To improve riparian woodland to provide shading and reduce stream temperatures.	High •	Use the MSS river temperature map to identify critical rivers.  With landowners, develop and cost suitable improvement project.  Draw in other partners and funders.  Finalize project costs, source contractors and commission project.  Establish monitoring and management plans.
noorland has increased the volume and speed of run-off, leading to more erosive spates and loss of peat, soil, and reduced water retention.	To improve water retention and loss of peat/soil.	High •	Using Salmon Pressures Map identify critical areas to improve.  Encourage activities for improving water retention, drain blockage, native forestry planting, re-meandering of rivers, etc.  Meet with landowners to discuss issues and identify willingness to consider improvements. Improve staff knowledge and training on the most appropriate techniques and funds.
1.3 Reduce the Trust's carbon footprint	Develop working practices to reduce use of fuel, paper and resources.	Low •	Regularly review work practices to minimize use of materials, fuel, etc.  Continue to make use of virtual meeting facilities.

- The flora and fauna within northern Scottish rivers prefer it cold! The fish, invertebrates
  and other wildlife within the Findhorn, Nairn and Lossie are no different. Increasing water
  temperatures resulting from climate breakdown will increase thermo-related mortality of
  salmon, trout and other fishes in the freshwater environment.
- The MSS led Scottish River Temperature Monitoring Network (<u>SRTMN</u>) program of research has allowed a model of river temperatures in Scottish rivers to be developed which, when mapped, identifies where rivers are most sensitive to climatic change and rising temperatures (<u>Jackson et al</u>, 2018).
- Good riparian tree cover providing shade is an important factor in reducing river temperature. Riparian tree cover has been lost from many upper tributaries, particularly in the Findhorn catchment. A key aim of this Plan is to work with landowners to identify

suitable areas to re-establish riparian tree cover, to improve shading and in the longer term reduce river temperatures for fish.

- The Findhorn regularly experiences losses of adult salmon to disease during periods of high temperature particularly in late spring. If low water conditions prevail at this time and salmon build up in the gorge section, then physical damage can lead to serious fungal infections (*Saprolignia*) leading in turn to significant losses of salmon. Data collected from these fish indicate they are mostly females so a significant loss in eggs can also result. Climate predictions indicate that warmer temperatures are likely to prevail, so this problem will get worse. There is no simple cure but improving riparian woodlands and shading should help.
- The Trust and Boards will reduce their fossil fuel consumption by regularly reviewing work programmes, travel and in the light of the Covid-19 outbreak, a greater emphasis on home working and video conferencing will be encouraged.

## 2. River Habitat and Land Use

# "To restore and maintain high quality river habitat allowing fish and wildlife populations to thrive"

Issue	Objective	Priority	Strategy
2.1 Man-made obstructions	To facilitate fish	High	Identify remaining barriers and assess passability.
block fish passage.	passage through		Identify the barrier owners and seek discussions
	the removal of		with them and SEPA to facilitate fish passage.
	barriers or the		Review new construction developments and
	installation of a fish		ensure no new obstructions are created.
	pass.		Develop monitoring plans to assess fish passage
			after barrier improvement.
2.2 Identify natural	To identify all the	Low	Continue to identify natural obstructions and
obstructions and assess	natural obstructions		collect data on the unique fish populations above
upstream fish populations.	and the unique fish		them.
	populations above		Review any new construction developments and
	them.		ensure there is no damage to the fish populations.
2.3 Land use developments	To promote	High	Monitor planning applications and respond to
may affect the river habitat	sustainable land		ensure fish populations and habitats are not
and fish populations.	use development		detrimentally affected.
	and protect riparian		Continue to provide support to riparian owners
	habitat and aquatic		and developers to manage river works
	wildlife.		appropriately.
2.4 Water quality and	To maintain the	Medium	Continue to be identify and report any pollution
pollution.	highest water		incidents to SEPA. Hotline 0800 807060.
	quality through the		Contribute to wider pollution control initiatives.
	minimization of		
	pollution.		
2.5 Water quantity, supply,	To ensure riparian	Medium	To continue and improve liaison with major water
and use.	habitats, fish and		users such as Scottish Water, distilleries, farmers
	aquatic wildlife are		etc.
	not detrimentally		Provide advice to water users to protect fish and
	affected by water		riparian habitats.
	abstraction and		Ensure that water use is compatible with Fisheries
	supply.		Legislation.
2.6 Significant sections of the	To improve river	Medium	Identify and review degraded riparian areas and
rivers have been historically	structure and		evaluate potential habitat restoration options.
modified leaving poor river	habitat.		Meet with landowners to discuss issue and
structure and habitat.			identify willingness to consider improvement
			schemes.
			Maintain links with SEPA and other organisations
			on river restoration initiatives.

- To date, 41 man-made obstructions have been identified, Findhorn 14; Nairn 6; Lossie 21; but others may well arise. Fish access has been improved at seven through removing the weir or installing a fish pass, six others have disintegrated or are no longer impeding fish passage. Of the remaining 28 obstructions, improvements at 11 would benefit the fish populations but at the remaining 17 alterations would only bring limited benefits.
- A Linkwood Burn Stakeholders group was formed by SEPA in 2014 which includes
  distillery representatives and the Trust and this group has made considerable progress
  on improving the access to the burn for fish and on controlling distillery abstraction and
  discharges to the burn. This approach is a good template for tackling other obstructions.
- Removing or modifying an obstruction is often difficult, time consuming and costly, and although good guidelines for river crossings prepared by <u>SEPA (2010)</u>, are available, poor designs still appear regularly and a key priority for this Plan is for the Trust to be involved at an early stage to advise on good designs for fish passage.
- Natural waterfalls also exist within both catchments and the burns above these complete obstructions often contain isolated, self-sustaining trout populations. Recent surveys relating to wind farm developments have indicated that these resident trout mature at a relatively small size and produce only a small number of eggs. Thus, these populations are fragile. Any change in upland land use could damage the population very quickly if access to spawning was affected or spawning areas were lost due to in-river works. Each trout population is unique and this Plan seeks to encourage landowners to manage and protect them as part of the biodiversity of the river. If they are lost, then they cannot be replaced!
- Control of pollution lies with SEPA but Trust and Board staff, as well as anglers, are in a
  good position to identify any pollution events and report them quickly. This plan seeks
  to strengthen the already good working relationship with SEPA.
- In general, the three catchments have low population densities but the three main towns, Elgin, Forres and Nairn are expanding and the Lossie has seen increase demand for potable water during recent dry springs and summers, potentially leading to detrimental effects on fish populations and riparian habitat. The Plan seeks to develop closer relationships with water suppliers and users to understand their requirements and improve their understanding of potential conflicts with fish and riparian habitats.
- The Findhorn is classified as good to high status for the majority of the mainstem and its tributaries by SEPA suggesting the river is in good condition (Figure 2). The Lossie ranges from Bad to Good (Figure 3), and this reflects that much of the river has been significantly modified over the years. A wide range of factors contribute to these classifications and as more knowledge on the rivers accumulates these grades will change. However, the rivers are falling far short of a functioning ecosystem and with increasing pressures on the catchment, strong action is needed to improve them.



Figure 2: SEPA classification for the Findhorn 2020.



Figure 3: SEPA classification for the River Lossie 2020.

- In 2017 a substantial river restoration project on the Aberarder Estate was completed which returned a large section of the upper Nairn to a more natural channel. The project was funded through the WFD and involved Aberarder Estate, SEPA, the Trust and restoration specialists, <a href="mailto:cbec">cbec</a>. A more natural channel has established with improvements in riparian habitat already clear. Although costly, this type of approach can bring substantial benefits to fish, river structure and habitat and improve upland water retention.
- With further funding through WFD the Trust completed a survey of further section of the Nairn to determine areas for future river morphology improvement. This Plan seeks to build on that experience and apply it to other reaches of degraded riparian habitat.

## 3. Biosecurity and Invasive Non-Native Species

"To promote effective biosecurity controls and to eradicate invasive non-native species"

Issue	Objective	Priority	Strategy
3.1 There are numerous biosecurity risks to the riparian flora and fauna.	Implement Biosecurity Plan to manage the key risks to the catchments.	High	<ul> <li>Update Biosecurity Plan.</li> <li>Continue to raise awareness on key biosecurity risks to the catchments.</li> </ul>
3.2 Pathogens and diseases are harmful to fish populations leading to reductions in spawning stocks.  3.3 Invasive Non-Native plants and animals are damaging riparian habitats and native species.	To maintain and improve awareness of pathogens and disease threats to fish stocks.  To control and eradicate nonnative species.	High	<ul> <li>Continue to prevent the introduction of the <i>Gyrodactylus salaris</i>.</li> <li>Continue to respond to fish disease outbreaks and collect samples.</li> <li>Maintain links with MS Fish Inspectors for advice and guidance.</li> <li>Continue monitoring and control programs using most appropriate techniques.</li> <li>Ensure rapid response to new INNs species which appear out-with existing control areas.</li> <li>Continue to source funding for INNs control and develop alternative strategies such as cooperative landowner schemes.</li> </ul>
			<ul> <li>Maintain public awareness through multi-media approach.</li> <li>Promote Alien Detectives resource as part of education initiatives.</li> </ul>

- Biosecurity can be defined as "procedures or measures designed to protect the population against harmful biological or biochemical substances", and in this Plan the population is the flora and fauna of the Findhorn and Lossie catchments.
- The Trust produced Biosecurity Plan(s) in 2012 and will update this as part of the Scottish Invasive Species Initiative in 2021.
- Within this category, the greatest risk posed to any Scottish river is the introduction of, Gyrodactylus salaris. This would quickly decimate stocks of Atlantic salmon and any treatment associated with its eradication would have a major impact on the biodiversity of the catchment. The Trust and Boards have continued to raise awareness of the threat by; installing warning signs, issuing biosecurity forms, using newsletters and social media and promoting the Clean and Dry campaign. This will continue in the new Plan.
- Fish diseases and fungal infections, such as Infectious Salmon Anaemia, UDN, Red Vent syndrome, *Saprolignia*, etc., have the potential to harm fish stocks. If low flows and

warm temperatures combine in April/May and large numbers of salmon accumulate within the gorge section of the Findhorn, infections can spread rapidly. High losses of salmon, often females, can result. Staff have collected samples in conjunction with MS Fish Disease inspectors and most of the fish were infected with *Saprolignia* fungus. Board and Trust staff will continue to inspect any diseased salmon and collect samples where appropriate and advise proprietors and anglers if remedial action is required.

- Invasive non-native plant species impact on the riparian ecology by reducing plant and invertebrate diversity and destabilizing riverbanks. The three most prolific non-native plants in the catchments are Giant Hogweed, Japanese Knotweed and Himalayan Balsam. Butter Burr, Skunk Cabbage, Rhododendron, Giant Rhubarb (*Gunnera tinctoria*), and Bamboo are also establishing and becoming problematic in certain areas. The Trust have developed a lead role in the control of INNs plants within the catchments and work closely with landowners and other groups to provide a coordinated control strategy. For plants, this involves tackling the infestation from the upper limit and working downstream in a coordinated manner using a range of techniques. This approach will be continued and regularly reviewed during this Plan.
- North American mink are the most significant invasive non-native mammal species currently present. To control mink a network of monitoring rafts and traps has been operated by gamekeepers, landowners, and volunteers for several years. As a result, the population is declining along the river's, but they still have a stronghold along the coast. The network of monitoring rafts and control of mink will continue during this Plan.
- Rainbow trout are present in put and take fisheries and an occasional escape is reported, while pike and minnows have also been introduced in the past. Similar, to the rest of Scotland an influx of Pink (Humpback) Salmon was also recorded in 2017 and again in 2019. The Trust will continue to raise awareness on non-native fish species and advice on preventative measures.
- The largest risk from future colonizations are from American signal crayfish, which are
  present in the River Nairn. The Trust will continue to raise awareness on the threat posed
  by Signal crayfish and advise on preventative measures.
- The Trust has gained considerable funds for INNs control and major control projects, such as the <u>Scottish Invasive Species Initiative</u> (SISI). Fund raising will continue but a high priority is to develop long-term control strategies with landowners and reduce the need for external funding.

## 4. Fish and Fisheries

"To maintain sustainable natural fish stocks for the enjoyment of future generations"

Issue	Objective	Priority	Strategy
4.1 Marine survival for salmon and sea trout has been very low and catches have declined in the last decade indicating reduction in adult spawning stocks.	To improve the conservation of adult salmonid spawning stocks.	High	<ul> <li>Maintain Conservation Codes on each river and continue to promote catch and release and other appropriate fishing techniques.</li> <li>Improve awareness of fish handling procedures during catch and release through demonstration/training to maximize survival to spawning.</li> </ul>
4.2 Illegal fishing or poaching is damaging spawning stocks of salmon and sea trout.	To enforce salmon fishery legislation and, if possible, eradicate poaching.	High	<ul> <li>Maintain well-trained river bailiff team.</li> <li>Continue liaison with Police Scotland and neighbouring rivers.</li> <li>Continue evidence collection and raise awareness of poaching as a wildlife crime.</li> </ul>
4.3 Little information is available for brown trout and pike fisheries within the catchments.	To improve knowledge and data on other fisheries in the catchments	Low	<ul> <li>Build on Moray Firth Trout Initiative to improve knowledge of trout fisheries.</li> <li>Collect information on pike fisheries.</li> </ul>
4.4 Avian (Goosander, Merganser and Cormorant) predation is reducing numbers of salmon and sea trout smolts reaching the sea.	To manage avian predation at natural levels to minimize the losses of smolts.	Medium	<ul> <li>Continue bird counting program and analyse data.</li> <li>Apply for licence through Moray Firth Sawbill Management Group.</li> <li>Explore and implement additional scaring techniques.</li> </ul>
4.5 Seal predation is impacting on returning adult salmon and sea trout numbers and potentially reducing spawning escapement.	To reduce the impact of seals on salmonid populations within the rivers.	Medium	<ul> <li>Continue seal counting program.</li> <li>Continue to participate in the Moray Firth Seal Management Plan.</li> <li>Explore the potential for using seal scaring techniques within the rivers.</li> <li>Liaise with FMS to review effects of proposed new seal legislation on seal control.</li> <li>Liaise with SMRU to explore potential for projects examine feeding and migration habits of seals and other marine mammals around Findhorn Bay/Moray Firth</li> </ul>

Issue	Objective	Priority	Strategy
4.6 Providing data on adult salmonid populations.	To maintain and improve data on adult salmonid populations.	High	<ul> <li>Continue collection and analysis of rod catches.</li> <li>Liaise with MS to ensuring the catch returns are accurate and are robust enough for conservation limits.</li> <li>Develop a catch and release tagging project to examine recapture rates.</li> <li>Consider radio tracking project for returning adult salmonids.</li> <li>Continue to look for potential fish counter and trap locations.</li> <li>Review alternative approaches for counting adult salmonid numbers.</li> <li>Continue to encourage scale collection for retained adult salmon and sea trout.</li> </ul>
4.7 Providing data on juvenile salmonid populations	To maintain and improve data on juvenile salmonid populations.	High	<ul> <li>Review electrofishing data and report.</li> <li>Develop electrofishing survey based on NEPS for long-term monitoring.</li> <li>Conduct specific EF surveys as required.</li> <li>Review alternative methods for monitoring juvenile salmonids.</li> </ul>
4.8 Provide data on salmonid smolts	To develop monitoring program for smolts.	High	<ul> <li>Continue AST smolt tagging program on the Findhorn.</li> <li>Establish suitable screw trap location for longer term monitoring of smolt output.</li> </ul>
4.9 Understanding salmonid stock structure	To improve knowledge on the salmon and trout stock structures within the rivers.	Medium	Review genetic sampling approaches to determining fish population structure with appropriate experts.
4.10 Lack of data on other Fish Species	To improve knowledge of the distribution and abundance of other fish species.	Low	Review existing data and develop monitoring plan.
4.11 Improving understanding of other aquatic species.	To improve knowledge on other riparian and aquatic species.	Low	<ul> <li>Where possible and appropriate initiate and contribute towards data collection on other aquatic species.</li> </ul>

- Fish and fisheries management has been a core duty for the FNLRT and since salmon
  and trout are the dominant fish species in both catchments these have attracted the most
  work and attention. The Trust receives core funding from both the Findhorn and the
  Lossie Fishery Boards, and this funds data collection and research, management advice
  and administration. Additional income through specific fisheries projects has also been
  a major part of the Trusts funds.
- This Plan seeks to continue the close working relationship with the two Boards and provide high quality fisheries data and advice, along with regular updates to Board meetings and production of an annual reports and accounts. The Trust will seek to strength their working relationship through a "Memorandum of Agreement" outlining the services provided each year and this will be reviewed annual and approved by each Board.

#### Fish Species

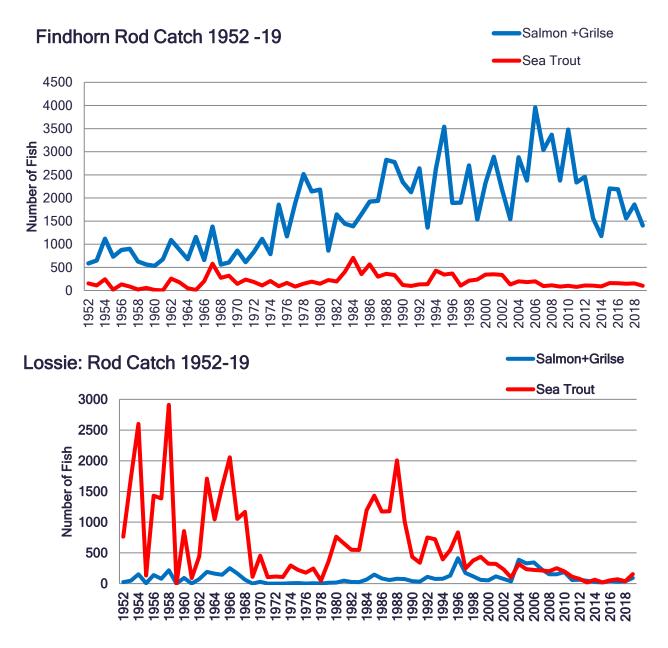
Catchment	Native Species Fish Species Present		
Findhorn	Atlantic Salmon, Trout (Sea and Brown), European Eel, Lamprey (Sea, River, Brook), Arctic Charr, 3-spined-stickleback, Flounder		
Lossie	Atlantic Salmon, Trout (Sea and Brown), European Eel, Lamprey (Brook), 3-spined-stickleback, Flounder		
Catchment	Introduced Species		
Findhorn	Pike, Minnows		
Lossie	Minnows, Perch		

Rainbow trout and other varieties of stocked trout are present in stocked fisheries and Pink (Humpback) salmon were recorded in the rivers during 2017 and 2019.

## Fisheries: Human Exploitation

- Human exploitation has the potential to reduce the spawning stock of salmonids and thereby reduce recruitment into their populations. Coastal and freshwater netting may have historically had an impact on salmon and sea trout stocks, but legal netting is no longer carried out on the rivers or along the coast. There continues to be incidences of illegal netting which undermine the Trust and Boards conservation work.
- Salmon and trout (sea and brown) are the main target species for anglers in the rivers Findhorn and Lossie. Loch fishing, for brown trout, is available in both catchments and there is also a pike fishery developing in Lochindorb. There are also put and take fisheries and stocked lochs using rainbow trout and other varieties of fish.

- Salmon and sea trout angling is the dominant fishery and the fishing season is set by the two Boards, Findhorn 11<sup>th</sup> February to 30<sup>th</sup> September and Lossie 25<sup>th</sup> February to 31<sup>st</sup> October. However, there are a range of variations within these dates depending on fish species and proprietor/angling club.
- The Findhorn supports a multi-sea-winter spring and summer salmon run and a onesea-winter grilse run from late spring to autumn. Sea trout are also caught on the Findhorn but numbers are much lower. On the Lossie salmon also present arriving as summer salmon and grilse. Historically sea trout dominated the catch on the Lossie, however, in recent years this catch has declined dramatically.



- Data from other Scottish rivers, such as the Spey, indicates that the spring salmon stocks have a higher rod exploitation rate than other stock components such as summer salmon and grilse (<u>Thorley, Youngson and Laughton, 2007</u>). This is also likely to apply to the Findhorn and thus protecting and managing this early running stock component remains a high priority. However, in the last few years rod catches of salmon have dropped across Scotland and this has heightened concern for all components of the salmon population.
- The Findhorn Fishery Board has maintained a catch and release <u>policy</u> for salmon and sea trout for many years on the river. The policy is reviewed annually and incorporates statutory requirements. The policy has been successful with <u>catch and release rates</u> for all salmon stock components high, typical 80% - 90% per season. Thus angling is having a minimal effect on the returning stocks.
- Sea trout catches in the Findhorn are much lower than those of salmon with the average catch for the last five years being 144. The sea trout is still an important part of the fishery with a number of anglers targeting them. A <u>catch and release policy</u> is also in place and return rates are between 60% 90%.
- On the Lossie sea trout catches vary widely each year with the average catch for the last 5 years on the Lossie being 78. The last two decades have seen a substantial decline in sea trout catches and the reasons for this remain unclear. Locally there has been a decline in fishing effort due to access restrictions during the construction of the Elgin flood alleviation scheme and fewer people taking up fishing. However, declines in sea trout catches elsewhere in the Moray Firth have also been reported indicating the decline may be linked to changes in the marine environment (Walters, 2011).
- In the last few years rod catches of salmon have dropped across Scotland and this worrying trend has heightened concern for all components of the salmon population. The Lossie bucked this trend in 2019 with an increase in the salmon and grilse catch. Salmon catches vary widely from year to year with the last 5year average being 44. In exceptional years, such as 1996, 414 salmon and grilse were caught indicating the river can be very productive for salmon.
- In 2016 the Scottish Government established a <u>conservation limit regulations</u> for salmon in all Scottish rivers. The regulations provide a <u>grading system</u> (Grade 1 to 3) for each salmon river based on rod catch and, if available, fish counter data. The Findhorn and Nairn were Grade 1 while the Lossie was graded at Grade 3 in 2016 and have remained at these grades to date. For the Lossie this indicates that exploitation of salmon is unsustainable and that all salmon must be released by anglers to preserve stocks.
- The Lossie Fishery Board have incorporated this into their catch and release <u>policy</u> for salmon and this has been successful with <u>catch and release rates</u> for salmon now at

100% in line with the Grade 3 conservation status. The catch and release policy also cover's sea trout but results have been patchy with release rates varying between 26% and 89%. So further effort to improve the sea trout release rate is required.

#### Fisheries: Illegal Fishing or Poaching

• The impact of poaching is difficult to quantify and unpredictable in nature. The Findhorn Board maintain two full time bailiffs to conduct patrols along the coast and river. They are also contracted by the Lossie Board to cover the Lossie District an arrangement which has worked well in the last few years. Close liaison with Police Scotland and neighbouring Boards is also in place. In general, the presence of a well-trained bailiff team ensures that poaching is at a very low level. In recent years the role of the river bailiff has been widened considerably to include activities such as fish trapping and surveys, habitat management, assessing river developments and they also play an import role in educational projects. This Plan will continue to enhance the role of the river bailiff.

#### Fisheries: Other Species

- Brown trout angling is practiced by local anglers and visitors who target the fish. During
  the Moray Firth Trout Initiative (MFTI) some information about trout fishing and data on
  catches was gathered. This Plan seeks to build on this information.
- Pike fishing at Lochindorb has grown in popularity. It is highly likely the pike were introduced to the loch, although it is not clear how or when this happened. The introduction of pike may have had effects on the native salmon and trout populations and there have also been problems with discarded tackle affecting the bird populations. Once established, pike are nearly impossible to get rid of and so this Plan seeks to improve the information on the pike population and fishery within the loch.

## **Predator Management**

Fish-eating birds, such as mergansers, goosanders and cormorants, feed on many fish species, including juvenile salmonids. Studies on several rivers have shown that on mainstem areas the greatest proportion of fish consumed by goosanders is salmon parr. Currently the populations of sawbill ducks and cormorants are monitored four to five times per year on the mainstem of the Findhorn. Counts use techniques outlined in, Cosgrove, Butler and Laughton (2004), and are completed by Board and Trust staff along with estate staff and volunteers. Ad hoc bird sightings are also collected by staff on patrol and from anglers.

- Counts were carried out on the Lossie for several years, but sightings of sawbills and cormorants were consistently low <5, so *ad hoc* sighting data is now used.
- The count data is submitted as a licence application to scare and control the birds.
   Control is carried out during the spring when smolts are particularly vulnerable to predation. The Trust and Boards will remain part of the Moray Firth Sawbill Management program and continue to collect data and improve our understanding of these birds.
- Seals can cause damage to the fish directly by eating or wounding adults, and secondly
  to the fishery in terms of disruption to angling. However, since the advent of the Marine
  Act (Scotland) 2010 it is a criminal offence to shoot seals unless under licence.
- The area to the west of Findhorn Bay is a designated haul out site and seals cannot be disturbed in this area. Drone surveys were carried out over the last three years and indicate the population has increased to around 800 seals, although it varies seasonally. Seals are known to have a varied diet and often range far afield to feed and return to the Bay to haul out and rest. However, there is considerable concern at this rise in numbers and the current decline in salmon and sea trout catches.
- The Findhorn is also part of the Moray Firth Seal Management Plan and this allows a
  licence to be gained each year to control seals that enter the river. At present a licence
  to control only grey seals in river is granted. Seal scarers have been trialed but with
  limited success, but technology has advanced in this area and this approach should be
  revisited. Further data on the movements, behavior and diet of the seals would also be
  welcome.
- Changes in legislation regarding the export of fish and fish products, particularly to the USA have been recently implemented by Scottish Government and this will affect licensing of seal control. Meantime the Boards/Trust will remain part of the Moray Firth Seal Management Plan.

#### Monitoring and Research

• Monitoring and data collection underpins good evidence-based fisheries management and the Plan highlights areas where data collection will continue and where new approaches will be developed. The Trust will remain members of Scottish Fisheries Coordination Centre (SFCC) and participate in training courses, workshops and meetings to ensure fishery data collection skills are up to date. Opportunities for training in other catchment and river related skills will also be pursued where appropriate.

#### 5. Marine and Inshore Environment

"To understand and protect migratory salmonids during their marine phase"

Issue	Objective	Priority	Strategy
5.1 Protection of salmonid stocks in the inshore marine environment	Enforce salmon fishery legislation on the coastal areas	High	<ul> <li>Maintain a well-trained fishery bailiff team to continue coastal patrols.</li> <li>Maintain liaison with Police Scotland, MS Fisheries Protection, and neighbouring Fishery Boards.</li> </ul>
5.2 How do salmonids utilize the coastal and inshore habitats.	To understand how salmonids utilize and migrate through inshore habitats.	Medium	Conduct review of information on inshore habitat and salmonids.
5.3 Inshore fisheries may be impacting on salmonid stocks.	To determine any impacts on salmonids from commercial inshore fishing.	Medium	<ul> <li>Research the amount of inshore fishing underway and determine potential impact on salmonids.</li> <li>Engage with inshore fishing groups to promote awareness of salmon and sea trout migrations and feeding requirements.</li> </ul>
5.4 Marine Developments may affect salmonid migrations and feeding.	To support research into the effects of marine development on salmonids in the Moray Firth and beyond.	Low	<ul> <li>Where possible support other relevant salmonid research initiatives in the marine environment.</li> <li>Continue to closely monitor marine developments, to comment on them and develop appropriate mitigation measures where required.</li> </ul>

- The inshore environment extends six nautical miles from the coast and is a transition area for salmonid post smolts leaving the river and for adults returning to the river. The time spend in the inshore environment may be short, but it is an important period.
- Information on salmon, sea trout and eel migration routes in the Moray Firth is limited (Malcolm et al 2010) and so more data is required. This is expensive but recent largescale tagging projects initiated by the AST Moray Firth Tracking Project has allowed new data on salmon and sea trout smolt marine migrations to be collected. Initial results indicates that smolts from the Findhorn and other Moray Firth rivers journey along the east coast rather than heading directly north. The Trust and Findhorn Board are contributing to this project and more smolts will be tagged in 2021-22.
- The Moray Firth Sea Trout project (<u>Walters, 2011</u>) reviewed data on sea trout feeding
  within the Moray Firth and indicates that although data is limited the inshore area it is an
  important foraging area for sea trout with many of their desired prey species such as
  sand eels, sprats and herring being present.

• Information on migration patterns and feeding behaviour in the marine environment is complex and important area and this Plan seeks to increase our knowledge in this area by working with other marine fisheries organisations.

#### Inshore Fisheries

- Currently there is no active coastal netting for salmonids within the Moray Firth and although this seems unlikely to change, the Trust and Boards should remain vigilant to any change in this position.
- Illegal inshore fishing for salmon and sea trout will affect Findhorn and Lossie stocks, although the occurrence is relatively low there have been incidents over the years along with the use of illegal gill nets. Bailiff staff will continue coastal patrols and liaison with the MS Fisheries Protection fleet.
- Scottish Government published the <u>Scottish Inshore Fisheries Strategy</u> in 2012, to promote and support sustainable inshore fisheries withing 6nm of Scotland's coast. A range of inshore fishing is carried out within the Moray Firth and some of the methods may have effects on salmonids as they migrate through or feed within the firth. Scallop dredging, bottom trawling for nephrops and the trawling for squid are important fisheries within the Moray Firth (<u>Kafas et al 2014</u>). These sea bed fishing techniques could be affecting the habitat for sand eels, an important food species for sea trout, while salmonid smolts could be caught as a by-catch in net fisheries (<u>Walters 2010</u>). This Plan seeks to develop closer working relationships with organisations such as the <u>Moray Firth Partnership</u> and the North & East Coast Regional Inshore Fisheries Group (<u>NECRIFG</u>) to highlight the importance of the inshore region for salmonids and contribute to improving fisheries management in the Moray Firth.

## Marine Development

- Offshore wind farms developments will feature prominently in future power generation, the <u>Beatrice Offshore Wind Park</u> is already operational while more will follow such as, <u>Moray Wind Farm East and West</u>. These massive developments have the potential to effect fish populations in terms of migration routes, feeding, refuge and spawning areas.
- The Trust and Board will continue to review and comment on any future proposed developments in the Moray Firth and seek to work closely with FMS, neighbouring Boards/Trust and other organisations to formulate research and mitigation proposals to improve our understanding of salmonid populations within the Firth.

 On a smaller scale, sewage outflows, cable laying and other developments also arise, and the Trust and Board will continue to review and provide comments on these developments and seek mitigation measures to protect salmonid stocks where necessary.

#### 6. Education and Awareness

# "To promote the ecological and recreational importance of the rivers and inspire the next generation"

Issue	Objective	Priority	Strategy
6.1 There is a general lack of knowledge about rivers and their management.	To promote management of the rivers to as wide an audience as possible.	High	<ul> <li>Continue to meet with stakeholders and organisations to promote good riparian and fish management.</li> <li>Continue promotion of the river and management through talks and events.</li> <li>Continue to build links with local communities and establish volunteer networks to support projects.</li> <li>Continue to develop publicity through website, social media, Facebook and twitter.</li> </ul>
	To promote education programs highlighting river ecology and angling.	High	<ul> <li>Continue "School Go To Fish" and "Alien Detectives" with local schools.</li> <li>Develop better routes into angling through fishing events with local Angling Clubs, parents and other organisations.</li> <li>Source funding for support of education and angling initiatives.</li> </ul>

- Damaging land management practices on agricultural land, on moorland, in forestry and in construction activities can all be found within the Findhorn and Lossie catchments. In many instances a lack of knowledge regarding the river and its flora and fauna leads to bad practices being implemented. This Plan seeks to improve land managers and the general public's knowledge of fisheries and catchment management, leading to improvements in land development designs.
- The Plan also seeks to improve communications with stakeholders, whether they be proprietors, anglers or members of the public. Different people will need information presented to them in different forms, whether verbal, printed or through one of the plethora of new media. In addition, the Trust must ensure that information can be fed in from stakeholders.

- Across the whole of Scotland the salmon fishing industry generates approximately £100 million (2015 values) to the Scottish economy and supports around 2000 direct full-time equivalent jobs (Radford et al 2004). Angling in the Findhorn and Lossie is an important part of the local economy and community in terms of tourism.
- Fisheries development has also received recognition at government level with the Wild Fisheries Review highlighting the need for fisheries development and placed an emphasis on the provision of accessible information detailing how, where and when to fish. There is additional emphasis on encouraging new participants into the sport and a recognition that:
  - "No industry or sport can hope to have a sustainable future if it is not able to attract new participants and customers to replace those leaving due to old age or other reasons" (Report of the Wild Fisheries Review Panel, 2014).
- There has been a noticeable decline in angling with local angling clubs reporting falling membership particularly among younger generations. Estates too are having to work hard to promote and sell angling.
- The Trust has developed a "Schools Go To Fish" initiative and 14 primary schools in the catchment have participated in the project. The initiative gives pupils an understanding of the ecology and river and its fish populations and over 200 pupils have also gained a first taste of angling!
- While this is encouraging, providing a pathway for these enthusiastic new anglers into regular angling remains a challenge. The Trust are exploring joint events with local Angling Clubs where pupils could bring a parent to try angling etc. There is also a need with clubs to train anglers to coach and encourage children into the sport. The recent outbreak of Covid-19 has not helped, and it remains unclear how "Schools Go To Fish" type initiatives can be implemented in the future.
- As part of this management plan, the Board and Trust will seek to promote angling and continue to inform Scottish Government, its agencies and the wider public, of the benefits that an economically vibrant fishery can bring to the local community in terms of jobs supported, quality of life and pride in the local environment.

## **Funding Review**

• The table below lists the objectives, priorities and indicates where funds have been gained and where potential support could be gained.

	Objective	Priority	Current Funders	Funding Summary
1.1	Riparian woodland	High	Various	Funding to review data secured.  Good potential for funding from range of sources
1.2	Water retention	High	None	Good potential for funding from range of sources
1.3	Carbon footprint	Low	None	Changed working patterns, travel reduced, home working and video conferencing increased.
2.1	Man-made obstructions	High	Various	Owners (Distillers, Council, etc) of the obstruction fund repairs. Redundant weirs-potential funding through SEPA WFD.
2.2	Natural obstructions	Low	None	Wind farms developments have allowed data to be collected in the past and may be possible in future.
2.3	Land developments	High	Boards	Core duties
2.4	Water quality	Medium	Boards	Core duties
2.5	Water quantity	Medium	Boards	Core duties
2.6	River morphology	Medium	None	Potential for funding through SEPA WFD
3.1	Biosecurity Plan	High	SISI	Updating plan funded through SISI
3.2	Disease monitoring	High	Boards	Core duties
3.3	INNs control	High	Various	SISI continues to 2022, others including Landfill Tax Funds, Crown Estate, Findhorn Board, etc
4.1	Salmon conservation	High	Boards	Core duties
4.2	Poaching control	High	Boards	Core duties
4.3	Other fisheries	Low	None	Additional funds required but no obvious sources
4.4	Avian management	Medium	Boards	Core duties
4.5	Seal management	Medium	Boards	Core duties Funding required for scaring devices
4.6	Adult salmon data	High	Boards	Core duties
4.7	Juvenile salmon Data	High	Boards/SG	Funding required for counters/traps/tagging etc Core duties Funding from SG NEPS program possible in 2021
4.8	Smolt data	High	AST	AST funding smolt tagging on Findhorn for 2021-2022
4.9	Stock structure	Medium	None	
4.10	Other fish data	Low	None	Data gained from salmonid surveys
4.11	Other aquatic species	Low	None	
5.1	Inshore protection	High	Boards	Core duties
5.2	Inshore habitat	Medium	None	
5.3	Inshore fisheries	Medium	None	
5.4	Marine development	Low	None	Offshore wind farm community funds may be available
6.1	Education	High	Various	Wide variety of funds utilised, SISI, WF Community Funds, Fishmongers Ltd, Tesco, Veolia and other companies, etc

• The Trust receives core funds from the Findhorn and Lossie Boards which covers a range of routine tasks as outlined in the table above. As part of the Plan the Trust will develop agreements with the Boards to continue to deliver these services and administration duties.

- External funding to support core duties has also been achieved through the National Electrofishing Program for Scotland (NEPS) and the AST smolt tagging program in the Moray Firth.
- The Trust has also been successful in gaining contracts for fish surveys relating to land use developments such as wind farms and roads. This has provided essential extra revenue and valuable additional data. The Trust will continue to bid for contracts where appropriate.
- Initial support to look at improving riparian woodland has been gained for 2021 and the
  prospects for further funding to ameliorate climate change crisis are promising through
  carbon capture funds and other sources. However, to secure these funds and turn them
  into tangible change along the rivers will take considerable work.
- The Trust has had considerable success in funding the INNs control programs. The SISI
  project will be extended by year into 2022 and we will continue to pursue additional funds
  and approaches for INNs control.
- Similarly, the Trust has also had great success in funding educational projects and will
  continue to pursue this particularly, for the Schools Go To Fish initiative. Although with
  Covid-19 restrictions the approach to school projects will need to be revised.
- The Trust and Boards acknowledge that to fully achieve the aspirations outlined in the Plan is currently beyond their resources and the Trust Board and staff will strive to address this shortfall. During 2021, the initial year of the Plan, the Trust will focus resources on:
  - Survey data collection and maintenance.
  - INNS Control
  - Education / Biosecurity
  - Developing riparian woodland in upper tributaries.

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