



AN INTRODUCTION TO EEL AND ELVER FISHING

3rd EDITION



NRA

National Rivers Authority

Welsh Region

ENVIRONMENT AGENCY
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CHECK LIST FOR EEL FISHING

1. Read carefully this advisory booklet.
2. Decide upon likely locations and types of gear for fishing.
3. Investigate possible markets for your catch.
4. Obtain permission from all land owners for access and fishery owners to set your gear.
5. Obtain licence for gear from Fisheries Dept at Cardiff giving details of number and type of gear, location to be fished and enclosing correct remittance.
6. Affix identification tag to each instrument.
7. Inform local fisheries officer (Appendix 1) of your fishing operations.
8. Ensure your gear is legal:
 - Fyke nets - not obstructing passage of salmon or sea trout (see Appendix 6).
 - not used prior to 25th June in waters frequented by salmon and sea trout (does not apply to still waters) unless dispensation has been granted.
 - otter guard has been fixed across entrance.
 - Others - fixed traps on main river watercourses need permission from National Rivers Authority Flood Defence Department.
 - baited traps used prior to 25th June in waters frequented by salmon and sea trout must be less than 10 inches in diameter.
9. Record details of your catches and send your catch return to the Fisheries Department at Cardiff at the end of the season.
- 10 Organise suitable holding facilities for your live eels.

The National Rivers Authority's policy is to encourage the development of the eel fishery. However, whilst we are active in monitoring and managing the biological aspects of the fishery any commercial development rests with the fishermen themselves.

This booklet is designed to advise anyone interested in fishing for eels of some of the different aspects they will need to consider. The next step is to find both a suitable site to which access and permission to fish can be secured, a market through which the catch can be sold, the most suitable equipment for catching and holding the eels and the best method for their transport.

Finally, licences can then be obtained from the Fisheries Department in Cardiff and you can then commence operations.

If there are any queries with respect to the suitability of sites, or the development of holding facilities then you should contact either the Fisheries Department in Cardiff, or for more specific information on particular sites, the Fishery Officer for the area you intend to fish. The addresses of Area Fisheries Officers are given in Appendix 1.

INTRODUCTION

In 1979 the Welsh Water Authority reviewed the status of the eel resource within Wales and examined the potential for economic cropping. It was concluded that whilst giving due regard to the protection of salmon and sea trout stocks the potential of the eel resource should be developed and that fishing for eels be positively encouraged.

It was also evident that very little was known about eel stocks in Wales. In order therefore to try and evaluate this more fully and determine the most profitable areas for trapping, a licensing and catch return system was initiated.

The first licences were issued in 1980, and since then increasing interest has been shown and a small commercial fishery is emerging. The purpose of this booklet is to provide information on the different aspects of the eel fishery in Wales.

There are several key factors which must be considered before starting fishing.

Firstly it is important to have a sound knowledge of the life history and habitat requirements of the eel and, thereby, an understanding of the type of sites at which eels will be found.

Secondly, it is important to be aware of the different types of available trapping instruments, the best ways of fishing them, and to consider the development of suitable holding and transporting facilities.

Thirdly, there are a number of legal restrictions which control the use of certain instruments which aim to protect a variety of interests and these must be understood and strictly adhered to. Also permission from fishery owners and land owners for access is required.

Fourthly, since fishing is a commercial venture the fisherman will also require a working knowledge of the various markets for his catch.

This booklet seeks to examine these factors in sufficient detail to enable prospective fishermen to make a reasoned assessment of an eel fishing project. It does not try to be an exhaustive handbook and you may feel after reading it that you wish to pursue some topics a little further. A book list is given in Appendix 4, and Fisheries Staff at NRA are available to give advice (Appendix 1).

1. LIFE HISTORY

The eel is a migratory species, feeding and growing in freshwaters and returning to the sea to spawn. During the autumn mature adult eels migrate to the sea by moving out of stillwaters and descending streams and rivers. Physiological changes in preparation for the adaptation from a freshwater to a marine environment occur and the fish take on a silvery appearance. Downstream movement is encouraged by higher river flows and is mostly at night between the last and first lunar quarters. At this time eels are in optimum condition, commanding the highest market prices.

Migration routes to the oceanic spawning area are unknown and as a consequence catches of eels in the sea are relatively rare, except in the immediate proximity of rivers.

Following spawning, the young fish or leptocephali return by drifting in the current to European rivers, a journey that takes three years and during which time the larvae become elvers. Elvers enter Welsh rivers during the spring, by which time they are between 5 and 7 centimetres long. The elvers move upstream, sometimes in large concentrations and mainly at night. The peak of upstream migration usually occurs during April and May on the rise of the spring tides.

The distribution of eels in Welsh rivers is widespread, although it is possibly true to say that the numbers and weight per unit area decreases with remoteness from the sea.

Eels grow slowly in fresh water, and in Wales examination of eels from a variety of rivers indicates that they spend twelve or more years feeding attaining a length of between 35 and 70 centimetres. As a consequence of slow growth rate the freshwater feeding stage or yellow eels can be easily overcropped, particularly if movement into the area is restricted. The feeding of eels and their inter-relationships with trout and salmon has been the subject of several studies, including one in North Wales. Whilst the studies are not completely in agreement, they suggest that eels and salmonids do consume similar food items although not to the same extent, nor in the same proportions.

Further although often accused of consuming large quantities of salmon eggs and fry scientific evidence suggests that this is unfounded.

Eels are not active feeders in winter and this must be borne in mind when deciding upon methods of trapping eels.

2. DIFFERENT TYPES OF FISHERIES

2.1 Estuaries and Coast

Estuaries, with their reedy margins and muddy bottoms, provide rich feeding grounds for eels and, therefore, support large populations. Individuals are small, 0.5 to 0.75 lb being most common, but numbers are high. Also, since estuaries are open habitats recruitment into the area is high, and cropped eels are replaced quite rapidly by other eels. Consequently nets set and left at a particular site will produce regular catches of small brown eels throughout the season.

When fishing an estuary it is important to remember that estuaries are subject to tidal movements and that nets left as the tide goes out will be exposed, subjecting catches to sun and wind.

Further, tidal strengths vary over the season with the biggest tides occurring at the spring and autumn equinoxes. At these times large catches of migratory eels can be expected, but, as after heavy rainfall, large amounts of debris can be brought down and equipment will be more susceptible to damage.

Since the coast and estuaries are usually Crown property, anyone generally has the right to fish in these waters for sea fish and eels, and with few exceptions nets can be staked out below the mean spring high water line, free of charge and without seeking permission. However, where farmland or other privately owned property has to be crossed to reach a site the permission of the landowner to cross his land is required.

2.2 Rivers

Lowland reaches of rivers with slow flowing water and areas where mud and silt are deposited provide ideal habitats for eels, rich in cover and food.

Like estuaries there is migration into this area and good catches of large individuals can be expected. Any drainage dykes or channels connected to the main river also provide ideal conditions and may be worth exploiting.

Going further upstream, the flows are faster and this produces a stony substrate which provides less cover and food and, therefore, supports fewer eels. There will, however, still be slack areas which provide suitable conditions for eels and very often the growth rates of individuals is fairly high. However, the large size of the individuals has to be weighed against the small size of the population and it may not be worthwhile exploiting stocks commercially except on a one off basis.

Small tributaries may produce more exploitable populations, even those high up in the catchment.

Many of the rivers of North and West Wales are best described as spate rivers, characterised by fast flows and stony bottoms. The eroding conditions of these rivers favour game fish, but eels will be found especially in

slack areas. The characteristics of these rivers make them difficult to fish. Fyke nets are particularly difficult to secure and are also easily damaged. Further most movements of eels occur under spate conditions following heavy rainfall, a time at which the river may be virtually impossible to enter and when equipment may become blocked with debris or lost downstream.

The most profitable part of these rivers to fish will be the lower reaches and estuaries where slow depositing conditions exist.

In non-tidal waters, the river bed, its banks and the fishing rights will be owned by someone, and the eel fisherman must secure the permission of all owners involved before he can set either a net or trap.

2.3 Stillwaters

Upland lakes tend to be deeper, larger and less fertile, and therefore support smaller populations of slower growing individuals. The low numbers of eels and the physical characteristics of these bodies of water mean they are more difficult to fish and yields will be small for the amount of effort required.

In these circumstances the shallow margins are likely to produce most fish.

Water supply reservoirs usually represent the largest bodies of still water but despite their size they usually yield only small quantities of eels per acre. Being set in upland areas having stony bottoms, few nutrients and little or no bankside vegetation they provide little food or shelter. Further the dams can prevent upstream migration of elvers into the reservoir or the migration of adults downstream.

If such a body of water has not been fished before it may produce good initial catches, but it is unlikely that such catches would be sustained during subsequent fishing.

Almost any body of water will contain other species of fish and care should be taken when setting traps to avoid the feeding areas of other species, especially if the water being fished is an established trout or coarse fishery.

Again, permission of the fishery owner and land owner must be obtained prior to any fishing operations.

Unlike rivers, lakes and reservoirs can be discrete bodies and so have little if any recruitment, consequently once fished they become depleted of eel stocks.

Where a lake is connected to a river system and migration of eels to and from the lake is possible the population can be maintained, producing one of the most valuable types of eel fishery.

2.4 Canals and Drainage Dykes

This type of waterway provides stable, nutrient rich, muddy conditions in which large populations of resident eels exist.

On navigable waters there may be physical or administrative constraints which restrict the type or timing of fishing. For example, where loaded barges almost touch the bottom, baited pots may be the only permissible instrument, or indeed the only suitable one. The fisherman must find out exactly what restrictions are enforced before setting equipment.

Permission to fish for eels in the canals within the Region must be obtained from the British Waterways Board.

3. TYPES OF EQUIPMENT

Only instruments licensed by the National Rivers Authority can be used for taking eels and elvers. The following instruments are the most commonly used:-

Fyke Nets

Putchers and Baited Traps

Fixed Traps

Dip Nets

A list of the current duties are available from the Fisheries Department at Cardiff (Appendix 1).

The licences are available only from the Cardiff Office and applicants must supply their name and address, the type and number of instruments to be used, the river and location where the instruments are to be used together with the correct remittance. All licences are issued for a calendar year and expire on the 31st December, subject to the provisions of the 1975 Salmon and Freshwater Fisheries Act. The licences are issued with identification tags which must be fixed to each licenced instrument. Failure to do so may lead to equipment being removed and seized by NRA staff. Also at the commencement of the fishing season or if a new river or location is being fished the appropriate Fisheries Officer should be informed in advance (Appendix 1).

Catch return forms are also issued with the licences and these should be completed by the fisherman and submitted to the Fisheries Department at Cardiff at the end of the season. The information is treated in strict confidence and helps the NRA to monitor and manage the eel resource.

3.1 Fyke Nets

These are perhaps the most commonly used instruments of eel capture. Catching ability depends solely on eel movement and, therefore eels can be caught at all stages of their life cycle. Silver eels which stop feeding when they reach a certain stage of maturity, and are therefore not attracted to baited pots, can be caught by fyke nets.

A fyke net is essentially a tube of netting supported by hoops of willow, bamboo, plastic or metal with three or more internal funnels, each with a smaller opening than the preceding one (fig. 1). On some Fyke Nets the first hoop, the longest, can be horeshoe shaped so that it lies flat on the bottom and is stable (called a D net). The remaining hoops are circular. The net ends with a toe or cod end, closed by a purse string so that it can be opened easily by the fisherman.

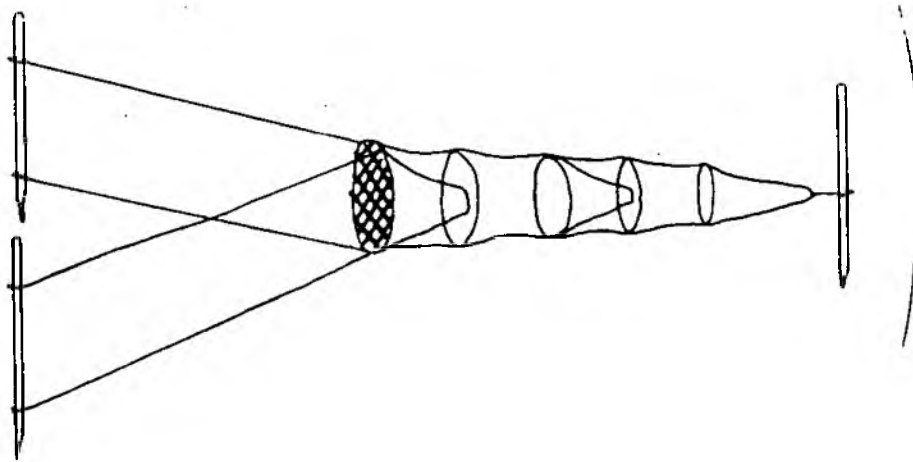


FIGURE 1 - A TYPICAL FYKE NET - with otter guards

The basic net is fished with a range of different leaders, panels of netting fixed to the opening of the net which guide the eels into the body of the net (fig. 2). The design of the leader is determined by the width and depth of the channel being fished. Commonly a single panel of vertical fixed netting projecting from the first hoop is used. Alternatively a fyke net can be fitted with two wing nets set at right angles to each other which have the same function as the leaders but greatly increase the fishing efficiency of the net.

The effectiveness of the net lies in the fact that wandering eels meeting a wall of netting make no serious attempt to swim through or over it, but change direction and swim along it. Once guided into the body of the net itself the design of the material funnels makes it impossible for the eels to turn and swim out and they end up in the cod end.

The design of the net is important, in particular the proportions of chamber lengths to height. Capture depends on trapping the eels so they cannot turn and swim out. Nets with long narrow chambers are most efficient.

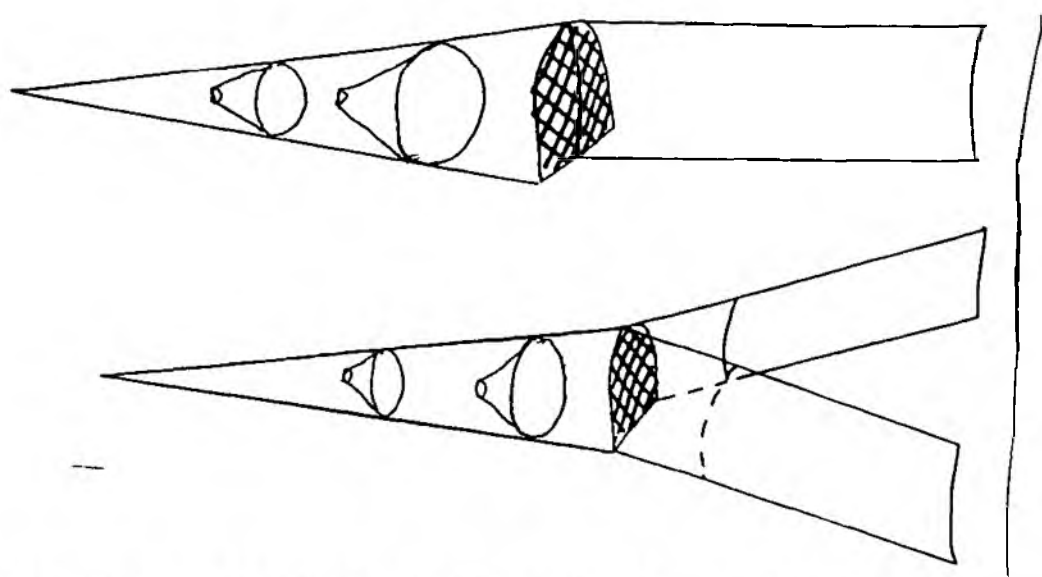


FIGURE 2 - 'D' Nets With Protective Otter Guards

Fykes can be fished singly, as a pair or in sets of pairs called a string. In all cases setting of the net is important, and to be most effective nets need to be stretched out as tightly as possible on weights or poles.

Single nets are suitable for fishing drains, small rivers and ponds and the margins of large rivers and lakes. Pairs are often set parallel to the banks of rivers in reedy or muddy regions whilst strings are usually set in large rivers and lakes.

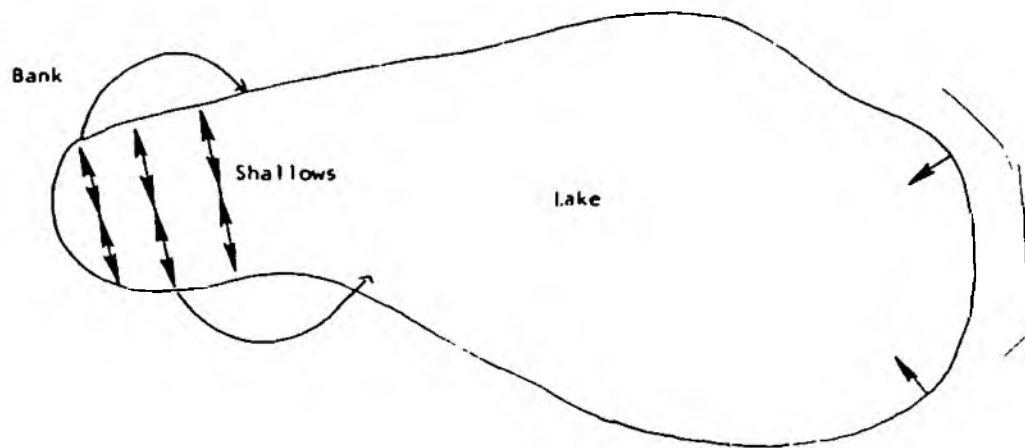


FIGURE 3 - Typical Fyke Net Settings In A Lake/Reservoir

On lakes a series of strings of nets can be set around and systematically across the lake (fig. 5) whilst on canals (if it is permissible) strings of nets fished close to the bank and D nets set on available slopes produce good catches.

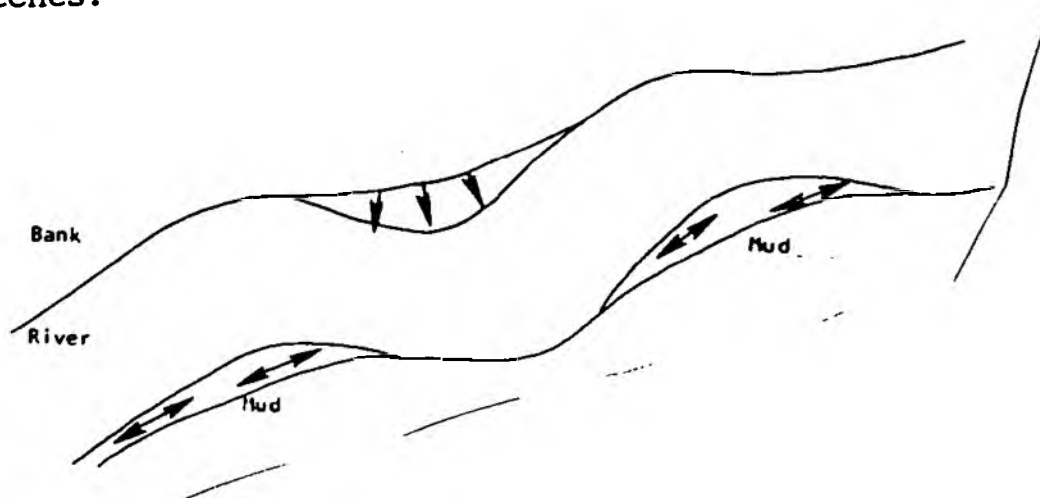


FIGURE 4 - Effective Netting Positions in a river

Probably the most efficient way of fishing on estuaries and rivers is to use paired fyke nets set well into and parallel to the bank coupled with single nets laid cod end into the middle of the river (figs. 4)

A number of manufacturers (listed in Appendix 2) produce a variety of fyke nets suitable for the range of different habitats which will be fished. Some also retail nets in kit form.

3.2 Baited pots/chambers

Unlike fyke nets, these are typically small instruments.

There are many different designs of baited pots. Baited pots are set to capture feeding eels and rely on the eels being attracted into the pot by the bait. Fresh bait such as fish or meat must be of a fair size (fist size being normal) to ensure a good scent dispersion.

The advantages of baited pots are that they can be used in a fast flowing water, or on stony bottoms, where a fyke net can be easily damaged and in navigable waters, where size is of prime importance. Pots can also be left for long periods of time without fear of eels escaping.

Baited pots are less suitable for still waters, since the bait scent dispersion is diffuse and not directional and so it is more difficult for eels to find the way into the pot.

Baited pots are most effective between May and September, most particularly during the last quarter of the new moon.

Apart from the more common instruments already mentioned, many fishermen design their own traps. For example, an excellent copy of a traditional wicker basket trap can be made from a piece of plastic waste water pipe into which a can of dog food is placed.

3.3 FIXED TRAPS

Eel traps are often installed where weirs are already in existence, in particular near mill ponds. The most common type is illustrated in figure 5. Here the water falls through a sloping grid so spaced that eels cannot fall through but are carried by the water along the sloping grid to a horizontal grille. Water flow through the trap is regulated by a sluice so that the upstream edge is just awash. Eels wriggle across this into a trough the far side of which is formed by a vertical grille through which any excess water passes. Along this trough the eels pass into an extension trough from which they drop into the storage well built into the river bank.

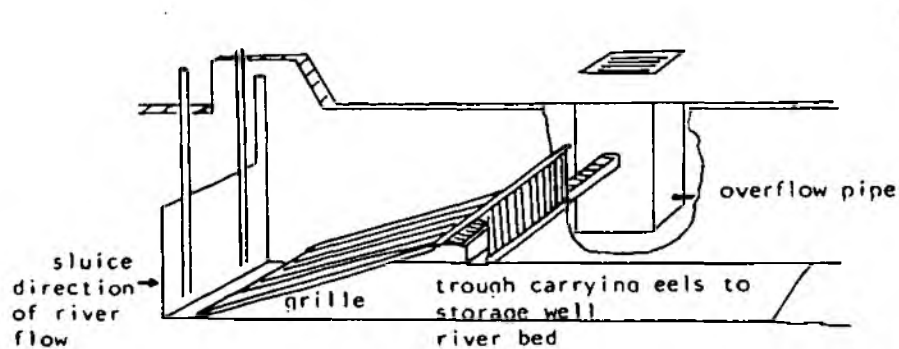


FIGURE 5 - Eel Trap typical of those used in mill stream

3.4 Restrictions on the Use of Equipment

All instruments used for catching eels must be licenced by the NRA. Also permission to cross private land to gain access to the water must be obtained from the landowner. The fishing rights of the river or lake to be fished may be controlled by people or organisations separately from the landowners. In all cases the permission of the fishery owners, which in a river may involve separate owners on each bank, must be obtained prior to fishing.

Any fish species other than eels that are accidentally captured during eel fishing operations must be carefully returned alive to the water. There are specific restrictions on the use of nets and traps in waters frequented by salmon and sea trout contained in the 1975 Salmon and Freshwater Fisheries Act (Appendix 6). Under Section 6 it is an absolute offence to place a fixed engine in any inland or tidal waters unless authorised by byelaw. Similarly, Section 7 seeks to prevent obstruction to the upstream passage of salmon and sea trout by the construction of fixed traps. Therefore, when setting fyke nets in estuaries and rivers great care must be taken not to cause an obstruction to the free passage of, or capture salmon and trout. Advice on local circumstances should be sought from the Fisheries Officer (Appendix 1).

Under Section 21 nets and traps (apart from baited baskets less than 10 inches in diameter) cannot be set in any waters frequented by salmon and sea trout prior to 25th June in any year. This restriction is aimed at protecting migrating smolts from capture, and is rigidly enforced.

Otters enjoy special protection under Section 9 of the Wildlife and Countryside Act 1981 and it is an offence to take or kill them. Otters may become entangled in fyke nets or other eel traps. In 1983 a byelaw was introduced aimed at protecting otters from accidental capture and subsequent death in fyke nets. All fyke nets used for fishing for eels must have stretched tightly across the entrance a mesh of not more than 64mm from knot to knot or fixed rigid bars, not more than 64 mm apart. Users of other means of capturing eels should take all reasonable precautions to avoid trapping otters.

When considering using fixed traps in main river watercourses, under Land Drainage Byelaws, the consent of the NRA is required. Initially, advice should be sought from the local Fisheries Officer (Appendix 1).

4. HOLDING AND TRANSPORT

4.1 Holding

Eels are sold as a live commodity and it is important that suitable holding and transporting facilities are developed so that eels are marketed in good condition.

The initial capture of eels is in fact the easiest part and the eel fisherman's main concern is the safe handling of the eels thereafter.

The details of the system used will depend on the fisherman's fishing strategy whether he is home based and fishing particular sites or simply travelling from one potential site to another, hoping to glean good catches from selected sites on a pre-planned circuit.

The most usual sites where successive catches can be taken throughout the year are the estuaries and lower reaches of rivers. Here recruitment throughout the year ensures that the average catch per net per day is usually sufficient to enable successful fishing to be undertaken throughout the entire eel fishing season.

In these instances eels are normally transferred from the nets into nearby floating holding boxes or keep nets and once a suitable quantity has been collected they can be transported to large aerated holding tanks where they can remain until sale. The fisherman can either transport the fish to one of the fish markets himself, or arrange for collection of his catch.

Although eels are renowned for their resilience they should be handled with extreme care, kept in well oxygenated moist conditions in which overcrowding is avoided, otherwise stress will develop, which in turn can lead to injury and/or disease, which detracts considerably from the saleability of the catch.

4.2 Holding Equipment

a) Keep Nets

Keep nets are useful for holding eels immediately after capture both in rivers and still waters, however, because of the flexible nature of these small mesh knotless nets eels, kept in such nets for a long period of time will be crushed, stressed and so become vulnerable to disease. Keep nets should, therefore, only ever be regarded as a temporary holding facility and eels transferred into holding boxes or aerated tanks as soon as possible. No more than 20 kg should be kept in a keep net measuring 45cms wide 75cms deep.

b) Holding Boxes

Rigid rectangular boxes made of weld mesh with a wooden top and designed to float, are a better way of holding eels since there is less chance of damaging the fish. Further since these boxes can be locked and floated on the section of water being fished they offer more security.

Eels can be kept in such containers for up to 3 weeks if overcrowding is avoided. A box 2m x 1m x 0.5m can hold 250 kg of live eels.

c) Aerated Tanks

Large tanks are essential for keeping eels over any length of time. Specialised aerated tanks can be bought commercially or the fisherman may prefer to develop his own, using materials to hand, such as old troughs, cold water tanks and even paddling pools. Whatever system is set up it is important that the water is well aerated and if no flow-through system exists, that water can be easily changed.

Eels are usually kept for at least 2-3 days in order that stomach contents can be voided. Thereafter, it is a matter of holding the eels until it becomes feasible to transport and sell. Normally eels can be kept up to 4 weeks but it is advisable to market a catch as soon as it is possible to avoid stress or disease.

Eels kept in tanks should be left undisturbed in cool dark conditions where overcrowding is avoided. A 2 sq m by 0.5m deep tank is suitable for 250 kg of live eels. If eels have to be kept for a long period of time, salt can be added to the water to reduce the risk of disease.

4.3 Transport

The system used to transport eels varies but as with static holding facilities, cool, well aerated conditions are required.

One of the most convenient systems suitable for short journeys consists of a series of open plastic or wooden trays each with a number of holes perforated on the bottom which can be stacked one on top of each other, up to 6 high. A tray 1 sq m by 10 cms will hold 50 kg.

Water sprayed on to the top tray filters down to the lowest tray, maintaining moist conditions throughout.

With access to a larger pick-up, large tanks connected to an aerator can be loaded. This system is more suited for long journeys but as with the tray system it is advisable to never overcrowd containers, 250 kgs in a tank 2 sq m by 0.5m deep is ideal.

The creation of holding and transporting facilities is essential in developing a commercial fishery. A fisherman must have confidence in his ability to retain eels in good conditions until he has a saleable quantity, until a dealer can pick up a consignment or until the price is favourable.

Development need not involve a large capital outlay, especially if, knowing the requirement of the eels, the fisherman is able to improvise and create his own equipment.

5. FISHING SEASON

The fishing season begins as the temperatures rises and fish begin to move and feed. In estuaries this tends to be March, on rivers and lakes late April to early May.

Initially lunar cycles influence movement and therefore catches, with largest catches being taken in the last quarter of the cycle. However, as the season progresses it has less effect. From July onwards mature eels begin to silver up ready for migration down to the sea during August and September. With brown eels still feeding through these latter months, this is usually the most productive cropping period.

As the temperature falls during October brown eels become less active and finally stop feeding and catches decline steadily.

Silver eels continue to migrate downstream through November and even December and during high flood conditions large catches may be taken. However, operation becomes increasingly difficult and for most fishermen November usually sees the end of the season.

6. STOCKS AND YIELDS

It is believed that eels occur in the majority of Welsh rivers, streams, ponds, lakes and reservoirs. The relative abundance of these stocks is not known and in some areas it is likely that structures such as reservoir dams are an impediment to the colonisation of certain waters. In some areas abundance will be constrained by either poor water quality (perhaps as a result of industrial discharges) or by low dissolved mineral content and low pH values, typical of many upland areas within Wales.

Unlike English regions, there appears to be little evidence from within the Authority's area of the use in former times of eel fishing weirs at mills or dams which themselves would indicate the presence of appreciable stocks of eels. Only in the Wye catchment are there eel traps. One on the River Llynfi, which drains Llangorse Lake, is owned by the Authority and has, after reinstatement in 1979, been leased to various interested individuals. Other disused traps exist on the Herefordshire Arrow as well as the River Lugg.

Until licensing was introduced in 1980 there was no information on the catches of yellow or silver eels or elvers within the Authority's area other than the incidental catches made by anglers.

As the eel fishery is developed it is hoped that catch returns supplied to the fisheries department will help to build up a picture of the size and distribution of eel populations within Wales.

From returns made to the Authority over the last few years it would appear that the estuaries of the larger rivers are proving most productive areas.

Most fishermen appear to catch primarily yellow eels, some of which are quite small in size. However, the stocks do appear to be there at exploitable levels, so that fishermen fishing throughout a season are taking consistently good catches from March to October.

7. MARKETS

Eel fisheries are well established in the east of England and since the majority of the catches are destined for either consumption in London or export into Europe, London and the east coast ports have developed as the main centres for eel buyers, with Billingsgate the main market. As interest in the eel fishery has grown so too has the number of markets where eels can be sold. Further, as facilities for holding and transporting have improved inland markets have also increased.

As well as large wholesalers, local fish markets, hotels, restaurants and smokeries can also be considered as possible buyers, and if a local market for smoked eels exists the development of a smokery should be considered.

If the fisherman does not want to transport and deal with the markets directly, there are several 'local dealers' who are willing to collect from a number of individual fishermen and transport the eels to either one of the main wholesalers or to the east coast ports for direct shipment abroad.

Dealers usually have well defined 'milk rounds' and will pick up consignments of 0.5-1 tonne from individuals for which they will pay a consistent price throughout the year. This system is ideal for anyone wanting to keep capital costs down or for anyone catching small quantities of eels, which may not represent a saleable amount on their own.

The more opportunistic fisherman may prefer to transport his own catch directly to a market. However, whilst he may receive a higher price for his catch on some occasions, he cannot always be guaranteed a sale.

Although there are several outlets open to eel fishermen, it is important to ensure that before any fishing is undertaken there will be at least one market willing to buy the catch and because of the importance of selling eels in good condition, fishermen should always be prepared to consider one, two or even three strategies for selling catches, so that eels are sold as soon as is possible.

A list of some of the larger markets and dealers is included in Appendix 3.

8. DEVELOPMENT

The capital cost of establishing a viable fishery depends on many factors including the size of the fishing operation, the way in which holding facilities are developed and the mode of transport used for reaching the markets.

Nets can be quite expensive and a fisherman just commencing operations will probably require at least 4-6 nets. Holding facilities will account for a more variable percentage of the cost depending on available resources and the ability of the fisherman to develop his own tanks and aeration systems.

In setting up a new fishery the fisherman may look towards some form of grant aid and this may be available from a number of organisations. Usually grant aid is available for capital expenditure, and for a venture such as commercial eel fishing it will probably be discretionary. A list of organisations that it would be worthwhile approaching is given in Appendix 5.

Finally, transport costs depend on the locality of the market. Where possible the fisherman should look for a local market, ensuring that his eels are in as good a condition as possible at the time of selling.

The price of eels is dependant on firstly the type and secondly the degree of grading.

Silver eels command the highest prices with yellow eels being worth slightly less, catches of small or mixed yellow eels are the least saleable.

Some buyers may specify a minimum size limit, 250 gms (0.5 lb) being quite common.

Smoking increases the market value of the eel, however to be saleable large eels of 3-4 lbs are needed, and it is unlikely that a fisherman would catch many of this size.

Prices also vary seasonally with higher prices being paid late in the season but they can also fluctuate depending on the supply and demand. Details of current prices can be found in the weekly magazine 'Fishing News'.

Where a dealer collects a consignment, the price paid per kilo is less. The actual amount paid will depend partially on the distance the dealer has to travel and partially on the amount collected. Prices for 100 kilos will be more favourable than the price for 25 kilos. Consequently if a fisherman wishes to have a catch collected, but only envisages having a small catch for sale, he would do well to contact other fishermen, so a 'milk round' can be organised.

It is difficult to give generalised information on the level of profitability, because obviously so many factors must be considered. However, if a fisherman has an established market and is able to operate efficiently then an average catch of 1lb per cod end per day should maintain viability.

9. ELVERS

9.1 Elver Fishing

A well established elver fishery exists on the River Wye where local people have traditionally fished for the returning elvers as they enter the lower reaches of the river during April and May. The peaks of migration occur on the height of the spring tides, and at these times the banks are lined with fishermen. Other rivers also supporting eel populations will also have an elver run in the spring, but apart from the River Usk no other river is known to be fished on a large scale.

As with the eel fishery the elver fishery is now licensed and anyone intending to fish for elvers must obtain a licence from the NRA's headquarters at Cardiff. The licence authorises the licensee to use a hand dip net, the traditional instrument used for catching elvers, and can be issued for one or more rivers. The licence does not however confer the right to fish, and licensees must obtain the permission of the owner.

Most elvers caught on the River Wye are taken for local consumption. However there is a growing market for elvers, and many fishermen now sell catches to local traders. Bristol Channel Fisheries in particular operate large transporters which they take to the river bank to collect directly from fishermen.

Some fishermen have now organised themselves into syndicates to ensure that they have a large and therefore more saleable catch.

As with eels the price paid for elvers varies upon availability and demand.

In 1986 between £14 and £20 a kilo was paid.

APPENDIX 1

HEADQUARTERS

**NATIONAL RIVERS AUTHORITY - WELSH REGION
RIVERS HOUSE
ST. MELLONS BUSINESS PARK
CARDIFF
CF3 OLT**

Tel: CARDIFF (0222) 770088

DIVISIONAL FISHERIES OFFICIES

**NORTHERN DIVISION - NRA WELSH REGION,
HIGHFIELD HOUSE,
PRIESTLEY ROAD
CAERNARFON.**

Tel: CAERNARFON (0286) 672247

AREA OFFICE - MOLD

Tel: MOLD (0352) 58551

**SOUTH WEST DIVISION - NRA WELSH REGION,
LLYS AFON
HAVERFORDWEST
DYFED
SA61 2BG
760081**

Tel: HAVERFORDWEST (0437)

AREA OFFICE - SWANSEA

Tel: SWANSEA (0792) 645300

SOUTH EAST DIVISION

**RIVERS HOUSE
ST. MELLONS BUSINESS PARK
CARDIFF**

Tel: CARDIFF (0222) 770088

AREA OFFICE - MONMOUTH

Tel: MONMOUTH (0600) 72121

DIVISIONAL FISHERIES, CONSERVATION AND RECREATION OFFICERS

MOLD (0352) 58551	-	B.P. HODGSON
CAERNARFON (0286) 672247	-	R. BRASSINGTON
HAVERFORDWEST (0437) 760081	-	D.C. GARDINER
SWANSEA (0792) 645300	-	A.J. SCHOFIELD
MONMOUTH (0600) 72245	-	P.G. HILDER
CARDIFF (0222) 770088	-	D. BUNT
HEADQUARTERS		
CARDIFF (0222) 770088		
FISHERIES SCIENTIST	-	G. JONES
FISHERIES TECHNICAL CLERK	-	T. HOPKINS

APPENDIX 2

Equipment Manufacturers

Nets

Nigel R. Collins,
78 Alexandra Road,
Bridport,
Dorset. DT6 5AL
Tel: Bridport (0308) 22367

Bridport-Gundry,
The Court,
Bridport,
Dorset. DT6 3QA
Tel: Bridport (0308) 56666

John Taylor, Fish Eagle Co.,
Little Faringdon Mill,
Lechlade,
Gloucestershire.
Tel: Lechdale (0367) 52754

C.J. Field (Polynet Ltd),
Adelphi Mill,
Grimshaw Lane,
Bollington,
Macclesfield,
Cheshire.
Tel: Macclesfield (0265) 611077

Food Smokers

Innes Walker Leisure Co. Ltd.,
56-58 Queen Elizabeth Avenue,
Hillington Industrial Estate,
Glasgow G52
Tel: (041 883) 2139

Torry Kilns by Afos,
Manor Estate,
Analby,
Hull.
Tel: (048) 252152

Brooks Productions,
1a Compton Road,
Southport,
Merseyside.
Tel: (0704) 67068

APPENDIX 3

Eel Buyers

A.W. Butler Ltd.,
Billingsgate Market,
London EC1

Hubert Koman (Dutch Buyer)
Agent is: M. Foster,
6 Brickfields,
Somerleyton,
Suffolk.
Tel: (0502) 730001

Donald Curzon,
St. Augustine's Marine Farm,
Sweechbridge Road,
Hillborough,
Herne Bay,
Kent.
Tel: (02273) 2356

M. Hancock,
Pudleigh Mill Fish Farm,
Combe St. Nicholas,
Chard,
Somerset.
Tel: (04606) 2663

M. Brown,
The Lodge,
Drayton Longport,
Somerset.
Tel: (0458) 251 320

Bristol Channel Fisheries
Contact: Mr. Nevsingher,
Elver Station,
Bristol Road,
Gloucester.
Tel: (0452) 23534

Mrs. Gell,
Redford Cottage,
Redford,
Midhurst,
West Sussex.
Tel: Millend (042876) 242

H.G. Cook,
South Cottage,
Walmore Hill,
Minsterworth,
Gloucester.
Tel: (0452 75) 464

APPENDIX 4

Books

C. Moriarty

"Eels A Natural and Unnatural History"

Publisher: David and Charles.

D. Forrest

"Eel Capture, Culture, Processing and Marketing"

Publisher: Fishing News Books Ltd.

V. Sinha and J. Jones

"The European Freshwater Eel"

Publisher: Liverpool University Press.

Tesch

"The Eel, Biology and Management of Anguilled Eels"

Publisher: Chapman and Hall, London.

A. Usui,

"Eel Culture",

Publisher: Fishing News Books Ltd.

Magazines

"Fish Farmer"
(monthly publication)

Publisher: Farmers Weekly Publication
1 Throwly Way,
Stretton,
Surrey.
Tel: (01 640) 8040

"Fishing News"
(Weekly Publication)

Publisher: AGB Heighway Ltd.,
Heighway House,
87 Blackfriars Road,
London. SE1 8HB

APPENDIX 5

Grant Aiding Bodies

Welsh Development Agency,
Treforest Industrial Estate,
Pontypridd,
Mid Glamorgan. CF37 5UT

Development Board for Rural Wales,
Ladywell House,
Newtown,
Powys. SY61 3NQ

Welsh Office,
Department of Agriculture
Crown Buildings,
Cathays Park,
Cardiff. CF1 3NQ

National Federation of Fishermen's Organisation
N.D. Atkins,
Chief Executive,
Fish Dock Road,
Grimsby. DN31 3NL

Sea Fish Industry Authority,
168 Amarda Way,
Plymouth.
Tel: (0752) 266460

APPENDIX 6

EXTRACTS FROM THE SALMON AND FRESHWATER FISHERIES & ASSOCIATED AMENDMENTS FROM 1986 SALMON ACT

6. (1) Any person who
- or
- (a) places a fixed engine in any inland or tidal waters;
- (b) uses an unauthorised fixed engine for taking or facilitating the taking of salmon or migratory trout or for detaining or obstructing the free passage of salmon or migratory trout in any such waters.
- shall be guilty of an offence
- (2) A person acting under directions to that effect given by the National Rivers Authority for the area may take possession of or destroy an engine placed or used in contravention of this section.
- (3) In subsection (1) above "unauthorised fixed engine" means any fixed engine other than
- (a) a fixed engine certified in pursuance of the Salmon Fishery Act 1865 to be a privileged fixed engine; or
- (b) a fixed engine which was in use for taking salmon or migratory trout during the open season of 1861, in pursuance of an ancient right or mode of fishing as lawfully exercised during that open season, by virtue of any grant or charter or immemorial usage.
- (c) a fixed engine the placing and use of which is authorised by byelaws made by the NRA under this act or by byelaws made by a local fisheries committee by virtue of Section 37(2) of the Salmon Act 1986.
- 21.(1) Subject to subsection (2) below, any person who
- or
- (a) before 25th June in any year, hangs, fixes or uses in any waters frequented by salmon or migratory trout any baskets, nets, traps or devices for catching eels, or places in any inland water any device whatsoever to catch or obstruct any fish descending the river;
- (b) at any time places upon the apron of any weir any basket, trap or device for taking fish, except wheels or leaps for taking lamperns between 1st August and the following 1st March,
- shall be guilty of an offence.
- (2) Subsection (1) above does not prohibit
- (a) the use of eel baskets not exceeding in any part 10 inches in diameter constructed so as to be fished with bait, and not used at any dam or other obstruction or in any conduit or artificial channel by which water is deviated by the river.

- (b) any device for taking eels in such places, during such time and subject to such conditions as may be authorised by the NRA for the area with the consent of the Minister.
- 7.
- (1) No unauthorised fishing weir shall be used for taking or facilitating the taking of salmon or migratory trout.
 - (2) Where a fishing weir extends more than halfway across any river at its lowest state of water, it shall not be used for the purpose of taking salmon or migratory trout unless it has in it a free gap or opening situated in the deepest part of the river between the points where it is intercepted by the weir, and
 - (a) the sides of the gap are in line with an parallel to the direction of the stream at the weir; and
 - (b) the bottom of the gap is level with the natural bed of the river above and below the gap; and
 - (c) the width of the gap in its narrowest part is not less than one-tenth part of the width of the river.
 - (3) A free gap need not be more than 40 feet wide and must not be less than 3 feet wide.
 - (4) If any person uses a weir in contravention of this section or makes any alteration in the bed of a river in such manner as to reduce the flow of water through a free gap, he shall be guilty of an offence.
 - (5) In subsection (1) above "unauthorised fishing weir" means any fishing weir which was not lawfully in use on 6th August 1861, by virtue of a grant or charter or immemorial usage.



ASiantaeth yr Amgylchedd Cymru
ENVIRONMENT AGENCY WALES

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